

SECTION 1 INTRODUCTION

NJDOT MISSION STATEMENT

“Deliver a safe, reliable and affordable transportation system that is considered to be the best - every day in every way - by those who live, work, play and invest in New Jersey”

1.1 Foreword

The NJDOT Procedures Manual presents current Department procedures for preparing construction contract documents. This manual details the life of a project from problem statement to construction close-out. Procedures are presented for road and bridge projects for all project categories: Interstate, National Highway System (NHS) and non-NHS, New Construction, Reconstruction and 3R.

The primary purpose of this manual is to enable Project Managers to efficiently manage their projects. Project Management is an organizational structure that systematically breaks down projects into discreet deliverables tied to schedule and budget milestones. Therefore, all budget/schedule/manpower needs are approved before project tasks are initiated.

All projects do not have to follow the same prescribed steps of procedure. Customization of the procedures to fit each project is encouraged. Project Managers should balance the need to prepare an accurate and complete set of construction contract documents, that comply with all NJDOT and FHWA policies and design standards, with the need to implement highway and bridge improvements quickly and economically. The users of New Jersey’s transportation system expect faster responses to problems and an efficient expenditure of their tax dollars.

Department procedures are always changing. With the publication of this manual, a new procedure (Baseline Document Change Requests, Section 4.7.2) has been implemented for updating documents. Ultimately, it is expected that updates will be issued electronically, as often as needed.

The NJDOT Procedures Manual is a living document. Corrections, additions and suggestions for additional sections are welcome. All such requests should be forwarded to the Manager, Bureau of Quality Management Services.

Russell Tong
Assistant Commissioner
Capital Program Management

Timothy F. McGough
Director
Division of Project Management

Richard Dunne
Director
Division of Design Services

John Lettiere
Director
Division of Capital Program Control and Support Services

Michael Seigfried
Director
Division of Construction Services and Materials

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1.3 Definitions

The following is a list of definitions and terms used in the capital project delivery process. Many are routinely referred to by their acronyms and are included here for reference.

Advisory Council on Historic Preservation (ACHP) - Independent agency charged with coordinating Federal, State, and local and private preservation efforts and advising the President and Congress matters of historic preservation. It acts in an advisory capacity and is typically the final “sign-off” in the Section 106 process.

Alternate Procedures - A procedure authorized by 23 CFR 106(b), 23 USC 117(a) and 23 CFR 640 for administering Federal-Aid projects. This procedure combines the Exempt and Certification Acceptance procedures.

Capital Program Development Committee - A committee that reviews problem statements during the various project development stages and determines whether a project should be developed to address the identified problems. The committee also determines where problem statements go - planning, back to planning, scope development, design development, maintenance, etc. The committee is chaired by the Assistant Commissioner Capital Program Management and is comprised of the Assistant Commissioner Maintenance and Operations, the Assistant Commissioner External and Governmental Affairs; the Director Project Management, Director Capital Program Control and Support Services, Director Transportation Policy and, in the future, a representative from NJ Transit.

Categorical Exclusions (CE) - A classification of projects which have been determined not to individually or cumulatively have a significant impact on the human or natural environment and are therefore exempt from the preparation of an Environmental Assessment or Environmental Impact Statement. They are identified in FHWA’s regulations (23 CFR 771) as being Class II projects.

Certification Acceptance (CA) - A procedure authorized by 23 U.S.C. 117 (a) and 23 CFR 640 for administering the design of Federal-Aid projects.

Controlling Design Element - A design element that “controls” or “drives” a particular design; has a controlling effect of a design (lane width, cross slope, superelevation, etc.).

Core Group - This is a critical activity for Project Managers to ensure the project has proper support. It consists of a working group of various Departmental representatives, FHWA, and external interests (e.g. MPOs, local elected officials, community and environmental groups/agencies), where appropriate, which provides a forum for soliciting input and “buy-in” into the project development process. It serves as a means to “tap” the knowledge and information pool within the Department on a particular transportation problem area and helps build support for the ultimate solution both within the Department and with external agencies and the community.

Critical Path Method (CPM) - A formal scheduling method used on large complex projects to assure design and construction can be completed in the shortest time frame. The Critical Path Method utilizes network based logic to identify the interrelationship of design and construction activities and calculates the longest path of interrelated activities (the critical path) through the process which cannot be delayed without causing the entire project to be delayed.

Cultural Resource - Term used to denote both architectural (above ground) and archaeological (below ground) resources which have some type of historical significance.

Deficiency Report - A report which addresses the physical elements of a specific area of roadway which is below current standards. Can be prepared concurrently with the Needs Assessment report.

Design Element - A particular feature of a design (lane width, cross slope, curb, beam guide rail, etc.).

Design Standard - An authoritative principle or rule containing specific criteria and controls for design.

Design Value - A particular value or set of values that are specified for each design element within a design standard.

Draft Environmental Impact Statement (DEIS) - Draft version of an EIS which documents evaluation of the potential environmental impacts of a project.

Effect Determination - Section 106 - An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the National Register. Alteration to features of the property's location, setting or use may be relevant, depending on a property's significant characteristics, in determining the effect on a property. An **Adverse Effect** results when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Under certain conditions a project may have an effect on a property but that effect may be determined to be "**Not Adverse**" and in certain instances there may be "**No Effect**".

Environmental Assessment (EA) - Document prepared for projects identified in FHWA's regulations as Class III type projects or those projects for which it is unclear if there is a potential for significant environmental impacts. Provides information on the alternatives considered and their associated impacts. After the EA is made available and a public comment period held, if the project is determined not to have a significant impact on the environment then FHWA issues a Finding of No Significant Impact (FONSI). If the project is determined to have a Significant Impact, an EIS must be prepared.

Environmental Impact Statement (EIS) - Document prepared for projects identified in FHWA's regulations as Class I type projects or those projects which have the potential for significant environmental impacts. Provides information on the alternatives considered and their associated impacts. It is circulated to the public and to review agencies for "comments" and is prepared as a draft and final document. Its approval is a Record of Decision prepared by FHWA and published in the Federal Register.

Executive Order 215 (EO 215) - State mandated “environmental document”. Similar to the federal Environmental Assessment or federal Environmental Impact Statement and required for all State funded projects over \$1 million in construction costs. (Order has provisions for certain project exemptions and NJDOT has a Memorandum of Agreement on additional projects which are exempt from the EO-215 requirements)

Exempt Project - I-3R, NHS-3R or Non-NHS project that has been granted reduced FHWA review and oversight requirements.

Experimental Feature - A material, process, method, equipment item, traffic operational device or other feature that: (1) has not been sufficiently tested under actual service conditions to merit acceptance without reservation in normal highway construction, or (2) has been accepted but needs to be compared with alternative acceptable features for determining their relative merits and cost effectiveness.

Federal Register - The official publication for Presidential Documents, Executive Orders as well as Notices, Rules, and Proposed Rules from Federal Agencies and organizations; regulations (also known as rules) regarding such laws as Section 106 of the National Historic Preservation Act are published in the Federal Register prior to their codification in the Code of Federal Regulations (CFR).

Final Environmental Statement (FEIS) - Final version of an EIS which documents evaluation of the potential environmental impacts of a project and the consideration of comments on the draft EIS and public involvement process, in making the recommendation for the Preferred Alternative to be developed using federal funds or the conclusion that the No Build Alternative will be chosen.

Federal Highway Administration (FHWA) - Federal agency which oversees the disbursement of federal funds for highway projects. Also required to ensure that all applicable federal laws have been met before releasing those funds to the State Department of Transportation.

Full Oversight - A Federal-Aid highway project processing category which requires complete Federal Highway Administration review of all project development processes.

Local Outreach - Loosely used to denote the Department’s Public Involvement Process. BPSD uses the term to mean soliciting input from local interests (municipal, township, county) on a particular transportation problem to help better define that problem and understand what the public perception of the transportation issues of an area are. An “Information Center” is usually beyond the level of involvement for Local Outreach and is typically part of the Community Involvement Process.

Major/Unusual - All tunnels, unusual and movable bridges, unusual or major hydraulic structures, unusual or major geotechnical structures and bridges with a deck area greater than 11,600 square meters.

A. An unusual bridge, hydraulic or geotechnical structure may be any of the following:

1. An unusual bridge involves difficult or unique foundation problems, new foundation types, new or complex designs involving design or operational features, longer than

normal spans or bridges for which the design procedures depart from current acceptable practice.

Examples include cable stayed, suspension, arch, segmental concrete bridges, trusses and other bridges which deviate from AASHTO Standard Specifications or Guide Specifications for Highway Bridges, bridges requiring abnormal dynamic analysis for seismic design, bridges designed using a three-dimensional computer analysis, bridges with spans exceeding 150 meters and bridges which include ultra high strength concrete or steel.

2. An unusual geotechnical feature involves new or complex retaining wall systems or ground improvement systems.
3. An unusual hydraulic structure involves unusual stream stability countermeasures, an atypical or unique design which may include hydraulic structures covered in Paragraph B.

B. Major hydraulic structures include but are not limited to:

1. Storm drainage systems designed to carry more than 6 cubic meters per second or, regardless of quantity of discharge, which have a surface detention storage system with an accumulated volume greater than 6170 cubic meters.

“Storm drainage systems” as used in this instance means piping systems that carry roadway drainage longitudinally. An example would be a major piping system to carry roadway drainage into Newark Bay. It does not include isolated cross pipe culverts or box culverts.

2. Stormwater pumping facilities designed to discharge more than 0.6 cubic meters per second.
3. Dams formed by highway fills which will affect permanent impoundment of water more than 7.5 meters deep or 61,700 cubic meters in volume.
4. Stream levees formed by highway fills which are constructed along a stream or body of water to reduce flooding in adjacent areas.

C. Major geotechnical features include unusually deep cuts or high fills where the site geology is potentially unstable, landslide corrections, and large retaining walls (cantilever, permanent ground anchor, and soil reinforcement). See the FHWA October 25, 1985, “Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications” for additional guidance.

Memorandum of Agreement (MOA) - Section 106 - typically an agreement signed by the NJDOT, SHPO, FHWA, and ACHP which documents the methods that will be used to minimize or mitigate impacts of projects on historic resources.

Multi-Purpose or Joint Development Projects - A project which uses a coordinated planning process that is carried out by highway agencies or other agencies or organizations to study the

creative use of highway right of way to provide benefits to communities and to assist in blending highways into the environment they traverse.

National Highway System (NHS) - An interconnected system of principal arterial routes which serve major population centers, international border crossing, ports, airports, public transportation facilities and other intermodal transportation facilities and other major travel destinations; which meet national defense requirements; and serves interstate and interregional travel.

Needs Assessment - A report which is prepared to identify the shortcomings of a particular roadway (can range from the corridor level to site specific). It typically focuses on congestion/capacity issues and occasionally safety issues.

National Environmental Policy Act - 1969 Act of national legislation requiring the preparation of environmental impact statements for major federal actions.

Project Manager - Manages and is accountable for projects from Scope Development through completion of construction.

(P.S. & E.) - Plans, Specifications, and Estimate.

Reconstruction - Any work that includes a lane addition (including auxiliary, acceleration and/or deceleration lanes or any extension thereof), use of a shoulder as a through lane, changes in the width of traveled way, pavement structure replacement, any changes in horizontal alignment, complete deck replacement and parapet replacement.

Projects that restripe the roadway to bring the width of through lanes up to the required design value by utilizing a portion of the existing shoulder may be classified under 3R (resurfacing) provided that a design exception is not required. When a project uses the existing shoulder width in its entirety for through lane use, the roadway cross section has been change significantly and therefore the project is to be classified as a reconstruction.

Those projects that include widening of the shoulders may be classified as 3R (rehabilitation). Minor widening is defined as a widening, within existing right of way, only to upgrade lanes and/or shoulders to the required design value, exclusive of a full lane addition.

Rehabilitation - Any work that includes:

1. any item in a resurfacing or restoration project
2. new concrete median barriers
3. rehabilitation of existing structures
4. new signals
5. new sign structures (sign bridge, cantilever and bridge mount)
6. access revisions (full compliance with NJ State Highway Access Management Code)
7. minor widening (see Reconstruction)
8. Type 2 noise barriers

Restoration - Any work that includes:

1. any item contained in a resurfacing project
2. upgrading existing signals
3. large signs (constructed on breakaway or non-breakaway supports)
4. replacement of concrete medial barriers
5. new underdeck, highmast, offset, or conventional lighting systems
6. new impact attenuators
7. new curb and/or sidewalk
8. regrading existing berm section
9. jacking of concrete slabs
10. bridge deck restoration and component patching (involves Type A and B repairs, with extensive Type C repairs to remove all deteriorated and chloride ion contaminated concrete from the deck and reconstruction of cross slopes along with a Latex Modified Concrete (LMC) wearing surface; also involves work to restore substructure and superstructure components)
11. structure repairs (includes rehabilitation or replacement of structural components in kind due to severe corrosion, cracking, collision damage and spalling; may be stringers, bearings, pier columns, etc.)
12. landscape improvements
13. access revisions (same as a Resurfacing project)

Resurfacing - Any work that includes:

1. minor amounts of new right of way and/or easements (work will primarily be within existing right of way)
2. pavement milling
3. pavement resurfacing
4. pavement repair
5. bridge bituminous resurfacing
6. bridge deck patching (includes spot repair areas to full deck resurfacing with LMC; deck patching would include Type A and B repairs, with minimal Type C repairs; does not include deck replacement, full deck restoration or substructure/superstructure component patching/repair)
7. joint replacement and/or repair
8. raised pavement markers
9. replacement of existing impact attenuators
10. repair/replacement of beam guiderail
11. resetting beam guiderail
12. new beam guiderail installation
13. small signs (constructed on bendaway supports)
14. upgrading existing lighting systems (underdeck, highmast, offset of conventional systems)
15. replacement of existing curb and/or sidewalk
16. modification of existing sidewalk/curb to comply with Americans with Disabilities Act (ADA) requirements.
17. channelizing, division and refuge islands (without widening the total pavement width)
18. upgrading existing drainage systems (replacing existing inlets, replacing existing pipe, plugging pipe, cleaning pipe and new inlets tied into the existing system)
19. access revisions (only as a consequence of one or more of the above items of work or as a result of a drive way accident analysis)

20. restriping (see Reconstruction)

Record of Decision (ROD) - Document prepared by FHWA which presents the basis for which the decision summarize any mitigation measures that will be incorporated in the project and documents any required Section 4(f) approval. Further Federal funding may not be secured for a project until a ROD has been signed.

Section 4 (f) - Generally accepted term to mean the process of complying with the requirements to document that there are no prudent or feasible alternatives to the “use” of publicly owned parks, recreation areas, wildlife refuges and historic sites. Originated from Section 4(f) of the 1966 DOT Act recodified as Section 303 in Title 49.

Section 4 (f) “Individual or Self-Standing” - For projects classified as a CE and which use property protected under Section 4(f), and which do not meet the criteria of either Temporary Occupancy or one of the Programmatic Section 4(f)'s, then a separate document must be prepared (an Individual or Self-Standing Section 4(f)) which presents the evaluation of alternatives to avoid the use of Section 4(f) land and the evaluation of all possible measures to minimize harm to such lands.

Section 4 (f) “Programmatic” - FHWA has prepared, processed and signed several “Programmatic” Section 4 (f) documents, which if the project’s use of the Section 4(f) property meets the criteria of these document, Individual Section (4) documents do not need to be prepared and the Section 4(f) approval can be done at the FHWA district level.

Section 106 or Section 106 Process - Loosely used to mean the process of complying with the National Historic Preservation Act. Basically requires the identification of properties on or eligible for the National Register of Historic Places and then determining what “effect” Federally Funded highway project will have on the resources.

Soft Costs - A project's engineering, review and incidental costs (such as Department salaries and overhead, consultant preliminary engineering, utility preliminary engineering, construction engineering, right of way plan preparation, and cultural resource mitigation).

Specifications - The compilation of provisions and requirements for the performance of prescribed work.

1. Standard Specifications. A book of specifications approved for general application and repetitive use.
2. Supplemental Specifications. Approved additions and revisions to the Standard Specifications.
3. Special Provisions. Revisions to the Standard and Supplemental Specifications applicable to an individual project.

State Historic Preservation Officer (SHPO) - State designated official which offers the official opinions of the State Historic Preservation Office in the Section 106 process.

Substandard Design Element - A design element that does not meet the specified design value.

Technical Environmental Study (TES) - Document which contains the technical detail by subject (ex. Ecology) of studies done to evaluate the environmental impacts of a proposed project.

United States Environmental Protection Agency (USEPA) - An executive agency of the United States Federal Government responsible for managing federal efforts to control air and water pollution, radiation and pesticide hazards, ecological research, and solid waste disposal. It was neither created by, nor is it an immediate part of the National Environmental Policy Act (NEPA), it does not promulgate regulations regarding the preparation of NEPA documents; it does, however, serve as a clearinghouse and commenting agency on all Environmental Impact Statements.

1.4 Capital Program Management Organization

In a strong project management organization, services and functions tend to revolve around a central figure, the project manager (see Figures 1 and 2).

Under this concept, the same person is responsible for their assigned project throughout the process, beginning at the project scoping stage and ending with completion of construction and project close-out. Institution of this “cradle to grave” concept is not new to the engineering field or public agencies and it has been successfully implemented in several large public and private engineering settings. In terms of implementation, it presumes that every project advanced is needed, and therefore, when coupled with detailed budgets and realistic schedule and monitoring programs, will take on the necessary sense of urgency and ownership of the project that was lacking under the old system of multiple hand-offs and conflicting priorities.

Once a project is approved by the Capital Program Development Committee, it is then the assigned project manager’s role to manage the three major stages: Scoping Development, Design Development, and Construction. The project manager is also charged as the primary individual for the Department to coordinate externally with FHWA, NJDEP and other agencies, and the affected community, and internally with the “owner,” the Operations Unit.

Capital Program Control and Support Services

The Capital Program Control Division consists of four functional bureaus organized to serve the development, control and coordination of the capital program. The bureaus are Capital Program Development, Capital Program Coordination, Program Support Services, and Program Information Services. As shown on Chart A-1, Capital Program Control and Support Division, three of the four bureaus provide the framework and guidance for implementation of the capital program internally, and interface with other divisions and bureaus within the Department. The Bureau of Program Information Services is dedicated to technical support of the capital program through interface between the computer application users and the Office of Telecommunication and Information Services (OTIS). Computer application includes the use of the Geographic Information Systems (GIS). GIS will be an integral part of the planning, design and reporting system for the Department’s capital program. It manages information such as mapping very effectively and provides information in a shorter period of time. It allows the Department to make more informed decisions during daily operations.

Capital Program Development is the first stop in the project development pipeline. This bureau is responsible for the development of project and program proposals and coordinating these proposals with the three Metropolitan Planning Organizations (MPO) which serve the urbanized areas of the State.

Once projects are established and moving through the pipeline, the responsibility for securing funds and managing the budget aspects of the current year of the 5-year plan falls to the Capital Program Coordination bureau. New project starts, as well as modifications to existing grants and funding agreements are coordinated and cleared through this office. In addition, the responsibility for ensuring ongoing compatibility with the STIP is resident in this bureau.

On the project level, support for budgeting, scheduling, cost estimating and project control will be provided by the Bureau of Program Support Services. Staff will provide the first cut

estimate of all needs as a service to Project Managers, who will review and work with BPSS and functional managers to develop project specific baseline budgets.

Quality Management Services

The Bureau of Quality Management Services (Chart A-2) is a group consisting of three service groups for the creation and assurance of quality management initiatives. The Bureau of Quality Assurance is charged with monitoring of overall standards and procedures. It serves as an audit function to ensure compliance with revised processes as they are implemented. Configuration Management is responsible for evaluating scope change proposals, providing recommendations to the Change Control Review Board, processing the scope change proposals and maintaining all manuals, documents and standards. Value Engineering will continue as a necessary and useful step in the design review process to assure continuance of both fresh ideas, and cost effective solutions to problems arising from the design process.

Project Management Division

The Project Management Division (Chart B) is responsible for management and direction of all activities in the development and implementation of capital improvement projects. Primarily, all project management functions and responsibilities are centralized in this area. Project Managers assigned to the program management units will have “cradle to grave” responsibility for every capital improvement project assigned to them. Developing a comprehensive scope of work and the work necessary to secure environmental approvals are assigned to this division. This is the most vital piece to a successful, timely and cost-effective completion of a project. Additionally, the contract administration services group is assigned here, to interface all project managers with the financial sections of the Department and ensure that contracting standards and requirements are maintained when engaging outside consultants.

Design Services Division

The Design Services Division (Chart C and C-1 through C-4) is the in-house design arm of the Department and provides either the in-house engineering expertise to design the project or supports the Project Manager by performing quality assurance reviews of the work of the design consultant. The design group directly supports the Project Manager from scope development through final design.

Team leaders from the Design Coordination Unit will work directly with the Project Managers to provide product/review at the appropriate time, at a level of cost appropriate to the effort. Schedules will be set in advance and strictly adhered to.

Construction Services and Materials

Construction Services (Chart D) provides construction administration support to the project manager. Other functions include construction contract development, acting as a liaison between municipalities, the community, etc., providing expertise pertaining to construction issues, providing on-site inspection and approving contract work in coordination with the Project Manager.

Additionally, the materials unit provides testing services and the evaluation and acceptance of materials.

The Role of the Project Manager

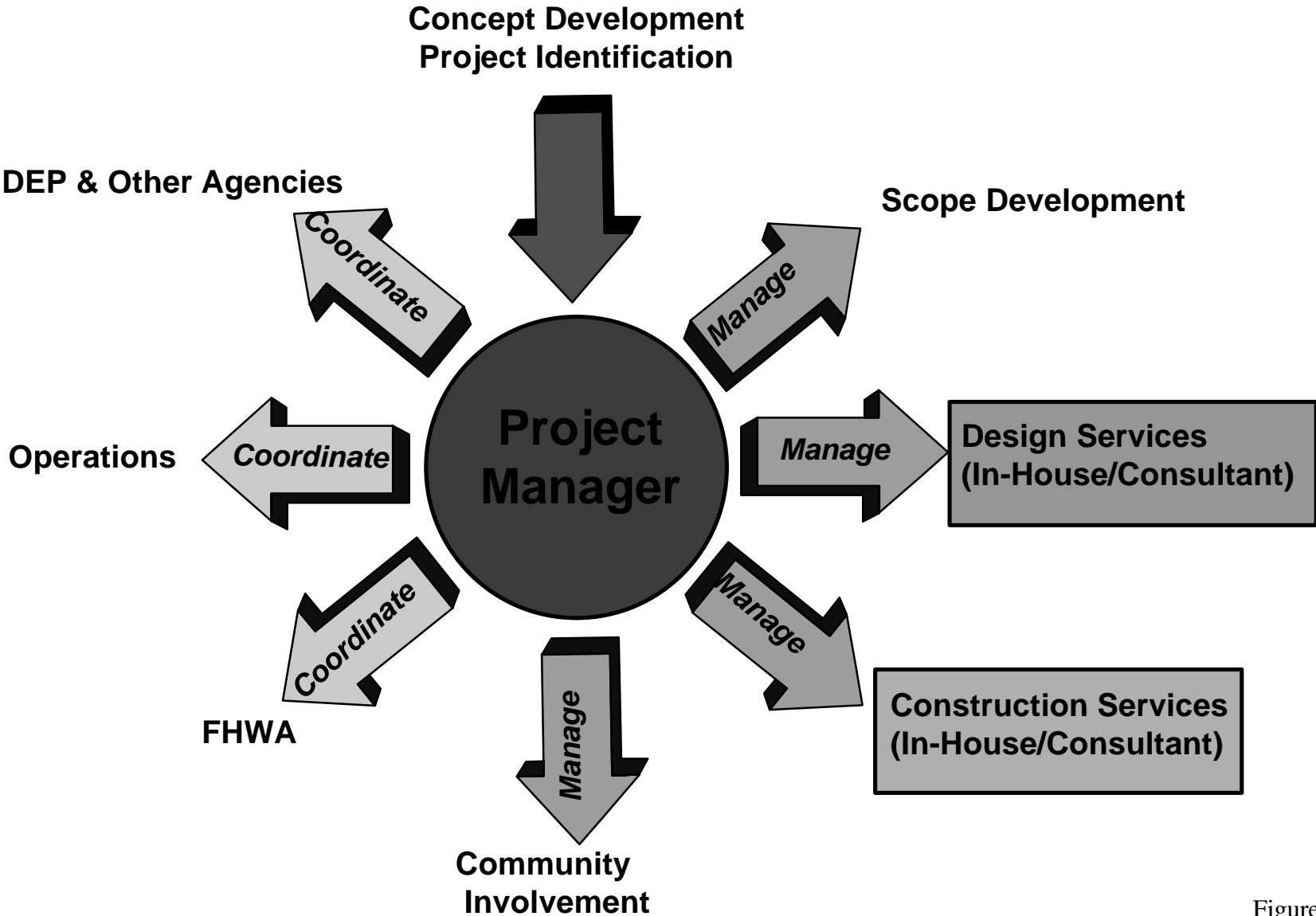


Figure 1

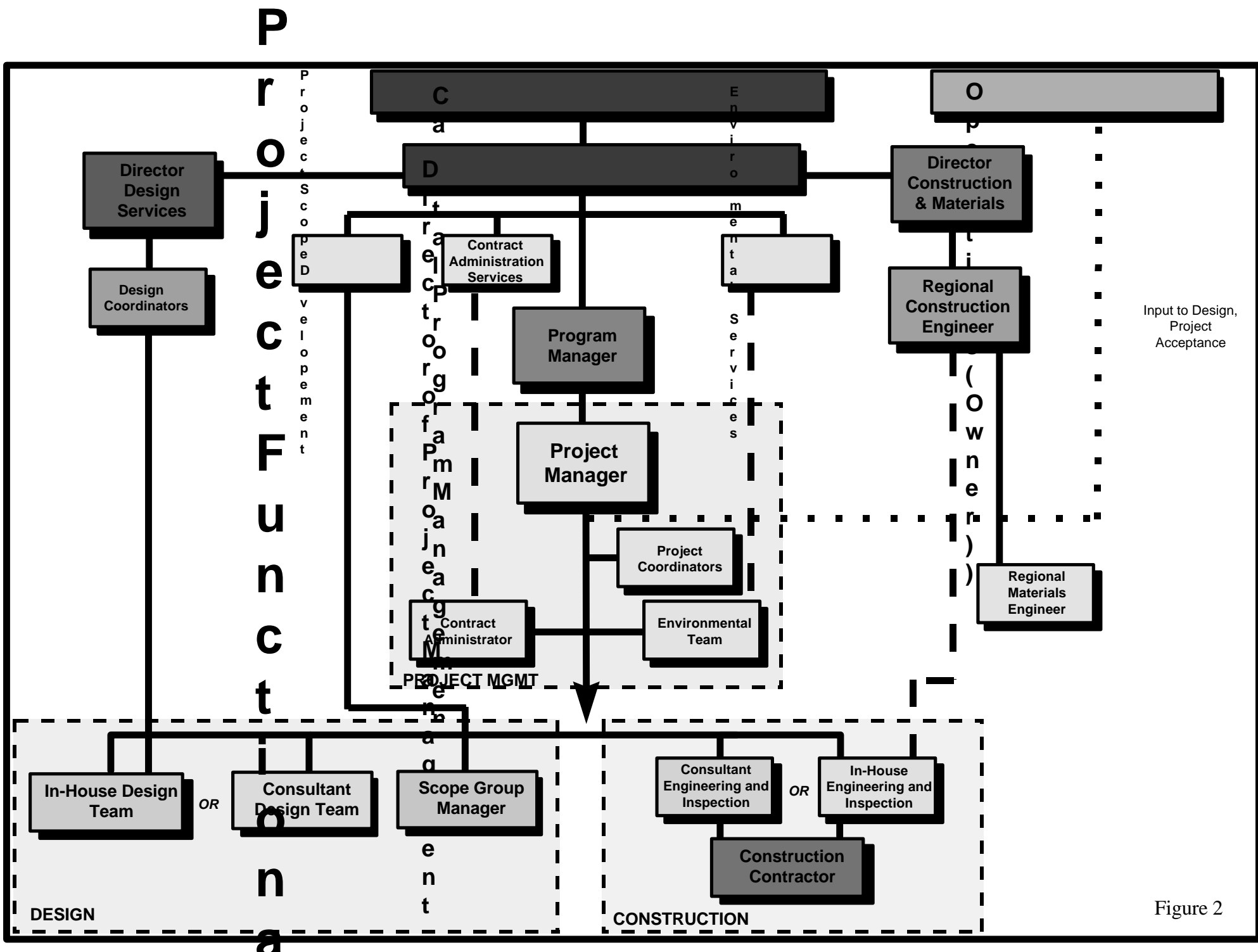
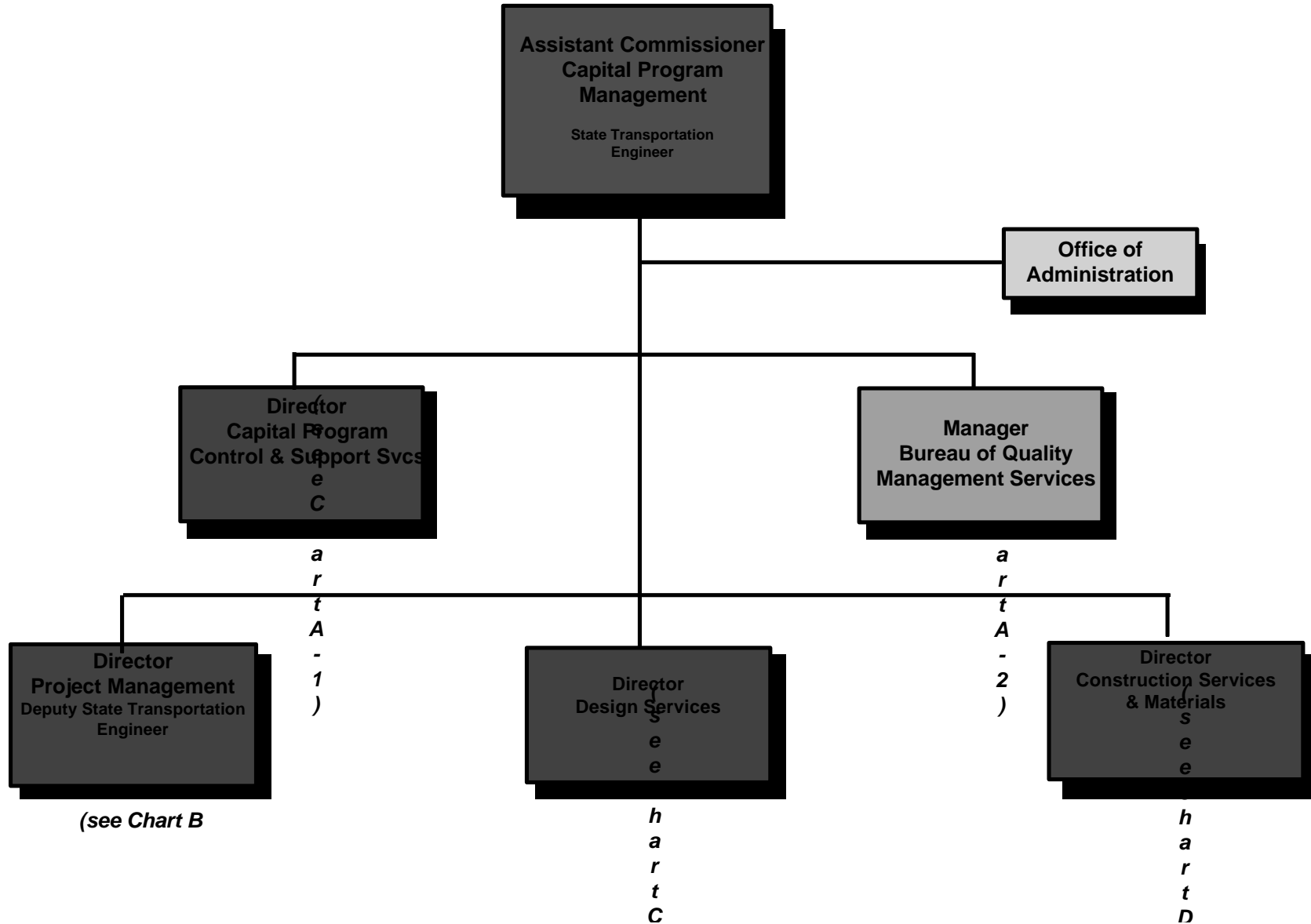


Figure 2

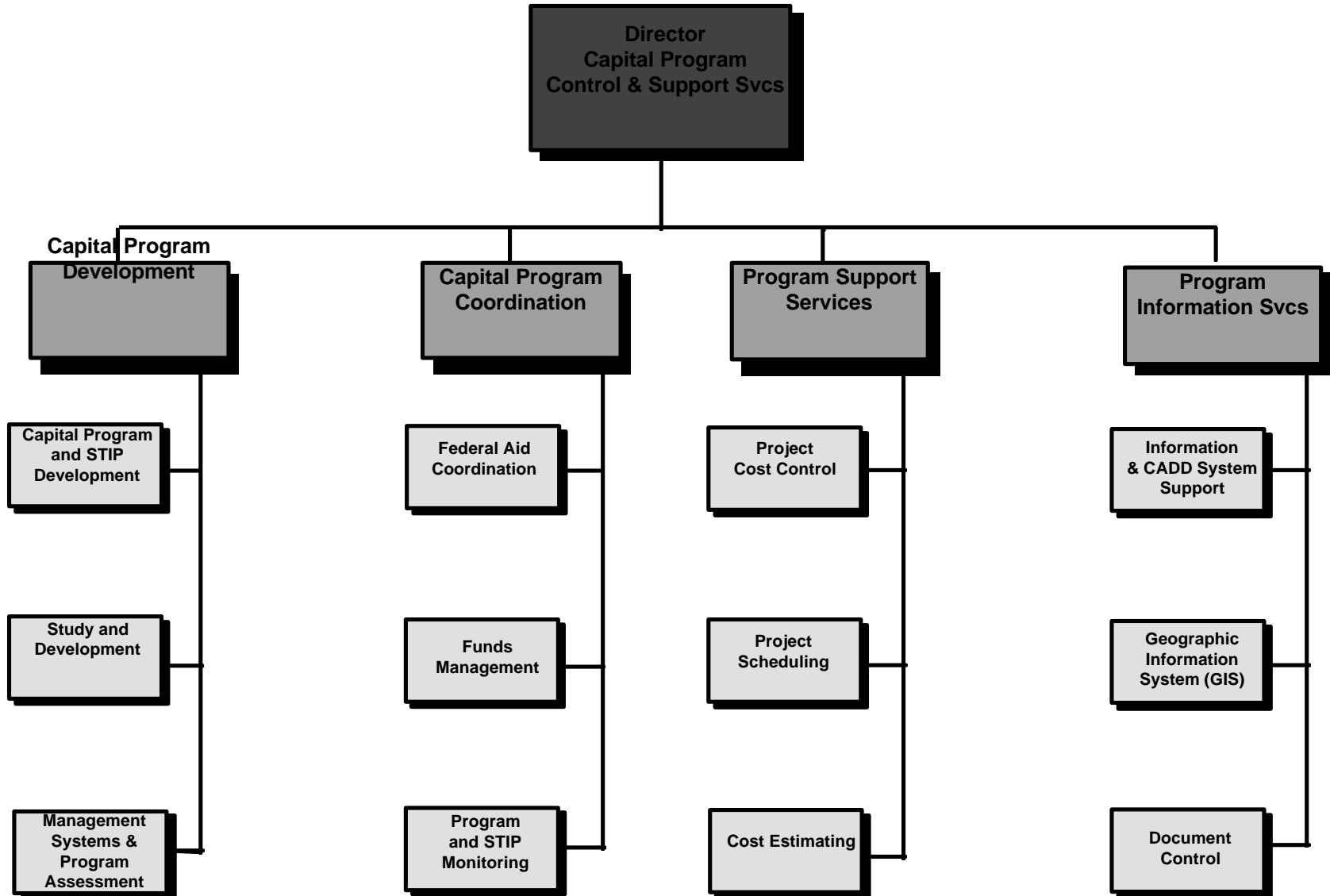
Capital Program Management Unit

Chart A - Senior Division Management

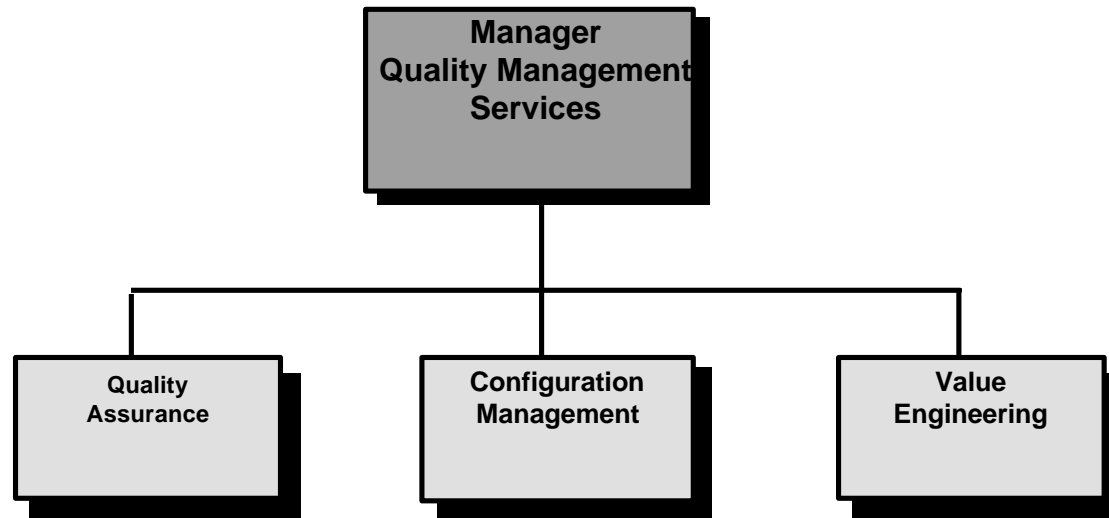


Capital Program Management Unit

Chart A-1 - Capital Program Control and Support Division

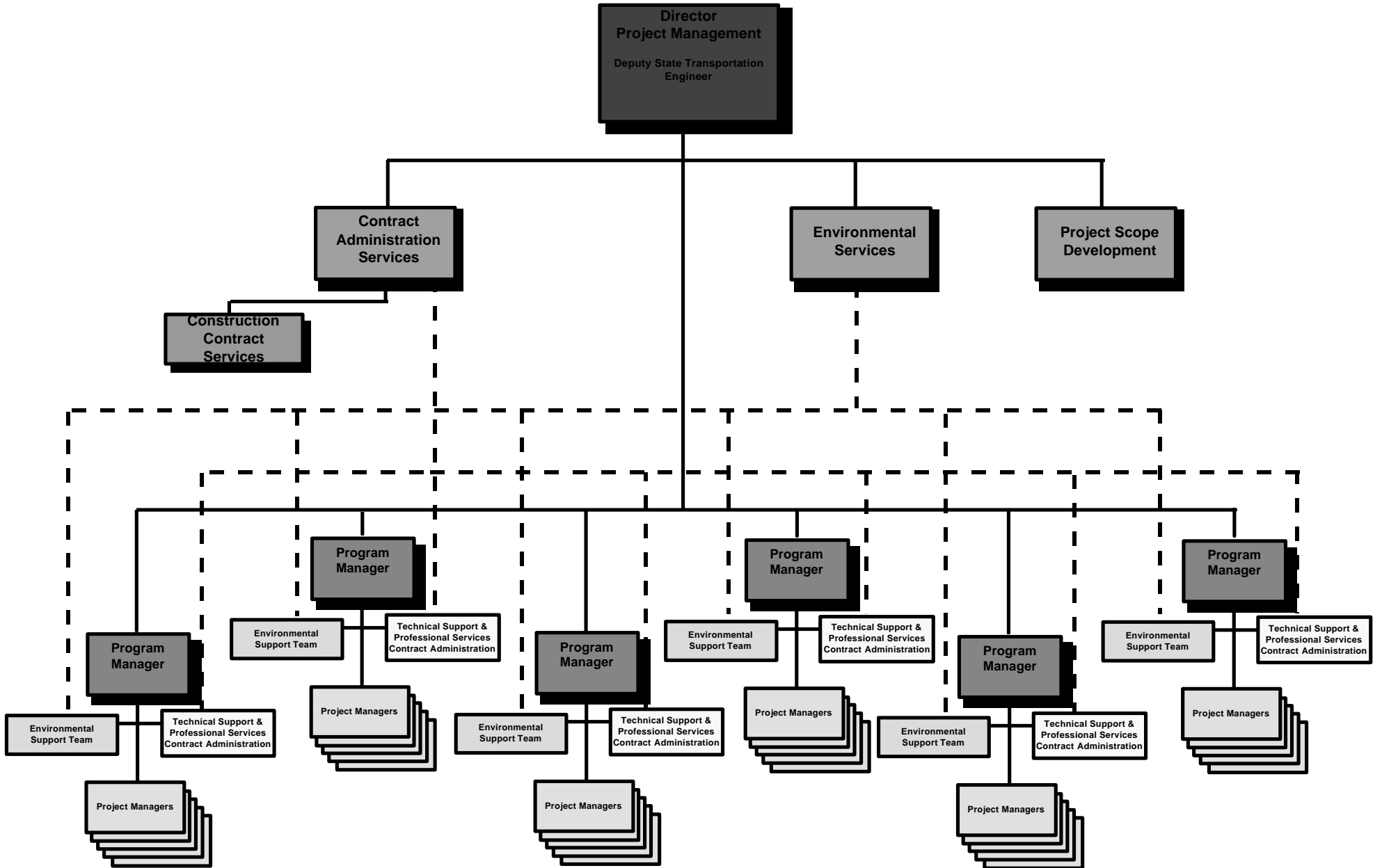


Capital Program Management Unit
Chart A-2 - Bureau of Quality Management Services



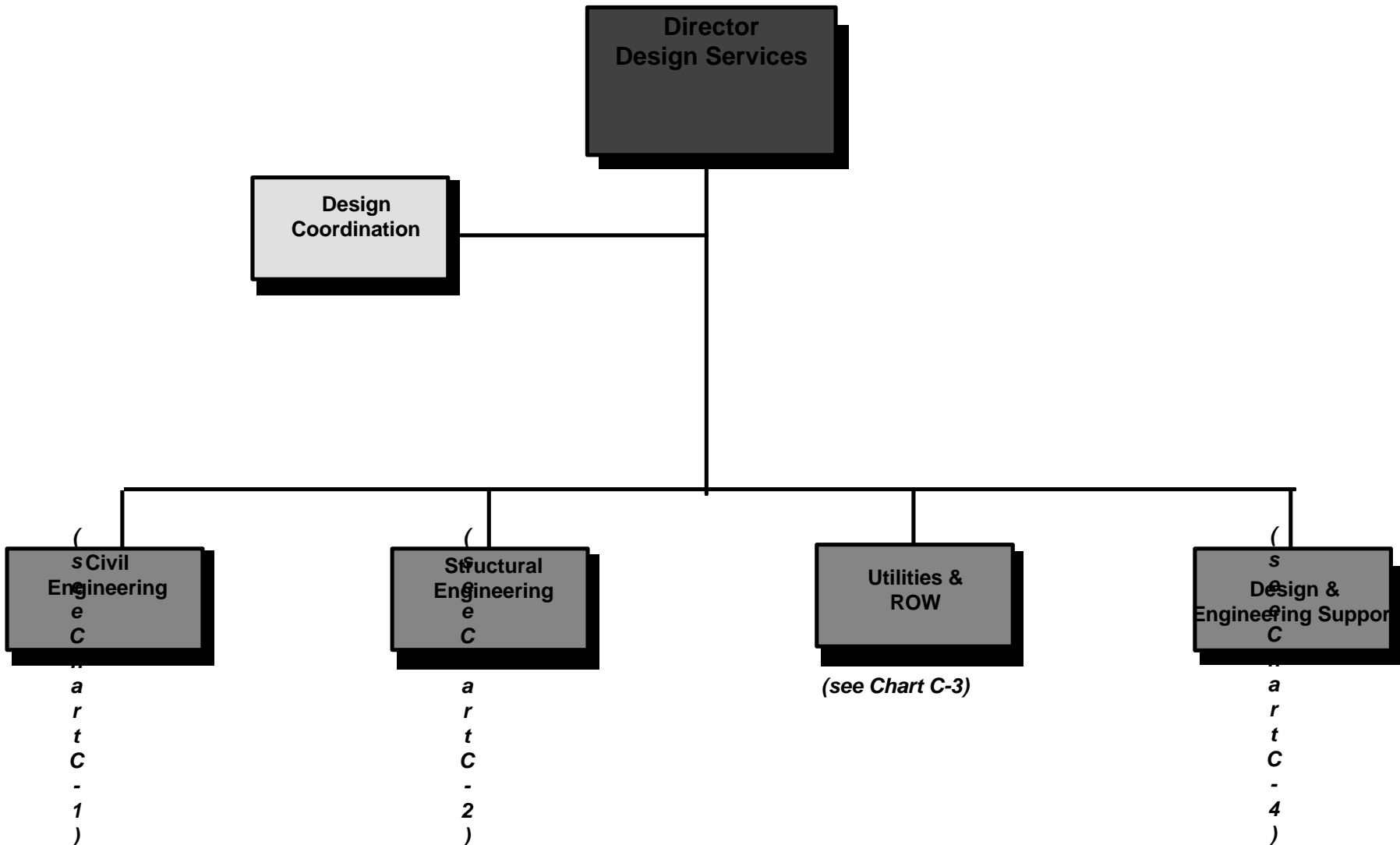
Capital Program Management Unit

Chart B - Project Management Division

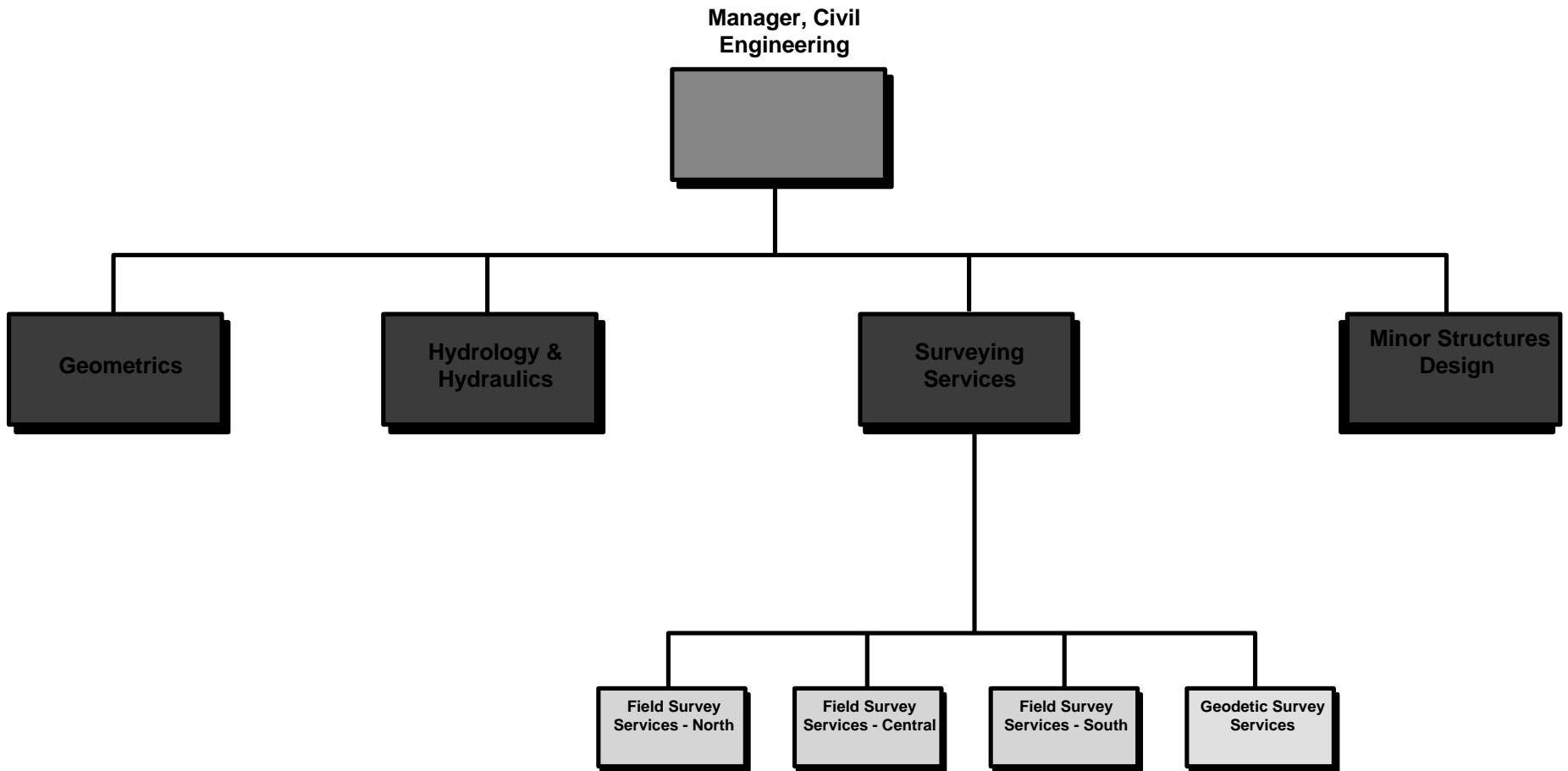


Division of Capital Program Management

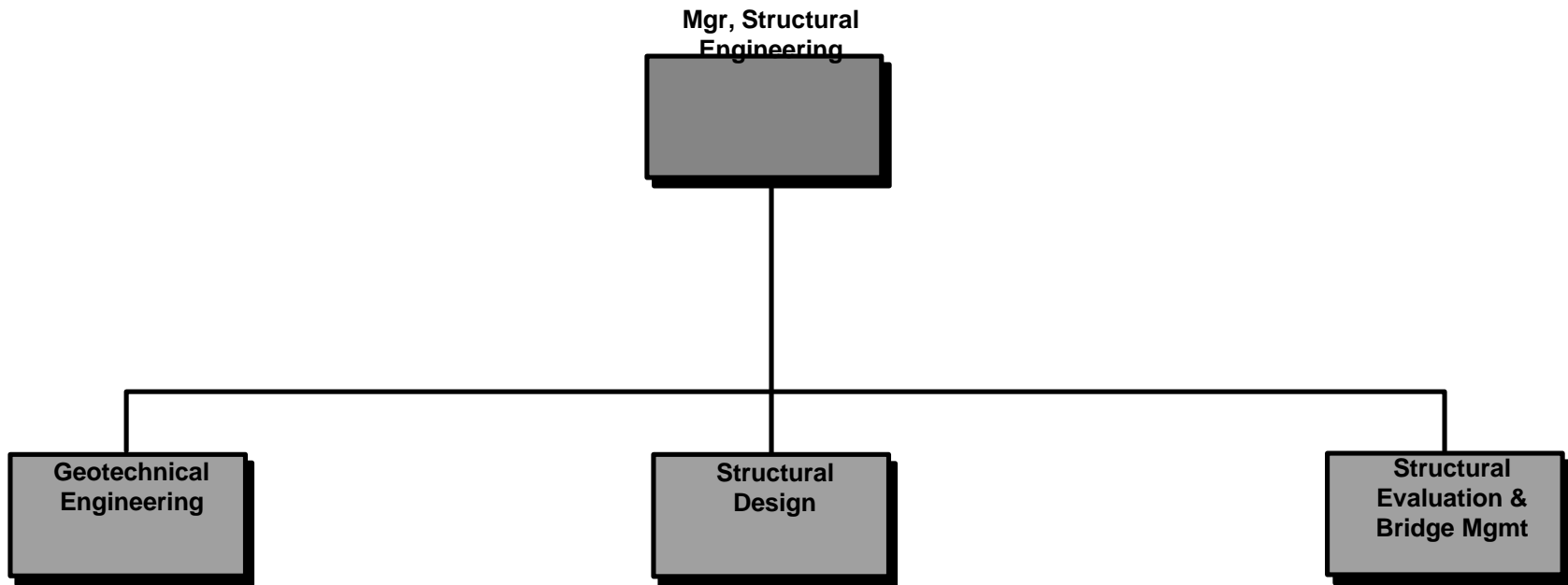
Chart C - Design Group Organization



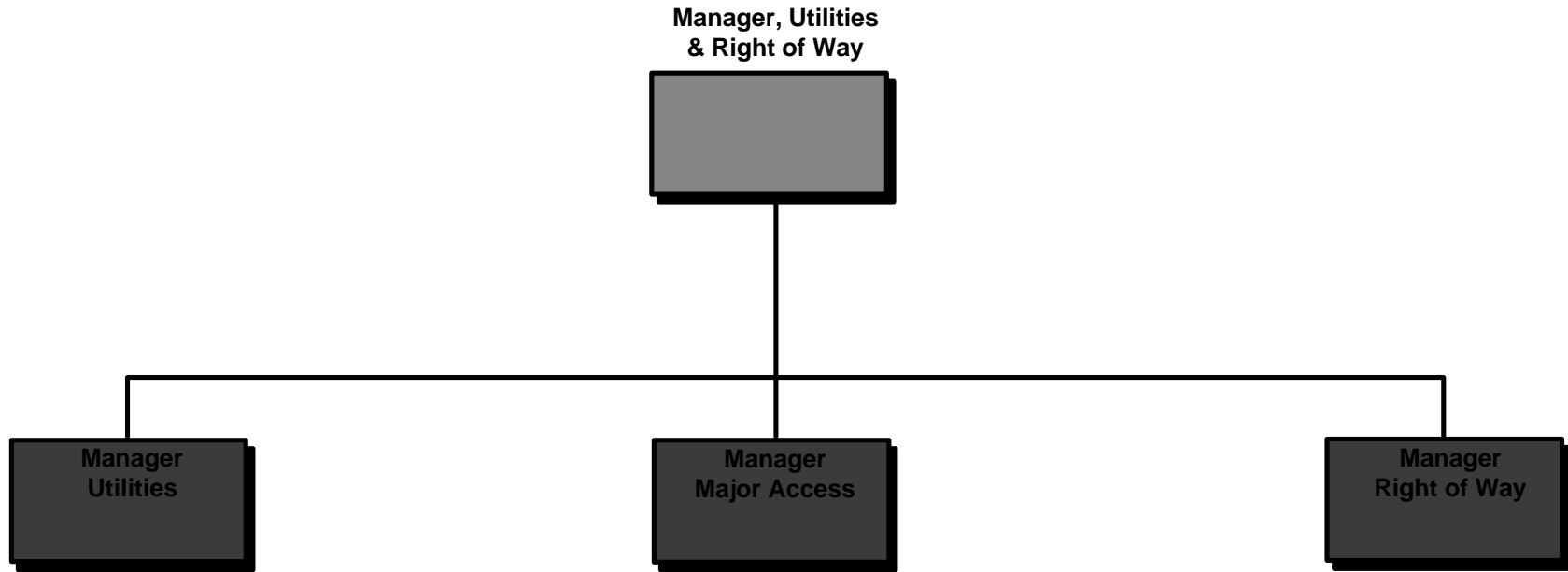
Capital Program Management Unit
Chart C-1 - Bureau of Civil Engineering



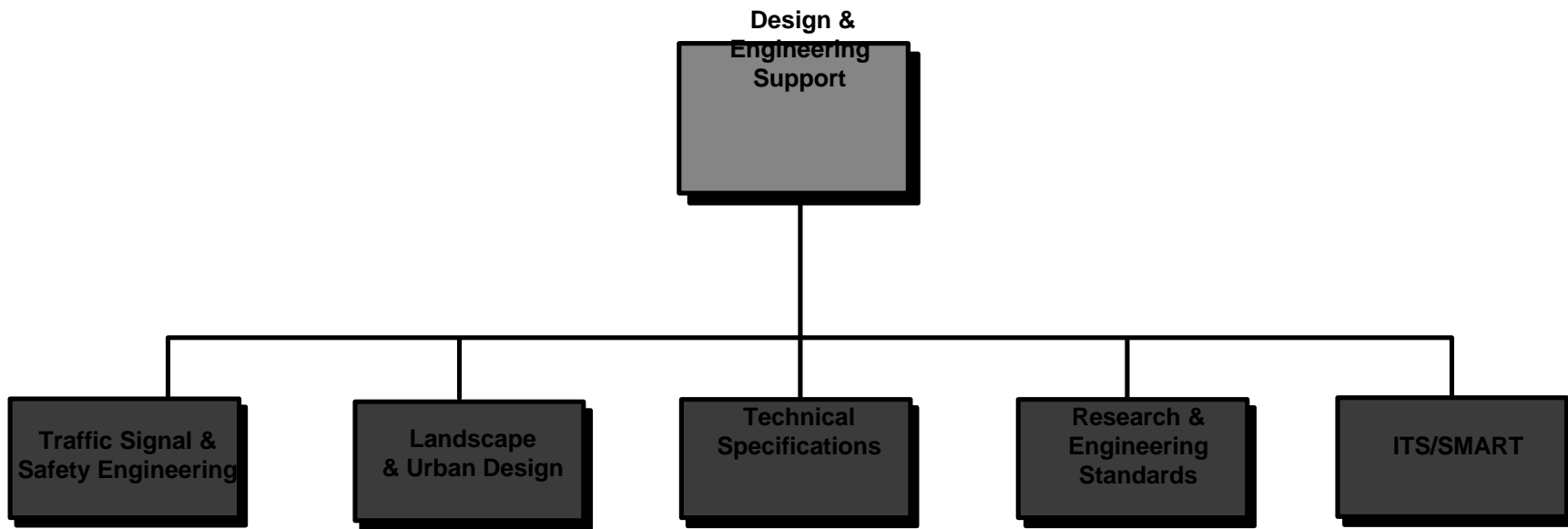
Capital Program Management Unit
Chart C-2 - Bureau of Structural Engineering



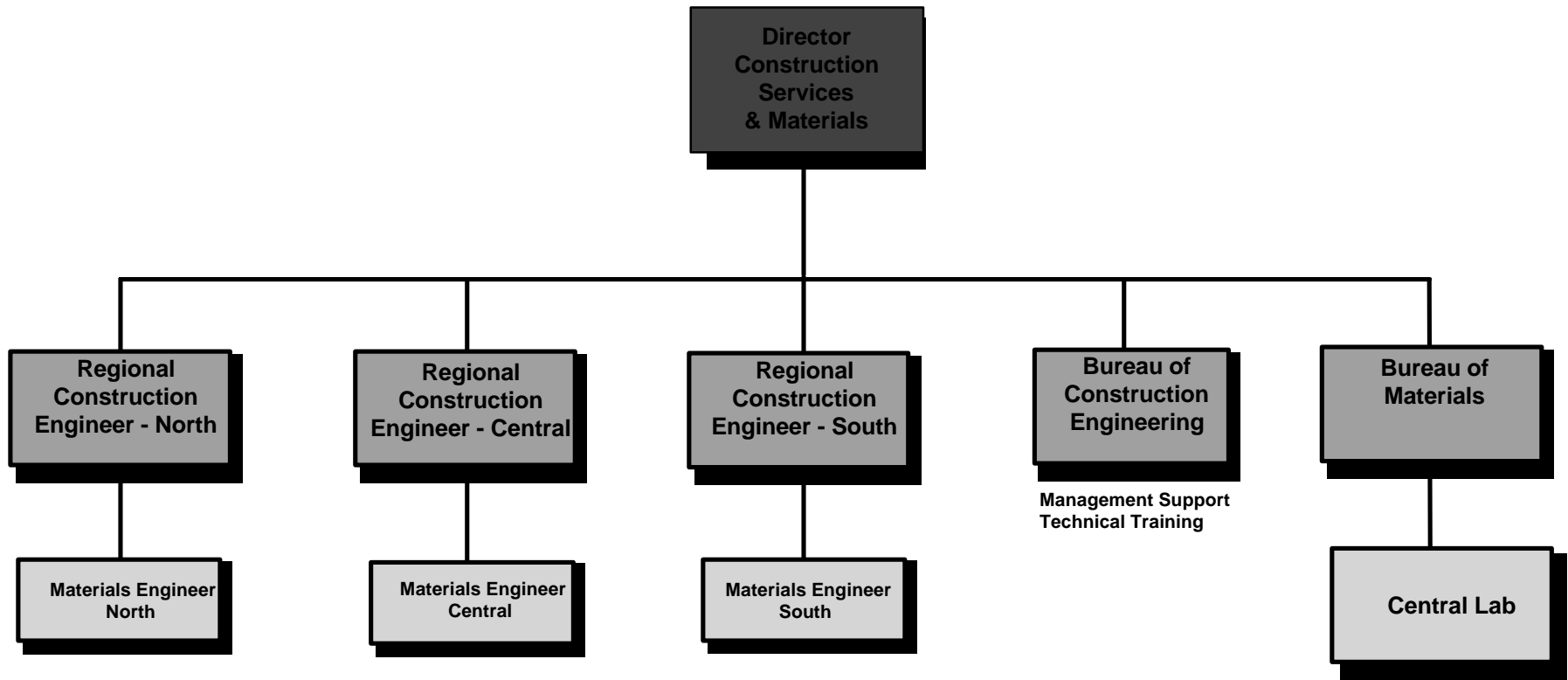
Capital Program Management Unit
Chart C-3 - Bureau of Utilities and Right of Way



Capital Program Management Unit
Chart C-4 - Bureau of Design & Engineering Support



Capital Program Management Unit
Chart D - Construction Services Division



1.4.1 Organizational Summaries

ORGANIZATIONAL SUMMARY

DIVISION OF PROJECT MANAGEMENT

Objectives

- Ensures that Capital Projects are developed and delivered according to schedule, within budget, in conformance with accepted standards of quality and with public support.
- Proactive management of capital projects from scope development to final acceptance by Department's Operations and Maintenance units.

Functions

- Develop and implement an operating budget.
- Scope Management - Ensures that Scope effort is complete and that are timely and effective solutions to minimize project schedule and budget impacts. Initiates scope changes through senior staff.
- Schedule Management - Develops, monitors and manages project schedules through the Project Management Control System (PMCS).
- Public Outreach - Serves as a catalyst. Seeks consensus of local governments and the public early in the project development process. Ensures community buy-in through public information centers, hearings and public meetings.
- Construction Management - Through both direct efforts and coordination with Regional Construction Engineer, ensures that quality projects are constructed on time and within cost estimates.
- Design Control Management - Ensures that design documents are developed to Department standards.
- Budget Management - Controls project expenditures and budgets, including in house hard costs and soft costs and vendor costs. Ensures adherence to project budget.
- Environmental Management - Ensures compliance with NEPA, Section 106 and Section 4(f) processes. Using in-house staff and consultants, obtains Categorical Exclusions (CE), Environmental Assessments (EA), Levels of Action Determinations (LOA), Environmental Impact Statements (EIS) and obtains all permits needed to construct projects. Ensures adherence to EO215.

- Design Management - Acts as contract manager for Design Services. Manages the work of consultants and in-house design to ensure adherence to project scope, budget, schedule and quality standards.

ORGANIZATIONAL SUMMARY

DIVISION OF PROJECT MANAGEMENT (CON'T)

- Quality Management - Ensures that adequate quality assurance/quality control measures are established and maintained through the project delivery cycle.
- Interagency Partnering - Ensures inter-agency buy in on capital projects, by appropriate federal, state agencies and metropolitan planning organizations.

ORGANIZATIONAL SUMMARY

BUREAU OF PROJECT SCOPE DEVELOPMENT

Objectives

- Provide dedicated services to project managers.
- Using an interactive and systematic process, deliver projects to final design with a well defined scope of work. A "scoped" project will include a recommended scheme with a realistic cost estimate; identification of project features needed to comply with the Access Code; identification of the need for and approval of design exceptions; an approved environmental document; reasonable assurance that environmental permits can be obtained; community support, or documentation explaining why such support cannot reasonably be obtained; identification of ROW needs and costs; and definition of other design services sub processes.
- Scope projects which involve new alignments, and provide engineering support to the Bureau of Environmental Services in obtaining NEPA or State environmental approvals for such projects.
- Scope solutions for Drainage Problems which are established as active Study and Development Proposals.

Functions

- Develop and implement an operating budget.
- Set project scope for assigned highway problem statements.
- Insure that Preliminary Engineering for scoped projects is developed prior to transfer to final design.
- Establish priorities and scope for assigned drainage problem statements.
- Provide detailed metric mapping for assigned projects.
- Provide support for special projects, as assigned.
- Provide support for various reports and tracking systems.

ORGANIZATIONAL SUMMARY

BUREAU OF ENVIRONMENTAL SERVICES

Objectives

- Provide dedicated services to project managers.
- Provide a full range of multi-disciplined environmental services to support the implementation of the Department's Capital Program and the operation of its transportation systems, and to meet the needs of its customers in a manner that is efficient, resulting in transportation projects and services that reflect environmental and cultural values of the State.

Environmental Teams

A multi-disciplined environmental team ("E" Team) is assigned directly to each of the six Project Management program areas. They provide project related environmental services to Project Managers.

Functions

- Develop and implement an operating budget.
- Prepare and obtain approvals of NEPA and Executive Order 215 documents. These include Categorical Exclusions, Environmental Assessments and Environmental Impact Statements.
- Prepare and obtain approvals for Section 4(f) documents.
- Conduct required work to meet Section 106 requirements of the Federal Historic Preservation Act of 1966 and the NJ State Register Act. Coordinate efforts with FHWA the SHPO and other agencies as required.
- Obtain environmental permits and approvals consistent with project schedules.
- Conduct environmental re-evaluations for projects to insure environmental processing is valid.
- Review plans to insure environmental commitments and permit conditions are appropriately included.
- Provide expert advice to Project Managers on environmental issues.
- Maintain database inventories of work products, project schedules and agency coordination.

ORGANIZATIONAL SUMMARY

BUREAU OF ENVIRONMENTAL SERVICES (CON'T)

Technical Services Section

Provides support in the areas of noise, air and hazardous waste to the "E" Teams, Project Managers and other units in the Department.

Functions

- Develop and implement an operating budget.
- Prepare/review and recommend approval of air and noise studies required for NEPA and E.O. 215 documents.
- Coordinate with planning and program development units and MPO staff as appropriate to stay abreast of TIP/SIP conformity issues.
- Prepare/review and obtain FHWA approval of Final Noise Studies, which include final recommendations for noise mitigation measures.
- Conduct Type II Noise Studies.
- Prepare/review and obtain approvals for all hazardous waste related work from the initial stages of project scoping through construction. Coordinate with DEP as required.
- Provide environmental clearance information for ROW parcels.
- Maintain database files on work products, schedules and DEP coordination.

Policy Support and Special Services Section

Provides environmental services to other units in DOT; tracks new/changing laws, rules, regulations and technical guidance; recommends policy changes in environmental areas; develops programmatic environmental solutions; tracks and coordinates interagency reviews on a program level; provides quality assurance on environmental processes.

Functions

- Develop and implement an operating budget.
- Provides environmental services for county scoping, transportation enhancements, airport projects, freight services, suburban mobility, MPOs.
- Provides environmental services involving complex or unusual work to support "E" Team efforts, wetland mitigation projects and wetland mitigation monitoring.

ORGANIZATIONAL SUMMARY

BUREAU OF ENVIRONMENTAL SERVICES (CON'T)

- Perform program liaison functions for BES with Pinelands Commission, FHWA and functional elements in DEP, including Historic Preservation Office, Land Use Regulation, Site Remediation, and E.O. 215 group through regular meetings on overall program delivery issues.
- Review proposed environmental laws and regulations to evaluate impact on DOT programs, provide expert advice to affect laws and regulations and guidance on implementation of new rules.
- Prepare Environmental Guidance Bulletins for distribution to “E” Teams, Project Management Staff and other units. These Bulletins will be the principal means for communicating changes in rules and new environmental procedures and technology.
- Maintain current library of applicable environmental laws, rules, regulations.
- Scan emerging technology for application by BES.
- Manage the Historic Bridge Survey database.
- Provide technical support for complex Section 106 and environmental permit related functions to the “E” Teams.
- Provide in-house archaeological support to “E” Teams.
- Provide oversight on environmental functions by BES and “E” Teams to evaluate effectiveness of work products, share innovations, identify dysfunctional activities and provide consistency in work products.

ORGANIZATIONAL SUMMARY

BUREAU OF CONTRACT ADMINISTRATION SERVICES

Objectives

Construction Document Section

- Provide dedicated services to project managers.
- Administer the Construction Advertisement Process for the Department's Capital Program.
- Answer all inquiries pertaining to the Advertisement Process from prospective bidders.
- Prepare and issue all addenda to Contract Documents.

Administrative and Consultant Section

- Provide dedicated services to project managers.
- Administer all Task Order Agreements for the Division of Project Management.
- Develop and disseminate Contract Administration Guidelines to the Division of Project Management.
- Administer funding for all Task Order Agreements within the Division of Project Management.

Functions

Construction Document Section

- Develop and implement an operating budget.
- Process Key Sheet for approval and signatures.
- Obtain Plans, Specifications, Estimate, Proposal, Schedule, ROW/Utility clearance letters, and DBE/Trainee goals from appropriate units, complete final package and documents, and submit for Federal authorization.
- Prepare and process Commission Action to approve funding for Advertisement.
- Prepare and submit to Construction Services the Advertisement Notice for issuance to public.

ORGANIZATIONAL SUMMARY

BUREAU OF CONTRACT ADMINISTRATION SERVICES (CON'T)

- Prepare final Bid documents. Sufficient copies of all documents will be completed and made available using the Department's Print Shop or through vendor services under contract to this Bureau.
- Respond to inquiries from prospective bidders. Obtain additional information as required from the Project Manager and other appropriate units.
- Prepare and issue Addenda as required to respond to bidder's inquiries or changes required by the Project Manager. Obtain approval from the Project Manager and FHWA as required.
- Update the PMCS system when activities are completed.
- Monitor progress of activities between Final Plans and Award and advise Project Manager, with recommendations to resolve, of any impediments to completion of pending activities.

Administrative and Consultant Section

- Provide dedicated services to project managers.
- Develop and maintain Division policies and standards based on Department Policies and Procedures and directives issued by the Division of Procurement. Distribute to appropriate Division staff.
- Provide guidance to the Professional Services Support Staff assigned to each Program Manager.
- Develop and update Bureau budget and manpower reports, for entire unit and project specific.
- Prepare and issue Advertising Schedule ("Report"). Schedule and attend monthly Advertisement Meetings.
- Prepare Monthly, Quarterly, and Yearly Reports, including anticipated and completed Advertisements and Awards.
- Prepare Special Reports and assignments.
- Prepare and process Task Order Agreements and Modifications to Task Order Agreements for additional funds.
- Retain an inventory of all Task Order Agreements and Modifications to the Agreements.
-

ORGANIZATIONAL SUMMARY

BUREAU OF CONTRACT ADMINISTRATION SERVICES (CON'T)

- Coordinate with the Program Managers and other Managers within Capital Program Management to determine funding needs for Task Order Agreements.
- Request funds for all Task Order Agreements.
- Prepare Consultant Selection packages.
- Act as a member of the Technical Evaluation Committee for all Agreements.
- Assist Designer in distributing and processing Plans/Documents.
- Supervise vendor contracts. Prepare reproduction service orders.
- Assist Construction Document Section in processing documents. Maintain Project files.

Quality Assurance/Continuous Improvement Function For All Bureaus

- Spot check and evaluate Phase Submission and Bid Document checklists for consistency with approved guidelines.
- Evaluate Addenda regarding initiation: Design error/Omission, Approved Change, or reasonable non-anticipated revision/clarification.
- Spot check and evaluate approved Consultant Selection, Agreement and Modification documents for consistency with approved guidelines.
- Determine if any deviations from the above evaluations are project specific or systematic. Advise Project Manager where specific and develop recommendations for submission to Quality Management Services or revisions to standards due to systematic issues.

ORGANIZATIONAL SUMMARY

DIVISION OF DESIGN SERVICES

Objectives

- Provide dedicated services to project managers.
- Operate the Division of Design Services in the manner of an “Independent Corporation” effectively and efficiently deploying both financial and human resources to produce the Capital Program.
- Provide the Department with Engineering Services as requested and in a timely manner.
- Review projects for compliance with design standards to ensure the development of safe and efficient highways and highway improvements.
- Establish, maintain, and ensure compliance with standards for right-of-way mapping and agreements, route surveying and establishment of baselines, and jurisdictional apportionment.
- Coordinate the accommodation of Public Utility and Railroad facilities in State Highway right-of-way and implement programs addressing railroad grade crossings, bridges, and track safety.

Functions

- Develop and implement an operating budget.
- Ensure Division-wide focus is on the design of Capital Projects and other activities required to deliver the Capital Program.
- Manage and coordinate Division-wide responses to issues.
- Direct incoming requests for information to the respective unit best capable to respond to the request and ensure timely responses.
- Take the lead in responding to and coordinating training requests.
- Monitor office supply budgets; provide appropriate feedback/comments.
- Ensure that responsible Performance Assessments are completed on time.
- Take the lead in coordinating the Division’s personal computer needs (support the CADD needs as required).
- Provide for Division-wide needs on an as required basis, dependent upon resource availability.

ORGANIZATIONAL SUMMARY
BUREAU OF DESIGN COORDINATION

Objectives

- Provide dedicated services to project managers.
- Coordinate the multi-disciplined design efforts of in-house projects and the Quality Assurance reviews of both in-house and consultant design projects.
- Provide CADD user support, software development and programming.

Functions

Design Coordination is comprised of a CADD development/support unit and a Design Coordination unit. The functions of each are listed below:

CADD Unit

- Develop and implement an operating budget.
- Serve as the first line of support (Helpdesk) for all CADD users and provide special project assistance as requested.
- Provide complete CADD software development.
- Research, test, and implement new or updated software.
- Coordinate activities of on-site Intergraph field engineers and administer maintenance contracts for Intergraph hardware and software.
- Provide Consultant and interagency coordination.
- Lead production units in fully utilizing CADD engineering and drafting capabilities.
- Develop and maintain training/user reference manuals required to conduct in-house training.
- Develop course outlines and procure vendors for off-site training.
- Conduct in-house training.

ORGANIZATIONAL SUMMARY

BUREAU OF DESIGN COORDINATION (CON'T)

Design Coordination Unit

- Develop and implement an operating budget.
- Under the direction of a Design Coordinator establish multi-disciplined Project Teams responsible for the preparation of contract plans and documents for in-house design projects.
- Establish delivery contracts with each unit involved in advancing an in-house project to identify the scope of work to be completed, a schedule for the required work effort, and an associated man-hour cost estimate.
- Under the direction of a Project Team Leader, coordinate in-house efforts throughout the design process to ensure progress in accordance with established schedules.
- Coordinate the distribution and Quality Assurance reviews of phase submissions for in-house and Consultant design projects.
- Coordinate resources in response to general requests to the Division of Design Services for in-house design support.
- Coordinate in-house resources in support of the Scope Development phase of the delivery process.
- Coordinate the review of Technical Proposals.
- Coordinate the review of Design-Build contract documents.
- Provide design support to Operations on an as-needed basis.

ORGANIZATIONAL SUMMARY
BUREAU OF CIVIL ENGINEERING
OFFICE OF CIVIL ENGINEERING

Objectives

- Provide dedicated services to project managers.
- Provide resources for all Civil Engineering units to deliver the Capital Program within the established scope, schedule, and budget.
- Assure the quality of all Civil Engineering services.

Functions

- Develop and implement an operating budget.
- Provide appropriate staffing levels and skills within the Civil Engineering disciplines, and shift personnel if needed to maximize the efficient delivery of the Capital Program.
- Provide the tools needed for staff to function efficiently, including fostering full implementation of CADD.
- Assure QC review is performed on all Civil Engineering designed projects.
- Assure QA review is provided on the Civil Engineering elements for all consultant designed projects.
- Review and approve Design Exception Reports prepared by in-house designers and consultants.
- Provide clerical and administrative support for Civil Engineering units.
- Assist in project scoping.

ORGANIZATIONAL SUMMARY
BUREAU OF CIVIL ENGINEERING
GEOMETRIC DESIGN

Objectives

- Provide dedicated services to project managers.
- Perform design and review of the following functional elements: horizontal and vertical geometry, slope limits, typical sections, geometric elements requiring design exceptions, cross sections, earthwork quantities, ties and grades, and pavement quantities.
- Provide QC review for all projects designed within the unit, and provide QA review for all consultant design projects.
- Provide staff support, product development, staff training, and production assistance for the Geometric Design Unit and the Survey Services Unit in the use of CADD engineering design and survey software.

Functions

- Develop and implement an operating budget.
- Alignment and Grade - Calculate the horizontal and vertical geometry for all in-house design projects. Provide geometric design services to the scoping unit as requested.
- Slope Limits - By superimposing the typical section and the proposed profile on existing cross sections, determine the slope limits and geometric impacts to adjacent property.
- Set proposed Right of Way limits on proposed base plans.
- Typical Sections - Based upon scoping determinations, draw the final typical sections including Right of Way lines.
- Design Exceptions - Compare the preliminary and final design with accepted standards and design exceptions identified in the scoping process.
- In addition to these major functions, the following tasks/functions will also be performed:

Draw X-sections
Calculate Earthwork Quantities
Prepare Ties and Grades
Calculate Pavement Quantities
Write Project Specific Unique Specifications

ORGANIZATIONAL SUMMARY

**BUREAU OF CIVIL ENGINEERING
GEOMETRIC DESIGN (CON'T)**

- QC Review/Certification - Provide QC review within the Unit. Each team is responsible for producing a quality product. To guarantee that the product leaving the Unit meets all standards and contains no errors, a QC review will be performed by another team in the Unit. The Unit will then certify that the product is accurate, complete, and meets standards.
- QA Review - Provide a QA review of consultant designed projects. A checklist has been prepared which identifies key elements to be examined.
- CADD - Staff will provide CADD engineering software support, development, training, and production assistance for the Geometric, Survey, and other engineering Units.
- Assist the project manager in addressing questions which arise during construction.
- Ensure that all projects are based on the New Jersey State Plane Coordinate System and the North American Vertical Datum of 1988 (NAVD88).
- Assist the project Scope Team in the establishment of horizontal and vertical control for the project.
- Provide guidance to designers on technical issues related to surveying.

ORGANIZATIONAL SUMMARY
BUREAU OF CIVIL ENGINEERING
MINOR STRUCTURES UNIT

Objectives

- Provide dedicated services to project managers.
- Provide necessary design work and drawing preparation as part of contract plans related to noise walls, gabion walls, crib walls, deck patching, high tower lighting, bridge fencing, drainage chambers, head walls, overhead sign structures and retaining walls.
- Assure the quality of all minor structures designed for the Capital Program.
- Assure that minor structure standards are maintained and up to date.

Functions

- Develop and implement an operating budget.
- Design the following types of minor structures to be incorporated in in-house projects:
 - Noise Walls
 - Gabions
 - Crib Walls
 - Grade Beams
 - Deck Patching
 - High Tower Lighting
 - Bridge Fencing
 - Drainage Chambers
 - Headwalls
 - Precast Culverts
 - Overhead Sign Structures that do not carry VMS signs
 - Ground Mounted signs
- Provide quality control for minor structures designed in-house.
- Perform quality assurance review of minor structure plans included in consultant design projects.
- Participate in the scoping of minor structures for future projects.
- Assist the project manager in addressing questions which arise during construction.
- Maintain standards for minor structures.

ORGANIZATIONAL SUMMARY
BUREAU OF CIVIL ENGINEERING
SURVEY SERVICES

Objectives

- Provide dedicated services to project managers.
- Operate the Office of Survey Services in the manner of an “Independent Corporation” effectively and efficiently to support the Capital Program.
- Provide the Department with all Survey Services on schedule and within budget.
- Establish, maintain, and ensure compliance with standards for roadway preliminary engineering surveys and geodetic survey, such as Global Positioning Systems (GPS) surveys.
- Develop a Survey Manual that will be used throughout the State.

Functions

- Develop and implement an operating budget.
- Ensure Unit-wide focus is on the survey of Capital Projects and other duties required to deliver the Capital Program.
- Develop base plans with baselines for the preparation of construction plans.
- Coordinate Division-wide requests for numerous types of survey.
- Provide a statewide network of geodetic control.
- Take the lead in and coordinate training of new technology to improve the survey process.
- Assist the project manager in addressing questions which arise during construction.
- Ensure that all projects are based on the New Jersey State Plane Coordinate System and the North American Vertical Datum of 1988 (NAVD88).
- Assist the Project Scope Team in the establishment of horizontal and vertical control for the project.
- Provide guidance to designers on technical issues related to surveying.

ORGANIZATIONAL SUMMARY
BUREAU OF CIVIL ENGINEERING
HYDROLOGY AND HYDRAULIC SECTION

Objectives

- Provide dedicated services to project managers.
- Administer the Drainage Management System.
- Provide highway pavement drainage design and review.
- Establish drainage easement limits.
- Design waterway openings.
- Obtain Stream Encroachment Permits.
- Develop Drainage Design Standards and soil erosion control.
- Assist the office of the DAG.
- Address drainage complaints.

Functions

- Develop and implement an operating budget.
- Design a system of inlets and pipes to effectively maintain highway passability and reduce traffic slowdowns and accidents due to hydroplaning and loss of visibility due to splash and spray. Design will include determination of drainage area, surface runoff, spacing of inlets, sizing of pipes, water quality treatment which will include the use of swales and ditches as much as possible, and outfall structure design and protection.
- Provide Quality Assurance review of Consultant drainage design.
- Establish drainage easement limits in order to accommodate outfall structures and associated erosion control treatments and for placement of stormwater treatment facilities such as grassed swales, detention/retention ponds or other treatments.
- Design waterway openings by determining contributing area, rainfall frequency and surface conditions to compute the discharge and use of appropriate methodology to properly size the opening. Determine potential erosion and appropriate outfall scour protection.

ORGANIZATIONAL SUMMARY

BUREAU OF CIVIL ENGINEERING HYDROLOGY AND HYDRAULIC SECTION (CON'T)

- Prepare applications for Stream Encroachment Permits to the NJDEP including preparation of an engineering report and a set of plans documenting the effects of construction on stream water surface profile and flood plain. The report includes complex hydrological and hydraulic computations, local and/or public notifications, and an environmental report. Review applications prepared by consultants for compliance with NJDEP regulations and completeness of package.
- Recommend NJDOT drainage design standards and practice by reviewing research literature on hydraulics, and drainage design standards and practice as published by various sources, including other states. Evaluate the economic impacts of drainage policy.
- Participate with the offices of Landscape and Geotechnical to maintain and upgrade soil erosion and sediment control procedures.
- Supply the DAG with technical information, answer depositions and provide expert testimony as required.
- Assist the Executive Directors to resolve drainage complaints from the general public and municipal officials. Design minor maintenance repairs for problems that can be resolved easily.
- Assist the project manager in addressing questions which arise during construction.

ORGANIZATIONAL SUMMARY
BUREAU OF CIVIL ENGINEERING
DRIVEWAY DESIGN

Objectives

- Provide dedicated services to project managers.
- Manage, maintain and preserve the safety, functional integrity and capacity of the State highway system by designing/approving driveway and street access, in accordance with the provisions of the New Jersey State Highway Access Management Code for Capital Program projects.
- Deliver a product to Capital Program Management that is within the established scope, schedule, and budget.
- Assure an accurate product through a Quality Assurance/Quality Control Plan.

Functions

Scope Development

- Develop and implement an operating budget.
- As part of a scoping core group provide input to the Group Manager identifying potential access impacts during scope development.
- Assist Group Manager in the selection of schemes based on the potential access impacts.

Design Development

In House Design

- Develop and implement an operating budget.
- Prepare baseline estimates for schedule, man-hours, and salary costs.
- Receive base maps from Survey Services.
- Design driveways that meet Driveway Design standards, prepare cutouts, displays, or required plan sheet development; coordinate schedules and design with Design Coordinator and attend public meetings.
- Review final access plans for conformity to State Highway Access Management Code.
- Prepare final individual cutouts and legal notices for revocations and modifications.

ORGANIZATIONAL SUMMARY
BUREAU OF CIVIL ENGINEERING
DRIVEWAY DESIGN (CON'T)

- Notify and negotiate with all affected property owners.
- Finalize driveway revocations and modifications.
- Prepare all waivers to access code as required.
- Coordinate with ROW for those properties with acquisitions.
- Prepare for, with a Deputy Attorney General, and attend hearings on all legal challenges.
- Maintain project files.
- Perform quality control functions.

Consultant Design

- Develop and implement an operating budget.
- Review baseline estimates for schedule, man-hours, and salary costs.
- Review driveway cutouts, displays, or required plan sheet development; coordinate schedules and design with Design Coordinator and attend public meetings.
- Review final access plans for conformity to State Highway Access Management Code.
- Review final individual cutouts and legal notices for revocations and modifications.
- Notify and negotiate with all affected property owners.
- Finalize driveway revocations and modifications.
- Prepare all waivers to access code as required.
- Coordinate with ROW for those properties with acquisitions.
- Prepare for, with a Deputy Attorney General, and attend hearings.
- Maintain project files.
- Perform quality assurance functions.

ORGANIZATIONAL SUMMARY
BUREAU OF CIVIL ENGINEERING
DRIVEWAY DESIGN (CON'T)

Final Design Development

- Develop and implement an operating budget.
- Assist Design Coordinator in the resolution of any conflicts between other design items and the driveways.

Construction

- Develop and implement an operating budget.
- Assist the project manager in addressing questions which arise during construction.
- Review or prepare changes of plan regarding driveways.
- Upon completion of as-builts prepare and execute new permits for property owners.
- File all executed permits in the appropriate county.

ORGANIZATIONAL SUMMARY

BUREAU OF UTILITIES AND RIGHT OF WAY

Objectives

- Provide dedicated services to project managers.
- Provide coordination among the three Units (Major Access Permits, Right of Way, and Utilities Design) to meet deadlines assigned to the Manager, such as requests for information from the Assistant Commissioner or Director of Design Services, Capital Program projects, etc.
- Provide clear title to all property needed for construction at the time Capital Program projects are advertised for construction.
- Before construction advertisement, provide an accommodation of all railroads and public utilities within a construction project, in order to avoid service interruptions to taxpayers.
- Assure that access to the state's highway system does not compromise the safety of the traveling public, while providing every opportunity for economic development in the state.

Functions

- Develop and implement an operating budget.
- Ensure that the primary mission of the units are carried out and defines opportunities to improve those services.
- Ensure that assignments are carried out in an efficient, timely, and cost effective manner.
- Provide services and equipment needed to carry out assignments.
- Reallocate staff, as needed, to address work load distribution and, when desirable, for employee enrichment.
- Develop staff through training and other opportunities for learning.
- Communicate expectations of the administration and executive management.
- Provide guidance to unit managers on technical and personnel issues.

ORGANIZATIONAL SUMMARY

UTILITIES DESIGN UNIT

Objectives

- Provide dedicated services to project managers.
- Identify utility facilities within Capital Program projects.
- Assist Program Managers in developing project scope so that utility involvement is kept to a bare minimum.
- Open continuous dialogue with the utility owners and designers to develop plans to accommodate utilities within the State's construction.
- Manage the Railroad Grade Crossing Safety Program.

Functions

- Develop and implement an operating budget.
- Determine which utility owners are franchised to operate within Capital Program project limits.
- Identify from survey data acquired during the base plan preparation process, existing utilities and obtain verification of the facilities from each of the utility owners.
- Review utility conflicts identified by the designer and jointly develop acceptable schemes of rearrangement/protection with each utility owner.
- Estimate utility engineering costs associated with the project. Request funding from Capital Program Coordination, and upon receipt of funding, enter into agreements with utility owners to cover utility engineering costs associated with the project.
- Authorize utility owners to develop plans and schedules for their facility relocations in accordance with approved schemes of accommodation.
- Develop utility plans indicating the work to be performed by the utility owners and their sequencing of work with respect to the overall highway construction project.
- Upon completion of the plan, issue an agreement modification to authorize the utility owners to proceed with their relocation/rearrangement work.
- Assist the Resident Engineer throughout the construction process with utility matters, as needed.

ORGANIZATIONAL SUMMARY

UTILITIES DESIGN UNIT (CON'T)

- After State's construction is complete, inspect the project, making sure that the utility facilities are properly in place, the utility companies have completed their work, and close out the utility project.
- Administer the Railroad Grade Crossing Inspection and Safety Program.
- Conduct railroad grade crossing safety inspections.
- Organize and conduct Diagnostic Team Meetings to review railroad grade crossing warning devices, and follow through by issuing the appropriate ORDER.
- Coordinate railroad grade crossing rehabilitation construction.

ORGANIZATIONAL SUMMARY

RIGHT OF WAY UNIT

Objectives

- Provide dedicated services to project managers.
- Acquire the right of way necessary for Capital Program projects in a manner that allows construction schedules to proceed as planned, is consistent with federal and state laws, and respectful of the rights of property owners and occupants.
- Provide appraisal, appraisal review, acquisition and relocation services to other agencies and units of government.
- Continue and expand the education and training of staff.
- Effectively manage property owned by the Department, but not yet included in a transportation facility.

Functions

- Develop and implement an operating budget.
- Meet the needs, schedules, and budget of the Capital Program approved by the New Jersey State Legislature and Governor. The service function of the Capital Program Pipeline is the highest responsibility.
- Acquire property needed for transportation purposes in fee, easement, license, or grant, in accordance with a pre-established time schedule and within the estimated budget for acquisition cost and staff cost. As part of this, all necessary relocations are also performed within a schedule and budget.
- Develop plans for acquisition of parcels. For consultant design projects, staff will perform a quality assurance review of the submittal prior to beginning the acquisition process.
- Assist the project scoping team and the design project manager in shaping the project into the most viable scope prior to the design handoff.
- Ensure that all parcels are purchased in accordance with federal and state laws and regulations, and that all prior encumbrances are dealt with in a proper manner.
- Dispose of and/or rent all parcels owned by the Department that are not needed for transportation purposes.

- Prepare pleadings necessary to accomplish acquisition of parcels by condemnation. Liaison with the Deputy Attorney General's Office in accomplishing filing of complaints and court deposits

ORGANIZATIONAL SUMMARY

RIGHT OF WAY UNIT (CON'T)

- Maintain an electronic database to enable the design and right of way project manager to monitor the status of his/her project at all times.
- Maintain an updated list of consultant appraisers and ensure that work loads are distributed appropriately, being mindful of MBE and WBE goals.
- Maintain parcel acquisition records in accordance with appropriate laws and regulations.
- Train staff.
- File all plans with the appropriate county clerks.
- Maintain a procedural manual for the use of all designers.
- Obtain federal authorization for right of way acquisition on all federal projects.

ORGANIZATIONAL SUMMARY

MAJOR ACCESS PERMITS UNIT

Objectives

- Provide dedicated services to project managers.
- Help manage, maintain and preserve the safety, functional integrity and capacity of the State highway system by permitting driveway and street access in accordance with the provisions of the New Jersey State Highway Access Management Code.
- Achieve the appropriate balance between state economic needs and highway safety, operational and capacity considerations, and public reaction in arriving at major access permit decisions.
- Require and obtain fair share mitigation or compensation for developer proposals that would significantly and adversely impact the safety, operational and capacity characteristics of the State highway system.

Functions

- Develop and implement an operating budget.
- Review Applications for Access to the State highway system - Driveway Access, Street Intersection, Street Improvement, Lot Consolidation/Subdivision (LCS), Concept Review - including review of plans, specifications, drainage calculations, traffic impact studies, fair share calculations, etc. Coordinate with Project Management, if there is a Capitol Project in the development's area.
- Issue Access Permits/Approvals - Driveway Access, Street Intersection, Street Improvement, Lot Consolidation/Subdivision, Concept Review.
- Create Developer Agreements related to highway improvements, land dedication, fair share, etc.
- Review developer's Scope of Studies including trip generation, trip distribution, site traffic assignment, half-trip assignment to determine analysis points and the portion of the site traffic the applicant is responsible for at each location. Coordinate with Project Management, if there is a Capitol Project in the development's area.
- Hold Preapplication Meetings to provide guidance to potential applicants. Coordinate with Project Management, if there is a Capitol Project in the development's area.
- Administer Wireless Communication Licenses and participate in Wireless Communication Agreements including:

ORGANIZATIONAL SUMMARY

MAJOR ACCESS PERMITS UNIT (CON'T)

- a. Work with the Wireless Communication Carrier to identify potential installation sites
 - b. Coordinate the review within the Department, Federal Highway Administration and all external agencies.
 - c. Issue licenses to carriers and establish accounts for the collection of fees.
 - d. Participate in Master Plan procedure for new carriers.
 - e. Stay on cusp of new technology to advance new license programs.
 - f. Track sites on Geographic Information System (GIS).
- Operate and maintain the Highway Access Permit System (HAPS), which main functions are to perform conformance analyses and track access applications (soon to include street, lot consolidation/subdivisions and concept reviews).
 - Prepare "Letters of No Interest" including conformance checks, developing trip generation, outlining the sections of the Access Code that pertain to the situation described in the request, etc.
 - Administer the Access Code including:
 - a. Identifying revisions needed to the Code by evaluating Departmental reviews, Customer requests and Waivers granted to the regulations.
 - b. Developing proposed changes for publication in the NJ Register.
 - c. Responding to public comments.
 - d. Coordinating readoption.
 - e. Publishing the Code.
 - Assist in the Development of Access Management Plans (AMP) including:
 - a. Attending monthly meetings.
 - b. Providing guidance to Municipalities, Counties, and other external agencies involved in the AMP.
 - c. Reviewing plans and final reports.
 - d. Attending public presentations.
 - Assist Deputy Attorneys General with lawsuits pertaining to Access Permits or Access Code including participating in the production of documents, providing the requested documents, answering inquiries, etc.
 - Maintain file of Minor Permits

ORGANIZATIONAL SUMMARY

BUREAU OF DESIGN SUPPORT ENGINEERING

The Bureau of Design Support Engineering is divided into five separate units based on specialty expertise not normally found in the general areas of roadway and structural design. This expertise is developed through continued experience in addition to traditional schooling. The five units comprising the Bureau are:

Intelligent Transportation Systems Engineering
Traffic Signal and Safety Design
Landscape Architecture and Urban Design
Technical Specifications

Objectives

- Provide dedicated services to project managers.
- Perform design functions for Intelligent Transportation Systems projects including the development of plans and specifications for advanced technology items or projects to allow operations staff timely information and the ability to control traffic and provide motorist information.
- Perform design functions for traffic control devices and safety devices including the development of plans and specifications to provide safe and efficient travelways for the public.
- Provide design functions for the development of maintenance of traffic schemes including the preparation of plans and specifications to all safe and efficient travel through and/or around work zones.
- Provide review functions with regard to traffic control devices, safety devices and maintenance of traffic schemes for access permits to allow the timely approval of the construction of facilities abutting state highways that provide accepted levels of safety and traffic flow.
- Provide an as-built data base on CADD for all State maintained traffic signals to facilitate future improvements.
- Perform urban design and landscape architecture services including the development of plans, specifications, and graphic representations that will provide functional and aesthetically pleasing roadside and other facility treatments which minimize maintenance.
- Perform soil erosion control design services with regard to vegetative measures which will minimize soil erosion during and after construction and to certify that all projects comply with State erosion control legislation.

ORGANIZATIONAL SUMMARY

BUREAU OF DESIGN SUPPORT ENGINEERING (CON'T)

- Provide technical support to construction staff to assure quality landscape products are received and utilized during the implementation of landscape plans.
- Provide Special Provisions for specific projects which include all site specific additions and all necessary updates, and revisions to the standard specifications to compliment the construction plans and minimize misunderstandings during the advertisement and construction of projects.
- Perform research studies which will result in recommendations to Department management which will provide more cost effective design and construction processes, lower cost and more durable materials, and better overall quality products and projects.
- Provide jurisdictional maps and agreements which identify maintenance and control limits of involved entities to facilitate determinations of responsibility and liability.
- Provide engineering support to other areas of the department to allow the efficient construction and effective operation of projects designed and systems installed.
- Provide quality assurance reviews within the areas of expertise in the Bureau for design work prepared by consultants to monitor their product quality.
- Provide input into Value Engineering and Scoping studies to assure perspectives represented by the varied expertise in the Bureau are considered.

Functions

Office of the Bureau Manager

- Develop and implement an operating budget.
- Provide overall administration and coordination of the units within the Bureau with regard to training, budget, equipment, and personnel.
- Provide direction to unit managers with regard to their operations and priorities.
- Facilitate change within units to achieve customer needs.
- Monitor quality of work produced by units and recommend/initiate change to improve quality.

ORGANIZATIONAL SUMMARY

BUREAU OF DESIGN SUPPORT ENGINEERING (CON'T)

Applicable to all units in the Bureau

- Develop and implement an operating budget.
- Participate in Value Engineering and Scoping teams.
- Provide design support to Value Engineering and Scoping teams.
- Provide information and advice concerning areas of expertise to Department and external customers.
- Develop, implement, monitor, and improve a unit quality assurance plan.
- Perform quality assurance reviews of design documents prepared by consultants with regard to the expertise contained in the unit.
- Represent the Department, the Division, or the Bureau on various committees, task forces or interagency groups.

Intelligent Transportation Systems Design

- Develop and implement an operating budget.
- Design ITS projects or components including computerized signal systems, WIMS, RWIS, CCTV, VMS, HAR, emergency telephone systems, and fiber optic communication systems.
- Develop specifications and standard details for ITS products and systems.
- Provide electrical engineering expertise to construction resident engineers with regard to ITS components and the testing of the components and systems.
- Prepare required change of plans for in-house design projects.
- Review and approve shop drawings for ITS equipment.
- Provide ITS design and training assistance to Operations and Maintenance staff.
- Review interagency ITS contracts and design documents when requested.
- Develop and maintain a database of ITS facilities.

ORGANIZATIONAL SUMMARY

BUREAU OF DESIGN SUPPORT ENGINEERING (CON'T)

Traffic Signal and Safety Design

- Develop and implement an operating budget.
- Design aspects of construction projects relating to the following:
 - Electrical Engineering - Highway Lighting and Traffic Signals
 - Traffic Engineering - Traffic Signals and Timing, Signing (Regulatory, Warning, and Guide), Overhead Sign Structure Location, and Pavement Markings
 - Stage Construction - Detours, Temporary Roads, Interim Horizontal and Vertical Geometry, Guide Rail, Barrier Curb, Impact Attenuators and Interim drainage
 - Traffic Control - Temporary Traffic Signals and Timings, and Work Zone Traffic Control Devices
 - Safety Engineering - Guide Rail, Impact Attenuators, Delineators, Raised Pavement Markers, and Ground Mounted Sign Supports
- Review and approve shop drawings for signs and electrical equipment.
- Prepare required change of plans for in-house design projects.
- Develop and maintain an as built data base for all State maintained traffic signals in CADD.
- Review Major Access Permits with regard to expertise within the unit.
- Develop specifications and standard details for electrical equipment.
- Perform traffic signal controller testing.

Landscape Architecture and Urban Design

- Develop and implement an operating budget.
- Design landscape treatments and soil erosion control measures.
- Certify soil erosion control measures to the Department of Agriculture.
- Design wetland mitigation site plantings.

ORGANIZATIONAL SUMMARY

BUREAU OF DESIGN SUPPORT ENGINEERING (CON'T)

- Provide technical support to construction staff for inspection and approval of landscape materials.
- Design streetscapes and aesthetic treatments for noise barriers, parks, rest areas, etc.
- Prepare graphic representations of proposed landscape work.

Technical Specifications

- Develop and implement an operating budget.
- Prepare project specific Special Provisions.
- Provide assistance to the Bureau of Contract Administration Services with regard to addenda involving specification changes.
- Propose changes to the standard specifications.

ORGANIZATIONAL SUMMARY

BUREAU OF STRUCTURAL ENGINEERING

Objectives

- Provide dedicated services to project managers.
- Produce modern and efficient engineering designs for construction of new structures or reconstruction of existing structures to support a safe, reliable and affordable transportation system in New Jersey.
- Provide expert geotechnical engineering services for construction of transportation systems in New Jersey.
- Provide for continuous monitoring of the condition of structures on New Jersey state highways to insure their safe continuous service to users of our transportation system.

Functions

- Develop and implement an operating budget.
- Develop policies for the design, construction and maintenance of structures on state highways.
- Review and approval of design concepts for bridge and structural work.
- Determine and recommend future bridge construction programs.
- Direct the investigation, evaluation, and design and review of pavement design, structural foundations and other geotechnical work.
- Review all public notices submitted to the Department by the Coast Guard and U.S. Corps of Engineers for potential NJDOT involvement.
- Review, recommend revisions and obtain FHWA approval to the New Jersey Department of Transportation Design Manual for Bridges and Structures.
- Develops recommendations, and obtains FHWA approval, for modified or new structural engineering design policies for issuance by Quality Management Services.
- Develop revisions to Bridge Special Provisions and modify existing specifications with FHWA approval, in coordination with the Technical Specifications Unit.
- Reviews proposed changes and makes recommendations regarding State and Federal legislation and investigates the impact on current Department policy relating to State owned bridges.

ORGANIZATIONAL SUMMARY

BUREAU OF STRUCTURAL ENGINEERING (CON'T)

- Represent NJDOT in National and International organizations, providing advise and opinions relative to the establishment of standards for structural safety, maintenane, design and construction and for research needs in the area of highway structures.
- Coordinates action between NJDOT and the AASHTO's Subcommittee on Bridges and Structures relating to the AASHTO Standard Specifications for Bridges and Structures and related matters.

ORGANIZATIONAL SUMMARY

STRUCTURAL EVALUATION AND BRIDGE MANAGEMENT

Objectives

- Provide dedicated services to project managers.
- Assure compliance with the federally mandated National Bridge Inspection Standards (NBIS) under “Federal Highway Act of 1968”, Section 23 CFR 650, and subsequent revisions.
- Inspect, analyze and evaluate all highway carrying bridges (6 meters or greater) in the State of New Jersey.
- Ensure the safety of all New Jersey highway bridges as designed; monitor and oversee the bridge safety inspection programs of various owners (counties, toll agencies, authorities, etc.).
- Seek cost effective solutions to remedy deficiencies observed during bridge safety inspections (including 1.5 meters to 6 meters) on state highways.
- Analyze and evaluate the capacity of State owned bridges for carrying vehicles which require a special overweight permit to operate.
- Development, implementation and maintenance of Department’s Bridge Management System in accordance with the ISTEA of 1991.
- Prioritization and programming of all bridge rehabilitation and replacement projects.
- Develop and maintain digitized scanned records of bridge evaluation reports and related files.
- Coordinate the development and consummation of consultants agreements for Design Services.

Functions

The Structural Evaluation and Bridge Management Unit is primarily responsible for ensuring safety of highway carrying bridges on State routes, public and private owners, toll agencies and authorities that own the bridges. To accomplish and ensure safety of all highway carrying bridges in New Jersey, specific actions are:

- Develop and implement an operating budget.
- Performs, with in-house or consultant forces, biennial inspections (routine or in-depth) of all NBIS bridges on state routes, analyzes and evaluates the safe load carrying capacity.

ORGANIZATIONAL SUMMARY

STRUCTURAL EVALUATION AND BRIDGE MANAGEMENT (CON'T)

- Recommends repairs or replacement of bridges to ensure safety of the structures.
- Coordinates the bridge inspection work of consulting engineers for county, municipal, NJ TRANSIT, and Department of Environmental Protection owned NBIS bridges.
- Monitors and coordinates the inspection programs of private agencies, special agencies, and toll authorities performing NBIS bridge evaluation activity.
- Implements the federally mandated bridge Scour Evaluation Program for all highways over waterway bridges on state routes. Also coordinates the implementation of this program by other agencies (public, private, toll and special).
- Establishes the monitoring system for scour critical bridges on state routes and recommends to other bridge owners for implementation of such actions.
- Recommends Priority Repairs to state bridges including those less than 6 meters if and when necessary.
- Recommends Load Posting or closing of a state bridge if and when necessary.
- Coordinates with counties, toll agencies and other bridge owners to comply with recommended priority repairs, load posting restrictions or closing of their bridges.
- Develops, implements and maintains the Department's Bridge Management System in accordance with the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and maintains statistical data relative to bridges.
- Maintains and updates Structural Inventory and Appraisal bridge data, PONTIS CoRe element and Seismic databases on a continual basis for all public use bridges in the state.
- Analyzes state owned bridges and evaluates the capacity for carrying vehicles which require a special overweight permit to operate.
- Coordinates with the New Jersey Division of Motor Vehicles with recommendations for overweight vehicles traversing state owned structures.
- Prioritizes all bridge rehabilitation and replacement projects, documents all work leading to the programming of a project, and project funding control and for development of preliminary Scope of Work necessary to initiate bridge design projects.

ORGANIZATIONAL SUMMARY

STRUCTURAL EVALUATION AND BRIDGE MANAGEMENT (CON'T)

- Develops and coordinates all bridge project processes involving activities which will lead to initial engineering. Tracks individual bridge projects and determines future funding needs.
- Evaluates damage to bridges and structures in emergency situations due to collision, natural causes or other defects. Provides assistance during execution of repairs.
- Maintains logs of priority repairs for state, county and other agencies' owned bridges. Follows up with the owners to accomplish emergency repairs.
- Provides statistical information relative to bridges including special requests for retrieval of information from the bridge inventory by in-house and/or outside agency.
- Modifies, clarifies and revises NJDOT Recording and Coding Guide for the Structural Inventory and Appraisal of New Jersey bridges.
- Coordinates the state owned high mast light pole and sign structures inspection and evaluation program.
- Oversees bridge inspection program of 1.5 meter to 6 meter long bridges on state routes.
- Performs deck condition surveys for in-house bridge deck rehabilitation/replacement projects:
- Reviews consultants bridge deck condition survey proposals for accuracy and conformance to FHWA standards and coordinates deck condition surveys for state and consulting engineers.
- Evaluates state owned bridges for deck overlays with bituminous concrete and performs analysis for additional dead load.
- Performs fathometer surveys for in-house NBIS inspections of state owned structures over waterways.
- Inspects, evaluates and recommends rehabilitation or replacement of "Orphan bridges".
- Coordinates essential repairs to "Orphan bridges" with the Utilities and Railroad engineering unit.
- Scans in-house bridge inspection reports and related files and makes it available to authorized personnel in the Department and outside agencies.

ORGANIZATIONAL SUMMARY

STRUCTURAL EVALUATION AND BRIDGE MANAGEMENT (CON'T)

- Develops consultant agreements for Design Services. Tracks and monitors the preparation and consummation of agreements.
- Reviews and evaluates consultant's expression of interest for bridge inspection and related projects to present to the Consultant Selection Committee for consultant selections.

ORGANIZATIONAL SUMMARY

STRUCTURAL DESIGN UNIT

Objectives

- Provided dedicated services to project managers.
- Produce modern and efficient engineering designs and contract documents for the construction of new bridges and structures, and for the repair, rehabilitation and replacement of existing bridges and structures on the State Highway System.
- Provide consultation, review and comment to other Departmental units, as well as external agencies, in matters relating to bridges and structural engineering.
- Provide structural engineering services to other Departmental units and other State Agencies.

Functions

- Develop and implement an operating budget.
- In coordination with the Scope Development Unit, assists in developing the final scope of work for all projects with structural involvement designed in-house, by consultant, other agencies or by developers. Review consultant structural scope of work and prepare independent man-hour estimates for the structural component of these projects.
- Perform structural design functions as requested by Capital Project Management or the Design Coordination Unit. Also performs Quality Control for all aspects of structural design and production of contract plans and documents for in-house bridge design projects.
- Produce quality structural engineering designs, contract plans, cost estimates and documents for all types of transportation related structures including but not limited to highway, railroad and pedestrian bridges, culverts, cantilever and overhead sign structures, retaining walls and miscellaneous structures in accordance with current departmental and federal requirements. These functions include but are not limited to:
 - Preparing all required documentation concerning structural design to comply with the Department's submission requirements.
 - Preparing all designs, study and development projects by utilizing Computer Aided Design and Drafting (CADD) and computer based technologies.
 - Preparing all documentation for permit applications to the US Coast Guard.
 - Providing engineering input for in-house design projects involving structures for the preparation of documents and permits, by other units, for the Army Corps of Engineers and the Department of Environmental Protection.

ORGANIZATIONAL SUMMARY

STRUCTURAL DESIGN UNIT (CON'T)

- Developing and maintaining standards and cell libraries for in-house CADD based structural and architectural drafting, architectural renderings and 3D modeling.
- Recommends and implements the incorporation of new engineering technologies into structural projects.
- Reviews and approves shop and working drawings for all projects involving bridges and structures.
- In coordination with the Project Manager, reviews and provides solutions and/or advice on any structural problems encountered during construction. Provides structural guidance and interpretation of contract documents to field personnel on projects under construction. Attends Pre-Award meetings and other meetings during construction for projects having structural involvement, as required.
- Provides structural engineering services in support of the maintenance of NJDOT structures.
- Acts as the consultant to other NJDOT units concerning non - standard structures affecting NJDOT property. Provides structural engineering services in support of various Department units as requested in emergency situations.
- When requested, reviews NJDOT Bridge attachment permit applications submitted by consultants, utility companies and other private and public agencies. Provides structural expertise and review on projects with external agencies and developers where their work affects State structures or their structures cross State highways.
- Evaluates, classifies and prequalifies consultants for structural design capability.
- As requested, evaluates and rates Consultant Expressions of Interest and Technical Proposals in the consultant selection procedure for all projects containing structural elements.
- Reviews Alternatives Analysis Reports for historic structures and recommends their submission to FHWA and SHPO.
- Reviews structural studies, bridge sketches, preliminary design plans, final design plans, Special Provisions, construction bar charts, construction cost estimates and other documents, as may be required, as part of a phase submission for projects that include bridges and structures.

ORGANIZATIONAL SUMMARY

STRUCTURAL DESIGN UNIT (CON'T)

- Provides structural input for permit applications to the US Coast Guard, Corps of Engineers, and NJ Department of Environmental Protection for projects developed by consultants. This includes support to projects dealing with the Office of New Jersey Heritage.
- As required, participates in community involvement efforts on projects with major structural work.
- Maintains Simeon Chanley Library to provide a repository for current bridge engineering, technical publications and design examples.
- Evaluates and implements structural related computer programs. Provides training to users and maintains software library.
- Provides appropriate design data to the Department's Bridge Management System (BMS).

ORGANIZATIONAL SUMMARY

GEOTECHNICAL ENGINEERING

Objectives

- Provide dedicated services to project managers.
- Provide geotechnical, geologic, rock mechanics and pavement engineering services for NJDOT project scope development, design, construction and maintenance efforts.
- Produce state-of-the-art geotechnical, rock mechanics and pavement engineering designs and contract documents for the construction, repair, rehabilitation or reconstruction of bridges, other structures and roadways.
- Obtain subsurface information required for the design of bridges, other structures and roadways.
- Update and maintain the Rockfall Hazard Rating System.
- Provide consultation, review and comment to other Department units, as well as external agencies, in matters relating to geotechnical, pavement and rock mechanics engineering issues relating to bridges, other structures and roadways.
- Represent the Department with external agencies for geotechnical, geologic, rock mechanics and pavement issues.
- Provide comments and technical advice on legislative and budget initiatives related to geotechnical, geologic, rock mechanics and pavement issues.
- Develop and enhance human resources skills with formal and on-the-job training programs.

Functions

The Geotechnical Engineering Section is primarily responsible for providing Geotechnical Engineering, Rock Engineering, Pavement Design and Subsurface Exploration Services for the Department of Transportation. Specific duties are:

- Develop and implement an operating budget.
- Performs geotechnical foundation engineering designs and provides foundation design recommendations for in-house design projects in the Capital Program.
- Performs geotechnical engineering designs for roadway embankments/cuts, and subsurface drainage design for in-house design projects in the Capital Program.

ORGANIZATIONAL SUMMARY

GEOTECHNICAL ENGINEERING (CON'T)

- Designs pavements and provides Pavement Design Recommendations for in-house design projects within the Capital Program.
- Performs rock mechanics designs for rock cuts, rock slopes, and rock stabilization for in-house projects in the Capital Program.
- Designs subsurface exploration programs and obtains subsurface information using in-house or Contractor forces. Provides quality control of the information obtained. Disseminates the information for design purposes and incorporation in projects.
- Catalogs and stores subsurface information for future reference.
- Maintains an up-to-date Rockfall Hazard Rating System (RHRS) for scoping major rockfall mitigation projects, recommending rockfall mitigation measures and providing a legal defense against injury and accident claims resulting from rockfalls.
- In support of Construction Operations, provides advice on the pile driving hammer systems, reviews test pile records, and recommends pile order lengths to the Resident Engineer.
- Provides geotechnical support to Construction and Maintenance Operations in the areas of foundation construction, embankment/cut construction, sub-surface drainage, pavement construction.
- Provides rock mechanics and geologic services in support of Construction and Maintenance Operations for in-house design projects.
- In conjunction with the Bureau of Maintenance Engineering, initiates immediate corrective action for emergency rockfall events posing an immediate threat to public safety.
- Develops technical specifications and evaluates/implements new technology for structure foundations, pile foundations, embankment/cut construction, sub-surface drainage, pavements and rock mechanics.
- Provides Quality Assurance services to the Capital Program Management Group for obtaining and presenting consultant-provided subsurface information on the plans. Disseminates the information as required for incorporation in the project bid packages.
- Provides Quality Assurance services to the Capital Program Management Group for the development of Consultant subsurface exploration programs and Contractor field operations.

ORGANIZATIONAL SUMMARY

GEOTECHNICAL ENGINEERING (CON'T)

- Provides Quality Assurance services to the Capital Program Management Group for Consultant designs involving structure foundations, pile foundations, embankment/ cut design, sub-surface drainage, pavements and rock mechanics.

ORGANIZATIONAL SUMMARY

QUALITY MANAGEMENT SERVICES

Mission

To provide quality assurance, quality improvement and change control for Capital Program Management based on:

Function
Cost
Value

Objectives

- Provide dedicated services to project managers.
- Establish quality assurance programs for all in-house units and for each project in the Capital Program Management Division so that continuous quality improvement will occur.
- Identify, evaluate and rapidly deploy new technologies, products and innovations that will add value, reduce cost, and enhance the quality of our transportation system.
- Develop and recommend for implementation quality improvements to all facets of design, construction, and program management.
- Introduce training programs that assure staff are fulfilling their capacity to execute their current and future work in a project management environment. To facilitate intra and inter-organizational development and partnering programs.
- Administer a program which will ensure that proposed changes to project scope, project schedule, project cost or any other element that may effect a project are necessary and add value in accomplishing the mission of the Department and the CPM Division.
- Ensure that all proposed changes in scope, cost, schedule, policy, procedure and baseline documents have been evaluated by all effected parties both internally and externally and those changes recommended to the change control board for implementation add value to the mission of the Department and Capital Program Management.
- Establish and maintain the integrity of all System Wide Baseline Documents, and make them accessible to our customers. These documents define the physical and functional characteristics and parameters that we use to manage, design and construct projects.

ORGANIZATIONAL SUMMARY

QUALITY MANAGEMENT SERVICES (CON'T)

- Ensure the integrity of the contract documents and to provide easy access of all engineering drawings on one retrieval system.
- Ensure the integrity of the project and program files by developing and maintaining a controlled tracking and storage system for all CPM correspondence and documents.
- Use Value Engineering as a tool to identify, evaluate, develop and recommend alternate designs/methods that provide an equal or improved product at a reduced life cycle cost, allowing the Department to achieve the most cost effective projects.

Functions

A. Office of the Manager, Quality Management Services

- Develop and implement an operating budget.
- To manage the Quality Assurance Program for NJDOT Capital Program.
- To ensure continuous improvement is occurring in all areas of design and construction.
- To provide the necessary long range planning to ensure QMS continuously meets its mission.
- To supervise the following offices:
 - Quality Assurance and Improvements
 - Configuration Management
 - Value Engineering

B. Quality Assurance and Audit Unit (QA)

- Develop and implement an operating budget.
- Establish Baseline Quality Assurance requirements for in-house units.
- Establish Baseline Quality Assurance Plans for projects.
- Establish an auditing procedure.
- Review and approve correction action plans based on audits.
- Set, maintain, and update Quality Assurance standards and specifications.
- Provide training to DOT units, consultants, contractors, and suppliers on Quality Assurance plans, specifications and changes.

ORGANIZATIONAL SUMMARY

QUALITY MANAGEMENT SERVICES (CON'T)

- Establish Quality Assurance templates for use by contractors, consultants, materials suppliers and CPM units to establish consistent and auditable plans/procedures.
- Identify from audits, opportunities for change and improvement.
- Develop a training plan to instruct internal and external staff in the methods for developing Quality Assurance plans.
- Develop assessments for opportunities for improvement.
- Track changes for long term effect.
- Create and maintain a performance tracking system for internal and external units.
- Issue Quality Assurance Plan certificate when plans are approved or report of noncompliance.
- Issue a periodic report card of customers' quality performance.

C. New Technologies and Products Unit (QA)

- Develop and implement an operating budget.
- Establish a fast track process for evaluation and deployment of new products/ technologies.
- Assign reviews and evaluations to appropriate units.
- Identify new products through internal and external recommendations.
- Coordinate with other transportation agencies the evaluation of products and services.
- Establish methods to evaluate the effectiveness of new technology.
- Redefine existing committee tasks: SHRP Implementation, Materials Committee, Equipment Committee, Recycle Materials Task Force, etc.
- Final recommendation for acceptance into standards and specifications.
- Point of contact for new product/technology vendors and establish a system to receive and review new products.
- Initiate training on new technologies, materials, products and equipment to ensure their proper evaluation and use.

ORGANIZATIONAL SUMMARY

QUALITY MANAGEMENT SERVICES (CON'T)

D. Quality Review and Development Unit (QA)

- Develop and implement an operating budget.
- Receive and evaluate and distribute for comment nationally developed standards and procedures issued by FHWA, AASHTO, ASTM, ACI, AWS, PCI, etc.
- Receive and review requests for changes in Departmental standards.
- Establish review and development teams for the redesign of standards, specification or policies and procedures.
- Finalize quality improvement changes for adoption by DOT.
- Update the inventory of standards and specifications stored in the Document Control Center based on quality improvements.
- Initiate changes based on Quality audits and reviews of standards.
- Lead and facilitate development teams from CPM units or cross discipline teams.
- Establish an electronic retrieval system for internal/external use in a query manner.
- Establish electronic inventory of standard plans/details.
- Initiate/facilitate formal Quality Improvement Teams (QIT's).
- Record, track and take action on "Design Impediment Memos" by identifying and recommending changes to improve quality.
- Develop new standards based on recommendations from the New Products/ Technologies Unit.

E. Employee Development and Facilitation Unit (QA)

- Develop and implement an operating budget.
- Assess employee skill levels.
- Develop and conduct training programs.
- Identify vendors for training.
- Initiate employee competency check lists for quality assurance.

ORGANIZATIONAL SUMMARY

QUALITY MANAGEMENT SERVICES (CON'T)

- Develop transcribing of employee competency and training.
- Coordinate with Human Resource Administration training, training plan and budget.
- Initiate and review certification programs for internal and external employees:

Examples:

Project Manager Certification
SAT Certifications
ACI Certification
NICET Certifications

- Initiate pre-design and preconstruction partnering and track effectiveness.
- Identify training requirements for suppliers, contractors, consultants, and in-house staff.
- Conduct train-the-trainer programs for internal subject matter experts/certify SME.
- Review training materials for all internal and external functional units.
- Develop pre-design and preconstruction partnering policy.

F. Change Control Unit (CM)

- Develop and implement an operating budget.
- Setting up and maintaining systems to deal with proposed changes in the following areas:
 - Project Scope (Design/Construction)
 - Project Cost (Design/Construction)
 - Project Schedule (Design/Construction)
 - Standards and Specifications
 - Baseline Documents
 - Policy and Procedures
 - Mandates Federal/State
- QA review of proposed change document.
- Presentation of proposed change document to Change Control Board.
- Assignment of implementation actions.
- Tracking system for all proposed changes.

ORGANIZATIONAL SUMMARY

QUALITY MANAGEMENT SERVICES (CON'T)

- Coordinate with outside agencies when external approvals are required.

G. Interface Control Unit (CM)

- Develop and implement an operating budget.
- Perform cost and effect analysis on all proposed changes to determine overall value.
- Prepare proposed change evaluation report.
- Make recommendation for approval/disapproval of proposed changes.
- Recommend method and time frame for implementing proposed changes.
- Evaluate proposed changes as to its effectiveness on:
 - Cost
 - Schedule
 - Manpower
 - Quality
 - Value
 - Long Term Benefits (Life Cycle)
- Perform technical research on proposed changes.

H. Document Control (Baseline Documents) (CM)

- Develop and implement an operating budget.
- Thoroughly define the tie controlled list of System Wide Baseline Documents, such as:
 - Standard Specifications
 - Design Manuals
 - AASHTO Specifications
 - Design Codes
 - Standard Details
 - Policies and Procedures, etc.
- Develop and maintain a list of technical advisors or contacts for each document.
- Maintain library (hard copy and disks) for baseline documents.
- Establish a standard format for manuals, specifications, and procedures.
- Process final changes into printing form.

ORGANIZATIONAL SUMMARY

QUALITY MANAGEMENT SERVICES (CON'T)

- Provide systematic and controlled release of revised Baseline documents.
- Maintain electronic retrieval system for internal/external use in a query manner.
- Establish and maintain customer list for each document.
- Maintain schedule for implementation of proposed document changes.

I. Engineering Plans and GIS Information (CM)

- Develop and implement an operating budget.
- Collect/gather, examine and organize, classify and catalog the plans from Roadway, Bridge, ROW, Jurisdiction, Traffic Signal Plans and Timing, Access Permits, as well as standard plan sheets.
- Work with other groups (GIS, MIS, consultants) to develop/determine most appropriate conversion of information to electronic media, develop standard indexing system for use by the entire department, and oversee preparation of plans for the conversion to microfilm and/or an electronic document management system.
- Develop department Policy and Procedure for Configuration Management, Engineering Plans and GIS Information process, control, access and disposition.
- Assure compliance with all NJDOT and FHWA requirements, NJ codes and statutes, NJ Public Records Law, and approved legal records retention schedules as they apply to operation.
- Provide systematic and controlled release of revised contract drawings after advertising of the project.
- Make available to the public for sale baseline documents (such as Design Manuals, Standard Specification, etc.) and other engineering drawing that may be required by our external customers.
- Develop tracking system for major baseline documents so that there can be a systematic and controlled release of revisions to baseline documents.

J. Document Control - Project/Program Correspondence (CM)

- Develop and implement an operating budget.
- Develop a uniform method to code all documents for projects.

ORGANIZATIONAL SUMMARY

QUALITY MANAGEMENT SERVICES (CON'T)

- Classify and separate all correspondence and project documents received in Capital Program Management.
- Establish access/distribution controls.
- Set up automated system to log and track documents.
- Maintain and control project/program history file.
- Provide information retrieval service.
- Establish Policy and Procedures for Document Control.
- Assure compliance with NJDOT and FHWA document requirements, NJ codes and statutes, NJ Public Law, and legal retention schedules as they apply to this operation.

K. Design Value Engineering Unit (VE)

- Develop and implement an operating budget.
- Conduct independent review based on function analysis of major cost items.
- Establish and maintain a list of trained employees willing to participate on VE Teams.
- Select projects to be analyzed.
- Select team members from pool of employees trained in VE.
- Lead/facilitate multi-disciplined team studies.
- Collect and/or request required back up data/justification for recommendations (i.e., traffic data, accident data, wetlands or hazardous waste screenings, ROW impacts, etc.).
- Prepare and submit report indicating proposed recommendations, cost savings, and implementation plan.
- Develop and monitor implementation of recommendations into the project.
- Provide continuous improvement and cost savings by incorporating approved VE proposals into future projects.

ORGANIZATIONAL SUMMARY

QUALITY MANAGEMENT SERVICES (CON'T)

- Coordinate with Quality Assurance and Configuration Management units regarding approved, state of the art materials and technology and materials, and on scope changes, etc.
- Maintain status report of proposals and measurable cost savings.
- Prepare annual report for FHWA.
- Participate in design partnering workshops.
- Establish database for sharing approved VE proposals with other State Highway Agencies.
- Initiate training for value engineering in design and life cycle cost analysis.
- Conduct life cycle cost analysis on alternate designs/materials. Study areas include:
 - Concrete or Steel Superstructures for Bridges
 - Painted Steel or Weathering Steel for Bridges
 - Rehabilitation vs. New Construction
 - Noise Walls
 - Use of Latex Modified Concrete vs. Asphalt Overlay
 - Deck Joint Review
 - Drainage for Long Term Pavement Performance
 - Standard Details
 - Full Depth Pavement
 - Waterway Opening/Risk Management
- Recommend alternates based on lowest life cycle cost.
- Give presentations to other states.

L. **Construction Value Engineering Unit (VE)**

- Develop and implement an operating budget.
- Encourage changes in design, changes in methods of construction, and changes of materials by alerting contractors to the specification and opportunity for change (give presentations, prepare and distribute brochures).
- Negotiate proposed savings.
- Facilitate timely review and approval of contractor proposals.

- Participate in partnering workshops.

ORGANIZATIONAL SUMMARY

QUALITY MANAGEMENT SERVICES (CON'T)

- Coordinate with Quality Assurance and Configuration Management units regarding approved, state of the art technology and materials.
- Provide continuous improvement and cost savings by incorporating effective methods and materials as standards.
- Prepare specifications, details, etc. for new standards based on approved proposals
- Initiate training for project managers, resident engineers and other staff in reviewing and negotiating contractor proposals.

M. Research

- Develop and implement an operating budget.
- Develop jurisdictional maps and agreements.
- Providing information with regard to existing jurisdictional agreements and maps.
- Conduct scientific research studies to evaluate new technologies, materials, processes, and equipment.
- Make recommendations for improvements in quality throughout the Department as evidenced by lower cost and shorter duration design and construction processes, lower cost and more durable materials, and reduced sampling high quality products.
- Maintaining the Department library and performing library functions.
- Research literature and electronic technology transfer media serving as the Departments contact for information exchange.
- Provide liaison with the Transportation Research Board (TRB) and provide service as the state representative for TRB and the AASHTO Research Advisory Committee.

ORGANIZATIONAL SUMMARY

DIVISION OF CONSTRUCTION SERVICES AND MATERIALS

Purpose

To establish the Division of Construction Services and Materials and to state the Division's objectives and functions, depict the organizational alignment for management control and indicate the actions required for implementation.

The Division of Construction Services and Materials shall be comprised of the following:

- Regional Construction - North
- Regional Construction - Central
- Regional Construction - South
- Bureau of Construction Engineering
- Bureau of Materials

Implementation

Creation of the Division of Construction Services and Materials is accomplished by:

- Establishing the Office of the Director, Construction Services and Materials.
- Establishing the offices of Regional Construction - North, Central and South.
- Transferring some staff from the now defunct Office of the Executive Director, Regional Operations, Region V to the Office of the Director, Construction Services and Materials.
- Transferring staff from the now defunct offices of Regions 1, 2, 3 and 4 into the offices of Regional Construction North, Central and South.

Chain of Command

Commissioner of Transportation
Deputy Commissioner of Transportation
Assistant Commissioner, Capital Program Management
Director, Construction Services and Materials

Objectives

- Provide dedicated services to project managers.
- Administer all Highway and Bridge construction contracts to assure that they are executed in accordance with the Project Management System adopted by the Department, providing quality construction in a timely manner.

ORGANIZATIONAL SUMMARY

DIVISION OF CONSTRUCTION SERVICES AND MATERIALS (CON'T)

- Ensure that all materials utilized for Department projects meet specifications.
- Provide Construction Engineering Services to Project Manager.
- Maintain the CEMM, MEMM and TIEMM manpower management systems.
- Provide ongoing computer program development, field support and OTIS liaison for the Automated Construction Engineering System (ACES). Integrate the ACES System into the Project Management Control System (PMCS).
- Monitor and provide monthly status reports of CE charges on a per project basis.
- Review contracts and documentation to verify that all administrative practices and construction activities are carried out in accordance with construction Certification Acceptance Guidelines and that all documentation is processed in accordance with same.
- Provide support to the Project Management Unit as required for the purpose of delivering the Capital Construction Program.

Functions

A. Office of the Director, Construction Services and Materials

- Develop and implement an operating budget.
- Direct all State Highway related construction, materials testing and inspection activities of the Department in accordance with established policies, procedures, federal requirements and accepted practices.
- Plan, organize implement and control all appropriate technical construction engineering functions commensurate with the objectives of the Project Management System, assigning specific accountability to appropriate personnel.
- Responsible to deliver the Capital Construction Program within the given budget and schedule requirements.
- Allocate divisional resources to ensure effective and efficient mission accomplishment.
- Investigate and provide response to internal and external inquiries on transportation related issues.
- Coordinate the submittal of reports from regions and bureaus and consolidate into one report for the Division.

ORGANIZATIONAL SUMMARY

DIVISION OF CONSTRUCTION SERVICES AND MATERIALS (CON'T)

- Provide budget support; formulate budgetary requests; develop, distribute and monitor progress of Divisional units towards accomplishment of performance indicators in the budget implementation plan.
- Identify, obtain or submit requests for fiscal resources for special project needs.
- Provide management with periodic fiscal reports; recommending courses of action, identifying critical fiscal issues and potential budget crises.
- Provide management with personnel coordination services including: processing the necessary paper work for all transfers, promotions, disciplinary actions, reclassifications, leave of absence, removals, hiring, unit scopes, staffing analyses, training requests, career counseling and tuition reimbursement.
- Maintain a liaison with Project Management and provide support as needed.
- Develop and implement policies and procedures as necessary.

B. Bureau of Construction Engineering

- Develop and implement an operating budget.
- Monitors all construction documents including change orders and estimate certificates to establish uniform practices in regional offices.
- Receive regional construction reports for work accomplished and other administrative technical reports; review same and develop required information for subsequent use; compile construction reports as required, maintain and evaluate construction manpower records.
- Analyze all unresolved claims and render supportive services to the claims committee.
- Solicit and recommend qualified consultants for selection by the Department.
- Conduct general inspections of active construction projects to monitor compliance with specifications, the Certification Acceptance Plan and standards of workman-ship; documentation and maintenance of records as well as ensuring adequate staffing inspection personnel to inspect all operations as part of the Divisions Quality Assurance Plan.
- Prepares and submits recommendations for changes in contract specifications and internal procedures.

ORGANIZATIONAL SUMMARY

DIVISION OF CONSTRUCTION SERVICES AND MATERIALS (CON'T)

- Prepares and promulgates construction manuals, directives, and Operations Bulletins, including manuals and directives pertaining to consultant construction engineering and inspection.
- Prepares and conducts training programs for Department personnel pertaining to construction functions and for consultant personnel in department procedures for construction project administration.
- Review as-built calculations and related documentation on all construction projects as part of the Divisions Quality Assurance Plan.
- Administers the Construction Engineering Manpower Management System, Materials Engineering Manpower Management System, and Testing Inspection Engineering Manpower Management System; monitors the construction engineering cost system, updates systems annually.
- Coordinates the statewide computerization of the Automated Construction Estimate System (ACES).
- Provides expertise in researching information and project history in order to satisfy demands from various sources such as Risk Management, DAG's office, etc.
- Provides project close-out support to the Regions.
- Provides notice in accordance with Title 27:7-26 and 27:7-27 prior to advertising of construction or reconstruction of a highway, to any owners and tenants of lands abutting the proposed highway and to any public utility using it that subsequent to construction of the surface pavement, no openings will be permitted in the highway for a period of five years thereafter without the consent of the Department.
- Develops the annual budget request for the Bureau and Regions, providing input to the Director's Office.
- Provide assistance and recommendation on all contractual liability claims.

C. Bureau of Materials

- Develop and implement an operating budget.
- Establishes a program of materials engineering and quality control testing within the Project Management System and in accordance with current standard NJDOT specifications. Reviews and updates testing methods and materials specifications for NJDOT use when no suitable national standards are available; develops long-range plans policies and programs necessary to accomplish the above.

ORGANIZATIONAL SUMMARY

DIVISION OF CONSTRUCTION SERVICES AND MATERIALS (CON'T)

- Provides a system for the reporting and analysis of laboratory test results for the information and guidance of concerned units.
- Maintains project files containing all test data, engineering reports, and records related to materials.
- Issues a Materials Certificate of Acceptance for all construction materials on partially or wholly funded federal projects.
- Provides Operations Bulletins and Instructional Bulletins for the standardization of regional materials activities and submits recommendation for changes in governing specifications and procedures for more effective materials operations.
- Provides central laboratory materials testing for inspections performed by other NJDOT units.
- Provides current and advanced planning for testing programs including: personnel requirements, equipment and instrumentation, technical and administrative procedures, space and fiscal requirements, and provides central coordination thereof with input from regions.
- Provides a testing, inspection and expediting service for materials or projects at point of origin.
- Provides technical services to the regions in materials related specialties; coordinates and provides training programs related to the materials functions.
- Maintains liaison with all pertinent standards organizations to coordinate NJDOT activities with those of local, regional and federal associations for improving materials performance, and advancing technology.
- Establishes and maintains liaison with other NJDOT units to provide material engineering consultation and services as required.
- Initiates, prepares and administers contracts and agreements for field testing and inspection services.
- Develops and monitors quantitative and qualitative standards for materials activities; performs semi-annual technical and administrative reviews of operational performance at Regional Material offices as part of the Division's Quality Assurance Plan.
- Develops the annual budget request for the Bureau and Regions, providing input to the Director's office.

ORGANIZATIONAL SUMMARY

DIVISION OF CONSTRUCTION SERVICES AND MATERIALS (CON'T)

D. Regional Construction - North, Central and South

- Provide a proactive constructibility review.
- Develop and implement an operating budget.
- Administer and manage the Region's Construction and Consultant Construction Inspection Programs commensurate with the ideals established by the Project Management System.
- Responsible for delivery of the Capital Construction Program within the budget and schedule requirements established under the Program Management System.
- Allocate available manpower, equipment, materials and supplies to allow effective and efficient operation.
- Inspect assigned construction contracts to ensure compliance with plans and specifications by contractor and consultant as required, and prepare monthly payment estimates for complete work.
- Initiate and process construction change orders including review of those prepared by consultants, and seek FHWA participation as required. Forward all construction orders to Project Management for approval.
- Review and recommend all contractor requests for approval to sublet.
- Coordinate the Region's construction activities with the various governmental agencies.
- Evaluate all contractor claims in the regions and make recommendation concerning settlement offers, within the Project Management System.
- Prepare the as-built records for regional contracts and maintain appropriate records.
- Monitor MBE and EEO programs on all regional construction projects.
- Arrange and conduct all pre-construction and utility meetings for regional construction projects within the Project Management System.
- Perform scope and phrase reviews on all the Region's future construction projects.
- Recommend to Project Management that consultants be solicited by the Bureau of Construction Engineering for providing inspection services.

ORGANIZATIONAL SUMMARY

DIVISION OF CONSTRUCTION SERVICES AND MATERIALS (CON'T)

- Estimate consultant staffing levels for individual projects for Project Management to negotiate, formulate, prepare and execute all consultant inspection agreements and any required modifications.
- Monitor and address performance issues of consultants on regional projects as they arise.
- Review and process for payment consultant billings and utility relocation vouchers.
- Assist the Project Manager in providing the public with responses to questions on the Region's construction projects.
- Inspect all utility relocation on the Region's construction projects and all railroad crossing rehabilitation work funded by the Department.
- Insure that all necessary participating and support unit services such as FHWA, Materials, Design etc. are provided to the Consultant Resident Engineer.
- Conduct annual operational and administrative reviews of unit operations, in accordance with the Quality Assurance Plan, taking appropriate corrective action to ensure adequate internal control and to facilitate the unit's performance toward desired goals and objectives.
- Provide annual and forecasted information for budgetary submission on unit's manpower, equipment, materials and supply needs.
- Conduct training or request training for individuals as needed to ensure that all personnel are provided with the technical skills necessary to perform their duties.
- Provide construction expertise to develop innovative processes in the performance of construction activities.
- Ensure that materials mix designs comply with specifications and field sampling and testing is provided on all construction projects including concrete, asphalt, soil aggregates, etc.

ORGANIZATIONAL SUMMARY

BUREAU OF MATERIALS ENGINEERING AND TESTING CENTRAL LAB

Functions

1. Develop and implement an operating budget.
2. Administer a program of materials engineering and quality acceptance testing in accordance with NJDOT Capital Program specifications and FHWA requirements.
 - Develop long range plans and policies for materials acceptance.
 - Review and update testing methods and materials specifications.
 - Maintain liaisons and provide testing and materials engineering consultation services for the other NJDOT units.
 - Maintain expertise in State of the Art Technologies.
3. Maintain AMRL accredited central laboratory in accordance with 23 CFR 637.
 - Train and evaluate personnel to meet or exceed the required standards.
 - Maintain a Quality System Manual outlining the organizational structure, staff responsibilities, policies, operating procedures and processes of the laboratory.
 - Maintain files for calibration and certification of test equipment.
 - Participate in AMRL proficiency testing program.
4. Provide point of origin inspection and verification testing.
 - Maintain and administer a materials information system that directs suppliers, contractors and resident engineers as to mechanism for materials acceptance.
 - Provide multi-capability testing, inspection, analysis, and expediting service for materials at point of origin.
 - Review and approve fabricators' Quality Control Program.
 - Validate quality of the final product before inclusion in the project.

ORGANIZATIONAL SUMMARY

BUREAU OF MATERIALS ENGINEERING AND TESTING (CON'T) CENTRAL LAB

5. Administer Quality Assurance Oversight Program.
 - Perform evaluations of facilities and testing procedures used by contractors, suppliers, consultants, Regional Materials and Central Laboratories.
 - Administer an Independent Assurance Testing and Sampling Program, in accordance with FHWA requirements.
6. Maintain an up-to-date database of laboratory test results.
 - Report information to operating units on a timely basis.
 - Maintain annual materials summaries.
 - Maintain list of approved bituminous and concrete plants.
 - Develop procedures to integrate materials reports into planning functions within the department.
 - Develop a comprehensive list of approved materials and materials suppliers.
7. Maintain and develop standardized procedures for testing and training of Central and Regional Materials staff.
 - Lead development, coordination and revision of Bureau Operations Bulletins and Instructional Bulletins.
 - Administrate SAT and ACI Field Technician Training Programs annually.
 - Coordinate materials inspection activities throughout the Department through monthly meetings with Regional Materials Engineers, and through continuous interaction with their staff.
 - Conduct a Round Robin Testing Program to standardize testing among the Regions and the Central laboratory.
 - Provide multi-faceted materials training to other units of the Department.
8. Provide technical services to other operating units within the Department.
 - Perform materials engineering analyses in support of field operations when performance failures occur.

ORGANIZATIONAL SUMMARY

BUREAU OF MATERIALS ENGINEERING AND TESTING (CON'T) CENTRAL LAB

- Perform statistical analyses and engineering evaluations to provide guidance in specifications development and projected serviceability levels of transportation facilities.
9. Maintain presence on national standards organizations to promote Department's interest.
 10. Issue the Materials Certification as part of the Federal project closeout process.
 11. Provide testing and inspection services for other governmental agencies (such as the Turnpike Authority).
 - Initiate, prepare and administer contracts and agreements for field and laboratory testing and inspection services.
 - Participate in national research efforts (such as SHRPP) and provide testing services.
 12. Develop and administer the budget for Bureau of Materials Engineering and Testing.
 - Procure all goods and services required by Central Lab and Regional Operations.
 - Develop and implement cost saving measures.
 13. Administer the Department Radiation Safety Program as required by the Nuclear Regulatory Commission.
 - Monitor nuclear density equipment and personnel exposure.
 - Respond to radiation safety incidents.
 - Administer USNRC License.

ORGANIZATIONAL SUMMARY

BUREAU OF CAPITAL PROGRAM DEVELOPMENT

Objectives

- Provide dedicated services to project managers.
- Identification, evaluation, screening, and selection of projects with respect to schedule, cost, deliverability, benefit, problem identification, and other criteria.
- Negotiation of project selection with internal and external entities, including Metropolitan Planning Organizations (MPOs).
- Development of draft and final capital program, Statewide Transportation Improvement Program, and Transportation Improvement Program documents which advance Department goals and objectives and which meet established standards of project deliverability and program fiscal constraint.
- Financial forecasting and planning to ensure the best use of all available financial resources to support the capital program.

Functions

Capital Programming

- Develop and implement an operating budget.
- Develop Annual Capital Program.
- Develop Five Year Capital Plan.
- Develop Annual Study and Development Program.

Program Effectiveness

- Develop and implement an operating budget.
- Develop annual Capital Investment Strategy to guide investment in the capital program.
- Manage prioritization and selection of transportation problem statements with recommended disposition.
- Coordinate ISTEA Management Systems for Capital Program development.
- Perform program analysis and performance evaluation.
- Perform needs and costs analysis.

ORGANIZATIONAL SUMMARY

BUREAU OF CAPITAL PROGRAM COORDINATION

Objectives

- Provide dedicated services to project managers.
- Ensure timely and most efficient use of funding resources available to implement approved Capital Programs.
- Ensure maximum obligation of Federal funds available to New Jersey.
- Provide timely submission to the Federal Highway Administration of all eligible federal projects for federal authorization and reimbursement.
- Assist NJDOT Project Managers on a cooperative basis in following up and expediting the financial progress of Capital projects.
- Provide NJDOT management with program and project information to efficiently utilize Department resources.

Functions

- Develop and implement an operating budget.
- Coordinate NJDOT formal transactions with FHWA as they relate to project activity.
- Manage the implementation of the approved Capital Programs including project funding and State Transportation Improvement adjustments needed to maintain program impetus.
- Develop plans for the actual obligation of financial resources provided by approved Capital Programs based on latest available schedule and fiscal data to produce the most effective and efficient use of available funding categories in accordance with Department's goals.
- Provide periodic forecasts of financial resources needed for implementation of Capital Programs.
- Identify and recommend funding adjustments to be made within the framework of approved Capital Programs.
- Coordinate the general information flow between FHWA and NJDOT receiving and disseminating material from FHWA relating to Federal projects.
- Assemble and process authorization requests to FHWA for all NJDOT Federal Aid projects.

ORGANIZATIONAL SUMMARY

BUREAU OF CAPITAL PROGRAM COORDINATION (CON'T)

- Process all funding documentation relating to project implementation process including change orders, utility contracts, project and consultant agreements and their modifications including documentation required for Federal reimbursement.
- Manage the submission of construction contract plans and documents and their revisions, addendums, and coordinate the resolution of comments to FHWA.
- Coordinate the assignment of NJDOT job numbers and UPC numbers.
- Continuously review and analyze Federal Aid projects; determine the need for NJDOT action; initiate modifications to project agreements or other appropriate action.

ORGANIZATIONAL SUMMARY
PROGRAM SUPPORT SERVICES

Functions

1. Develop and implement an operating budget.
2. Scope Development

Cost Control Unit:

- Establish workhour/dollar budgets for scoping.
- Develop work breakdown structure.
- Monitor/report expenditures.

Scheduling Unit:

- Establish project milestone dates.
- Schedule scoping phase.
- Status scoping schedule.
- Resource load preliminary project schedule.
- Provide preliminary staffing curves.

Estimating Unit:

- Develop conceptual project capital cost estimate

3. Design Development

Cost Control Unit:

- Prepare a final work breakdown structure.
- Establish project cost baselines.
- Monitor performance.
- Process change orders and provide controls.
- Maintain reporting/database computer systems.
- Assist in variance analyses.
- Produce monthly status reports.

Scheduling Unit:

- Prepare project schedule.
- Revise milestone dates as required.
- Status design phase.
- Refine staffing projections.
- Provide "look ahead" type reports.
- Review design with respect to schedule impacts.

ORGANIZATIONAL SUMMARY

PROGRAM SUPPORT SERVICES (CON'T)

4. Final Design

Cost Control Unit:

- Monitor performance.
- Process change orders and provide controls.
- Maintain reporting/database computer systems.
- Assist in variance analyses.
- Produce monthly status reports.

Scheduling Unit:

- Status final design phase.
- Develop Construction Engineering staffing forecast.
- Provide "look ahead" type reports.
- Review design with respect to schedule impacts.
- Produce preliminary construction schedule.

Estimating Unit:

- Review final plans, specs and schedule.
- Review consultants estimate.
- Forward estimate for input from civil rights.
- Prepare Engineer's Estimate and proposal .

5. Construction

Cost Control Unit:

- Monitor and report quantities and dollars.
- Provide change order control.
- Assist in variance analyses.
- Produce status reports.

Scheduling Unit:

- Review contractors schedule .
- Integrate schedule in master file.
- Provide "look ahead" type reports .
- Review change order requests for schedule impacts.
- Status and report on construction progress.

Estimating Unit:

- Review change order requests for reasonableness.
- Record as-built quantities and amounts in database.

1.5 Federal-Aid Highway System

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) which became effective in December, 1991, provided for several new funding categories which replaced and consolidated some of the old categories which were created in the 70's.

Interstate Maintenance - This program replaced the old Interstate 4R category. However, the fourth "R" (reconstruction) has been eliminated. Reconstruction was defined as including, but not limited to, addition of travel lanes and construction and reconstruction of interchanges and overcrossings along completed Interstate routes. ISTEA limits construction of additional lanes using Interstate Maintenance funds only when they are used as High Occupancy Vehicle (HOV) lanes. ISTEA did add Preventive Maintenance as an eligible activity when "a state can demonstrate, through its pavement management system, that such activities are a cost-effective means of extending Interstate pavement life." The funding for these projects is 90% federal, 10% state.

National Highway System - Funds were developed to provide an interconnected system of Principal Arterial routes which serve major population centers, international border crossings, ports, airports, public transportation facilities and other intermodal transportation facilities and serve interstate and interregional travel. Highways included in the proposed NHS system include the Interstate System and other urban and rural principal arterials and highways (refer to Attachment 1).

This system replaced the Federal Aid primary, secondary and urban systems. The following projects are eligible for NHS fundings:

1. Construction, reconstruction, resurfacing, restoration and rehabilitation of the system.
2. Operational improvements.
3. Construction and/or operational improvements to a Federal-Aid Highway not on the NHS if:
 - a) the proposed project is in the same corridor and in proximity to a fully access controlled highway designated for the NHS.
 - b) the improvement will improve the level of service on the fully access controlled highways and regional travel.
 - c) the improvement is more cost-effective than an improvement to the fully access controlled highway.
4. Highway safety improvements.
5. Transportation planning.
6. Highway research and planning.
7. Highway-related technology transfer activities.

8. Startup costs for traffic management and control.
9. Fringe and corridor parking facilities.
10. Carpool and vanpool projects.
11. Bicycle transportation and pedestrian walkways.
12. Development and establishment of management systems.
 - Bridge
 - Pavement
 - Traffic Congestion
 - Highway Safety
 - Public Transportation Facilities and Equipment
 - Intermodal Transportation Facilities and Systems
13. Wetlands mitigation efforts and wetlands mitigation.

These projects are funded 80% federal, 20% state, unless the work is for an HOV lane. The percentage is then 90-10.

Congestion Mitigation and Air Quality Improvement Program - This new program was established for projects that:

1. Would be likely to contribute to the attainment of a national air quality standard or;
2. Are included in a State Implementation plan that has been approved pursuant to the Clean Air Act and will have air quality benefits.

No funds are to be provided under this program for construction of new capacity unless the project is limited to high occupancy vehicles in peak hours. These projects are funded 80% federal, 20% state.

Surface Transportation Program - This program combined and expanded several of the previous programs including urban system, rural secondary, Hazard Elimination, and Rail Highway Crossings. Projects included in this program are:

1. Construction, reconstruction, rehabilitation, restoration, resurfacing and operational improvements for highways and bridges including seismic retrofit and painting and application of calcium magnesium acetate on bridges and approaches and mitigation of damage to wildlife.
2. Capital costs for Transit projects eligible for assistance under the Federal Transit Authority and publicly owned intracity or intercity bus terminals and facilities.
3. Carpool projects, fringes and corridor parking facilities and programs and bicycle transportation and pedestrian walkways.

4. Highway and Transit safety improvements and programs, hazard elimination, projects to mitigate hazards caused by wildlife and railway highway grade crossings.
5. Highway and Transit research and development and technology transfer programs.
6. Capital and operating costs for traffic monitoring, management and control facilities and programs.
7. Surface transportation and planning programs.
8. Transportation Enhancement activities.
9. Transportation Control Measures listed in certain sections of the Clean Air Act.
10. Development and establishment of management systems.
11. Participation in wetlands mitigation efforts.

Of the funds provided under this program, at least 10% must be made available for safety projects (the old Hazard Elimination and Rail Highway Crossing programs). Another 10% must be available for Transportation Enhancement projects. Of the balance, 62.5% must be spent in urbanized areas over 200,000 population and in other areas of the State in proportion to the relative share both such areas are of the State's population, and the remaining 37.5% in any area of the state, rural or urban.

Transportation Enhancement Projects mentioned above include:

- provision of facilities for pedestrians and bicycles.
- acquisition of scenic enhancements.
- scenic or historic highway programs.
- landscape and other scenic beautification.
- historic preservation.
- rehabilitation and operation of historic transportation buildings, structures or facilities.
- preservation of abandoned railway corridors.
- control of outdoor advertising.
- archaeological planning and research.
- mitigation of water pollution due to highway runoff.

The funding for these projects is 80% federal, 20% state, except that certain safety projects are eligible for 100% federal fundings.

In addition ISTEA provided for several categories of Demonstration funds including, for New Jersey:

1. High Cost Bridge Projects - Ocean City-Longport Bridge.
2. Urban Access and Urban Mobility - Route 21 Freeway, Molly Ann's Brook Bridge, I-78 Ramps, United Hospital Parking Facility, Route 1 Widening, Raritan River Bridge

Crossing Study, I-280 Interchange and Ramps, Route 4 & 17 Interchange, Bridges over Route 4, Beckett Street Terminal.

3. Innovative Projects - Route 21 Viaduct, Route 21 Widening, Paulsboro Bridge.

These projects are all funded at an 80% federal, 20% state ratio.

The remaining major funding categories below remained as under previous legislation except that Bridge Painting and use of calcium magnesium acetate are now eligible activities under the Bridge Program.

Interstate Completion - Funds provided under this section are to be used for completion of gaps in the Interstate System and those sections of highway, although designated interstate, which were not constructed to interstate standards.

Bridge Replacement and Rehabilitation - Funds under this category are to be used to repair or replace structurally deficient bridges. Bridges both on the federal highway system and off the system are eligible. 65% of these funds must be spent on "On System Bridges", 15% on "Off System Bridges", the remaining 20% can be spent on either.

Interstate Substitution - Title 23 of the US Code permits states to seek withdrawal of any route or portion thereof on the Interstate System if it is determined that this route or portion of route is not essential to the completion of a unified and connected interstate system. When approval to withdraw is received, the value of the route as determined by the 1983 Interstate Cost Estimate is then made available to substitute highway and transit projects. These projects must serve the area or areas which would have served the area from which the interstate route was withdrawn. New Jersey has withdrawn and had substitute funds made available for I-95 and 695 in central New Jersey and I-895 in Burlington County and I-495 in Hudson County.

ISTEA also provided for various miscellaneous categories including highway timber bridges for repair of timber bridges, metropolitan planning for funding of the various metropolitan organizations, emergency relief for repair of damages by natural disasters and various other demonstration projects and special allocations made under the Annual Federal Highway Appropriations Bills.

A provision of ISTEA also allows expenditures by Toll Authorities to serve as credit for having matched available FHWA funds, thereby enabling projects to be funded 100% federal with a "soft match".

Attachment 1 - New Jersey's National Transportation System



RAIL COMPONENT

**New Jersey's National Transportation System
Rail Mileage Summary By Line**

RAIL NAME	PASSENGER LINE MILEAGE	
	End Points and Service	TOTAL
Main Line	Suffern to West End, service to Hoboken	29.10
Bergen County Line	Ridgewood to West End, service Suffern to Hoboken	16.80
Pascack Valley Line	Spring Valley to Pascack Junction, service to Hoboken	22.60
Morris and Essex Line	Netcong to Hoboken, service to Hoboken	47.90
Boonton Line	Denville to West End, service Netcong to Hoboken	32.10
Gladstone Branch	Gladstone to Summit, service to Hoboken	22.10
Montclair Branch	Bay Street to Roseville, service to Hoboken	3.80
Raritan Valley Line	High Bridge to Hunter Tower, service to NPS to PSNY	45.00
Northeast Corridor	Trenton to PSNY, service to NPS to PSNY	58.10
North Jersey Coast	Bay Heat to Union Interlocking, service to NPS to PSNY	44.80
Atlantic City Line	State Line to Atlantic City	52.00
Princeton Branch	Princeton Junction to Princeton	5.00
PATCO	Lindenwald to Camden	13.70
PATH Line	Newark to Hoboken	8.00
PATH Line	Journal Square to Exchange Place	4.00
TOTAL		405.00

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RAIL NAME	FREIGHT LINE MILEAGE	
	End Points and Service	TOTAL
NYS&W	Little Ferry to State Line	74.00
Conrail	West Trenton to Bound Brook	28.00
Conrail	Phillipsburg to Newark	63.00
Conrail	Delaware River Bridge to Camden	6.00
NEC Amtrak/Conrail	Trenton to Newark	50.00
Conrail	Hoboken to State Line	23.00
Conrail	Weehawken to State Line	19.00
Conrail	Camden to Hammonton	16.00
TOTAL		279.00

HIGHWAY COMPONENT



New Jersey's National Transportation System Highway Mileage Summary By County

COUNTY	MILEAGE			
	Rural	Urbanized	Small Urban	TOTAL
Atlantic	55.36	60.83	15.03	131.22
Bergen	0.00	109.87	0.00	109.87
Burlington	86.97	89.41	2.90	179.28
Camden	15.38	109.06	0.00	124.44
Cape May	44.97	7.30	0.90	53.17
Cumberland	18.49	23.75	4.13	46.37
Essex	0.00	85.89	0.00	85.89
Gloucester	47.19	49.94	0.00	97.13
Hudson	0.00	75.10	0.00	75.10
Hunterdon	61.88	0.00	0.00	61.88
Mercer	18.91	104.75	0.00	123.66
Middlesex	22.69	119.29	0.00	141.98
Monmouth	37.05	114.98	0.00	152.03
Morris	17.78	98.82	0.00	116.60
Ocean	49.79	52.41	9.13	111.33
Passaic	0.00	65.46	0.00	65.46
Salem	43.37	12.62	1.84	57.83
Somerset	15.75	66.05	0.00	81.80
Sussex	65.34	1.68	2.43	69.45
Union	0.00	59.49	0.00	59.49
Warren	62.71	9.78	3.39	75.88
SUBTOTAL	663.63	1,316.48	39.75	2,019.86
*DEDUCTION	0.00	72.26	0.00	72.26
TOTAL	663.63	1,244.22	39.75	1,947.60

*As stated in FHWA's "Instructions for Developing the Proposed National Highway System: Attachment 5 -- Special Instruction, paragraph 4", if a parkway is identified in a State's NHS and trucks are excluded from that parkway, a parallel facility to accommodate trucks may be included without the State having to count the additional mileage against its original target mileage. In New Jersey, the Garden State Parkway north of Exit 105, excludes trucks. Since this facility is identified as an NHS route, the following 72.26 miles of parallel/alternate truck routes (also on the NHS) have been deducted from New Jersey's mileage.

NJ 35	Milepost 29.38 to 49.36 (NJ 36 to U.S. 9)	19.98
U.S. 9	Milepost 129.80 to 136.25 (NJ 35 to U.S. 1&9)	6.45
U.S. 1&9	Milepost 35.97 to 47.80 (U.S. 9 to NJ 21)	11.83
NJ 21	Milepost 0.00 to 9.33 (U.S. 1&9 to NJ 3)	9.33
NJ 3	Milepost 4.85 to 6.39 (NJ 21 to NJ 17)	1.54
NJ 17	Milepost 3.68 to 26.81 (NJ 3 to I-287)	<u>23.13</u>
		72.26 miles

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
I-76	1. Interstate 2. STRAHNET route 3. National truck route	Milepost 0.00 to 3.04 -- I-295 to PA/NJ State Line	Camden		3.04		3.04
			TOTAL	0.00	3.04	0.00	3.04
I-78	1. Interstate 2. STRAHNET route 3. National truck route	Milepost 0.00 to 67.83 -- PA/NJ State Line to NY/NJ State Line	Warren	3.11	3.92		7.03
			Hunterdon	19.69			19.69
			Somerset	6.26	9.76		16.02
			Union		10.62		10.62
			Essex		7.24		7.24
			Hudson		7.23		7.23
			TOTAL	29.06	38.77	0.00	67.83
I-80	1. Interstate 2. STRAHNET route 3. National truck route	Milepost 0.00 to 68.10 -- PA/NJ State Line to I-95	Warren	22.40			22.40
			Sussex	0.82			0.82
			Morris	3.09	22.09		25.18
			Essex		4.45		4.45
			Passaic		7.62		7.62
			Bergen		7.63		7.63
			TOTAL	26.31	41.79	0.00	68.10
I-95	1. Interstate 2. STRAHNET route 3. National truck route	Milepost 0.00 to 62.67 -- PA/NJ State Line to East/West alignment diverge; Milepost 62.67 to 71.30 -- Eastern alignment; Milepost 62.67 to 71.30 -- Western alignment; Milepost 71.30 to 77.96 -- East/West alignment merge to NY/NJ State Line	Burlington	7.65	3.90		11.55
			Mercer	7.47	4.38		11.85
			Middlesex	6.82	20.66		27.48
			Union		7.30		7.30
			Essex		4.34		4.34
			Hudson		9.74		9.74
			Bergen		14.33		14.33
TOTAL	21.94	64.65	0.00	86.59			

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
I-195	1. Interstate 2. STRAHNET route 3. National truck route	Milepost 0.00 to 34.17 - I-295/NJ 29 Freeway to NJ 138.	Mercer	2.48	5.85		8.33
			Monmouth	13.37	3.54		16.91
			Ocean	8.93			8.93
			TOTAL	24.78	9.39	0.00	34.17
I-278	1. Interstate 2. STRAHNET route 3. National truck route	Milepost 0.00 to 2.00 - U.S. 1&9 to NY/NJ State Line.	Union		2.00		2.00
			TOTAL	0.00	2.00	0.00	2.00
I-280	1. Interstate 2. STRAHNET route 3. National truck route	Milepost 0.00 to 17.85 - I-80/U.S. 46 to I-95 (East and West alignment of NJ Turnpike).	Morris		3.32		3.32
			Essex		11.21		11.21
			Hudson		3.32		3.32
			TOTAL	0.00	17.85	0.00	17.85
I-287	1. Interstate 2. STRAHNET route 3. National truck route	Milepost 0.00 to 67.54 - I-95/NJ 440 to NY/NJ State Line. Includes proposed section.	Middlesex		10.24		10.24
			Somerset	1.68	18.25		19.93
			Morris	1.68	22.03		23.71
			Passaic		3.30		3.30
			Bergen		10.36		10.36
			TOTAL	3.36	64.18	0.00	67.54
I-295	1. Interstate 2. STRAHNET route 3. National truck route	Milepost 0.00 to 76.96 - DE/NJ State Line to PA/NJ State Line. Includes proposed section.	Salem	3.58	5.35		8.93
			Gloucester	7.51	9.29		16.80
			Camden		10.11		10.11
			Burlington	5.40	16.48		21.88
			Mercer		19.24		19.24
			TOTAL	16.49	60.47	0.00	76.96
I-676	1. Interstate 2. STRAHNET route 3. National truck route	Milepost 0.00 to 4.75 - I-76 to PA/NJ State Line.	Camden		4.75		4.75
			TOTAL	0.00	4.75		4.75

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
U.S. 1	1. Principal Arterial 2. Serves interregional travel 3. Commercial route	Milepost 0.00 to 64.90 - PA/NJ State Line to NY/NJ State Line (G.W. Bridge).	Mercer		11.97		11.97
			Middlesex		26.37		26.37
			Union		7.86		7.86
			Essex		5.66		5.66
			Hudson		8.77		8.77
			Bergen		4.27		4.27
			TOTAL	0.0	64.90	0.00	64.90
U.S. 1 Truck	1. Principal Arterial 2. Commercial route	Milepost 0.00 to 4.11 - U.S. 1&9 to U.S. 1&9/ NJ 139	Essex		0.67		0.67
			Hudson		3.44		3.44
			Total	0.0	4.11	0.00	4.11
U.S. 9	1. Principal Arterial 2. Major travel corridor 3. STRAHNET major connector (NJ 70 to I-195)	Milepost 0.00 to 3.06 - Lewes Ferry Terminal to NJ 109; Milepost 16.79 to 18.58 - Co. 601 to NJ 83; Milepost 32.20 to 33.19 - Garden State Parkway to NJ 52; Milepost 94.51 to 136.25 - Garden State Parkway to U.S. 1	Cape May	4.85			4.85
			Atlantic		0.99		0.99
			Ocean		8.52		8.52
			Monmouth	2.58	15.90		18.48
			Middlesex		14.74		14.74
			TOTAL	7.43	40.15	0.00	47.58
U.S. 22	1. Principal Arterial 2. Major travel corridor 3. Commercial route	Milepost 0.00 to 4.68 -PA/ NJ State Line to I-78; Milepost 33.88 to 60.53 - U.S. 202/206 to U.S. 1&9.	Warren		4.68		4.68
			Somerset		13.14		13.14
			Union		11.37		11.37
			Essex		2.14		2.14
			Total	0.0	31.33	0.00	31.33
U.S. 30	1. Principal Arterial 2. Serves recreational area 3. Provides rural/urban connectivity	Milepost 1.20 to 3.13 - I-676 to U.S. 130 (beginning of coincident route); Milepost 4.26 to 58.23 - U.S. 130 (end of coincident route) to Adriatic Avenue.	Camden	4.35	21.27		25.62
			Atlantic	13.55	12.08	4.65	30.28
			TOTAL	17.90	33.35	4.65	55.90

New Jersey's National Transportation System -- Highway Route Description Line

Route or	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small	TOTAL

Street Name						Urban	
U.S. 40	1. Principal Arterial 2. Serves recreational area 3. Provides rural/urban connectivity	Milepost 1.85 to 64.30 - NJ Turnpike to Atlantic Avenue	Salem	22.58	0.17		22.75
			Gloucester	0.94	7.19		8.13
			Atlantic	18.70	12.87		31.57
			TOTAL	42.22	20.23	0.00	62.45
U.S. 46	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 10.00 - I-80 to NJ 31; Milepost 21.67 to 33.25 - NJ 182 to NJ 10; Milepost 56.20 to 59.96 - NJ 23 to NJ 3; Milepost 63.22 to 64.32 - Proposed NJ 21 to Garden State Parkway (Interchange 157).	Warren	10.00		0.15	10.15
			Morris	3.68	7.75		11.43
			Passaic		4.49		4.49
			Bergen		0.37		0.37
			TOTAL	13.68	12.61	0.15	26.44
U.S. 130	1. Principal Arterial 2. Commercial route 3. STRAHNET major connector (Co. 545 to I-295) 4. System connectivity	Milepost 12.28 to 14.29 - U.S. 322 to I-295; Milepost 23.53 to 55.67 - I-295 to U.S. 206; Milepost 56.43 to 69.02 - U.S. 206 (end of coincident route) to Hightstown Bypass.	Gloucester	2.01	1.90		3.91
			Camden		10.27		10.27
			Burlington		21.82		21.82
			Mercer	3.34	7.40		10.74
			TOTAL	5.35	41.39	0.00	46.74
U.S. 202	1. Principal Arterial 2. STRAHNET Route (NJ 31 to I-287) 3. Provides rural/urban connectivity	Milepost 0.00 to 31.50 - PA/NJ State Line to U.S. 206 (end of coincident route); Milepost 62.98 to 65.31 - NJ 23 (beginning of coincident route) to NJ 23 (end of coincident route).	Hunterdon	17.61			17.61
			Somerset	1.39	12.50		13.89
			Passaic		2.33		2.33
			TOTAL	19.00	14.83	0.00	33.83
U.S. 206	1. Principal Arterial 2. Serves interregional travel 3. Provides rural/urban connectivity 4. STRAHNET major connector (NJ 68 to Co. 545) 5. Serves recreational area	Milepost 0.00 to 71.26 - NJ 54/U.S. 3 to U.S. 202 (beginning of coincident route); Milepost 78.32 to 95.61 - U.S. 202 (end of coincident route) to I-80 (beginning of coincident route); Milepost 97.01 to 129.77 - I-80 (end of coincident route) to PA/NJ State Line.	Atlantic			6.27	6.27
			Burlington	24.34	7.84		32.18
			Mercer	1.50	17.28		18.78
			Somerset	6.42	12.40		18.81
			Morris	6.39	6.82		13.21
			Sussex	27.94	1.68	2.43	32.05
			TOTAL	66.59	46.02	8.70	121.31

New Jersey's National Transportation System -- Highway Route Description Line

Route of Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
U.S. 322	1. Principal Arterial 2. National truck route (west of I-295) 3. Provides rural/urban connectivity	Milepost 0.00 to 24.59 - PA/NJ State Line to Co. 536 Spur.	Gloucester	19.81	4.78		24.59
			TOTAL	19.81	4.78	0.00	24.59
NJ 3	1. Principal Arterial 2. Major travel corridor 3. Commercial route	Milepost 0.00 to 10.84 - U.S. 46 to U.S. 1&9.	Passaic		4.81		4.81
			Bergen		3.68		3.68
			Hudson		2.35		2.35
			TOTAL	0.00	10.84	0.00	10.84
NJ 4	1. Principal Arterial 2. Major travel corridor	Milepost 2.10 to 10.89 - NJ 208 to I-95/U.S. 1&9.	Bergen		8.79		8.79
			TOTAL	0.00	8.79	0.00	8.79
NJ 7	1. Principal Arterial 2. Major travel corridor	Milepost 0.00 to 5.29 - U.S. 1&9 Truck to NJ 21.	Hudson		5.29		5.29
			TOTAL	0.00	5.29	0.00	5.29
NJ 10	1. Principal Arterial 2. Major travel corridor	Milepost 0.00 to 23.45 - U.S. 46 (Ledgewood Circle) to Co. 577 (Prospect Avenue)	Morris		17.72		17.72
			Essex		5.73		5.73
			TOTAL	0.00	23.45	0.00	23.45
NJ 15	1. Principal Arterial 2. Major travel corridor 3. Provides rural/urban connectivity	Milepost 2.05 to 19.52 - I-80 to U.S. 206.	Morris	2.04	4.88		6.92
			Sussex	10.55			10.55
			TOTAL	12.59	4.88	0.00	17.47

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
NJ 17	1. Principal Arterial 2. Major travel corridor 3. Commercial route	Milepost 3.68 to 26.81 - NJ 3 to I-287.	Bergen		23.13		23.13
			TOTAL	0.0	23.13	0.00	23.13
NJ 18	1. Principal Arterial 2. STRAHNET major connector (NJ 34 to I-95/NJ Turnpike) 3. Provides rural/urban connectivity	Milepost 5.38 to 43.71 - NJ 138 to Co. 514 Spur (River Road); Milepost 43.71 to 48.20 - River Road to I-287 (proposed section)	Monmouth	6.52	18.02		24.54
			Middlesex		18.28		18.28
TOTAL				6.52	36.30	0.00	42.82
NJ 19	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 2.46 - Garden State Parkway/ U.S. 46 to I-80.	Passaic		2.46		2.46
			TOTAL	0.0	2.46	0.00	2.46
NJ 20	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 4.15 - U.S. 46 to Co. 507.	Passaic		4.15		4.15
			TOTAL	0.0	4.15	0.00	4.15
NJ 21	1. Principal Arterial 2. Major travel corridor 3. Commercial route	Milepost 0.00 to 9.33 - U.S. 1&9 to NJ 3; Milepost 9.33 to 14.20 - NJ 3 to U.S. 46 (proposed section).	Essex		9.01		9.01
			Passaic		5.19		5.19
TOTAL				0.0	14.20	0.00	14.20
NJ 23	1. Principal Arterial 2. Provides rural/urban connectivity	Milepost 5.17 to 6.88 - U.S. 46 to U.S. 202 (beginning of coincident route); Milepost 9.21 to 52.53 - U.S. 202 (end of coincident route) to NY/NJ State Line.	Passaic		10.76		10.76
			Morris	0.90	7.34		8.24
Sussex	26.03		26.03				
TOTAL				26.93	18.10	0.00	45.03

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
NJ 24	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 10.59 - I-78 to I-287.	Morris Essex Union		6.87 1.99 1.73		6.87 1.99 1.73
			TOTAL	0.00	10.59	0.00	10.59
NJ 29	1. Principal Arterial 2. Provides rural/urban connectivity	Milepost 0.00 to 20.00 - I-195/I-295 to U.S. 202.	Mercer Hunterdon		17.03		17.03 2.97
			TOTAL	2.97	17.03	0.00	20.00
NJ 31	1. Principal Arterial 2. STRAHNET route (I-295 to U.S. 202) 3. Provides rural/urban connectivity	Milepost 0.00 to 16.36 - U.S. 206 to U.S. 202 (beginning of coincident route); Milepost 21.95 to 49.00 - U.S. 206 (end of coincident route) to U.S. 46.	Mercer Hunterdon Warren	4.12 21.61 8.27	8.14		12.26 21.61 9.54
			TOTAL	34.00	8.14	1.27	43.41
NJ 32	1. Principal Arterial 2. Connector of other NHS routes 3. Commercial route	Milepost 0.00 to 1.18 - U.S. 130 to N.J. Turnpike.	Middlesex	1.18			1.18
			TOTAL	1.18	0.00	0.00	1.18
NJ 33	1. Principal Arterial 2. Major travel corridor 3. Provides rural/urban connectivity	Milepost 0.00 to 7.86 - NJ 129/U.S. Route 1 to U.S. 130 (beginning of coincident route); Milepost 15.45 to 29.04 - Hightstown Bypass to Halls Mill Road; Milepost 29.35 to 37.93 - Halls Mill Road to Garden State Parkway.	Mercer Middlesex Monmouth	7.59 8.21	8.83 5.40		8.83 7.59 13.61
			TOTAL	15.80	14.23	0.00	30.03
NJ 34	1. Principal Arterial 2. STRAHNET major connector	Milepost 11.50 to 12.27 - Asbury Avenue to N.J. 18.	Monmouth	0.77			0.77
			TOTAL	0.77	0.00	0.00	0.77

New Jersey's National Transportation System -- Highway Route Description Line

				Mileage			

Route or Street Name	NHS Justification	Description and Termini	County	Rural	Urbanized	Small Urban	TOTAL
							L
NJ 35	1. Principal Arterial 2. STRAHNET major connector (NJ 36 to Co. 537) 3. Connector of other NHS routes	Milepost 15.95 to 20.22 - NJ 70/NJ 34 to NJ 138; Milepost 29.64 to 49.36 - NJ 36 to U.S. 9; Milepost 50.60 to 56.46 - U.S. 9 to U.S. 1&9.	Monmouth Middlesex		19.96 9.89		19.96 9.89
			TOTAL	0.00	29.85	0.00	29.85
NJ 36	1. Principal Arterial 2. STRAHNET major connector (GSP to Wyckoff Road) 3. Serves recreational area	Milepost 0.00 to 24.40 - Garden State Parkway to NJ 35.	Monmouth		24.40		24.40
			TOTAL	0.00	24.40	0.00	24.40
NJ 37	1. Principal Arterial 2. Serves recreational area 3. Barrier Island evacuation route	Milepost 0.00 to 13.42 -NJ 70 to NJ 35.	Ocean		13.42		13.42
			TOTAL	0.00	13.42	0.00	13.42
NJ 38	1. Principal Arterial 2. Major travel corridor	Milepost 0.00 to 9.60 - U.S. 30/U.S. 130 to I-295.	Camden Burlington		4.38 5.22		4.38 5.22
			TOTAL	0.00	9.60	0.00	9.60
NJ 42	1. Principal Arterial 2. Major travel corridor 3. National truck route	Milepost 6.23 to 14.28 - Atlantic City Expressway/NJ 138 to I-295.	Gloucester Camden		2.38 5.67		2.38 5.67
			TOTAL	0.00	8.05	0.00	8.05
NJ 47	1. Principal Arterial 2. Serves recreational area 3. Connector of other NHS routes	Milepost 0.00 to 3.15 - Atlantic Avenue to Garden State Parkway; Milepost 17.50 to 20.80 - NJ 83 to Co. 670; miles to 31.81 to 34.83 - Co. 670 to NJ 55.	Cape May Cumberland	6.45 3.02			6.45 3.02
			TOTAL	9.47	0.00	0.00	9.47

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage
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				Rural	Urbanized	Small Urban	TOTAL
NJ 49	1. Principal Arterial 2. Provides rural/urban connectivity	Milepost 0.00 to 37.85 - I-295/U.S. 40 to NJ 55.	Salem Cumberland	10.77 7.89	6.17 7.05	1.84 4.13	18.78 19.07
			TOTAL	18.66	13.22	5.97	37.85
NJ 52	1. Principal Arterial 2. Barrier Island evacuation route	Milepost 0.00 to 2.74 - Palen Avenue to U.S. 9.	Cape May Atlantic		1.90 0.84		1.90 0.84
			TOTAL	0.00	2.74	0.00	2.74
NJ 55	1. Principal Arterial 2. Major travel corridor 3. provides rural/urban connectivity 4. Commercial route	Milepost 20.00 to 60.53 - NJ 47 to NJ 42.	Cumberland Gloucester	1.75 6.81	16.70 15.27		18.45 22.08
			TOTAL	8.56	31.97	0.00	40.53
NJ 57	1. Principal Arterial 2. Provides rural/urban connectivity	Milepost 0.00 to 21.10 - U.S. 22 to NJ 182.	Warren	18.93	1.18	0.99	21.10
			TOTAL	18.93	1.18	0.99	21.10
NJ 63	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 3.11 - Co. 501 to U.S. 1&9.	Bergen Hudson		3.03 0.08		3.03 0.08
			TOTAL	0.00	3.11	0.00	3.11
NJ 68	1. STRAHNET major connector 2. Provides rural/urban connectivity	Milepost 0.00 to 8.02 - Co. 616 to U.S. 206.	Burlington	6.93		1.09	8.02
			TOTAL	6.93	0.00	1.09	8.02

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
NJ 70	1. Principal Arterial 2. STRAHNET major connector (Co. 547 to U.S. 9) 3. Provides rural/urban connectivity	Milepost 0.00 to 59.84 - NJ 38 to NJ 34/NJ 35.	Camden	17.53	7.38		7.38
			Burlington	7.18	8.54		26.07
			Ocean		17.72		24.90
			Monmouth		1.49		1.49
			TOTAL	24.71	35.13	0.00	59.84
NJ 72	2. Principal Arterial 2. Serves recreational area 3. Barrier Island evacuation route	Milepost 0.00 to 28.72 - NJ 70 to Co. 607.	Burlington	11.47			11.47
			Ocean	11.87		5.38	17.25
			TOTAL	23.34	0.00	5.38	28.72
NJ 73	1. Principal Arterial 2. Major travel corridor 3. Commercial route	Milepost 6.06 to 34.60 - Atlantic City Expressway to PA/NJ State Line.	Camden	4.08	12.58		16.66
			Burlington		11.88		11.88
			TOTAL	4.08	24.46	0.00	28.54
NJ 81	1. Interstate 2. STRAHNET major connector (I-95/NJ Turnpike to Co. 624) 3. National truck route	Milepost 0.00 to 1.16 - I-95/NJ Turnpike to U.S. 1&9.	Union		1.16		1.16
			TOTAL	0.00	1.16	0.00	1.16
NJ 83	1. Principal Arterial 2. Serves recreational area 3. Connector of other NHS routes	Milepost 0.00 to 3.84 -NJ 47 to U.S. 9.	Cape May	3.84			3.84
			TOTAL	3.84	0.00	0.00	3.84
NJ 87	1. Principal Arterial 2. Barrier Island evacuation route	Milepost 0.00 to 1.72 - U.S. 30 to Brigantine Boulevard.	Atlantic		1.72		1.72
			TOTAL	0.00	1.72	0.00	1.72

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
NJ 90	1. Principal Arterial 2. Major travel corridor	Milepost 0.00 to 3.22- PA/NJ State Line to NJ 73.	Camden Burlington		3.03 0.19		3.03 0.19
			TOTAL	0.00	3.22	0.00	3.22
NJ 92	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 7.10 - NJ 32 to U.S. 1. - Proposed Route -	Middlesex	7.10			7.10
			TOTAL	7.10	0.00	0.00	7.10
NJ 109	1. Principal Arterial 2. Route to Lewes Ferry Terminal 3. Connector of other NHS routes	Milepost 2.31 to 3.06 - Garden State Parkway to U.S. 9.	Cape May	0.75			0.75
			TOTAL	0.75	0.00	0.00	0.75
NJ 124	1. Principal Arterial 2. Connector of other NHS routes	Milepost 11.81 to 14.84 - I-78 to Co. 603.	Union Essex		1.57 1.46		1.57 1.46
			TOTAL	0.00	3.03	0.00	3.03
NJ 129	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 2.41 - Lambertson Road to U.S. 1. - Proposed Route -	Mercer		2.41		2.41
			TOTAL	0.00	2.41	0.00	2.41
NJ 138	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 3.34 - I--295 to NJ 35.	Monmouth	0.72	2.62		3.34
			TOTAL	0.72	2.62	0.00	3.34

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
NJ 139	1. Principal Arterial 2. Commercial route	Milepost 0.00 to 1.13 - U.S. 1&9 to I-78 (Hudson County Extension).	Hudson		1.13		1.13
			TOTAL	0.00	1.13	0.00	1.13
NJ 147	1. Principal Arterial 2. Serves recreational area 3. Barrier Island evacuation route	Milepost 0.28 to 4.20 - Garden State Parkway to New York Avenue.	Cape May	3.02		0.90	3.92
			TOAL	3.02	0.00	0.90	3.92
NJ 169	1. Interstate 2. STRAHNET major connector (I-78 to Port Terminal Road)	Milepost 0.80 to 4.25 - NJ 440/Co. 501 to I-78 (Hudson County Extension).	Hudson		3.45		3.45
			TOTAL	0.00	3.45	0.00	3.45
NJ 182	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 0.98 - NJ 57 to U.S. 46.	Warren			0.98	0.98
			TOTAL	0.00	0.00	0.98	0.98
NJ 208	1. Principal Arterial 2. Major travel corridor	Milepost 0.00 to 9.83 - NJ 4 to I-287.	Bergen Passaic		8.15 1.68		8.15 1.68
			TOTAL	0.00	9.83	0.00	9.83
NJ 440	1. Principal Arterial 2. Major travel corridor 3. National truck route 4. System connectivity	Milepost 0.00 to 5.15 - I-287/I-95 to NY/NJ State Line; Milepost 20.68 to 23.28 - NJ 169 to U.S. 1&9 Truck.	Middlesex Hudson		5.15 2.60		5.15 2.60
			TOTAL	0.00	7.75	0.00	7.75

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
NJ 495	1. Principal Arterial 2. Major travel corridor 3. Commercial route	Milepost 0.00 to 3.43 - I-95/ NJ Turnpike to NY/NJ State Line.	Hudson		3.43		3.43
			TOTAL	0.00	3.43	0.00	3.43
Atlantic City Expressway	1. Principal Arterial 2. Major travel corridor 3. National truck route 4. Serves recreational area	Milepost 0.00 to 44.20 - NJ 42 to Baltic Ave.	Atlantic	14.04	11.10	4.11	29.25
			Camden	6.95	6.75		13.70
			Gloucester		1.25		1.25
			TOTAL	20.99	19.10	4.11	44.20
Garden State Parkway	1. Principal Arterial 2. Major travel corridor 3. STRAHNET major connector (GSP Spur/NJ 36 to I-95) 4. Serves interregional travel 5. Provides rural/urban connectivity	Milepost 0.00 to 170.80 - NJ 109 to NY/NJ State Line.	Cape May	22.80	5.40		28.20
			Atlantic	6.85	13.20		20.05
			Burlington	6.95			6.95
			Ocean	21.00	12.75	3.75	37.50
			Monmouth	4.88	21.84		26.72
			Middlesex		13.96		13.96
			Union		8.62		8.62
			Essex		10.45		10.45
			Passaic		4.45		4.45
			Bergen		13.90		13.90
			TOTAL	62.48	104.57	3.75	170.80
Garden State Parkway Spur	1. Principal Arterial 2. STRAHNET major connector 3. Connector of other NHS routes	Milepost 0.00 to 0.50 - Garden State Parkway to NJ 36.	Monmouth		0.50		0.50
			TOTAL	0.00	0.50	0.00	0.50
New Jersey Turnpike	1. Principal Arterial 2. Major travel corridor 3. National truck route 4. Serves interregional travel	Milepost 0.47 to 51.45 - I-295 to Pennsylvania Extension.	Salem	6.44	0.93		7.37
			Gloucester	10.11	6.66		16.77
			Camden		8.86		8.86
			Burlington	4.70	13.28		17.98
			TOTAL	21.25	29.73	0.00	50.98

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
Palisades Interstate Parkway	1. Principal Arterial 2. Major travel corridor	Milepost 0.00 to 11.06 - I-95 to NY/NJ State Line.	Bergen		11.06		11.06
			TOTAL	0.00	11.06	0.00	11.06
Palisades Interstate Parkway Spur	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 0.42 - U.S. 9W to Palisades Interstate Parkway.	Bergen		0.42		0.42
			TOTAL	0.00	0.42	0.00	0.42
Co. 501	1. Principal Arterial 2. Connector of other NHS routes	Milepost 12.71 to 26.62 - Bayonne Bridge to NJ 63.	Hudson		13.90		13.90
			TOTAL	0.00	13.90	0.00	13.90
Co. 504	1. Principal Arterial 2. Connector of other NHS routes	Milepost 6.68 to 8.24 - Co. 673 to Co. 689.	Passaic		1.56		1.56
			Total	0.00	1.56	0.00	1.56
Co. 507	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 0.75 - NJ 20 to NJ 208.	Bergen		0.75		0.75
			TOTAL	0.00	0.75	0.00	0.75
Co. 509	1. Principal Arterial 2. Connector of other NHS routes	Milepost 24.25 to 24.75 - I-80 to Cianci Street.	Passaic		0.50		0.50
			TOTAL	0.00	0.50	0.00	0.50

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
Co. 510 (Raymond Blvd.)	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 1.89 - U.S. 1&9 to Raymond Boulevard/Springfield Avenue split.	Essex		1.89		1.89
			TOTAL	0.00	1.89	0.00	1.89
Co. 510 (Springfield Ave.)	1. Principal Arterial 2. Connector of other NHS routes	Milepost 28.92 to 29.99 - Co. 510 split to Raymond Boulevard.	Essex		1.07		1.07
			TOTAL	0.00	1.07	0.00	1.07
Co. 536 Spur	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 1.54 - U.S. 322 to Atlantic City Expressway.	Gloucester Camden		1.22 0.32		1.22 0.32
			TOTAL	0.00	1.54	0.00	1.54
Co. 537	1. STRAHNET major connector	Milepost 27.34 to 28.32 - Co. 545 to NJ 68.	Burlington	0.98			0.98
			TOTAL	0.98	0.00	0.00	0.98
Co. 545	1. STRAHNET major connector	Milepost 6.59 to 6.94 - Co. 680 (McGuire Air Force Base Access Road) to Co. 537; Milepost 13.79 to 14.05 - U.S. 206 to U.S. 130.	Burlington	0.35	0.26		0.61
			TOTAL	0.35	0.26	0.00	0.61
Co. 547	1. STRAHNET major connector	Milepost 0.00 to 0.81 - Rt. 70 North to Lakehurst Air Force Base Entrance.	Ocean	0.81			0.81
			TOTAL	0.81	0.00	0.00	0.81

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
Co. 563	1. Serves Atlantic City Airport	Milepost 6.78 to 13.63 - U.S. 40/322 to U.S. 30.	Atlantic	2.22	4.63		6.85
			TOTAL	2.22	4.63	0.00	6.85
Co. 577	1. Principal Arterial 2. Connector of other NHS routes	Milepost 9.73 to 11.00 - Mt. Pleasant Avenue to I-280.	Essex		1.27		1.27
			TOTAL	0.00	1.27	0.00	1.27
Co. 601	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 0.50 - Garden State Parkway to U.S. 9.	Cape May	0.50			0.50
			TOTAL	0.50	0.00	0.00	0.50
Co. 601 (Main Street)	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 6.73 - NJ 3 to I-80.	Passaic		6.73		6.73
			TOTAL	0.00	6.73	0.00	6.73
Co. 602 (Second Street)	1. Serves port facility	Milepost 0.00 to 1.21 - Ferry Street to Mickle Boulevard.	Camden		1.21		1.21
			TOTAL	0.00	1.21	0.00	1.21
Co. 603 (Ferry Street)	1. Serves port facility	Milepost 0.00 to 0.57 - Broadway Avenue to Second Street.	Camden		0.57		0.57
			TOTAL	0.00	0.57	0.00	0.57

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
Co. 603 (Springfield Avenue)	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 3.72 - NJ 124 to Co. 510.	Essex		3.72		3.72
			TOTAL	0.00	3.72	0.00	3.72
Co. 624 (North Avenue)	1. Serves port facility 2. STRAHNET major connector (NJ 81 to McLester Street)	Milepost 0.66 to 2.50 - U.S. 1&9 to McLester Street.	Union		1.84		1.84
			TOTAL	0.00	1.84	0.00	1.84
Co. 659	1. Principal Arterial 2. Connector of other NHS routes	Milepost 1.16 to 1.33 - Mt. Pleasant Avenue to Main Street.	Essex		0.17		0.17
			TOTAL	0.00	0.17	0.00	0.17
Co. 670	1. Principal Arterial 2. Serves recreational area 3. Connector of other NHS routes	Milepost 0.00 to 8.59 - NJ 47 to NJ 47.	Cape May Cumberland	2.76 5.83			2.76 5.83
			TOTAL	8.59	0.00	0.00	8.59
Co. 673	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 2.43 - Co. 655 to Co. 504; Milepost 25.06 to 25.16 - Cianci Street to Co. 655.	Passaic		2.53		2.53
			TOTAL	0.00	2.53	0.00	2.53
Co. 680 (McGuire Air Force Base Access Road)	1. STRAHNET major connector	Milepost 0.00 to 2.48 - McGuire Air Force Base to Co. 545.	Burlington	0.67		1.81	2.48
			TOTAL	0.67	0.00	1.81	2.48

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
County Avenue	1. Access to intermodal facilities	Milepost 1.29 to 2.54 - County Road to I-95 (Exit 16E).	Hudson		1.25		1.25
			TOTAL	0.00	1.25	0.00	1.25
County Road	1. Access to intermodal facilities	Milepost 0.00 to 1.27 - U.S. 1&9 to County Avenue.	Hudson		1.27		1.27
			TOTAL	0.00	1.27	0.00	1.27
Doremus Avenue	1. Serves port facility	Milepost 0.27 to 2.68 - Port Street to U.S 1&9 Truck.	Essex		2.41		2.41
			TOTAL	0.00	2.41	0.00	2.41
Dowd Avenue	1. Access to intermodal facilities	Milepost 0.00 to 1.23 - Trumball Street to North Avenue.	Union		1.23		1.23
			TOTAL	0.00	1.23	0.00	1.23
Fish House Road	1. Access to intermodal facilities	Milepost 0.00 to 1.41 - Central Avenue to NJ 7.	Hudson		1.41		1.41
			TOTAL	0.00	1.41	0.00	1.41
Halls Mill Road	1. Principal Arterial 2. Connector of other NHS routes	Milepost 1.24 to 2.26 - NJ 33 to NJ 33 Business.	Monmouth		1.02		1.02
			TOTAL	0.00	1.02	0.00	1.02

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
Co. 689	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 3.13 - Co. 504 to U.S. 202/NJ 23.	Passaic		3.13		3.13
			TOTAL	0.00	3.13	0.00	3.13
36th Street	1. Serves port facility	Milepost 0.00 to 0.76 - Pettys Island to River Road.	Camden		0.76		0.76
			TOTAL	0.00	0.76	0.00	0.76
Arkansas Avenue	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 0.32 - Atlantic Avenue to Atlantic City Expressway.	Atlantic		0.32		0.32
			TOTAL	0.00	0.32	0.00	0.32
Aruba Street	1. Serves port facility	Milepost 0.00 to 0.30 - Lyle King Street to North Fleet Street.	Union		0.30		0.30
			TOTAL	0.00	0.30	0.00	0.30
Atlantic Avenue	1. Serves port facility	Milepost 0.00 to 0.72 - Ferry Street to I-676.	Camden		0.72		0.72
			TOTAL	0.00	0.72	0.00	0.72
Atlantic Avenue	1. Principal Arterial 2. Connector of other NHS routes	Milepost 5.46 to 7.40 - U.S. 40/322 to Virginia Avenue.	Atlantic		1.94		1.94
			TOTAL	0.00	1.94	0.00	1.94

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
Bay Avenue Extension	1. Serves port facility	Milepost 0.00 to 0.50 - McLester Street to Corbin Street.	Union		0.50		0.50
			TOTAL	0.00	0.50	0.00	0.50
Broad Street	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 2.21 - NJ 21 to I-80.	Essex		2.21		2.21
			TOTAL	0.00	2.21	0.00	2.21
Broadway Avenue	1. Principal Arterial 2. Serves port facility	Milepost 0.00 to 1.16 - Morgan Boulevard to King Street.	Camden		1.16		1.16
			TOTAL	0.00	1.16	0.00	1.16
Central Avenue	1. Access to intermodal facilities	Milepost 1.41 to 2.07 - U.S. 1&9 Truck to Fish House Road.	Hudson		0.66		0.66
			TOTAL	0.00	0.66	0.00	0.66
Cianci Street	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 0.50 - Co. 509 to Co. 673.	Passaic		0.50		0.50
			TOTAL	0.00	0.50	0.00	0.50
Corbin Street	1. Serves port facility	Milepost 0.00 to 1.20 - Lyle King Boulevard to Port Street.	Union		0.66		0.66
			Essex		0.54		0.54
			TOTAL	0.00	1.20	0.00	1.20

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
Haynes Avenue	1. Serves Newark International Airport	Milepost 0.00 to 0.57 - Frelinghuysen Avenue to U.S 1&9.	Essex		0.57		0.57
			TOTAL	0.00	0.57	0.00	0.57
Hightstown Bypass	1. Principal Arterial 2. Major travel corridor 3. Provides rural/urban connectivity	Milepost 1.18 to 3.40 - U.S. 130 to NJ 33. - Proposed Route -	Mercer		2.22		2.22
			TOTAL	0.00	2.22	0.00	2.22
Kapkowski Road	1. Serves port facility	Milepost 0.00 to 0.80 - Trumbull Street to North Avenue. - Proposed Route -	Union		0.80		0.80
			TOTAL	0.00	0.80	0.00	0.80
King Street	1. Serves port facility	Milepost 0.00 to 0.78 - Water Street to Broadway Avenue.	Camden		0.78		0.78
			TOTAL	0.00	0.78	0.00	0.78
Lyle King Street	1. Serves port facility	Milepost 0.00 to 0.50 - McLester Street to Corbin Street.	Union		0.50		0.50
			TOTAL	0.00	0.50	0.00	0.50
Main Street	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 2.70 - Co. 659 to Market Street.	Essex		2.70		2.70
			TOTAL	0.00	2.70	0.00	2.70

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
Market Street	1. Principal Arterial 2. Connector of other NHS routes	Milepost 2.70 to 4.43 - Main Street to Co. 510 (Springfield Avenue).	Essex		1.73		1.73
			TOTAL	0.00	1.73	0.00	1.73
Mickle Boulevard	1. Serves port facility	Milepost 0.00 to 0.73 - Second Street to I-676.	Camden		0.73		0.73
			TOTAL	0.00	0.73	0.00	0.73
Missouri Avenue	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 0.32 - Atlantic City Expressway to Atlantic Avenue.	Atlantic		0.32		0.32
			TOTAL	0.00	0.32	0.00	0.32
McClellan Street	1. Serves Newark International Airport	Milepost 0.00 to 0.59 - NJ 27 to U.S. 1&9.	Essex		0.59		0.59
			TOTAL	0.00	0.59	0.00	0.59
McLester Street	1. Serves port facility 2. STRAHNET major connector	Milepost 0.00 to 1.00 - North Avenue to Lyle King Street.	Union		1.00		1.00
			TOTAL	0.00	1.00	0.00	1.00
Morgan Boulevard	1. Principal Arterial 2. Serves port facility	Milepost 0.00 to 0.25 - I-676 to Broadway Avenue.	Camden		0.25		0.25
			TOTAL	0.00	0.25	0.00	0.25

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
Mt. Pleasant Avenue	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 0.65 - Co. 577 to Co. 659.	Essex		0.65		0.65
			TOTAL	0.00	0.65	0.00	0.65
North Fleet Street	1. Serves port facility	Milepost 0.00 to 0.11 - Aruba Street to Corbin Street.	Union		0.11		0.11
			TOTAL	0.00	0.11	0.00	0.11
Port Street	1. Serves port facility 2. STRAHNET major connector	Milepost 0.00 to 1.54 - U.S. 1&9 to Doremus Avenue.	Essex		1.54		1.54
			TOTAL	0.00	1.54	0.00	1.54
Port Jersey Boulevard	1. Serves port facility	Milepost 0.00 to 1.50 - I-78 (Hudson County Extension) to end of road.	Hudson		1.50		1.50
			TOTAL	0.00	1.50	0.00	1.50
Port Terminal Road	1. STRAHNET major connector	Milepost 0.00 to 0.40 - NJ 169 to Military Ocean Terminal.	Hudson		0.40		0.40
			TOTAL	0.00	0.40	0.00	0.40
Raymond Boulevard	1. Principal Arterial 2. Connector of other NHS routes	Milepost 0.00 to 0.48 - Raymond Boulevard/Springfield Avenue split to NJ 21.	Essex		0.48		0.48
			TOTAL	0.00	0.48	0.00	0.48

New Jersey's National Transportation System -- Highway Route Description Line

Route or Street Name	NHS Justification	Description and Termini	County	Mileage			
				Rural	Urbanized	Small Urban	TOTAL
Wyckoff Road	2. STRAHNET major connector	Milepost 27.08 to 27.37 - NJ 36 to NJ 35.	Monmouth		0.29		0.29
			TOTAL	0.00	0.29	0.00	0.29

1.6 Project Development Stages

A project follows a progression through the three critical stages: **concept development, design, and construction** (see Figure 1).

Concept Development

Concept Development represents the first stage in the project delivery process, where potential projects are first identified, defined and evaluated. In this phase, policy direction and strategic direction are established and problem identification, statement packaging and conceptual development are performed. Also, a broad range of community needs are considered.

Projects are developed as solutions to transportation needs. The concept development stage includes all the transportation analysis required to identify and prioritize these needs at the state, regional, and local community levels. The stage will last approximately six months to one year.

Design

Final Scope Development

Upon completion of the concept development stage and screening through the Capital Program Development process, the problem statement package, along with copies of all supporting documents will be transferred to Project Management. At this point, a project manager is assigned and final scope development begins.

It is the Department's intent that Scoping will include those preliminary engineering activities that will produce a well-defined engineering approach to solving a transportation issue with a reasonable life-cycle cost considering impacts to the environment, the community and the state of New Jersey. Scoping includes all the necessary activities to bring the design of a project to a level of detail necessary to support the approved environmental document and preliminary utility involvement definition, Right of Way needs established and permits required.

Design Development to Final Design

Upon completion of Scope Development and screening through the Capital Program Development process, the project proceeds into Design Development. Design Development will begin at the completion of Scope Development when environmental documents and any necessary Design Exceptions have been approved.

The objective of the design process is to develop a quality and comprehensive set of design and construction documents, including plans, specifications, and estimates (PS&E) for construction of transportation facility improvements. Design elements are completed in accordance with the concepts and guidelines presented during the Scope Development.

Construction

Construction begins with the selection of the lowest responsible bidder, subsequent award of the construction contract, and issuance of the Notice to Proceed by NJDOT. Following the award of the construction contract, the primary project activity becomes the administration and enforcement of the terms and conditions of the construction contract and the monitoring of construction progress and costs. The Resident Engineer (RE) is responsible for the day-to-day administration of the contract activities under the supervision of the Regional Construction Engineer (RCE) (Construction Services and Materials) with direction from the Project Manager (Capital Program Management) until the project is completed and accepted by the Operations and Maintenance Division. The Project Manager remains responsible for overall project direction and for the project scope, schedule, and budget during construction.

Project Stages

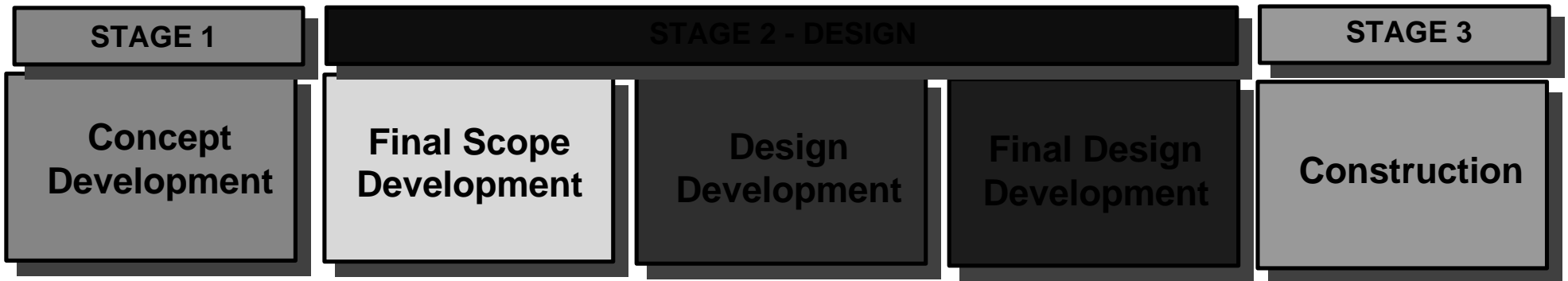


Figure 1

SECTION 2 CONCEPT DEVELOPMENT

2.1 Project Initiation

Background

Projects are initiated by submitting a Transportation Problem Statement (see Attachment 1) to the Bureau of Capital Program Development (refer to Figure 1).

The purpose of the Transportation Problem Statement is to identify needs which may be suitable to be addressed by capital improvement projects implemented by the Division of Project Management. Work undertaken by Operations and Maintenance units does not require submission of a Transportation Problem Statement.

Projects required for public health, safety, and welfare on an emergency basis, and projects directed for implementation by the Commissioner for policy reasons may bypass some or all of the Transportation Problem Statement procedure.

Procedure

Initiation:

- Bureau of Capital Program Development solicits new Transportation Problem Statements from lead units with appropriate problem responsibility.
- Major program categories and lead unit/management system responsibility are as follows:
 - Bridge Rehabilitation and Replacement—Bridge Management System
 - Highway Rehabilitation and Reconstruction—Pavement Management System
 - Drainage—Drainage Management System
 - Safety Intersection Improvements—Safety Management System
 - Congestion Relief Projects (bottleneck widening, highway operational improvements, intelligent transportation systems)—Congestion Management System
 - Strategic Mobility Projects (missing links, major widenings, economic development projects)—Division of Transportation Systems Planning, Office of Policy
 - Quality of Life Projects (transportation enhancements, noise walls, landscape improvements, air quality improvements)—Division of Transportation Systems Planning, Office of Planning
- Other sources of Transportation Problem Statements:
 - NJDOT managers familiar with specific problems
 - Mayors
 - Freeholders
 - Legislators

- Metropolitan Planning Organizations
- Corridor task forces
- Concerned citizens
- Police Departments

Information required on Transportation Problem Statements:

- Concise statement of transportation need.
- Proposed concept and/or scope of work of a capital improvement project to address the identified need where appropriate.
- Statement of the extent to which the proposed capital improvement project or removal of the identified deficiency would advance the Department's objectives as identified in the Capital Investment Strategy.
- Current traffic counts and accident rates, with respect to the following program categories: Bridge Rehabilitation and Replacement, Highway Rehabilitation and Reconstruction, Safety Intersection Improvements.
- Identification of individuals or groups who may be sponsoring or supporting the proposed project.
- Summary of identified environmental issues within the probable footprint of the proposed project, especially including the identification of any historic or potentially historic properties, historic or potentially historic structures, historic districts, and wetlands.
- To assure proper quality control, all Transportation Problem Statements are required to be signed by a Division Director.

NOTE: In the case of a Transportation Problem Statement originating from outside the Department, the Bureau of Capital Program Development may request the Department unit which transmitted the problem statement, and/or any other appropriate unit within the Department, to complete the necessary information.

The Bureau of Capital Program Development may return a Transportation Problem Statement to the initiator with a request to complete missing or inadequate items of information.

The Bureau of Capital Program Development may request the project manager in conjunction with the Bureau of Environmental Services to undertake an environmental screening to identify pertinent environmental issues involving Transportation Problem Statements, as appropriate.

Prioritization:

- Bureau of Capital Program Development prioritizes Transportation Problem Statements and recommends those to be selected for further work.
- Prioritization is based on:
 - Technical priority analysis based on Management Systems information.
 - Consistency with program objectives set forth in Capital Investment Strategy.

- Consistency with Corridor Strategies (implementing the State Development and Redevelopment Plan, the Department's Long Range Plan, the Transportation Blueprint, etc.).
- Consistency with the other NJDOT policies and management directives, as appropriate.
- Selection is based on:
 - Targets set in the Capital Investment Strategy for desired project volumes in each program category.
 - Discussions with the Metropolitan Planning Organizations (MPOs) as part of the annual project selection cycle.

Approval Process:

- The Bureau of Capital Program Development presents prioritized lists of Transportation Problem Statements, with recommended disposition (concept development, feasibility assessment, on hold, directly to construction, rejected) to the Capital Program Development Committee for review and approval.
- The Capital Program Development Committee approves and/or recommends alternate action for each Transportation Problem Statement.
- The Bureau of Capital Program Development notifies the originator of the Transportation Problem Statement of the final disposition.
- The Bureau of Capital Program Development notifies the appropriate lead unit of the action required as a result of the direction given by the Capital Program Development Committee.

Attachment 1 - Transportation Problem Statement

New Jersey Department of Transportation
TRANSPORTATION PROBLEM STATEMENT

Location: (to be completed by initiator)

Please attach map clearly depicting the location of the problem, and attach copy of straight line diagram if applicable.

1. Route (if applicable) _____
2. Mileposts (if applicable) _____
3. Limits _____
4. County _____
5. Municipality _____

Description of Problem: (to be completed by initiator)

6. Check those items best describing the problem:

Existing Highway

- ___ a. Capacity problem
- ___ b. Operational problem
- ___ c. Physical conditional problem
- ___ d. Safety problem

Existing Bridge

- ___ e. Capacity Problem
- ___ f. Physical condition problem
- ___ g. Safety problem

Corridor/area capacity problem

- ___ h. Need for corridor safety
- ___ i. Possible highway on new alignment
- ___ j. Possible new transit line
- ___ k. Need for park and ride development

7. Describe the problem:

8. If this problem is actively supported by an outside group, please identify:

9. Other comments (if any) by initiator:

10. Initiator (print or type): _____

11. Date of Initiation: _____

12. Signature: _____

13. Concurrence of Division Director (Signature): _____

14. Date of Concurrence: _____

Capital Program Development Project Initiation, Programming and Delivery

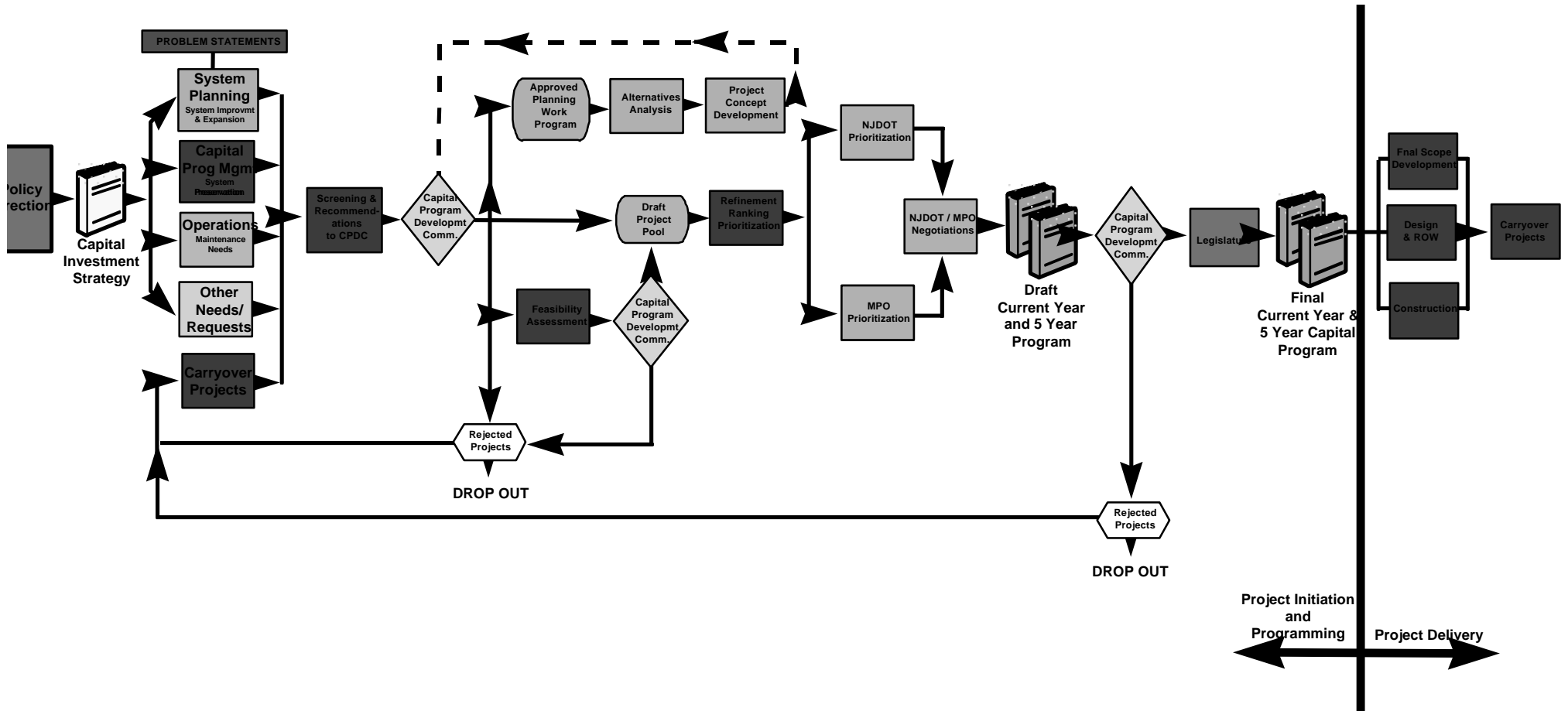


Figure 1

2.2 Project Selection and Capital Programming

Background

Projects are programmed (selected for a specific phase of work in the project development and implementation process) through procedures managed by the Bureau of Capital Program Development.

Projects assigned to the Division of Project Management are normally required to be included in two documents:

- Annual Capital Program which provides state budget authority.
- Statewide Transportation Improvement Program which provides federal authority.

NOTE: Projects assigned to the Division of Transportation Systems Planning are not normally listed in these documents.

Project selections at all stages of the “pipeline” are made within the context of the Department’s Capital Investment Strategy.

The Bureau of Capital Program Development produces and submits to the Capital Program Development Committee for review and approval an annual Capital Investment Strategy to guide investment in the capital program. The Capital Investment Strategy process identifies investment options for each program area, together with the appropriate policy context, program goals, performance measures, current system conditions, financial analysis, and pipeline capacity analysis. The approved Capital Investment Strategy should explicitly identify program tradeoffs and the outcomes to be expected from the resulting project mix. The approved Capital Investment Strategy should also identify, for each program, capital program investment benchmarks and appropriate project needs for the detailed scoping work program, the alternatives analysis Program, and new problem statements.

Procedure

Project selection for proposed projects that are assigned to the Division of Transportation Systems Planning for project concept development:

- Division of Transportation Systems Planning will submit the Problem Statement Package to the Capital Program Development Committee for review.
- If approved by the Capital Program Development Committee, proposed projects will be available for selection for final scope development.
- The Bureau of Capital Program Development will prioritize proposed projects with approved Problem Statement Packages based on:

- Technical priority analysis based on Management Systems information

- Consistency with program objectives set forth in the Capital Investment Strategy
 - Consistency with corridor strategies
 - Consistency with other NJDOT policies and management directives.
- The Bureau of Capital Program Development will prepare prioritized lists of projects based on targets set in the Capital Investment Strategy and forward with recommended disposition (feasibility assessment, final scope development, on hold, rejected) to the Capital Program Development Committee.
 - The Bureau of Capital Program Development will obtain estimated costs for feasibility assessment and final scope development from the Bureau of Program Support Services, and will provide this information to the Capital Program Development Committee.
 - The Capital Program Development Committee will review the recommendations and determine the appropriate disposition of each project.
 - The Bureau of Capital Program Development will advise the appropriate lead unit(s) of the disposition of the project.
 - The Bureau of Capital Program Development will include the estimated cost for feasibility assessment and final scope development in the Capital Program/Statewide Transportation Improvement Program for those projects approved by the Capital Program Development Committee.

Project selection for proposed projects assigned to the Division of Project Management for final scope development, which are under consideration for Design Development:

- The Division of Project Management will submit Scope Development Package to the Capital Program Development Committee for review to determine whether they are effective, feasible, and economical.
- If approved by the Capital Program Development Committee, the project will be available to program for implementation.
- The Bureau of Capital Program Development will select projects for programming of design in accordance with the Capital Investment Strategy as part of the capital programming process.

Capital Programming Process

- The Bureau of Capital Program Development will prepare annually (normally in October) a Project Pool which will list all projects eligible to be selected for the next Annual Capital Program (effective the following July 1) and the next Statewide Transportation Improvement Program (effective the following October 1).

NOTE: Projects which are not included in the Project Pool are at a significant disadvantage in receiving the reviews and approvals needed for project selection; program managers should, therefore, be sure to identify all candidate projects.

- Projects identified as potential candidates for inclusion in the Annual Capital Program and the Statewide Transportation Improvement Program are subjected to intensive screening by the Bureau of Capital Program Development and the Division of Project Management to verify project scope, status, schedule, and cost.
- The Project Pool is analyzed independently by NJDOT, NJ TRANSIT, and the Metropolitan Planning Organizations (MPOs) to assign a priority to each project. DOT uses Capital Investment Strategy to set priorities during the screening process. Each MPO uses their own project prioritization system.
- NJDOT develops revenue projections based on current assessment of available state, federal, and other funds for planning purposes and circulates to the three Metropolitan Planning Organizations by December 15.
- The Bureau of Capital Program Development prepares a preliminary Annual Capital Program for review and approval by the Capital Program Development Committee by January 15.
- NJDOT, NJ TRANSIT, and each MPO enters into intensive discussions (January 15 - February 15) to negotiate a draft list of deliverable transportation projects that best fit the composite statewide and regional priorities within a financially constrained program.
- The Bureau of Capital Program Development prepares a draft Annual Capital Program, as negotiated with the MPOs, for final approval by the Capital Program Development Committee. Final approval is required by February 22.
- After receiving approval of the Capital Program Development Committee, the Bureau of Capital Program Development prepares a proposed Annual Capital Program for submission to the Governor and Legislature (by March 1 of each year).
- The Bureau of Capital Program Development prepares a draft Statewide Transportation Improvement Program by March 31 for approval by the Capital Program Development Committee, based on negotiations with the three Metropolitan Planning Organizations.
- After receiving approval by the Capital Program Development Committee, the Bureau of Capital Program Development prepares a draft Statewide Transportation Improvement Program by April 15 for circulation to NJDOT, NJ TRANSIT, and Metropolitan Planning Organization personnel.
- NJDOT, NJ TRANSIT, and each of the Metropolitan Planning Organizations will undertake further review to refine the proposed Statewide Transportation Improvement Program after the mid-point of the federal fiscal year (April 1).
- The Bureau of Capital Program Development prepares the final Annual Capital Program, based on approval by the Legislature. This document is circulated in August of each year.

NOTE: Program Managers who attempt to program projects during the current fiscal year which are not in the approved Annual Capital Program must contact the Bureau of Capital Program Coordination. It is to be noted that this procedure will require re-negotiation with the affected Metropolitan Planning Organization, supplemental appropriation by the Legislature, and may require additional air quality reviews.

- The Bureau of Capital Program Development prepares the final Statewide Transportation Improvement Program document for submission to the Federal Highway Administration, the Federal Transit Administration, and the US Environmental Protection Agency in September of each year.
- After federal approvals are received, the Bureau of Capital Program Development circulates the approved Statewide Transportation Improvement Program (approximately November of each year).
- The Bureau of Capital Program Development will prepare each year a Study and Development Program based on Problem Statements accepted by the Capital Program Development Committee.

SECTION 3 SCOPE DEVELOPMENT

The purpose of Scope Development is to deliver projects to Design Development with a well defined scope of work. This will be done using the process described in this section. The completion of Scope Development will include: a recommended scheme with a preliminary cost estimate; an approved environmental document; reasonable assurance that environmental permits can be obtained; community support, or documentation explaining why such support cannot reasonably be obtained; identification of ROW needs and costs; identification of design exceptions needed; and receipt of approval of those exceptions. Scope Development will consist of two major phases: Feasibility Assessment and Final Scope Development.

Not all projects will need to go through the Feasibility Assessment phase. Projects of limited scope, which require little or no right of way, which are eligible for Programmatic environmental approvals, and which have almost no potential for community concern, will bypass Feasibility Assessment and proceed directly into Final Scope Development as described in Section 3.2. These projects will be identified by the Bureau of Capital Program Development, and approved for immediate assignment to Project Management by the Capital Program Development Committee.

3.1 Feasibility Assessment

Feasibility Assessment will be performed as part of the Initiation and Programming process of Concept Development as described in Section 2. During this stage, the Bureau of Project Scope Development (BPSD) will perform sufficient engineering to determine whether the concept submitted with the Problem Statement can be feasibly evolved into a project in light of environmental constraints and community issues. If it cannot be reasonably demonstrated that environmental approvals and community support are forthcoming, the concept will neither become a project nor pass into Final Scope Development. In essence, the Feasibility Assessment will serve as a Fatal Flaw Analysis, intended to prevent flawed concepts from entering Final Scope Development where they will escalate soft costs and cause the three year delivery process to fail.

Although Concept Development is not part of the three year project delivery process, the relevant Program Manager will designate a Project Manager to coordinate Feasibility Assessment activities with BPSD. The role of the Project Manager during the Feasibility Assessment stage will be to provide a liaison to and continuity into Final Scope Development, Design Development, and Construction. Although the Project Manager will not be accountable for the budget and schedule of Feasibility Assessment, the presence of a Project Manager will insure that the Program Manager has oversight and input during the Initiation and Programming process leading into Final Scope Development.

Step 1: Project Screening

During Project Screening, BPSD, in coordination with the Project Manager, will define the objectives of the project, establish the Project Need, and identify those special characteristics and responsibilities necessary for the successful completion of scope development. The BPSD, in consultation with the Project Manager, will assemble the Scope Team and develop a plan to direct and control the Scope Team involvement necessary for effective project

screening and scope development. At this time, the BPSD will develop a preliminary budget and schedule for all Feasibility Assessment activities.

Step 1A: Review Problem Statement Package for Completeness

The Problem Statement Package is the foundation of scope development. The BPSD will review the information supplied to determine if it is complete or requires additional data collection.

This Problem Statement Package will be provided by the unit responsible for the proposal's concept development. If that unit was Planning, this information will be developed as part of a corridor-wide study or a needs assessment. Alternatively, if the proposal to be scoped is a bridge, the baseline information will be generated as part of the Bridge Management System. If the problem statement was initiated by a local jurisdiction or elected official, the Department may need to generate the baseline information as a separate step prior to initiating the Feasibility Assessment.

The following list of items are deemed desirable for all scoping efforts and will be beneficial in the development of the Problem Statement Package described above. However, if during the review of the Problem Statement Package the information is not provided, it may need to be developed prior to advancing further scoping efforts.

- Project Need Statement.
- Initial identification or potential alternatives to be assessed.
- Identification of key "stakeholders" whose "buy-in" to the Recommended Alternative may be required for successful project implementation. Prior coordination with MPOs, County, Locals, Local Interest Groups, FHWA, Environmental Entities, etc. should be provided.
- Base plans: if plans and mapping already in existence are insufficient, additional information will be obtained, via either photogrammetry, Geographical Information System (GIS), or conventional field survey. All of the information is verified and edited in the field. This includes access points; termination points; existing drainage structures; utilities; signs; and other major topographic features. The base plans will be developed by the Division of Design Services or by a consultant. Design Services will be responsible for insuring that they are in accordance with the latest standards.
- Mailing list of local/county/municipal contacts.
- Discussion of new planned developments.
- Current tax maps of project area.
- Current land use or zoning map.
- Bicycle and pedestrian considerations.
- Traffic volumes, and any traffic survey information.
- Information on traffic signals and phasing.
- Accident data and analysis
- Preliminary environmental sensitivity information to identify "fatal flaws" in concepts.
- SIP/TIP conformity.
- MIS/CMS analysis.
- Decision as to regional vs. local significance.
- A summary of the public involvement program, including results of coordination with MPO staff, local government representatives, and the public, leading to a shared

- definition of need by DOT and the host communities.
- Identification of geometric and physical deficiencies within the project area (often referred to as a deficiency analysis).
- Initial contact made with NJ TRANSIT, and other relevant agencies.
- Structural Inventory and Appraisal sheets, and identification of any additional structural needs.
- Navigation survey and coordination with the USCG regarding vertical clearance.
- “Planning level” cost estimates.
- Desired functional classification for project.
- Any available geotechnical information.
- Pavement condition (PSI) and skid numbers.
- Recommended and justification to advance scoping effort.

Step 1B: Assemble Scope Team

The Scope Team is composed of the Core Group, and other units and entities which will meet less frequently but which will still provide input into the Scoping process. The Core Group will generally consist of relevant NJDOT units and FHWA. The remaining units are those which have other responsibilities outside our Capital Program (such as elected officials, environmental groups, municipal engineers, etc.), who may find it difficult to meet more than once during this phase.

The BPSD will carefully control Scope Team Meetings. All “stakeholders” must be represented; however, care must be taken to ensure that an excessively large group is not assembled. Unnecessarily large groups inhibit effective communication and drive up soft costs. The BPSD will also need to break down the Team as soon as its usefulness has ended. The candidate units for inclusion in the Scope Team are:

- Project Manager
- Bureau of Project Scope Development
- Federal Highway Administration
- Bureau of Civil Engineering
- Bureau of Utilities and Right of Way
- Office of Major Access (except projects that have no involvement with state highways)
- Bureau of Traffic Engineering and Systems
- Bureau of Project Support and Engineering
- Bureau of Design Support Engineering
- Bureau of Structural Engineering
- Office of Geotechnical Engineering
- Office of Community Relations
- Bureau of Design Coordination
- Bureau of Quality Management Services
- Office of Landscape and Urban Design
- Office of Geometrics
- Office of Hydrology/Hydraulics
- Office of Surveying Services
- Office of Traffic Signal and Safety Engineering
- Office of Miscellaneous Structures Design

- Office of ITS Engineering
- Regional Construction
- Regional Maintenance
- Traffic Operations (north or south)
- Regional Traffic Engineer
- Bureau of Environmental Services
- Municipal Engineer
- County Engineer
- New Jersey Transit
- Local and State Police
- New Jersey Department of Environmental Protection and the SHPO
- Environmental groups
- The community
- Elected officials
- Utilities companies (if warranted by the significance of the involvement)
- Highway Authorities

Step 1C: Scope Meeting

The BPSD shall provide each member of the Scope Team with a Project Fact Sheet (see Attachment 1) and other relevant information prior to convening the scope meeting. It is the individual Scope Team member's responsibility to thoroughly analyze the project and to be fully prepared to discuss issues within their jurisdiction at the scope meeting. All Scope Team members shall utilize their individual unit's Project Scoping Checklist (see Attachment 2), and bring their checklist with written comments to the meeting.

The following is a list of items that will be discussed at the scope meeting:

- Project Need
- Potential Alternatives
- Project Limits - approximate, with mileposts
- Existing Construction Plans and Right of Way Documents
- Survey Control
- Posted/Design Speeds
- Traffic Data and operational needs
- Accident Data
- Project Category - reconstruction, 3R, etc.
- Design Standard - NJDOT Design Manuals, etc.
- Lane/Shoulder widths
- Border widths/Right of Way
- Median widths
- Cross slope/Superelevation
- Horizontal/Vertical Geometry
- Sight Distance - horizontal, vertical and intersection
- Curb (type and size)/Sidewalks
- Mobility - bikes, pedestrians, handicapped facilities, etc.

- Existing/Proposed Pavement
- Traffic Barriers
- Drainage features
- Landscaping
- Signals/Signing/Lighting/Striping
- Interchange/Intersection configurations
- ITS Facilities
- Structural clearances - horizontal, vertical
- Proposed Structural needs, including clearances (horizontal, vertical) and deck deficiencies which need to be addressed, etc.
- Bridge approaches and railings
- Structural physical condition (from inspection report)
- Advisability of acquiring a fee interest in lands beneath any proposed structures
- Structural profile/geometry
- Walls
- Waterway openings
- Environmental constraints - permit requirements, who will get the permits?, etc.
- Noise requirements - should a study be done?
- Local Commitments/Public Involvement
- Maintenance features
- Traffic Control (including night work)
- Jurisdiction
- Utilities/Railroads
- Access
- Constructability - traffic control, detours, temporary signals, etc.
- QA/QC Guidelines

Project Scoping is a TEAM effort. Therefore, it becomes critical that all scope team members thoroughly evaluate a project and fully participate in both the screening and scoping process. Post Scoping changes to the scope of work will be strictly controlled by the Project Manager. Changes to the project scope must be approved by the Change Control Board as described in Section 4.7.

At the scope meeting, supervised by the BPSD and the Project Manager, the scope team shall utilize the items listed above, along with information from the NJDOT GIS system and the most recent road and/or bridge plans and videolog, if available. If deemed necessary, the Bureau of Environmental Support Services will provide information as to the proximity of major wetlands, potential cultural resources, significant hazardous sites, Green Acres properties, etc.

Step 1D: Project Screening Products

Through input provided by the Scope Team by the end of Project Screening, the BPSD, in consultation with the Project Manager, will have identified the elements to be considered during scoping.

Also, with input from the Scope Team, the BPSD shall identify the appropriate design standards which shall be utilized throughout the project development process:

1. All Local Highway projects shall follow the standards as referenced in 23 CFR 625, Federal-Aid Policy Guide (see Attachment 3).
2. Interstate projects shall follow 23 CFR 625 or controlling design elements. Non-controlling design elements should conform to the NJDOT Design Manual Roadway and the NJDOT Design Manual Bridges and Structures (refer to Appendix for a listing of controlling design elements). An exception to the above is 23 CFR 625.4(2), where for interstate resurfacing projects the designer must utilize the currently approved design standard, not the AASHTO standard that was in effect at the time of original construction.
3. Non Interstate New Construction and Reconstruction projects shall follow the NJDOT Design Manuals.
4. Non Interstate Resurfacing, Restoration and Rehabilitation (3R) projects shall follow the NJDOT Design Manuals in conjunction with Appendix.

It is extremely important to note that design standards reflect specific criteria recommended for use in design and typically range from minimum to desirable values. The BPSD and the Project Manager should consider, when appropriate, lesser values which, when applied, will satisfy the Project Need and provide additional benefits justifying their use. It is particularly important that the Project Manager fully participate, and concur, in any decision to select design criteria which depart from the applicable Department standard.

Step 2: Development of Project Schemes

During this phase, the schemes which address the Project Need and are consistent with environmental, community and budget constraints are developed for further assessment.

Potential schemes must first be evaluated in light of community support, environmental impacts, and financial constraints. If warranted, an optimum scheme which fully meets all design criteria, and achieves Level of Service C or better, is developed. More than one scheme that fully meets the above goals may exist. If so, environmental sensitivities, access impacts, cost estimates, and other factors may be used to evaluate optimum schemes. If environmental impacts, community opposition, or other constraints obviously preclude the implementation of an optimum scheme, engineering resources invested in its development will be kept to a minimum. The elimination of all potential schemes on this basis will be documented by the BPSD for the record. This documentation will prove invaluable should it be required for the justification of a Design Exception or Alternative Analysis required during Final Scope Development.

Schemes which fully address project goals will be overlaid on the environmental sensitivities, using existing GIS files and other baseline information gathered during Concept Development. If conflicts are identified, then a full range of design and alignment alternatives will be considered, including ones which back off desirable standards and instead meet minimum standards. Consideration of dropping below minimum standards could be warranted, and will be weighed against environmental, economic, access or other benefits. Consideration may also be given to alternatives that do not achieve one or more of the project goals identified in the Project Need.

The successful completion of this step will identify all project schemes which warrant further evaluation. The BPSD will also develop an initial matrix of benefits, costs, impacts, and other factors against which each scheme will be evaluated.

Step 2A: Environmental Support During Feasibility Assessment

The BPSD, in consultation with the Bureau of Environmental Services, will review the environmental baseline information provided with the Problem Statement Package to determine if it provides suitable information for evaluation of scoping alternatives. In some instances, the Bureau of Environmental Services will be asked to supplement this information to assist in scheme development. This could include identification of environmentally sensitive areas such as wetlands, parkland, areas with potential for containing cultural resources, and potentially contaminated properties. This is an early level of environmental screening intended to provide available background information. In general, it will be gleaned from existing sources such as GIS files, tax maps, as-built plans/ information, historic maps (i.e. Sanborn Maps, County Atlases, etc.). In certain situations where the environmental constraints are of a critical nature, it may be deemed appropriate to establish specific boundaries for historic sites, parklands or wetlands. This effort could include initiating detailed technical studies and consultation with environmental agencies.

The BPSD will then be responsible for developing specific project alternatives that best fit the constraints for each particular project site. Environmental agencies, the SHPO, the public, county and municipal officials, DOT units and FHWA may be consulted before, during and after the development of the alternatives. The BPSD will carefully monitor the project's advancement against use of available resources, the schedule and budget.

Where necessary, a Section 106 Alternative Analysis for historic bridges and other cultural resource properties may be conducted. The Bureau of Environmental Services will provide expertise on environmental issues as part of the process of balancing engineering benefits of each alternative against economic and environmental concerns in order to have sufficient information to compare alternatives. This may include the following: conducting cultural resource surveys and obtaining determination of eligibility and/or effect from the SHPO; delineating wetlands; or initiating preliminary hazardous waste sampling.

In some instances the balance may be close enough to warrant an environmental review by Bureau of Environmental Services of two or more schemes. Base input provided to environmental staff could in some instances be a box inscribed for an area in which a range of schemes could fall. In other instances, actual sketches of alternate scheme "footprints" could be provided. If this step is taken, the environmental input may be a key factor in selecting a recommended alternative from the range of options identified.

Step 2B: Community Involvement

The public is defined as local technical and elected officials, state officials, interested citizens and public interest groups. The goal of the Community Involvement process is to develop a partnership with local officials, being responsive to public concerns, in the hope of achieving local community "buy-in" for the project at the conclusion of Final Scope Development. Early involvement will enable problems and solutions to be assessed and developed with community input without extending the overall process significantly. It will also provide an early

opportunity for the NJDOT to address community issues, consider modifications to alternative solutions, or even defer or abandon feasible solutions for which no community support exists.

The first step will be to review and reaffirm the transportation needs analysis coordinated with the community during the Concept Development stage. This will be followed by the presentation of the schemes to representatives of the community. Work sessions will be established with the Host Communities by the Office of Community Relations (Bureau of Environmental Services will assist in bringing the environmental community to the table), at which times BPSD staff will describe the alternatives for the project, explain the rationale behind each, and delineate any other options that may be available. Feedback will be taken seriously, and requests for project changes will be evaluated by the BPSD. The BPSD and the Project Manager will make reasonable and appropriate changes and attempt to identify an Initially Preferred Alternative. For those changes that are not deemed reasonable and/or appropriate, documentation will be developed and presented to the public and environmental community later.

The above process will continue until NJDOT and officials of the host community have reached agreement that an Initially Preferred Alternative is ready for presentation to the community at large. The local officials will be asked to support NJDOT by acknowledging their partnership with DOT in an attempt to find a mutual solution to this shared transportation problem. Serious consideration will be given to abandoning the project if the local officials are not willing to provide such support. This is especially true for projects under local jurisdiction.

The degree of public involvement will vary with the project type, its complexity, the environmental sensitivity and the public interest. Some projects, such as those which address safety and maintenance problems, may involve a minimal public discussion. Other projects, such as widenings, include a public involvement program aimed at giving full and careful consideration of public issues and citizen concerns.

The BPSD will monitor the progress of the community involvement program carefully. Such programs have the potential to extend indefinitely, and the BPSD will need to periodically decide, in consultation with the Project Manager and Office of Community Relations, whether to continue to extend the schedule or to terminate the project. In addition to discussions with local government representatives and the host community, the Community Involvement Program will sometimes involve the MPOs, and could on occasion also involve special interest groups, such as the Department of Environmental Protection.

If the problem is one of regional significance, the NJDOT may continue discussions with MPO staff during the project programming process. The discussions could be expanded to include local government representatives, special interest groups, focus groups and the general public.

If, however, the problem is more localized, NJDOT will seek the active participation of local government in securing public input and to then provide the NJDOT with a formal resolution of support once a concept scheme is selected. This local lead process is the ideal, and while there are examples of it working well in the past, it is recognized that NJDOT may often have to take the lead in effectuating community involvement.

Step 2C: Right of Way Input

The Bureau of ROW may play a vital role during the entire Scoping process. They will generally be an active member of the Scope Team and will provide guidance in assessing the practicality and economics of proposals. During the Feasibility Assessment, they may be asked to provide comparative preliminary estimates to be utilized in the selection of the Initially Preferred Alternative. The Bureau of ROW will also provide input as to whether lands under proposed structures should be acquired in fee.

Step 2D: Resolve any Major Utility Issues

The BPSD will coordinate with the Bureau of Utilities to determine whether there are any utility issues that are of sufficient magnitude to affect the selection or rejection of a scoping alternative. The Bureau of Utilities will be responsible for establishing initial contact with the utility companies and determining whether any potentially critical utility issues exist. More extensive utilities development work will be done as a Design Service during Final Scope Development.

Step 2E: Review of Access Code Implications (Initiate Access Impacts)

The BPSD will fully coordinate development of project schemes with the Driveway Review Unit of the Bureau of Civil Engineering. The Optimum scheme will reflect maximum compliance with the Access Code. During the assessment of subsequent alternatives, the benefits of each application of the code to an existing project site will be evaluated by the Driveway Review Unit to determine when and where Access Code waivers will be warranted. Ultimately, an Access Impact Summary will be prepared which identifies how the selected alternative will alter existing access, and further identify and justify any waivers to the Access Code that will be required.

Step 2F: Coordination with Value Engineering

Value Engineering is an essential element in developing cost effective project alternatives. For that reason, the Value Engineering Unit of the Bureau of Configuration Management will have an opportunity for involvement from the outset of the Scope Development process. In this way, Value Engineering considerations may both influence the selection and development of the Initially Preferred Alternative as well as shape the Recommended Alternative ultimately used for design and construction.

The BPSD will request that the Value Engineering Unit be a part of the Scope Team on all projects. The involvement of the VE Unit will be determined in accordance with Section 3.7.1. VE Unit recommendations will consider functional analysis of engineering and economic considerations, which must be evaluated against policy, environmental, political, and community issues. In addition, all VE recommendations will include documentation indicating that they are feasible (i.e. Coast Guard clearance) before they will be incorporated into the Initially Preferred Alternative or the Recommended Scheme.

Step 2G: Determine the Initially Preferred Alternative

At the completion of this step, the Initially Preferred Alternative will be selected. This alternative will be the one that appears to provide the best balance between cost

effectiveness, community concerns, environmental issues, and transportation needs. The Project Manager and the BPSD will attempt to attain “buy-in” for the Initially Preferred Alternative from all key “stakeholders” represented on the Scope Team. It is important that in deciding upon the Initially Preferred Alternative, the BPSD, in consultation with the Project Manager, consider the original Project Need. If warranted, it may be justified to move forward with a scheme which does not fully resolve all of the transportation needs identified in the Problem Statement Package.

Although the community, NJDEP, and the SHPO will be actively involved in scoping up to this point, the selection of this preferred alternative will precede the full community and environmental acceptance. The Design Services which may be advanced at this time, such as utilities, geotechnical, etc., will be based on the Initially Preferred Alternative. The Project Manager and BPSD will need to assess the risks associated with initiating Design Services prior to the completion of Final Scope Development. It may warrant to conduct, as part of the Feasibility Assessment, the formal Community Involvement program described in Section 3.2. This may include the obtaining of the actual resolution of support from the community governing body prior to expending additional funds required to complete the environmental document.

Step 3: Presentation to the Capital Program Development Committee

At the conclusion of the Preliminary Scoping phase, the BPSD, in partnership with the Project Manager, will make a presentation to the Capital Program Development Committee regarding the potential project. If deemed a worthy project, the project will enter the Draft Project Pool to be programmed for Final Scope Development. If the project is determined to be “fatally flawed”, it will be recommended for termination, or recycled for reconsideration as part of Concept Development. In some instances, it may be warranted to direct the BPSD to conduct additional scoping in order to develop a more feasible alternative to the Project Need.

Attachment 1 - Sample Project Fact Sheet

SAMPLE PROJECT FACT SHEET

TO: Those Listed Below

FROM: Project Manager

DATE:

SUBJECT: Request for Project Scoping
Route 85 (2)
M.P. 2.7 to M.P. 4.1
Townships of Chester and Mt. Olive
Morris County
Federal Project No. F-44(107)
Job Number 8710-292

Please independently field review this project prior to a scope meeting to be held on _____ in Chester Township Municipal Building, 305 Grove Street, Chester at _____.

Please refer to the attached location map. To assist your review, utilize the following:

1. AADT(1990) = 8000
T(%) = 12
V(posted) = 55 mph
V(design) = 100 km/h
2. Design Standard: NJDOT Design Manuals in conjunction with the Design Procedure for 3R projects.
3. Highway Section: Highway Section Sketches (see Attachment 1)
4. Structures: Structural Inventory and Appraisal Sheets
5. Controlling Substandard Design Elements:
 - a. Superelevation on three horizontal curves

<u>HC1</u>	<u>HC2</u>	<u>HC3</u>
MP 3.2 - 3.3	MP 3.51 - 3.62	MP 3.86 - 3.94
R = 1370 m	R = 460 m	R = 915 m
e = 0.015	e = 0.020	e = 0.015
V* = 80 mph	V* = 57 mph	V* = 71 mph

b. Insufficient length for three vertical curves:

<u>VC1</u>	<u>VC2</u>	<u>VC3</u>
MP 2.96 - 3.12	MP 3.53 - 3.76	MP 3.92 - 4.03
L = 250 m	L = 365 m	L = 180 m
A = 5.1	A = 6.0	A = 7.2
V* = 56 mph	V* = 58 mph	V* = 45 mph

- safe speed

6. Accident Analysis

- a. The overall accident rate was less than the statewide rate.
- b. Individual accident rates for controlling substandard design elements are less than the statewide rates.

(Attach all accident analyses, Accident Detail Reports, and available collision diagrams to actual Project Fact Sheets, if the overall rate is above the statewide rate).

If you have any questions, please call _____ at _____.

Attachment 2 - Project Scoping Checklists

PROJECT SCOPING CHECKLIST

DIVISION OF PROJECT MANAGEMENT

Project _____ Manager

Date _____ Weather

Limits:

Resurfacing

- Ⓟ pavement resurfacing with superelevation
- Ⓟ pavement resurfacing without superelevation
- Ⓟ milling
- Ⓟ joint replacement and/or repair
- Ⓟ repair/replacement of beam guiderail
- Ⓟ resetting beam guiderail
- Ⓟ access revisions
- Ⓟ upgrading existing drainage
- Ⓟ long-life pavement markings
- Ⓟ pavement repair (upgrading the pavement section to accommodate the widening of lanes - without widening the total pavement width)
- Ⓟ bridge bituminous resurfacing
- Ⓟ small signs
- Ⓟ channeling divisional and refuge islands
- Ⓟ bridge deck patching
- Ⓟ raised pavement markers
- Ⓟ replacement of existing impact attenuators
- Ⓟ new beam guide rail
- Ⓟ replacement of existing curb
- Ⓟ modification of existing sidewalks to provide for handicapped facilities
- Ⓟ replacement of existing sidewalks
- Ⓟ upgrading existing lighting systems

Restoration

- Ⓟ pavement widening (only to upgrade existing design elements to current standard)
- Ⓟ upgrading existing signals
- Ⓟ large signs (constructed on breakaway or non-breakaway supports)
- Ⓟ replacement concrete of median barriers
- Ⓟ channelizing, divisional and refuge islands
- Ⓟ underdeck, highmast, offset or conventional lighting systems
- Ⓟ new impact attenuators
- Ⓟ new curb, sidewalk and handicapped facilities

PROJECT SCOPING CHECKLIST

DIVISION OF PROJECT MANAGEMENT (CON'T)

- regrading existing berm section (only to upgrade existing design elements to current standard)
- jacking of concrete slabs
- bridge deck restoration and component patching (involves Type A, B with extensive Type C repair to remove all deteriorated and contaminated concrete from the deck and reconstruction of cross slopes along with a wearing surface; also involves work to restore substructure and superstructure components)
- structural repairs (includes rehabilitation or replacement of structural components in-kind due to severe corrosion, cracking, collision damage and spalling; may be stringers, bearings, pier columns, etc.)
- access revisions
- landscape improvements
- seismic retrofit

Rehabilitation

- addition of concrete median barriers
- sections of realignment (not to exceed 20% of the total project length and which may contain new paved surfaces contiguous to existing pavement or shoulder)
- auxiliary lanes (left turn, acceleration and/or deceleration and climbing lanes only)
- bridge widening (less than 1 lane width)
- deck replacement
- rehabilitation of existing structures
- new signals
- new sign structures (sign bridge, cantilever and bridge mounted)
- seismic retrofit

Posted Speed _____ Design Speed _____

Obstructions within Clear Zone Yes No

Explain _____

Latest As-Built correspond with existing conditions Yes No

Survey required Yes No

Structures within project limits

Bridge _____

Culverts _____

PROJECT SCOPING CHECKLIST

DIVISION OF PROJECT MANAGEMENT (CON'T)

Ⓟ Walls _____

- Excavation:
- Minor regrading Yes No
 - Moderate regrading Yes No
 - Major regrading Yes No
 - Are cross-sections required Yes No
 - Replace existing curb Yes No
 - Berm section Yes No
 - Umbrella section Yes No
 - Walls required Yes No

- Drainage: Flooding observed or areas determined (Check with Maintenance) Yes No

Flooding where _____

- Soil erosion Yes No

Where? _____

- Additional drainage required? Yes No

Where? _____

- New inlets for widening Yes No
- Reset heads Yes No
- Extension frames Yes No
- Headwalls Yes No
- End sections Yes No
- Retention basins Yes No
- Detention basins Yes No
- Slope protection Yes No
- Matting Yes No

- Safety: Grass median Yes No
- Need upgrade Yes No
 - Barrier curb Yes No
 - Need upgrade Yes No

PROJECT SCOPING CHECKLIST

DIVISION OF PROJECT MANAGEMENT (CON'T)

Maintenance

of Traffic:

Detour

Yes No

One lane operation

Yes No

Permits required

Yes No

Right

of Way:

Architectural plans

Yes No

required for partial building





demolition and/or restoration?

PROJECT SCOPING CHECKLIST

GEOMETRICS UNIT

Prior to a field trip, identify the design standard which shall be utilized throughout the project's design.

The following items shall be checked in the field by all personnel participating in the project scoping process:

- Posted/Design Speed Sections
- Horizontal Geometry
- Vertical Geometry
- Grades/Profile
- Sight Distance
 - Mainline
 - Ramps
 - Intersection
- Lane Widths
- Shoulder Widths
- Auxiliary Lane
 - Width
 - Length
 - Access
- Cross Slopes
- Superelevation
- Obstructions within Clear Zone
- Median Widths
- Adjoining Highway Sections
- Delineation (RPM's roadside)
- Tapered Concrete Terminal
- Ramp Configurations
- Constructability
- Maintenance Features
- Access
-  Curb
-  Mobility
 - Bicycles
 - Pedestrians
 - Handicapped
- Structural Clearances
-  Traffic Volumes
-  Accident Evidence
- Non-Standard Guiderail

PROJECT SCOPING CHECKLIST
OFFICE OF GEOTECHNICAL ENGINEERING

Project: _____

General Information:	Yes	No
1. Are the general location, limits of construction and existing ROW described:	_____	_____
2. Are scope and purpose of the project summarized?	_____	_____
3. Are a plan and profile of proposed improvements provided?	_____	_____
4. Are limits placed on profile changes?	_____	_____
5. Is traffic information provided?		
a. 80 kilonewton Equivalency Factor	_____	_____
b. Total Truck Percentage	_____	_____
c. ADT - Current and Projected	_____	_____
6. Are there existing boring logs?	_____	_____
7. Summary of the area's subsurface conditions from Rutgers Soil Survey: _____		

PROJECT SCOPING CHECKLIST

OFFICE OF GEOTECHNICAL ENGINEERING (CON'T)

Geotechnical Section:	Yes	No
1. Existing surface and/or subsurface drainage?	_____	_____
2. Evidence of excessively wet areas or wetlands?	_____	_____
3. Slides, slumps, faults noted along existing slopes?	_____	_____
4. Possibility of bedrock or boulders impacting drainage and subsurface structures?	_____	_____
5. Evidence of consolidation or stability problems	_____	_____
6. Is the estimated depth to groundwater at least 1.2 meters below proposed subgrade elevation?	_____	_____
7. Is there sufficient ROW to allow 1:2 slide slopes? (1:3 or better is preferable)	_____	_____

Comments:

PROJECT SCOPING CHECKLIST

OFFICE OF GEOTECHNICAL ENGINEERING (CON'T)

Geology Section:	Yes	No
8. Is cut(s) listed on Rockfall Hazard Rating System List?	_____	_____
9. Is rockfall mitigation recommended?	_____	_____
10. Should effects of blast induced vibrations on adjacent structures and utilities, especially gas lines, be evaluated?	_____	_____
11. If Rockfall Mitigation is recommended:		
a. Is ROW needed?	_____	_____
b. Are slope easements required?	_____	_____
c. Is there room to assess equipment?	_____	_____
d. Is a traffic plan needed?	_____	_____
12. Does catchment area need to be cleaned?	_____	_____
13. Are there are apparent safety problems?	_____	_____
a. Protruding rock	_____	_____
b. Sightlines	_____	_____
c. Substandard existing mitigation measures	_____	_____
14. Are photos needed to document conditions, provide baseline data for potential problems?	_____	_____
15. Is there vegetation which should be removed?	_____	_____

Comments: _____ -



PROJECT SCOPING CHECKLIST

OFFICE OF GEOTECHNICAL ENGINEERING (CON'T)

Foundations:	Yes	No
1. Are there existing boring logs?	_____	_____
2. Locate Rutgers Soil Survey map of the area and summarize subsurface conditions.	_____	_____
3. Are As-Built Plans available?	_____	_____
4. Is there an existing Foundation Report?	_____	_____
5. What is the existing/proposed structure?		
Bridge	_____	_____
Culvert	_____	_____
Wall	_____	_____
6. What is the existing foundation?		
Spread Footing	_____	_____
Piled Foundation	_____	_____
Type, size and length of piles:		
<hr/>		
Pile bent	_____	_____
Other (list below)	_____	_____
7. Any visible signs of settlement?	_____	_____
8. Any signs of scour or embankment erosion?	_____	_____
9. If a widening is proposed, are there any obstructions to prevent the widening?	_____	_____

PROJECT SCOPING CHECKLIST

OFFICE OF GEOTECHNICAL ENGINEERING (CON'T)

Foundations (con't):

Yes No

10. Area Topography:

- Stream Crossing
- RR Crossing
- Road Crossing
- Floodplain
- Wetland
- Rock Outcrops

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Comments:

PROJECT SCOPING CHECKLIST

OFFICE OF GEOTECHNICAL ENGINEERING (CON'T) PAVEMENTS

Pavements with Asphalt Concrete Surfaces:

Distress Type	Severity		
	Low	Moderate	High
Cracking:			
1. Fatigue cracking			
2. Block cracking			
3. Edge cracking			
4. Longitudinal cracking 4a. Wheel path 4b. Non-Wheel path			
5. Reflection cracking 5a. Transverse 5b. Longitudinal			
6. Transverse cracking			
Patching and Potholes:			
7. Patch/patch deterioration			
8. Potholes			
Surface Deformation:			
9. Rutting			
10. Shoving			
11. Settlement			
Surface Defects:			
12. Bleeding			
13. Polished Aggregate			
14. Raveling			
Miscellaneous Distress:			
15. Lane-To-Shoulder Dropoff			
16. Water Bleeding			
Curb Reveal:			
17. Outside _____ millimeters			
18. Inside _____ millimeters			

PROJECT SCOPING CHECKLIST
OFFICE OF GEOTECHNICAL ENGINEERING (CON'T)

Type and Shoulder Condition: _____

Pavement Section: _____

PROJECT SCOPING CHECKLIST

OFFICE OF GEOTECHNICAL ENGINEERING (CON'T) PAVEMENTS

Pavements with Portland Concrete Surfaces:

Distress Type	Severity		
	Low	Moderate	High
Cracking:			
1. Corner breaks			
2. Longitudinal cracking			
3. Transverse cracking			
Joint Deficiencies:			
4. Transverse joint seal damage			
5. Longitudinal joint seal damage			
6. Spalling of longitudinal joints			
7. Spalling of transverse joints			
Surface Deformation:			
8. Map cracking			
9. Scaling			
10. Polished aggregate			
11. Popouts			
Surface Distress:			
12. Blowups			
13. Faulting of transverse joints and cracks			
Miscellaneous Distress:			
14. Lane-to-shoulder dropoff			
15. lane-to-shoulder separation			
16. Patch/patch deterioration			
17. Water bleeding and/or pumping			
Curb Reveal:			
18. Outside _____ millimeters			
19. Inside _____ millimeters			

PROJECT SCOPING CHECKLIST

OFFICE OF GEOTECHNICAL ENGINEERING (CON'T)

Type and Shoulder Condition:

Pavement Section:

PROJECT SCOPING CHECKLIST

BUREAU OF LANDSCAPE AND URBAN DESIGN

PROJECT _____ JOB CODE #

DESCRIPTION _____ FAUS #

OFFICE:

DATE _____

BY _____

ACID SOIL AREA (from County Soil Survey of D.E.P. State Map)

PREVIOUS PLANTING COMMITMENTS _____

AVAILABLE PARCELS (ROW PLANS)

FIELD:

POSTED SPEED LIMIT

STRIPPING (Is material suitable?)

ANY AREAS NOT SUITABLE? _____ WHERE?

TOPSOIL STORAGE AREAS

SUBSURFACE CONDITIONS

ACID PRODUCING SOIL (From Soil Samples)

EXISTING VEGETATION (Types)

TO BE PRESERVED (location & quality)

TREE REMOVAL _____ TREE TRIMMING

CLEAR ZONE _____ SIGHT DISTANCE

SELECTIVE THINNING

UTILITIES

PREPARATION OF EXISTING SOIL AREAS

SEED TYPE

PLANTING (Brief Description)

ROW X-PARCELS TO BE RETAINED

WILDFLOWER LOCATIONS

NON-VEGETATIVE SURFACES

WETLANDS

NOISE BARRIERS

EROSION CONTROL MEASURES

TURF REPAIR STRIP

REGRADE BERM

AREAS FOR GLOBAL WARMING PLANTING

PROJECT SCOPING CHECKLIST

BUREAU OF LANDSCAPE AND URBAN DESIGN (CON'T)

Comments:

PROJECT SCOPING CHECKLIST

BUREAU UTILITIES AND RIGHT OF WAY UTILITIES DESIGN

1. Review memorandum provided by the lead unit giving background information on project.
2. Familiarize yourself with location of project and utility companies which service that area.
3. If there is a railroad within limits of project, know who operates on that section of tracks.
4. Arrive at project site early enough to walk through site or drive through if project is extremely long.
5. Look up! What facilities are on utility poles?
 - (a. Electric (Distribution and Transmission)
 - (b. Cable TV
 - (c. Fire Alarm (look for boxes on utility poles)
 - (d. Riser poles (underground feeds)
6. Look down for evidence of underground facilities.
 - (a. Water (valve boxes or hydrants)
 - (b. Gas (valve boxes, cathodic protection, marker, vents)
 - (c. Sanitary Sewer (manholes)
 - (d. Telephone or long lines (manholes)
 - (e. Electric (manholes)
 - (f. Pipeline (marks)

PROJECT SCOPING CHECKLIST

BUREAU OF UTILITIES AND RIGHT OF WAY (CON'T)

UTILITIES DESIGN

7. If railroad is involved, note if line is active and if it is electrified. Note condition of at grade crossing. Evaluate the need for a Diagnostic Team meeting.
8. Will electric facilities interfere with construction equipment necessitating temporary relocations?
9. If a bridge is involved, note what utility facilities are through the structure or hanging off the side of the structure. This would be a good time to recommend provisions be made for all underground utilities through the structure.
10. If removal of superstructure and substructure is involved, check:
 - (a. Clearance with aerial facilities
 - (b. Underground facilities in close proximity to footings
 - (c. How will existing facilities be supported.
11. Will longer poles be needed because of signalization at intersections.
12. Should subsurface utility mapping be done?
13. Relay this information to Designer and confirm that the Designer is familiar with the Bureau's Steps of Procedure.
14. Use your best judgement to rough out a cost estimate for utility and railroad involvement.

PROJECT SCOPING CHECKLIST

BUREAU OF ENVIRONMENTAL SUPPORT SERVICES

Prior to conducting a field trip, the Project Manager will identify, using in-house reference materials, the following:

- Known historic sites and districts
- Parks
- Delineated wetland areas
- Sole Source Aquifers
- Known and suspected hazardous waste sites

The following items shall be checked in the field by BEA personnel participating in the project scoping process:

- **Historic Sites**
 - 50+ year old structures
 - Potential Historic Districts
 - Old foundations or building rubble
- **Section 4(f) Properties**
 - Recreational facilities
 - Publicly owned open space
 - Wildlife refuges
- **Air and Noise**
 - Sensitive receptors
 - Significant SOV capacity
 - Need for CO Analysis (intersection)
- **Ecological Resources**
 - Wetlands
 - Floodplains
 - Stream crossings
 - Wildlife habitat

PROJECT SCOPING CHECKLIST

BUREAU OF ENVIRONMENTAL SUPPORT SERVICES (CON'T)

- **Socioeconomics**
 - Relocations
 - Farmland
 - Community facilities
 - Unique aesthetic features

- **Hazardous Waste**
 - Landfills
 - Active industry
 - Abandoned industry
 - Evidence of potential contamination (asbestos, etc.)
 - Railroad or railyards

PROJECT SCOPING CHECKLIST
NJDOT BICYCLE AND PEDESTRIAN

Project or Study Title

Location and Limits

Description

PLANNING CONSIDERATIONS

Regional Considerations

The highway or study area is identified for bicycling and/or walking in an MPO or county bicycle or pedestrian master plan. ___Yes ___No
s

The highway or study area is identified in a regional recreational bicycling plan or provides access to trail facilities. ___Yes ___No
s

The need to improve bicycle compatibility of the highway is identified on NJDOT's Bicycle Compatible Roadway Map. ___Yes ___No
s

Community and Land Use Considerations

The highway or study area passes through a city, town, village or other mixed use community, or area with high density residential land use. ___Yes ___No
s

The highway is identified for bicycling and/or walking in an MPO or county bicycle and pedestrian master plan. ___Yes ___No
s

A transit station and adjacent residential area exists within the study area or within 4.8 kilometers of the highway. ___No
___No

A university or college exists within the study area or 4.8 kilometers of the highway. ___Yes ___No
s

An elementary school or high school and adjacent residential area exists within the study area or within 1.6 kilometers of the highway. ___Yes ___No
s

A major employment center and adjacent residential area exists within the study area or within 4.8 kilometers of the highway. ___No
___No

___Yes
s

—Ye
s

PROJECT SCOPING CHECKLIST

NJDOT BICYCLE AND PEDESTRIAN (CON'T)

Transportation Corridor Considerations

The highway will provide continuity with or between existing bicycle and pedestrian facilities. Yes No
s

The highway is part of a mapped bike route or utilized regularly by local bicycle clubs. Yes No
s

The highway provides access to a transit station, school, college, public recreational facility, or major employment center. Yes No

The highway serves a bus route. Yes No
s

Yes
s

Shopping, office buildings, public buildings, parking lots and other generators of pedestrian traffic are located on both sides of the highway or within the study area. Yes No
s

There is a worn path, indicating regular pedestrian use adjacent to the highway. Yes No
s

Right-of-Way Considerations

The right-of-way is sufficient to allocate the required space for a bikeway or walkway. Yes No
s

Additional right-of-way is available or can be obtained to accommodate a bikeway or walkway. Yes No
s

Physical impediments or restrictions can be avoided or removed to allow the required pavement and pedestrian space to provide a bikeway and/or walkway. Yes No
s

Bridges allow for bicycle and pedestrian access in accordance with bikeway or walkway design guidelines. Yes No
s

Yes
s

Additional right-of-way for bicycle/pedestrian facilities would require:
Reduction or narrowing of travel lanes or turning lanes Yes No
Elimination or reduction of parking Yes No
s

___Ye
s

Opportunities exist for trail development that would parallel the highway.

___Ye ___No
s

PROJECT SCOPING CHECKLIST

NJDOT BICYCLE AND PEDESTRIAN (CON'T)

Bikeway and Walkway Considerations

A bikeway and/or walkway should be recommended for the following situations:

Would the facility or improvement connect bicycle traffic generators within 6.4 kilometers of each other? Yes No
s

Would the proposed facility or improvement connect pedestrian traffic generators within 0.8 kilometers of each other? Yes No
s

Would the facility help to provide continuity with existing bicycle and pedestrian facilities? Yes No
s

Does the Planning/Preliminary Engineering Scoping Checklist indicate that striped and/or signed bicycle lanes or routes would address the needs of area bicyclists? Yes No
s

Does the Planning/Preliminary Engineering Scoping Checklist indicate that sidewalks or other types of walkways would address the needs of area pedestrians? Yes No
s

Would inclusion of a grade separated pedestrian structure resolve a significant pedestrian or bicycle crossing problem? Yes No
s

Would a separate bicycle and/or pedestrian trail resolve an obstacle to non-motorized traffic or provide an opportunity for walking or bicycling that would otherwise not exist? Yes No
s

Roadway and Traffic Operation Considerations for Compatible Roadways

Can parking be restricted or removed to allow for a bicycle compatible roadway? Yes No
s

Can lane widths and turn lanes be modified to allow bicycle compatibility? Yes No
s

The cross section incorporates a paved shoulder for pedestrian use on a rural roadway that does not have a sidewalk. Yes No
s

The right-of-way could accommodate the provision of sidewalks when adjacent land use, pedestrian volumes and motor vehicle volumes indicate a need. Yes No
s

Marked crosswalks are provided at intersections and mid-block crossings where land use, pedestrian volumes, traffic volumes or local Yes No
s

PROJECT SCOPING CHECKLIST

NJDOT BICYCLE AND PEDESTRIAN (CON'T)

conditions indicate a need.

Pedestrian refuge islands are provided for multi-lane crossings. Yes No
s

Medians are provided on multi-lane highways. Yes No
s

Traffic signals provide adequate crossing time for pedestrians and bicyclists. Yes No
s

Traffic signals installed as part of the project accommodate bicycle traffic, including visibility of the signal, sensitivity and placement of the detectors for traffic actuated signals and consideration of signal timing. Yes No
s

The project will provide for the installation of drainage grates that prevent the catching of bicycle wheels. Yes No
s

Guide beams, sign posts, lighting standards, utility poles and other posts and signs are adequately set back from the roadway edge. Yes No
s

Intersecting streets, driveways, curb cuts and railroad grade crossings are examined for hazards to bicycle and pedestrian travel and corrected if possible. Yes No
s

TSM projects do not degrade the highway's accommodation of bicycle and pedestrian travel by narrowing the curb lane or replacing the shoulder with an additional travel lane. Yes No
s

Routine Maintenance Considerations for Compatible Roadways

Have Bicycle Compatible Roadways and Bikeways and Pedestrian Compatible Planning and Design Guidelines been consulted for compatibility design guidelines for repaving, re-striping and shoulder paving projects? Yes No
s

Have lane widths, shoulder widths and signing been determined according to Bicycle Compatible Roadways and Bikeways guidance? Yes No
s

The curb side travel lane and shoulder are maintained to the same (or a higher) standard as the rest of the highway. Yes No
s

Bicycle and pedestrian facility signs and pavement markings are regularly inspected and repaired. Yes No
s

PROJECT SCOPING CHECKLIST

NJDOT BICYCLE AND PEDESTRIAN (CON'T)

Site lines are maintained, especially at corners, intersections, curves on highways and separate bicycle and pedestrian facilities. Yes No
s

Shoulder surfaces are smooth and provide adequate space for bicycle and pedestrian road sharing. Yes No
s

Drainage grate replacements are bicycle safe. Yes No
s

Patching is as seam free and flush with the pavement as possible. Yes No
s

PROJECT SCOPING CHECKLIST

BUREAU OF STRUCTURAL ENGINEERING

General information (bring to scoping meeting)

		Available	Unavailable
1	Latest Inspection Report		
2	Latest Structural Inventory & Appraisal Sheet		
3	Latest Deck Condition Survey Report		
4	Latest Scour Report		
5	Problem Statement		
6	Plans/As-Builts of Existing Structures		
7	Sample Agreement (if new Consultant and Str. Proj. Mgt. Lead)		
8	Other Known Structure Reports or Info		
9	List of other Structures or Known Projects in the Vicinity		
10	Manhour Estimate Disk		
11	Assessment of current use of lands located beneath proposed overhead structures		
12	Other		

PROJECT SCOPING CHECKLIST

BUREAU OF STRUCTURAL ENGINEERING (CON'T)

Structural Scope:

		No Work Req.	Remove	Repair	Replace	Modify/Widen	New
1	Parapet/Railing						
2	Sidewalk						
3	Deck						
4	Deck Joints						
5	Deck Overlay						
6	Cathodic Protection						
7	Superstructure						
8	Bearings						
9	Abutments						
10	Pier						
11	Wingwalls						
12	Footings						
13	Piles						
14	Embankment/Slope Protection						
15	Electrical						
16	Str. Drainage						
17	Utility Supports						
18	Bridge Mtd. Signs						
19	Chain Link Fence						
20	Safety and Substandard Roadway Features near the Bridge (i.e. Guide Rail Attachments)						
21	Other						
22	Retaining Walls						
23	Culverts						
24	OHSS or Cantilevers						
25	Sound Barriers						
26	Deck Patching Guidelines						
27	Approach Roadway						

PROJECT SCOPING CHECKLIST
BUREAU OF STRUCTURAL ENGINEERING (CON'T)

Comments:

1. Project Procedure: 3R 100% State Full Oversight
 Alternate Procedures

2. Proposed Bridge Cross-Section: _____

3. Min. Req. Vertical Underclearance: _____

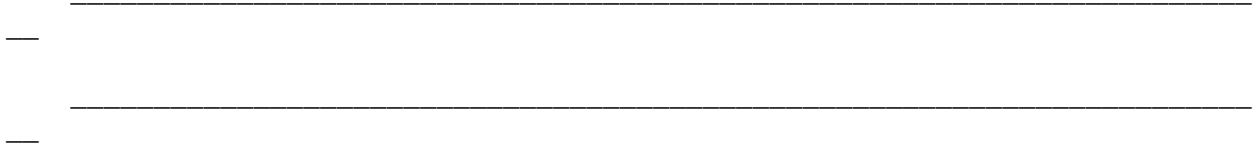
4. Min. Req. Horizontal Underclearance: _____

5. Project Limits:

6. Potential Structural vs. Utility Conflicts (describe):

7. Potential R.O.W. or Easements required for Structural Work and determination of need to acquire fee interest in lands beneath overhead structure will be made by Structural Engineering and Bureau of Right of Way:

8. Environmental Constraints:



PROJECT SCOPING CHECKLIST

BUREAU OF STRUCTURAL ENGINEERING (CON'T)

9. Structural Work Compatibility with Traffic Staging:

10. Constructability/Accessibility:

11. Other Concerns:

PROJECT SCOPING CHECKLIST

BUREAU OF UTILITIES AND RIGHT OF WAY RIGHT OF WAY ENGINEERING

- 1) Right of Way Plans
 - Are existing plans available, including tax maps?
 - Will new right of way plans be required?
 - Identify list of current owners.
 - Identify county, municipal and private roads.
 - Identify municipal and county engineer contacts.
- 2) Involvement
 - Is there railroad right of way involved?
 - Will riparian grants to be required?
 - Is there wetland involvement?
- 3) Driveways
 - Internal circulation, aisle widths.
 - Parking spaces, replacement if necessary in contract.
 - Light fixtures and signs.
 - Building location, zoning, building corner or overhang, access.
 - Existing and proposed clearly defined.
- 4) Grade Changes
- 5) Drainage
 - Before and after.
 - Change in internal drainage system, surface and subsurface.
- 6) Sewers or Septic
 - If septic, where located, replacement?
- 7) Landscape Replacement
 - Headlight glare.
 - Site improvement.
- 8) Sight Triangles
 - Safety of access.

PROJECT SCOPING CHECKLIST
BUREAU OF RESEARCH

JURISDICTION	YES	NO
Is there an existing Agreement		
If yes, is it still valid		
Will a new Map and Agreement be required		

Comments

PROJECT SCOPING CHECKLIST
BUREAU OF TRAFFIC SYSTEMS ENGINEERING

To: _____

From: _____

Date: _____

Phone: _____

Subject: _____

Items

1. Background from Bureau's files
_____ None or insignificant _____ Yes - see comment 1 below
2. Adjacent projects
_____ None _____ Yes - see comment 2 below
3. Proposed development or other issues within limits of project
_____ None _____ Yes - see comment 3 below
4. Was accident analysis prepared by Safety Section?
_____ No _____ Yes comments _____ none _____ Yes - see comment 4 below
5. Capacity - issues, recommendations, problems
_____ No _____ Yes - see comment 5 below
6. Safety - issues, recommendations, problems
_____ No _____ Yes - see comment 6 below

PROJECT SCOPING CHECKLIST

BUREAU OF TRAFFIC SYSTEMS ENGINEERING (CON'T) ELECTRICAL ENGINEERING

A. Signal Project	<u>Yes</u>	<u>N/A</u>	<u>No*</u>
1. The project is properly described as to the type of signalization proposed (i.e. new, reconstruction, closed loop)	()	()	()
2. The Roadways, Municipalities and Counties are correctly identified	()	()	()
3. Reference is made to full conformance of the Electrical Engineering Traffic Signal design manual	()	()	()
4. All appropriate authorities which may be involved are noted (i.e. Turnpike, Parkway, Coast Guard, etc.)	()	()	()
5. Considerations are noted for determination of inclusion of appropriate ITS components (e.g. VMS, fiber optic conduits, etc.)	()	()	()
6. Investigation of utility conflicts, service availability, and inclusion on plan sheets has been mentioned	()	()	()
7. Right of Way limits and investigations of such have been included	()	()	()
8. Catalog cut review in a timely manner by the consultant is noted	()	()	()
9. Attendance requirements at phase review meetings, public inquiries and field meetings is included	()	()	()
10. Plans are being prepared in the format required by the Bureau of Electrical Engineering	()	()	()
11. Lighting investigations at intersections is addressed	()	()	()

* Explain reasons on an attached sheet

PROJECT SCOPING CHECKLIST

BUREAU OF TRAFFIC SYSTEMS ENGINEERING (CON'T)

B. Lighting Project		<u>Yes</u>	<u>N/A</u>	<u>No*</u>
1. The project is properly identified as to roadways, municipality, and county	()	()	()	
2. The project is properly described as to the extent of the lighting system proposed ()	()	()		
3. Reference is made to full conformance to the current Electrical Engineering Lighting Design Manual	()	()	()	
4. All appropriate authorities which may be involved are noted (i.e. Turnpike, Parkway, Coast Guard, etc.)	()	()	()	
5. Considerations are noted for determination of inclusion of appropriate ITS components (e.g. VMS, fiber optic conduits, etc.)	()	()	()	
6. Investigation of utility conflicts, service availability, and inclusion on plan sheets has been mentioned	()	()	()	
7. Right of Way limits and investigations of such have been included	()	()	()	
8. Catalog cut review in a timely manner by the consultant is noted	()	()	()	
9. Attendance requirements at phase review meetings, public inquiries and field meetings is included	()	()	()	
10. Plans are being prepared in the format required by the Bureau of Electrical Engineering	()	()	()	
11. Study will be made to determine where any glare problems or light pollution might be anticipated	()	()	()	

* Explain reasons on an attached sheet

PROJECT SCOPING CHECKLIST

BUREAU OF TRAFFIC SYSTEMS ENGINEERING (CON'T)

C. Resurf. Bridge and Special Projects	<u>Yes</u>	<u>N/A</u>	<u>No*</u>
1. The project is properly described as to the type of signalization proposed	()	()	()
2. The roadway, structures, municipalities, counties, and limits are properly identified	()	()	()
3. Any traffic signals, lighting systems counting stations, WIM installations, etc. are identified and included	()	()	()
4. All appropriate authorities which may be involved are noted (i.e. Turnpike, Parkway, Coast Guard, etc.)	()	()	()
5. Considerations are noted for determination of inclusion of appropriate ITS components (e.g. VMS, fiber optic conduits, etc.)	()	()	()
6. Investigation of utility conflicts, service availability, and inclusion on plan sheets has been mentioned	()	()	()
7. Right of Way limits and investigations of such have been included	()	()	()
8. Catalog cut review in a timely manner by the consultant is noted	()	()	()
9. Attendance requirements at phase review meetings, public inquiries and field meetings is included	()	()	()
10. Plans are being prepared in the format required by the Bureau of Electrical Engineering	()	()	()
11. Consideration has been made for electrical conduits, fiber optic conduits, and junction boxes on/in bridges	()	()	()

* Explain reasons on an attached sheet

PROJECT SCOPING CHECKLIST

BUREAU OF TRAFFIC SYSTEMS ENGINEERING (CON'T)

	<u>Yes</u>	<u>N/A</u>	<u>No*</u>
12. Lighting design calculations according to Electrical Engineer Lighting design manual has been made to locate bridge bosses for lighting units proposed or for future installations	()	()	()
13. The appropriate Electrical Engineering design manuals are referenced for the type of project proposed	()	()	()
14. Review of any other applicable check list (traffic signal or lighting) has been completed	()	()	()

* Explain reasons on an attached sheet.

PROJECT SCOPING CHECKLIST

BUREAU OF UTILITIES AND RIGHT OF WAY MAJOR ACCESS

Prior to the field scoping trip, do the following:

1. Obtain copies of the tax maps along the project limits.
2. Obtain the Desirable Typical Section (DTS)*, Access Level (AL)* and Spacing Distance from the Access Code.
3. Review the project Highway Section. Is the project Highway Section \leq the DTS? If not, the two must be reconciled.
4. Determine if the DTS AL is practical given the project Highway Section. If not, determine what turning movements are appropriate given the Highway Section (refer to N.J.A.C. 16:47-3.1(c)).

In the field, make note of lots that:

- a) have multiple driveways
- b) have shared access
- c) have alternative access
- d) may have substandard edge clearance
- e) may have substandard corner clearance
- f) may have substandard/nonstandard driveway geometrics
- g) may be along full width acceleration, deceleration, left turn or right turn lanes
- h) may require its own left turn and/or right turn lane (AL 4 highways)
- i) may be affected by significant grade changes
- j) may have sight distance problems
- k) may have their access revoked or modified
- l) may have impediments to providing reasonable alternative access

* "Desirable Typical Section" means that Department's long range plan for State Highway configurations, as shown in N.J.A.C. 16:47 Appendix B. Each desirable typical section shows the number of through lanes.

* "Access Level" means the allowable turning movements to and from access points on a State Highway segment based on highway access classification.

PROJECT SCOPING CHECKLIST

INTELLIGENT TRANSPORTATION SYSTEMS ENGINEERING UNIT

ITS Project	<u>Yes</u>	<u>N/A</u>	<u>No</u>
1. Objectives are defined (Closed Loop, Incident Management)	()	()	()
2. Traffic signals, arterial highways, and areas of congestion are identified to determine project limits.	()	()	()
3. Operational needs regarding traffic signal control, CCTV, VMS, HAR, WIM, etc. are identified.	()	()	()
4. Evaluation of existing systems by field checks to local sites and Traffic Operations Center survey of system equipment is included.	()	()	()
5. Development of ITS facility conceptual design plans with facility locations is included.	()	()	()
6. Field investigation to verify existing utilities to avoid conflicts and determine service availability is included.	()	()	()
7. Geotechnical borings and subsurface review of existing plans is included.	()	()	()
8. Structural analysis for structure locations determined in the conceptual design is included.	()	()	()
9. Other agencies are identified and determination of impacts on local municipalities is included.	()	()	()
10. Development of plans to design the systems and subsystems, update traffic signals to current standards, use Microstation.dgn format, estimate of number of plan sheets and details is included.	()	()	()
11. Determination of required permits is included.	()	()	()

PROJECT SCOPING CHECKLIST

INTELLIGENT TRANSPORTATION SYSTEMS ENGINEERING UNIT (CON'T)

	<u>Yes</u>	<u>N/A</u>	<u>No</u>
12. Construction services by designer is included.	()	()	()

PROJECT SCOPING CHECKLIST

DIVISION OF CONSTRUCTION SERVICES AND MATERIALS

1. CONSTRUCTIBILITY ISSUES
 - A. How should the project be staged? Will temporary overlays or patching be needed for staging?
 - B. Should detours be used? Will detour routes need upgrades, if implemented? Is any signing needed?
 - C. Should work be done during day or night? If performed at night, will the intended work conflict with existing local noise ordinances?
 - D. Should the project be closed to traffic? If so, how do we handle locals? Are special signs needed? What about impact to school bus routes and/or emergency vehicles? Pedestrian considerations?
 - E. Will there be access problems for private driveways? How will staging affect access? Are special signs needed?
 - F. Will there be a need for variable message boards and/or highway advisory radio? Could any other extraordinary traffic mitigation efforts (i.e. acceleration) be applicable on this project?
 - G. Will timing of project interfere with local events like shore traffic, county fairs, race tracks, sporting events, high volume traffic generators, etc.?
 - H. When should the project start/finish? What do you think is the optimum month to bid the project for construction efficiency and to reduce CE costs (avoiding winter layovers, seasonal restraints, etc.)?
 - I. Should the project use flaggers, local police and/or State Police for Traffic Safety Services?
 - J. Are adequate size work zones and storage space available at the site for the proposed work?
 - K. Could Quickchange Moveable Barrier expedite or improve productivity in the construction work zone, thereby shortening the construction duration?
 - L. Are there adjacent projects which may pose a conflict with traffic management during construction, including on parallel routes?
 - M. What special snow removal concerns are applicable in this area?
2. Should the limits of construction be extended based on field conditions at the proposed end limits?
3. Are the appropriate types of repairs provided for bridge rehabilitation projects? Should decks be patched or overlaid with latex? What protection is required for the roadway or water course under the structure?
4. Are there any apparent major environmental concerns (buried tanks, landfills, wetlands, asbestos, contaminated areas, etc.)?

PROJECT SCOPING CHECKLIST

DIVISION OF CONSTRUCTION SERVICES AND MATERIALS (CON'T)

5. PAVEMENT ISSUES

- A. Is full depth pavement box needed, or will milling and resurfacing of existing pavement be sufficient?
- B. Is full depth shoulder reconstruction needed? Can the shoulder be used to carry traffic for staging operations?
- C. Are there any distressed areas where joint repair or bituminous patch is needed?
- D. Will sawing and sealing of joints be required?
- E. What types of pavement should be used? Is this a good location for experimental pavement?
- F. What type of subbase should be used? Is material available locally?
- G. Will the proposed pavement widths and milling depths be constructable within equipment limitations?
- H. Will rutting require special milling treatments to achieve new cross slope or typical section?
- I. Will RPM's have to be removed and replaced?

6. DRAINAGE ISSUES

- A. Is the current drainage sufficient? If not, identify locations.
- B. Do existing inlets and drainage structures need to be cleaned out? If so, identify locations.
- C. Do existing inlets and/or manholes need to be reconstructed or have castings replaced? If so, identify locations.
- D. Can you foresee any drainage problems with adjacent properties?
- E. Will any existing underdrains, roof drains, septic systems, or outlet drains be affected?
- F. Are existing inlet grates acceptable, or should bicycle safe grates be used?
- G. Are new curb pieces needed? If so, specify what height is required.
- H. If staged, will the project be drainable in all stages? Will castings have to be reset to allow winter plowing?

7. GUIDERAIL ISSUES

- A. Are there any areas where guiderail should be extended, removed or upgraded?
- B. Does existing guiderail need to be reset? If so, are extra posts needed to provide for replacements?
- C. Is new rail element needed to replace damaged rail? If so, identify locations.
- D. Will staging require resetting of guiderail?
- E. Do end treatments need to be upgraded? Is there space for upgrade?
- F. Will additional areas need to be cleared for guiderail placement?
- G. Where existing guiderail ties into structures, are any upgrades needed? Conditions of parapets and sidewalks should be noted.

PROJECT SCOPING CHECKLIST

DIVISION OF CONSTRUCTION SERVICES AND MATERIALS (CON'T)

8. ELECTRICAL ISSUES

- A. Should any electrical services be upgraded or relocated?
- B. Do any traffic signals or highway lighting fixtures need to be upgraded or relocated?
- C. Will temporary signals or highway lighting be required for staging?
- D. Are there any existing loop detectors?

9. MAINTENANCE OF RIGHT-OF-WAY ISSUES

- A. What driveways need to be reviewed for access compliance?
- B. Check the condition of curbs, sidewalks and driveways. Are any replacements required?
- C. Handicap ramps (new or upgraded) should be addressed?
- D. When designing concrete islands, consider where grass is used very carefully, since this can be a maintenance problem after construction?
- E. Does existing highway signing need refurbishing or replacement?
- F. Are there any privately owned signs, fencing, lighting, or sprinklers in our R.O.W. that do not belong and should be removed on this project?
- G. Will this project require changes to, or a new, jurisdictional agreement?

10. UTILITY ISSUES

- A. Do any power lines or other utilities, including above and below ground property services, need to be relocated? If so, can they be moved before construction?
- B. Does the area require predesign underground utility locations verification? Should test pits be dug? Is there a need to relocate underground utilities?
- C. Is there any evidence of buried fiber optic lines?
- D. Can utility relocations be done under master agreement or will a specific project agreement be required before relocation work can be done?
- E. Is the project in proximity to railroad property - active or exempt?
- F. Will utility betterments be incorporated into this project?

PROJECT SCOPING CHECKLIST

DIVISION OF OPERATIONS

A. MAINTENANCE

1. Will sawing and sealing of joints be required?
2. Are there any joints that need to be repaired or replaced?
3. Does guiderail need to be upgraded?
4. Should curb be replaced?
5. Should all areas of distress (alligator cracking, raveling, etc.) be stabilized prior to resurfacing (including shoulders and ramps)?
6. Will all driveways be accessed?
7. Check inlets and manholes to see if reconstruction is needed?
8. Do drainage pipes and structures need to be cleaned?
9. Can drought resistant plantings be used?
10. Can low maintenance grasses be used?
11. Are slopes flat enough to resist erosion?
12. Can sound walls be placed on right-of-way to eliminate maintenance behind the walls? If not, is access provided?
13. Is access provided to mow behind guiderails? What about vegetation under guiderail?
14. Check out where existing guiderail ties into structures, any upgrades or changes should be addressed!
15. Will RPM's be constructed and/or replaced?
16. Do any cross slopes need to be corrected?
17. Can snow be removed from bridge decks and sidewalks easily?
18. Are shoulders wide enough to accommodate maintenance equipment (snooper trucks, mowers, etc.) without impeding traffic?

PROJECT SCOPING CHECKLIST

DIVISION OF OPERATIONS (CON'T)

19. Do cross drain pipes need to be extended? What about end treatments? Will the extension of cross drain pipes eliminate the need for guiderail?
20. All drainage pipes should be upgraded to the minimum 375 millimeter diameter as required?
21. Longlife traffic stripes should be used or thermoplastic to reduce maintenance.
22. Will all non-standard inlets be replaced?
23. Will 75 millimeters or more curb face be maintained?
24. Will intersection areas receive handicap ramps?
25. Is there a fill area or other area where accumulated sweeping or other solid waste can be disposed?
26. Check all maintenance of grass area for future mowing problems, including those surrounded by guiderail.
27. How will maintenance clean oil/separators?
28. If this could be a widening project determine if any utilities reside in a live lane and if so could they be relocated?
29. Examine and review current SI&A sheets and bridge reports on all structures.
30. Close all median openings where left hand turn slots cannot be employed.
31. All roadways with flat profiles should be considered as candidates for open-graded surface treatments to reduce hydroplaning.
32. When possible incorporate automated road and weather systems in the project.
33. Is guiderail back far enough to allow snow plowing - not at curb face?
34. Should fencing be removed/relocated when sound walls are erected? (no confined areas between)
35. Is there access behind sound walls?
36. Can we sell in fee (\$1.00) the area between the sound walls and the adjacent property line? This will eliminate a big future maintenance cleanup problem. Retain easement for repairs, etc.

PROJECT SCOPING CHECKLIST

DIVISION OF OPERATIONS (CON'T)

37. Are underdrains needed?
38. Exercise all adjacent area improvements so as to eliminate need for guiderail?
39. Do not obstruct moveable areas with delineators, mile markers, etc. Move them back as far as possible.
40. Identify any slope erosion!
41. Employ methods so vegetation will not grow under guiderail, such as plastic panels, I-5 mix, etc.
42. Where mowing is required on islands or bowls, construct depressed curb for mower entry!
43. Keep signs off points where ramps, etc. exit off mainline. This is a snow storage area!
44. Consider increasing scupper drain pipe size from 150 millimeters to 200 millimeters with no 90 degree bends, using all 135 degree bends with cleanouts!
45. Include bridge deck repairs if within limits of contract!
46. Plant ivy or climbing vegetation at sound wall to deter graffiti!
47. Include jurisdictional agreements, existing or proposed, perhaps with upgrades. Some responsibilities can be relinquished to local authorities!
48. Consider installing living snow fence when applicable!
49. Look at the possibility of upgrading signing or to eliminate non-essential signs!
50. Add an item for sound wall placement so that wall heights will not shade travel way during the winter months!
51. Consider using trench drains where water seepage problems are occurring!
52. Are all drainage problems addressed?
53. If pavement grade is raised, are driveways reconstructed to prevent water from flowing into them?
54. Consider agreements with farmers to have them leave the last three rows of corn for a natural snow fence.

PROJECT SCOPING CHECKLIST

DIVISION OF OPERATIONS (CON'T)

55. Look to include fertilizing and seeding for areas within the R.O.W. where there is no existing grass/vegetation?
- 56 Other?

B. COMMUNITY INVOLVEMENT

1. Will a public hearing be needed?
2. Are there any complaints filed concerning this area?
3. Are there any requests from the public (jughandles, lighting, traffic signals, sidewalks, etc.)?
4. Are there any requests from politicians or special interest groups?
5. Are there any requests from the County or Municipal Engineer?
6. Is there any provisions to improve bicycle access or other recreation facilities?
7. Will any intended work conflict with local noise ordinances?
8. Are there any sensitive impacts within the project area such as schools, emergency response units, hospitals, loss of property, trees, sidewalks, driveways, access, etc.?
9. Check to ensure if a detour is required?
10. Contact M.P.O. or Planning Bureau!
11. Other?

C. PERMITS

1. Driveway alignment and contour?
2. Driveway offsets, centerline and property line?
3. Number of driveways to a property? Driveway width?
4. Check with property owner with no access point to see if owner would like to file for access?
5. Make sure landscaping will not affect the project?
6. Will all driveways be accessed?

PROJECT SCOPING CHECKLIST

DIVISION OF OPERATIONS (CON'T)

7. Any encroachments?
8. Check edge clearance 3.6 meter minimum?
9. Corner clearance?
10. Conditions of shoulders and width for proposed accel/decel lanes?
11. Are there any modifications that may be needed to municipal streets?
12. What is the status of utility work and other pertinent highway occupancy permits in the project area?
13. Other?

D. REGIONAL ELECTRICAL

1. Do any overhead wires need to be relocated?
2. Should any loop detectors be upgraded?
3. Will new traffic signals be adequately protected from traffic?
4. Should any traffic signals be upgraded?
5. Can any wiring be upgraded?
6. Does conduit size need to be increased or additional conduit included?
7. Check to see if any 508 millimeter JB's should be replaced with 457 by 914 millimeter JB's?
8. Any signal phase on one pole should be changed?
9. Should detection areas (roadway surface) be upgraded?
10. Pedestrians right-of-way should be considered if possible!
11. Can forewarning devices be used where needed?
12. Will synchronization of other signals be of concern?
13. Are the as-built plans on file accurate?

PROJECT SCOPING CHECKLIST

DIVISION OF OPERATIONS (CON'T)

14. Is a temporary traffic signal system needed while re-wiring the traffic signal or for staged construction?
15. Will the existing controller accommodate the proposed traffic signal upgrades, or will a new controller be needed?
16. Are there any outstanding temporary and/or regular traffic signal directives?
17. Contact the local municipality for their input.
18. Other?

E. TRAFFIC ENGINEERING

1. ITS options should be addressed!
2. Are integrated signal systems needed?
3. Are variable message signs or highway advisory radio needed?
4. Should HOV lanes be considered?
5. Check all nearby design and construction projects for possible conflicts or traffic flow problems?
6. What is the schedule of allowable closures?
7. How should this project be staged?
8. Impact to mass transit?
9. Special signs needed for traffic flow, control, information, etc.?
10. Special signs needed for businesses and safety of pedestrians as well as customers?
11. If ramps are involved, do we need to ball bank ramps to determine advisory speed?
12. Any special regulations needed for speed limits, turn prohibitions, parking prohibitions, one-way designations, etc.?
13. Other?

PROJECT SCOPING CHECKLIST

DIVISION OF OPERATIONS (CON'T)

F. TRAFFIC OPERATIONS

1. ITS options should be addressed!
2. Is an integrated signal system, with incident management capabilities, warranted?
3. Are variable message signs or highway advisory radio needed? Temporary or permanent?
4. Should HOV lanes be considered?
5. Check all nearby design and construction projects for possible conflicts or traffic flow problems?
6. What is the schedule of allowable closures?
7. How should this project be staged?
8. Impact to mass transit?
9. Special signs needed for traffic flow, control, information, etc.?
10. Special signs needed for businesses and safety of pedestrians as well as customers?
11. Consider all evacuation routes if a detour is anticipated?
12. What is the appropriate communications backbone (telephone, fiber optic, microwave, cellular, none)?
13. Should video surveillance, traffic speed and/or weather detection systems be included?
14. Other?

Attachment 3 - Federal Aid Policy Guide

FEDERAL AID POLICY GUIDE
23 CFR 625
DESIGN STANDARDS FOR HIGHWAYS

SUBCHAPTER G - ENGINEERING AND TRAFFIC OPERATIONS

PART 625 - DESIGN STANDARDS FOR HIGHWAYS

Sec.

625.1 Purpose

625.2 Policy

625.3 Application

625.4 Standards, policies, and standard specifications

625.5 Guides and references

Appendix A - Documents cited in Part 625

Authority: 23 U.S.C. 109, 315, and 402; Sec. 1073 of Pub. L. 102-240, 105 Stat. 1914, 2012; 49 CFR 1.48(b) and (n).

[58 FR 38293, July 16, 1993]

Source: 51 FR 16832, May 7, 1986, unless otherwise noted.

Editorial Note: For document cited by bracketed numbers, see Appendix A.

Sec. 625.1 Purpose.

To designate those standards, specifications, policies, guides and references that are acceptable to the Federal Highway Administration (FHWA) for application in the geometric and structural design of highways.

Sec. 625.2 Policy.

- (a) Plans and specifications for proposed Federal-aid highway projects shall provide for a facility that will:
 - (1) Adequately meet the existing and probable future traffic needs and conditions in a manner conducive to safety, durability, and economy of maintenance; and
 - (2) Be designed and constructed in accordance with standards best suited to accomplish the foregoing objectives and to conform to the particular needs of each locality.
- (b) The development and overall management of highway facilities must be considered as a continuing program. This process of highway management commences with planning and extends through design, construction, maintenance, and operation. To assure a continuing acceptable level of safe traffic service, it is essential to provide for adequate maintenance and periodic resurfacing, restoration, and rehabilitation (RRR) throughout the life of the highway. The RRR work is defined as work undertaken to

extend the service life of an existing highway and enhance highway safety. This includes placement of additional surface material and/or other work necessary to return an existing roadway, including shoulders, bridges, the roadside, and appurtenances to a condition of structural or functional adequacy. The RRR work may include upgrading of geometric features, such as minor roadway widening, flattening curves, or improving sight distances. The RRR work is an essential part of any highway program, and each State and local agency should provide for these types of improvements in each annual highway program.

- (c) An important goal of the FHWA is to provide the highest practical and feasible level of safety for people and property associated with the Nation's highway transportation systems and to reduce highway hazards and the resulting number and severity of accidents on all the Nation's highways. Accordingly, the only constraint on the application of Federal-aid funds to RRR work is that they must be used to provide a facility that adequately meets existing and probable future traffic needs and conditions in a manner conducive to safety, durability, and economy of maintenance, and acceptable levels of community and environmental impact. The RRR projects shall be designed and constructed in a manner that will enhance highway safety and accomplish the foregoing objectives according to the particular needs of each State and locality.

[51 FR 16832, May 7, 1986, as amended at 54 FR 281, Jan. 5, 1989]

Sec. 625.3 Application

- (a) The standards, policies, and standard specifications contain specific criteria and controls for the design of highways. Deviations from specific minimum values therein are to be handled in accordance with procedures in paragraph (f) of this section.

If there is a conflict between criteria in the documents enumerated in Sec. 625.4 of this part, the latest listed standard, policy, or standard specification will govern.

- (b) The guides and references (handbooks, reports, etc.) include information and general controls that are valuable in attaining good design and in promoting uniformity. They are intended to provide general program direction. Project-by-project deviations from the criteria in guides and references do not require handling as exceptions under paragraph (f) of this section.
- (c) Application of FHWA regulations, although cited in Sec. 625.4 of this part as standards, policies, and standard specifications, shall be as set forth therein.
- (d) This regulation does not establish Federal standards for work that is not federally funded; however, the safety related criteria of the referenced documents are established as goals for developing State and local safety programs for all public highways as required by Highway Safety Program Standard 12, 23 CFR 1204.4.
- (e) The Division Administrator shall determine the applicability of the roadway geometric design standards to traffic engineering and safety projects for signing, marking, signal installation, and traffic barriers which include very minor or no roadway work. Formal

findings of applicability are expected only as needed to resolve controversies.

- (f) Exceptions.
 - (1) Approval within the delegated authority provided by FHWA Order 1-1 [2] may be given on a project basis to designs which do not conform to the minimum criteria as set forth in the standards, policies, and standard specifications for:
 - (i) Experimental features on projects; and
 - (ii) Projects where conditions warrant that exceptions be made.
 - (2) The determination to approve a project design that does not conform to the minimum criteria is to be made only after due consideration is given to all project conditions such as maximum service and safety benefits for the dollar invested, compatibility with adjacent sections of roadway and the probable time before reconstruction of the section due to increased traffic demands or changed conditions.

Sec. 625.4 Standards, policies and standard specifications

The documents listed in this section are incorporated by reference in accordance with 5 U.S.C. 552(a) and are on file at the Office of the Federal Register in Washington, DC. They are available for inspection as noted in footnote numbers 1 and 2 in the Appendix to this Part.

- (a) Roadway and appurtenances.
 - (1) A Policy on Geometric Design of Highways and Streets, AASHTO 1990. [3]
 - (2) A Policy on Design Standards-Interstate System, AASHTO, 1991. [3]
 - (3) Interim Selected Metric Values for Geometric Design, AASHTO, 1993, [3]
 - (4) The geometric design standards for resurfacing, restoration, and rehabilitation (RRR) projects on highways other than freeways shall be the procedures and the design or design criteria established for individual projects, groups of projects, or all nonfreeway RRR projects in a State, and as approved by the FHWA. The other geometric design standards in this section do not apply to RRR projects on highways other than freeways, except as adopted on an individual State basis. The RRR design standards shall reflect the consideration of the traffic, safety, economic, physical, community, and environmental needs of the projects.
 - (5) A Policy on U-Turn Median Openings on Freeways, AASHTO 1960. [3]
 - (6) A Policy on Access Between Adjacent Railroads and Interstate Highways, AASHTO 1960. [3]
 - (7) Erosion and Sediment Control on Highway Construction Projects, FHWA, 23 CFR Part 650, Subpart B.

- (8) Location and Hydraulic Design of Encroachments on Flood Plains, FHWA, 23 CFR Part 650, Subpart A.
 - (9) Water Supply and Sewage Treatment at Safety Rest Areas, FHWA, 23 CFR Part 650, Subpart E.
 - (10) Procedures for Abatement of Highway Traffic Noise and Construction Noise, FHWA, 23 CFR Part 772.
 - (11) Accommodation of Utilities, FHWA, 23 CFR Part 645, Subpart B.
 - (12) Pavement Design, FHWA, 23 CFR Part 626.
- (b) Bridges and Structures.
- (1) Standard Specifications for Highway Bridges, Sixteenth Edition, AASHTO 1996, and Interim Specifications, Bridges, AASHTO, [3]
 - (2) Standard Specifications for Movable Highway Bridges, AASHTO 1988. [3]
 - (3) Bridge Welding Code (D1.5-95), AASHTO/AWS 1995. [3,4]
 - (4) Reinforcing Steel Welding Code AWS D 1.4-79. [4]
 - (5) Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, AASHTO 1994, and Interim Specifications, Bridges, AASHTO. For use on Federal-aid highway projects, the requirement for maximum change in velocity in Section 7, Breakaway Supports, may be 4.9 meters per second in lieu of the 4.6 meters per second contained in the AASHTO specifications. [3]
 - (6) Navigational Clearances for Bridges, FHWA, 23 CFR Part 650, Subpart H.
- (c) Materials
- (1) General Materials Requirements, FHWA, 23 CFR Part 635, Subpart D.
 - (2) Standard Specifications for Transportation Materials and Methods of Sampling and Testing, Part I and Part II, AASHTO 1986. [3]
 - (3) Sampling and Testing of Materials and Construction, FHWA, 23 CFR part 637, Subpart B.

[51 FR 16832, May 7, 1986, as amended at 52 FR 36247, Sept. 28, 1987; 54 FR 281, Jan. 5, 1989; 58 FR 25934, April 29, 1993; FR 25939 April 29, 1993]

Sec. 625.5 Guides and references.

The following are citations to publications which are primarily informational or guidance in character and serve to assist the public in knowing those materials which are considered by FHWA to provide valuable information in attaining good design.

(a) Roadway and appurtenances.

- (1) An Informational Guide for Roadway Lighting, AASHTO 1984. [3]
- (2) Highway Design and Operational Practices Related to Highway Safety, Report of the Special AASHTO Traffic Safety Committee, AASHTO 1974. [3]
- (3) Guide for Selecting, Locating and Designing Traffic Barriers, AASHTO 1977. [3]
Barriers classified as either operational or experimental, except Type MB 1 median barriers, are acceptable for Federal-aid projects.
- (4) An Informational Guide on Fencing Controlled Access Highways, AASHTO 1967. [3]
- (5) An Informational Guide for Preparing Private Driveway Regulations for Major Highways, AASHTO 1960. [3]
- (6) Highway Capacity Special Report 209, Highway Capacity Manual, Transportation Research Board, 1985. [5]
- (7) Guidelines on Pavement Management, AASHTO 1985. [3]
- (8) Handbook of Highway Safety Design and Operating Practices, FHWA 1978. [2]
- (9) Skid Accident Reduction Program, T 5040.17, FHWA December 23, 1980. [2]
- (10) Guidelines for Skid Resistant Pavement Design, AASHTO 1976. [3]
- (11) Special Report 214, Designing Safer Roads, Practices for Resurfacing, Restoration, and Rehabilitation, TRB 1987. [5]
- (12) AASHTO Guide for Design of Pavement Structures, AASHTO 1986. [3]
- (13) National Cooperative Highway Research Program Report 350, Recommended Procedures for the Safety Performance Evaluation of Highway Features, TRB 1993. [5]

(b) Bridges and Structures

- (1) A Guide for Protective Screening of Overpass Structures, AASHTO 1990. [3]
- (2) Manual for Maintenance Inspection of Bridges, AASHTO 1983, and Interim Specifications, Bridges, AASHTO 1986 through 1988. [3]
- (3) Guide Specifications for Fracture Critical Non-Redundant Steel Bridge Members, AASHTO 1978, and amending Interim Specifications, Bridges, AASHTO 1981 through 1987. [3]
- (4) Guide Specifications for Horizontally Curved Highway Bridges, AASHTO 1993.
- (5) Guide Specifications for Seismic Design of Highway Bridges, AASHTO 1983, and amending Interim Specifications, Bridges, AASHTO 1985 through 1988. [3]
- (6) Highway Drainage Guidelines, Volumes I through VIII, AASHTO 1987. [3]
- (7) Manual on Subsurface Investigations, AASHTO, 1988. [3]
- (8) Guide Specifications for Bridge Railings, AASHTO 1989. [3]

(c) Other

- (1) Transportation Glossary, AASHTO 1983. [3]
- (2) A Guide for Erecting Mailboxes on Highways, AASHTO 1984. [3]
- (3) A Guide on Safety Rest Areas for the National System of Interstate and Defense Highways, AASHTO 1968. [3]
- (4) Guide for Development of New Bicycle Facilities, AASHTO 1981. [3]
- (5) Guide Specifications for Highway Construction AASHTO 1985. [3]

[51 FR 16832, May 7, 1986, as amended at 53 FR 15671, May 3, 1988; 54 FR 281, Jan. 3 1989; 54 FR 1844, Jan. 17, 1989; 54 FR 25117, June 13, 1989; 58 FR 38293, July 16, 1993]

Appendix A - Documents Cited in Part 625

1. The design standards listed in Sec. 625.4 are incorporated by reference and are on file at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, DC.
2. These documents may be reviewed at the Department of Transportation Library, 400 7th Street, SW, Washington, DC 20590 in room 2200. These documents are also available for inspection and copying as provided in 49 CFR Part 7, Appendix D.
3. American Association of State Highway and Transportation Officials, Suite 225, 444 North Capitol Street, NW, Washington, DC 20001.
4. American Welding Society, 2501 Northwest 7th Street, Miami, Florida 33125.
5. Transportation Research Board, 2101 Constitution Avenue, NW, Washington, DC 20418.

[51 FR 16832, May 7, 1986, as amended at 54FR 282, Jan. 5, 1989; 58 FR 25939, April 29, 1993]

Attachment 4 - Highway Sections

A set of Highway Section sketches shall be prepared on 210 by 297 millimeter, 210 by 360 millimeter, or half scale contract plan sheets (ISO A3 sheets), whichever is most appropriate for the specific project conditions (see Figure 1 for an example of a Highway Section sketch). The Highway Section sketch is intended to be a sketch that indicates the basic information necessary for the preparation of the Scope Summary and ultimately contract plan typical sections.

General Notes

- A. Highway Sections for pavement transition widths and superelevation transition areas are not required.
- B. Highway Sections for projects of approximately 300 meters or less are not required.
- C. Highway Sections for resurfacing projects are not required when the existing cross slopes, lane widths and shoulder widths conform to the appropriate design standard and no modifications to these design elements are proposed.
- D. Scales for Highway Section sketches are not required.
- E. Identification of the proposed pavement design is not required.

Highway Section sketches shall include the following:

1. **Normal Section**

- A. Both existing and proposed Highway Section conditions shall be shown. These conditions may be shown as two (2) separate sketches, if they can be referenced to each other (baseline, centerline, etc.). Dimensions shall be labeled as existing or proposed.
- B. Identify existing and proposed lane widths and their corresponding cross slopes and label each "Lane", "Left-turn lane" or "Two-way left-turn lane" as applicable.
- C. Identify existing and proposed shoulder widths and their corresponding cross slopes and label each "Shoulder". If the existing shoulder width varies, indicate the maximum and minimum width.
- D. Show existing pavement width and type. If concrete pavement exists, indicate the location of all longitudinal joints.
- E. Indicate the direction of travel (NB, SB, etc.).
- F. Identify the following roadside details:
 - roadside or border dimensions and cross slopes
 - existing and proposed guiderail with offset dimensions
 - existing and proposed right of way lines
 - existing and proposed sidewalk location and cross slope

- cut and fill slopes
- curb height and existing and proposed face reveal
- berm height and width

- G. Where applicable, show and dimension the median area and label "Median". If the median width varies, indicate the maximum and minimum width. If median barrier is proposed, identify median barrier location and dimension. For resurfacing projects, indicate remaining median barrier reveal.
- H. An inset shall be used for auxiliary lanes, showing the lane width and cross slope, and labeled "Auxiliary Lane". If a shoulder is to be used adjacent to the auxiliary lane, the shoulder width and cross slope should be indicated and labeled "Shoulder".
- I. Where applicable, show and dimension all Collector-Distributor "C-D Roads", including cross slopes, and label "C-D Road". If multi-lane, identify each lane width and cross slope and label each accordingly.

2. **Superelevated Section**

- A. Same as 1. above.
- B. Indicate the specific maximum superelevation (4% or 6% maximum) which will be used to determine the rate of superelevation on the project. The actual superelevation should not be mentioned. A separate sketch for each curve is not required.
- C. Indicate the maximum rollover between lane and shoulder on the high side of the superelevated section (7% to 8% maximum).

3. **Ramp Section**

- A. Show a minimum and maximum ramp cross slope, minimum width and roadside treatment (see 1.F. above).
- B. If a two (2) lane ramp, identify minimum lane widths, cross slopes and label each "Lane".

4. **Relocated Local Road, Service Roads, Connectors, etc.**

Highway sections for those roadways that will be under NJDOT jurisdiction shall conform to 1. and 2. above. For those roadways not under NJDOT jurisdiction, the proposed Highway Section should be coordinated with the appropriate local or county officials.

Analysis of Tapered Concrete Terminal Sections

1. New Concrete Barrier Curb Locations

All new locations of concrete barrier curb, where concrete barrier curb never existed before, that terminate within the clear zone on any roadway segment where the posted speed will exceed 40 mph shall have the exposed approach concrete barrier curb end protected by a crash cushion.

2. Existing Concrete Barrier Curb Locations

On Reconstruction projects, all existing concrete barrier curb locations that terminate within the clear zone on any roadway segment where the posted speed exceeds 40 mph should have the exposed concrete barrier curb end protected by a crash cushion, or justification provided in the Project Report.

Accidental/Controlling Substandard Design Element Analysis

Only those highway elements that are identified as "controlling design elements" and do not conform to a specified design value are categorized as "controlling substandard design elements" (refer to Section 3.8, Design Exceptions, for a discussion of controlling design elements).

1. Overall Analysis

- A. Request an overall accident analysis of the project limits from the Bureau of Traffic Signal and Safety Engineering (see Figure 2 for a sample memorandum). This will compare over-represented accidents against the accident rate occurring on highways of similar section.
 - B. If the overall analysis accident rate is greater than the statewide rate, identify any potential areas where there may be an increased incidence of accidents and request Traffic Signal and Safety Engineering to evaluate each location separately. Otherwise, proceed to Part 2.
2. For Non-Interstate resurfacing projects (all other project types, proceed to Part 3), if the overall rate is less than the statewide rate, proceed to Step 6, unless it is concluded that there is a serious potential for accidents. If the overall rate is greater than the statewide average, the Bureau of Traffic Signal and Safety Engineering will contact the project manager to discuss individual categories.

A. Wet Weather

If wet weather accidents are over-represented, it is likely that a reduction to the accident rate will occur based on the proposed resurfacing.

B. Accident Records

If over-represented accidents have occurred (other than Wet Weather) analyze individual accident reports to determine if a controlling substandard design element is involved.

C. Mitigating Measures

Determine if mitigating measures can be included in the scope of the project to reduce over-represented accidents.

If A and B are determined to be acceptable, or C can be incorporated into the project, proceed to Step 6, otherwise go to Part 3 or submit a Problem Statement.

3. Identify all controlling substandard design elements.
4. Request an individual accident analysis of all controlling substandard design elements from the Bureau of Traffic Signal and Safety Engineering.
5. On existing highways, where the utility pole offset does not meet Department standards, request an accident analysis of existing utility pole locations from the Bureau of Traffic Signal and Safety Engineering (refer to Section 8 of the Design Manual Roadway).
6. Incorporate the results in the Project Fact Sheet.

FIGURE 2

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM**

To: _____
Manager
Traffic Signal and Safety Engineering

From: _____
Project Manager

Date:

Phone:

Subject: Overall Accident Analysis

Please provide my office with the actual accident rate, and the statewide accident rate for highways of similar cross section, for the following project(s):

Route	Milepost	Cross-Section	Job #
157	0.0-0.91	2 Lane - No shoulder	0116501
68	3.2-7.0	4 Lane - Grass Median with shoulders	0306501
68	7.0-7.2	4 Lane - Grass Median with shoulders (intersection)	0306501
68	7.2-8.0	4 Lane - Grass Median with shoulders	0306501
68	0.0-3.2	2 Lane - with shoulders	0306501

It is our understanding that the data requested will encompass both directions of travel on a divided highway. Also, please provide a copy of the Accident Detail Report printout for each project. If you prepare a collision diagram, or recommend that a collision diagram be prepared, please include that also.

3.2 Final Scope Development

Final Scope Development produces a Recommended Alternative which sets the Scope for Design Development and Construction. This effort includes advancing preliminary engineering necessary to complete the environmental document, obtaining formal community input, receiving approved design exceptions, and advancing those Design Services critical to the Design Development schedule. At the beginning of Final Scope Development, the Project Manager assigned to oversee the Feasibility Assessment process, will assume full control of the Project.

Some projects will have been assigned directly to a Program Manager by the Capital Program Development Committee. These will be projects which the Bureau of Capital Program Development identified as being of limited scope and for which the solution to the problem is apparent. The potential project will, in such instances, be advanced without having gone through the Feasibility Assessment phase. Although the solution to the problem is apparent, the Project Screening, Step 1 (1A - 1D) of Section 3.1, will be implemented by the Project Manager to allow the Scope Team to offer input into the project. It is possible that this input could ultimately lead to a decision to recommend the project be remanded back to the Feasibility Assessment process.

Project Screening conducted for this type of project is considered to be part of the project development process and as such will be conducted under the management of a Project Manager.

Step 1. Initiate Formal Community Involvement and Environmental processes:

Step 1A. Obtain Formal Community Involvement Buy-In:

A public meeting will be generally arranged. Although the Initially Preferred Alternative will be based on early involvement by local officials and environmental agencies, this may be the first time the public at large will be presented with the project's impacts clearly delineated on paper. This may lead to some minor modifications to the Initially Preferred Alternative. The Bureau of Environmental Services will be advised of any changes so that they can be reflected in the environmental document. If major changes are requested by the public during this phase, the project may be reassigned to BPSD for additional Feasibility Assessment.

At the end of the community involvement process, the Office of Community Relations will ask the local officials to provide a resolution of support endorsing the project. The scheme is finalized once comments have been received and evaluated, and the appropriate adjustments are made, and combined with input from the environmental process, will be used to produce the Recommended Alternative.

Step 1B. Initiate Environmental Review of the Initially Preferred Alternative:

Environmental input is solicited from the Bureau of Environmental Services, NJDEP (including the SHPO), FHWA, and other environmental agencies. This will essentially provide an opportunity for formal participation in the Scope Development process.

The Bureau of Environmental Services will start the process of obtaining approval of the appropriate environmental document based on the Initially Preferred Alternative. Close consultation will need to be maintained with the Project Manager to ensure coordination with other concurrent activities.

Step 2. **Advanced Design Services Coordination:**

A number of Design Services will be initiated during Final Scope Development. These Design Services may not be needed to set the scope of the project, but will serve to advance later design activities. Most will be initiated by the Project Manager supplying either a consultant, or functional units within the Division of Design Services, the Initially Preferred Alternative. Design Services will use the Initially Preferred Alternative, as well as the Base Plans and other information provided with the Problem Statement Package, to begin their various sub processes. These initial design activities will need to be completed prior to start of Design Development, and summarized into reports attached to the Scope Development Package.

It should be noted that many of these activities involve the gathering of existing data which will be unaffected by the finalization of the Recommended Alternative. However, since these services are not essential to scoping, and are labor intensive, the Project Manager will need to carefully assess the risks associated with starting these Design Services against the potential for minor changes which may occur because of environmental and/or community issues. Potential adverse effects to the Design Development schedule must also be assessed. If the risk of changes is deemed high, the Project Manager may decide to hold off initiation of these Design Services until the actual resolution of community support and environmental approvals are received. Such a decision will have to be carefully weighed because the extra process will delay start of the Final Scope Development, but will minimize the need to discard work later if the community involvement or environmental processes results in significant scope changes after Design Services are started.

Step 2A. **Utilities:**

Upon receipt of the Initially Preferred Alternative, the BPSD, Bureau of Utilities or the Department's consultant will determine the locations of existing utilities and have them plotted on the base plans. These Utilities mark ups will be submitted to the utility companies for location verification when needed. The Bureau of Utilities will also develop Master Utility Agreements at this time. A preliminary relocation cost estimate will be prepared.

Step 2B. **Geotechnical:**

Upon receipt of the Initially Preferred Alternative, the Geotechnical Unit or the Department's consultant will undertake a preliminary boring program, for all projects that involve structures, or as otherwise deemed relevant by the Project Manager.

Step 2C. Drainage:

Upon receipt of the Initially Preferred Alternative, the Hydraulics Section of the Bureau of Civil Engineering or the Department's consultant will locate the existing drainage system and have it plotted on the base plans. The Hydraulics Section will then determine whether that system needs to be upgraded to handle current flows, and if so, determine preliminary ROW needs and drainage costs. The BPSD will only perform drainage engineering if the flooding or inadequate drainage issues which require major scoping are raised in the Problem Statement Package and/or the Project Screening.

Step 2D. Base Plan Evolution:

The Design Coordination Unit or the Department's consultant will insure that the utilities and drainage information are adequately reflected in the Base Plans in their custody. The BPSD will be apprised of substantial changes so that the Initially Preferred Alternative can be revised as necessary. These "marked up" plans will be then used for development of Preliminary ROW plans needed for development of budget level ROW cost estimates.

Step 2E. Right of Way Estimates:

The Preliminary ROW plans will identify: partial takings; full takings demolition; environmentally sensitive parcels; utility and drainage easements; and construction easements. Access changes will also be reflected on the plans to the extent available. These plans will be used by the Bureau of ROW to develop their budget level estimates for the ROW acquisition process that will occur simultaneous with final design.

Step 3. Obtain Environmental Approvals for the Initially Preferred Alternative:

The analysis and coordination work initiated by Bureau of Environmental Services in Step 1A may lead to changes in the IPA. It may also lead to a recommendation to terminate the project, to recycle the project to Concept Development, or for more scoping. Any changes will be documented, and the formal approvals of the environmental documents will be obtained. (See Section 8 - Environmental of this Manual for more details.)

Step 4. Select a Recommended Alternative:

The Recommended Alternative will be selected by the BPSD, with concurrence by the Project Manager, to recommend the scope for final Design Development, Right of Way Acquisition, and Construction. This will occur only after the environmental document, community involvement, and Advance Design Service processes are completed. The Project Manager and the BPSD will attempt to attain "buy-in" for the Recommended Alternative, or reaffirm "buy-in" if the Initially Preferred Alternative has been modified, from all key "stakeholders" represented on the Scope Team.

Step 5. Preparation of Highway Sections:

The purpose of the Highway Section is to ensure that proposed improvements to a highway segment conform to the appropriate design standard and are consistent with the adjacent highway section and its environment. This intent is different from the "Typical Section" plan

sheet required in construction contract documents. Normally a few highway sections will be necessary for the purpose of showing the general intent of the project.

Structure sketches are to be prepared in accordance with Section 17.2. Highway sections are to be prepared in accordance with Attachment 4. The initial development of this information may have occurred during the Feasibility Assessment; however, the formal approval occurs at the conclusion of Final Scope Development. Highway sections and structure sketches are to be recommended for approval by the Bureau of Design Coordination after consultation with the Office of Geometrics and the Bureau of Structural Engineering.

Step 6. Design Exceptions:

All design exceptions that will be needed for the Recommended Alternative will be identified and obtained in accordance with Section 3.8 prior to completion of the Scope Development phase.

Step 7. Prepare Scope Development Package:

During this Step, the BPSD takes care of the administrative steps needed to complete the study effort and present it as a formal proposal. BPSD will refine construction costs, and incorporate input from Design Services which will be attached to the Scope Development Package and summarized therein.

The final Scope Development Package which documents relevant scoping related issues will be prepared and submitted to the Program Manager as follows:

***Recommended Alternative:**

A description of the Recommended Alternative and reasons for its selection will be documented. Preliminary plans, studies, highway sections, and structure sketches depicting the Recommended Alternative should be included.

***Development of other Alternatives:**

The full range of design and alignment alternatives which were considered will be discussed.

***Public Involvement:**

The Public Involvement Program will be documented.

***Background Information:**

All background data accumulated during the Scope Development Process will be included.

***Environmental Documentation:**

The approved Environmental Document, including all environmental constraints and issues which provided input for scoping will be included. The Scope Development Process will not be considered complete unless the Environmental Document is approved. The Bureau of Environmental Services is responsible for obtaining this approval.

***Additional Reports and Cost Estimates from other Units:**

Each unit providing Advance Design Services will provide a "mini" report and cost estimates and a summary of their work performed.

***Approved Design Exceptions: if applicable**

***Access Impact Summary:**

Includes a discussion of Access implications of the Recommended Alternative identifying and providing justification for any Access Code waivers that may be required.

Step 8. Presentation of the Recommended Alternative to the Capital Program Development Committee:

The Project Manager will use the Scope Development Package as the basis of a presentation to the Capital Program Development Committee. The intent will be to obtain the Capital Program Development Committee's approval to enter the project in the Draft Project Pool for Final Design. The completion of this step will constitute "Scheme Set".

3.3 Activity Descriptions

This section describes the critical activities in the Capital Project Delivery Process, from Scope Development through Final Design (refer to the attached Project Delivery Process Network diagram). The activities referenced in this section include a description of each activity along with examples of some primary tasks respective of that activity. In addition, references are included where additional information on certain activities may be obtained.

Activity Summary

- Topographic Survey (1170)
- Utility Company Initial Contact (1100)
- Establish Utility Engineering Funding (1110)
- Prepare Utility Agreement (1130)
- Utility Base Plan Preparation (1140)
- Utility Discovery and Verification (1120)
- Structure Sketch (1190)
- Gather Preliminary Subsurface Information (1700)
- Conduct Geotechnical Assessment (1710)
- Conduct Pavement Condition Assessment (1720)
- Prepare Pavement Design (2230)
- Gather Subsurface Information (2400)
- Conduct Geotechnical Foundation Design (2410)
- Conduct Geotechnical Roadway Design/Rock Slope (2420)
- Horizontal/Vertical Geometry Completed (2210)
- Project Screening (1010)
- Community Relations (1060)
- Initiate Access Impacts (1150)
- Final Scope Development (1040)
- Capital Program Development Committee Review (1095)
- Initiate Drainage (1800)
- Initiate Geometrics (1070)
- Initiate Right of Way and Prepare Estimate (1160)
- Prepare Design Exceptions (1080)
- Consultant Selection (1240)
- Contract Negotiations (1250)
- Consultant Agreement (1260)
- Develop Initial Baseline Schedule (1265)
- Develop Design Cost Estimates (1270)
- Develop Initial Baseline Budget (1280)
- Conduct Value Engineering Review (1050)
- Constructibility Review (1055)
- Environmental Documentation (for Categorical Exclusions) (1290)
- Eligibility/Effect Cultural Resources (1310)
- Prepare Summary Document Section 106 (1320)
- FHWA CE Approval (1300)
- Prepare Memo of Agreement (MOA) Cultural (1330)

- Prepare Draft 4(f) (1340)
- Circulate Draft 4(f) (1350)
- Prepare Final 4(f) (1360)
- Final Approval 4(f) (1370)
- Early Coordination Individual Section 106/4(f) (1380)
- Prepare Draft Individual Section 106/4(f) (1390)
- Circulate Draft Individual Section 106/4(f) (1400)
- Prepare Final Individual Section 106/4(f) (1410)
- Final Approval Individual Section 106/4(f) (1420)
- Prepare Programmatic 4(f) (1430)
- NEPA Scoping (1550)
- Prepare Technical Environmental Studies (1440) (1500) (1560)
- Prepare Draft 4(f)/EIS (1650)
- Prepare Draft Environmental Assessment (1450)
- Submit Draft Environmental Assessment (1460)
- Make Available Environmental Assessment (1470)
- Address Comments Environmental Assessment (1480)
- Request FONSI (1490)
- Prepare Draft Environmental Impact Statement (1570)
- Submit EIS to FHWA (1580)
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- Assemble Comments/EIS (1600)
- Prepare Final EIS (1610)
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- Address Comments Environmental Document (1530)
- Final EIS Made Available (1630)
- Obtain Record of Decision (1640)
- Prepare Draft Environmental Document (1510)
- Submit Draft Environmental Document (1520)
- Conduct Supplemental Surveys (2240)
- Develop and Approve Schemes of Accommodation (2110)
- Prepare Access Markups (2080)
- Conduct Access Review (2090)
- Administer Access Modifications and Revocations (2100)
- Utility Owner Develops Plans and Estimates (2130)
- Prepare Permit Applications Environmental (2300)
- Prepare Drainage Design (2170)
- Prepare Preliminary Structure Plans (2260)
- Prepare Noise Barrier Details (3160)
- Prepare Preliminary Right of Way Documents (2020)
- Prepare Contamination Cleanup Plan (2270)
- Prepare Wetlands Conceptual Mitigation Plan (2280)
- Prepare Final Wetlands Mitigation Plan (3200)
- FHWA Right of Way Authorization (2010)
- Prepare Roadway Plans (2190)
- Design and Constructibility Review (2200)

- Complete Final Right of Way Documents (2030)
- Prepare Landscape Design (3070)
- Complete Drainage Design (3080)
- Prepare Traffic Signing, Striping and Signal Plans (2160)
- Prepare ITS Facilities Plan (2165)
- Prepare Lighting Design (2150)
- Appraise Right of Way (2050)
- Review Right of Way Appraisals (2060)
- Review Plans and Modify Utility Agreements (2140)
- Prepare Final Roadway Documents (3110)
- Authorization of Utility Work (3030)
- Advance Relocation of, or Construction by, Utility (3040)
- Final Design Review (3120)
- Secure Permits Environmental (2310)
- Prepare Final Wetlands Mitigation Plan (3200)
- Complete Lighting Design (3050)
- Complete ITS Facilities Plans (3065)
- Complete Traffic Signal, Signing and Striping Plans (3060)
- Prepare Final Structure Documents (3190)
- Prepare Roadway Special Provisions (3150)
- Prepare Structure Special Provisions (3180)
- Mitigate Cultural Resources (2290)
- Acquire Right of Way (2070)
- PS&E Prepare Package (3130)
- Implement Relocation Plan (3010)
- Obtain Construction Environmental Reevaluation (3170)
- Authorization to Advertise (3140)
- Closing Process Relocation Plan(3020)
- Bid and Award Contract (4800)
- Execute Contract (4810)
- Construction to Substantial Completion (4830)
- Final Acceptance (4835)

Topographic Survey (1170)

The field survey notes provide documentation of the site's existing field conditions, drainage systems, utility lines right of way, soil borings, control points, and elevations. The field survey may supplement any necessary photogrammetric survey or GIS. The field survey documents.

Existing Field Conditions: The survey crew records any topographic features which will influence or be influenced by the project design. Also, cross-sections and profiles are prepared which define the ground contour within the anticipated limits of construction.

Drainage Systems: The drainage considerations in the survey may include any bodies of water, open channels or pipe systems.

Utilities: The utility information consists of the location and ownership of all railroads, powerlines, communications lines, substations and pipelines, and other utilities facilities.

Right of Way Considerations: The survey crew locates existing right of way and property boundaries, and all relevant property information, including all buildings, parking lots (including a count), driveways, septic tanks, wells, structures, and any other information that could affect the ROW costs on all properties where ROW takings or easements are anticipated.

Primary Tasks:

1. Request control criteria from NJDOT Geodetic Control Unit.
2. Receive survey request and assign personnel to the project.
3. Telephone 1-800-272-1000 (Garden State Underground Plant Location Service) to request that underground utilities be marked out prior to the field survey.
4. Conduct field survey and/or photogrammetric survey.
5. Do required investigations if actual field survey is not required.
6. Prepare field notes and/or a summary of the investigation.
7. Prepare a Survey Report.
8. Submit results to the appropriate units.

Utility Company Initial Contact (1100)

This activity includes establishing the necessary initial utility and railroad contacts. This task is accomplished by sending letters to the utility owners.

Primary Tasks:

1. Assign Utility Design Engineer (UDE)
2. Review scoping and determine effect on utility facilities.
3. Identify utility owners within project limits, obtain the name and address of the engineer assigned to the project and open a dialog with the owners.

Establish Utility Engineering Funding (1110)

Once initial contacts have been established, a preliminary engineering cost estimate is developed and a funding source is established by the Utilities Unit.

Primary Tasks:

1. Make a reconnaissance of the project
2. Estimate engineering costs to be incurred by the utility owners
3. Establish a funding source.

Prepare Utility Agreement (1130)

Prepare agreement, transmit to utility owners for execution (include in transitional letter an authorization date for the owners to incur engineering costs).

Utility Base Plan Preparation (1140)

This activity includes preparing/showing existing utilities on the Base Plans by the designer (Section 10):

Primary Tasks:

1. Show location of all existing utilities obtained from survey.
2. Supply two (2) sets of Base Plans to each utility owner.
3. Request owner to verify its facilities and add the type, size, depth, operation restrictions, etc. to the Base Plan and return one set to the designer.

Utility Discovery and Verification (1120)

Transmit copy of roadway base plan indicating existing utility facilities to owners, determine type, size and depth of facilities as well as operating restrictions.

Structure Sketch (1190)

Based on the overall project scope, sketches are prepared for all impacted structures included in a project. Refer to Section 17.

Primary Tasks:

1. Obtain input data (field notes, project data, study plans).
2. Evaluate input data.
3. Prepare Structures Sketches.
4. Submit Structures Sketches for review and comment.
5. Evaluate and resolve comments.

Gather Preliminary Subsurface Information (1700)

During Scope Development, the Geotechnical Engineering Unit, in conjunction with the Bureau of Project Scope Development and under the direction of the Project Manager, will undertake a preliminary geotechnical engineering study.

Primary Tasks:

1. The Project Manager requests a Hazardous Screening from the Bureau of Environmental Services.
2. Collect/review the existing geologic/soil information and existing boring logs.
3. Develop the preliminary subsurface exploration and laboratory testing programs.
4. Conduct the preliminary subsurface exploration program and obtain lab testing data.

Conduct Geotechnical Assessment (1710)

Primary Tasks:

1. Study the existing reports (scour study, problem statement, etc.) for existing structures.
2. Identify existing and potential problems related to geotechnical engineering (slope stability, settlement, groundwater, etc.).
3. Investigate the need for possible rock slope mitigation.
4. Summarize existing and potential geotechnical considerations needed to be investigated and incorporate into Design Development.

Conduct Pavement Condition Assessment (1720)

Primary Tasks:

1. Review existing pavement section and traffic data for pavement design.
2. Conduct non-destructive testing or visual evaluation on the physical condition of the existing pavement, including shoulders.
3. Provide network level uniformity of pavement rehabilitation strategies.
4. Recommend pavement treatment.

Prepare Pavement Design (2230)

The purpose of the pavement design is to prepare a structural design to accommodate predicted traffic volumes for a given time period. This design, which is based on subsurface soil types, regional conditions, and traffic analyses, results in establishing the types and thicknesses of the materials used (i.e., subbase, base course and surface courses) to construct the pavement section.

The pavement design is developed using AASHTO or other accepted procedures (standard pavement design, etc.) adapted specifically for the conditions and materials available in New Jersey.

Primary Tasks:

1. Determine location and number of soil samples, if necessary.
2. Conduct soil sampling process and analysis, if necessary.
3. Conduct coring of existing pavement, if necessary.
4. Document results of the soil and core survey.
5. Request traffic data.
6. Prepare the pavement recommendation.
7. Forward the pavement recommendation for review and approval.

Gather Subsurface Information (2400)

The geotechnical investigation typically involves soil sampling and/or rock drilling and may also require the use of piezometers, slope inclinometers, geophysical surveys and geologic field surveys to obtain the necessary field data (refer to Section 11).

Primary Tasks:

1. Determine the need for, or receive the request for, foundation slope stability and/or settlement investigations.
2. Determine the number and location of borings necessary to satisfy the design requirements.
3. Conduct drilling. Classify samples. Conduct site soil strength tests, geophysical investigation and geologic surveys, where required.
4. Prepare and send samples for laboratory analysis and request appropriate tests.
5. Prepare boring logs and geophysical/geological reports.

Conduct Geotechnical Foundation Design (2410)

The geotechnical foundation engineering design is an important path in the structural design process. It provides the foundation recommendations and geotechnical assessments to the Structural Design Unit for the structural foundation designs.

Primary Tasks:

1. Gather and review the soil boring logs, soil lab testing data and groundwater conditions for the proposed structure.
2. Determine the soil parameter for geotechnical analysis and develop the soil profile.
3. Conduct geotechnical analysis and design for the foundations. Analyze soil bearing capacity and pile bearing capacity; estimate pile tip elevation and required pile embedment; perform settlement analysis and stability analysis.
4. Assess constructibility, pile drivability and other geotechnical concerns, e.g. groundwater, temporary sheeting during construction.
5. Prepare the Foundation Report for each structure.

Conduct Geotechnical Roadway Design/Rock Slope (2420)

The Geotechnical Roadway Engineering Design is to provide geotechnical recommendations for the design and construction of embankment and cut of the roadway.

Primary Tasks:

1. Gather and review the soil boring logs; soil lab testing data, groundwater conditions for the proposed roadway.
2. Determine the soil parameters for geotechnical analysis and develop the soil profile.
3. If rock cut/slope is involved, a rock engineering report (refer to Section 11) should be prepared.
4. Conduct geotechnical analysis and design for slope stability and subsurface drainage; perform settlement analysis; design ground improvement.
5. Assess constructibility and other geotechnical concerns during construction.
6. Prepare the Geotechnical Roadway Engineering Report.

Horizontal/Vertical Geometry Completed (2210)

The Horizontal and Vertical Geometry is an important critical path in the design process. This phase of work must be completed early on in the initial design, as beginning other activities rely on completed Geometry.

Primary Tasks:

1. Prepare final line, grade and profile plans as per Quality Control Guidelines.

2. Prepare construction plans indicating proposed geometry.
3. Transmit finalized plans to utilities, ROW, BEA etc.

Project Screening (1010)

Project screening describes those activities which initiate the scope development phase of a project.

Primary Tasks:

1. Review Problem Statement Package.
2. Initiate additional data collection, if required.
3. Hold scope meeting with scope team.
4. Consultation with FHWA, relevant DOT units, local officials, and outside agencies should be conducted as warranted by the project specifics.
5. Perform initial screening of environmental and other constraints
6. Estimate the need for and level of alternative analysis.
7. Set appropriate path for project delivery.

Community Relations (1060)

Once the Optimum Scheme has been developed, possibly with several alternative schemes, a formal public involvement program is to be developed in consultation with the Office of Community Relations (OCR). This activity may include traditional information centers and public meetings, as well as work sessions/focus groups with local officials. OCR will be responsible for scheduling and meeting protocol. Other tasks may include the preparation of mailing lists, data sheets, displays, technical presentations, and meeting follow-up.

Initiate Access Impacts (1150)

This activity includes consultation with the Major Access Unit throughout the development of project schemes to review Access Code implications. Ultimately, an Access Impact Summary will be prepared which identifies how the selected alternative will alter existing access, and further identify and justify any waivers to the Access Code which will be required.

Final Scope Development (1040)

This activity includes all steps necessary to conclude Final Scope Development with the selection of the recommended alternative, or "Scheme Set".

Primary Tasks:

1. Detailed development and final selection of Recommended Alternative.

2. Providing technical support necessary to complete the environmental document.
3. Complete Community Involvement program.
4. Develop Preliminary Environmental Plan Sheet.
5. Complete Scope Development package providing all documentation.

Capital Program Development Committee Review (1095)

At the conclusion of Scope Development, the Scope Development Package/Scope Summary is transmitted by the Project Manager to the Capital Program Development Committee for review and approval to proceed to Design Development.

Initiate Drainage (1800)

This activity includes the initial screening of existing drainage systems to assess the need for proposed drainage to be included in the discussion of alternative schemes. The adequacy of waterway openings for bridge structures are a major contributing factor in evaluating bridge replacement alternatives.

Primary Tasks may include:

1. Delineating existing surface drainage system characteristics.
2. Determining waterway openings, ROW needs. Coordinate with ROW District to inform them of drainage needs and possible solutions to reduce/eliminate impacts concerning ROW.
3. Evaluate impact of drainage alternatives on project scope.

Initiate Geometrics (1070)

This activity includes the development of geometrics sufficient to evaluate specific project alternatives or impacts.

Primary Tasks may include:

1. Calculation of vertical geometrics, profiles, clearances, covers, grades, etc.
2. Calculation of horizontal geometrics, curves, superelevation, offsets, etc.

Initiate Right-Of-Way and Prepare Estimate (1160)

This activity includes the initial assessment of ROW needs for the optimum scheme and the evaluation of ROW required for subsequent alternatives.

Primary Tasks may include:

1. Establishment of the existing ROW.
2. Assessing ROW needs for various alternatives including providing preliminary cost estimates (prepared by the District ROW staff) of sufficient detail for decision making purposes and obtaining input from the ROW District Engineers to obtain the optimal solution for the project which would weigh the ROW costs when determining the preferred alternative. Also, access issues must be considered at this point.

Prepare Design Exceptions (1080)

In order to obtain Federal and/or State approvals, a project must conform to the appropriate design standard. When conditions warrant, a Design Exception may be approved when it can be demonstrated that the Design Exception is in the best interest of the Department, the traveling public and the local citizens.

In general, a Design Exception is prepared by the Bureau of project Scope Development under the direction of the Project Manager. Once all substandard design elements have been identified, the Design Exception is prepared and submitted for approval. The activity is considered completed when the Design Exception has been approved by the Director Division of Design Services and/or the FHWA.

Primary Tasks:

1. Justify the need for the identified design exception (e.g., adverse impacts on properties fronting the roadway, disrupts the community, etc.).
2. Prepare and submit the draft Design Exception for approval.

Consultant Selection (1240)

This activity describes the process of selecting a consultant to provide professional services for projects from receipt of Expressions of Interest (EOI) to approval of selection by Deputy Commissioner.

Contract Negotiations (1250)

This activity describes the process of negotiating a contract with the selected consultant resulting in a final proposal within limits of budget and schedule acceptable to the Department.

Primary Tasks:

1. Review of consultant's technical and fee proposal by the Bureau of Auditing.
2. Hold pre-negotiation meeting with selected consultant to eliminate squabbling.
3. Conduct negotiation requesting consultant to justify man hours by task which contribute to overall discrepancies. Schedule and conduct a negotiation meeting if necessary.
4. Calculate fixed fee to be used as the basis for negotiating fixed fee.

5. Conclude negotiations with the submission of a Final Proposal.

Consultant Agreement (1260)

This activity describes the process of agreement preparation and execution.

Primary Tasks:

1. Finalize the draft agreement
2. Forward agreement checklist to Deputy Attorney General
3. Circulate draft agreement and final proposal to Bureau of Auditing and consultant.
4. Resolve and incorporate comments.
5. Circulate Final Agreement for signature.
6. Prepare Commission Action and Agreement checklist.
7. Provide notice to proceed to consultant.

Develop Initial Baseline Schedule (1265)

This activity will commence once the Project Manager has determined that the project's scope of work has been finalized. This will generally occur toward the conclusion of Final Scope Development. The Project Manager will perform the necessary tasks required to develop an Initial Baseline Schedule which shall be circulated for approval.

Develop Design Cost Estimates (1270)

This activity includes the development of cost estimates for design by the Cost Control Unit of the Bureau of Program Support Services. Upon receipt of an approved Initial Baseline Schedule and a narrative Scope of Work from the Project Manager, the Cost Control Unit will develop cost estimates, broken down by activity and person-hours, for design by consultant or in-house staff and in-house design support.

Develop Initial Baseline Budget (1280)

This activity will commence upon the receipt of the design cost estimates from the Bureau of Program Support Services, and the right-of-way, utilities, and construction estimates from the Scope Development Package. The Project Manager will review these estimates and perform the necessary tasks required to develop an Initial Baseline Budget which shall be circulated for approval.

Conduct Value Engineering Review (1050)

Value Engineering (VE) is the systematic application of recognized techniques by multi-disciplined teams which identifies the function of a product or service, establishes a value for that function, generates alternatives through the use of creative thinking, and provides the needed functions, reliably, at the lowest overall cost.

Primary Tasks:

1. Gather information for selected project.
2. Assign VE team to evaluate the major problem areas anticipated within the project. Initiate constructibility review.
3. Conduct VE during Scope Development.
4. Generate, evaluate and select the best alternative for development.
5. Develop a written report on findings and recommendations and distribute to Project Manager and interested parties.
6. Make an oral presentation of the study results that includes an implementation plan to the Project Manager and other units.
7. Address and resolve all comments to the satisfaction of all parties involved.
8. Audit results of implementation to its conclusion.

Constructibility Review (1055)

This task shall be performed throughout the entire Scope Development stage by the Scope Team Members (see Section 7.6).

Environmental Documentation (for Categorical Exclusions) (1290)

Categorical exclusions are actions or activities which meet the definition of 23 CFR 771.117 (listed under Attachment 2 - Categorical Exclusion on Page 8.1-8) and do not have significant environmental effects. The level of documentation necessary for a particular CE depends on the scope of the project. Where adverse environmental impacts are likely to occur, the level of analysis should be sufficient to define the extent of impacts, identify appropriate mitigation measures, and address known and foreseeable public and agency concerns. As a minimum, the information should include a description of the proposed action and, as appropriate, its immediate surrounding area, a discussion of any specific areas of environmental concern (e.g., Section 4(f), wetlands, relocations), and a list of other Federal actions required, if any, for the proposal.

Eligibility/Effect Cultural Resource (1310)

This activity involves the initial step in the Section 106 process and covers the time from receiving the project "footprint" to receiving the State Historic Preservation Office's (SHPO) concurrence on eligibility (or ineligibility). Tasks involved include: establishing an appropriate

Area of Potential Effect (APE); conducting background research; field investigation of the APE; preparation or review of a report identifying presence or absence of eligible resources; submission of this report to FHWA; and submission of the report to the SHPO.

Under the terms of the Programmatic Agreement among FHWA, NJDOT, SHPO and the ACHP, the agreement allows NJDOT to complete consultation with the SHPO on National Register eligibility and effects without prior consultation with the FHWA, and on findings of no adverse effect without seeking the comments/concurrent of the Council. In instances where agreement with the SHPO can be reached, this eliminates the need to consult with FHWA twice during the Section 106 consultation process and the need to transmit documentation in support of a finding of no adverse effect to the Council.

This activity also covers the time from receiving SHPO concurrence on eligibility to receiving concurrence from the SHPO on Effect. In addition to the SHPO concurrence on eligibility, this activity can not begin until engineering with sufficient details needed to assess the effect to the subject resource(s) is provided. *If a No Effect finding is requested, FHWA and SHPO concurrence can be requested concurrently with the SHPO obligated to respond within 15 days. If an Adverse Effect is determined alternatives must be investigated. For projects requiring an EA or EIS, engineering provided should include all alternatives under consideration.*

Prepare Summary Document Section 106 (1320)

This activity covers the time from receiving concurrence from the SHPO regarding a no adverse effect opinion to receiving concurrence from the Advisory Council on Historic Preservation (ACHP). Tasks included are: compiling the required information needed for the summary documentation package; submission of this package to FHWA and SHPO for signatures; and submission of the summary documentation to the ACHP by FHWA for a 30 day review.

FHWA CE Approval (1300)

For projects which are not self-certified, the documentation which verifies that the particular project will not cause significant environmental impacts must be submitted to FHWA for their approval of the CE classification.

Prepare Memo of Agreement (MOA) Cultural (1330)

This activity covers the time from receiving an adverse effect finding from the SHPO to receiving the ACHP acceptance of the MOA. Tasks included are: documenting alternatives considered; developing mitigation measures; consolidating this information and preparation of the MOA; obtaining the appropriate signatures to the MOA from the Department, SHPO, and FHWA; and submission of the MOA to the ACHP by FHWA.

Prepare Draft 4(f) (1340)

This activity covers the time from receiving sufficient engineering to determine the impact to a 4(f) resource to submission of the Draft 4(f) Evaluation to FHWA. It involves preparing or reviewing a Section 4(f) Evaluation for a project involving impacts to a park, recreational area, waterfowl refuge or historic resource. The 4(f) evaluation can be a "self standing" document or

can be included in an Environmental Assessment or Environmental Impact Statement. [For historic resource 4(f) evaluations this activity can not begin until a formal Determination of Effect is obtained from the SHPO]. Other tasks this activity includes are: early coordination with the agency having jurisdiction over the 4(f) site; and preparing or reviewing the 4(f) evaluation.

Circulate Draft 4(f) (1350)

This activity covers the time from receiving FHWA approval to print and circulate the 4(f) Evaluation through the end of Regulatory 45 day public comment period. It includes tasks such as: printing the document; preparation of the appropriate distribution list; and distribution of the document itself.

In cases when the 4(f) is included in an EA or EIS, circulation occurs when the overall environmental document is circulated.

Prepare Final 4(f) (1360)

This activity covers the time from the end of the Draft 4(f) comment period to submission of the Final 4(f) to FHWA. Tasks in this activity include: assemblage of comments received per circulation of the Draft, addressing comments and preparation of the Final 4(f) document to indicate that there are no prudent or feasible alternatives.

For historic resource 4(f) evaluations this activity can not be completed until the MOA is signed by all parties involved. *Preparation of the Final EIS includes this activity when a 4(f) is a part of an EIS. For EA's having a 4(f) involvement, a final EA is not prepared but a final 4(f) Evaluation included in the EA is prepared and submitted with a request for a FONSI.*

Final Approval 4(f) (1370)

This activity covers the time from submission of the Final 4(f) Evaluation to FHWA, through FHWA Regional Office's approval of the 4(f) Evaluation. This activity includes making any revisions to the 4(f) Evaluation per comments by FHWA and resubmissions. *In cases when the 4(f) is included in an EA or EIS, this activity is included in obtaining the final approval of the respective document i.e., FONSI or ROD.*

Early Coordination Individual Section 106/4(f) (1380)

This activity includes submission of the Cultural Resource Report to FHWA, and submission of the report to SHPO. This activity also covers the time from receiving SHPO concurrence on eligibility to receiving concurrence from the SHPO on Effect.

Note: This activity is already included under Eligibility/Effect Cultural Resources (1310).

Prepare Draft Individual Section 106/4(f) (1390)

This activity covers the time from receiving sufficient engineering to determine the effect to the historic resource to submission of the Draft 4(f) Evaluation to FHWA. It involves preparing or reviewing a Section 4(f) Evaluation for a project involving impacts to an historic resource. This activity cannot begin until a formal Determination of Effect is obtained from the SHPO.

Circulate Draft Individual Section 106/4(f) (1400)

This activity covers the time from receiving FHWA approval to print and circulate the 4(f) Evaluation through the end of regulatory 45 day public comment period. It includes tasks such as: printing the document, preparation of the appropriate distribution list, and distribution of the document itself.

Prepare Final Individual Section 106/4(f) (1410)

This activity covers the time from the end of the Draft 4(f) comment period to submission of the Final 4(f) to FHWA. Tasks in this activity include: assemblages of comments received per circulation of the Draft, addressing comments and preparation of the Final 4(f) document to indicate that there are no prudent or feasible alternatives to avoid Section 4(f) land and the proposed action includes all possible planning to minimize harm. This activity cannot be completed until the MOA is signed by all parties involved.

Final Approval Individual Section 106/4(f) (1420)

The final Section 4(f) Evaluation will be reviewed for legal sufficiency by FHWA. Actions requiring the use of Section 4(f) property will not proceed until notified by the FHWA of Section 4(f) approval.

Prepare Programmatic 4(f) (1430)

This activity begins with the receipt of engineering sufficient enough to determine the impact to the 4(f) resource through submission of the Programmatic 4(f) to FHWA. For projects classified as a Categorical Exclusion this 4(f) can be submitted with the environmental documentation. It involves: reviewing the Section 4(f) regulations to determine if the Programmatic criteria is applicable; coordinating with the agency having jurisdiction over the resource; obtaining a discussion of the appropriate alternatives; preparing the Programmatic 4(f); and submission to FHWA. Tasks included in this activity include, and addressing any comments FHWA may have on the document.

NEPA Scoping (1550)

An early and open process for determining the scope of issues to be addressed in the preparation of an environmental impacts statement (EIS). It requires an open process with public notice; identification of significant and insignificant issues; allocation of EIS preparation assignments; identification of related analysis requirements in order to avoid duplication of work; and the planning of schedule for EIS preparation.

Scoping is a process, not an event or a meeting. It continues throughout the planning for an EIS, and may involve a series of meetings, telephone conversations, or written comments from different interest groups. Scoping cannot be useful until enough is known about the proposed action to identify most of the affected parties, and to present a coherent proposal and a suggested list of environmental issues and alternatives. Until that time there is no way to explain to the public or other agencies what we want them to get involved in. The first stage is to gather preliminary information to compose a clear picture of the proposal.

Prepare Technical Environmental Studies (1440) (1500) (1560)

This activity begins with receipt of engineering with sufficient details to assess environmental impacts of the various alternatives under consideration to preparation of an Environmental Assessment (EA), Environmental Impact Statement (EIS), or EO215. It involves preparing and or reviewing individual impact analyses of the respective environmental disciplines that are incorporated into the environmental document (EA, EIS) for a specific project. These Technical Environmental Studies can be individual bound documents reviewed and approved by FHWA (for EA and EIS, NJDEP for EO215) prior to their incorporation into an EIS or Technical memorandums used as input to an EA. Time allocated to this task includes review(s)/ approval(s) by the appropriate agencies and any revisions to the respective reports needed per comments made during these reviews. *This task also includes review and coordination of Major Investment and Individual Congestion Management Studies as needed.*

Prepare Draft 4(f)/EIS (1650)

This activity combines the work that goes into preparation of a Draft 4(f) and a Draft EIS into one document. The Draft 4(f) Evaluation in this case is included in the EIS as a section. The evaluation of alternatives to avoid the use of Section 4(f) land and of possible measures to minimize harm to such lands will be developed by the NJDOT in cooperation with FHWA. (For historic resource 4(f) evaluations, this activity cannot begin until a formal Determination of Effect is obtained from the SHPO.) Other tasks this activity includes are: early coordination with the agency having jurisdiction over the 4(f) site, preparing or reviewing the 4(f) evaluation section, and writing or reviewing the Draft EIS; making needed revisions prior to submission of the Draft 4(f)/EIS to FHWA; and submission of the Draft 4(f)/EIS to FHWA. Rewrites to address FHWA comments are also included in this activity.

Prepare Draft Environmental Assessment (1450)

This activity covers the time from completion of the TES' through submission of the EA to FHWA. Tasks included are: preparation or review of the EA; and making or coordinating revisions to the EA per FHWA comments.

Submit Draft Environmental Assessment (1460)

This activity covers the time from submitting a Draft EA to FHWA to obtaining FHWA's approval to print and make the EA available for public/agency review.

Make Available Environmental Assessment (1470)

This activity covers the time from receiving FHWA approval to print the EA to the end of the regulatory 30 day public comment period. Tasks included in this activity are: printing EA; developing a distribution list; distributing document; coordinating Notice of Availability for local newspapers; coordinating and attending Public Hearing.

Address Comments Environmental Assessment (1480)

This activity begins at the close of the Public comment period for an Environmental Assessment and extends to requesting a Finding of No Significant Impact (FONSI) from

FHWA. It includes: assembling verbal and written comments received by the department during the comment period; conducting any studies needed to address concerns raised; and preparing responses to specific comments. This could involve making changes to the EA.

Request FONSI (1490)

This activity covers the time from the Department submitting a request for a FONSI to FHWA through FHWA granting the FONSI. It includes: submitting to FHWA a copy of the revised EA as appropriate; the public hearing transcript(s), where applicable; copies of comments received and responses thereto; and a written recommendation of a preferred alternative that will result in a Finding of No Significant Impact (FONSI). Also included in this activity is FHWA's review of these materials, their preparation of a separate FONSI incorporating reference to the EA and FHWA's preparation of a Notice of Availability of the FONSI. *For actions that would normally require an EIS this task would also account for an additional 30 day EA availability.*

Prepare Draft Environmental Impact Statement (1570)

This activity covers the time from completion of the Technical Environmental Studies through the submission of a DEIS to FHWA. It includes such tasks as: writing or reviewing the DEIS; making needed revisions prior to submission of the DEIS to FHWA; and submission of the DEIS to FHWA. Rewrites to address FHWA comments are also included in this activity.

Submit EIS to FHWA (1580)

This activity extends from submission of the DEIS to Federal Highway Administration to receiving FHWA comments or approval to print and or circulate the DEIS.

Circulate Draft EIS (1590)

This activity covers the time from receiving FHWA approval to circulate the DEIS through the end of the 45 day public comment period. Tasks involved include printing the document, developing the appropriate circulation list, distribution of the document, coordinating the preparation of public notices noting availability of the DEIS and or notification of a public hearing, and including conducting a Public Hearing.

Public Hearing (1660)

Opportunities during project development for the public to be involved in the identification of social, economic and environmental impacts, as well as impacts associated with relocation of individuals, groups or institutions. Whenever a public hearing is held, the Draft EIS shall be available at the public hearing and for a minimum of 15 days in advance of the public hearing.

The availability of the Draft EIS shall be mentioned, and public comments requested, in any public hearing notice and at any public hearing presentation.

Assemble Comments/EIS (1600)

The Bureau of Environmental Services begins this activity after completion of the public comment period and extends to preparation of the Final Environmental Impact Statement. Tasks included in this activity are: evaluating all written and or verbal comments received;

initiating any studies needed to address specific comments; and after analysis of issues raised regarding the various alternatives making a recommendation to the Departments management as to which alternative shall be considered the Preferred alternative in the Final Environmental Impact Statement (FEIS).

Prepare Final EIS (1610)

This activity covers the time from recommendation of a preferred alternative to submission of a FEIS to FHWA. It includes: completion of any additional technical studies; preparation of the FEIS which shall; identify the preferred alternative, evaluate all reasonable alternatives considered, discuss substantive comments received on the DEIS, responses thereto, and describe the mitigation measures that are to be incorporated into the proposed action. Reviews by NJDOT staff, and revisions per NJDOT or FHWA comments are also included in this activity. This activity can not be completed until Summary Documentation or the MOA is accepted by the ACHP. Also, as needed, the Final 4(f) Determination must be completed to allow this activity to be finalized.

Submit Final EIS (1620)

This activity includes review of the FEIS by the District office of FHWA, and as appropriate review by FHWA Headquarters. It covers time associated with these reviews and ends with FHWA approval to print the FEIS.

Address Comments Environmental Document (1530)

This activity covers the time from NJDOT receiving a response from NJDEP related to their review of an administratively complete environmental document to providing a written response to NJDEP either indicating acceptance of NJDEP's recommendations or setting forth those issues remaining in dispute. By regulation, the Department shall provide this response within 30 days of receiving NJDEP's recommendation. Also by regulation any disputes shall be resolved in good faith through meetings between the Commissioners of Environmental Protection, and Transportation.

Final FEIS Made Available (1630)

This activity covers the time from receiving FHWA approval to print the FEIS to distribution of the FEIS. Tasks involved include: printing FEIS; distribution of the FEIS to any person, organizations, or agencies that made substantive comments on the DEIS or requested a copy; and *filing notice with USEPA through publication of the final EIS notice in the Federal Register.*

Obtain Record of Decision (1640)

This activity covers the time from publication of the final EIS notice in the "Federal Register" to signing of the Record of Decision by FHWA. This 30 day time frame concludes the EIS process and if applicable the 4(f) as well.

Prepare Draft Environmental Document (1510)

This activity includes preparation of an environmental document, pursuant to NJ Executive Order 215 regulations. It begins after completion of the appropriate Technical Environmental Studies and extends to submission of the document to NJDEP. Tasks included are: preparation and or review of the document; and revisions to the document pursuant to comments received from NJDEP.

Submit Draft Environmental Document (1520)

This activity covers the time from submission of an EO 215 to NJDEP granting approval of the proposed action. Tasks include: NJDEP review of the document for administrative completeness (must be done, by regulation, within 20 days of receipt of the document); NJDEP's subsequent review of an administratively complete document (must be completed within 60 days); and NJDEP providing a written response to NJDOT regarding the proposed action.

Conduct Supplemental Surveys (2240)

As the project design evolves, additional survey work subsequent to the scoping process may be required to progress the project. The supplemental survey may include but is not limited to locating utility test pits, provides layout for soil borings and documents areas not sufficiently addressed in previous surveys.

Primary Tasks:

1. Receive survey request and assign personnel to request.
2. Conduct supplemental survey.
3. Compile report and/or field notes.

Develop and Approve Schemes of Accommodation (2110)

Primary Tasks:

1. For in house projects, the Utilities Unit will develop schemes of accommodations with each utility owner as the project develops.
2. For consultant design, the consultant with the assistance of the assigned UDE, will develop schemes accommodation with each of the utilities. (Note: The Utilities Unit is responsible for interpreting policies and procedures with respect to utility agreements).
3. The Utilities Unit will review and approve the scheme of accommodation and authorize the utility owners to proceed with their plans and estimates.

Prepare Access Markups (2080)

Once the project's geometry has been defined, access for each lot within the project limits must be identified as per the access code by the designer. This includes determining if access regulations and safety standards are satisfied by direct access or alternative access. The geometric design of each driveway is established by the designer.

Primary Tasks:

1. Verify each driveway in the field.
2. Obtain and review accident records.
3. Consultant Designers shall prepare and submit for review to the Major Access Unit markups showing existing and proposed driveways, and proposed traffic striping adjacent to each driveway.

Conduct Access Review (2090)

Access for each lot (property) must be reviewed for conformance to the New Jersey State Highway Access Management Code (N.J.A.C. 16:47) by the Major Access Unit.

Primary Tasks:

1. Review the marked up plans by the designer, showing the proposed driveways, for compliance with the Access Code.
2. The Major Access Unit shall arrange a meeting with the Project Manager and Designer to discuss alternatives for lots with unique or difficult access.
3. Return plans to the Designer with comments and/or conformance. Copy Project Manager.

Administer Access Modifications and Revocations (2100)

The owners of lots whose access will be modified or revoked must be notified (see New Jersey Access Code 16:47-4.33). Lot owners may request a meeting to discuss the changes to their access. The owner of the lot whose access is to be modified or revoked has an opportunity for an Office of Administration Law hearing if discussions do not result in a successful conclusion.

Primary Tasks:

1. The Designer shall prepare driveway cutouts for each lot with an access modification or revocation. On the cutouts, show the lot's existing and proposed access, on-site circulation and the proposed highway striping. Prepare a list of property owners' names and mailing addresses.

2. Prepare and forward a letter, with cutout, to the owner of each lot whose access is to be modified or revoked. The letter will be signed by the Manager of Major Access.
3. For lots having their access revoked:
 - show, if warranted, the proposed signing that directs motorists to/from the lot/highway on the cutout.
 - prepare a list of property owner(s) and/or lessee names and addresses, if necessary.
4. At the lot owner's request, the Major Access Unit will schedule a meeting to discuss the proposed access to the lot. Attempt to resolve all differences at the meeting.
5. If necessary, the Designer will prepare a revised cutout showing the access agreed upon at the meeting. Send the revised cutout to the lot owner and/or lessee.
 - a. ROW plans for property takings will be prepared for all properties where suitable and reasonable access cannot be provided.
6. If differences are not resolved for lots whose access is to be revoked or modified, the major Access Unit will arrange a hearing with the Office of Administrative Law.

Utility Owner Develops Plans and Estimates (2130)

Upon receipt of approved checklists and Roadway Plans, the utility owners can begin preparing the detailed plans and estimates.

Primary Tasks:

1. Submit approved Utility Checklist, Scheme of Relocation and Roadway Plans to utility owners.
2. Utility owners prepare Detailed Plans and Estimate.

Prepare Permit Applications Environmental (2300)

This activity begins early in the process. Generally, the identification of the need for permits will begin within the scoping process and conclude once the last permit application is submitted. All permits are to be submitted by the Bureau of Environmental Services to the applicable Environmental Agencies.

Primary Tasks:

1. Determine applicable regulations.
2. Collect supporting information.
3. Prepare and submit permit application.

4. Perform the necessary reviews and revisions.

Prepare Drainage Design (2170)

The Preliminary Drainage Design documents the schemes for channeling and removing water on the right of way and, conveying water under the highway. This activity includes the preparation of the Drainage Report. The report must address the channeling and removing water on the right of way and, conveying water under the highway. The Drainage Design shall be prepared in accordance with the Quality Control Guidelines.

Primary Tasks:

1. Determine type and sizes of inlets, outlets, pipes and channels and placement of drainage structures.
2. Determine swales and ditches required to carry run off.
3. Determine right of way easement needs for outlets and conveyance of water.
4. Evaluate alternatives and recommend measures to control pollution in the stormwater runoff.
5. Prepare Drainage Report, if appropriate.
6. Review Drainage Report submitted by Design Consultants.
7. Revise Drainage Report as necessary.
8. Review for conformance with Design Standards and the overall Project Scheme.
9. Prepare Alternative Design, if required.

Prepare Preliminary Structure Plans (2260)

The Project Manager evaluates the proposed bridge and road designs. This work includes an evaluation of the roadway plans, proposed bridge hydraulics design and field review of the bridge sites (refer to the NJDOT Design Manual Bridges and Structures).

Prepare Preliminary Structure Plans in accordance with the Quality Control Guidelines.

Primary Tasks:

1. Evaluate roadway plans, bridge sketches, utilities and permit requirements.
2. Prepare preliminary structure design.
3. Prepare Preliminary Structure Plans.
4. Prepare Design Appraisal Statement.

5. Prepare Foundation Report.
6. Prepare engineering cost estimate.

Prepare Noise Barrier Details (3160)

This activity covers the design of plans and details for noise walls which are associated with the final approved noise study. These plans and details shall be developed in accordance with the Quality Control Guidelines.

Primary Tasks:

1. Analyze roadway plans including full profile and cross section information.
2. Decide on materials and aesthetics with the Bureau of Landscape and Urban Design.
3. Prepare plans and details.
4. Prepare Final Noise Study Report and send to municipality.
5. Review geotechnical data for foundation design.

Prepare Preliminary Right of Way Documents (2020)

The main emphasis in preparing the documents is the identification of all right of way requirements so the necessary parcels can be acquired. The documents are developed according to the current Manual for the Preparation of Right of Way Maps and Agreements.

The designer coordinates with all involved units. After the documents have been reviewed and necessary corrections made, the designer proceeds as directed by Right of Way.

Primary Tasks

1. Determine right of way requirements.
2. Prepare preliminary right of way documents according to the Manual.
3. Submit preliminary right of way documents to Right of Way.
4. Preliminary right of way documents reviewed by Right of Way Engineering and the Project Manager.
5. Comments submitted to designer.

Prepare Contamination Clean-up Plan (2270)

Should environmental studies identify potentially contaminated Right of Way, further analyses may be required to confirm the presence and extent of contamination. Such analyses will

include the development and implementation of a soil sampling plan (analyses of samples by qualified laboratory), development of a mitigation plan (based upon input with NJDEP), and the development of appropriate engineering and specifications for use by a qualified contractor. The above procedures also consider:

- Worker Health and Safety Plan (HASP)
- Equipment Requirements
- Public Safety and Health
- Environmental Protection
- Project Costs

Primary Tasks:

1. Sample the site and delineate contamination area (core sampling, site pumping, other testing).
2. Determine best method of treatment or removal.
3. Prepare report which documents the contamination clean-up plan.
4. Submit the contamination clean-up plan for review and approval.
5. Make necessary revisions based on comments from review.
6. Distribute plan to appropriate units.

Prepare Wetlands Conceptual Mitigation Plan (2280)

Includes all work required to prepare a conceptual wetlands mitigation plan.

Primary Tasks:

1. Collect required data.
2. Research various alternatives.
3. Prepare Conceptual Wetlands Mitigation Plan.
4. Submit Conceptual Wetlands Mitigation Plan to BES for review.
5. Revise as necessary.

FHWA Right of Way Authorization (2010)

Upon receipt of the Preliminary Right of Way Plans, Right of Way begins the authorization process. This work effort consists of reviewing the preliminary right of way plans and preparing a Right of Way cost estimate. Once the cost estimate has been completed, the

appropriate forms and letter, necessary for requesting authorizations for Federal funds are prepared by the Federal Aid Coordinator. If necessary, an Environmental Reevaluation is completed. Once FHWA approves the Right of Way authorization request, the Right of Way funding area then prepares the Right of Way funding action for authorization to proceed.

Primary Tasks:

1. Review preliminary right of way plans and prepare cost estimate.
2. The Project Manager prepares the Project Identification and Summary form, Environmental Checklist, and New Job Number Request form.
3. Submit cost estimate to Federal-Aid Coordinator for submission to FHWA.
4. Prepare Project Agreement form (PR-2).
5. Upon receipt of the approved funding action from FHWA, request the establishment of funds. Prepare right of way funding action to establish funding and authorization to proceed.
6. Review previous environmental document sufficiency with regards to the current project design.
7. Complete reevaluation form.
8. Submit for BES manager approval of recommendation.
9. Return form to Project Manager.

Prepare Roadway Plans (2190)

The work associated with preparing the Roadway Plans will vary from project to project. This work shall be performed within the Quality Control Guidelines.

Primary Tasks:

1. Prepare or assist in preparing the following:
 - Construction Cost estimate work sheets.
 - Construction Bar Chart
 - Roadway and Structure Plans as a complete package.
 - Soil Erosion and Sediment Control Design Report

- Environmental Key Sheet
2. The designer will distribute documents to Bureaus as designated by the Project Manager.

Design and Constructibility Review (2200)

The Initial Design Submission is sent to those offices as designated by the Project Manager for review and/or comment. The Project Manager approves the submission for conformance with the basic design concept. Quality Assurance and Constructibility Reviews shall be performed in accordance with Sections 6.2 and 7.6, respectively.

Primary Tasks:

1. Review initial design submission utilizing Quality Assurance Checklists.
2. The Project Manager evaluates and resolves comments with the Designer and provides authorization to proceed to final design.

Complete Final Right of Way Documents (2030)

Based on the preliminary right of way review, and the Initial Design review, the necessary corrections are made, submitted to Right of Way.

Primary Tasks:

1. Review Preliminary Submission comments.
2. Make necessary corrections.
3. For Design Consultants, submit final Right of Way documents to Right of Way.

Prepare Landscape Design (3070)

This activity represents the effort necessary to furnish a complete set of landscape plans and specifications for the project. The Bureau of Landscape and Urban Design will determine if a landscape design is required for a project at the Project Scoping stage. When a landscape design is required, the designer shall supply the Bureau with CADD compatible base sheet information for their use. Also, the grading plans of wetland mitigation areas and noise barrier locations are needed to complete the landscape plans. Basically, this activity involves field trips for location of seedings and plantings. Once locations have been verified, the actual landscape plans are developed, along with quantities and project costs.

Primary Tasks:

1. Conduct field investigation to collect information for landscape design.
2. Determine the locations for functional and aesthetic plantings and verify the clear zone and sight distances for these areas.

3. Prepare landscape plans.
4. Prepare landscape specifications, estimate and detail sheets.
5. Submit plans and specifications to the Designer for inclusion in the Final Design Submission.

Complete Drainage Design (3080)

With the approval of the drainage design, the designer continues through the Final Design development of the drainage design. As part of this effort the designer completes the drainage design according to the established Quality Control Guidelines.

Primary Task:

1. Prepare final drainage plans.

Prepare Traffic Signing, Striping and Signal Plans (2160)

These plans provide a detailed layout of regulatory traffic control devices and designate the location and type of control devices required for the project. Field investigations are required for this activity to verify the actual physical locations. This work involves the actual design of plans for the traffic signals including all necessary electrical considerations and plans.

Primary Tasks:

1. Review project file (traffic counts, traffic patterns, and accident statistics).
2. Develop the preliminary signing, striping and signal concepts.
3. Conduct field investigation to verify proposed concepts.
4. Attend Utility meetings.
5. Develop the final signing, striping and signal concepts.
6. Evaluate need and type of all traffic signal systems.
7. Prepare and send agreements.
8. Review traffic signing, striping and signal plans by designers as required.

Prepare ITS Facilities Plan (2165)

This activity produces all necessary plans for ITS facilities such as computerized traffic signal systems. Variable Message Sign (VMS), Closed Circuit Television (CCTV) installations, Highway Advisory Radio (HAR) systems, Weigh-in-Motion (WIM) systems, Roadway Weather Information Systems (RWIS), fiber optic cable and conduit installations, and emergency call telephone systems including all necessary electrical considerations.

Primary Tasks:

1. Coordinate with other agencies.
2. Identify existing utility conflicts.
3. Prepare ITS system plans/details.
4. Prepare ITS specifications.
5. Prepare preliminary engineer's estimate.
6. Review designs of ITS facilities prepared by consultants.

Prepare Lighting Design (2150)

This activity produces a set of lighting (roadway and signs) plans and specifications for the project. Lighting design cannot begin until utility locations are established and overhead sign plans are completed. These plans are developed in accordance with the Quality Control Guidelines.

Since the electrical lighting design affects outside utility companies, a Utility plan will be provided to the Bureau of Traffic Systems Engineering by the Bureau of Utilities and Right of Way prior to the start of this activity.

Primary Tasks:

1. Upon utility checklist approval, prepare design and calculations.
2. Conduct utility meetings as required.
3. Design lighting systems (roadway and sign).
4. Prepare specifications.
5. Prepare plans for the Initial Design Submission.
6. Review lighting designs by designers as required.

Appraise Right of Way (2050)

The Appraisal Unit, Technical Support Section, coordinates the evaluation of property to determine the fair market value. The appraisal helps to ensure that the offer to purchase the right of way property is fair and equitable. At least one appraisal is prepared for each parcel being obtained unless:

- The owner is donating the property and releases the Department from its obligation to compensate

or

- The valuation problem is uncomplicated and the estimated value is \$10,000 or less.

The appraisal is researched and prepared by an assigned staff appraiser or an appraiser contracted by the Department. The appraisal discusses the current uses of the property and provides photographs. It also documents market trends, financing alternatives, and the appraisal method used to determine the fair market value.

In preparing the fair market estimate, the appraiser considers impacts, if any, to the property owner's remaining land. The appraisal is then submitted to the District Manager.

Primary Tasks:

1. Review the project right of way plans.
2. Assign staff or arrange for a consultant to appraise properties or arrange for consultant.
3. Prepare the appraisal report.
4. Submit the appraisal to the District Manager.

Review Right of Way Appraisals (2060)

Upon completion of an appraisal, the District Right of Way Office or an authorized representative reviews each appraisal. The appraisal reviewer ensures that:

- the appraisal report is in accordance with appraisal order
- the appraisal contains no mathematical errors
- no additional sales or other factors were overlooked
- appraisal was prepared using the most accurate information and follows all State and Federal regulations
- the value is fair, reasonable and well documented
- no non-compensable items were included

Primary Tasks:

1. Perform office and field review of the appraisal to ensure completeness, accuracy, and compliance with all State and Federal regulations and the appraisal order.
2. Request supplemental information from appraiser, if necessary.
3. Prepare reviewer's statement of Fair Market Value.
4. Register the Fair Market Value at District Right of Way Office.
5. Transmit approved registration to District Manager.

Review Plans and Modify Utility Agreements (2140)

Primary Tasks:

1. For in house design projects, the Utilities Unit will incorporate the owners plans, specifications and scheduling into the NJDOT contract documents and prepare the appropriate Utility Agreement Plan.
2. For consultant design, the Utilities Unit will review the owner plans and estimates. Authorize the consultant informing the project manager to prepare schedules, specifications and incorporate owner facilities into NJDOT contract documents and prepare the appropriate Utility Agreement Plan.

Prepare Final Roadway Documents (3110)

Plan preparation includes the finalization of the roadway documents according to the Quality Control Guidelines.

Primary Tasks:

1. Prepare or assist in preparing the following:
 - Prepare Engineers Quantity Estimate.
 - Complete Lighting Design.
 - Complete Special and/or Modified Construction Details.
 - Construction Bar Chart.
 - Roadway Quantity Calculations.
 - Complete Landscaping Design.
 - Complete Traffic Signal, Lighting, Signing and Striping Design.
 - Complete Drainage Design.
 - Prepare Roadway Special Provisions.
2. Incorporate previous submission comments as approved by the Project Manager.

Authorization of Utility Work (3030)

Develop and issue Agreement modification to the utility owners. (Attach agreement plan, incorporate cost estimate and spell out restrictions).

Advance Relocation of, or Construction by, Utility (3040)

This activity includes advancing the relocation of utility facilities prior to advertisement.

Primary Tasks:

1. Upon receipt of utility relocation funding authorization, schedule and conduct utility preconstruction meeting.
2. Establish responsible party for inspection of utility relocations.
3. Issue Notice to Proceed to affected utilities.

Final Design Review (3120)

Upon receipt of the Final Design Submission, the documents are reviewed for the constructibility of the design and for conformance to Department's Quality Assurance guidelines.

Primary Tasks:

1. Distribution and review activities in accordance with Section 4.3. Resubmission of items, if required.
2. Completion of S-Proof of Special Provisions and draft Engineer's Estimate.
3. Recommendation of construction schedule and inspection budget by Regional Construction.
4. The Project Manager will evaluate the comments and submit to the Designer for appropriate resolution.
5. Comment resolution Summary, prepared by the Designer, is approved by the Project Manager.

Secure Permits (2310)

During this activity, coordination with the issuing agency is pursued to ensure that any problems can be resolved and that all environmental conditions for the specific project can be met by the Department of Transportation.

After the permit has been issued, they are monitored to ensure that they remain valid through the advertising and construction. This may entail securing a time extension for the permit.

Primary Tasks:

1. Coordinate with the permit agency (satisfy requests for additional information).
2. Monitor progress of the permit application.

3. Revise application and prepare mitigation plan, as necessary, to obtain permit approval.
4. Receive permit.
5. Evaluate the terms of the permit.
6. Transmit conditions of the permit to the Project Manager and to the Designer for inclusion into the project plans and specifications.
7. Monitor to ensure that permit remains valid.

Prepare Final Wetlands Mitigation Plan (3200)

This work includes the basic information and data developed during preparation of the Conceptual Wetlands Mitigation Plan, along with any refinements or revisions that result from the regulatory agencies review. It should also include the development of construction quality plans and specifications that contain the grading, landscaping, hydrologic/hydraulic, and erosion control requirements. Any special conditions, such as seasonal work restrictions, agency notifications, progress reports, or fill disposal locations should be included in the Final Plans and/or Specifications for the wetland mitigation work. In many cases, the wetland mitigation work will be done as part of the main highway project; however, there are some situations in which the mitigation work will be a separate contract, and the plans and specifications will have to contain all the other appropriate information needed to receive bids.

Complete Lighting Design (3050)

Based on the initial design review, incorporate comments as determined by the project Manager into the plans and continue to complete the lighting plans in accordance with Quality Control Guidelines.

Primary Task:

1. Complete Lighting Plans.

Complete ITS Facilities Plans (3065)

Based on initial design review, incorporate comments, determined by the Project Manager into the plans and continue to complete the ITS facilities plans, specifications and estimate in accordance with Quality Control Guidelines as listed in Appendix A.6.

Primary Tasks:

1. Complete design of ITS plans and specifications.
2. Complete special and/or modify construction details.
3. Finalize ITS engineer's estimate.

4. Review final designs of ITS facilities prepared by consultants.

Complete Traffic, Signing, Striping and Signal Plans (3060)

Based on the initial design review, incorporate comments as determined by the project Manager into the plans and continue to complete the lighting plans in accordance with Quality Control Guidelines.

Primary Task:

1. Complete Traffic Signing, Striping and Signal Plans.

Prepare Final Structures Documents (3190)

Plan preparation includes the finalization of the structures documents according to the Quality Control Guidelines (Section 6.1).

Primary Tasks:

1. Prepare or assist in preparing the following:
 - prepare engineer quantity estimate
 - complete special and/or modified structural details
 - structural quantity calculations
 - complete structural plans and special provisions
 - complete structural details for noise barriers
 - complete temporary structures documents

Prepare Roadway Special Provisions (3150)

During Initial Design Development and Final Design Development, the Designer develops Special Provisions.

Primary Task:

1. Develop Special Provisions.

Prepare Structure Special Provisions (3180)

Once the Preliminary Structure Plans are completed, the designer begins developing the Structure Special Provisions.

Primary Task:

1. Develop Structure Special Provisions.

Mitigate Cultural Resources (2290)

Prior to the initiation of any Department activity which will compromise a significant cultural resource (archaeological, architectural, engineering and historical), activities must be completed to mitigate or monitor these adverse effects.

Primary Tasks:

1. Preparation of appropriate contract documents.
2. Coordination to determine right of way availability and property reports.
3. Monitoring of the consultant's work, including review of progress reports.
4. Review and approval of technical documents and reports of mitigation activities.
5. Transmittal of final report to appropriate agencies and interested parties and, when appropriate, conveyance of archeological materials to the New Jersey State Museum.

Acquire Right of Way (2070)

In acquiring the property, the negotiator makes an offer to the property owner based on the registered fair market value and, as appropriate, offers an owner's housing supplement. If the owner accepts the offer, an agreement is obtained. If a settlement cannot be achieved, condemnation proceedings are recommended.

Primary Tasks:

1. Prepare and present written offer to the property owner.
2. Negotiate with property owner to reach a mutually acceptable agreement or alternatively, if the offer is not acceptable to the property owner, then recommend condemnation.
3. Prepare case summary and Department Action recommending appropriate action.
4. Upon approval of agreement, process the case to the Bureau of Titles for closing and payment and deliver executed agreement to owner/agent.
5. Upon authorization for condemnation, the Right of Way District Office request condemnation maps, descriptions and title update.
6. File condemnation complaint, declaration of taking and deposit money in court. Make Personal Service on interested parties and achieve the appointment of commissioners at the "Show Cause Hearing".

PS&E Prepare Package (3130)

Upon completion of the Final Design Review and approval of the Comment Resolution Summary, the Designer is to make final revisions and perform a final Quality Control check in accordance with Section 4.3.

Primary Tasks:

1. Designer makes final revisions, performs final Quality Control check and submits PS&E package to the Project Manager in accordance with Section 4.3.
2. For Full Oversight Federally funded projects, the PS&E package is forwarded to the Bureau of Contract Administration Services for a Preliminary PS&E Submission to FHWA in accordance with Section 4.3.
3. Final Engineer's Estimate and Master Special Provisions are prepared.
4. Project Manager assembles and submits the PS&E to Contract Administration Services.

Implement Relocation Plan (3010)

In an effort to achieve orderly and equitable relocation of all project displacements, the Office of Relocation Services and Property Management provides a relocation assistance program. The program consists of:

- relocation cost estimate
- relocation plan
- relocation advisory assistance
- reimbursement for moving cost
- supplementary housing payments
- short-term leases.

The final step of this activity is to ensure that properties needed for construction are available or that they are scheduled to be available in time for the start of construction. This is confirmed with the issuance of a R/W availability letter and the taking of possession of properties as they become vacant.

Primary Tasks:

1. Prepare relocation estimate and relocation plan.
2. Establish a local site office as required.
3. Identify persons requiring relocation assistance.
4. Research the availability of replacement housing and commercial properties.
5. Provide assistance to displacements in relocating.
6. Lease back to owner and/or tenants, as required.

7. Send out 90-day notices to vacate.

Obtain Construction Environmental Reevaluation (3170)

The Environmental Reevaluation reaffirms the approved environmental document and evaluates other environmental considerations. This reevaluation occurs prior to the submittal of the Plans, Specifications and Estimate. The Project Manager initiates the environmental reevaluation to the Bureau of Environmental Services. The items which are required to be reevaluated are:

- previous environmental document sufficiency with regard to the current project design
- changes in project scope
- changes in land use
- new or changed regulations
- current status of community reaction
- status of environmental commitment.

If the reevaluation indicates that there has been a significant change with regard to environmental considerations then supplemental documentation may be required.

Primary Tasks:

1. Review previous environmental document for sufficiency with regard to the current project design.
2. Coordinate with the Office of Community Relations on status of community reaction.
3. Review conditions of permits with regard to plans or specifications.
4. Complete reevaluation form and Environmental Checklist.
5. Submit for internal approval of recommendation.
6. Return completed Environmental Reevaluation and Checklist to Contract Administrations Services copying the Project Manager.

Authorization to Advertise (3140)

This activity covers the processing of a complete PS&E package by the Bureau of Contract Administration up to the Advertisement date. Upon receipt of a complete PS&E package, the necessary documents are processed in accordance with Procedures listed in Section 4.4 and are submitted to FHWA for their review comments and/or authorization to advertise for bid.

Primary Tasks:

1. Compute funding pro-rata.
2. Assemble documents.

3. Submit PS&E to FHWA.
4. Coordinate efforts to obtain FHWA authorization.
5. Prepare advertisement notice.
6. Submit final approved documents.

Closing Process Relocation Plan (3020)

During the condemnation proceedings, all parties are given an opportunity to express their viewpoint concerning the property's value or the amount of just compensation. Once a condemnation complaint is filed, the appraisal report can be updated to the legal date of value. After registration of the updated Fair Market Value, settlement sessions are conducted in order to seek an amicable settlement. If this is unsuccessful, both sides have the opportunity to present value testimony to the court-appointed commissioners. Their award can be appealed by either party. Appeals are heard by the Superior Court. The judgment resulting from that trial is final, unless a legal procedure was violated.

Primary Tasks:

1. Arrange closings and final payments with property owner under agreements, condemnation, awards or judgments.
2. Update appraisal.
3. Re-register Fair Market Value.
4. Take possession of property as it becomes available.
5. Continue settlement discussions.
6. Prepare for commission hearing and/or court trial.
7. Participate in Commission hearing and report results.
8. Participate in Superior Court Trial and report results.
9. Prepare project availability letter.

Bid and Award Contract (4800)

This activity commences once the advertisement is placed in newspapers to inform contractors. Each contractor is required to pick up a copy of the bid package. Bids must be received by the date specified in the bid package. For larger or unusual projects a pre-bid meeting may be held.

A meeting is held where the bids are opened and read aloud. A bid analysis is completed. From the analysis, a recommendation is made to award or reject. The Department Action is then circulated to award the contract.

Primary Tasks:

1. Advertise contract.
2. Prepare addenda, as appropriate, and answer questions from potential bidders.
3. Receive bids.
4. Prepare bid analysis.
5. Prepare Department Action for award of contract or rejection of bids.

NOTE: Even though this activity is primarily the responsibility of Construction Services Procurement, it is the final activity and a significant milestone which ends the preconstruction process.

Execute Contract (4810)

This activity commences upon Award of the contract and covers the process of executing the contract up to the Notice to Proceed. This activity is primarily the responsibility of the Bureau of Construction Services.

Primary Tasks:

1. Notify low bidder, Regional Construction Engineer, and PM.
2. Receive contractor's bonds.
3. Receive wage rates.
4. Secure third party or local participation funding.
5. Circulate contract for signature.

Construction to Substantial Completion (4830)

This activity includes construction of the contract from Notice to Proceed thru approval of the substantial completion memorandum by the Project Manager (see Section 5.3).

Final Acceptance (4835)

This activity includes the approval of all Final Acceptance Inspections (reports and corrective actions), obtaining FHWA approvals (if applicable) and letter of acceptance as necessary (see Section 5.3).

3.4 Cost Baselines

To set forth the methodology for establishing, monitoring and controlling Project Cost Baselines. This includes methods for incorporating changes and reporting on Project performance.

3.4.1 Definitions

Activity - An element of work spanning a specific time period as defined in the schedule. For the purposes of this procedure, an activity can refer to a single activity or a group of activities (hammock).

Budget at Completion (BAC) - The sum of all budgets allocated to a project over time and becomes the Performance Measurement Baseline (PMB).

Budgeted Cost for Work Performed (BCWP) - Also known as "Earned Value" - The sum of the budgets for completed work including the appropriate portion of the budgets for level of activities.

Budgeted Cost for Work Scheduled (BCWS) - The sum of the budgets for discrete work items within the project scope scheduled to be accomplished within the approved time period.

Cost Account - A management control point at which responsibility is assigned, a budget is established, actual costs can be determined, and performance is determined.

Earned Value - See BCWP.

Earning Rules - Methods developed and used to objectively determine progress accomplished (earned value) on technical work during a specific period.

Level of Effort (LOE) - Support type effort that does not readily lend itself to measurement of discrete accomplishment.

Milestone - A specific point in the project schedule by which a critical activity will have been accomplished.

Organizational Breakdown Structure (OBS) - A functionally oriented hierarchy, or family tree, which defines the organizational relationships and responsibilities of the Project team.

Other Direct Costs (ODCs) - All costs other than staff salary costs.

Performance Measurement Baseline (PMB) - The time-phased budget plan against which project performance is measured. It is developed from the budgets assigned to scheduled work items. It will equal the total authorized BAC for the project.

Project Baselines - The scope, schedule and budget parameters that completely define the work to be performed under a specific project.

Work Breakdown Structure (WBS) - A product-oriented family tree division which organizes, defines, and displays all of the work to be performed in accomplishing the project objectives.

Cost Control Engineer (CCE) - Responsible for assisting the Project Manager (PM) in developing the project baselines. The CCE will advise the PM on the proper level of the WBS to establish the proper earning rules and the earned value measurement system to be used on the project. The CCE will prepare the preliminary cost account information. The CCE then submits the cost account level documentation to the PM for approval.

Actual Cost of Work Performed (ACWP) - The costs actually incurred for accomplishing the work performed within a given time period.

Cost Variance - The difference between BCWP and ACWP. At any point in time it indicates whether the work already performed costs more or less than that budgeted.

Estimate at Completion (EAC) - The most accurate estimate of what the costs will actually be when the authorized budgeted work on the project is completed. The EAC is defined as the costs actually incurred to date for work performed, i.e., Actual Cost of Work Performed (ACWP), plus the forecast or estimate of costs to complete the authorized budgeted work, i.e., Forecast To Go (FTG). The formula is: $EAC = ACWP + FTG$. The EAC is compared to the BAC to identify potential cost variance at completion.

Estimate to Complete (ETC) - See "Forecast-To-Go."

Forecast-To-Go (FTG) - The estimate of hours and dollars for authorized budgeted work remaining.

Schedule Variance (SV) - The difference between BCWP and BCWS. At any point in time it is used as an indicator of whether the work actually performed is ahead or behind the schedule.

Variance at Completion (VAC) - The difference between the Budget at Completion (BAC) and Estimate at Completion (EAC). At any point in time, it represents a forecast of the cost overrun or underrun at the completion of the project.

Variance Analysis Report (VAR) - A report prepared when a cost or schedule variance threshold is exceeded. An analysis, for cause, is provided along with an impact analysis and corrective action plan.

Variance Thresholds - Thresholds for variance reporting purposes may be established in terms of dollars and/or workhours, with or without a percentage value, for both cost and schedule variances. Variance thresholds are established for each project which will, in turn, support the level of project reporting required. When not specifically otherwise defined the variance threshold for each project once the project reached 25% complete is established at 15% of the Cumulative Cost Variance, Schedule Variance or Variance at Completion, or \$100,000 of the project total dollars.

3.4.2 Baseline Development

3.4.2.1 Introduction

The budget and schedule as defined in the project baseline documents are the basis for the Performance Measurement Baseline (PMB). The PMB is defined by the following:

Scope:

- The Statement of Work
- Work Breakdown Structure (WBS) (Schedule Activities)
- Responsibility Assignment Matrix

Schedule (see Section 3.7 for more details):

- Milestone Schedule
- Detailed Schedule

Cost:

- Detailed Cost Estimate by WBS and Payroll Unit

The PMB shall be developed and maintained by the Cost Control Engineer (CCE) in support of the PM on every project.

3.4.2.2 Initiation of Budget Planning

- Project Authorization - The Project Manager authorizes by memo the detailed planning and estimating effort. This memo directs the CCE to begin the project planning and identifies the date the baselines are due.
- Project Documentation - As it relates to cost/scheduling, the PM is responsible at a minimum, for the preparation of the WBS, and the milestone and summary schedules. Each PM establishes the amount of detail and the required formats for this documentation.
- The Work Breakdown Structure (WBS) is developed to systematically establish hierarchical relationships of work scope. It is to define and organize the project to represent the way design is to be performed and forms the basis for the activities in the schedule.
- The CCE assembles budget information packages and, utilizing the planning guidance provided by the PM, develops budgets for each WBS responsible unit.

3.4.2.3 Development of Design Cost Estimates

The Cost Control Engineer (CCE) is responsible for developing initial design cost estimates upon receipt of the Initial Baseline Schedule, prepared in accordance with Section 3.5, from the Project Manager. The Project Manager is to also provide a detailed Scope of Work and indicate if the design is to be performed by a consultant or an in-house design team.

Initial design cost estimates will provide a breakdown, by activity, of person-hours for design by in-house; or design by consultant and design support by in-house; plus additional estimates for administrative services. The Project Manager must perform a detailed review and approval of these estimates prior to incorporating them into the Initial Baseline Budget. The initial design cost estimate for consultant design is used to define the selection procedure, and then again

later used as a factor in conducting cost negotiations with the selected consultant. This process is depicted in the Cost and Schedule Baseline Process shown in Attachment 5.

3.4.2.4 Initial Baseline Budget

An Initial Baseline Budget is prepared by the Project Manager upon receipt of the Design Cost Estimates from the CCE. The initial budget shall include:

- Design cost estimates as recommended by the PM.
- Right of Way, Utilities, and Construction Costs estimated during Final Scope Development.

The Initial Baseline Budget is included in the Scope Development Package provided to the Capital Program Development Committee.

3.4.2.5 Final Baseline Budget

The Final Baseline Budget is to be submitted by the Project Manager upon completion of negotiations with the in-house or consultant design team. Upon receipt of approval from the Director, Project Management, the Project Manager will submit a funding request to the Bureau of Capital Program Coordination in accordance with Section 19.3.

3.4.2.6 Establishing Earning Rules

Determining the appropriate methods to evaluate the design accomplished for discrete work items is the responsibility of the PM working with the CCE. The system established on each project must be reviewed and approved by the Manager, Program Support Services.

When all the baseline documents, associated budgets, and schedule activity number cross references are loaded and balanced to the BCWS in the control system, it is then ready to receive status updates.

The milestones and percentage complete for each milestone used by each project cannot be changed unless approved by the Manager, Program Support Services. PMs are encouraged to establish "objective" earning rules for discrete work on their projects in order to more accurately and consistently measure work accomplished.

Currently there are only two different earning rules from which a PM can choose. They are:

- Level of Effort - This rule spreads the BCWS linearly over the duration of the activity. No status information is required to earn BCWP using LOE. BCWP is earned automatically with the passage of time and is equal to the value of BCWS for that period. This method should be limited to support activities where no discrete measurement technique is appropriate. The LOE should not exceed 20% of the total project work.
- External Rule - BCWS will be spread over the duration of the activity in accordance with the manner in which the PM feels the resources will be expended. BCWP is earned by

entering the percent complete in the system used for the monthly update. Any of the following methods can be used to determine earnings using the external rule:

- a) Milestone Method - BCWS is distributed in accordance with the milestones identified and the weighted value is assigned relative to the budget for the discrete element of work. BCWP is earned when the milestone is accomplished. Incremental credit for earnings between milestones is allowable.
- b) Percent Complete Method - This method is used when the milestone method can not be used. There is no clear definition of completion criteria for intermediate steps to complete the work. The work status is "subjective" and is based on a judgment of accomplishments.
- c) Apportioned Method - This method of earning is used to update accomplishments of certain work activities. An example is "design supervision" which is apportioned in relationship to the discrete work being supervised.

3.4.2.7 Baseline Review and Approval

The CCE reviews all baseline data resulting from the detailed planning process. This review is to ensure the adequacy and accuracy of the planning in terms of schedule consistency, appropriateness of assigned earning rules, amount of level of effort, the performance measurement system used to report discrete work and conformance to the total labor hours negotiated. Discrepancies are resolved between the PM and CCE. The PM will then approve the BCWS workhour/dollar budgets.

3.4.3 Control Cycle and Baseline Changes

BCWP Update - The PM ensures that the BCWP is reported accurately and reflects the work accomplished using the established guidelines. The BCWP update is required for the performance measurement evaluation, FTG calculation and schedule, and cost variance analysis. After status has been updated a progress report is prepared by the CCE for PM review.

Change Request Approval - After the Director, Program Management approves the change request, the CCE is authorized to change the baseline on the project. The CCE updates the change request control log for the project and assembles the documentation required to implement the change. This includes a properly authorized appended budget spread of BCWS, as appropriate. The PM is responsible for ensuring that the BCWS is updated within 30 days of the approval of a Change Request.

Monthly Incurred Costs

Time Reporting - After the time charges are available in the system for the current reporting period, files for total labor dollars corresponding to each payroll unit, work element, and total, project are generated for preparation of the monthly reports.

Other Direct Costs (ODCs) - ODCs are accrued monthly based on invoiced ODCs for the period and to-date.

Previous Months Adjustments - Labor - A reconciliation of the incurred costs with department records is done each month.

EAC Update - The EAC is evaluated monthly. A rule of thumb for updating is once any phase of the project has reached 25% complete, the PM should begin to look more closely at the EAC. The EAC reported is in relationship to the “authorized” scope only. Pending changes that identify a change in the schedule or a change in condition that impacts the budget should be considered in the EAC. The EAC must be as accurate as possible since it is used by management for manpower forecasting and also identification of funding shortfalls. The PM is responsible for the identification of the basis for the project EAC. The CCE will support the PM by supplying information on trending, performance, and changing conditions that may impact the FTG and schedule status.

Data Analysis and Variance Report - A cost performance report with predetermined detail is used to identify variances that meet or exceed the project established threshold. It also shows potential Variances at Completion (VAC) to the schedule activity by comparing the BAC and EAC.

Action Item Log - Corrective action plans identified by the PM are included in this log. The PM or designee updates the log to reflect new or closed items occurring during the reporting period. The PM implements approved corrective action plans and assigns a responsible individual to complete the action items listed. When a responsible individual completes an action item to the PMs satisfaction, the PM notifies the CCE of the successful completion of that item in the corrective action plan. The CCE annotates the appropriate item as “completed” on the log upon notification of successful completion.

Changes to the Baseline - During the life of a project, situations may arise whereby the available budgets and or the work plan for remaining “in-scope” work are decidedly insufficient. Consequently, performance measurement against the available budgets becomes unrealistic. Under these circumstances, a requirement exists for the PM to request to add additional budget to the performance measurement baseline which, in turn, causes the project BAC to exceed the authorized funding and formal “reprogramming” or “replanning” may be necessary. As appropriate these changes to the baseline may entail replanning future work, replanning in-process work, and/or adjusting cost and/or schedule variances.

Internal Replanning - Is when the PM decides that the authorized baseline for the remaining scope of work does not reflect the current plan to complete the work. The PM may replan the cost baseline as long as the following conditions are met:

- The cost BAC does not change and
- The control milestone dates do not change

The PM has the authority to do internal replanning without formal approval from the Program Manager. Once the replanning is done, the PM must transmit to the Program Manager the change to the cost account and project baseline.

Reprogramming - The term “reprogramming” is associated with only severe conditions. The purpose of reprogramming is to change the amount of budget and funding for remaining work to provide more realistic, reasonable budget objectives, work control,

and performance measurement. It is not done to merely to compensate for existing variances. In formal reprogramming, changes to baseline budgets must be fully documented and traceable. Formal reprogramming requires the submittal of a Baseline Change Request and/or a Formal Review/Approval by the Change Control Board. Internal records and reports will be revised expeditiously and provide appropriate visibility to account for the manner in which project budgets were changed. If variances are to be adjusted, the BCWS and BCWP values before adjustment will be retained to ensure traceability. An advantage in reprogramming is minimizing or eliminating future schedule variances, cost variances or both.

3.4.4 Responsibilities

Project Manager - Directs the preparation of and approves all baseline documentation. Also, defines the scope, develops the schedule, and estimates the cost of the project. The PM must also monitor adherence to the baseline plans, budgets, and funding for the project.

Cost Control Engineer (CCE) - Responsible for assisting the PM in developing the project baselines. The CCE will advise the PM on the proper work breakdown structure established, as well as the proper earning rules and the earned value measurement system to be used on the project. The CCE will prepare the project documentation and report monthly performance status.

Manager, Program Support Services - Reviews and ensures that proper methods are being utilized, and reviews the earning rules and earned value system that are used on each to ensure compliance with these procedures.

3.4.5 Acronyms

- Actual Cost of Work Performed (ACWP)
- Budget at Completion (BAC)
- Budgeted Cost for Work Scheduled (BCWS)
- Budgeted Cost for Work Performed (BCWP)
- Change Requests (CRs)
- Cost Performance Index (CPI)
- Cost Variance (CV)
- Project Management Control System (PMCS)
- Estimate At Completion (EAC)
- Estimate To Complete (ETC)
- Forecast To Go (FTG)
- Organizational Breakdown Structure (OBS)
- Other Direct Costs (ODCs)
- Performance Measurement Baseline (PMB)
- Project Manager (PM)
- Schedule Variance (SV)
- Schedule Performance Index (SPI)
- Variance Analysis Report (VAR)
- Variance At Completion (VAC)
- Work Breakdown Structure (WBS)

Attachment 5 - Cost and Schedule Baseline Process

COST AND SCHEDULE BASELINE PROCESS

3.5 Scheduling Baselines

Project scheduling is an integral element of an effective project control system. Project schedules are established at the earliest feasible time and monitored/statused throughout the life of the Project. The purpose of this procedure is to provide standard guidelines in the development and updating of project schedules and all supporting documents and reports.

3.5.1 Definitions

Activity - An element of work spanning a specific time period as defined in the schedule. Single activities can be summarized within a schedule.

Baseline Schedule - The approved project schedule against which all progress is compared. Also called a target schedule.

Current/Working Schedule - The current schedule shows the original baseline schedule that gets updated periodically according to the update cycle.

Early Finish (EF) - Scheduled earliest date an activity can be completed.

Generic Sub-Project Schedule - The generic schedule lists all major work activities in a logical sequence to be used as a model for creating new project schedules. The schedule lists activities from study agreements through advertise and award and into construction. The activities in this schedule all have one-day durations and require detailed information and special relationships dictated by each specific project. The durations and other modifications are developed by the Project Manager.

P3 Sub Project ID - The unique two letter sub-project ID is required by Primavera so the software can distinguish each project as a separate entity. The sub-project ID is the next available sequential two-character combination available in the Project Log file and is assigned by the scheduler. The sub-project ID appears as the first two digits of all activity IDs.

P3 Sub-Project Name - Each P3 sub-project must have a unique four character file name. The file name will be an extract of the universal project code (UPC). For all those UPCs starting with '96', the sub-project name will be the last four digits of the UPC (i.e., UPC 961046 will have a sub-project name of 1046). For all subsequent UPCs, the sub-project name will be comprised of the last digit of the year and the last three digits of the UPC (i.e., UPC 970101 will have a sub-project name of 7101). Using this method will work well unless the total number of assigned project per year reach one thousand or until the year 2001. By that time Primavera will have resolved the restrictions on the 4-digit sub-project file name.

Primavera (P3) - Primavera Project Planner, a commercial scheduling software package that is being used to schedule the projects.

Project Baseline Schedule/Scope/Budget Revision Form - a form used to obtain management approval for changing the baseline of a project: schedule, budget, and/or scope. It is located on-line in the PMCS. The following people must approve a baseline change before it can be implemented: the Program Manager, manager of Project Support Services, and the Director of Project Management.

Project Log - The Project Log is a listing of all projects that are in the P3 system. The log contains the UPC number, P3 sub-project ID number, P3 Sub-Project name, the Project Title, the planned year of advertisement, the current Program Manager, and the current status of the baseline schedule. It is maintained by the scheduling manager.

Report Coordinator - the Program Support Services personnel responsible for coordinating the production of the monthly Capital Project Status Report.

Schedule Change Form - a form for scheduling use only that records logic or duration changes made to a current schedule.

Scheduling Stamp - contains lines for project number initials of scheduler making change, date of change in active directory, and date of update or copy to report directory. It is used on every document used by schedulers to modify schedules in any way to record when the change was made and who made the change.

Universal Project Code (UPC) - a six-digit project identifier. The first two digits represent the fiscal year the project was created. The last four digits are the next available sequential numbers.

Update Form - a form that contains a list of all activities for a project that are scheduled to start, finish, or progress during the update period. The forms are produced by the schedulers and distributed to the project managers. Updates are marked by the project manager and returned to scheduling for entry into Primavera.

3.5.2 Overview

The scope of this procedure applies to all new projects that are scheduled in Primavera. Projects would include all capital projects in the Capital Program Management Division (CPM) and other support type projects deemed appropriate by division management.

One of the primary responsibilities of a project manager is to establish a plan and schedule for the project as early as possible. The schedule must portray the activities required to support the project plan. The project manager must impose tight control and discipline on all members of the project team to see that the planned schedule objectives are met.

The NJDOT planning and scheduling system described in these procedures is designed to aid the project manager in discharging this responsibility. It outlines the steps in schedule development and control of these schedules once they are developed. It delineates the interfaces with and responsibilities of the various elements of the project organization in the scheduling process, and it describes the reports generated by the Scheduling Unit and their use as tools in schedule control.

While the project manager is directly responsible for establishing schedule milestones and maintaining overall schedule control, the implementation of the planning and scheduling system is the duty of the planner/scheduler assigned to the project team. However, for the system to perform its functions effectively, the support of all project personnel involved in the scheduling process is required, as is their adherence to these policies and procedures

The planning and scheduling system performs the following major functions:

- Provides time-scaled network schedules that define when in-house (and consultant) work tasks are to be performed.
- Provides detailed bar charts for these schedules.
- Provides tools for evaluating schedule performance to date.
- Provides tools for forecasting final schedule performance.
- Produces reports that provide the Project Manager, and CPM staff with the information necessary to monitor schedule status and to initiate corrective action if required.
- Providing assistance in implementation of corrective action when required. This may include authorizing overtime, increasing manpower, or intensifying expected activity. If this does not solve the slippage problem, it is desirable to revise the schedule and re-plan the project.

3.5.3 Schedule Development

All capital projects managed in CPM will require a baseline schedule and a formal approval from the Director of Project Management before the projects are incorporated into the working directory.

3.5.3.1 Initial Baseline Schedule

An Initial Baseline Schedule is prepared by the Project Manager upon finalization of a project's scope of work. This will generally occur toward the conclusion of Final Scope Development. The approved Initial Baseline Schedule will then be used to develop Design Cost Estimates. Accordingly, the Project Manager is responsible for accurately selecting activities which correspond to the project's final scope of work. The activities in this initial schedule will be used as the basis for the development of Design Cost Estimates.

The Initial Baseline Schedule is developed as follows:

- Project UPC is assigned.
- The scheduler adds the new project information to the Project Log and assigns a P3 Project Name and P3 Project ID.
- The PM prepares a marked-up process network or other logic diagram identifying all required activities, relationships, and constraints.
- The PM requests that an Initial Baseline Schedule be developed and identifies the generic format of the schedule.

- The scheduler will print out a predecessor/successor report (Attachment 6) and bar charts (Attachment 7) and give them to the PM for development of the initial baseline.
- The PM will use the generic schedule and develop new durations and logic relationships pertaining to the scope of this project. The PM should use a similar type project as a guide and should also review the activity duration list to verify activity time frames.
- The PM should solicit assistance from the scheduler if major or complicated modifications to the logic are required. The PM can review and verify the results.
- The scheduler will complete the input and calculate the schedule. This will produce a series of reports identifying any scheduling problems, such as a logic loop or open-ended activities. The scheduler and the PM will correct all listed problems.
- The scheduler will place a start no later than (SNL) constraint on the “Advertisement” activity and re-calculate the schedule.
- The scheduler and PM will review the initial baseline schedule and verify that the total float of the sub-project is zero and that the critical path of the project is correct. The critical path should be continuous and run through the Advertisement activity.
- The scheduler will produce the early start bar chart.

3.5.3.2 Final Baseline Schedule

A Final Baseline Schedule is to be submitted by the Project Manager upon project approval by the Capital Program Development Committee. This Final Baseline Schedule will reflect minor variations in the Notice to Proceed date and durations for design development activities which may result from final negotiations with the designer. In addition, dates may be adjusted based on programming and funding availability.

The PM completes a Project Baseline Schedule/Scope/Budget Revision form, attaches the Final Baseline Schedule to it, and follows the procedure outlined in Section 3.5.5, Baseline Changes, to get the required approvals.

After receiving the Project Baseline Schedule/Scope/Budget Revision form, approved by the Director of Project Management, the Director of Capital Program Control and Support and the Program Manager, the scheduler will include the Project Schedule in future updates (described in Section 3.5.4 of this procedure).

3.5.4 Schedule Updates

Projects are updated once a month.

Schedule update forms are produced and distributed by the scheduling group one week before they are due back. They list all activities scheduled to start, finish, or progress during the period between the last update and the next update. The Project Manager is to mark up the update form with the actual start/finish dates and/or remaining durations of each listed activity.

When the scheduler receives the completed update forms from the Project Managers, he/she should first review it to be sure the form is filled out completely and there are no questions about the remarks. If, as a result of the update, the advertise date slips more than five days, the scheduler should notify the Project Manager and suggest that they meet to discuss the situation. The slippage could be a result of some logic constraint that the project manager was not aware of, and should be addressed immediately so the situation can be remedied if necessary before the next monthly status report is published.

If an activity started

- If an activity started on the date in the Early Start column, write an “A” next to the early date or on the update line, and update the forecast finish (see “If an activity has a start date” below).
- If an activity started on a date other than the date in the Early Start column, write the actual start date on the update line and an “A” next to it, and update the forecast finish (see “If an activity has a start date” below).
- If an activity that is not listed started, write the activity number and the actual start date on the form. This may be a logic change and requires revisions to the schedule. The PM should write down the logic change (if any) and be available to revise the schedule with the scheduler and update the forecast finish (see “If an activity has a start date” below).

If an activity completed/finished

- If an activity finished on the Early Finish date, write an “A” next to the early date or on the update line.
- If an activity finished on a date other than the Early Finish date, write the actual finish date on the update line and an “A” next to it.
- If an activity that is not listed finished, write the activity number and the actual finish date on the form. This may be a logic change and requires revisions to the schedule. The PM should write down the logic change (if any) and be available to revise the schedule with the scheduler.

If an activity has an actual start date

- If an activity has an actual start date then one way the activity can be progressed is by revising the remaining duration. The forecast finish date will then be based on the remaining duration relative to the new data date.
- For all activities with a start date, the percent complete must be updated based on the PM’s estimate completion of the activity. Not updating the percent complete will indicate that the program should calculate the percentage based on the original duration and time to go.

If an activity did not start

- If an activity was scheduled to start, but did not, leave the update line blank and let the logic and remaining duration (change if necessary) dictate the new forecast date.

What If/Re-Baseline Schedules

If major changes to the schedule are planned (change of scope, etc.), and the PM wants to do a “What If” schedule or develop a Preliminary Re-Baseline, then the PM must tell the scheduler that they want to develop a “What If” schedule or a Preliminary Re-Baseline. The scheduler will copy the current file to a temporary working directory and input the changes to the schedule there or download file for PMs use. If the “What If” is to become a new baseline, the PM must follow the procedure described in Section 3.5.5, Baseline Changes before the scheduler can replace the existing baseline schedule with the “What If”.

3.5.5 Baseline Changes

Once the baseline schedule has been established and approved, progress is compared against it for every update and report. The current schedule will either show that an activity is on, ahead, or behind schedule as compared with the baseline. The baseline can only change with an approved Project Baseline Schedule/Scope/Budget Revision form. The PM is responsible for initiating the change when the scope of the project or schedule has been altered significantly enough that a new project schedule must be developed, or when the approach to managing the project has changed significantly.

When events have changed significantly on a project and the schedule baseline needs to be changed, the PM initiates this change with the scheduler. When the new baseline is developed to the satisfaction of the PM, he or she fills out a Project Baseline Schedule/Scope/Budget Revision form. These forms are available on the PMCS. The top portion contains information about the project: the PM's name and phone number, the project UPC and title. The PM justifies his reason for modifying the schedule baseline in the section labeled ‘Justification/Effects of Request.’ In the Schedule Impacts section of the form, the PM lists the advertisement date in the current baseline and the advertisement date in the new baseline he wishes to get approved. If the fiscal year of advertisement is changed, this is indicated in the second column of the Schedule Impacts section. Finally, if the baseline change will result in a change to the construction finish date, this is indicated in the third column.

If there are any budget impacts as a result of this schedule baseline change, these should be indicated in the Budget Impacts section of this form. This would be necessary if the baseline change moved the schedule enough to require monies in different fiscal year, or some design change require a change in the amount of funds needed. A bar chart of the old and new baseline schedules should be attached to the form.

Approval

Once the PM signs the form, he or she then passes it on to the Program Manager for his or her approval. Other required approvals include the Director of Program Control and Support, who is responsible for insuring that any budget impacts get reported to the appropriate individuals, and the Director of Project Management. Each person on the approvals list is responsible for

passing it on to the next person, within one business day of receiving it. The secretary to the Director of Project Management must forward the approved form to the scheduling manager, who will insure it replaces the existing baseline schedule within one business day. If there is a need for this process to move quicker, the Project Manager can hand carry it to the necessary signatories. **The project baseline cannot be changed without all approvals stated above.**

Once the change has been made and the baseline schedule has been replaced, the scheduler files the Project Baseline Schedule/Scope/Budget Revision form in the scheduling project file. All project baseline changes will be reported in the monthly Capital Projects Status Report.

This procedure is followed for both a change to an existing schedule baseline and an approval of a brand new schedule baseline. When a project enters construction, the Project Manager uses the approved Project Baseline Schedule/Scope/Budget Revision form to inform the Scheduling Unit of the construction start date (NTP), contract duration, and contract completion date. The Project Baseline Schedule/Scope/Budget Revision form need only be approved by the Program Manager in this one situation.

3.5.6 Scheduling Reports

Monthly printouts for Program and Project Managers:

- A bar chart listing “To-go activities over Baseline” will be printed out for each project.
- Also, printout of all advertise dates and current data dates will be printed for the Program Managers.

Other normally requested printouts:

- Bar charts without baseline target information.
- Critical Path Bar charts.
- A predecessor/successor report.

3.5.7 Responsibilities

Project Manager - Directs the preparation of and approves all baseline documentation. Also, defines the scope, develops the schedule, and estimates the cost of the project. The PM must also monitor adherence to the baseline plans, budgets, and funding for the project.

Schedulers - Provides day to day implementation of this procedure. Specific responsibilities include working with project team members to prepare all project schedules for management review and approval; provides evaluations of all change orders and/or design change notices; provides dates, reports, and/or lower level schedules to project team members, and insures that all actual schedule information is presented in the proper formats to support the databases/reports.

Manager, Program Support Services - Reviews and ensures that proper methods are being utilized and reviews the baseline information that is used on each project to ensure compliance with these procedures.

Attachment 6 - Predecessor/Successor Report

Attachment 7 - Bar Charts

3.6 Requesting Survey Services

Prepare a DC 112 (Request for Field Survey Personnel) establishing the following:

- A detailed explanation of the work to be performed with delineation of the project limits. Included also shall be a checklist of activities of each Design Unit involved in the project.
- The requester shall provide all documentation available that will be used to perform the survey functions (see attached DC 112 checklist).
- Each request shall indicate an anticipated completion date.
- Any additional survey service not included in the original request must be accompanied by an additional request.
- A meeting between the requester and the Survey Services Field Supervisor will be held if deemed necessary.
- If additional research data or support is required to perform the services it must be requested through the Project Manager.

NEW JERSEY DEPARTMENT OF TRANSPORTATION
REQUEST FOR FIELD SURVEY PERSONNEL

* NOTE - **TO BE PREPARED IN TRIPLICATE**

DATE _____

MEMORANDUM TO: _____

MR. _____
Supervising Engineer, Field Survey

KINDLY SUPPLY FIELD SURVEY PERSONNEL TO WORK ON ROUTE _____ SECTION _____ COUNTY OR M.P. _____

THE WORK WILL CONSIST OF: _____

****NOTE:** PLANS/DOCUMENTS TO BE INCLUDED TO FACILITATE COMPLETION OF REQUEST. SEE SHEET NO.2

THE FIELD SURVEY PARTY WILL MEET MR. _____ TITLE _____

AT _____ AM - PM ON _____
Date

AT _____
Location

JOB/PROJECT CODE NUMBER _____

COPY DISTRIBUTION:
Supervising Engineer
Office File
Field Survey Coordinator

REQUESTED BY: _____

TITLE _____

BUREAU/AGENCY _____

APPROVED: Supervising Engineer, Field Survey

SIGNATURE _____ PHONE _____

FOR FIELD SURVEY PERSONNEL ONLY

COMPLETED _____
Date Name/Title

MEMBERS	NO.
PARTY CHIEF	
INSTRUMENT MAN	
CHAINMAN/RODMAN	
FIELD COORDINATOR	

NO. OF CREWS

NO. OF	AMOUNT
HOURS	
DAYS	
WEEKS	
MONTHS	

DATE IN Field Book _____ PAGE(S) _____

DC-112 CHECKLIST

PLANS AND OR DOCUMENTS PROVIDED

- TAX MAPS
- FILED MAPS
- DEEDS
- E.T.M.'S
- G.P.P.M.'S
 - ROUTE _____ SECTION _____
 - ROUTE _____ SECTION _____
- AS-BUILT CONSTRUCTION PLANS
 - ROUTE _____ SECTION _____
 - ROUTE _____ SECTION _____
- OTHER _____
- SCOPING REPORT

3.7 Value Engineering

Value Engineering (VE) is a function based method of analysis used to achieve an equal or improved product at a reduced life cycle cost. It is a tool used to improve the quality of a project and get the maximum value for every dollar spent.

The Bureau of VE is responsible for evaluating all contractor construction VE proposals and for coordinating all VE reviews in Scope Development. The Bureau also conducts analyses on design standards, specifications and Department policies and procedures.

3.7.1 Scope Development

A VE study should be done as soon as a scheme/plan and construction cost estimate are available.

A. Project Selection

1. The FHWA requires that all projects with an estimated construction cost of \$25 million or more undergo a VE review.
2. All projects with a construction cost estimate of \$5 million or more should be considered for a VE review. However, resurfacing, guiderail, pavement marker, signalization/intersection improvement, bridge repair projects, etc. are exempt from this procedure.
3. Additional projects may be selected for review by either the Bureau of VE or by the Department Project Manager. When selected by the Bureau of VE, the Department Project Manager is notified in writing with a request for study reports, plans, construction cost estimate, etc. necessary to perform a VE study.
4. The ranking system below is used to determine which projects have the greatest potential for savings.

Value Engineering Project Selection Ranking System

1 Point is awarded for each project characteristic that applies. Most projects selected for a VE study have been awarded at least 7 points.

- _____ Roadway Work over 25% Total Project Cost
- _____ Bridge Work over 25% Total Project Cost
- _____ Right of Way Impacts over 10% Total Project Cost
- _____ New Alignment of Roadway
- _____ New Alignment of Bridge(s)
- _____ More than two Construction Stages

- _____ More than four Construction Stages
- _____ Night Work Construction Required
- _____ Wetland Mitigation
- _____ Hazardous Waste Cleanup
- _____ Utility Cost over 10% Total Project Cost
- _____ Total Project Cost over \$10 million
- _____ Total Project Cost over \$20 million
- _____ Total Project Cost over \$50 million
- _____ Total Project Cost over \$100 million

Total Ranking # Points

- _____ Maximum Total 15 Points

B. Team Study

1. The Bureau of VE does research and collects all plans, estimates, reports, documents, etc. required for a thorough VE study.
2. Formal team studies are conducted during one week long training courses with multi-disciplined team members from NJDOT, FHWA, and other agencies.
3. Using personnel that previously participated in the training, the Bureau of VE organizes in-house VE Teams to conduct additional studies.
4. The Bureau of VE also conducts VE studies by informally soliciting various personnel for their expertise and input when needed.
5. During the study, the Bureau of VE will regularly inform the Department Project Manager of the estimated study completion date and the potential magnitude of the VE recommendations. If necessary, the Department Project Manager should consider directing the Designer to stop work, pending approval of the study recommendations.

C. Develop/Distribute Draft Value Engineering Proposal

1. The Bureau of VE fully develops feasible recommendations.
2. The Bureau of VE prepares and submits a draft proposal to all involved units and FHWA for review and comment. All affected units participate in the development of the recommendations.
3. The Bureau of VE addresses any comments received.

D. Formal Presentation Of Draft Value Engineering Proposal

The Bureau of VE presents the draft VE proposal to NJDOT upper management, all involved in-house units, FHWA, local officials, and other agencies using graphics/displays prepared by the VE Team and/or the Bureau.

E. Address Comments

The Bureau of VE addresses all questions or comments received prior to or during the presentation to the satisfaction of all units. At this time, the VE proposal is approved or rejected.

F. Final VE Report

The Bureau of VE prepares and submits a final VE Proposal Report which incorporates any required revisions to the draft proposal and includes an implementation plan.

G. Signatures

The VE Proposal Report is submitted for signature to the Department Project Manager, FHWA and Assistant Commissioner, Capital Program Management.

H. Implementation

The Department Project Manager will incorporate the approved VE proposal into the project.

In order to expedite the process, some proposals may not require the development of a draft report or a formal presentation. Through appropriate coordination and communication between the Bureau of VE, the Project Manager and other involved units, concerns can be addressed and VE recommendations can be submitted directly to the Project Manager for approval and implementation.

3.8 Design Exceptions

The Federal Aid Policy Guide states that "The determination to approve a project design that does not conform to the minimum criteria is to be made only after due consideration is given to all project conditions such as maximum service and safety benefits for the dollar invested, compatibility with adjacent sections of roadway and the probable time before reconstruction of the section due to increased traffic demands or changed conditions". When these criteria produce severe social, economic and/or environmental impacts, lesser design values may be chosen. The result of this process is the design exception document. The design exception is prepared to record the considerations given toward social, economic, environmental and safety impacts to the motoring public.

3.8.1 Criteria

When conditions warrant, a design exception may be granted for a project design which proposes a controlling substandard design element (CSDE). A design exception may be approved when it can be documented that a lesser design value is the best practical alternative. The warrants for the selection of a lesser design value shall give consideration to social, economic and environmental impacts together with safe and overall efficient traffic operations.

A design exception is not required for a temporary CSDE usually present during the construction stage of a project. However, due to additional driving tasks in a construction zone, the designer is encouraged to provide the highest practicable design value.

Design Exception Approval

National Highway System (Interstate or Major/Unusual¹)

Approval of a design exception by the FHWA is required for a CSDE on all Interstate (regardless of funding source) and Federally Funded Major/Unusual projects.

On an Interstate project, an existing controlling design element that is degraded by the proposed design, but still meets or exceeds the required design value, will require a design exception request. This is required because degrading the existing controlling design element will change the project's original as-built. Also, maintaining an existing or creating a new CSDE will require a design exception request.

National and Non-National Highway System (excluding Interstate or Major/Unusual)

Approval of a design exception by the Director Division of Design Services, is required on all projects.

¹FHWA approval of a Major/Unusual design exception is necessary only when Federal funds are involved in the design or construction stages of a project.

Controlling Design Elements

The controlling design elements are:

Roadway Elements

- Cross Slope
- Lane and Shoulder Width
- Minimum Radius (mainline and interchange ramps)
- Grades (maximum and minimum)
- Stopping Sight Distance (horizontal curves, vertical curves, two-way left-turn lanes)
- Intersection Sight Distance
- Superelevation (mainline and interchange ramps)
- Auxiliary Lane Length (interchange only)
- Through-lane Drop Transition Length

Structural Elements

- Bridge Width
- Structural Capacity
- Vertical Clearance

A design exception shall be requested when a project contains a controlling design element which does not conform to the required design value. A design exception should not normally be requested for substandard cross slopes on a roadway project (excluding existing structures), since it is socially, economically and environmentally feasible to upgrade the cross slopes to required design values. A design exception will be considered for substandard cross slopes related to existing structures on a case-by-case basis.

Resurfacing, Restoration and Rehabilitation Projects

This design procedure shall apply to all Resurfacing, Restoration and Rehabilitation (3R) projects, excluding Interstate 3R projects.

Although 3R projects are primarily intended to preserve pavement integrity, the designer must consider improving highway safety by upgrading existing highway and roadside elements. The level of improvement for a particular project will depend on an engineering evaluation of the cost to improve an element versus the resultant safety benefits, with due consideration given to social, economic and environmental impacts.

Types of Projects

3R projects increase in complexity from Resurfacing (least complex) to Restoration to Rehabilitation (most complex). A project classified as Rehabilitation may contain scope of work items in the Resurfacing category, however, a less complex type of project may NOT contain scope of work items identified in the more complex categories. See the definitions section for a detailed description of each project type.

Design Exceptions

Programmatic Design Exceptions for controlling substandard design elements (CSDEs) that satisfy the Design Exception Criteria for a 3R Project shall be identified in the Project Fact Sheet. Refer to the following pages for the listing of Programmatic Design Exceptions. All other CSDEs in a 3R project must have a design exception request.

Problem Statements

In addition to a design exception request, a Problem Statement shall be prepared and submitted for any CSDE which falls into one of the following categories:

1. The safe speed of a horizontal curve is more than 15 mph below the posted speed and the ADT is greater than 750 vehicles per day.
2. Crest vertical curves where:
 - a. The curve hides from view major hazards such as intersections, sharp horizontal curves or narrow bridges.
 - b. The $V_{(calc)}$ of the vertical curve is more than 20 mph below the project design speed.
3. A bridge with a usable width less than the following values:

Design Year ADT	Usable Width (meters)
0 - 750	width of approach lanes
751 - 2000	width of approach lanes + 0.6 m
2001 - 4000	width of approach lanes + 1.2 m
Over 4000	width of approach lanes + 1.8 m

Emergency Resurfacing Projects

In areas where the highway pavement has experienced accelerated deterioration, it is important to resurface those areas without delay. For such cases, the project manager may elect to develop a project for **Pavement Resurfacing Only**, provided that a safety project will be implemented in the next construction season to address safety deficiencies.

The project manager shall contact Maintenance Engineering to provide for the safety contract. Safety deficiencies which should be addressed include the replacement or repair of barrier systems, the replacement or repair of impact attenuation systems, utility poles in hazardous locations (in front of beam guiderail, behind beam guiderail but not in conformance with standard details and within the clear area of a guiderail end treatment), beam guiderail not attached at bridges, the removal of non-conforming signs and the replacement of severely deteriorated signs.

The project manager shall provide a complete discussion of the proposed safety contract, including project timeframes, with the Project Fact Sheet.

Programmatic Design Exceptions for a 3R Project

The following Programmatic Design Exceptions may be utilized for Non-Interstate 3R projects only. All proposed CSDEs (which have an acceptable individual accident analysis) that fall into one of the following categories will not require the preparation of a formal design exception. All Programmatic Design Exceptions shall be identified in the Project Fact Sheet. CSDEs that do not meet the criteria below and/or which do not have an acceptable individual accident analysis shall require a design exception request to the appropriate design standard.

1. The safe speed is equal to or greater than the posted speed for superelevation and horizontal curve stopping sight distance.
2. Superelevation in urban areas, if the spacing between property improvements and/or driveways is less than or equal to 60 meters. Urban areas shall be determined by referring to the NJDOT Straight Line Diagrams (for state highways) and the NJDOT Functional Classification System Maps (for non-state highways).
3. For Resurfacing and Restoration projects only:
Any CSDE involving structures with a span length greater than or equal to 6 meters.
4. Maximum and minimum profile grades (only if the required design values for cross slopes are provided).
5. For Resurfacing and Restoration projects only:
Vertical bridge clearances greater than or equal to 4.42 meters. Any substandard vertical bridge clearance requires the concurrence of the Manager, Bureau of Structural Engineering.
6. Lane and shoulder widths which meet the following values:

Design Year Volume (ADT)	Posted Speed (mph)	10% or more trucks			less than 10% trucks		
		lane (m)	inside shoulder (m)	outside shoulder (m)	lane (m)	inside shoulder (m)	outside shoulder (m)
2000 or less	under 80	3.3	N/A	0.6	3.0	N/A	0.6
	80 & over	3.6	N/A	0.9	3.3	N/A	0.9
over 2000	all	3.6	1	1.8	3.3	1	1.8

7. The length of vertical curve which meets or exceeds the following vertical curve stopping sight distance values:

Design Speed (km/h)	Vertical Stopping Sight Distance	
	(meters)	(feet)
40	44.4	145
50	57.4	188
60	74.3	244
70	91.4	300
80	106.7	350
90	129.5	425
100	152.4	500
110	182.9	600

Note: This table should be used for 3R project vertical curve Programmatic Design Exceptions only. Solve for the existing vertical curve stopping sight distance knowing the vertical curve length and algebraic difference in grades, and using Figures 4-I and 4-J in the NJDOT Design Manual Roadway. Using the above table, interpolate to determine if the existing vertical curve stopping sight distance meets or exceeds the value shown for the project's design speed.

Design Standards

The required design values for the controlling design elements previously mentioned are contained in the following design standards:

- NJDOT Design Manual Roadway
- NJDOT Design Manual Bridges and Structures
- AASHTO publication A Policy on Design Standards Interstate System
- AASHTO publication A Policy on Geometric Design of Highways and Streets.

Specific design values for each of the controlling design elements, along with references to AASHTO and NJDOT Design Manuals, are presented in Tables 1 through 8. It should be noted that the design values in all NJDOT Design Manuals meet AASHTO design values, except where noted in these tables.

Projects Exempt from the Design Exception Procedure

A county or municipal construction project, funded under the following State Aid Programs, is not required to follow the design exception procedure, unless the design phase or construction phase is being funded with Federal Aid or the project is on the National Highway System or construction phase:

- New Jersey Transportation Trust Fund (NJTTF) - Federal Aid Urban System Substitution Program: County and Municipal Aid
- NJTTF - Municipal Aid
- 1979 Transportation Bond Issue Program
- 1983 NJ Bridge Rehabilitation and Improvement Fund: State Aid to Counties and Municipalities (Local Non-Federal portion)

- 1989 NJ Bridge Rehabilitation and Improvement and Railroad Right of Way Preservation Bond Act (Local Aid portion)
- Any previous State Aid to county or municipal programs, with remaining balances, where the Department was not responsible for the development of the plans or the advertising and bidding of the construction contract.

3.8.2 Controlling Substandard Design Element (CSDE) Format

This is the most significant part of the design exception. It contains the rationale for the design exception approval. It shall include: existing and proposed CSDE's; required design values; proposed impacts; proposed cost estimate; accident summary with proposed safety measures.

Sample Tables for Proposed CSDE's

A table should be provided to show existing and proposed conditions. To illustrate what is expected, tables of a few common CSDE's will be presented in this section. It should be noted that when a required design value cannot be met, then the highest practical design value should be selected.

Superelevation

Table 9 shows the information required for the CSDE superelevation. Included are the curve location; existing and proposed radius; existing, proposed and required superelevation rates (e); existing, proposed and required safe speeds ($V_{(safe)}$); existing and proposed posted speed; and the cost to correct the CSDE. Refer to Section 3.8.3 for an explanation on safe speed.

It is very important, when listing the information in table form, to give a brief description of the material presented. In the following example, the required "e" is based on an "e" maximum of 6%, at a design speed of 110 km/h and the required "V (safe)" is based on the required "e" and proposed radius.

Table 9

Sample Superelevation Table

Location	Radius (Exist/Prop) (meters)	e max (Exist/ Prop)	e max (required)	V(safe) (Exist/ Prop) (mph)	V(safe) (required) (mph)	Posted Speed (Exist/ Prop) (mph)	Cost to Upgrade (\$1000)
MP 71.45 to 70.77 NB (Sta. 114+987.6 to 116+087.6)	2,000/2,000	2.0/2.0	2.8	89/89	91	55/55	100
MP 70.62 to 70.25 NB (Sta. 116+330.8 to 116+914.2)	1,500/1,500	2.0/2.0	3.6	83/83	87	55/55	150

Vertical Curve Stopping Sight Distance

An example of the information required for the CSDE vertical curve stopping sight distance is shown in Table 10. The table lists the vertical curve location; the existing and proposed length of vertical curve (L); the existing and proposed difference in grades (A); the existing, proposed and minimum required stopping sight distance (S); the existing and proposed calculated speed ($V_{(calc)}$); the existing and proposed posted speed; and the cost to upgrade to the required design value. The design speed for this example is 70 km/h.

Table 10

Sample Vertical Curve Stopping Sight Distance Table

Location	A (Exist/ Prop)	L (Exist/ Prop) (meters)	S (Exist/ Prop) (meters)	S (min req'd) (meters)	V _(calc) (Exist/ Prop) (mph)	Posted Speed (Exist/ Prop) (mph)	Cost to Upgrade (\$1000)
MP 10.0 to 10.04 SB (Crest) (Sta.16+093.4 to 16+154.4)	3.5/3.5	60/60	87.7/ 87.7	94.1	37/37	40/40	150
MP 10.04 to 10.08 SB (Crest) (Sta.16+154.4 to 16+212.3)	3.0/3.0	54/57	94.3/ 95.8	94.1	39/40	40/40	100
MP 10.10 to 10.12 SB (Sag) (Sta.16+254.4 to 16+300.1)	5.0/5.0	45/60	53.1/ 64.6	94.1	27/31	40/40	250

To determine the existing and proposed S, use the appropriate formula below:

For sag vertical curves:

If $S > L$, then $S = (120 + LA)/(2A - 3.5)$

If $S < L$, then $S = (3.5L + [(3.5L)^2 + 480 AL]^{1/2})/2A$

For crest vertical curves:

If $S > L$, then $S = (L/2) + (202/A)$

If $S < L$, then $S = (404L/A)^{1/2}$

The minimum required S is from the appropriate design standard. A design exception request is not necessary if the proposed S is equal to or greater than the minimum required S. Use Attachment 8 to determine V(calc), given the existing and proposed S.

Crest Vertical Curve Stopping Sight Distance - Two-Way Left-Turn Lanes

Use a table similar to Table 10 for this CSDE. See Section 6 in the NJDOT Design Manual Roadway for a discussion of how to calculate the existing and proposed stopping sight distance S. The minimum required S is two times the minimum design value for stopping sight distance in the appropriate design standard. A design exception request is not needed if the proposed S is equal to or greater than the minimum required S. Using Attachment 8, divide the existing and proposed S by two to determine V (calc).

Horizontal Curve Stopping Sight Distance

The information shown in Table 11 is not all inclusive, it must be supplemented with a description of the proposed lane and shoulder widths. This information is necessary to calculate "M". The information in Table 11 includes the curve location; the existing and proposed radius; the existing and proposed distance from the center line of the inside lane to the sight obstruction (M); the existing, proposed and required stopping sight distance (S); the existing and proposed calculated speed ($V_{(calc)}$); the existing and proposed posted speed; and the cost to upgrade to the required design value.

Table 11
Sample Horizontal Curve Stopping Sight Distance Table

Location	Radius (Exist/ Prop) (meters)	M (Exist/ Prop) (meters)	S (Exist/ Prop) (meters)	S (min re- quired)* (meters)	V(calc) (Exist/ Prop) (mph)	Posted Speed (Exist/ Prop) (mph)	Cost to Upgrade (\$1000)
MP 14.0 to 14.04 SB (Sta.22+530.8 to 22+591.8)	360	3.6/ 3.6	101.6/ 101.6	131.2	41/41	50/50	150
MP 14.04 to 14.08 SB (Sta.22+597.9 to 22+655.8)	600	2.7/ 2.7	113.7/ 113.7	131.2	43/43	50/50	100

* This table is based on a design speed of 90 km/h.

To determine the existing and proposed horizontal curve S, use the following formula:

$$S = 2(2RM - M^2)^{1/2}$$

The minimum required S is from the appropriate design standard. A design exception request is not necessary if the proposed S is equal to or greater than the minimum required S. Use Attachment 8 to determine V (calc), given the existing and proposed S.

Impacts

For each CSDE, compare all of the impacts caused by constructing to the required design value to the impacts caused by the proposed design value. Avoid vague terms such as "extensive," "considerably" and "adversely." Otherwise, elaboration is necessary. The following is an example of elaborating on a vague term:

Providing the required design value for stopping sight distance on the vertical curve would require extensive regrading. The tangent sections between vertical curves are short. To lengthen the vertical curves, the grades on the immediate bridge approaches would have to be changed from 7.0% to 5.0%.

Sometimes, in providing a CSDE to the required design value may cause:

- another controlling design element to become substandard
- social impacts

- environmental impacts.

If appropriate, include these in the discussion. Use tables or charts to supplement and summarize the impacts presented. However, tables and charts should not be used exclusively to present the impacts of constructing to the required design value. Table 12 is a sample table comparing the proposed impacts and those impacts necessary to meet required design values.

Table 12

Sample Table on Impacts

	Proposed	Total to Meet Required Design Values	Additional to Meet Required Design Values
Length of Roadway Reconstruction South Branch Road Clawson Avenue	360 m 45 m	570 m 120 m	210 m 75 m
Maximum Height of Fill	3 m	5.4 m	2.4 m
Total Amount of Fill	10,700 m ³	43,575 m ³	32,575 m ³
Total Cost Estimate	\$1,500,000.00	\$3,100,000.00	\$1,600,000.00

Cost Estimate

Provide a cost estimate for constructing to the required design value at each location that a CSDE occurs. Compare the cost estimate to the total project cost, and state the resultant percentage increase in the project cost. This comparison brings into perspective the feasibility of constructing to the required design value. Include in each cost estimate a breakdown showing the construction, right of way and utility costs. Also, state if the cost estimate includes maintenance and protection of traffic costs.

Accident Analysis

The design exception request shall use the accident analysis in the Project Fact Sheet provided by the Bureau of Traffic Signal and Safety Engineering. The analysis should include an overall accident history summary, including the overall rate, the statewide average accident rate for highways of similar cross-section, and the accident detail report printout. Refer to the accident analysis when discussing each CSDE.

Safety Measures

When a CSDE cannot be upgraded to the required design value, additional safety measures should be incorporated into the project. Discuss how each safety measure improves the CSDE. Safety measures do not have to be expensive. See Table 13 for examples of low cost safety measures.

Table 13

Low Cost Safety Measures

Controlling Substandard Design Element	Safety Measures
Lane and shoulder width	<ul style="list-style-type: none"> • Pavement edge lines • Raised pavement markers • Post delineators
Bridge width	<ul style="list-style-type: none"> • Traffic control devices • Approach guiderail • Hazard and pavement markings
Radius and superelevation	<ul style="list-style-type: none"> • Traffic control devices • Shoulder widening • Flatten side slopes • Pavement antiskid treatment • Obstacle removal or shielding
Stopping sight distance (horizontal and vertical)	<ul style="list-style-type: none"> • Traffic control devices • Fixed hazard removal • Shoulder widening • Highway lighting (sag curves)

Attachment 9 contains more detailed tables which show accident types along with probable causes, studies to be performed to determine probable cause and possible safety measures. Designers can also use this table to conduct a safety analysis in the scoping stages of a project.

3.8.3 Controlling Substandard Design Elements

This section provides guidance and insight for preparing design exception requests for each CSDE's.

Cross Slope

In addition to what was stated in Design Exception Criteria, two separate studies pursued in 1970 found that pavement cross slope is the most important design element concerning wet weather accidents. A proper pavement cross slope will allow water to drain from the roadway during wet weather and thus reduce the chance of an accident caused by hydroplaning.

Cross Slope on Existing Structures

For bridge decks, it is not always technically possible to modify the existing cross slope to meet the required design value. The maximum thickness of a Latex Modified Concrete Overlay on a bridge deck is usually limited to 50 millimeters. Since the minimum overlay thickness is 32 millimeters, only cross slope modifications which result in an increase of less than 19 millimeters can be accommodated on this type of bridge deck rehabilitation. An increase of 19

millimeters equates to an increase in cross slope of ½ percent, based on a 3.6 meter wide lane. Therefore, it is possible to meet required design values on a two lane structure, where the existing pavement cross slope is one percent.

It is standard procedure to check existing structural members for their load carrying capacity when work, including overlays on the bridge deck, is required. When changing the existing cross slope to required design values, there is a possibility that existing structural members will be overloaded.

Major reconstruction or replacement of a bridge deck, which would include supports, may be required structurally to accommodate changes in cross slope. For many structure projects, particularly bridge deck rehabilitation, this is prohibitively expensive and beyond the project scope.

The decision to upgrade a bridge deck cross slope will be made on a case by case basis and should be based on the project scope, the ability of the structure to accommodate additional dead load, the cost to strengthen the structure to accommodate the increase in loading, and an accident analysis.

Safety Measures

If the decision is made to request a design exception, include safety measures such as "Slippery When Wet" signs and transverse pavement grooving. State how the chosen safety measures will help reduce the severity and frequency of accidents.

Lane Width

The location and description of substandard lane widths shall include the station, milepost and direction, existing lane width, proposed lane width, and the required design value for lane width.

Wider lanes reduce the potential for accidents more than wider shoulders. Therefore, adequate lane widths should be provided before consideration is given to widening shoulders. Existing shoulder widths may be reduced to provide wider lanes except in those locations where parked car accidents are higher than the statewide average.

Accident Indicators

The accidents associated with substandard lane widths are head on, parked vehicle, sideswipe and fixed object accidents.

Safety Measures

Safety measures for substandard lanes include, but are not limited to, pavement edge lines, raised pavement markers, post delineators, removing fixed objects (utility poles, trees, etc.), eliminating steep slopes and providing guiderail where appropriate. State how the chosen safety measures will help reduce the severity and frequency of accidents.

Shoulder Width

The location and description of substandard shoulder widths shall include the station, milepost and direction, existing shoulder width, proposed shoulder width, and the required design value for shoulder width.

Substandard shoulder width on a structure requires a design exception request. If the proposed shoulders on a structure are substandard in width, but are consistent with the roadway approach shoulders, state so.

Accident Indicators

Examples of indicator accidents associated with substandard shoulders are head on collisions involving a vehicle while passing a right turning vehicle; rear end accidents; struck parked vehicle accidents; same direction accidents involving a turning vehicle; and fixed object accidents occurring on the right side of the road with respect to the direction of traffic.

Safety Measures

Safety measures for substandard shoulders include, but are not limited to, pavement edge lines, raised pavement markers, post delineators, removing fixed objects (utility poles trees, etc.), eliminating steep slopes and providing guiderail where appropriate. State how the chosen safety measures will help reduce the severity and frequency of accidents.

Minimum Radius (mainline and interchange ramps)

Driver Expectation

Roadway uniformity has a direct effect on driver expectation. A sharp curve immediately following an extended stretch of straight highway will experience more accidents than a similar curve situated within a generally winding section.

Safe Speed

The designer should seriously consider reconstruction of a horizontal curve (radius), when the safe speed of the existing curve is below the posted speed (assuming improved superelevation cannot increase the safe speed to that of the posted speed). Refer to the safe speed formulas identified earlier.

Safety Measures

If reconstruction of a horizontal curve is not feasible, less costly safety measures should be implemented. Such measures include widening lanes, widening and paving shoulders, superelevation, flattening steep sideslopes, removing or relocating roadside obstacles, marking no-passing zones, installing traffic control devices, raised pavement markings, and delineator posts. State how the chosen safety measures will help reduce the severity and frequency of accidents.

The following is a sample discussion of safety measures:

The tendency to run off the road on the outside of curves has been well established. It is clear that roadside conditions can substantially influence accident severity and, quite possibly, accident frequency. Therefore, guiderail has been installed because of steep slopes, and trees 150 millimeters or more in diameter have been removed along the outside edge of the curve. Also, the curve has been superelevated to improve pavement surface drainage and to help reduce the number of wet weather accidents.

Grades (maximum and minimum)

Provide the existing grade, proposed grade and the required design value. Explain the impacts that providing the required design value would cause, such as additional right of way, cut and fill slopes, and drainage. Grades less than the required minimum design value could be justified for highways in flat areas with good drainage. For short distances and low volume highways, the use of steeper than maximum grades may be acceptable.

Accident Indicators

Accidents that may occur when grades exceed the maximum design value are same direction rear-end collisions caused by sudden vehicle deceleration or slow trucks. Wet weather accidents may be caused by inadequate drainage on below minimum grades.

Safety Measures

Safety measures for greater than maximum grades are warning signs, advisory speed limits, and truck lanes. For below minimum grades, regrading of the border area and additional positive drainage (for example, inlets, pipes and swales) should be considered. State how the chosen safety measures will reduce the severity and frequency of accidents.

Horizontal Curve Stopping Sight Distance

A sample Horizontal Curve Stopping Sight Distance Table was previously shown in Table 11. Attachment 8 shows V (calc) given the stopping sight distance (S) in open road conditions. State the cause of the restricted sight distance, for example longitudinal barrier, a retaining wall or bridge approach will slope. Explain the impacts that would result from providing the required design value.

Accident Indicators

Accidents that may indicate substandard horizontal curve sight distance are same direction rear-end, head-on, right angle and left turn accidents.

Safety Measures

Safety measures that should be considered are shoulder widening and improved highway lighting. State how the chosen safety measures will reduce the severity and frequency of accidents.

Vertical Curve Stopping Sight Distance (and two-way left-turn lanes)

A sample Vertical Curve Stopping Sight Distance Table was previously shown in Table 10. Attachment 8 shows the V (calc) given the stopping sight distance (S) in open road conditions.

Graphical Measurement

Sometimes the profile has to be checked graphically to determine if a vertical curve less than the required length meets the required design value for stopping sight distance. These cases involve adjacent crest and sag vertical curves with little or no intervening tangent. The substandard stopping sight distance may be minimized or eliminated with minor adjustments to the sag curve, or providing highway lighting on the sag curve.

Impacts

List all impacts caused by the proposed design, and a design that would provide the required design value for stopping sight distance, such as: utility relocation, right of way acquisition, paving of side streets, resetting signal standards, installing new loop detectors, reconstructing curb, sidewalk, driveways, and concrete islands, resetting inlets and various other appurtenances, and structural work.

If providing the required design value for stopping sight distance would involve lengthening the vertical curve, explain the slope and drainage impacts to adjacent properties. Also, include the following statement: "Lengthening the vertical curve to provide the required design value for stopping sight distance would require raising (or lowering) the roadway elevation a maximum of ___ millimeters."

Accident Indicators

- a. Sag Vertical Curves
Indicator accidents for sag vertical curves are nighttime same direction accidents or wet weather same direction accidents.
- b. Crest Vertical Curves
Indicator accidents for crest vertical curves are same direction accidents or angle accidents.

Accident Analysis

When analyzing the crest vertical curve indicator accidents, the location of these accidents in relation to the curve is important. A higher frequency of same direction or angle accidents must prevail just after the crest vertical curve for the accidents to be considered CSDE related.

Safety Measures

Improving the stopping sight distance on vertical curves can sometimes be easily accomplished by milling or resurfacing. Otherwise, reconstruction is required.

- a. Sag Vertical Curve
If lighting is or will be provided at a substandard sag vertical curve, state that lighting the curve will compensate for the substandard sight distance illuminated by vehicle headlights alone.

b. Crest Vertical Curve

A crest vertical curve improvement does little to reduce user cost, compared to reconstruction of a horizontal curve. Reconstruction of a crest vertical curve has to be justified on the basis of safety. The designer should examine the nature of roadway elements hidden by a crest vertical curve, such as an intersection, a sharp horizontal curve or a narrow bridge. Also check the location of the roadway element(s) in relation to the portion of the highway where sight distance falls below the required design value. The roadway element may lend itself to relocation or improvement. If, after evaluation, reconstruction of a crest vertical curve is ruled out, provide safety measures. State how the chosen safety measures will help reduce the severity and frequency of accidents.

If intersections, traffic signals, interchanges, deceleration or acceleration lanes exist in the vicinity of a crest vertical curve, indicate that advance signing is or will be provided, what type of signing, and where the signing is or will be located (what direction).

Intersection Sight Distance

Provide the existing, proposed and required design value for intersection sight distance. State the cause for the substandard intersection sight distance. Describe the impacts of providing the required design value.

Accident Indicators

Accidents related to substandard intersection sight distance are right angle and left turn accidents.

Safety Measures

Safety measures include left turn slots, stop and yield signs, turning prohibitions, reducing speed limits, advance warning signs and removal of parking (if allowed). If a MUTCD warrant is satisfied, consider installing a traffic signal. For existing signalized intersections, consider phasing/timing changes and increased amber/all red phases. State how the chosen safety measures will reduce the severity and frequency of accidents.

Superelevation

Safe Speed

The required curve data to be included in a design exception request is shown in Table 9. The most important item in the table is the safe speed [V (safe)]. Safe speed is an accepted limit at which riding discomfort due to centrifugal force is evident to the driver. The safe speed of a horizontal curve in miles per hour, given the radius and cross slope, can be calculated by using the following formulas or by interpolating the graph in Figure 3. Both graph and formulas are based on a Ball Bank indicator reading of 10 degrees.

[V ≤ 50 mph]

$$v = \frac{-0.015R + ((.015R)^2 + 4R(15E + 2.85))^{1/2}}{2}$$

[V > 50 mph]

$$v = \frac{-0.03R + ((.03R)^2 + 4R(15E + 3.6))^{1/2}}{2}$$

Note: Use when radius is in feet, E=e/100

[V £ 50 mph]

$$v = \frac{-0.0492R + ((0.0492R)^2 + 13.1R(15E + 2.85))^{1/2}}{2}$$

[V > 50 mph]

$$v = \frac{-0.0984R + ((0.0984R)^2 + 13.1R(15E + 3.6))^{1/2}}{2}$$

Note: Use when radius is in meters, E=e/100

The Ball Bank indicator has been used by the Department as a uniform measure, for the point of discomfort, to determine the safe speed on a curve. The safe speed based on the proposed superelevation should be equal to or greater than the posted speed. If the safe speed is less than the posted speed, include the following sentence in the design exception body: **when paving is completed, and before the roadway is opened to traffic, the curve(s) shall be Ball Banked and appropriate advisory speeds posted where needed.** The Resident Engineer shall request this action through the Bureau of Traffic Signal and Safety Engineering.

Accident Indicators

Accident indicators generally associated with substandard superelevation include errant vehicle accidents such as fixed object, overturned, head on and parked vehicle accidents.

Impacts

List all impacts caused by the proposed design, and a design that would provide the required design value for superelevation, such as intersections, curbs, sidewalks, drainage, structures, businesses, residences any impacts to barrier curb. State why the chosen superelevation rate is the highest practical superelevation rate possible.

Figure 3

Safe Speed for Horizontal Curves

Auxiliary Lane Length (interchange only)

Provide the existing, proposed and required design value for the length of the acceleration or deceleration lane. Explain why a substandard design value was chosen. Describe the impacts of providing the required design value, such as additional right of way, new retaining walls, bridge work, and utility relocations.

Accident Indicators

Accidents related to substandard auxiliary lane lengths are same direction, sideswipe, and merging traffic rear-end accidents.

Safety Measures

Additional pavement markings, advance warning and advisory speed signs, delineators and highway lighting help to mitigate the impacts of substandard auxiliary lanes. State how the chosen safety measures will reduce the severity and frequency of accidents.

Through-Lane Drop Transition Length

Provide the existing, proposed and required design value for the through-lane drop transition length. Explain why a substandard design value as chosen. Describe the impacts or providing the required design value, such as additional right of way, slopes, physical obstructions, and utility relocations.

Accident Indicators

Accidents related to a substandard through-lane drop transition length are same direction, sideswipe and merging traffic rear-end accidents and, on undivided highways, head-on accidents.

Safety Measures

Safety measures to consider include pavement widening, additional pavement markings and signing, delineators, highway lighting and, on undivided highways, elimination of passing zones. State how the chosen safety measures will reduce the severity and frequency of accidents.

Bridge Width

When the required design value for clear bridge width cannot be provided on a structure, a design exception will be needed. AASHTO provides the required clear bridge widths for new and reconstructed bridges. In the design exception, state the existing, proposed and required design value for clear bridge width, and the width of the approach lanes.

Accident Analysis

A study by Daniel S. Turner indicated that the most important variables in predicting bridge accidents were: bridge relative width (clear bridge width minus width of approach roadway),

average daily traffic volume and approach roadway width. In this study, a probability table was developed to predict accidents, as shown in Table 14. The table was based on data gathered from two-lane, two-way traffic structures on rural roads. Knowing the approach roadway width and bridge relative width, the table shows the expected collision rate.

Facts that may aid in the accident evaluation for a two lane bridge are:

- Increasing the difference between the width of the bridge and the width of the approach lanes from 0 to 1.2 meters will decrease bridge accidents by about 40 percent, with the first 0.3 meter of widening accounting for nearly one-third of this reduction.
- The incremental safety gains of widening bridges decrease as clear bridge width increases (i.e. the first 0.3 meter of bridge width beyond the travel lanes has three times the effect on accident rates as the tenth 0.3 meter).

Also, no evidence exists to suggest a relationship between the severity of constriction at bridges and the severity of bridge related accidents.

Factors other than clear bridge width, such as bridge length and type (e.g. deck versus truss), presence or absence of curb, approach alignment, pavement surface condition, and premature icing in winter may also affect the accident rate at bridges.

TABLE 14 PROBABILITY OF BRIDGE ACCIDENT PER MILLION VEHICULAR PASSAGES								
Bridge Relative Width, in Meters	Approach Roadway Width, in Meters							
	4.8-5.4	5.5-6.0	6.1-6.6	6.7-7.2	7.3-7.8	7.9-8.4	8.5-9.0	Over 9.0
Over 1.8 Narrower	1.200	0.767	0.436	0.135	0.060	0.030	0.200	0.163
1.3-1.8 Narrower	1.200	1.171	0.757	0.686	0.604	0.533	0.472	0.150
0.7-1.2 Narrower	1.194	0.476	0.490	0.503	0.500	0.400	0.300	0.140
0.0-0.6 Narrower	0.611	0.649	0.553	0.695	0.479	0.500	0.400	0.130
0.0-0.6 Wider	0.344	0.496	0.330	0.529	0.319	0.497	0.677	0.120
0.7-1.2 Wider	0.641	0.319	0.319	0.308	0.477	0.448	0.420	0.105
1.3-1.8 Wider	0.217	0.200	0.193	0.256	0.224	0.176	0.128	0.080
1.9-2.4 Wider	0.254	0.170	0.234	0.061	0.162	0.113	0.064	0.056
2.5-3.0 Wider	0.165	0.000	0.170	0.145	0.333	0.331	0.200	0.120
3.1-4.2 Wider	0.140	0.123	0.120	0.083	0.148	0.171	0.068	0.176
Over 4.2 Wider	0.113	0.110	0.066	0.090	0.098	0.102	0.299	0.248

Adapted from: D.S. Turner "Prediction of Bridge Accident Rates", Journal of Transportation Engineering, Vol. 110, No 1, American Society of Civil Engineers, NY January, 1984.

Safety Measures

There are various safety measures for substandard bridge widths which include, but are not limited to, installing guiderail at bridge approaches, new or rehabilitated bridge rails, and warning signs.

It is vitally important to have proper guiderail attachments to structures, especially at the bridge approaches. Also, nighttime bridge accidents are more likely to occur than daytime accidents. Therefore, provide the proper lighting or delineation, especially on bridges 20% or more narrower than the approach. State how the chosen safety measures will help reduce the severity and frequency of accidents.

Structural Capacity

As noted in Table 7, Note 3, there are no exceptions to the minimum live load design criteria.

Vertical Clearance

Resurfacing and Restoration Project

In all cases, a design exception request is necessary for substandard vertical clearance. For Resurfacing and Restoration projects where there is no fixed object (bridge) accident history, a Programmatic Design Exception described in the Project Fact Sheet is sufficient.

Impacts

The description of a substandard vertical clearance shall include the structure number and milepost. Also provide the existing and proposed minimum vertical clearance and the required design value for vertical clearance. Compare the structure's substandard vertical clearance to any adjacent structure's vertical clearance before the next logical exit, that will not be altered by the project. A listing of structures by route, structure number and vertical clearance can be obtained from the Bureau of Maintenance Engineering and Operations. Existing vertical clearance can also be found on a structure's Structural Inventory and Appraisal (SI&A) sheet, Item 54. SI&A sheets are available from the Bureau of Structural Evaluation.

Discuss the design alternatives considered which would provide the required minimum vertical clearance, such as milling, jacking or bridge reconstruction. If the alternatives were found infeasible, provide reasons why. Also, discuss the existing and proposed roadway profile as it relates to vertical clearance.

Accident Analysis

Discuss whether the bridge has been hit by high vehicle loads. Use the accident analysis performed by the Bureau of Traffic Operations and Safety Programs, and inspect the site for any physical evidence.

Safety Measures

Cite safety measures proposed at or on the structure such as advance warning signs, improved delineation and markings. State how the chosen safety measures will help reduce the severity and frequency of accidents.

Memorandum of Concurrence

A separate Memorandum of Concurrence from the Manager, Structural Engineering shall be obtained and attached to the Design Exception.

Interstate

Every effort should be made to provide 4.9 meters vertical clearance on the “26,000 Mile Priority Network” (a subset of the Interstate System - refer to Attachment 10). Design exception requests for less than 4.9 meters vertical clearance on the Priority Network must be coordinated with the Military Traffic Management Command (MTMC) by the FHWA. This will add to the design exception approval time. Therefore, it is important that the design exception request be submitted as soon as possible. For all Interstate highways, the FHWA will not approve a design exception request for vertical clearance less than 4.42 meters.

Defense Route (Non-Interstate)

The NJDOT Bridges and Structures Design Manual specifies a greater vertical clearance design value for non-Interstate Department of Defense (DOD) routes. To determine if a structure is on a DOD route, see Item 100 on the structure’s SI&A sheet.

Consulting Firm Statement

If the design exception was prepared by a consulting firm, include the following statement after the first sentence of the routing memorandum: This design exception was prepared by (consulting firm's name).

Number of Final Copies

Attach two copies to the design exception when only State approval is required. Design exceptions that require FHWA approval should have the original and three copies. Circulate the design exception for signature. The approved original design exception is forwarded to Configuration Management, except for design exception requests that require FHWA approval. Then the FHWA retains the approved original design exception, with a copy to Configuration Management.

Routing of FHWA Additional Information Request

Once the FHWA receives the design exception, the FHWA may request additional supportive information. The Project Manager shall provide the additional supportive information directly to the FHWA, with a copy to all signatories. This is only if the design exception is not altered. If the FHWA requires revisions to the final design exception, then the revised design exception must be circulated for signature.

3.8.4 Design Exception Format

The design exception is comprised of three parts: opening paragraph, each CSDE, and recommendation.

A letter format is used when requesting FHWA approval of a design exception on an Interstate or Major/Unusual project² (refer to Figure 4). The memorandum format is used when requesting State approval of a design exception on all other projects (refer to Figure 5). See Attachment 11 for a sample design exception.

A Department routing memorandum shall cover the entire Design Exception package and shall be submitted by the Project Manager to the Director of Design Services and include a recommendation signature by the Program Manager and a Concurrence signature by the Manager, Civil Engineering.

Standard Opening Paragraph

Figures 4 and 5 illustrate the opening paragraphs requesting FHWA and State approval of a design exception, respectively.

Controlling Substandard Design Elements (CSDEs)

Each existing and proposed CSDE are described as discussed in the Controlling Substandard Design Element Section, with each CSDE located by station and milepost.

Recommendation

The recommendation is comprised of a positive statement paragraph, an approval request paragraph, a complimentary closing, a signature line (letter format only), and approval line.

²FHWA approval of a Major/Unusual design exception is necessary only when Federal Funds are involved in the design or construction of a project.

FIGURE 4

Do not date

(name)

Division Administrator
Federal Highway Administration
840 Bear Tavern Road
Suite 310
West Trenton, NJ 08628

Attention: (name of District Engineer)

Re: DESIGN EXCEPTION
Route , Section/Contract Number
Town(ship), City or Borough
County
Milepost Limits
Project Category
Federal Project Number
NJDOT Job Number

Dear **(name)**:

The Federal-Aid Policy Guide, Transmittal 1, Section 625.3, indicates that a design exception may be granted for projects which do not conform to required design values where conditions warrant.

Approval of the design exception is requested to the following controlling design elements contained in the (List only those references that apply: NJDOT Design Manual Roadway; NJDOT Design Manual Bridges and Structures; AASHTO publication, A Policy on Geometric Design of Highways and Streets (Year); AASHTO publication, A Policy on Design Standards Interstate System (Year)); based on the warranting conditions described herein:

- List the CSDEs for which a Design Exception is being requested.

Please refer to the attached Project Fact Sheet for the project description and accident analysis.

- Discuss each CSDE here.

Based on the warranting conditions presented (the existing and proposed geometry and surface conditions, additional costs, accident analysis and safety measures), it is recommended that the design exception be approved for (list the CSDEs).

Sincerely,

(name)
Director, Division of Design Services

FHWA Approval By:

(name)
Division Administrator

Date

FIGURE 5

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MEMORANDUM

To: (name)
Director, Division of Design Services

From: (name)
Project Manager

Date:

Phone:

RE: DESIGN EXCEPTION
Route , Section/Contract Number
Town(ship), City or Borough
County
Milepost Limits
Project Category
NJDOT Job Number
Federal Project Number (if applicable)

Approval of the design exception is requested to the following controlling design elements contained in the (list only those references that apply: NJDOT Design Manual Roadway; NJDOT Design Manual Bridges and Structures; AASHTO publication, A Policy on Geometric Design of Highways and Streets (Year)) based on the warranting conditions described herein:

- List the controlling design elements for which a Design Exception is being requested.

Please refer to the attached Project Fact Sheet for the project description and accident analysis.

- Discuss each CSDE here.

Based on the warranting conditions presented (the existing and proposed geometry and surface conditions, additional costs, accident analysis and safety measures), it is recommended that the design exception be approved for (list the CSDEs).

Approval By:

(name)
Director, Division of Design Services

Date

Fact Sheet is attached

C. Controlling Substandard Design Elements

Milepost Location	Y []	N []	I []	
Station Location	Y []	N []	I []	

Design Values:

Existing	Y []	N []	I []	
Proposed	Y []	N []	I []	
Required	Y []	N []	I []	
Table	Y []	N []	I []	NA []

Impacts:

Impacts due to required design values	Y []	N []	I []	
Impacts due to Proposed Scheme	Y []	N []	I []	
Impacts Table	Y []	N []	I []	NA []

Cost Estimate:

Constructing to required design values	Y []	N []	I []	
Constructing to proposed scheme	Y []	N []	I []	
Separated costs (Con., ROW, Util.)	Y []	N []	I []	
Percent increase in project cost due to required design values	Y []	N []	I []	

Accident Analysis:

Summary of Accident Analysis included in Body	Y []	N []	I []	
Safety Measures	Y []	N []	I []	

D. Recommendation

Positive statement in favor of the controlling substandard design elements	Y []	N []	I []	
Standard Closing Paragraphs	Y []	N []	I []	

Miscellaneous

Memo of Concurrence from Manager, Structural Engineering	Y []	N []	I []	
Routing Memorandum	Y []	N []	I []	
Plans or sketches attached	Y []	N []	I []	

(Y): Included (N): Not Included (I): Incomplete/Incorrect (NA): Not Applicable

Comments

Attachment 8 - Conversion Chart from S to V (Calc)

CONVERSION CHART FROM S TO V (CALC)

S		Vcalc	S		Vcalc	S		Vcalc
meters	feet	mph	meters	feet	mph	meters	feet	mph
45	147	25	100	329	41	179	588	57
48	157	26	105	345	42	187	613	58
51	167	27	110	361	43	190	623	59
54	177	28	115	376	44	193	634	60
57	187	29	117	383	45	199	652	61
60	196	30	122	399	46	204	670	62
63	207	31	127	416	47	210	688	63
66	218	32	132	432	48	215	706	64
69	228	33	136	447	49	221	724	65
73	238	34	141	461	50	228	747	66
76	248	35	147	481	51	235	770	67
81	267	36	153	502	52	242	794	68
85	279	37	157	514	53	249	817	69
88	290	38	160	526	54	256	840	70
92	302	39	164	538	55			
95	313	40	172	563	56			

Note: Divide S by two to determine V (calc) for a crest vertical curve on a two-way left-turn lane.

Attachment 9 - Intersection and Link Accidents

INTERSECTION ACCIDENTS

Type of Accident - Left Turn Head On Collision	
Probable Cause	<ol style="list-style-type: none"> 1) Restricted sight distance due to presence of left turning traffic on the opposite approach and improper channelization and geometrics. 2) Too short amber phase. 3) Absence of special left turning phase when needed. 4) Excessive speed on approaches.
Study to be Performed	<ol style="list-style-type: none"> 1) Review existing intersection channelization. 2) Volume count for thru traffic. 3) Perform volume count for left turning traffic. 4) Review signal phasing. 5) Review intersection clearance times. 6) Study need for special left turn phase. 7) Study capacity of the intersection approaches in question for possible multi-phase operation. 8) Perform spot speed study.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Provide adequate channelization. 2) Install traffic signal if warranted by MUTCD. 3) Provide left turn slots. 4) Install stop signs if warranted by MUTCD. 5) Increase amber phase. 6) Provide special phase for left turning traffic. 7) Widen road. 8) Prohibit left turns (study possible adverse effects on other nearby intersections). 9) Reduce speed limit on approaches if justified by spot speed study. 10) Remove left turn traffic. 11) Provide all red phase.

INTERSECTION ACCIDENTS

Type of Accident - Rear End Collisions At Unsignalized Intersections	
Probable Cause	<ol style="list-style-type: none"> 1) Improper channelization. 2) High volume of turning vehicles. 3) Slippery surface. 4) Lack of adequate gaps due to high traffic volume from the opposite direction. 5) Inadequate intersection warning signs. 6) Crossing pedestrians. 7) Excessive speed on approaches. 8) Inadequate roadway lighting.
Study to be Performed	<ol style="list-style-type: none"> 1) Review existing channelization. 2) Review pedestrian signing and crosswalk marking. 3) Perform turning count. 4) Perform volume count for thru traffic. 5) Check skid resistance. 6) Perform spot speed study. 7) Check for adequate drainage. 8) Check roadway illumination.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Create right or left turn lanes. 2) Increase curb radii. 3) Prohibit turns (study possible adverse effects on other nearby locations). 4) Provide "Slippery When Wet" signs (interim measure only). 5) Increase skid resistance. 6) Improve drainage. 7) Install or improve signing and marking of pedestrian crosswalks. 8) Reduce speed limit on approaches if justified by spot speed study. 9) Provide advance intersection warning signs. 10) Improve roadway lighting.

INTERSECTION ACCIDENTS

Type of Accident - Rear End Collisions At Signalized Intersections	

Type of Accident - Rear End Collisions At Signalized Intersections	
Probable Cause	<ol style="list-style-type: none"> 1) Improper signal timing. 2) Poor visibility of signal indicator. 3) Crossing pedestrians. 4) High volume of turning vehicles. 5) Slippery surface. 6) Excessive speed on approaches. 7) Inadequate roadway lighting. 8) Inadequate channelization.
Study to be Performed	<ol style="list-style-type: none"> 1) Review existing channelization. 2) Review pedestrian signing and crosswalk markings. 3) Perform turning count. 4) Perform spot speed study. 5) Check skid resistance. 6) Check for adequate drainage. 7) Check visibility of traffic signals. 8) Check roadway illumination. 9) Review intersection clearance time.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Create right or left turn lanes. 2) Increase curb radii. 3) Prohibit turns (study possible adverse effects on other nearby locations). 4) Increase skid resistance. 5) Provide adequate drainage. 6) Provide "Slippery When Wet" signs (interim measure only). 7) Install advance intersection warning signs. 8) Install or improve signing and marking of pedestrian crosswalks. 9) Provide pedestrian walk - don't walk indicators. 10) Increase amber phase. 11) Provide special phase for left turning traffic. 12) Provide proper signalized progression. 13) Reduce speed limit on approaches. 14) Install backplates, larger lens, louvers, visors, etc. on traffic signal to improve contrast and visibility. 15) Relocate signals. 16) Add additional signal heads. 17) Improve roadway lighting.

INTERSECTION ACCIDENTS

Type of Accident - Pedestrian - Vehicle Collision	

Type of Accident - Pedestrian - Vehicle Collision	
Probable Cause	<ol style="list-style-type: none"> 1) Inadequate pavement markings. 2) Inadequate channelization. 3) Improper signal phasing. 4) Restricted sight distance. 5) Inadequate pedestrian signals. 6) Inadequate roadway lighting. 7) Inadequate gaps at unsignalized intersection. 8) Excessive vehicle speed.
Study to be Performed	<ol style="list-style-type: none"> 1) Field observation for sight obstructions. 2) Pedestrian volume count. 3) Review channelization. 4) Check roadway illumination. 5) Review pavement markings. 6) Review signal phasing. 7) Perform gap studies. 8) Perform spot speed study.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Install pedestrian crosswalks and signs. 2) Install pedestrian barriers. 3) Prohibit curb parking near crosswalks. 4) Install traffic signal if warranted by MUTCD. 5) Install pedestrian walk - don't walk signals. 6) Increase timing of pedestrian phase. 7) Improve roadway lighting. 8) Prohibit vehicle turning movements. 9) Remove sight obstructions. 10) Reroute pedestrian paths. 11) Reduce speed limits on approaches if justified by spot speed studies. 12) Use crossing guards at school crossing areas.

INTERSECTION ACCIDENTS

Type of Accident - Right Angle Collisions At Signalized Intersections
--

Type of Accident - Right Angle Collisions At Signalized Intersections	
Probable Cause	<ol style="list-style-type: none"> 1) Restricted sight distance. 2) Inadequate roadway lighting. 3) Inadequate advance intersection warning signs. 4) Poor visibility of signal indication. 5) Excessive speed on approaches.
Study to be Performed	<ol style="list-style-type: none"> 1) Volume count on all approaches. 2) Field observations for sight obstructions. 3) Review signal timing. 4) Check roadway illumination. 5) Perform spot speed study.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Remove obstructions to sight distance. 2) Increase amber phase. 3) Provide all red phase. 4) Retime signals. 5) Prohibit curb parking. 6) Install advance intersection warning signs. 7) Install backplates, larger lens, louvers, visors, etc., on traffic signal to improve contrast and visibility. 8) Install additional signal heads. 9) Reduce speed limit on approaches if justified by spot speed studies. 10) Provide proper signalized progression. 11) Improve location of signal heads.

INTERSECTION ACCIDENTS

Type of Accident - Right Angle Collisions At Unsignalized Intersections	

Type of Accident - Right Angle Collisions At Unsignalized Intersections	
Probable Cause	<ol style="list-style-type: none"> 1) Restricted sight distance. 2) Inadequate roadway lighting. 3) Inadequate intersection warning signs. 4) Inadequate traffic control devices. 5) Excessive speed on approaches.
Study to be Performed	<ol style="list-style-type: none"> 1) Volume count on all approaches. 2) Field observations for sight obstructions. 3) Check roadway illumination. 4) Perform spot speed study. 5) Review signing.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Remove obstructions to sight distance. 2) Prohibit parking near corners. 3) Improve roadway illumination. 4) Install yield or stop signs if MUTCD warrants are met. 5) Install traffic signal if MUTCD warrants are met. 6) Install advance intersection warning signs. 7) Reduce speed limits on approaches if justified by spot speed studies.

INTERSECTION ACCIDENTS

Type of Accident - Sideswipe Collisions
--

Type of Accident - Sideswipe Collisions	
Probable Cause	<ol style="list-style-type: none"> 1) Inadequate pavement markings. 2) Inadequate channelization. 3) Inadequate signing. 4) Narrow traffic lanes. 5) Improper street alignment.
Study to be Performed	<ol style="list-style-type: none"> 1) Review pavement markings. 2) Review channelization. 3) Review sign placement. 4) Review lane width. 5) Check alignment.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Provide wider lanes. 2) Install acceleration and deceleration lanes. 3) Place direction and lane change signs to give proper advance warning. 4) Install or refurbish centerlines, lane lines and pavement edge lines. 5) Provide turning lanes. 6) Provide proper alignment.

LINK ACCIDENTS

--

Type of Accident - Off-Road Accidents	
Probable Cause	<ol style="list-style-type: none"> 1) Inadequate signing and delineators. 2) Inadequate pavement marking. 3) Inadequate roadway lighting. 4) Slippery surface. 5) Improper channelization. 6) Inadequate shoulders. 7) Inadequate pavement maintenance. 8) Inadequate superelevation. 9) Severe curve. 10) Severe grade.
Study to be Performed	<ol style="list-style-type: none"> 1) Review signs and placement. 2) Review pavement marking. 3) Check roadway illumination. 4) Check skid resistance. 5) Review channelization. 6) Check roadside shoulders and road maintenance. 7) Check superelevation. 8) Check for adequate drainage. 9) Perform spot speed studies.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Install proper center line, lane lines, and pavement edge markings. 2) Increase skid resistance. 3) Improve roadway lighting. 4) Install warning signs to give proper advance warning and advisory speed limit. 5) Install roadside delineators, guiderails and redirecting barriers. 6) Perform necessary road surface repairs. 7) Improve superelevation at curves. 8) Reduce speed limit if justified by spot speed studies. 9) Upgrade roadway shoulders. 10) Provide "Slippery When Wet" signs (interim measure only). 11) Provide adequate drainage. 12) Flatten curve. 13) Provide proper superelevation.

LINK ACCIDENTS

Type of Accident - Head-on Collisions	

Type of Accident - Head-on Collisions	
Probable Cause	<ol style="list-style-type: none"> 1) Restricted sight distance. 2) Inadequate pavement markings. 3) Inadequate signing. 4) Narrow lanes. 5) Inadequate shoulders and/or maintenance. 6) Inadequate road maintenance. 7) Excessive vehicle speed. 8) Severe curve. 9) Severe grade.
Study to be Performed	<ol style="list-style-type: none"> 1) Review lane width. 2) Review pavement markings. 3) Review signing. 4) Check road shoulders where present. 5) Check road for proper maintenance. 6) Perform spot speed study. 7) Field check for sight obstructions.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Provide wider lanes. 2) Provide pennant signs. 3) Install no passing zones at points with restricted sight distances. 4) Install center lines, lane lines and pavement edge markings. 5) Improve roadside shoulders. 6) Perform necessary road surface repairs. 7) Reduce speed limits if justified by spot speed studies. 8) Remove obstructions to sight distances. 9) Flatten curve. 10) Provide proper superelevation.

LINK ACCIDENTS

Type of Accident - Pedestrian - Vehicle Collisions

Type of Accident - Pedestrian - Vehicle Collisions	
Probable Cause	<ol style="list-style-type: none"> 1) Restricted sight distance. 2) Inadequate roadway lighting. 3) Excessive vehicle speed. 4) Pedestrian walking on roadway. 5) Inadequate signing. 6) Sidewalks too close to roadway. 7) Improper pedestrian crossing.
Study to be Performed	<ol style="list-style-type: none"> 1) Check sight distances. 2) Check roadway illumination. 3) Review existence of sidewalks. 4) Review warning signs and placement. 5) Perform spot speed study.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Improve sight distance. 2) Prohibit curb side parking. 3) Improve roadway lighting. 4) Install sidewalks. 5) Install proper warning signs. 6) Reduce speed limit if justified by spot speed studies. 7) Install pedestrian barriers. 8) Move sidewalks further from roadway. 9) Enforcement.

LINK ACCIDENTS

Type of Accident - Railroad Crossing Accidents

Type of Accident - Railroad Crossing Accidents	
Probable Cause	<ol style="list-style-type: none"> 1) Inadequate signing, signals or gates. 2) Inadequate roadway lighting. 3) Restricted sight distance. 4) Inadequate pavement markings. 5) Rough crossing surfaces. 6) Improper traffic signal pre-emption timing. 7) Improper pre-emption timing of railroad signals or gates.
Study to be Performed	<ol style="list-style-type: none"> 1) Review signing, signals and gates. 2) Check roadway illumination. 3) Review pavement markings. 4) Review sight distance.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Install advance warning signs. 2) Install proper pavement markings. 3) Install proper roadway lighting on both sides of tracks. 4) Install automatic flashers and gates. 5) Improve sight distance. 6) Install stop signs. 7) Rebuild crossing. 8) Retime traffic signals. 9) Retime railroad signals and gates.

LINK ACCIDENTS

Type of Accident - Parked Car Accidents
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Type of Accident - Parked Car Accidents	
Probable Cause	<ol style="list-style-type: none"> 1) Improper pavement markings. 2) Improper parking clearance at driveways. 3) Angle parking. 4) Excessive vehicle speed. 5) Improper parking. 6) Illegal parking.
Study to be Performed	<ol style="list-style-type: none"> 1) Review pavement markings. 2) Review parking clearance from curb. 3) Review angle parking if it exists. 4) Perform spot speed studies. 5) Law observance study.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Convert angle parking to parallel parking. 2) Paint parking stall limits 2.1 m from curb face. 3) Post parking restrictions near driveways. 4) Prohibit parking. 5) Create off-street parking. 6) Reduce speed limit if justified by spot speed studies. 7) Widen lanes. 8) Enforcement.

LINK ACCIDENTS

Type of Accident - Fixed Objects	
Probable Cause	<ol style="list-style-type: none"> 1) Obstructions in or too close to roadway. 2) Inadequate channelization. 3) Inadequate roadway lighting. 4) Inadequate pavement marking. 5) Inadequate signs, delineators and guiderails. 6) Improper superelevation. 7) Slippery surface. 8) Excessive vehicle speed. 9) Severe curve. 10) Severe grade.
Study to be Performed	<ol style="list-style-type: none"> 1) Review pavement markings, signs and delineators. 2) Review channelization. 3) Field observation to locate obstructions. 4) Check illumination. 5) Check superelevation. 6) Check for adequate drainage. 7) Perform spot speed studies.
Possible Safety Measures	<ol style="list-style-type: none"> 1) Remove or relocate objects. 2) Improve roadway lighting. 3) Install reflectorized pavement lines. 4) Install reflectorized paint and/or reflectors on the obstruction. 5) Install crash cushioning devices. 6) Install guiderails or redirecting barriers. 7) Install appropriate warning signs and delineators. 8) Improve superelevation at curves. 9) Improve skid resistance. 10) Provide adequate drainage. 11) Provide "Slippery When Wet" signs (interim measure only). 12) Reduce speed limit if justified by spot speed studies. 13) Provide wider lanes. 14) Flatten curve. 15) Provide proper superelevation.

LINK ACCIDENTS




Type of Accident - Sideswipe Collisions	

Type of Accident - Sideswipe Collisions		
Probable Cause	1) 2) 3) 4) 5) 6) 7)	Inadequate pavement markings. Inadequate channelization. Inadequate signing. Narrow traffic lanes. Improper road maintenance. Inadequate roadside barriers Excessive vehicle speed.
Study to be Performed	1) 2) 3) 4) 5) 6) 7)	Review pavement markings. Review channelization. Review sign placement. Review lane width. Check roadside shoulders. Check road surface for proper maintenance. Perform spot speed studies.
Possible Safety Measures	1) 2) 3) 4) 5) 6) 7) 8) 9)	Provide wider lanes. Install acceleration and deceleration lanes. Place direction and lane change signs to give proper advance warning. Install or refurbish centerlines, lane lines and pavement edge lines. Perform necessary road surface repairs. Improve shoulders. Remove constrictions such as parked vehicles. Install median divider. Reduce speed limit if justified by spot speed study.

Attachment 10 - 26,000 Mile Priority Network

26,000 MILE PRIORITY NETWORK (Subset of the Interstate System)

New Jersey 4.9 m Clearance Routes

	I-78	PA State Line to I-287
	I-80	PA State Line to I-287
	I-287	NY State Line to I-95 (NJ Turnpike)

Attachment 11 - Sample Design Exception

(date)

(name)

Division Administrator
Federal Highway Administration
840 Bear Tavern Road
Suite 310
West Trenton, NJ 08628

Attention **(name)**: District Engineer

Re: DESIGN EXCEPTION
Route 42, Section 13P
Route 76, Section 3L
Route 295, Section 10L
Bellmawr Borough
Camden County
Route 42 Milepost 14.20 to 14.28
Route 76 Milepost 0.00 to 0.06
Route 295 Milepost 26.73 to 27.02
Project Category: Interstate 3R
Federal Project Number: NH-295-2(95)26
NJDOT Job Number: 0417504

Dear **(name)**:

The Federal-Aid Policy Guide, Transmittal 1, Section 625.3, indicates that a design exception may be granted for projects which do not conform to required design values where conditions warrant.

Approval of the design exception is requested to the following controlling design elements contained in the AASHTO publication, A Policy on Design Standards - Interstate System (July 1991), for Routes 76 and 295, and the NJDOT Design Manual Roadway for Route 42, based on the warranting conditions described herein:

1. Substandard Left Shoulder

- a. Route 42, Northbound Local Roadway
MP 14.20 to MP 14.28
- b. Route 76, Northbound Express and Local Roadways
MP 0.00 to MP 0.06
- c. Route 295, Northbound Express and Local Roadways
MP 26.83 to MP 27.02
- d. Route 76, Southbound Express and Local Roadways
MP 0.00 to MP 0.06

- e. Route 295, Southbound Express and Local Roadways
MP 26.74 to MP 27.02

2. Substandard Right Shoulder

- a. Route 42, Northbound Express Roadway
MP 14.20 to MP 14.28
- b. Route 76, Northbound Express Roadway
MP 0.00 to MP 0.05
- c. Route 295, Northbound Express Roadway
MP 26.83 to MP 27.02

3. Substandard Right Shoulder (Vicinity of Browning Road Overpass)

- a. Route 295, Northbound Local Roadway
MP 26.88 to MP 27.00
- b. Route 76, Southbound Local Roadway
MP 0.00 to M 0.05
- c. Route 295, Southbound Local Roadway
MP 26.98 to MP 27.02

The locations in item 3 are presented separately from item 2 to emphasize the proximity of the Browning Road overpass.

4. Substandard Vertical Clearance

- a. Route 295, All Roadways
MP 26.98

5. Substandard Cross Slopes

- a. Route 76, All Roadways
MP 0.00 to MP 0.06
- b. Route 295, Northbound Express and Local Roadways
MP 26.94 to MP 27.02
- c. Route 295, Southbound Express and Local Roadways
MP 26.98 to MP 27.02

6. Substandard Superelevation

- a. Route 42 Northbound
MP 14.20 to MP 14.28
- b. Route 295 Northbound

MP 26.83 to MP 26.94

- c. Route 295 Southbound
MP 26.73 to MP 26.81

The locations in Item 6 are presented by direction because the northbound and southbound alignments are bifurcated.

Appendix A shows the mileposts within the project limits to facilitate field identification of each controlling substandard design element (CSDE). Please refer to the attached Project Fact Sheet for the project description and accident analysis.

CONTROLLING SUBSTANDARD DESIGN ELEMENTS (CSDEs)

1. Substandard Left Shoulder

Substandard left shoulders exists at the following locations:

Location	Existing Width (meters)	Proposed Width (meters)	Required Width (meters)
Route 42, Northbound Local Roadway MP 14.20 to MP 14.28 (Sta. 22+852.7 to 22+977.1)	0	0	1.2
Route 76, Northbound Express and Local Roadways MP 0.00 to MP 0.06 Express (Sta. 0+000.0 to 0+096.6) Local	0 0	0 0	1.2 3.0
Route 295, Northbound Express and Local Roadways MP 26.83 to MP 27.02 Express (Sta. 43+178.7 to 43+490.5) Local	0 0	0 0	1.2 3.0
Route 76, Southbound Express and Local Roadways MP 0.00 to MP 0.06 Express (Sta. 0+000.0 to MP 0+096.6) Local	0 0	0 0	1.2 3.0
Route 295, Southbound Express and Local Roadways MP 26.74 to MP 27.02 Express (Sta. 0+096.6 to MP 0+545.6) Local	0 0	0 0	1.2 3.0

Providing the required design values for left shoulders would require the reconstruction of Routes 42, 76 and 295. The existing highway is typically a cut section with a curb-to-curb

width of 63 meters. The additional width required for left shoulders is 8.5 meters. Reconstructing the highway would require additional right of way and/or retaining walls. The interchange of Routes 42 and 295 would require realignment and regrading. Replacement of the Browning Road overpass would be necessary. Browning Road crosses over Route 295 within the project limits (MP 26.98, Structure 0427-158). The existing horizontal clearance is 56 meters, which is insufficient to accommodate the addition of left shoulders. (The right shoulders are dropped at the overpass.) The cost estimate to replace the overpass is:

\$5,786,900	Construction
\$527,600	Utilities
\$75,500	Maintenance of Traffic
\$6,390,000	TOTAL

The above does not include the cost for right of way or construction of the left shoulders. The total construction cost of the project as proposed is \$1,000,000. Replacement of the Browning Road overpass would increase the project cost to \$7,390,000, an increase of 639%.

Indicator accidents related to this CSDE are fixed object (median) and head-on accidents. For the three year period, there were no indicator accidents for northbound Routes 42, 76 and 295. There were 10 fixed object (median) accidents for southbound Routes 76 and 295. These accidents are presented by direction because of the separation of travel directions by a barrier curb. The 10 fixed (median) accidents represent 9.3% of the total of 118 accidents on this section. The fixed object (median) accidents are over represented when compared with statewide fixed object (median) accidents (9.3% vs. 5.2% statewide). The fixed object accidents (all types) for this section account for 50.9% of this section's accidents. Statewide fixed object accidents (all types) make up 25.6% of total accidents.

From these percentages it can be concluded that statewide, approximately one out of every five fixed object accident involves a median hit. On this section of Routes 42, 76 and 295, it appears that fixed object (median) accidents are occurring at the same rate (1 out of 5). In review of the fixed object (median) accidents, it was revealed that all occurred under wet surface conditions. In our opinion, the high wet surface accident percentage is the condition having the greatest effect on the overall accident frequency, the percentage of total fixed object accidents, and the percentage of fixed object (median) accidents on this southbound section. The lack of left shoulder appears not to be a major contributing factor. See the attached Project Fact Sheet for the Bureau of Traffic Signal and Safety Engineering accident analysis.

Since the fixed object being hit is a concrete median, it is not possible to remove the fixed object. Safety measures included in this project that reduce CSDE related and wet surface accidents are resurfacing, 100 mm wide long-life pavement edge lines, and raised pavement markers. Also, there is existing highway lighting throughout the project.

2. Substandard Right Shoulder

Substandard right shoulder conditions exist at the following locations:

Location	Existing Width (meters)	Proposed Width (meters)	Required Width (meters)
Route 42, Northbound Express Roadway MP 14.20 to MP 14.28 (Sta. 22+852.7 to MP 22+977.1)	0	0	3.0
Route 76, Northbound Express Roadway MP 0.00 to MP 0.05 (Sta. 0+000.0 to 0+079.9)	2.4 to 3.0	1.5 to 3.0	3.6
Route 295, Northbound Express Roadway MP 26.83 to MP 27.02 (Sta. 43+178.7 to 43+490.5)	0 to 2.4	0 to 1.5	3.6

The proposed shoulder widths vary from the existing shoulder widths due to the proposed lengthening of a lane drop taper from 90 meters to 235 meters. The pavement width utilized by the longer lane drop taper reduces the pavement width available for the shoulder.

Providing the required design values for right shoulders would require the shifting of the northbound Routes 42, 76 and 295 local roadway 3.0 to 3.6 meters to the east. The existing highway is typically in a cut section. Shifting the northbound local roadway would require additional right of way and/or retaining walls and extensive slope regrading. Replacement of the Browning Road overpass would be necessary. Browning Road crosses over Route 295 within the project limits (MP 26.98, Structure No. 0427-158). The existing paved highway section and horizontal clearance at the overpass is 56 meters, which therefore cannot accommodate the addition of a 3.6 meters wide right shoulder. The cost estimate to replace the overpass is:

\$5,786,900	Construction
\$527,600	Utilities
\$75,500	Maintenance of Traffic
\$6,390,000	TOTAL

The above does not include the cost for right of way or construction of the right shoulder. The total construction cost of the project proposed is \$1,000,000. Replacement of the Browning Road overpass would increase the project cost to \$7,390,000, an increase of 639%.

Indicator accidents related to this CSDE are fixed objects (non-median), struck parked vehicle and overturned accidents. For the three year period, there were 16 indicator accidents on this section. There were 12 fixed object (non-median) accidents, 3 struck parked vehicle accidents, and 1 overturned accident. These accidents represent 17.1%, 4.3% and 1.4% of the total of 70 accidents on this section, respectively.

Struck parked vehicle accidents is the only indicator accident category over represented (4.8% vs. 4.0% statewide). In our opinion, the accident frequency is too low to be considered a result of the CSDE, as opposed to random occurrence. See the attached Project Fact Sheet for the Bureau of Traffic Signal and Safety Engineering accident analysis.

Safety measures included in this project that reduce CSDE related accidents are 100 millimeters wide long-life pavement edge lines and raised pavement markers. Also, there is existing highway lighting throughout the project.

3. Substandard Right Shoulder (Vicinity of Browning Road Overpass)

Substandard right shoulder conditions exist in the vicinity of the Browning Road overpass at the following locations:

Location	Existing Width (meters)	Proposed Width (meters)	Required Width (meters)
Route 295, Northbound Local Roadway MP 26.88 to MP 27.00 (Sta. 43+259.2 to 43+449.7)	0 to 3.6	0 to 3.6	3.6
Route 76, Southbound Local Roadway MP 0.00 to MP 0.05 (Sta. 0+000.0 to 0+073.2)	0.3 to 2.4	0.3 to 2.4	3.6
Route 295, Southbound Local Roadway MP 26.98 to MP 27.02 (Sta. 43+420.1 to 43+488.1)	0 to 3.6	0 to 3.6	3.6

Providing the required design values for right shoulders would require the replacement of the Browning Road overpass. Browning Road crosses over Route 295 within the project limits (MP 26.98, Structure No. 0427-158). The existing shoulders taper to a 0 meters width on either side of the overpass. The existing highway section width at the Browning Road overpass equals the horizontal clearance of the overpass, which is 56 meters. Therefore, the existing overpass cannot accommodate the addition of 3.6 meters wide right shoulders. The cost estimate to replace the overpass is:

\$5,786,900	Construction
\$527,600	Utilities
\$75,500	Maintenance of Traffic
\$6,390,000	TOTAL

The above does not include the cost for right of way or construction of the right shoulder. The total construction cost of the project proposed is \$1,000,000. Replacement of the Browning Road overpass would increase the project cost to \$7,390,000, an increase of 639%.

Indicator accidents related to this CSDE are fixed objects (non-median), struck parked vehicle and rear end accidents. For the three year period, 5 fixed object (non-median) and 1 rear end accident occurred northbound while 22 fixed object (non-median) and 1 struck parked vehicle accident occurred southbound. These accidents are represented by direction because of the separation of travel directions by a barrier curb.

Fixed object (non-median) accidents at both locations and rear end accidents northbound are the accident categories that are over represented (29.4% and 40.0% vs. 20.5% statewide and 5.9% vs. 2.0% statewide). The one struck parked vehicle accident represents 1.8% of the total accidents in the southbound direction, which is below the statewide average of 2.1%. Based on the fact that 27 of the 29 indicator accidents occurred on a wet surface, we believe that the wet surface condition is the major contributing factor to these accidents, not the CSDE. A copy of the Bureau of Traffic Signal and Safety Engineering accident analysis is included in the attached Project Fact Sheet.

Safety measures include 100 mm wide long-life pavement edge lines and “railrider” delineators mounted on the guiderail that exists on both sides of the Browning Road overpass abutments. Also there is existing highway lighting throughout the project.

4. Substandard Vertical Clearance

Substandard vertical clearance exists at the following location:

Location	Vertical Clearance (meters)		
	Existing Clearance	Proposed Clearance	Required Clearance
Route 295, All Roadways MP 26.88 (Sta. 43+259.1)	4.47	4.42	4.88

The structure at this location is Browning Road over Route 295. The 50 mm reduction of the vertical clearance results from resurfacing Route 295 with only 50 mm of bituminous pavement. This is less than the typical resurfacing thickness of 100 mm. Approval to reduce

the resurfacing thickness in the vicinity of the Browning road overpass from 100 mm to 50 mm has been obtained from Geotechnical Engineering. Permission to provide only 4.42 meters vertical clearance has been obtained from the Bureau of Structural Engineering.

Providing the required design value for vertical clearance and allowing for the recommended 100 mm resurfacing thickness would require jacking the overpass 0.5 meters. Consequently, 140 meters of Browning Road would require reconstruction. The cost estimate to jack the overpass and reconstruct Browning Road is:

\$335,000	Construction
\$32,000	Utilities
\$18,000	Maintenance of Traffic
\$385,000	TOTAL

The above does not include the cost for right of way. The total construction cost of the project as proposed is \$1,000,000. Jacking the overpass and reconstructing Browning Road would increase the project cost to \$1,385,000, an increase of 39%.

The possibility of lowering the profile of Route 295 was also investigated. It was determined that the location and elevations of the footings for the Browning Road overpass make is infeasible to lower the highway profile sufficiently to obtain a vertical clearance of 4.9 meters.

Indicator accidents for this CSDE are fixed object (bridge) accidents. There were no indicator accidents for the three year period analyzed.

The available vertical clearance will be posted as a safety countermeasure.

5. Substandard Cross Slopes

Substandard cross slopes exist at the following location:

Location	Cross Slopes		
	Existing Min.	Proposed Min.	Required Min.
Route 76, All Roadways MP 00.00 to MP 0.06 (Sta. 0+000.0 to 0+110.3)	1%	1%	1.5%
Route 295, Northbound Express and Local Roadway MP 26.94 to MP 27.02 (Sta. 43+355.7 to 43+480.1)	1%	1%	1.5%
Route 295, Southbound Express and Local Roadway MP 26.98 to MP 27.02 (Sta. 43+420.1 to 43+480.5)	1%	1%	1.5%

The above locations are all in the immediate vicinity of the Browning Road overpass. Table 1 summarizes the possible options and their impacts.

It is acknowledged that the table is contingent upon FHWA approval of the design exception for CSDE #4, substandard vertical clearance. Permission to provide only 4.42 meters vertical clearance has been obtained from the Bureau of Structural Engineering.

As can be seen from Table 1, options 1 through 4 are either unacceptable or infeasible. Therefore it is proposed to proceed with option number 5.

Wet surface accidents is the indicator used for this CSDE. For the three year period, 25 wet surface accidents occurred northbound and 68 wet surface accidents occurred southbound. These accidents are presented by direction because of the separation of travel directions by a barrier curb. The 25 northbound accidents represent 43.1% of the 58 total accidents in that direction; the 68 southbound accidents represent 81.0% of the 84 total accidents in that direction.

Wet surface accidents on both sections are over represented (43.1% and 81.0% vs. 23.6% statewide). Low skid numbers on both sections appear to be a major contributing factor to the accident frequency (southbound - 31.4 and 25.3 and northbound - 26.2 and 25.4 vs. recommended SN_{40} of 37.0 at 50 mph for the year 1988). A cursory review of hard copy accident reports was inconclusive. Not enough detail was given as to standing water, puddling or sheeting being the cause for these wet surface accidents to determine if cross slope or lack of skid resistance was the contributing factor. A copy of the Bureau of Traffic Signal and Safety Engineering accident analysis is included in the attached Project Fact Sheet.

The primary safety measure will be the resurfacing of the highway, which will improve the skid resistance.

Table

6. Substandard Superelevation

Substandard superelevation exists at the following locations:

Location	Radius (Exist. & Prop.)	^e max (Exist. & Prop.)	^e max Req'd.	V (Safe) Exist. & Prop. (mph)	V Safe Req'd. (mph)	Posted Speed (mph)	Cost to Upgrade
Route 42, Northbound MP 14.20 to MP 14.25 (Sta. 22+852.7 to 23+190.7)	900	1.5%	5.1%	71	77	55	\$375,000
Route 42, Northbound MP 14.25 to MP 14.28 (Sta. 22+933.2 to 22+994.2)	1000	1.5%	4.8%	72	78	55	\$280,000
Route 295, Northbound MP 26.83 to MP 26.94 (Sta. 43+178.7 to 43+368.6)	1000	1.5%	4.8%	72	78	55	\$450,000
Route 295, Southbound MP 26.73 to MP 26.81 (Sta. 43+017.8 to 43+158.0)	700	1.5%	5.7%	65	72	55	\$825,000

In the above table, the required design value for “e” is based on an “e” maximum of 6% at a design speed of 110 km/h, and the required “V (safe)” is based on the required “e”.

Providing the required design values for superelevation would require an extensive increase in bituminous tonnage, reconstruction of the highway drainage system, a retaining wall, all new barrier curb, the raising of 4 sign structures, and extending the project limits. The cost estimate to provide the required design values for superelevation is:

\$1,737,000	Construction
\$193,000	Maintenance of Traffic
\$1,930,000	TOTAL

The estimated cost for utilities is minimal and no right of way would be required. The total cost estimate of the project as proposed is \$1,000,000. Providing the required design values for superelevation would increase the project cost to \$2,930,000, an increase of 193%.

Indicator accidents for this CSDE are different for right curves and left curves. The indicators for right curves are fixed object (median) and overturned accidents, and the indicators for left curves are fixed object (non-median), struck parked vehicle and overturned accidents.

Curve #1 (Route 42 Northbound MP 14.19 to 14.25) is a left curve. For the three year period there was 1 fixed object (non-median) accident. This one accident represents 16.7% of the total of 6 accidents on this curve. This percentage is less than the statewide average (20.5%),

so the accident is not over represented. In our opinion, the accident frequency is too low to be considered a result of the CSDE, as opposed to random occurrence.

Curve #2 is a right curve connecting route 42 Northbound (MP 14.25 to 14.28) to Route 295 Northbound (MP 26.83 to 26.94). For the three year period there were no indicator accidents.

Curve #3 (Route 295 Southbound MP 26.73 to 26.81) is a left curve. For the three year period there were 2 fixed object (non-median) accidents. This represents 28.6% of the total of 7 accidents on this curve. This percentage is greater than the statewide average (20.5%), so these accidents are over represented. In our opinion, 2 accidents in 3 years is too low a frequency to be considered a result of the CSDE, as opposed to random occurrence.

The primary safety measures will be the resurfacing of the highway, which will improve the skid resistance, 100 mm wide long-life pavement striping and raised pavement markers. Also, there is existing highway lighting throughout the project. It should be noted that the proposed safe speeds for the curves are greater than the 110 km/h design speed except for one curve which will have a safe speed of 65 mph. The posted speed is 55 mph.

RECOMMENDATION

The purpose of this project is to preserve the functional integrity of the existing pavement, extend the pavement left, improve skid resistance and improve rideability. Many of the accidents within the project limits are herein correlated with the condition of the existing pavement, particularly wet surface accidents. Resurfacing the highway is the most effective method of addressing the most common accidents on this highway.

Based on the warranting conditions presented (the existing and proposed geometry and surface conditions, additional costs, accident analysis and safety measures), it is recommended that the design exception be approved for the controlling substandard design elements left shoulders, right shoulders, vertical clearance, cross slopes and super-elevation. Approval of this exception for these controlling design elements is requested.

Sincerely,

(name) Date
Director, Division of Design Services _____

FHWA Approval By:

(name) Date
Division Administrator

APPENDIX A

Straight Line Diagrams

Insert Straight Line Diagram Sample here

Insert Straight Line Diagram Sample #2 here

SECTION 4 DESIGN DEVELOPMENT

Introduction

The delivery of Capital Program projects to construction is a team effort. This section describes the roles of various team members including the Federal Highway Administration, the Project Manager, the Design Coordinator, and other units from the Division of Design Services. Specific processes for design reviews, scope changes and construction contracting are also included.

4.1 FHWA Review and Oversight Requirements

The New Jersey Department of Transportation and the Federal Highway Administration (FHWA) have agreed to the following FHWA review requirements on all federal-aid projects (including any project that anticipates the use of federal funds in design and/or construction). All design units should use this information to process all federal-aid projects:

4.1.1 Project Categories

- Interstate New Construction or Reconstruction (I - NEW/RECON)
- Interstate Resurfacing, Restoration and Rehabilitation (I-3R)
- National Highway System New Construction or Reconstruction (NHS-NEW/RECON)
- National Highway System Resurfacing, Restoration and Rehabilitation (NHS-3R)
- Non National Highway System (Non-NHS)
- Major/Unusual

4.1.2 Processing Projects

The project categories Interstate New Construction or Reconstruction and Major/Unusual require complete FHWA review and oversight of all processes (Full Oversight). Refer to Section 4.1.3.

Interstate 3R, all NHS and Non-NHS projects are processed under Alternate Procedures. Under Alternate Procedures those processes that must have FHWA review and oversight are:

- Review/Approval of design exceptions on all Interstate and major/unusual projects regardless of the funding source.
- Right-of-way acquisition and relocation activities.
- Requests for federal authorization of estimated or modified preliminary engineering, Right-of-way and construction costs.
- Environmental activities.

Refer to Section 4.1.4 for additional information on Alternate Procedures.

4.1.3 Full Oversight

All Interstate New Construction and Reconstruction projects and all projects classified as Major/Unusual (regardless of the highway system) shall require complete Federal Highway Administration (FHWA) review and oversight of all processes.

The processes under Full Oversight include, but are not limited to:

- Participation in project scope development
- Review and approval of Design Exceptions
- Participation in the Preliminary Engineering and Constructibility Review
- Sign-off of the Scope Summary at the conclusion of Scope Development
- Requests for federal authorization of estimated or modified preliminary engineering, Right-of-way and construction costs
- Approval of individual consulting agreements and modifications
- Review and approval of all Right-of-way acquisition and relocation activities
- Review and approval of all environmental activities
- Approval of individual utility agreements
- Participation in the Initial Design Submission and Constructibility Review
- Participation in the Final Design Submission Review
- Approval of project Plans, Specifications and Estimates (PS&E)
- Awarding or rejecting contracts for construction
- Participation in pre-construction conferences
- Approval to begin force account work
- Review and approval of Change Orders
- Administration of construction projects
- Substantial Completion and Final Inspection of construction projects
- Approval of railway/highway agreements

4.1.4 Alternate Procedures

The New Jersey Department of Transportation will administer certain Federal-Aid highway projects under Alternate Procedures (NJDOT) as provided for in 23 U.S.C. 117, 23 CFR 106(b) and 23 CFR 640. It is understood that projects and project documents will be available for inspection by representatives of the Federal Highway Administration, as necessary, to evaluate the process.

Projects under Alternate Procedures will be administered in accordance with current* New Jersey Department of Transportation policies, procedures, directives, bulletins and/or instructions so as to accomplish the policies and objectives contained in Title 23 U.S.C., 23 CFR 106(b) and 23 CFR 640.

This process shall apply to:

- Interstate Resurfacing, Restoration, and Rehabilitation projects
- All Non-Interstate projects on the National Highway System
- All Non-National Highway System projects

Excluded from the above are those projects designated as "Major/Unusual Projects", as defined in the Federal-Aid Policy Guide G6012.1 (see Section 17.1), and all Interstate New Construction and Reconstruction projects.

Additional exceptions:

- (a) Transportation planning and research (23 U.S.C. 134 and 307), highway safety (Chap. 4, Title 23 U.S.C.) or those public transportation projects not administered by FHWA under Title 23 U.S.C. (142(a)(2), 142(c), 103(e)(4)).
 - (b) Right-of-way acquisition and relocation activities and responsibilities covered by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. 2000d et seq).
 - (c) The National Environmental Policy Act of 1969 As Amended (Pub. L. 91-190, 42 U.S.C. 4321 et seq); the Clean Air Act (42 U.S.C. 7401 et seq and 23 CFR 770); and Section 4(f), 23 U.S.C. 138 and 23 CFR 771.135 responsibilities.
 - (d) Title VI of the Civil Rights Act of 1964 As Amended and Section 504 of the Rehabilitation Act of 1973.
 - (e) Requests for federal authorization of estimated or modified preliminary engineering, Right-of-way and construction costs will be processed in accordance with the NJDOT Procedures Manual and Project Management Plan.
- * "Current" is used throughout this plan to mean the edition of a Departmental Policy, Procedure, Directive, Bulletin or Instruction which is in effect at the time a project is authorized, and approved by the FHWA.

4.1.4.1 Functions

Pursuant to the provisions of 23 CFR 106(b) and 23 CFR 640 (23 U.S.C. 117), the New Jersey Department of Transportation will perform the functions of the Federal Highway Administration related to the following specific project transactions:

1. Approval of individual consulting engineer agreements.

It will be the responsibility of the Commissioner or the Commissioner's designee to approve preliminary engineering (P.E.) agreements. This responsibility is defined in the NJDOT Procedures Manual.

2. Granting of authority to proceed to public hearings, holding of public hearings, producing transcripts and evaluations.

- (a) Combination Hearings

The authorization to proceed with a combined corridor and design public hearing will be the responsibility of the Commissioner or the Commissioner's designee. The responsibility to hold these public hearings, produce a verbatim

transcript and evaluate the hearing will be that of the Director of Community Relations.

The control is contained in 23 CFR 771.

(b) Corridor Hearings

When it is deemed necessary, the authorization to proceed to a corridor hearing will be the responsibility of the Commissioner or the Commissioner's designee. The responsibility to hold these public hearings, produce a verbatim transcript and evaluate the hearing will be that of the Director of Community Relations. The control is contained in 23 CFR 771.

(c) Design Hearings

The authorization to proceed to a design public hearing will be the responsibility of the Commissioner or the Commissioner's designee. The responsibility to hold these public hearings, produce a verbatim transcript and evaluate the hearing will be that of the Director of Community Relations. The control is contained in 23 CFR 771.

3. Granting of location and/or design approval.

The granting of location and/or design approval will be in accordance with the NJDOT Procedures Manual.

4. Approval of design submissions during project development and any other design approval necessary to produce completed plans.

Approval of individual design submissions during project development will be the responsibility of the Director of Project Management, as set forth on the Department's Organizational Chart. Approval to administer projects under Alternate Procedures for multi-purpose (highway/park, bicycle/pedestrian, etc.) or joint development projects (NJDOT/New Jersey Transit, NJDOT/CIAP Technology Development, etc.) or experimental features (Design/Build, New Construction Materials or Technology Projects, etc.) not similar to previous Federal-Aid projects will be requested after the Assistant Commissioner Capital Program Management has had consultation with and concurrence by the Federal Highway Administration's Division Administrator.

5. Approval of individual utility agreements for engineering relocations.

These approvals will be in accordance with the NJDOT Procedures Manual and will be the responsibility of the Manager, Bureau of Utilities and Right-Of-Way. The necessary control is included in 23 CFR 645.

6. Approval of project plans, specifications, and estimates (PS&E), and associated agreements; and granting of authorization to advertise for bids.

- (a) The approval of PS&E and associated agreements is the responsibility of the Assistant Commissioner Capital Program Management. The control is the NJDOT Procedures Manual, 23 CFR 630.
- (b) The Managers of the Bureau Contract Administration Services and the Bureau of Maintenance Engineering and Operations, upon notification of FHWA funding authorization for construction, will be responsible for processing the contract documents. The controls will be the current NJDOT Procedures Manual, 23 CFR 635C, 49 CFR 24.
- (c) With approvals covered under 6 (a) and 6 (b), the Manager, Bureau of Construction Services Procurement, advertises for bids. Additional control will be 23 CFR 635A.

7. Award of contracts.

Awarding or rejecting contracts for construction work is the responsibility of the Assistant Commissioner Capital Program Management. The control will be the NJDOT Procedures Manual, 23 CFR 635A.

8. Approval to begin Force Account work.

Granting authorization to do Force Account Construction work by the State or other public forces is the responsibility of the Assistant Commissioner Capital Program Management, after determination and recommendation by the Director Project Management that it is in the public interest, and is cost effective, to do so. The control will be 23 CFR 635A and 23 CFR 635B.

9. Administration of construction projects and approval of change orders.

The overall administration of construction projects is the responsibility of the Director Project Management. The procedures and policies dealing with the administration and inspection of construction projects are set forth Construction Operations Bulletins (O.B.'s), the Construction Manual, As-Built Manual, the Manual on Uniform Record Keeping (MURK), the NJDOT Procedures Manual.

Preconstruction Conferences - Preconstruction Conferences will be held to discuss the construction project in accordance with the NJDOT Procedures Manual.

Change Orders and Field Orders - All changes in construction work from the plans and specifications shall be accomplished by issuing a change order or field order. Change orders and field orders shall conform to the NJDOT Procedures Manual.

Concurrent Field Inspection - In accordance with the NJDOT Procedures Manual. Concurrent field inspections will be conducted by supervisory construction personnel not involved in the daily project inspection.

General Reviews - A team of engineers from the Bureau of Construction Engineering will make general reviews on a yearly basis as described in the current O.B. 67-7 as

modified by the NJDOT Procedures Manual. The FHWA shall be invited to participate in these reviews. The Manager, Bureau of Construction Engineering shall prepare a report to the appropriate Director, Construction Services and Materials, outlining those actions to be taken as a result of the review.

Inspections-In-Depth - The Bureau of Construction Engineering will conduct inspections-in-depth statewide each year as described in the current O.B. 67-7 as modified by the NJDOT Procedures Manual. The FHWA shall be invited to participate in these inspections.

As-Built Reviews - The Bureau of Construction Engineering will perform an as-built review on all projects as described in the current O.B. 67-7 as modified by the NJDOT Procedures Manual. FHWA final review is not required.

Final Corrective Action Inspection - Final corrective action inspections will be made in accordance with the current O.B. 76-1. FHWA final review is not required.

Operations Bulletins and Construction Manual - All Operations Bulletins, the Construction Manual, As-Built Manual and MURK Manual will be updated as required with the updates to be approved by the FHWA.

The materials inspection and testing units under the Director Construction and Materials, are responsible for the inspection, testing and approval of materials used on construction projects. The specific functions of the Bureau of Materials and the Regional Materials Inspection Forces are set forth in the NJDOT Procedures Manual. The Bureau of Materials also performs independent tests during the life of a construction project in accordance with plans and specifications and 23 CFR 635D.

10. Approval of railway-highway agreements and associated work.

The approval of railway agreements and associated work is the responsibility of the Director, Design Services. Where railroad property is required or where it is necessary to enter onto railroad property for construction purposes and no crossing is involved, the Department enters into an agreement with the railroad, and it is the responsibility of the Manager, Bureau of Utilities and Right-Of-Way to arrange for these agreements. The controls are 23 CFR 140I and the NJDOT Procedures Manual.

11. Equal Employment Opportunity Program (EEO).

The EEO Program pursuant to the requirements of Title 23, U.S.C. will be the responsibility of the Division of Civil Rights and Affirmative Action under the supervision of the Commissioner.

This program is defined in New Jersey Department of Transportation's Title VI Affirmative Action Plan. Employment on all construction projects will be without regard to race, color, creed, sex, age, or national origin.

12. Additional References.

To further demonstrate the flow of activities and the method of operations within the Department, the following will be made a part of this procedure (by reference).

- (a) Current Billing and Concurrent Audit Agreement.
- (b) Memorandum of Understanding on Single Audit Concept and subsequent Implementation Plans.
- (c) Agreement on Control of Outdoor Advertising.
- (d) The following will apply to design, preparation of plans, specifications, and estimates and construction:
 - Road and Bridges - 23 CFR 625
 - AASHTO Guide For New Bicycle Facilities
 - Noise - 23 CFR 772

The above referenced publications will be the general design standards.

Additional standards will be contained within the following:

- Construction Requirements - New Jersey Department of Transportation Standard Specifications and Supplements
- Construction Details - New Jersey Department of Transportation Standard Roadway Construction Details
- Roadway/Drainage - New Jersey Department of Transportation Design Manual Roadway
- Resurfacing, Restoration and Rehabilitation Projects - NJDOT Procedures Manual
- Utilities NJDOT Procedures Manual
- Structural - New Jersey Department of Transportation Design Manual Bridges and Structures
- Traffic Control Devices - (FHWA) Manual of Uniform Traffic Control Devices
- Standard Plans - New Jersey Department of Transportation Sample Plans
- Specifications - New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction and Supplemental Specifications

Any revisions to the above cited Department manuals will be routinely furnished to FHWA for approval.

Local environmental conditions, route design continuity, scarcity of materials, or other considerations may indicate the desirability of deviation from the cited design standards. Cost effectiveness evaluation and safety studies will be made in these instances. Approval of exceptions from the cited design criteria will be requested from FHWA for all Interstate and Major/Unusual projects. All other projects shall have exceptions approved by the appropriate Director. All Design Exceptions shall be in accordance with the NJDOT Procedures Manual.

All projects administered under this procedure will be available for review by the Federal Highway Administration at all times and all documents will be retained and available for inspection during the design development and construction for a three year period after payment of the final voucher for the project.

Local governments perform work or services for the New Jersey Department of Transportation on a very limited basis. The Department assures local government knowledge of and compliance with state and federal requirements through the Bureau of Local Aid Administration and the Division of Project Management. These units maintain a close working relationship with the local government in the development of state and federally aided programs and projects.

A liaison is established and maintained by the Department and the local governmental agencies during the route selection, location, design and final plan preparation on all projects using state or Federal-Aid highway funds.

4.1.4.2 Reports Required by FHWA

The reports required by 23 CFR 640, Appendix A shall be considered an integral part of this procedure.

4.1.4. Revisions or Amendments and Acceptance

Any changes to this procedure will be submitted to the Federal Highway Administration for comment and approval. However, should results of this procedure prove to be of disadvantage or hardship to the Department, the New Jersey Department of Transportation reserves the right to withdraw this certification upon 30 days notice to the FHWA Division Administrator and return to the former procedures to the fullest extent practicable.

The acceptance of this certification may be rescinded in whole or in part, if considered necessary, by the Federal Highway Administration to protect the Federal Interest.

The acceptance of this certification by the Federal Highway Administration does not constitute a commitment or obligation of federal funds.

4.1.4.4 Procedure for Design Projects

This procedure hereby establishes those activities necessary to enable certification of design projects by the Director of Project Management.

In accordance with the provisions of the Intermodal Surface Transportation and Efficiency Act of 1991 (ISTEA), and as stipulated herein, the following procedure shall be utilized in the administration of the design of Federal-Aid highway projects.

Scope Development

1. Upon assignment of a project to the Bureau of Project Scope Development (BPSD), the Project Manager in coordination with BPSD shall establish a Scope Team of various interdisciplinary units within the Department, local officials and other agencies as deemed necessary. At this time, the Federal Highway Administration (FHWA) shall be formally requested to participate in the scoping of all projects.

All Requests to the FHWA requesting project scoping participation shall identify the project system [Interstate, National Highway Systems (NHS), or Non- NHS] and identify if a project includes a major/unusual structure.

2. Upon conclusion of project scoping, a scope summary shall be prepared and forwarded to the FHWA. The FHWA Area Engineer shall, at this time, select the project processing category that is to be followed.

Design Development

Throughout the design of a project, the Project Manager shall monitor the design at critical decision points in the schedule to ensure that issues/problems are resolved immediately. The Project Manager may utilize specific department units to aid in the monitoring as deemed necessary.

All designers shall utilize the Quality Control Guidelines for Designers to assist in their quality control efforts for the project.

1. For both the initial and final design submissions, the designer shall distribute plans to those units/officials/agencies as identified by the Project Manager.

Department units shall utilize their individual Quality Assurance Checklist for their review.

The Project Manager shall be responsible for resolving all comments with the designer prior to issuing the notice to proceed to final design or preparation of the plans, specification and estimates (PS & E) package.

2. At the PS&E Submission, the designer shall submit to the Project Manager a certification that the design of the project conforms to Alternate Procedures.
3. Upon resolution of all comments, the Project Manager shall sign an NJDOT certification (Attachment 1), and forward to the Program Manager for signature.

The NJDOT Certification shall state:

The New Jersey Department of Transportation (NJDOT) hereby certifies that this project has been designed and will be constructed in accordance with the Alternate Procedures established by NJDOT and FHWA (add either a or b below)

- a. The project design has met or exceeded the approved standards (if not, indicate that a design exception report has been prepared and approved by NJDOT and provide date of approval)
 - b. (If necessary, add the following: ...except those design exception elements approved in report dated _____).
4. The Program Manager shall sign and forward the NJDOT certification to the Project Manager.
 1. The Project Manager shall obtain the ROW availability and Environmental Reevaluation Letters, if required, and submit along with the NJDOT certification to CAS, notifying CAS to prepare the FHWA authorization package.
 6. CAS shall prepare the project for advertisement in accordance with Section 4.4 of this manual.

Addenda/Change of Plan

Any Addendum or Change of Plan that involves work outside the original scope of work of the project shall require FHWA review and approval. All Addenda or Change of Plan shall be prepared in accordance with current Department policies and procedures.

Award

The Federal Aid Coordinator will supply the Federal Highway Administration with the following information and documents within 10 days of the award for all Interstate 3R and non-interstate projects on the National Highway System.

Original and one copy of a letter from the Federal Aid Coordinator advising that the Commissioner awarded the contract in accordance with alternate procedures. This letter should contain: name of contractor, city where contractor's home office is located, contract amount, date of award, and contract completion date. Attached to this letter will be the following unless they have been previously transmitted to the Federal Highway Administration at an earlier date:

- 2 copies Engineer's Estimate
- 2 copies of Tabulation of Bids
- 2 copies of Certified Bids

Attachment 1, NJDOT Certification

Date:

Division Administrator
Federal Highway Administration
840 Bear Tavern Road, Suite 310
Trenton, NJ 08628-1019

Attention:

Re: East Hanover Avenue Bridge
Morris County
BRM-7988 (104)

Dear _____ :

The New Jersey Department of Transportation hereby certifies that the above referenced project has been designed and will be constructed in accordance with Alternate Procedures established by the NJDOT and FHWA.

The project design has met or exceeded the approved standards except those design elements in the Design Exception request approved by FHWA on _____.

Recommended for approval:

Approved by:

Project Manager

Program Manager

4.2 Initial Design Submission

Throughout the Design Development stage the Project Manager is responsible for the management and direction of all activities and is accountable for the cost, schedule, and quality of the project. Supporting the Project Manager is the engineering expertise of the entire Division of Design Services, led by the Design Coordinator, from the Bureau of Design Coordination.

The Design Coordinator is the review team leader and, as such, must be involved in all review activities throughout Design Development. Interim submissions, consultant office visits, pre-submission reviews, and requests for in house design support should all be conducted with assistance from the Design Coordinator.

Prior to the Initial Design Submission

Prior to the Initial Design Submission, the Project Manager should meet with the Design Coordinator and identify the complete distribution list for the submission in accordance with Section 4.3, Attachment 3A. This list, along with the specific details of each transmittal, is to be forwarded to the Designer allowing sufficient time for packaging and delivery no later than the submission due date. It is suggested that the Project Manager and Design Coordinator visit the consultant's office to make a pre-submission inspection of the deliverables. The QC Guidelines in Section 6 should be consulted for Initial Design Submission requirements.

In anticipation of the Initial Submission, the Project Manager should determine if a Constructibility Review is to be conducted in accordance with Section 7.6.

Initial Design Submission Review

The Initial Design Submission will be reviewed in accordance with the Department's Quality Assurance Review Procedure. **Design Coordination is responsible for receiving and compiling all review comments.**

Should any comments require a revision to the Initial Design Submission, the Designer shall correct and resubmit all revised contract documents affected **immediately** as directed by the Project Manager.

The Project Manager, after consultation with the Design Coordinator, will determine the method of presentation of review comments. A review meeting may be warranted. Comments may be presented face-to-face by key Quality Assurance reviewers. The most cost efficient method will be chosen by the Project Manager. Upon completion of the Initial Design Submission Review, the Designer shall submit a Comment Resolution Summary for approval by the Project Manager.

4.2.1 Initial Engineer's Construction Cost Estimate

- A. Determine which of the seven classifications most nearly represents the type of work to be performed.
- B. Use the forms for that classification to estimate the construction cost.
- C. For projects that do not fit into any of the seven classifications, the best results are usually obtained by searching out a previously completed project of a similar nature and adjusting its cost to reflect and scope differences and price escalation.
- D. Those seven classifications are:

- 1. **NEW CONSTRUCTION**

New construction or major reconstruction of divided or undivided highways. Includes all major phases of construction site preparation, earthwork, drainage, structures, paving, etc. whether contracted separately or as a complete project. Minor items such as signing, landscaping and guardrail are included unless they are in separate specialty contracts.

- 2. **RECONSTRUCTION, WIDENING AND DUALIZATION**

The removal and replacement, rebuilding or upgrading of an existing facility, including intersections. There may be grade changes but normally the changes will not be significant. Includes all phases of construction. May include short relocations. Includes widening equivalent to one lane width or wider. Includes structures when decks are replaced on existing substructures or decks are widened and substructures extended. Includes intersection improvements when roadway area is also rebuilt.

- 3. **WIDENING AND RESURFACING**

Widening and resurfacing of existing highway facilities when the total added width is equivalent to less than one lane width in each direction and grades are not changed. Includes minor grading, extending culverts, curb and gutter, etc. Includes bridge deck widening possibly without substructure changes.

- 4. **RESURFACING**

Overlaying existing highways, and surfacing or overlaying existing shoulders with asphaltic material. Includes joint repair, minor widening with asphaltic materials, some base corrections or asphaltic base, curb and gutter replacement, and adjustments at structures, drives and street returns. Does not include extensive reconstruction, pavement replacement or construction of new pavements, excavation, utility or sewer work.

- 5. **BRIDGE REPAIR**

Repair of bridges, includes repairs to decks, curbs, rails, beams and structures. If total deck removal and replacement is required, the contract should be classified as reconstruction.

6. INTERSECTION IMPROVEMENTS

Minor construction or reconstruction of street or highway intersections. Normally includes some removal, grading, drainage and paving. May include curb and sidewalk along with traffic signals installed at the intersection. If intersection pavement is to be rebuilt, the contract should be classified as reconstruction.

7. SAFETY AND TRAFFIC CONTROL

Placement or replacement of guide rail, signs, striping, lighting, traffic signals, and other safety and traffic control devices, along streets and highways, when let on a specialty contract basis. If safety and traffic control devices are included as part of a major contract type, they should be included under the Miscellaneous activities for that type.

- E. The costs shown on the calculation forms are for the date shown on the forms. Updates will be issued to reflect changes in costs and conditions. If the Designer feels that the cost shown on the calculation forms do not accurately reflect the cost of the work for his particular project, he may adjust the cost accordingly. The cost changed and the reason for the cost change shall be submitted in a letter attached to the preliminary estimate.
- F. For some types of work only a range of unit prices could be determined. The estimator must determine which unit price is most appropriate.
- G. Provisions are included on the Summary Sheet for contingencies and to adjust estimated costs to the anticipated midpoint of construction time.
- H. When there is proposed work to existing structures within the limits of the proposed project, the Bureau of Structural Engineering should be contacted to determine the estimated cost of that work.
- I. The Summary Sheet includes provisions for adding other work types. Examples of possible additions are wetland mitigation, garbage dump removal, toxic waste removal, etc. Costs for these work types are best determined as stated in Paragraph C above.
- J. For work which must be constructed at night or done on overtime, increase the Estimate for that work by 30%.
- K. This procedure does not include Engineering costs.
- L. The percentages shown for the Utility Relocation costs are "averages" for each classification of project. Unusual conditions such as power stations, sewerage plants, high tension lines and pumping stations must be taken into account. If any unusual condition is encountered, the designer should

contact the Bureau of Utility and Railroad Engineering for guidance in determining the preliminary utility cost.

When there is "railroad" involvement, the Bureau of Utility and Railroad Engineering should be contacted.

All utility costs should be updated whenever the Construction Cost Estimates are updated.

- M. When there is R.O.W. involvement, Mr. Edward Nyzio of the R.O.W. Division should be contacted at (609) 530-2188 to obtain a R.O.W. cost which should be added to the Summary Sheet.

All R.O.W. costs should be updated whenever the Construction Cost Estimates are updated.

- N. Federal non-participating construction cost work sheets (Attachment No. 1.1), listing anticipated items of work that FHWA. will not participate in, shall be completed and included as the last page of each classification even if the non-participating amount is zero. This total should already be included in the Construction Cost for the project and will only be used for programming purposes.

Attachment No. 1.1

Federal Non-Participating Construction Cost Estimation Work Sheet

<u>Items of Work</u>	<u>Amount</u>
Approach slabs with any of the following conditions:	
(a) if one-way traffic loading is less than 500 18-kip equivalent single axle load applications per day;	
(b) posted speed limit is less than 35 m.p.h.;	= _____
(c) the abutments are not supported on pile foundations.	
Fishing piers (or bridges) and pedestrian walkways for recreational access.	= _____
Greater than 2:1 mitigation of wetland sites. FHWA <u>sometimes</u> participates in greater than 2:1 replacement if FHWA considers the impact significant. Contact Project Manager for guidance.	= _____
<u>Sometimes</u> the use of liners for Wetland Mitigation Sites as they do not permit ground water recharge. Contact Project Manager for guidance.	= _____
Waterway openings and net fill requirements mandated by NJDEP when they differ from FHWA. requirements.	= _____
Structures less than 6.1 meters in span if BR/BH funds are being utilized for the project.	= _____
Sidewalks on bridges when there are no sidewalks on the approaches for pedestrians. Contact Project Manager for guidance.	= _____
Maintenance dredging if the dredged material is not used as a fill.	= _____
Maintenance operations such as cleaning existing pipes, drainage structures, ditches, repairing impact attenuators, mowing etc. FHWA <u>sometimes</u> participates in this work. Contact Project Manager for guidance.	= _____
Items of work paid for by other agencies or private developers.	= _____
<u>Sometimes</u> Memorial and/or Vanity Plaques on structures.	= _____
Type II Noise Barriers	= _____
BR/BH funds for approach work past the touchdown points for new / rehabilitated structures.	= _____
Proprietary items without proper justification. Contact Project Manager for guidance.	= _____
Additional items not listed above. (see next page)	= _____
_____	= _____
_____	= _____

4.2.1.1 Classification Number 1 - NEW CONSTRUCTION
Work Type - EARTHWORK (must be calculated)

Route _____	Section/Proj. Id. #	_____		
	Unit	Quantity	x Unit Price	= Amount
Stripping (100-150mm Depth)	Hectare		6,857	
Roadway Exc. Unclassified	C.M.		See (J)	
Removal of Conc. Base & Conc. Surface Courses	S.M.		18 - 25 See (K)	
Channel Excavation	C.M.		14.00	
Ditch Excavation	C.M.		13.00	
Borrow Excavation Zone 3	C.M.		See (J)	
EARTHWORK TOTAL				=

Suggested procedure for calculating earthwork:

- A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
- B) Get latest topography map available.
- C) Plot proposed alignment on topo map.
- D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
- E) Calculate Areas for the typical section in 0.3 meter increments of cut or fill.
- F) At 30 to 150 meter intervals (depending on frequency of X-section changes) calculate the earthwork.
- G) Calculate any other significant earthwork (ramps, cross-roads, etc.).
- H) Make appropriate earthwork corrections for the pavement box and striping. Use 530 mm depth for rigid pavement, 660 mm depth for all flexible pavement and 100 mm depth for striping.
- I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
- J) See Final Construction Cost Estimate (Section 4.3.3). This worksheet must be utilized for the most recent price information.
- K) Based on the quantity, location and type of project.

Classification No. 1 - NEW CONSTRUCTION - Work Type - PAVEMENT

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	= 440
B	50 mm Bit. Conc. Surf. Crs. & 200 mm Bit. Stab	= 150
C	75 mm Bit. Conc. Surf. Crs. & 100 mm Bit. Stab	= 105
D	37 mm Bit. Conc. Surf. Crs. & 50 mm Bit. Stab	= 49
E	Bridge Approach & Transition Slabs	= 440

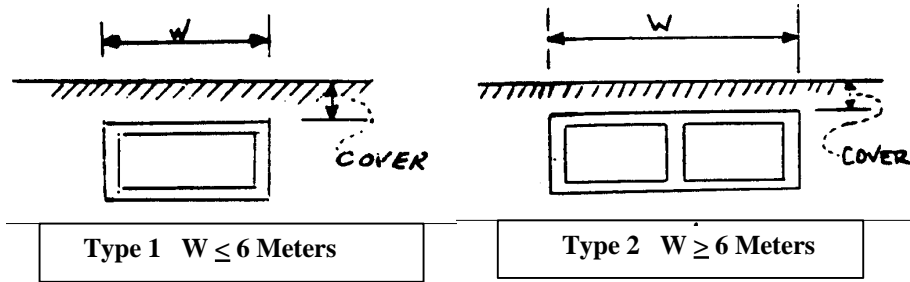
Computation Table for Pavement. Cost

Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $\frac{7.5}{3.6} = 2.05$ W.F.

Classification No. 1 - NEW CONSTRUCTION - Work Type - CULVERTS



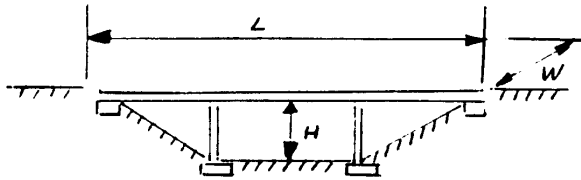
Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Meter
Type 1	Area $W \times L$ exceeds 93 Sq. Meters	0-60 degrees	0 to 3 M	990
			3 to 6 M	1292
	Short Culverts Difficult Conditions under Square Meters	0-60 degrees	0 to 3 M	1755
			3 to 6 M	2034
Type 2	Area $W \times L$ exceeds 93 Sq. Meters	0-60 degrees	0 to 3 M	1044
			3 to 6 M	1313
	Short Culverts Difficult Conditions under Square Meters	0-60 degrees	0 to 3 M	1755
			3 to 6 M	2034

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Meter	= Amount
CULVERT TOTAL			=

Classification No. 1 - NEW CONSTRUCTION - Work Type - BRIDGES (1 of 3)

1 to 3 spans and 2 side spans (Max. Span 30.5 meters)

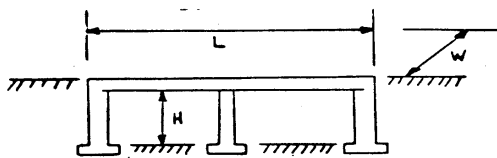


H - Clear Height 4.4 to 7.0 meters(4)

L - 30.5 to 122 meters & all Viaducts Over 122 meters (5)

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq. Meter
I	Width at Least 13.7 Meters	0 Degrees-40 Degrees	No Piles	1216
			Piles at Stub Abut.	1432
			Piles at Piers & Stub Abut.	1560
		40 Degrees-60 Degrees	No Piles	1302
			Piles at Stub Abut.	1507
			Piles at Piers & Stub Abut.	1615

1 to 3 Main Spans(Max. Span 30.5 Meters)(3)

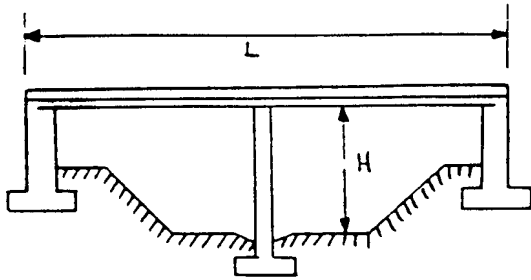


H - Clear Height 4.4 meters (4)

L - Length Under 122 meters

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
II	L exceeds W Area L x W exceeds 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	1518
			On Piles	1614
		40 Degrees-60 Degrees	No Piles	1895
			On Piles	2357
III	W exceeds L Area L x W exceeds 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	1959
			On Piles	2583
		40 Degrees-60 Degrees	No Piles	2088
			On Piles	2670
IV	Width 9.1 - 13.7 meters Area W x L under 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	2550
			On Piles	3423
		40 Degrees-60 Degrees	No Piles	2745
			On Piles	3595

Classification No. 1 - NEW CONSTRUCTION - Work Type - BRIDGES cont'd (2 of 3)



1 to 2 Main Spans (Max. Span 38 meters)

H - Clear Height 4.4 meters

L - 30.5 - 76 meters

Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
Width at Least 12 meters	0 Degrees to 40 Degrees	No Piles	1356
		Piles at Semi-Stub Abut.	1572
		Piles at Piers & Semi Stub Abut.	1765
Minimum Length 30.5 meters	40 Degrees to 60 Degrees	No Piles	1432
		Piles at Semi-Stub Abut.	1679
		Piles at Piers & Semi Stub Abut.	1873

Classification No. 1 - NEW CONSTRUCTION - Work Type - BRIDGES cont'd (3 of 3)

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.
2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square meter price.
3. For longer spans, adjust the cost per square meter to reflect increased cost of structural members.
4. For span bridges, it is expected the length of the side span will be increased in proportion to any increase in height. Because of the resultant increase in deck area, the square meter price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square meter prices will have to be increased.
5. For structures over 122 meters long (viaducts), reduce the cost per square meter if repetitive span length and forming can be used. Reduce by \$5.00 for lengths from 122 to 180 meters and by \$10.00 for lengths over 180 meters. (Do not forget adjustments (3) and (4) above on viaducts).
6. For statically indeterminate structures, square meter prices will have to be established.

Structure Description	Calculated Sq. Meter of Bridge Deck	x Cost Per Sq. Meter	= Amount
Sub Total			=
Clearing Site Bridge *0-3% of Sub Total =			+
*Pick appropriate percent based on the size, type and materials of existing structure			=
BRIDGE TOTAL			=

Classification No. 1 - NEW CONSTRUCTION
Work Type - DRAINAGE (includes inlets and cross drains)

Rural		x 162,000	=	
	project length(kilometers)	cost per kilometer		Amount
Urban		x 242,000	=	
	project length(kilometers)	cost per kilometer		Amount

The above are the total costs of basins, manholes, longitudinal and transverse pipes, underdrains, headwalls, protecting curbs, aprons, etc. for a divided highway with a depressed median. The costs are assumed to apply to 4, 6 or 8 lane sections since there will be no appreciable difference in the number of basins or the sizes or lengths of pipes.

Frontage Road & Ramp Drainage

	x 130.00	=	
length of ramp or frontage rd. in meters	cost per meter		Amount
DRAINAGE TOTAL			=

Classification No. 1 - NEW CONSTRUCTION - Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	52.50/L.M.		
Fence 1.8 Meter High	59.00/L.M.		
225 mm X 400 mm White Conc. Vertical Curb	52/L.M.		
375mm X 1040 mm White Conc. Barrier Curb	180/L.M.		
600mm X 1040 mm White Conc. Barrier Curb	200/L.M.		
600mm X Variable White Conc. Barrier Curb	125/L.M.		
Sign Bridge	251,000		
Cantilever Sign Structure	51,000		
INCIDENTAL ITEMS TOTAL			=

Classification No. 1 - NEW CONSTRUCTION - Work Type - LANDSCAPE

	Quantity	x Unit Prices	= Amount
Topsoil and Seeding (Mainline) Length of Project in kilometers		78,000	
Planting (Mainline) Length of Project in kilometers		38,000	
Topsoil, Seeding, Planting (Finger Ramp) Number of Finger Ramps		13,700	
Topsoil, Seeding, Planting (Loop Ramp) Number of Loop Ramps		18,700	
Topsoil, Seeding (Access Road) Length of Access Road in Meters		28.50	
LANDSCAPE TOTAL			=

Classification No. 1 - NEW CONSTRUCTION - Work Type - NOISE ABATEMENT MEASURES

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.M.		869	
NOISE ABATEMENT MEASURES TOTAL				=

Classification No. 1 - NEW CONSTRUCTION - Work Type - GENERAL ITEMS

Item	Project Length (Km)	x Cost/KM	= Amount
Field Office		4,525	
Materials Field Laboratory		3,044	
Erosion Control during Construction		30,000	
GENERAL ITEMS TOTAL			=

Classification No. 1 - NEW CONSTRUCTION - SUMMARY

Route _____ Section/Proj. Id. _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		3% of Proj. Subtotal	
Maintenance of Traffic		1.5% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 5.0	8% of Proj. Subtotal	
	5.0 to 30.0	10% of Proj. Subtotal	
	30.0 & above	11% of Proj. Subtotal	
Progress Schedule	Project Cost(Mil.)	\$	
	Less than 2.0	0	
	2.0 to 5.0	7,000	
	5.0 to 10.0	8,500	
	10.0 to 20.0	15,000	
	20.0 to 30.0	30,000	
	30.0 to 40.0	40,000	
	40.0 & above	55,000	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	20,000	
	1.0 to 2.0	35,000	
	2.0 to 5.0	45,000	
	5.0 to 10.0	145,000	
	10.0 to 20.0	270,000	
	20.0 to 30.0	350,000	
	30.0 to 40.0	450,000	
40.0 & above	550,000		

continued on next page

Classification No. 1 - NEW CONSTRUCTION - SUMMARY (cont.)

Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	15,000	
	1.0 to 2.0	20,000	
	2.0 to 5.0	40,000	
	5.0 to 10.0	100,000	
	10.0 to 20.0	155,000	
	20.0 to 30.0	210,000	
	30.0 to 40.0	485,000	
	40.0 & above	700,000	
		PROJECT TOTAL	=

CONTINGENCIES & ESCALATION

	x	x	=
Project Total	(1+ C)	1 + [0.01 (Y+1) (Y-2)]	Construction Cost for Preliminary Estimate
	Contingencies	Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-10	3%	1
10-20	2.5%	2
20-50	2%	3
Over 50	1.5%	4

UTILITY RELOCATION COST

	x 0.09	=
Construction Cost for Preliminary Estimate		Utility Relocation Cost for Preliminary Estimate

or

Use utilities detailed estimates as soon as available

R.O.W. COST

4.2.1.2 Classification Number 2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - EARTHWORK (must be calculated)

Route _____	Section/Proj. Id. #	_____		
	Unit	Quantity	x Unit Price	= Amount
Stripping (100-150mm Depth)	Hectare		6,857	
Roadway Exc. Unclassified	C.M.		See (J)	
Removal of Conc. Base & Conc. Surface Courses	S.M.		25.00	
Channel Excavation	C.M.		14.00	
Ditch Excavation	C.M.		13.00	
Borrow Excavation Zone 3	C.M.		See (J)	
EARTHWORK TOTAL				=

Suggested procedure for calculating earthwork:

- A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
- B) Get latest topography map available.
- C) Plot proposed alignment on topo map.
- D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
- E) Calculate Areas for the typical section in 0.3 meter increments of cut or fill.
- F) At 30 to 150 meter intervals (depending on frequency of X-section changes) calculate the earthwork.
- G) Calculate any other significant earthwork (ramps, cross-roads, etc.).
- H) Make appropriate earthwork corrections for the pavement box and striping. Use 530 mm depth for rigid pavement, 660 mm depth for all flexible pavement and 100 mm depth for striping.
- I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
- J) See Final Construction Cost Estimate (Section 4.3.3). This worksheet must be utilized for the most recent price.

Classification Number 2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - PAVEMENT

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	440
B	50 mm Bit. Conc. Surf. Crs. & 200 mm Bit. Stab	150
C	75 mm Bit. Conc. Surf. Crs. & 100 mm Bit. Stab	105
D	37 mm Bit. Conc. Surf. Crs. & 50 mm Bit. Stab	49
E	Bridge Approach & Transition Slabs	440
	(Resurfacing Portion only F & G)	
F	50 mm Bit. Conc. Surface Course	17.55
G	50 mm Bit. Conc. Surface Course	26.00
H	Milling 50 mm	6.5

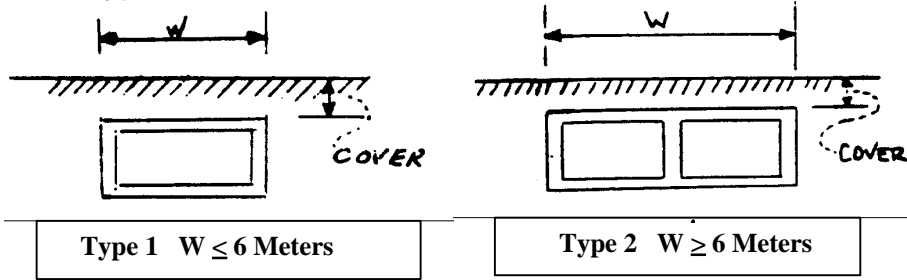
Computation Table for Pavement. Cost

Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $7.5/3.6 = 2.05$ W.F.

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - CULVERTS



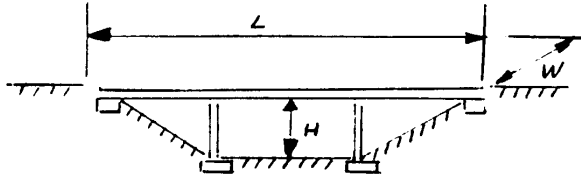
Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Meter
Type 1	Area $W \times L$ exceeds 93 Sq. Meters	0-60 degrees	0 to 3 M	990
			3 to 6 M	1292
	Short Culverts Difficult Conditions under Square Meters	0-60 degrees	0 to 3 M	1755
			3 to 6 M	2034
Type 2	Area $W \times L$ exceeds 93 Sq. Meters	0-60 degrees	0 to 3 M	1044
			3 to 6 M	1313
	Short Culverts Difficult Conditions under Square Meters	0-60 degrees	0 to 3 M	1755
			3 to 6 M	2034

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Meter	= Amount
CULVERT TOTAL			=

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - BRIDGES (1 of 3)

1 to 3 spans and 2 side spans (Max. Span 30.5 meters)

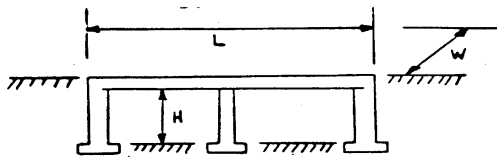


H - Clear Height 4.4 to 7.0 meters(4)

L - 30.5 to 122 meters & all Viaducts Over 122 meters (5)

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq. Meter
I	Width at Least 13.7 Meters	0 Degrees-40 Degrees	No Piles	1216
			Piles at Stub Abut.	1432
			Piles at Piers & Stub Abut.	1560
		40 Degrees-60 Degrees	No Piles	1302
			Piles at Stub Abut.	1507
			Piles at Piers & Stub Abut.	1615

1 to 3 Main Spans (Max. Span 30.5 Meters)(3)



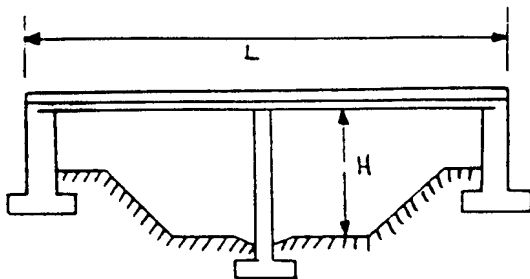
H - Clear Height 4.4 meters (4)

L - Length Under 122 meters

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
II	L exceeds W Area L x W exceeds 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	1518
			On Piles	1614
		40 Degrees-60 Degrees	No Piles	1895
			On Piles	2357
III	W exceeds L Area L x W exceeds 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	1959
			On Piles	2583
		40 Degrees-60 Degrees	No Piles	2088
			On Piles	2670
IV	Width 9.1 - 13.7 meters Area W x L under 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	2550
			On Piles	3423
		40 Degrees-60 Degrees	No Piles	2745
			On Piles	3595

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - BRIDGES cont'd (2 of 3)

1 to 2 Main Spans (Max. Span 38 meters)



H - Clear Height 4.4 meters

L - 30.5 - 76 meters

Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
Width at Least 12 meters	0 Degrees to 40 Degrees	No Piles	1356
		Piles at Semi-Stub Abut.	1572
		Piles at Piers & Semi Stub Abut.	1765
Minimum Length 30.5 meters	40 Degrees to 60 Degrees	No Piles	1432
		Piles at Semi-Stub Abut.	1679
		Piles at Piers & Semi Stub Abut.	1873

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - BRIDGES cont'd (3 of 3)

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.
2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square meter price.
3. For longer spans, adjust the cost per square meter to reflect increased cost of structural members.
4. For span bridges, it is expected the length of the side span will be increased in proportion to any increase in height. Because of the resultant increase in deck area, the square meter price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square meter prices will have to be increased.
5. For structures over 122 meters long (viaducts), reduce the cost per square meter if repetitive span length and forming can be used. Reduce by \$5.00 for lengths from 122 to 180 meters and by \$10.00 for lengths over 180 meters. (Do not forget adjustments (3) and (4) above on viaducts).
6. For statically indeterminate structures, square meter prices will have to be established.

Structure Description	Calculated Sq. Meter of Bridge Deck	x	Cost Per Sq. Meter	=	Amount
Sub Total				=	
Clearing Site Bridge *0-3% of Sub Total =				+	
*Pick appropriate percent based on the size, type and materials of existing structure				=	
BRIDGE TOTAL				=	

Classification No.2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - DRAINAGE (includes inlets and cross drains)

(PER DIRECTION OF WIDENING)	cost per meter	Amount
meters	x 132.00	=
DRAINAGE TOTAL		

Classification No.2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - Work Type - LANDSCAPE

The meter measurement is for each side of the roadway or ramp that requires landscaping. For example: If a road is widened on one side only the cost = 13.50 per meter. If the road is widened on both sides the cost is 27.00 per meter. If a dualized roadway is widened into the median for each direction of traffic and both outside edges, the cost = 54.00 per meter. When more than one-half of the profile changes by 0.3 meters, the above costs will increase by 25 percent.

Pavement Edge Length in Meters	Cost per pavement edge for Topsoil & Seeding	Amount
	X 13.50	
LANDSCAPE TOTAL		=

Classification No. 2 - NEW CONSTRUCTION - Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	52.50/L.M.		
Fence 1.8 Meter High	59.00/L.M.		
225 mm X 400 mm White Conc. Vertical Curb	52/L.M.		
375mm X 1040 mm White Conc. Barrier Curb	180/L.M.		
600mm X 1040 mm White Conc. Barrier Curb	200/L.M.		
600mm X Variable White Conc. Barrier Curb	125/L.M.		
Sign Bridge	251,000		
Cantilever Sign Structure	51,000		
INCIDENTAL ITEMS TOTAL			=

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION - Work Type - NOISE ABATEMENT MEASURES

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.M.		869	
NOISE ABATEMENT MEASURES TOTAL				=

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION Work Type - GENERAL ITEMS

Item	Project Length (Km)	x Cost/KM	= Amount
Field Office		4,525	
Materials Field Laboratory		3,044	
Erosion Control during Construction		30,000	
GENERAL ITEMS TOTAL			=

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION - SUMMARY

Route _____ Section/Proj. Id. _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		3% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 5.0	8% of Proj. Subtotal	
	5.0 to 30.0	10% of Proj. Subtotal	
	30.0 & above	11% of Proj. Subtotal	
Progress Schedule	Project Cost(Mil.)	\$	
	Less than 2.0	0	
	2.0 to 5.0	7,000	
	5.0 to 10.0	8,500	
	10.0 to 20.0	15,000	
	20.0 to 30.0	30,000	
	30.0 to 40.0	40,000	
	40.0 & above	55,000	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	20,000	
	1.0 to 2.0	35,000	
	2.0 to 5.0	45,000	
	5.0 to 10.0	145,000	
	10.0 to 20.0	270,000	
	20.0 to 30.0	350,000	
	30.0 to 40.0	450,000	
40.0 & above	550,000		

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Classification No. 2 - RECONSTRUCTION, WIDENING & - SUMMARY (cont.)

Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	15,000	
	1.0 to 2.0	20,000	
	2.0 to 5.0	40,000	
	5.0 to 10.0	100,000	
	10.0 to 20.0	155,000	
	20.0 to 30.0	210,000	
	30.0 to 40.0	485,000	
	40.0 & above	700,000	
		PROJECT TOTAL	=

CONTINGENCIES & ESCALATION

	x	x	=
Project Total	(1+ C)	1 + [0.01 (Y+1) (Y-2)]	Construction Cost for Preliminary Estimate
	Contingencies	Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-5	3%	1
5-20	2.5%	2
Over 20	2%	3

UTILITY RELOCATION COST

	x 0.09*	=
Construction Cost for Preliminary Estimate	*for Urban use 12%, Rural 5.5%	Utility Relocation Cost for Preliminary Estimate

or

Use utilities detailed estimates as soon as available

R.O.W. COST

4.2.1.3 Classification Number 3 - WIDENING & RESURFACING
Work Type - EARTHWORK (must be calculated)

Route _____ Section/Proj. Id. _____
 # _____

	Unit	Quantity	x Unit Price	= Amount
Stripping (100-150mm Depth)	Hectare		6,857	
Roadway Exc. Unclassified	C.M.		See (J)	
Removal of Conc. Base & Conc. Surface Courses	S.M.		25.00	
Channel Excavation	C.M.		14.00	
Ditch Excavation	C.M.		13.00	
Borrow Excavation Zone 3	C.M.		See (J)	
EARTHWORK TOTAL				=

Suggested procedure for calculating earthwork:

- A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
- B) Get latest topography map available.
- C) Plot proposed alignment on topo map.
- D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
- E) Calculate Areas for the typical section in 0.3 meter increments of cut or fill.
- F) At 30 to 150 meter intervals (depending on frequency of X-section changes) calculate the earthwork.
- G) Calculate any other significant earthwork (ramps, cross-roads, etc.).
- H) Make appropriate earthwork corrections for the pavement box and striping. Use 530 mm depth for rigid pavement, 660 mm depth for all flexible pavement and 100 mm depth for striping.
- I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
- J) See Final Construction Cost Estimate (Section 4.3.3). This worksheet must be utilized for the most recent price information.

Classification Number 3 - WIDENING & RESURFACING
Work Type - PAVEMENT

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	440
B	50 mm Bit. Conc. Surf. Crs. & 200 mm Bit. Stab	150
C	75 mm Bit. Conc. Surf. Crs. & 100 mm Bit. Stab	105
D	37 mm Bit. Conc. Surf. Crs. & 50 mm Bit. Stab	49
E	Bridge Approach & Transition Slabs	440
F	50 mm Bit. Conc. Surface Course	17.55
G	50 mm Bit. Conc. Surface Course	26.00
H	Milling 50 mm	6.5

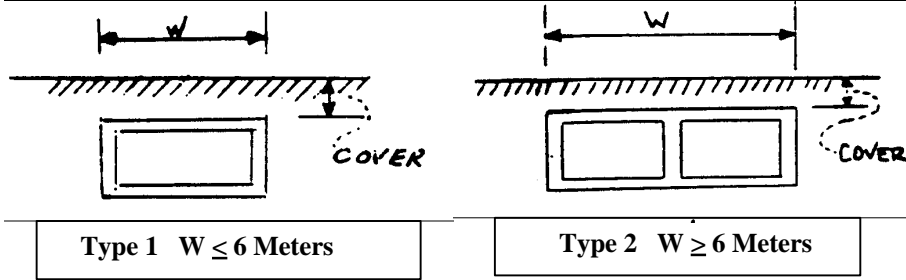
Computation Table for Pavement. Cost

Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $\frac{7.5}{3.6} = 2.05$ W.F.

Classification No. 3 - WIDENING & RESURFACING - Work Type - CULVERTS



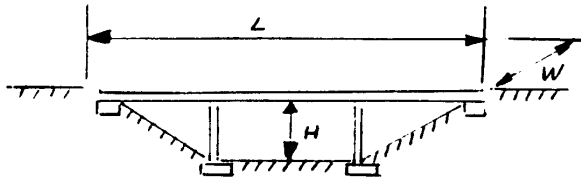
Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Meter
Type 1	Area W x L exceeds 93 Sq. Meters	0-60 degrees	0 to 3 M	990
			3 to 6 M	1292
	Short Culverts Difficult Conditions under Square Meters	0-60 degrees	0 to 3 M	1755
			3 to 6 M	2034
Type 2	Area W x L exceeds 93 Sq. Meters	0-60 degrees	0 to 3 M	1044
			3 to 6 M	1313
	Short Culverts Difficult Conditions under Square Meters	0-60 degrees	0 to 3 M	1755
			3 to 6 M	2034

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Meter	= Amount
CULVERT TOTAL			=

Classification No. 3 - WIDENING & RESURFACING - Work Type - BRIDGES (1 of 3)

1 to 3 spans and 2 side spans (Max. Span 30.5 meters)

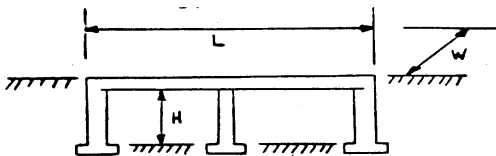


H - Clear Height 4.4 to 7.0 meters(4)

L - 30.5 to 122 meters & all Viaducts
Over 122 meters (5)

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq. Meter
I	Width at Least 13.7 Meters	0 Degrees-40 Degrees	No Piles	1216
			Piles at Stub Abut.	1432
			Piles at Piers & Stub Abut.	1560
		40 Degrees-60 Degrees	No Piles	1302
			Piles at Stub Abut.	1507
			Piles at Piers & Stub Abut.	1615

1 to 3 Main Spans (Max. Span 30.5 Meters)(3)

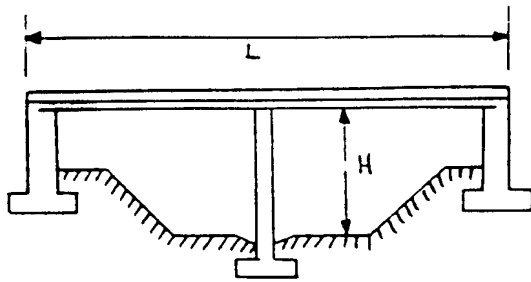


H - Clear Height 4.4 meters (4)

L - Length Under 122 meters

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
II	L exceeds W Area L x W exceeds 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	1518
			On Piles	1614
		40 Degrees-60 Degrees	No Piles	1895
			On Piles	2357
III	W exceeds L Area L x W exceeds 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	1959
			On Piles	2583
		40 Degrees-60 Degrees	No Piles	2088
			On Piles	2670
IV	Width 9.1 - 13.7 meters Area W x L under 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	2550
			On Piles	3423
		40 Degrees-60 Degrees	No Piles	2745
			On Piles	3595

Classification No. 3 - WIDENING & RESURFACING - Work Type - BRIDGES cont'd (2 of 3)



1 to 2 Main Spans (Max. Span 38 meters)

H - Clear Height 4.4 meters

L - 30.5 - 76 meters

Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
Width at Least 12 meters	0 Degrees to 40 Degrees	No Piles	1356
		Piles at Semi-Stub Abut.	1572
		Piles at Piers & Semi Stub Abut.	1765
Minimum Length 30.5 meters	40 Degrees to 60 Degrees	No Piles	1432
		Piles at Semi-Stub Abut.	1679
		Piles at Piers & Semi Stub Abut.	1873

Classification No. 3 - WIDENING & RESURFACING - Work Type - BRIDGES cont'd (3 of 3)

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.
2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square meter price.
3. For longer spans, adjust the cost per square meter to reflect increased cost of structural members.
4. For span bridges, it is expected the length of the side span will be increased in proportion to any increase in height. Because of the resultant increase in deck area, the square meter price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square meter prices will have to be increased.
5. For structures over 122 meters long (viaducts), reduce the cost per square meter if repetitive span length and forming can be used. Reduce by \$5.00 for lengths from 122 to 180 meters and by \$10.00 for lengths over 180 meters. (Do not forget adjustments (3) and (4) above on viaducts).
6. For statically indeterminate structures, square meter prices will have to be established.

Structure Description	Calculated Sq. Meter of Bridge Deck	x	Cost Per Sq. Meter	=	Amount
Sub Total				=	
Clearing Site Bridge *0-3% of Sub Total =				+	
*Pick appropriate percent based on the size, type and materials of existing structure				=	
BRIDGE TOTAL				=	

Classification No.3 - WIDENING & RESURFACING
Work Type - DRAINAGE (includes inlets and cross drains)

(PER DIRECTION OF WIDENING)	cost per meter	Amount
meters	x 132.00	=
DRAINAGE TOTAL		

Classification No.3 - WIDENING & RESURFACING
Work Type - Work Type - LANDSCAPE

The meter measurement is for each side of the roadway or ramp that requires landscaping. For example: If a road is widened on one side only the cost = 13.50 per meter. If the road is widened on both sides the cost is 27.00 per meter. If a dualized roadway is widened into the median for each direction of traffic and both outside edges, the cost = 54.00 per meter. When more than one-half of the profile changes by 0.3 meters, the above costs will increase by 25 percent.

Pavement Edge Length in Meters	Cost per pavement edge for Topsoil & Seeding	Amount
	X 13.50	

LANDSCAPE TOTAL =

Classification No. 3 - WIDENING & RESURFACING - Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	52.50/L.M.		
Fence 1.8 Meter High	59.00/L.M.		
225 mm X 400 mm White Conc. Vertical Curb	52/L.M.		
375mm X 1040 mm White Conc. Barrier Curb	180/L.M.		
600mm X 1040 mm White Conc. Barrier Curb	200/L.M.		
600mm X Variable White Conc. Barrier Curb	125/L.M.		
Sign Bridge	251,000		
Cantilever Sign Structure	51,000		
INCIDENTAL ITEMS TOTAL			=

Classification No. 3 - WIDENING & RESURFACING
Work Type - NOISE ABATEMENT MEASURES

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.M.		869	
NOISE ABATEMENT MEASURES TOTAL				=

Classification No. 3 - WIDENING & RESURFACING - Work Type - GENERAL ITEMS

Item	Project Length (Km)	x Cost/KM	= Amount
Field Office		4,525	
Materials Field Laboratory		3,044	
Erosion Control during Construction		20,000	
GENERAL ITEMS TOTAL			=

Classification No. 3 - WIDENING & RESURFACING- SUMMARY

Route _____ Section/Proj. Id. # _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		3% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 1.0	5% of Proj. Subtotal	
	1.0 to 5.0	6% of Proj. Subtotal	
	5.0 & above	7% of Proj. Subtotal	
Progress Schedule	Project Cost(Mil.)	\$	
	Less than 2.0	0	
	2.0 to 5.0	5,000	
	5.0 & above	6,000	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	3,500	
	1.0 to 2.0	10,000	
	2.0 to 5.0	20,000	
	5.0 & above	65,000	

continued on next page

Classification No. 3 - WIDENING & RESURFACING - SUMMARY (cont.)

Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	3,500	
	1.0 to 2.0	10,000	
	2.0 to 5.0	25,000	
	5.0 & above	60,000	
	PROJECT TOTAL	=	

CONTINGENCIES & ESCALATION

	x	x	=
Project Total	(1+ C)	1 + [0.01 (Y+1) (Y-2)]	Construction Cost for Preliminary Estimate
	Contingencies	Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-10	3%	1
Over 10	2.5%	2

UTILITY RELOCATION COST

	x 0.09*	=
Construction Cost for Preliminary Estimate	*for Urban use 12%, Rural 5.5%	Utility Relocation Cost for Preliminary Estimate

or

Use utilities detailed estimates as soon as available

R.O.W. COST

4.2.1.4 Classification Number 4 - RESURFACING
Work Type - EARTHWORK (must be calculated)

Route _____ Section/Proj. Id. _____
 # _____

	Unit	Quantity	x Unit Price	= Amount
Roadway Exc. Unclassified	C.M.		See (A)	
Removal of Conc. Base & Conc. Surface Courses	S.M.		25.00	
EARTHWORK TOTAL				=

A) See Final Construction Cost Estimate (Section 4.3.3) for the method to utilize the most recent price information available.

Work Type - GENERAL ITEMS

Item	Project Length (Km)	x Cost/KM	= Amount
Field Office		4,525	
Materials Field Laboratory		3,044	
GENERAL ITEMS TOTAL			=

Classification Number 4 - RESURFACING - Work Type - DRAINAGE

Item	Unit	Quantity	Cost	Amount
Reset Casting	Unit		375	=
Inlet *	Unit		2,500	
Pipe *	L.M.		295	
DRAINAGE TOTAL				

* Any drainage problems to be corrected should be estimated and included.

Classification Number 4 -RESURFACING - Work Type - PAVEMENT3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	440
B	50 mm Bit. Conc. Surf. Crs. & 200 mm Bit. Stab	150
C	75 mm Bit. Conc. Surf. Crs. & 100 mm Bit. Stab	105
D	37 mm Bit. Conc. Surf. Crs. & 50 mm Bit. Stab	49
E	Bridge Approach & Transition Slabs	440
	(Resurfacing Portion only F & G)	
F	50 mm Bit. Conc. Surface Course	17.55
G	50 mm Bit. Conc. Surface Course	26.00
H	Milling 50 mm	6.50

Computation Table for Pavement. Cost

Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $\frac{7.5}{3.6} = 2.05$ W.F.

Classification No. 4 - RESURFACING - Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	52.50/L.M.		
Fence 1.8 Meter High	59.00/L.M.		
225 mm X 400 mm White Conc. Vertical Curb	52/L.M.		
375mm X 1040 mm White Conc. Barrier Curb	180/L.M.		
600mm X 1040 mm White Conc. Barrier Curb	200/L.M.		
600mm X Variable White Conc. Barrier Curb	125/L.M.		
Sign Bridge	251,000		
Cantilever Sign Structure	51,000		
INCIDENTAL ITEMS TOTAL			=

Work Type - Work Type - LANDSCAPE

The meter measurement is for each side of the roadway or ramp that requires landscaping. For example: If a road is widened on one side only the cost = 13.50 per meter. If the road is widened on both sides the cost is 27.00 per meter.

Pavement Edge Length in Meters	Cost per pavement edge for Topsoil & Seeding	Amount
	X 13.50	
LANDSCAPE TOTAL		=

Classification No. 4 - RESURFACING - SUMMARY

Route _____ Section/Proj. Id. # _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		2% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 1.0	5% of Proj. Subtotal	
	1.0 to 5.0	6% of Proj. Subtotal	
	5.0 & above	7% of Proj. Subtotal	
Progress Schedule	Project Cost(Mil.)	\$	
	Less than 2.0	0	
	2.0 to 5.0	5,000	
	5.0 & above	6,000	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	3,500	
	1.0 to 2.0	10,000	
	2.0 to 5.0	20,000	
	5.0 & above	65,000	

continued on next page

Classification No. 4 - RESURFACING - SUMMARY (cont.)

Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	3,500	
	1.0 to 2.0	10,000	
	2.0 to 5.0	25,000	
	5.0 & above	60,000	
	PROJECT TOTAL	=	

CONTINGENCIES & ESCALATION

	x	x	=
Project Total	(1+ C)	1 + [0.01 (Y+1) (Y-2)]	Construction Cost for Preliminary Estimate
	Contingencies	Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-20	3%	1
Over 20	2%	2

UTILITY RELOCATION COST

	x 0.025	=
Construction Cost for Preliminary Estimate		Utility Relocation Cost for Preliminary Estimate

or

Use utilities detailed estimates as soon as available

R.O.W. COST

4.2.1.5 Classification Number 5 -BRIDGE REPAIR - Work Type - PAVEMENT

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	440
B	50 mm Bit. Conc. Surf. Crs. & 200 mm Bit. Stab	150
C	75 mm Bit. Conc. Surf. Crs. & 100 mm Bit. Stab	105
D	37 mm Bit. Conc. Surf. Crs. & 50 mm Bit. Stab	49
E	Bridge Approach & Transition Slabs	440
	(Resurfacing Portion only F & G)	
F	50 mm Bit. Conc. Surface Course	17.55
G	50 mm Bit. Conc. Surface Course	26.00
H	Milling 50 mm	6.5

Computation Table for Pavement. Cost

Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $\frac{7.5}{3.6} = 2.05$ W.F.

Classification No. 5 - BRIDGE REPAIR**Work Type - INCIDENTAL ITEMS**

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	52.50/L.M.		
Fence 1.8 Meter High	59.00/L.M.		
225 mm X 400 mm White Conc. Vertical Curb	52/L.M.		
375mm X 1040 mm White Conc. Barrier Curb	180/L.M.		
600mm X 1040 mm White Conc. Barrier Curb	200/L.M.		
600mm X Variable White Conc. Barrier Curb	125/L.M.		
INCIDENTAL ITEMS TOTAL			=

Work Type - BRIDGE

Cost to be provided by BUREAU OF STRUCTURAL ENGINEERING

Classification No. 5 - BRIDGE REPAIR- SUMMARY

Route _____ **Section/Proj. Id.** _____
_____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		1% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 1.0	5% of Proj. Subtotal	
	1.0 to 5.0	6% of Proj. Subtotal	
	5.0 & above	7% of Proj. Subtotal	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	5,000	
	1.0 & above	10,000	
Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	3,000	
	1.0 & above	6,000	
PROJECT TOTAL =			

continued on next page

Classification No. 5- BRIDGE REPAIR- SUMMARY (cont.)

CONTINGENCIES & ESCALATION

	x	x	=
Project Total	(1+ C)	1 + [0.01 (Y+1) (Y-2)]	Construction Cost for Preliminary Estimate
	Contingencies	Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-5	3%	1
Over 5	2.5%	2

UTILITY RELOCATION COST

	x 0.085	=
Construction Cost for Preliminary Estimate		Utility Relocation Cost for Preliminary Estimate

or

Use utilities detailed estimates as soon as available

R.O.W. COST

4.2.1.6 Classification Number 6 - INTERSECTION IMPROVEMENT
Work Type - EARTHWORK (must be calculated)

Route _____ Section/Proj. Id. _____
 # _____

	Unit	Quantity	x Unit Price	= Amount
Roadway Exc. Unclassified	C.M.		See (A)	
Removal of Conc. Base & Conc. Surface Courses	S.M.		25.00	
Borrow Excavation, Zone 3	C.M.		See (A)	
EARTHWORK TOTAL				=

A) See Final Construction Cost Estimate (Section 4.3.3) for the method to utilize the most recent price information available.

Work Type - Work Type - LANDSCAPE

The meter measurement is for each side of the roadway or ramp that requires landscaping. For example: If a road is widened on one side only the cost = 13.50 per meter. If the road is widened on both sides the cost is 27.00 per meter.

Pavement Edge Length in Meters	Cost per pavement edge for Topsoil & Seeding	Amount
	X 13.50	
LANDSCAPE TOTAL		=

Classification Number 6 -INTERSECTION IMPROVEMENT
Work Type - PAVEMENT

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	440
B	50 mm Bit. Conc. Surf. Crs. & 200 mm Bit. Stab	150
C	75 mm Bit. Conc. Surf. Crs. & 100 mm Bit. Stab	105
D	37 mm Bit. Conc. Surf. Crs. & 50 mm Bit. Stab	49
E	Bridge Approach & Transition Slabs	440
	(Resurfacing Portion only F & G)	
F	50 mm Bit. Conc. Surface Course	17.55
G	50 mm Bit. Conc. Surface Course	26.00
H	Milling 50 mm	6.5

Computation Table for Pavement. Cost

Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $7.5/3.6 = 2.05$ W.F.

Classification Number 6 -INTERSECTION IMPROVEMENT - Work Type - DRAINAGE

Item	Unit	Quantity	Cost	Amount
Reset Casting	Unit		375	=
Inlet *	Unit		2,500	
Pipe *	L.M.		295	
DRAINAGE TOTAL				

* Any drainage problems to be corrected should be estimated and included.

Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	52.50/L.M.		
Fence 1.8 Meter High	59.00/L.M.		
225 mm X 400 mm White Conc. Vertical Curb	52/L.M.		
375mm X 1040 mm White Conc. Barrier Curb	180/L.M.		
600mm X 1040 mm White Conc. Barrier Curb	200/L.M.		
600mm X Variable White Conc. Barrier Curb	125/L.M.		
Lighting Assembly (Includes wire, junction box, etc.) *	7,200/Unit		
Meter Cabinet (Lighting one per cross road)	8,450/ Unit		
Complete Traffic Signal Installation at Typical Intersection	111,000		
INCIDENTAL ITEMS TOTAL			=

* For estimating purposes space lights 60 meters apart.

Classification No. 6 - INTERSECTION IMPROVEMENT - SUMMARY

Route _____ Section/Proj. Id. # _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		3% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 5.0	8% of Proj. Subtotal	
	5.0 to 30.0	10% of Proj. Subtotal	
	30.0 & above	11% of Proj. Subtotal	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	20,000	
	1.0 to 2.0	35,000	
	2.0 to 5.0	45,000	
	5.0 to 10.0	145,000	
	10.0 to 20.0	270,000	
	20.0 to 30.0	350,000	
	30.0 to 40.0	450,000	
	40.0 & above	550,000	

continued on next page

Classification No. 6 - INTERSECTION IMPROVEMENT - SUMMARY (cont.)

Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	15,000	
	1.0 to 2.0	20,000	
	2.0 to 5.0	40,000	
	5.0 to 10.0	100,000	
	10.0 to 20.0	155,000	
	20.0 to 30.0	210,000	
	30.0 to 40.0	485,000	
	40.0 & above	700,000	
PROJECT TOTAL		=	

CONTINGENCIES & ESCALATION

	x	x	=
Project Total	(1+ C)	1 + [0.01 (Y+1) (Y-2)]	Construction Cost for Preliminary Estimate
	Contingencies	Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-5	3%	1
Over 5	2.5%	2

UTILITY RELOCATION COST

	x 0.015	=
Construction Cost for Preliminary Estimate		Utility Relocation Cost for Preliminary Estimate

or

Use utilities detailed estimates as soon as available

R.O.W. COST =

4.2.1.7 Classification Number 7 - SAFETY & TRAFFIC CONTROL
Work Type - PAVEMENT

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	440
B	50 mm Bit. Conc. Surf. Crs. & 200 mm Bit. Stab	150
C	75 mm Bit. Conc. Surf. Crs. & 100 mm Bit. Stab	105
D	37 mm Bit. Conc. Surf. Crs. & 50 mm Bit. Stab	49
E	Bridge Approach & Transition Slabs	440
	(Resurfacing Portion only F & G)	
F	50 mm Bit. Conc. Surface Course	17.55
G	50 mm Bit. Conc. Surface Course	26.00
H	Milling 50 mm	6.5

Computation Table for Pavement. Cost

Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $7.5/3.6 = 2.05$ W.F.

Classification No. 7 - SAFETY & TRAFFIC CONTROL
Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	52.50/L.M.		
Fence 1.8 Meter High	59.00/L.M.		
Hydro-Cell	13,300/Unit		
Frangible Module	7,800/Unit		
G.R.E.A.T.	28,000/Unit		
Sign Bridge	251,000		
Cantilever Sign Structure	51,000		
Lighting Assembly (Includes wire, junction box, etc.) *	7,200/Unit		
Meter Cabinet (Lighting one per cross road)	8,450/ Unit		
Complete Traffic Signal Installation at Typical Intersection	111,000		
INCIDENTAL ITEMS TOTAL			=

* For estimating purposes space lights 60 meters apart.

Work Type - EARTHWORK & LANDSCAPE

	Unit	Quantity	x Unit Price	= Amount
Roadway Exc. Unclassified	C.M.		36.00	
Removal of Conc. Base & Conc. Surface Courses	S.M.		25.00	
Borrow Excavation, Zone 3	C.M.		13.75	
EARTHWORK TOTAL				=

Roadway Excavation Unclassified and Borrow Excavation Zone 3 should be calculated on a job-to-job basis depending on need. The prices include Topsoil and Seeding required.

Classification No. 7 - SAFETY & TRAFFIC CONTROL - SUMMARY

Route _____ Section/Proj. Id. # _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		3% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 1.0	5% of Proj. Subtotal	
	1.0 to 5.0	6% of Proj. Subtotal	
	5.0 & above	7% of Proj. Subtotal	
Progress Schedule	Project Cost(Mil.)	\$	
	Less than 2.0	0	
	2.0 to 5.0	5,000	
	5.0 & above	6,000	
Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	3,500	
	1.0 to 2.0	10,000	
	2.0 to 5.0	25,000	
	5.0 & above	60,000	
PROJECT TOTAL =			

continued on next page

Classification No. 7 - SAFETY & TRAFFIC CONTROL - SUMMARY (cont.)

CONTINGENCIES & ESCALATION

	x	x	=
Project Total	(1+ C)	1 + [0.01 (Y+1) (Y-2)]	Construction Cost for Preliminary Estimate
	Contingencies	Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-5	3%	1
Over 5	2.5%	2

UTILITY RELOCATION COST

	x 0.10	=
Construction Cost for Preliminary Estimate		Utility Relocation Cost for Preliminary Estimate

or

Use utilities detailed estimates as soon as available

R.O.W. COST

4.3 Final Design Submission/Plans, Specifications and Estimate

This section describes activities required upon receipt of the Final Design Submission to prepare the Plans, Specifications and Estimate (PS&E) Package which is to be submitted to the Bureau of Contract Administration Services for advertisement. The Project Manager is ultimately responsible for the management of these activities. The Design Coordinator is responsible for the coordination of these activities performed in support of project delivery. An Activity Flow Chart is provided in Attachment 2.

Time Frames for Scheduling

The following time frames should be used as a guide for scheduling the required Final Design Submission date necessary to meet Advertising schedules consistent with the Department's goals for Capital Program Delivery:

- **Federally funded projects under Alternate Procedures** will require approximately **12 weeks** from the Final Design Submission to the Advertisement date. This will allow 2 weeks for Final Design Review, 2 weeks for comment resolution, 2 weeks for final revisions, and 2 weeks for preparation of the Final PS&E package which is to be submitted to the Bureau of Contract Administration Services 4 weeks prior to the scheduled Advertisement date.
- **Federally funded Full Oversight Projects** will require approximately **18 weeks** from the Final Design Submission to the Advertisement date. This will allow 2 weeks for Final Design Review, 2 weeks for comment resolution, 2 weeks for final revisions, and 2 weeks for the preparation of the Preliminary PS&E Submission which is to be submitted to the Bureau of Contract Administration Services 1 week prior to submission to FHWA. FHWA is then allowed 2 weeks for Preliminary PS&E review, followed by 2 weeks for comment resolution, and 1 week for preparation of the Final PS&E package which is to be submitted to the Bureau of Contract Administration Services 4 weeks prior to the scheduled Advertisement date.
- **100% State funded Projects** will require approximately **10 weeks** from the Final Design Submission to the Advertisement date. This will allow 2 weeks for Final Design review, 2 weeks for comment resolution, 2 weeks for final revisions, and 2 weeks for the preparation of the Final PS&E package which is to be submitted to the Bureau of Contract Administration Services 2 weeks prior to the scheduled Advertisement date.

For those projects requiring less extensive design reviews, the Project Manager is **cautioned** that the 8 week period from Final Design Submission to PS&E is required for the coordinated activities of various units in the preparation of an **accurate and complete** PS&E package which includes the Final Estimate, Schedule, and Special Provisions. Refer to Section 4.4 for further requirements and scheduling after Final Design.

Prior to the Final Design Submission Date

The Project Manager should meet with the Design Coordinator and identify the complete distribution list for the submission **in advance**. This list along with the specific details of each transmittal are to be forwarded to the Designer allowing sufficient time for packaging and

delivery **no later than** the submission due date. A sample plan distribution memorandum and spreadsheet is provided in Attachment 3B. The Design Coordinator should verify that the distribution is received in order to assure maintenance of the PS&E schedule.

In addition, the Project Manager is to consult with Design Coordination in developing a complete list of **Quality Assurance Review** units and their specific distribution requirements. It is at this time that the date and format of the Final Design Review Meeting is to be determined so that this information may be included in the distribution letter.

Comments on the plans, specifications, and construction schedule provided by the Bureau of Construction Engineering, are to be forwarded to the Regional Construction Field Manager, along with their construction engineering manpower estimate, review of State Police manhours, and schedule review comments. The Regional Construction Field Manager will be allowed 2 weeks beyond the initial 2 weeks for Construction Engineering's review, so that he may complete his recommendations for Construction Schedule and Inspection Cost to the Project Manager for concurrence.

For those projects under **Full Oversight**, one set of plans and a letter of response to their Initial Design Submission review comments is to be provided to FHWA by the Project Manager.

For projects under **Local Jurisdiction**, the original mylar **KEY SHEET** is to be forwarded to the **County Engineer** with a complete set of Final plans, specifications, estimate, and construction schedule. It is the Project Manager's responsibility to ensure that the **County** circulates the Key Sheet and acquires all local signatures **prior to PS&E Submission**.

The Bureau of Contract Administration Services is to be copied on all transmittals from Final Design Review through PS&E.

Multi-Year Funding

For any project identified as requiring multi-year funding, the Project Manager shall notify the Technical Specifications Unit to include the standard multi-year clause.

The Project Manager shall determine the amount of work that the contractor could reasonably perform within the first year of funding. If this amount exceeds the available funds, contact the Bureau of Capital Program Coordination to obtain additional funding.

Right-Of-Way and Utility Clearances

The Right-Of-Way and Utility Agreement Processes are critical to the delivery of most Capital Program Projects. As such, the Project Manager must be intimately familiar with the project's current status and estimated completion dates for these activities. Right-Of-Way and Utility Clearance Letters must accompany PS&E Submissions for Federally funded projects.

The Project Manager **must** check with the Bureau of Utilities to determine the pre-Final Design status of the Utility Agreements. As a rule, the completed Utility Agreements should have been sent out to all respective Utility Companies for signature **prior to the Final Design Submission date**. This will allow ample time, approximately 8 weeks, for Utility Company execution and return of the Agreements. The Project Manager is encouraged to verify the

processing of these Agreements throughout this period since Utility Companies frequently fail to meet the Department's prescribed timeframes. A Utility Clearance Letter **cannot** be issued by the Utility Bureau until the signed Agreements are returned. This would delay the Authorization Request to FHWA and could ultimately revise the advertising schedule.

For 100% State funded projects, the project could be advertised without the Utility Agreements, however, the Project Manager must ensure that any areas that will be unavailable to the contractor to work as a result of Utility conflicts are clearly noted in the specifications, considered in the construction schedule, and subsequently reflected in the project's completion date. This may also apply to fully executed agreements, if constraints such as "no gas main shut-down during the heating season" are introduced by the respective Utility Company. If this is not done the project may be delayed to correct the problem by addendum or a construction claim for delays may occur. This practice **should be avoided** if possible because it can lead to higher bid prices and numerous construction problems.

The Project Manager should also confirm the status of any outstanding Right-of-way required for the project. Right-of-way target dates are provided and updated continuously throughout design development. as a rule these target dates should all **precede** the Final Design Submission date. Any parcels yet to be acquired as of the Final Design Submission date must be scrutinized closely by the Project Manager. The Project Manager should **immediately** contact the Right-Of-Way Technical Support Group to verify the status of any outstanding parcel. A Meeting should be arranged with the District and/or Trenton staff to discuss the acquisition or condemnation schedule with the intent to provide any **assistance necessary to expedite** the process. For federal projects **all Right-of-way must be available prior to FHWA authorization**. For 100% state funded projects, Right-of-way availability dates may be included in the specifications and accounted for in the construction schedule. The Project Manager must continue to verify these availability dates throughout the Bid and Award period to avoid further complications during construction. Obviously, this practice is highly undesirable and should only be employed when necessary.

Environmental Reevaluation and Permit Status

The Environmental status of all projects assigned to a Project Manager should be verified long before the Final Design Submission date. If the previous Environmental document is dated or incomplete, the Environmental Reevaluation may need to be initiated as much as **3 months prior** to the Final Design Submission date. In any case, the Project Manager must develop a work schedule with his E-Team support group so that the Environmental Reevaluation will be completed, and signed by the Manager, Bureau of Environmental Services, for inclusion in the PS&E Submission for Federally funded projects.

As a prerequisite of the Environmental Reevaluation, the Project Manager should also confirm the status of all required permits. Permit expiration dates should be checked so that an extension, if required, may be requested. All permit conditions affecting the construction of the project must be included in the specifications and accounted for in the construction schedule.

The Environmental Reevaluation process may also indicate the need for additional Community Involvement. An information center, or other appropriate forum as determined by the Office of Community Relations, may need to be scheduled at this time.

Final Design Submission

The Designer will submit the following:

- **Transmittal Letter** indicating the distribution of all Final Design Submission deliverables.
- **Final Plans, prints only**, distributed to the appropriate Quality Assurance units. Mylars are to be held by the Designer so that any necessary revisions can be made as required by the Final Design Review and PS&E processing activities.
- **Construction Schedule** prepared in accordance with Procedure 4.3.1 as directed by the Project Manager.
- **Special Provisions** are to be submitted reflecting all revisions or additions required to the current SI supplementary specification previously provided to the Designer by the Technical Specifications Unit as a result of their Initial Design Submission Review. See Section 4.3.2 Special Provisions Guidelines.
- **Engineer's Estimate** is to be prepared and submitted in accordance with current Department guidelines. See Section 4.3.3 Engineer's Estimate and Proposal.
- **Response to All Previous Comments** including the return of any marked-up plans and specifications.

Final Design Review

The Final Design Submission will be reviewed in accordance with the Department's Quality Assurance Review Procedure. **Design Coordination is responsible for receiving and compiling all review comments.**

Should any comments require a revision to the Final Design Submission, the Designer shall correct and resubmit all revised contract documents affected **immediately** as directed by the Project Manager.

The Design Coordinator must ensure that all Final Design revisions are properly **coordinated**. Any changes to the plans that affect quantities, add or revise items, must be forwarded to Program Support Services for inclusion in the Estimate and to Technical Specifications for inclusion in the Special Provisions. Conversely, if Technical Specifications or Project Support Services requires a revision, the plans must be revised accordingly. It is imperative that this coordination between be closely monitored, otherwise addenda will be required to make corrections during the advertising period which can delay the project.

Upon completion of the Final Design Review the Designer shall submit a **Comment Resolution Summary** for approval by the Project Manager.

At the completion of the Final Design Review, the Bureau of Technical Specifications will have produced an edited S-proof of the Special Provisions. The Bureau of Program Support Services will have prepared a final draft Engineer's Estimate. This S-proof and estimate, if

revised, will be provided to the Design Coordinator for review by the Designer prior to PS&E submittal. The draft Engineer's Estimate shall be provided to the Bureau of Contract Administration Services from the Project Manager.

At this time, the Regional Construction Field Manager will have reviewed and recommended the **final construction schedule and construction engineering manpower estimate**, provided by the Bureau of Construction Engineering, for approval by the Project Manager.

Prepare PS&E Package

Upon completion of the Final Design Review, the Designer will complete any outstanding revisions and perform a final Quality Control check of the Plans, Specifications and Estimate. This will be reflected in the Designer's Certification.

Concurrently, the Bureau of Program Support Services performs those necessary functions listed in Procedure 4.3.3 to produce a final Engineer's Estimate. The Bureau's Scheduling Unit reviews the construction schedule including necessary provisions in the Contract Documents.

During this period the Project Manager **must** obtain any outstanding PS&E submission requirements such as Utility and Right-Of-Way Clearances or Environmental Reevaluation.

The Construction Engineering budget is to be finalized to include:

- Construction Inspection budget, as recommended by the Regional Construction Field Manager and approved by the Project Manager.
- In-house construction engineering budget taken from the baseline budget for in-house manhours estimated for the Construction activity. These estimates should be re-verified if not provided within the current fiscal year.
- Consultant Agreement Modification required for Construction Engineering/Shop Drawing review, if applicable.

The PS&E package is to be assembled by the Design Coordinator for submission by the Project Manager to the Bureau of Contract Administration Services.

PS&E Submission Requirements for Federally Funded Projects Under Alternate Procedures

The following constitutes the PS&E Submission which is assembled by the Design Coordinator for submission by the Project Manager to the Bureau of Contract Administration Services **at least 4 weeks prior to the scheduled Advertisement date**:

- **Original mylars, design and quantity calculations** submitted by the Designer.

- **Designer Certification**, submitted by the Designer, based on the final Quality Control check performed by the Designer subsequent to the Final Design Review by the Department under the oversight of the Project Manager.
- **Recommendation for Certification** from Design Coordinator for the Department to certify the project in accordance with Section 4.1, Attachment 1.
- **Engineer's Estimate and Proposal** 3 copies, from the Bureau of Program Support Services. The Trainee requirements, M/DBE Goals, and completion date should have been previously provided and included in the Master Specification. **The Project Manager is to certify the final construction cost and schedule.**
- **Master Specification** provided by the Bureau of Technical Specifications.
- **Original Key Sheet** and two copies (half-scale) with all required signatures **except** the Director, Division of Project Management and the Assistant Commissioner, Capital Program Management.
- **Right-Of-Way and Utility Clearance Letters**
- **Environmental Reevaluation**
- **Environmental Checklist**

PS&E Submission Requirements for 100% State Funded Projects

At least 2 weeks prior to the Advertising date the following documents must be submitted to the Bureau of Contract Administration Services from the Project Manager:

- Original Mylars and Design and Quantity Calculations from the Designer.
- Engineer's Estimate and Proposal from Program Support Services.
- Master Specification from Technical Specifications.
- Designer Certification, submitted by the Designer, certifying that the decision meets all State requirements.

PS&E Submission Requirements for Full Oversight Federally Funded Projects

For Preliminary PS&E submissions the following documents must be assembled by the Design Coordinator for submission to the Bureau of Contract Administration Services by the Project Manager at least five working days prior to the preliminary PS&E submission date:

- One set of plans from the Designer with a list of any corrections made after the final design submission.
- One set of S-PROOFS specifications from Technical Specifications.
- Eight copies of the Estimate from Program Support Services.
- One copy of the Key Sheet from the designer.
- Designer Certification.

All preliminary PS&E comments from the FHWA **must** be resolved before the final PS&E submission.

The original mylars, design and quantity calculations should be supplied to Contract Administration Services at least 2 weeks prior to the final PS&E submission date to allow for printing of half scale plans.

The following documents for the final PS&E submission must be assembled by the Design Coordinator for submission to the Bureau of Contract Administration Services by the Project Manager at least five working days prior to the final PS&E submission date:

1. Eight copies of the Estimate from Program Support Services.
2. One copy of the Proposal from Program Support Services.
3. One set of Master Specification from Technical Specifications.
4. Utility Clearance Letter.
5. Right-of-way Availability Letter.
6. Environmental Reevaluation.
7. Response to all Pre-PS&E comments/revisions.
8. One set of half scale plans.
9. Environmental Checklist.

4.3.1 Construction Bar Chart

Construction Bar Charts are prepared and submitted with the Initial Design Submission. A Quality Assurance and/or Constructibility Review will be performed at this time. The Construction Bar Chart will be reviewed by the Project Manager, the Bureau of Construction Engineering, the Scheduling Unit of the Bureau of Program Support Services, and the Regional Construction Field Manager assigned to the project. Based on this review, a proposed construction schedule will be submitted with the Final Design Submission for approval by the Regional Construction Field Manager and the Project Manager.

A Construction Bar Chart should establish a completion date that provides the shortest practical duration of construction so as to minimize disruption of traffic but still allows the contractor a reasonable amount of time to complete the work. Tables A, B, C, D and E, Contractor Production Rates, shall be used to determine required working times.

Tables A and B show production rates per day for roadway items. Tables C, D and E show production rates per day for bridge items. Table C shows total production rates, and should be used when the bridge items are not the critical path for construction completion. Tables D and E should be used when the bridge items are the critical path for construction completion. In this case, a detailed breakdown of the bridge items is needed on the Construction Bar Chart. This is necessary to determine if increased production rates or additional crews are needed to meet a desired completion date. Where ranges of production rates are shown, the lower rates are for two-lane bridges and the higher rates are for wider bridges. The Designer should also take into account the complexity of the work when choosing a production rate.

Increased production rates may require the use of multiple crews and/or overtime. This additional cost shall be reflected in the Construction Cost Estimate. Where increased production rates are used, it may be necessary to assess higher than normal liquidated

damages in order to discourage the contractor from overrunning the completion date. Also, the use of a bonus for early completion may be appropriate. The Bureau of Program Support Services shall be consulted to determine when such provisions are to be used. Resultant modifications to the project's schedule and cost must be approved by the PM.

Factors that must be taken into account when preparing a Construction Bar Chart include:

- scheduling the advertisement of small, short duration projects in order to allow construction to be completed in one season
- seasonal limitations such as curb construction, the placement of long life traffic stripes, landscaping and bridge painting
- utility relocations
- Right-of-way availability
- work hour restrictions due to maintenance of traffic such as paving milled areas within 72 hours
- marine or railroad traffic
- staged construction
- concrete curing time for roadway items
- embankment settlement time
- coordination with other projects
- winter shutdown
- shop drawing approvals
- delivery of materials
- permit restrictions
- work area restrictions (wetlands, historic sites, parkland, etc.)

Attachment 4 includes two sample Construction Bar Charts, one for a project with only roadway items, and the other for a bridge replacement project where the bridge items are the critical path for construction completion. Also provided in Attachment 4 is a blank Bar Chart which provides for a three year construction period. Along the top of the form under each month is the statewide average number of working days for roadway (R) and bridge (B). The average total working days per calendar year is 165 for roadway and 185 for bridge. The number of days per month for roadway and bridge work should be adjusted downward in the northern part of the State, and adjusted upward in the southern part of the State. If weekend

work is required the total number of work days per month must be adjusted. If a different number of working days is used, the Designer is to provide a written explanation with the Construction Bar Chart.

Ideally, the full width of the traveled way and shoulders should be open to traffic during a winter shutdown. Consideration should be given to setting interim completion dates for stages of construction and for portions of the work which significantly affect traffic.

On larger, more complex projects a computer generated progress schedule using the Primavera Project Planner computer software will be required rather than the standard bar chart. Some of the factors that warrant the use of the Primavera progress schedule are as follows:

1. New Construction or Reconstruction/Rehabilitation projects that require staging plans or a specific sequence of construction. General resurfacing projects or any project that may be constructed with the Standard Temporary lane closure details will not require a computer generated progress schedule.
2. Major Utility Relocations.
3. Significant Right-of-way impact.
4. Estimated duration longer than one construction season. An interim bar chart may be required to estimate the project duration.

The Project Manager should be contacted to verify the need for a Primavera generated progress schedule. The date for start of construction can be determined by use of the following table:

Project Cost in Millions	Final Design to PS&E Submission in Weeks*	PS&E to Advertising in Weeks	Advertise to Start of Construction in Weeks**
0-2	6	4	8-12
2-10	8	4	8-12
10-25	8	5	10-12
25-50	8-10	5	10-14
Over 50	8-12	6	10-16

* Add 4 weeks for Full Oversight FHWA funded projects to allow for Pre-PS&E review.

** In general, shorter time frames are appropriate for 100% State funded projects. Longer time frames should be used on Federal Projects requiring full-oversight, or those projects requiring third party or local funding participation prior to contract execution. The Bureau of Contract Administration Services should be consulted by the Project Manager to verify that the time frames used by the Designer are appropriate.

**TABLE A
CONTRACTOR'S PRODUCTION RATES FOR ROADWAY ITEMS**

ITEM	Type 1 Constructio n	Type 2 Reconstructio n	Type 3 Widening	Type 4 Resurfacin g	Type 5 Intersections
Mobilization	10 Days*	10 Days*	5 Days	2 Days	2 Days
Clearing Site Including Stripping	1.6 hectares	1.6 hectares	1.6 hectares	N/A	N/A
Removal of Vertical Curb	N/A	300 LM	210 LM	120 LM	120 LM
Demolition of Buildings	1 Unit	1 Unit	1 Unit	N/A	N/A
Pest Control	10 Days	10 Days	10 Days	N/A	N/A
Asbestos Clean-up Resident and Small Commercial	4 Days	4 Days	4 Days	N/A	N/A
Large Commercial	10 Days	10 Days	10 Days		
Removal of Bituminous Concrete Overlay	N/A	2090 SM	2090 SM	2090 SM	250 SM
Roadway Excavation Embankment	2300 CM	765 CM	765 CM	N/A	N/A
Wet Excavation	1150 CM	270 CM	270 CM	N/A	N/A
Drainage Pipe Includes 1 Structure					
900 mm and Smaller	90 LM	45 LM	45 LM	N/A	45 LM
Larger than 900 mm	30 LM	18 LM	18 LM	N/A	18 LM
Reset Castings	N/A	5 Units	5 Units	5 Units	5 Units
Extension Frames and Rings	N/A	12 Units	12 Units	12 Units	12 Units
Subbase	270 CM	190 CM	115 CM	N/A	38 CM
Aggregate Base Course	270 CM	190 CM	115 CM	N/A	38 CM
Bituminous Concrete Base or Surface Course	1360 MGR	900 MGR	680 MGR	1180 MGR	225 MGR
Portland Cement Concrete Base or Surface Course	2090 SM	840 SM	625 SM	N/A	190 SM

Note: Production Rates are per an 8 hour working day per crew unless otherwise indicated.

TYPE 1 = New construction, additions or major reconstruction of divided or undivided highways.

TYPE 2 = Rebuilding or upgrading existing highways.

TYPE 3 = Widening (less than one lane) and resurfacing existing highways.

TYPE 4 = Resurfacing existing highways with bituminous concrete.

TYPE 5 = Minor construction or reconstruction of street or highway intersections.

* = Use 20 days when \$20 million or higher.

**TABLE B
CONTRACTOR'S PRODUCTION RATES FOR ROADWAY ITEMS**

ITEM	Type 1 Construction	Type 2 Reconstruction	Type 3 Widening	Type 4 Resurfacing	Type 5 Intersections
Bridge Approach Slabs or Transition Slabs	165 SM	165 SM	165 SM	N/A	N/A
Milling (up to 50 mm thick)	N/A	5000 SM	5000 SM	5000 SM	2090 SM
Concrete Barrier Curb	120 LM	105 LM	105 LM	75 LM	N/A
Concrete Vertical Curb	150 LM	120 LM	120 LM	90 LM	60 LM
Concrete Sidewalk	190 SM	150 SM	150 SM	125 SM	125 SM
Electrical Conduit	180 LM	120 LM	120 LM	45 LM	45 LM
Fiber Optic Conduit	300 LM	300 LM	300 LM	300 LM	N/A
Electrical Wire	365 LM	365 LM	365 LM	90 LM	90 LM
Lighting Standards	4 Unit	4 Unit	4 Unit	N/A	4 Unit
Traffic Signal Installation (1)	20 Days per Intersection	20 Days per Intersection	20 Days per Intersection	20 Days per Intersection	20 Days per Intersection
Reset Beam Guide Rail	N/A	150 LM	150 LM	120 LM	N/A
Beam Guide Rail	230 LM	230 LM	230 LM	150 LM	N/A
Chain Link Fence	120 LM	120 LM	120 LM	N/A	N/A
Overhead Sign Structure (2)	15 Days per Structure	15 Days per Structure	15 Days per Structure	15 Days per Structure	N/A
Landscaping, Turf	8,360 SM	8,360 SM	8,360 SM	N/A	N/A
Landscape, Planting (3)	Planting Season	Planting Season	Planting Season	Planting Season	N/A
Final Acceptance (4)	60 Calendar Days	60 Calendar Days	60 Calendar Days	30 Calendar Days	45 Calendar Days

Note: Production Rates are per 8 hour working day per crew unless otherwise indicated.

- (1) Manufacturing and delivery of steel traffic signal poles requires 4 months, aluminum lighting and traffic signal poles require 2 months and traffic signal controllers require 4 months.
- (2) Allow 2 months for shop drawing approval, fabrication and delivery.
- (3) Planting seasons - from March 1 to May 1 and from August 15 to December 1.
- (4) Final Acceptance shall be 15 calendar days for resurfacing projects \$2 million or less.

TABLE C
CONTRACTOR'S PRODUCTION RATES FOR BRIDGE ITEMS
For Use When Bridge Items Are Not the Critical Path for Construction Completion

ITEM	Type 1 Construction	Type 2 Reconstruction	Type 3 Superstructure	Type 4 Deck	Type 5 Overlay
Size of Bridge					
One Span (1)					
2 Lanes	70	80	65	45	25
4 Lanes	75	90	75	52	30
6 Lanes	80	100	85	60	35
Two Spans (2)					
2 Lanes	85	110	95	65	35
4 Lanes	100	130	110	78	42
6 Lanes	115	150	125	90	50
For Each Additional Span, Any Number of Lanes	10/Span	5/Span	5/Span	5/Span	5/Span
Cofferdams	20	20	N/A	N/A	N/A
Piles	10	10	N/A	N/A	N/A
Retaining Walls (3,5) (Cast-in-Place)	20/30 m	20/30 m	N/A	N/A	N/A
Box Culverts (Cast-in-Place)	10/10 m	10/10 m	N/A	N/A	N/A
Box Culverts (4) (Precast)	5/10 m	5/10 m	N/A	N/A	N/A

Notes:

- Production Rates are per 8 hour working day per crew unless otherwise indicated.
- For two bridges add 50%, for each additional bridge add 25%.
- For Stage Construction, consider each stage to be a separate bridge.
- For bridges over water or railroads add 30 days, except for Type 5 for which no adjustment is necessary.
- Production rates include the time required for concrete curing.

- (1) Allow 2 months (steel beams) and 3 months (concrete beams) for shop drawing approval, fabrication and delivery.
- (2) Allow 3 months (steel beams) and 4 months (concrete beams) for shop drawing approval, fabrication and delivery.
- (3) Add 5 days per 30 meters if temporary sheeting is required.
- (4) Includes excavation and placing, allow 3-4 months for shop drawing approval, fabrication and delivery.
- (5) Use for Reinforced Earth, Double Wall and Anchored Walls.

Type 1 = New Construction on new alignment.

Type 2 = Remove existing bridge and construct new bridge at same location.

Type 3 = Replace deck and beams including minor substructure repair.

Type 4 = Replace deck.

Type 5 = Deck patching and LMC overlay (subtract 10 days if overlay is bituminous concrete).

TABLE D
Bridge Item
Contractor Production Rates
One Span Bridge (12 to 30 meter Range)
For Use When Bridge Items Are the Critical Path for Construction Completion

BRIDGE TYPE/BRIDGE ITEM	TYPE 1	2	3	4	5
	NEW ON NEW ALIGNMENT	NEW ON SAME ALIGNMENT	SUPERSTRUCTURE REPLACEMENT	DECK REPLACEMENT	ABC & LMC
Demolition	--	16-28 days	8-16 days	7-14 days	--
RDN EXC	2-4 days	2-4 days	--	--	--
Piles	4-6 days	4-6 days	--	--	--
Footing	2-4 days	2-4 days	--	--	--
Abutment, Pier, & WW's	6-8 days	6-8 days	--	--	--
Substructure Curbing Framing	14 days 2-4 days	14 days 2-4 days	-- 2-4 days	-- --	-- --
Deck Joints	2-4 days	2-4 days	2-4 days	2-4 days	2-4 days
Deck Forms	7-12 days	7-12 days	7-12 days	7-12 days	--
Shear Conn.	1-2 days	1-2 days	1-2 days	1-2 days	--
Deck	2-4 days	2-4 days	2-4 days	2-4 days	--
Deck Slab Curbing Header	14 days 1-2 days	14 days 1-2 days	14 days 1-2 days	14 days 1-2 days	-- --
Parapets	2 days	2 days	2 days	2 days	--
Preformed Joint	1 day	1 day	1 day	1 day	1 day
Railing/Fence	3 days	3 days	3 days	3 days	--
Sawcut Deck	1 day	1 day	1 day	1 day	1 day
Substructure Rehabilitation	--	--	6-12 days	2-4 days	--
Deck Repairs	--	--	--	--	6-12 days
LMC	--	--	--	--	2-4 days
LMC Curing	--	--	--	--	14 days
TOTAL	64-85 days	80-113 days	50-77 days	43-63 days	26-36 days

TABLE E
Bridge Item
Contractor Production Rates
Two Span Bridge (55 to 60 meter Range)
For Use When Bridge Items Are the Critical Path for Construction Completion

BRIDGE TYPE/BRIDGE ITEM	TYPE 1	2	3	4	5
	NEW ON NEW ALIGNMENT	NEW ON SAME ALIGNMENT	SUPERSTRUCTURE REPLACEMENT	DECK REPLACEMENT	ABC & LMC
Demolition	--	26-48 days	16-32 days	14-28 days	--
RDN EXC	3-5 days	3-5 days	--	--	--
Piles	6-10 days	6-10 days	--	--	--
Footing	4-8 days	4-8 days	--	--	--
Abutment, Pier, & WW's	9-13 days	9-13 days	--	--	--
Substructure Curbing Framing	14 days 4-8 days	14 days 4-8 days	-- 4-8 days	-- --	-- --
Deck Joints	3-6 days	3-6 days	3-6 days	3-6 days	3-6 days
Deck Forms	14-24 days	14-24 days	14-24 days	14-24 days	--
Shear Conn.	2-4 days	2-4 days	2-4 days	2-4 days	--
Deck	4-8 days	4-8 days	4-8 days	4-8 days	--
Deck Slab Curbing Header	14 days 1-2 days	14 days 1-2 days	14 days 1-2 days	14 days 1-2 days	-- --
Preformed Joint	2 days	2 days	2 days	2 days	2 days
Parapets	4 days	4 days	4 days	4 days	--
Railing/Fence	6 days	6 days	6 days	6 days	--
Sawcut Deck	1-2 days	1-2 days	1-2 days	1-2 days	1-2 days
Substructure Rehabilitation	--	--	9-18 days	3-6 days	--
Deck Repairs	--	--	--	--	12-24 days
LMC	--	--	--	--	4-8 days
LMC Curing	--	--	--	--	14 days
TOTAL	91-130 days	117-178 days	80-130 days	68-106 days	36-56 days

4.3.2 Special Provisions Guidelines

Preparation of the Special Provisions will begin prior to the Initial Design Submission by the designer. Special Provisions combines the current SI's with the project specific information.

The designer (consultant or the Bureau of Design Coordination) shall provide the Technical Specifications Unit of the Bureau of Design Support Engineering with the following Preliminary Specification Package:

- Two sets of plans. Any special details related to non-standard items must be included.
- Two copies of the current SI marked with proposed revisions and locations of any inserts.
- Two copies of the printed inserts and a floppy disk in the proper format (English-Kedit/ASCII, Metric-Word) addressing non-standard items and any major additions/revisions to the current SI.
- Two copies of the Special Provisions Input Sheet completed with the information available as of the submission date.
- The Preliminary Specification Package should be submitted as soon as the non-standard items are defined and the full item list is developed, and at least a minimum of six weeks prior to the scheduled Final Plan Submission.

The Technical Specifications unit will return written comments and the floppy disks to the Project Manager. The Project Manager will direct the designer to incorporate these comments into the Final Submission.

The designer will submit the following for the Final Design Submission. The date of the SI used must be noted and the designer must certify that the project has incorporated the most current edition and any revisions issued within six weeks of the final submission date.

- Two sets of plans.
- Two copies of the current SI marked with proposed revisions and locations of any inserts.
- Two copies of the printed inserts and a floppy disk in the proper format (English-Kedit/ASCII, Metric-Word) addressing non-standard items and any major additions/revisions to the current SI. If applicable, an additional printed copy of the respective sections will be sent directly to the Geotechnical unit and the Landscape and Urban Design unit.
- Two copies of the completed Special Provisions Input Sheet.

The designer's submission must include the latest data as provided by the Project Manager or other Department units for the following as a minimum (these are noted in the Special Provisions Input Sheet):

- Utility information (companies, work involved, and time frames for both road and bridge work).
- Field Office type and equipment.
- Right-of-way availability dates or restrictions.
- Pavement recommendation and RAP information.
- Pavement reduction information for pavement rideability.
- Staging and maintenance of traffic restrictions.
- Number of Trainees.
- Time of Completion (start dates, interim completion dates, final completion date, etc.)
- Clearing Site estimate if different than the standard table.
- Final Engineer's Estimate for both Road and Bridge.
- The cost per day for projects to be bid as A + B.
- Incentive - disincentive costs.
- Traffic control liquidated damages costs.
- Determination of the need for the item Progress Schedule based on the project total cost.

The Technical Specifications unit will provide a draft Special Provisions and review comments to the Bureau of Design Coordination with a copy to the Bureau of Program Support Services and the Regional Construction office. The Bureau of Contract Administration will be contacted to provide the federal wage rate call outs.

The Project Manager will provide the final comments, including updates on ROW, utilities and permits, the completion dates as established by the Bureau of Program Support Services and the Regional Construction Office, and other applicable input from the Geotechnical and the Landscape and Urban Design units. The Technical Specifications unit will incorporate final comments and print one Master Special Provision to be returned to the Project Manager for their submission with the PS&E package to the Bureau of Contract Administration.

4.3.3 Engineer's Estimate and Proposal

4.3.3.1 Preparation of Final Engineer's Construction Estimate

When preparing a construction cost estimate to be submitted at the Final Design Development, the designer shall utilize the most recent price information available. Usually, that will be the Bid Price Report for Standard Items (BPR). The BPR for standard items will be issued annually during the first quarter of each year. In addition, Supplements will be issued periodically during the year which will contain the most current price information for major items. However, in order to have the most current bid price information available, Designers shall contact the Department's Bulletin Board for the most recent Bid Price Report or Supplement in order to prepare the Final Design Development Construction Cost Estimate. The Bulletin Board is maintained by James Panzitta, (609) 530-3508.

The best use of the Bid Price Report is to find projects listed in the Report which are similar in work type, location and quantities to the project being estimated. If such projects are found, the low bidders' prices for these projects will be indicators of what to use in the estimate. When "not too similar" projects are the best that can be found in the Report, the prices for those projects can still be utilized if the following "rules of thumb" are taken into account.

1. Quantity - the larger the quantity the lower the cost except very large quantities may not cost less. Very small quantities are usually disproportionately expensive.
2. Restrictions on the contractor:
 - a. Working hours - most construction workers get paid for an 8 hour day even if they work less. Therefore, costs will be more on a project that requires the work to be carried out in less than 8 hour shifts.
 - b. Access to the work site - the more access is restricted, the higher the cost of doing the work.
3. Stage Construction - the more complicated the construction staging the higher the cost.
4. Maintenance of Traffic - working in close proximity to traffic costs more. The closer the proximity and the higher the traffic volume, the higher the cost.
5. Night Work - work done at night usually costs about 30% more than the same work done during the day.
6. Completion Date
 - a. Costs will be higher if a contractor must work overtime in order to meet the completion date. Work done on overtime costs about 30% extra. In lieu of overtime a contractor may increase his prices to cover anticipated liquidated damages.
 - b. Some materials require significant lead times for fabrication or manufacture. Costs will be higher if the completion date does not allow sufficient lead time for such items since the contractor will have to pay a premium for getting early delivery or may increase his prices to cover anticipated liquidated damages.
 - c. Availability of some materials is seasonal and requiring work to be done "out of season" will significantly increase the cost. For example, bituminous concrete is not readily available in the winter because most plants are shut down.
7. Location - work in urban areas costs more than work in rural areas.

Do not use the Bid Price Report for the following items:

1. Clearing Site - the type of vegetation such as heavy timber, small trees or built up area determines the cost of clearing the site. Using a percentage of the total project cost is not reliable. Refer to the 1996 Specification Book, Section 201.12, Basis of Payment.
2. Mobilization - For all projects use 5% to 10% of the estimated cost. This is one item that bidders bid lower when there is a lot of competition. For most projects bid during the next year the 8% figure would be appropriate unless a large amount of specialized equipment that would be required.
3. Construction Layout - the type of construction is the best indicator of the cost of the item. A survey crew costs approximately \$1000 per day. On large projects and projects with a compressed schedule more than one crew may be required.
4. Progress Schedule -The Progress Schedule shall be 0.15 percent of the cost of the Project rounded off to the next highest \$500.
5. Performance Bond and Payment Bond - The following table shall be used for estimating the cost of the pay item Performance Bond and Payment Bond.

Total Contract Price (Engineer's Estimate) Roadway & Bridge		Total Bond Cost per \$1000
From More Than	To & Including	Amount
\$0	\$100,000	8.5
100,000	2,500,000	7.5
2,500,000	5,000,000	6.5
5,000,000	7,500,000	5.5
7,500,000	10,000,000	4.5
10,000,000	---	3.5

6. Training Reimbursement - this item is used on 100% State funded projects. The cost is 0.5% of the project's cost and should be rounded to the nearest \$100. This item is only used on projects over \$1 million.
7. Trainees - this item is used on Federal projects over \$1 million. Use 1,000 hours per \$1 million of project cost at a rate of \$1.00 per hour.
8. Telephone Service - use \$250 per month for the number of months estimated for the field office.

In order to facilitate the Department's review of designer's Final Design Development estimates, the Construction Cost Estimate Work Sheet (Page 4.3-21) shall be submitted to the Bureau of Program Support Services, Cost Estimating Unit showing how the cost was arrived at for items whose costs exceeds one half million dollars or exceeds 1% of the total cost. As many reference projects as are available should be shown.

The Final Design Development estimate should be escalated to the midpoint of construction if the midpoint of construction is greater than 2 years. If the midpoint is less than 2 years, no

escalation is required. The period of time that is used for escalation will be the midpoint of construction minus 2 years. If a project's midpoint is 2.5 years, the project would be escalated for one-half year only. This escalation cost should be reflected in the unit prices contained in the estimate and not as a single combined cost added on to the end of the estimate. The percent of escalation shall be 5% per year. The start and duration of construction shall be determined from the bar chart which is to be submitted with the Final Design Submission in accordance with Section 4.3.1 "Construction Bar Charts".

For items not included in the Bid Price Report for Standard Items, contact the Bureau of Program Support Services, Cost Estimating Unit for price information. If this office does not have the price information, the design unit should contact suppliers, manufacturers and other agencies that may have used the item or similar items. If in-place cost is not available, develop it assuming that the in-place cost is comprised of 30% labor, 20% equipment, 25% materials and 25% overhead and profit.

The Bid Price Report for Standard Items from the past few years often includes cost information that can be useful as long as the prices are adjusted to reflect the changes in construction cost.

After a project is awarded, the design unit receives a copy of the low bidder and second low bidder prices. This information is available to estimators to supplement the Bid Price Report for Standard Items through the Cost Estimating Unit of the Bureau of Program Support Services.

The Final Design Development estimates should also contain breakouts showing a separate cost for anticipated Federal Non-Participating Items of Work. These items would be utility betterments, proprietary items that the Department might specifically want to use and any items listed in the initial cost estimate work sheets titled Federal Non-Participating Construction Cost Estimate Work Sheet (see Attachment No. 1.1 of Section 4.2.1, Pages 4.2-5 & 6). This total should already be included in the Construction Cost for the project and will only be used for programming purposes.

CONSTRUCTION COST ESTIMATE WORK SHEET

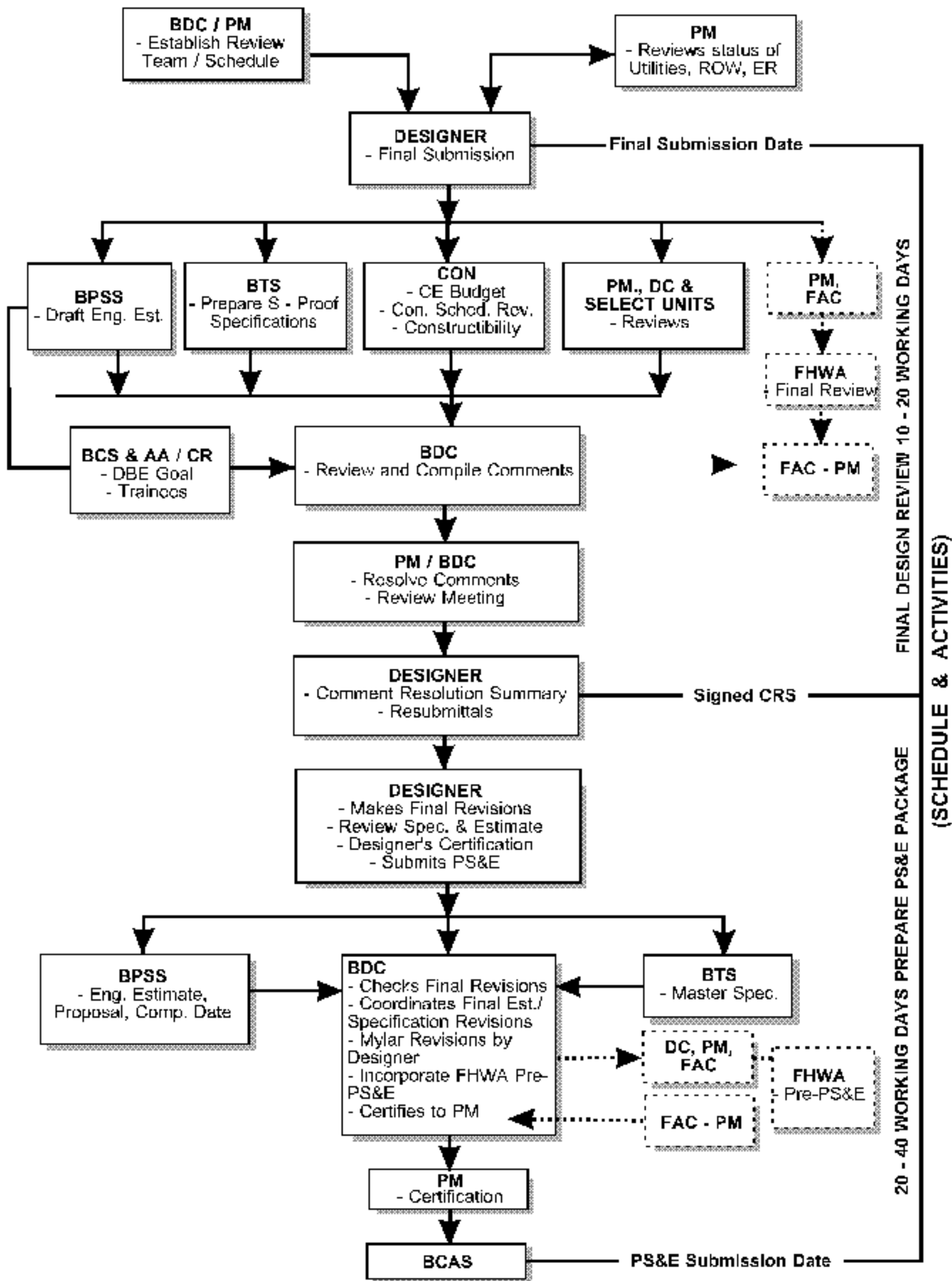
Route _____ Section/Proj. Id. _____
 # _____

		Reference Project Information			
		Route & Section			
		Municipality			
		County			
		Total Bid Price			
Item No.	Item Description	Bid Date			
		Work Class			
		Quantity			
	Unit Price for Estimating	Unit Price			
		Total Price			
		Quantity			
	Unit Price for Estimating	Unit Price			
		Total Price			
		Quantity			
	Unit Price for Estimating	Unit Price			
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	Unit Price for Estimating	Unit Price			
		Total Price			
		Quantity			
	Unit Price for Estimating	Unit Price			
		Total Price			

4.3.3.2 Submittal Procedure for Engineer's Estimate and Proposal

- Project Manager accepts Final Design Submission for review.
- Distribution is made by the Designer as directed by the Project Manager.
- Estimating Unit receives package to review.
- Estimating Unit forwards copy of engineer's estimate to Civil Rights for determination of trainee hours.
- Estimating Unit begins review of engineer's estimate.
- Scheduling Unit and the Regional Construction Field Manager reviews construction schedule.
- Quality Assurance review is conducted.
- Estimating Unit incorporates comments as they relate to estimate.
- Estimating Unit prepares final draft of engineer's estimate.
- Estimating forwards final draft to Construction Services for MBE/DBE Goals recommendation.
- Design Coordination forwards review comments to Designer.
- Designer resolves/incorporates NJDOT design comments.
- Construction Services forwards MBE/DBE Goals recommendation to Civil Rights.
- Estimating Unit prepares engineer's estimate based on PS&E plans submitted by consultant. The estimate must include all funding type breakdowns, local shares and utility betterments, as required.
- Civil Rights assigns trainee hours and MBE/DBE Goals.
- Estimating Unit forwards the engineer's estimate trainee hours and MBE/DBE goals and proposal to the Project Manager for approval and submission to Contract Administration Services.
- Contract Administration Services prepares advertising package.

FINAL SUBMISSION FLOW CHART



Attachment 3A - Sample Plan Distribution

NEW JERSEY DEPARTMENT OF TRANSPORTATION
--

MEMORANDUM

To: Those Listed Below

From: Project Manager

Date:

Phone:

Subject: Route _____ Section _____
 Type of Work (Bridge, Resurfacing, etc.)
 Municipality, County
 NJDOT Job No. _____
 Project Category _____
 _____ Submission

Attached for your review and comment is that portion of the _____ submission applicable to your unit. A Chart is attached indicating distribution of the following:

Plans (_____ sheets)
 Engineer's Estimate
 Project Specific Specifications
 Construction Bar Chart
 _____ Checklist
 Reports (i.e., Drainage, Traffic Impact, etc.)
 Structural Design and Structural Quantity Calculations
 _____ written comments and responses
 _____ marked-up plans and responses

(THIS PORTION OF THE TRANSMITTAL LETTER SHOULD INDICATE ANY SIGNIFICANT CHANGES FROM THE PREVIOUS SUBMISSION. ALSO, PROVIDE STATUS OF SUBMISSION REQUIREMENTS SUCH AS ROW, UTILITIES, ENVIRONMENTAL, ETC.)

All comments and marked-up plans are to be forwarded to _____, Manager, Design Coordination by the date indicated in the Chart. If you are returning marked-up plans, please return only those sheets containing comments along with Key Sheet identifying the reviewing unit. _____ is the Design Coordinator assigned to this project and can be reached at _____.

Attachment

c: Memo Only:

Project Manager
Civil
Survey
(Utilities and ROW
Structural
Design Support
Contract Services)
Research and Engineering Standards
Construction Services and Materials
Regional Operations Executive Director

(ADD THE FOLLOWING FOR FINAL SUBMISSION):

A copy of DBE goals and training requirements is to be sent to the Bureau of Technical Specifications with a copy to Design Coordination no later than _____.

SAMPLE ONLY - ROUTE XXX SECTIONS XXX & XXX

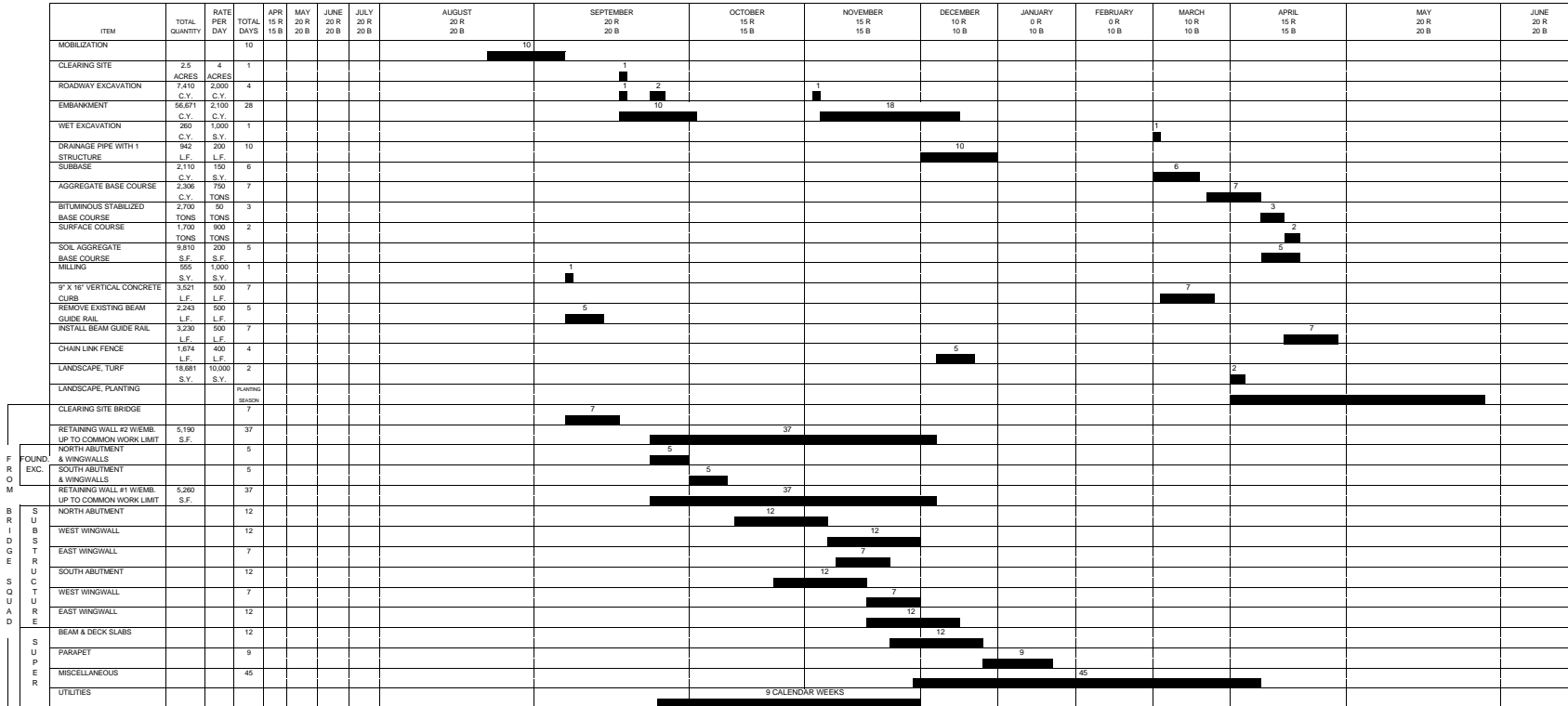
Submitted to:	Construction Drawings	Engineer's Estimate	Structural Design and Quantity Calculations	Reports	Construction Bar Chart	Project Specific Specifications	Phase Checklist	Written Comments and Responses	Marked-up Plans and Responses	Due Date for Comments
Project Manager Project Management Trenton, E&O 3rd Floor	2	2			2	2	X	X	X	----
Design Coordination Trenton, E&O 6th Floor	2	X			X	X	X			----
Geometric Design Trenton, E&O 6th Floor	X							X	X	01/24/97
Hydrology & Hydraulics Trenton, E&O 4th Floor	X			DRAINAGE				X	X	01/24/97
Access Design Trenton, E&O 4th Floor	X							X	X	01/24/97
Survey Services, Central Freehold	X							X	X	01/24/97
Utilities Trenton, E&O 4th Floor	X					X		X	X	01/24/97
Geotechnical Engineering Trenton, E&O 5th Floor	X					X		X	X	01/24/97
Structures Trenton, E&O 5th Floor	X		X					X	X	01/24/97
Traffic Engineering Trenton, E&O 7th Floor	X							X	X	01/24/97
Landscape Architecture Trenton, E&O 6th Floor	X					X		X	X	01/24/97
Technical Specifications Trenton, E&O 5th Floor	2	X				2 W/DISKS		X		01/24/97

SAMPLE ONLY - ROUTE XXX SECTIONS XXX & XXX

Submitted to:	Construction Drawings	Engineer's Estimate	Structural Design and Quantity Calculations	Reports	Construction Bar Chart	Project Specific Specifications	Phase Checklist	Written Comments and Responses	Marked-up Plans and Responses	Due Date for Comments
Region Central Construction Freehold	X	X			X	X		X	X	01/24/97
Construction Engineering Trenton, E&O 2nd Floor	X	X			X	X		X	X	01/24/97
Program Support Services Trenton, E&O 2nd Floor	2	X W/DISKS			X	2				01/24/97
Maintenance, Central Freehold	X							X	X	01/24/97
Traffic Operations, North Mount Arlington	X			TRAFFIC IMPACT				X	X	01/24/97
Traffic Engineering Trenton, E&O 7th Floor	X			TRAFFIC IMPACT				X	X	01/24/97
Project Support and Engrg Trenton, Tech Bldg	X					X		X	X	01/24/97
Contract Services Trenton, E&O 4th Floor		X								----
Federal Highway Admin Bear Tavern Road	X	X			X	X		X	X	----

CONSTRUCTION SCHEDULE BAR CHART

ROUTE 50 SECTION 2D ROADWAY TYPE 1 BRIDGE TYPE 1 DATE PREPARED MARCH 22, 1993



BEGIN MOBILIZATION 8/23/93
 BEGIN STEP 1 BRIDGE 9/6/93
 BEGIN STEP 2 CONSTRUCTION AND FOUNDATION EXCAVATION 9/16/93
 BEGIN UTILITY WORK (STEPS 3 AND 4) 9/27/93
 BEGIN BRIDGE SUPERSTRUCTURE 11/24/93
 BEGIN STEP 5 CONSTRUCTION 12/2/93
 END CONSTRUCTION OPERATIONS 4/26/94
 FINAL ACCEPTANCE 30 CALENDAR DAYS
 COMPLETION DATE 5/26/94

Project Description: This is a bridge replacement project, and the bridge replacement is the critical path for construction completion. Route 50 is a summer tourist route near the shore. Therefore, the highway can be closed only after Labor Day and must be reopened before Memorial Day. The production rates for the bridge items 1, include curing time. Special concrete is being used to reduce the required curing time.

R = ROADWAY WORKING DAYS
 B = BRIDGE WORKING DAYS

4.4 Advertisement, Addenda, and Bid Process Procedures

If a Project Manager is contacted by a prospective bidder during the period a project is advertised, the Project Manager should offer no advice or answer any questions, referring the caller to Contract Administration Services. The contractor must submit his questions or comments in writing to the Department. It should be noted that any information provided to any one prospective bidder must be shared with all prospective bidders. The Department cannot provide information that will allow or be perceived to allow an "unfair advantage" to any one bidder.

If a problem arises that requires the preparation of an addendum, the Project Manager must take immediate action in obtaining information required for the preparation of the addendum from other units or the Designer. The highest priority must be placed on this work. Full cooperation should be given to Contract Administration Services in preparing the addendum.

Bureau of Contract Administration Services (BCAS) is responsible for administering all tasks necessary for Authorization, Advertisement, Addenda, and Bid of all the Capital projects (see Attachment 5 for an outline of the Advertisement to Award Process).

All Capital projects are mainly classified in the following three categories:

1. 100% State funded projects
2. Full Oversight Projects
3. Alternate Procedure Projects

4.4.1 100% State Funded Projects

Advertisement

- 1) The Bureau of Contract Administration Services (BCAS) requests Construction Job Number from the Bureau of Capital Program Coordination (BCPC).
- 2) BCAS receives the draft engineer's estimate in accordance with Section 4.3.
- 3) BCAS receives the PS&E from the Project Manager in accordance with Section 4.3.
- 4) BCAS prepares Form AD-12 (Department Action Slip) for authorization to advertise the project and sends it to the following offices for approval:
 - To Bureau of Capital Program Coordination
 - To Bureau of Agreement Accounting
 - To Director, Division of Project Management
 - To Assistant Commissioner, Capital Program Management
 - To Department Secretary
- 5) BCAS confirms the advertisement date and Bid date with the Bureau of Construction

Services (BCS).

- 6) BCAS prints and distributes the contract documents (plans, specifications and proposals) for bidding.
- 7) BCAS prepares notifications of advertisement and sends them to the following offices:
 - BCS.
 - Director of Accounting and Auditing.
 - Local Health Officer if demolitions are included in the projects.
- 8) BCAS prepares project status form, updated every Friday and transmitted to Bulletin Board until the award of the project.

Addenda

- 9) BCAS receives inquiries from prospective bidders.
- 10) BCAS investigates and resolves the bidder's inquiries as follows:
 - For Design related inquiries, resolves through the specific unit of the Department.
 - For Specification related inquiries, resolves through BTS.
 - For Proposal related inquiries, resolves through BPSS.
- 11) BCAS prepares and distributes Addenda as follows:
 - Upon investigation, BCAS confirms the necessity of an addendum with the Project Manager.
 - BCAS prints and distributes addenda to prospective bidders and all the Project individuals and/or Bureaus, including the Regional Construction Engineer.

Bid/Award

- 12) BCAS informs BCS by mail of the Engineer's Estimate on the day before the bid date for all projects.
- 13) BCAS requests the state wage rates from the Department of Labor after the bids are received.
- 14) BCAS receives a copy of Bid analysis and award/rejection letter from the BPSS.
 - If the bid is rejected in accordance with Section 4.6, BCAS readvertises the project.
 - If the project is awarded in accordance with Section 4.5 , BCS then provides a copy of the final award letter to BCAS. BCAS transfers all the project files, original quantity calculations and original mylar to the Bureau of Configuration Management.

4.4.2 Full Oversight Projects

Advertisement

- 1) The Bureau of Contract Administration Services (BCAS) requests Construction Job Number from the Bureau of Capital Program Coordination (BCPC).

BCAS receives the Preliminary P.S.& E. package in accordance with Section 4.3 and ensures that the submitted package to the Federal Aid Coordinator for FHWA review is accurate and complete.
- 2) BCAS Prepares Form AD-12 (Department Action Slip) for authorization to advertise the project and sends it to the following offices for approval:
 - To Bureau of Capital Program Coordination
 - To Bureau of Agreement Accounting
 - To Director, Division of Project Management
 - To Assistant Commissioner, Capital Program Management
 - To Department Secretary
- 3) The Project Manager receives and resolves comments from FHWA.
- 4) BCAS receives the final P.S.&E package in accordance with Section 4.3 and ensures that the submitted package to the Federal Aid Coordinator for FHWA authorization is accurate and complete.
- 5) FHWA authorization must be received by BCAS before the advertisement of Project for Bid.
- 6) BCAS confirms the advertisement date and Bid date with the Bureau of Construction Services (BCS).
- 7) BCAS prints and distributes the contract documents (Plans, Specifications and Proposals) for bidding.
- 8) BCAS prepares the notifications of advertisements and sends them to the following offices:
 - BCS
 - The Director of Accounting and Auditing
 - Local Health Officer if demolitions are included in the Projects
- 9) BCAS prepares project status forms, updated every Friday and transmitted to the Bulletin Board until the award of the Project.

Addenda

- 10) BCAS receives inquiries from Prospective bidders.
- 11) BCAS investigates and resolves the bidder's inquiries as follows:
 - For Design related inquiries, resolves through the specific units of the department.
 - For Specification related inquiries, resolves through BTS.
 - For Proposal related inquiries, resolves through BPSS.
- 12) BCAS prepares, submits and distributes the Addenda as follows:
 - Upon investigation, BCAS confirms the necessity of an addendum with the Project Manager.
 - Submits three copies of the addendum and eight copies of the revised Engineers Estimate (only if changes in Bid Proposal) to Federal Aid Coordinator for FHWA approval.
 - FHWA approval must be received by BCAS before distribution of an addendum.
 - Distributes the addenda to all prospective bidders and all the Project individuals and/or Bureaus, including the Regional Construction Engineer.

Bid/Award

For guidance on the bid process related to Federal-Aid projects, refer to Attachment 6, Technical Advisory T5080.

- 13) BCAS informs BCS by mail the Engineer's Estimate on the day before the Bid date for all Projects.
- 14) BCAS requests the state wage rates from the department of Labor after the bids are received.
- 15) BCAS receives a copy of Bid analysis and award/rejection letter from the BPSS.
 - If the bid is rejected in accordance with Section 4.6, BCAS readvertises the Project.
 - If the project is awarded in accordance with Section 4.5, BCS then provides a copy of the final award letter to BCAS. BCAS transfers all the Project files, original quantity calculations and original mylars to the Bureau of Configuration Management.

4.4.3 Alternate Procedure Projects

Advertisement

- 1) The Bureau of Contract Administration Services (BCAS) requests Construction Job Number from the Bureau of Capital Program Coordination (BCPC).
- 2) BCAS receives the draft Engineer's Estimate in accordance with Section 4.3.

- 3) BCAS Prepares Form AD-12 (Department Action Slip) for authorization to advertise the project and sends it to the following offices for approval:
 - To Bureau of Capital Program Coordination.
 - To Bureau of Agreement Accounting.
 - To Director, Division of Project Management.
 - To Assistant Commissioner, Capital Program Management.
 - To Department Secretary.
- 4) BCAS receives the PS&E submission in accordance with Section 4.3, ensures that the Package submitted to the Federal Aid Coordinator for FHWA authorization is accurate and complete, and processes the Key Sheet for signatures.
- 5) FHWA authorization must be received by BCAS before the advertisement of Project for Bid.
- 6) BCAS confirms the advertisement date and Bid date with the Bureau of Construction Services (BCS).
- 7) BCAS prints and distributes the contract documents (Plans, Specifications and Proposals).
- 8) BCAS prepares the notifications of advertisements and sends them to the following offices:
 - BCS.
 - The Director of Accounting and Auditing.
 - Local Health Officer if demolitions are included in the Projects.
- 9) BCAS prepares project status forms, updated every Friday and transmitted to the Bulletin Board until the award of the Project.

Addenda

- 10) BCAS receives inquiries from Prospective bidders.
- 11) BCAS investigates and resolves the bidder's inquiries as follows:
 - For Design related inquiries , resolves through the specific unit of the department.
 - For Specification related inquiries, resolves through the BTS.
 - For Proposal related inquiries, resolves through the BPSS.
- 12) BCAS prepares, submits and distributes Addenda as follows:
 - Upon investigation, BCAS confirms the necessity of an addendum with the Project Manager.
 - BCAS submits three copies of the addendum and eight copies of the revised Engineer's Estimate (only if changes in bid Proposal) to Federal Aid

Coordinator for FHWA approval and/or information. Only the addendum which involves work outside the original Scope of Work of the project must require the FHWA approval before distribution.

- Distributes the addenda to prospective bidders and all the Project individuals and/or Bureaus, including the Regional Construction Engineer.

Bid/Award

- 13) BCAS informs BCS by mail the Engineer's Estimate on the day before the Bid date for all Projects.
- 14) BCAS requests the State Wage Rates from the department of Labor after the bids are received.
- 15) BCAS receives a copy of Bid analysis and award/rejection letter from BPSS.
 - If the bid is rejected in accordance with Section 4.6, BCAS readvertises the Project.
 - If the project is awarded in accordance with Section 4.5, BCS then provides a copy of the final award letter to BCAS. BCAS transfers all the project files, original quantity calculations and original mylars to the Bureau of Configuration Management.

Attachment 5 - Advertisement to Award Process

Attachment 6 - FHWA Technical Advisory T5080

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

Subject:
Preparing Engineer's Estimate and Reviewing Bids

FHWA Technical Advisory
T 5080.4
December 29, 1980

- Par. 1 Purpose
2. Background
3. Preparing Engineer's Estimates
4. Bid Evaluation
5. Conclusion

1. **Purpose.** To outline recommended procedures for preparing engineer's estimates and for reviewing bids prior to concurrence in award.

2. **Background.** Volume 6, Chapter 1, Section 1, Subsection 1 of the Federal-Aid Highway Program Manual (FHPM), Controlling Design, Construction, and Maintenance Costs to Combat Inflation, encourages development of estimates for upcoming projects on the basis of previous bids, local market surveys of prices, and by taking into account actual prices. The FHPM also discusses specific justification on contract awards if the low bid received exceeds the engineer's estimate by a significant amount. This advisory provides further technical guidance to program personnel to accomplish those objectives.

3. **Preparing Engineer's Estimates.**

a. Estimating, by definition, is an inexact process whose accuracy may be governed by more factors than can be taken into account in any formalized process. The engineer's estimate should reflect the amount that the contracting agency considers reasonable and is willing to pay for performance of the contemplated work. Estimates of project costs can be forecast using available information and should produce a reasonable degree of accuracy as measured against actual bids received. This available information includes:

(1) Previous unit bids - a file of previous unit bid prices should be maintained according to type, size, and location of project. Upcoming projects should be matched to the most recent projects to develop base prices for estimating the value of the work. Further adjustment of the base prices should be considered based upon the ages of the similar projects, but past inflation rates should not be projected into the future unless based on circumstances which can be reasonably expected to occur, such as labor rate increases through labor negotiations. Where the magnitude and timing of future increases are uncertain and would have a major effect on critical unit prices, price adjustment clauses may

be a better alternative.

(2) Surveys of local market prices of labor, equipment, and materials - a feedback mechanism should be developed with labor organizations; equipment manufacturers, dealers, and rental companies; and material suppliers to obtain current cost information on a regular basis. Davis-Bacon minimum wage rates on Federal-aid contracts could be easily incorporated to provide labor costs; purchases and rentals of construction equipment could provide equipment costs; and contracts for material and supply purchase could provide confirmation of industry quotes to assure that reasonably accurate information was obtained.

(3) Actual price trends - it is suggested that price trends be developed from recent contract awards and used to project future cost trends for upcoming work. Large upward or downward adjustments in estimated base unit prices should not be made based on short-term price changes, but long-term price trends should be a consideration.

b. The FHPM 6-1-1-1 suggests that the division office incorporate surveillance reviews of engineer's estimate preparation and accuracy in its annual review of competition in bidding. It is recommended that such a review be performed annually if more than 50 percent of the engineer's estimates are not within 10 percent (plus or minus) of the actual low bids for the previous year. A suggested guideline for use in such a review is included as Attachment A.

4. **Bid Evaluation.** The FHPM 6-1-1-1 discusses treatment of apparent high bids in the process of awarding or rejecting bids. The FHPM recommends that guidelines be developed for reviewing bids and making award decisions for routine projects. Specialized highway construction work should be evaluated on a case-by-case basis. The following discussion expands on each of the four circumstances mentioned in the FHPM where an apparently excessive bid may be justified as a basis for award:

a. Competition should be considered excellent when there are six or more bids within 20 percent of the low bid, including the low bid. Fewer competitive bids should require evaluation to determine whether competition was adequate, and whether additional competition or better prices could be obtained. As a guideline to this determination, the following is offered as a suggestion for determining whether adequate competition was obtained:

Number of Competitive Bids* (*Range = Low Bid + 20 Percent)	Competition May Be Considered Adequate When Low Bid Does Not Exceed**
5	120 percent of engineer's estimate
4	115 percent of engineer's estimate
3	110 percent of engineer's estimate
2	105 percent of engineer's estimate
1	The engineer's estimate

**Exceptional types of projects should be identified where competition has been historically poor, and when the prospects of increased competition are not apparent. Such projects should be reviewed independently of this or any alternative guideline.

b. Few projects are considered so essential that deferral (even for 60 days to solicit readvertised bids) would not be in the public interest. However, projects which are considered essential are of the following types:

- (1) Safety projects which are to correct extremely hazardous conditions where the traveling public may be in danger.
- (2) Emergency repair or replacement of damaged facilities.
- (3) Projects to close substantial gaps in otherwise completed facilities to allow opening to traffic.
- (4) Projects which are critical elements in a staged or phased construction schedule, where a delay would mean substantial impact on the completion date of the facility.

c. It is difficult to justify that readvertising would likely result in higher costs without concluding that all practical anti-inflation measures contained in FHPM 6-1-1-1 have been employed to the maximum extent possible.

d. Estimating errors should not be considered unless the magnitude of the error is significant and procedures are modified to attempt to prevent the occurrence of similar errors. Some errors are merely mistakes which can be corrected easily once discovered, while others are "errors of judgment" which cannot be as easily explained. The critical review of any high bid depends on the reliability of the estimate it is being compared to; therefore, States are strongly urged to devote sufficient attention to preparation.

5. **Conclusion.** The recommendations presented above are suggestions for consideration, not rigid rules. Consultation between the contracting agency and the Division Administrator to develop procedures which will accomplish the objective of minimizing the costs of highway construction is encouraged.

**ATTACHMENT A
GUIDELINE**

REVIEW OF ENGINEER'S ESTIMATE PREPARATION

1. Are any State laws or regulations in effect regarding release or protection of the engineer's estimate?
2. Are any State laws or administrative regulations in effect for determination of whether a contract award is proper, based on estimate overrun, competition, or other factors?
3. Review and attach copies of any written procedures or instructions the State may have pertaining to preparation, revision, checking, and use of the engineer's estimate.
4. Briefly describe the intended process for preparation of estimates. Verify the actual method used in comparison with the intended process and note any differences.
5. Does the State have an estimating section? Which other portions of the agency become involved in preparing, checking, or approving the estimate?
6. Briefly describe the personnel resources available for preparing, etc., estimates and note any workload changes versus personnel available over the past 3 years.
7. What is the primary basis for establishing estimated unit prices?
8. What methods are used to identify and incorporate anticipated changes in cost of labor, equipment, and material?
9. Are upcoming labor negotiations considered in the process?
10. Are material suppliers contacted for anticipated materials costs?
11. Are adjustments made for individual project conditions? In what way?
12. What other factors are used to adjust the primary basis to determine the estimated prices for the project?
13. In typical cases, how far in advance of the letting date is the estimate prepared?
14. How often is the estimate revised during the advertising period? Discounting addenda and quantity changes, what are the usual reasons for revising estimated prices?
15. Is every estimate routinely evaluated by anyone other than the preparer? If so, when?
16. If possible, determine how often further study and/or revision is believed desirable but not accomplished due to workload restriction.
17. Is any information released publicly which may indicate the actual or approximate value

- of the estimate prior to opening bids? Is the estimate released after opening bids?
- a. When?
 - b. Is it published and where?
 - c. Who receives copies, if published?
 - d. In detail or only giving total cost?
18. Is any other information regarding the estimate available to a contractor on request?
19. Review the State's experience during the past calendar year for Federal-aid contractors for up to 100 randomly selected projects if the contract volume exceeds 100 projects.
- a. Determine the percentage of projects sampled where the low bid fell within ± 10 percent of the estimate, and plot the distribution of low bids above and below the estimate.
 - b. Determine the percentage of projects with zero, one, two, three, four, etc., bids. Are there any project size trends noted?
 - c. Prepare graphs with percent above or below estimate for each project versus cumulative percent of number of low bids for three separate groups of projects, single bids, two or three, and four or more bids. (Each group should be arranged in ascending order to facilitate preparing these graphs.) Are any trends noted?
20. Review the State's procedure for evaluating bids received prior to recommending award or rejection.
- a. Is there an established policy on, or apparent pattern of, awards or rejections of bids at a set level above the engineer's estimate?
 - b. In the case of poor competition or excessive difference between the estimate and the low bid, does the State contact the bidders and non-bidders who checked out proposal forms?
 - c. Are there any "ground rules" for adjusting estimates after receipt of bids? Is such action taken on its own merits or may it be prompted by pressure to award an apparently excessive bid?

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

Subject:
Guidelines on Contract Procedures with
Emphasis on Bid Reviews and Evaluation

FHWA Technical Advisory
T 5080.6
December 17, 1982

- Par. 1 Purpose
2. Background
3. Pre-bid Considerations
4. Engineer's Estimates
5. Bid Analysis and Contract Award
6. Post-Award Reviews
7. Unacceptability for Employment (Debarment) Policy
8. Discussion

1. **Purpose.**

- a. To provide guidance for improving current bid review and evaluation policies and procedures.
- b. To discuss steps that can be taken to help provide a competitive bidding situation thereby resulting in the lowest attainable cost of construction to the contracting agency.

2. **Background.** Technical Advisory T 5080.4, Preparing Engineer's Estimate and Reviewing Bids, dated December 29, 1980, addresses the issue of preparing an engineer's estimate and reviewing bids. On August 21, 1981, an American Association of State Highway and Transportation Officials (AASHTO) Task Force released suggested guidelines titled "Strengthening Bidding and Contract Procedures." Due to the discovery of widespread contractor bid rigging, it was determined additional guidance in the area of contract administration was warranted.

3. **Pre-Bid Considerations.**

a. **Contractor Prequalification.**

(1) Prequalification of contractors desiring to bid on a highway construction project does not assure the contracting agency that the firm will submit a competitive bid. In general, contractor prequalification has been used as a method to help determine the quantity and type of work a firm is capable of undertaking. Normally the firm's resources, its financial assets, work experience, and its staffing capability must all be identified for it to become prequalified. Some States that do not require prequalification find it necessary to collect

some information via a financial statement or some other abbreviated process. These States do not specify the type of work or limit the size of project a firm may bid upon because they feel pre-qualification may restrict competition unduly. More recently, some States feel they have achieved the desired results by merely allowing any firm that can get sufficiently bonded for the advertised project to be allowed to bid on it.

(2) While the Federal Highway Administration (FHWA) does not require contractor prequalification, it has recently been identified by some of the States as a useful tool for gathering pertinent information on the intricate management details of a contractor's firm. In the event of a conviction of a crime such as bid rigging, such information proves useful as an aid in determining the appropriate sanctions for the firm and/or the individuals involved. Another possible use would be to determine the relationship of firms bidding on any one project.

(a) Specific information that should be collected from a firm includes the following: financial resources, principal individuals in the firm (anyone having a 10 percent or more interest in the firm), all affiliates or subsidiary companies including material sources, available equipment, work experience, individuals and organizations that have control or influence over the firm's bidding procedures, and whether the firm has ever been suspended or debarred from bidding and the related circumstances.

(b) The instructions for completing the work experience section (of the prequalification form) should require that the firm identify all projects for which it was the prime contractor and those on which it worked as a subcontractor during at least the past 2 years as well as the contracting agency for those projects. Also, the firms submitting the above information should be advised of how they will be dealt with if it is determined that any of the information submitted is false, e.g., the applicability of a State false statements statute. The information collected should be stored in a computer or be readily accessible otherwise for immediate use if needed.

b. Anti-collusion Statement. A sworn anti-collusion statement should be included as part of the bid proposal package. Under the FHWA's current directive, Federal-Aid Highway Program Manual (FHPM) 6-4-1-6, Contract Procedure, only the successful low bidder is required to submit a sworn anti-collusion statement prior to the award of a contract. However, due to the recent discoveries of bid rigging activity, it seems desirable that the States should require all bidders to submit a sworn statement attesting to the fact that the bid has been prepared and submitted independently, without consultation, communication, or agreement for the purpose of restricting competition. If a false statement is submitted by any, bid sanctions could then be taken against the firm.

c. Standard Specifications. All States should have standard specifications that address the issue of evidence of collusion among bidders. Those State specifications that currently address this item generally specify that the State Highway agency (SHA) may determine that the bidder is not responsible and reject his/her proposal based on evidence of collusion. In addition to rejection of a firm's proposal, the specification should advise that collusive bidding is a violation of the law and could result in criminal prosecution, civil damage actions, and State and Federal administrative sanctions.

d. Bidders' List. Confidentiality of the bidders' list (those firms that have taken out plans and a bid proposal document) has both advantages and possible disadvantages.

(1) In an effort to create the most competitive environment for potential bidders, a firm should not be aware of the identity of the other potential bidders. An advantage of keeping the bidders' list confidential is that bidders will submit what is believed to be a realistic competitive bid based upon the company's own individual circumstances.

(2) A possible disadvantage of keeping the bidders' list confidential would be that potential material suppliers and subcontractors would not be informed of what firms to contact for upcoming projects. Therefore, a material supplier may fail to inform a potential bidder of its current prices. However, by the very nature of competitive bidding and the last-minute quotes traditionally provided contractors, it is felt both contractors and suppliers will continue to have adequate communication. Further, since the bidder must perform the contract work with his/her own firm and/or subcontract it, the burden actually lies with the bidder to determine what other firm he/she wants to work with on a project. Unless the project has new or unusual material or construction requirements, it is believed most contractors are aware of the available subcontractors and potential material suppliers. Therefore, it is believed the bidder is generally the one seeking potential subcontractors, especially if Minority Business Enterprise/Women's Business Enterprise (MBE/WBE) goals are included in the proposal. During court testimony, defendants have stated the bidders' list was used to identify other potential prime contractors to be contacted to rig the project bids. Although there are other ways to find out who plans on bidding, i.e., from material suppliers, bonding companies, etc., at least the contracting agency is not providing this information when it keeps the bidders' list confidential. It is recognized that State freedom of information or similar statutes may, however, preclude keeping the bidders' list confidential.

e. Competition. Competition for projects by bidders, is an integral part of a successful construction program. An effort should be made by the contracting agency to maximize the competition by a number of methods such as those listed below. Other methods to increase competition have been identified in FHPM 6-1-1-1, Controlling Design, Construction, and Maintenance Costs to Combat Inflation, dated January 16, 1981.

(1) Advertisement should be widespread enough to advise

those potential bidders interested in the type of work and size of project involved.

(2) Consideration should be given to the project's estimated cost/size to maximize the number of bidders. The size normally varies in each State depending on the makeup of the construction industry.

(3) Jobs should be allowed to be bid individually or in combination.

f. Multiple Bid Requirement. If a State law or regulation exists which requires that more than one bid be submitted before award can be made, efforts should be made to revise or repeal it. There is evidence that in those cases where only one contractor was interested in a project and the multiple bid requirement existed, the firm actually contacted other contractors to submit a complementary bid so award could be made. If only one bid is submitted and it far exceeds the estimate, it should be rejected; but if it is at or below the estimate, it should be considered for award.

g. Bid Proposal Documents. The SHA's should consider adding the following language to the bid proposal documents: "The apparent low bidder will be required to submit his/her workpapers in a sealed envelope prior to being awarded the project. A contractor's workpapers shall include all quotes and calculations used in determining the unit prices which were submitted to the bid. The State-retained envelope will remain sealed unless a controversy arises during construction regarding unit prices or the contractor is suspected of bid rigging."

4. Engineer's Estimates.

a. General. The engineer's estimate is an essential element in the project approval process. In addition to serving as a tool to predict the financial obligations to be incurred, the estimate is used as a guide for reviewing bids by those individuals involved in the award process. The engineer's estimate should reflect the dollar amount a contracting agency considers reasonable for the proposed work. It should be based on current market conditions since prices will vary depending on the amount of work available.

b. Preparation. The amount of time and effort spent on preparing an engineer's estimate varies extensively depending upon such factors as the size of the contracting agency's construction program, staffing, organization and how much emphasis management believes should be placed on estimate preparation. Because the relationship of the bid to the estimate is generally a major factor in deciding whether to award or reject bids, the importance of having a good estimate should not be overlooked.

(1) Historical Data Approach. The most common approach used in preparing an estimate is to utilize historical bid data, unit prices, and quantities taken from recently awarded contracts. This data,

summarized on a statewide, districtwide, or even a system type basis, is then adjusted based upon the project conditions such as project quantities, location, overall project size, and general market conditions. This method provides a good estimate if properly adjusted, if current data is utilized, and if factors such as prices based on noncompetitive bids are not included in the average unit price database. While the historical data approach for all items of the estimate requires the least amount of personnel and time to develop, it is also the easiest to be influenced by an outside factor, such as inflated bid prices based on contracts that were rigged.

(2) Actual Cost Approach. Another approach used in preparing an estimate is known as the actual cost approach. It takes into consideration all factors related to performing the proposed work; i.e., cost of labor, materials, equipment, production rates, reasonable values for overhead and profit, etc. While this approach should provide the contracting agency and estimate reviewers a better idea of how much a project should cost, it does take a greater commitment of resources to produce the estimate. The preparers should have a good working knowledge of construction techniques and construction equipment, proposed project work and how it will most likely be accomplished, equipment production rates, how much to adjust quotes from material suppliers, potential locations of aggregate or borrow sources, etc. While some material suppliers will quote the same prices to State estimators as they quote to contractors, this is generally not the practice. One State advised that price quotes for pipe materials were adjusted as much as 40 percent downward to be consistent with the contractor's cost. Although the actual cost estimate may also need to be adjusted, based on current market conditions, the base unit prices should be more accurate than on historical data.

(3) Combination Approach. Another approach used in preparing an estimate is the historical data approach in conjunction with the actual cost approach. Some items could be estimated based on actual costs. It is believed that most projects contain a small number items that together total a significant portion (70 ± percent) of the estimated cost. These items, i.e., portland cement concrete pavement, structural concrete, structural steel, asphaltic concrete items, embankment, etc., should be estimated on a regular basis at least quarterly, to keep abreast of current market conditions and then adjusted for the specific projects. The remaining items, even though they may be a significant number, could be estimated based on historical data prices and adjusted if necessary for the individual project.

c. Confidentiality.

(1) Procedures and policies concerning confidentiality range from including the total estimated construction cost in the bid proposal to keeping the estimate confidential from the public even after the project

has been constructed and opened to traffic. Benefits of making the total estimate public include eliminating the possibility of only one or some of the bidders knowing what the State believes the project is worth plus removing any pressure from State employees to release the estimated cost secretly. One disadvantage of making the estimated cost public is that firms desiring to rig bids can use the engineer's estimate as a basis for determining the low bid amount to be submitted.

(2) While confidentiality of the estimate obviously will not by itself successfully deter a firm from conspiring with other bidders, it does prevent bidders from knowing what approximate amount the contracting agency is willing to accept. For those agencies that believe total secrecy from the public is not realistic in their State, as a minimum attempt of confidentiality, a range for the estimated project cost could be provided and included in the bid proposal document. For example, a range could be established as follows:

\$ 0-100,000	2,500,000-5,000,000
100,000-250,000	5,000,000-10,000,000
250,000-500,000	10,000,000-15,000,000
500,000-1,000,000	15,000,000-25,000,000
1,000,000-2,500,000	greater than 25,000,000

(3) The present policy in several States of providing a specified dollar amount for a bid bond could indicate the amount of the estimate. This procedure should be revised to specify a percentage of the bid submitted, thus maintaining the confidentiality of the estimate.

d. Accuracy of Estimates.

(1) Regardless of what method is used to prepare the estimate or whether the estimate is kept secret or made available to the public, an estimate must have credibility if the process is to be effective. It is realized that estimate preparation is not an exact science; however, it is felt the engineer's estimate should be within ± 10 percent of the low bid for at least 50 percent of the projects. If this degree of accuracy is not being achieved over a period of time, such as 1 year, confidence in the engineer's estimates may decline. Further, if estimated total costs are made available to the public, even after the letting, and are consistently running well above the low bid (say 15-20 percent) when a sufficient workload is available, bidders may be cognizant of the higher estimates and may submit higher bids accordingly.

(2) Where confidence in the estimate has been established by the contracting agency, it follows that to be an effective tool, the agency must show that confidence by rejecting those low bids that are not within a reasonable percentage above the estimate. Adjustments to the estimate, for projects to be readvertised, should not be made to correspond to the previous bids submitted without adequate justification.

5. **Bid Analysis and Contract Award.** The analysis and award process for a project should be thorough even when the low bid is below or at a reasonable percentage above the engineer's estimate. It is reasonable, however, to expect that larger projects will receive a more thorough review than very small projects.

a. Review Factors.

(1) Factors that should be considered in reviewing the bids received for a project include the following:

- (a) number of bids submitted;
 - (b) comparison of the bids against the engineer's estimate;
 - (c) distribution or range of bids received;
 - (d) identity and geographic location of the bidders;
 - (e) potential for savings if the project is readvertised;
 - (f) bid prices for the project under review versus bid prices for similar projects in the same letting;
 - (g) urgency of the project;
 - (h) current market conditions/workload;
 - (i) any unbalancing of bids;
 - (j) which unit bid prices differ significantly from the estimate;
 - (k) if there is a justification for the difference;
- and
- (l) any other factors the contracting agency has determined to be important.

(2) The influence of any one of the above factors may not be too meaningful. However, when considered in combination, the results could be significant. Although the number of bids received is a measure of bidder interest, by itself the number does not indicate the degree of competition. For example, one would not normally expect a firm that is located near a project to be underbid by a firm located a distance from

the project and having extensive mobilization and materials transportation costs if both firms are bidding truly competitively. A number of other factors enter into a particular firm's bid such as workload or the size of project, but a bidder's geographic location is a significant factor.

b. Comparison of Bid Prices. A comparison of project unit bid process should be made at each letting to determine if the contractors are submitting consistent prices on the different projects they bid. In general, there will be an adequate number of projects in each letting to make a comparison except for the large or very specialized jobs. Although the projects being compared may not be in the same geographic area, the reviewers should be aware of any geographic price differences which normally remain constant between areas even when the overall market conditions change.

c. Unbalancing of Unit Bid Prices. The unbalancing of unit bid prices by a contractor is difficult to assess in that it is quite normal for different contractors to place their costs such as overhead or their expected profit for the project in the unit cost of different items. Normally these costs will be in those items which the individual contractor has determined will not be eliminated or significantly underrun. The main concern of the contracting agency should be to assure itself that the bids have not been materially unbalanced in order to take advantage of errors in the plans or specifications. Unbalancing of bids may also occur on those lump-sum items that can be performed in the early stages of the project.

d. Review Committee. A multi-disciplined review committee should be used to analyze the bids received so that the various perspectives within the contracting agency are represented and are provided with technical and managerial input. This approach can also be used to readily identify the effects of awarding the contract or rejecting the bids. If a review committee is not utilized for analyzing bids, as a minimum, the estimating section should be involved. The estimating section is normally familiar with the projects. Any major differences in the unit bid prices and the estimate will be readily identifiable and evaluated. Also, it keeps the estimating section apprised of any trends in the market conditions so the engineer's estimates can be kept current.

e. General Guidelines. It may be beneficial for a contracting agency to develop general guidelines to be used in determining whether to award the contract or to reject all bids. However, each project should be considered on its own merits as some will normally have a higher priority to begin construction than others. If guidelines are developed, consideration should be given to the use of a "sliding scale" approach for low bids over the estimate. A low bid 15 percent above the engineer's estimate of \$50,000 should not necessarily be treated the same way as a low bid 15 percent above an engineer's estimate of \$5,000,000. Also, if guidelines are used, it is recommended that the specifics be kept confidential from the general public so as not to influence contractors who are preparing bids.

f. Submission of Bids. If a significant number of firms take out a set of

plans and a bidding proposal but only a small percentage, less than 30 percent, actually submit a bid, an effort should be made to determine the reasons for the lack of interest. If the cause for lack of interest can be identified, appropriate steps should be taken to improve the situation.

6. **Post-Award Reviews.**

a. Evaluation Period. A conscientious effort should be made to determine if bid rigging is currently ongoing or has occurred in the recent past. To make this determination, an adequate number of projects awarded over a sufficient time period must be evaluated. A time period of approximately 5 years should be selected for the initial evaluation to determine if any abnormal competitive bid patterns exist.

b. Review Considerations. The following information should be considered in a post-award review for abnormal bid patterns: (1) number of contract awards to a specific firm; (2) project bid tabulations; (3) firms that submitted a bid and later became a subcontractor on that project; (4) rotation of firms being the low bidder; (5) a consistent percentage differential between the various firms' bids; (6) a specific percentage of the available work in a geographic area to one firm or to several firms over a period of time; (7) a consistent percentage differential between the low bid and the engineer's estimate; (8) location of the low bidder's plant versus location of the second and third low bidders' plants; (9) variations in unit bid prices submitted by a bidder on different projects in the same letting; (10) type of work involved; (11) number of firms that took out a set of plans and a proposal versus the number actually submitting a bid; and (12) any other items discovered in the review that may indicate noncompetitive bidding. Readvertised projects should be checked to determine if the eventual low bidder was also low in the first letting.

c. Analysis. To consider or to analyze the above information to determine if unusual bid patterns exist, the information for project award must be in a readily accessible form, preferably on a computer. Further, although the analysis can be done manually, use of a computer to analyze the data and to monitor bidding activity will probably be cost effective. A number of programs are currently available for use; however, at this time, FHWA cannot recommend which program is considered to be the most effective. Efforts are underway in FHWA to develop a computer program that will perform an analysis considering most of the information listed in paragraph 6b. It is expected this program will be developed by late 1983, at which time it will be available for use by the SHA's. The use of a computer program is intended only to provide information to indicate whether further investigation is warranted.

d. In-depth Post-Award Review. The extent to which an in-depth post-award review should be carried out by FHWA or an SHA will depend upon the circumstances surrounding each particular review. If an FHWA field office believes that irregular bid patterns may exist and further investigation is warranted, any evidence should be furnished to the appropriate Department of Transportation (DOT), Office of the Inspector General (OIG) and the State.

Further, most SHA's should provide any evidence of wrongdoing to its State Attorney General's Office, FHWA, and other appropriate officials. The frequency of the in-depth reviews should be adequate to indicate to the contracting agency that illegal activities are not ongoing or have not occurred in the recent past.

7. **Unacceptable for Employment (Debarment) Policy.**

a. Purpose.

(1) The purpose of a debarment policy is to protect the interest of the contracting agency in the event of illegal acts by a contractor, subcontractor, materials supplier, or any others directly associated with a highway construction project.

(2) Where such irregularities have occurred on a Federal-aid highway project, FHWA has declared the firms and individuals involved to be "unacceptable for employment" on Federal-aid projects for a specified period of time. The term "debarment" is most commonly used for this type of action by a State. Since the practical effect is essentially the same, the terms are used interchangeably in this Technical Advisory.

b. Contracting Agency Policy.

(1) It is desirable that each contracting agency have a written policy addressing what action will be taken in instances of contractor irregularities, such as bid rigging.

(2) A written policy serves as a deterrent to the contracting industry by advising them, in general terms, what activities the agency considers to be illegal or irresponsible and how it intends to deal with those involved should any wrong-doing be detected. Further, the policy provides a basis for any action that may be taken against the individual or firm involved in the illegal wrongdoing by those responsible for enforcing the policy. Since bid rigging is presumably done for financial gain, for a contracting agency to merely collect restitution for overcharges from the contractor and immediately allow that firm to bid again does not appear to be an effective prevention or deterrent technique.

(3) It is recommended that debarment policies address each of the following items:

(a) Whether a suspension approach, by which bidding privileges are temporarily denied on the basis of suspicion or accusation of debarable offenses, should be established, and if so, what procedures will apply to it.

(b) The basis for the debarment action, i.e., conviction, guilty plea, or plea of no contest regarding fraud,

bribery, collusion, conspiracy, etc. should be included. While debarment action can be based on an indictment or "information" in accordance with a number of States statutes and/or regulations, it is recommended the policy provide that suspension action be taken pending the outcome of the indictment. If found guilty via trial, guilty plea in court, or plea of no contest, unacceptability action could be taken. Also, the policy should provide that action can be taken upon a finding by a State of clear and convincing evidence of a violation of a State or Federal statute without having to go through a court proceeding.

(c) Applicability of the debarment action to the parent firm, subsidiary, affiliate, or any other connected firms or individuals should be addressed. In order to be effective, all related firms should be covered.

(d) The time period of unacceptability which may be imposed on the firm or individual should be included. For those State policies currently in effect, the average time limits specified range from 4 months to 3 years. Generally, determinations are based on the degree of involvement, i.e., number of projects and time period, along with the willingness of the firm to cooperate with investigators. The debarment period imposed should not be so severe that competition would become unduly restricted, but it should be of sufficient length to command the convicted bidders' attention as well as to serve as a deterrent for other contractors.

(e) A process which allows the firm, whenever required by due process considerations, to explain in further detail its involvement, provide an opportunity to request a reduction in the debarment period, and a chance to discuss the steps necessary to be reinstated as an eligible bidder should be established.

(f) Honoring of other State, Federal, or local government debarment actions should be addressed. If a contractor is not allowed to bid in a State but is permitted to bid in other States, the effectiveness of debarment is diminished. Obviously, each State should consider its debarment action on a case-by-case basis but preferably should make its debarment periods coincide with the time restraints determined by the original debarring agency if the circumstances are indeed similar.

(g) The policy should prevent a firm, during its debarment period, from engaging in any type of manipulation such as merely changing its name and then being allowed to bid on projects. Further, it should address the treatment of convicted individuals and any firm with which they may be associated. If a contracting agency has prequalification requirements, this

problem could be adequately addressed in the personnel experience, projects completed, and/or contractor equipment section of the prequalification form.

(h) Attachment B is an excerpt of a bill prepared by one of the States dealing comprehensively with collusive bidding. While FHWA does not necessarily endorse all elements of the bill, the bill does provide a good example of items that should be considered in a debarment policy. Because of the nature of some of the items, this particular State has decided to go through the legislative process; most SHA's, however, do have the administrative capability to develop policies to implement their programs. Regardless of which process is used to develop a policy, for it to be an effective deterrent, the agency must implement and enforce it as outlined. Details of a new policy or revisions to an existing debarment policy should be promptly furnished to prospective bidders.

c. Internal Policy. In addition to developing a debarment policy for dealing with contractors, an internal policy should be developed to identify specific individuals/positions who will be responsible for handling inquiries or for receiving reports of suspicious illegal activities. Further, an awareness within the agency of the bid rigging problem, i.e., magnitude, potential costs, and what constitutes illegal activity, should be conveyed to all employees.

d. FHWA Policy. The FHWA is currently working with the Office of the Secretary of Transportation to develop a Departmentwide unacceptability for employment (debarment) policy. The new policy would apply to all Department of Transportation operating administrations, i.e., Federal Aviation Administration, Federal Railroad Administration, Urban Mass Transportation Administration, etc., in lieu of being applicable to only Federal-aid or direct Federal highway projects.

8. Discussion. The Technical Advisory is intended for guidance purposes; it provides suggestions for strengthening current policies and procedures. One item that should be further stressed is maintaining open lines of communication. The FHWA believes that one of the most effective deterrents for contractor bid rigging is a strong commitment by the administrators/managers of the contracting agencies to not tolerate any illegal activities such as bid rigging. The construction industry should be made aware of the States' attitude on bid rigging. Open communication is necessary not only with the construction industry, but also with other States, other agencies within the State, and local governments especially if they are advertising and awarding projects for the SHA's.

ATTACHMENT B

SAMPLE DEBARMENT POLICY

Relating to the regulation of contractors bidding on and performing public contracts.

Section 1. deleted

Section 2. deleted

Section 3. Every person who shall engage in any conspiracy, combination, or any other act in restraint of trade or commerce declared to be unlawful by the provisions of _____ shall be guilty of a Class A felony under this section where the combination conspiracy or other unlawful act in restraint of trade involves:

(1) A contract for the purchase of equipment, goods, services, or materials or for construction or repair of a public improvement let or to be let by a public agency.

(2) A subcontract for the purchase of equipment, goods, services or materials or for the construction or repair of a public improvement with a prime contractor or proposed prime contractor for a public agency.

(3) A contract for the providing of services of any nature to a public agency.

Section 4. A conviction of violation of Section 3 of this act shall be punished as a Class A felony. Notwithstanding any other provision of law, the court may also impose a fine up to _____ on any convicted individual and a fine of up to _____ on any convicted corporation. Any fine imposed pursuant to this section shall not be deductible on a State income tax return for any purpose.

Section 5. deleted

Section 6. (1) Any public agency shall have the authority to suspend for a period of up to 3 years from the date of conviction, or, if the conviction is appealed, from the final decision of the last appellate court to rule on the appeal, any person and any corporate employee or subsidiary of any person from further bidding on any public agency contracts, from being a subcontractor on any public contracts and from being a supplier to any public agency or on any public contract if that person or any officer, director, employee, or agent of that person has been convicted of charges of engaging in any conspiracy, combination, or other unlawful act in restraint of trade or of similar charges in any Federal court or of a court of this or any other State.

(2) A public agency may order a temporary suspension as a

bidder of any contractor, subcontractor or supplier or corporate employer or subsidiary thereof charged in an indictment or criminal information in a Federal court or in a court of this or any other State, with engaging in any conspiracy, combination, or any unlawful act in restraint of trade in any Federal court or court of this State or any other State until such time as the charges are finally resolved. Any person so suspended shall be sent notice of the suspension by certified mail.

(3) Any person temporarily suspended by agency action pursuant to (2) of this section may, within 60 days of the certified mailing to that person of a copy of the notice of suspension, request a hearing to determine the validity of the temporary suspension. The scope of such hearing shall be limited to the issue as to whether or not the aggrieved party has been charged, in an indictment or criminal information in a Federal court, or a court of this or any other State, with engaging in any conspiracy, combination or any unlawful act in restraint or trade.

(4) The provisions of this section are in addition to and not in derogation of any other powers and authorities of any public agency.

Section 7.

(1) Any public agency entering into a contract which is or has been a subject of a conspiracy shall have a right of action against the participants in the conspiracy to recover damages, as provided herein. A public agency may proceed with such right of action regardless of whether it was a direct or indirect purchaser of the goods, services, or property involved. The public agency shall have the option to proceed jointly or severally in a civil action against any one or more of the participants for recovery of the full amount of the damages. There shall be no right to contribution by defendants among participants in the conspiracy.

(2) At the election of the public agency, the measure of damages recoverable under this section shall be either the actual damages proven, if any, or 10 percent of the contract price, and the one selected shall be trebled.

(3) If the public agency prevails in an action brought pursuant to this section, it shall also recover its necessary reasonable investigative costs and reasonable experts' fees and a reasonable attorney fee at trial and on appeal.

(4) The cause of action shall accrue at the time of discovery of the conspiracy by the public agency which entered into the contract. The action shall be brought within 4 years of the date of accrual of the cause of action.

Section 8.

Any person having knowledge of acts committed in violation of _____ involving a contract with the public agency who reports the same to that public

agency and assists in any resulting proceedings may receive a reward as set forth herein. The public agency is authorized to pay to the informant, in its discretion, up to 25 percent of any civil damages that it collects from the violator named by the informant by reason of information furnished by the informant. The information and knowledge to be reported includes but is not limited to any agreement or proposed agreement or offer or request for agreement among contractors, subcontractors, or suppliers to rotate bids, to share the profits with contractors not the low bidder, to sublet work in advance of bidding as a means of preventing competition, to refrain from bidding, to submit prearranged bids, to submit complementary bids, to set up territories to restrict competition or to alternate bidding, or to otherwise violate _____.

Section 9. A sworn affidavit of non-collusion may be required by rule or ordinance of any public agency from all prime bidders. Any such requirements shall be set forth in the invitation to bid. Failure of any bidder to provide a required sworn affidavit to the public agency shall be grounds for disqualification of its bid. The provisions of this section are in addition to and are not in derogation of any other powers and authority of any public agency.

Section 10. Any person who shall commit perjury in any affidavit made pursuant to this section or rules or ordinances adopted pursuant hereto shall be guilty of a Class C felony.

Section 11. (1) Any public agency responsible for letting public contracts may promulgate rules concerning the confidentiality of: (a) the agency cost estimate for any public contract prior to bidding; and (b) the identity of contractors who have obtained proposals for bid purposes for a public contract.

(2) If the agency rules or ordinances require that such information be kept confidential, an employer or officer of the agency who divulges such information to any unauthorized person shall be subject to disciplinary action.

4.5 Awarding Contracts

The following outlines the procedure for processing all Capital Program Bid Contract Awards:

Manager, Bureau of Construction Services

1. Having received the bid proposal packages, examine for completeness and acceptability, and provide copies of the first and second lowest bidder's proposals to the Bureau of Program Support Services and to the Project Manager. Submit all original proposals to the Office of Transportation Information Systems. Submit the Disadvantaged Business Enterprise/Female Owned Business attachments to the Office of Civil Rights/Contract Compliance.

Office of Transportation Information Systems

2. Produce a certifiable print-out of the proposal. Provide to the Bureau of Construction Services.

Office of Civil Rights/Contract Compliance

3. Review the Disadvantaged Business Enterprise/Female Owned Business attachments for compliance to specified goals. Send a report of findings and recommendation for award to the Bureau of Construction Services.

Manager, Bureau of Program Support Services

4. Review and compare the proposal with the Engineer's Estimated Cost. If the lowest bid is more than 10% above or is more than 15% below the Engineer's Estimated Cost, or if there is any reason which may be a cause for rejection, confer with the Project Manager. If not, provide a recommendation for award, approved by the Project Manager, to the Bureau of Construction Services.

The analysis must include a comparison of any subtotals for different funding breakdowns, local shares or utility betterments as required. A copy of the recommendation with the funding analysis and any contingency revisions is provided to BCPC.

Note: If the Assistant Commissioner Capital Program Management rejects the bid go to the Procedure for Rejecting Bids, Section 4.6.

Manager, Bureau of Construction Services

5. Prepare a Certificate of Award, Form DC-86, containing the following information:
 - description and designation of the project
 - certification as to Publication and Notice
 - summary of acceptable bids, rankings, and rejections

6. Prepare and sign a Department Action Form AD-12, noting multi-year funding, if applicable, per current procedure requesting the awarding of the contract to the lowest bidder. The AD-12 must address any different funding types.
7. Sign and date the Form AD-12. Forward it with the appropriate attachments and a Recommendation to Award memorandum to:
 - If the project is Federally funded, send appropriate attachments to the Supervisor, Federal Aid Section.
 - If the project is State funded, send the Form DC-86 and AD-12 to the Director, Division of Auditing and Accounting, Step 13.
 - If any of the following conditions exist, send the package first to the Bureau of Capital Program Coordination.

Supervisor, Federal Aid Section

10. If the project is under Full Oversight, obtain the concurrence of FHWA. Sign and date Part E of Form DC-86.
11. If the project is under Alternate Procedures, enter the appropriate information in your records, sign and date Part E of Form DC-86. Within ten (10) days of the award, supply the Federal Highway Administration with the following:
 - Letter advising that the Commissioner awarded the contract in accordance with Alternate Procedures. This letter will contain the name of the contractor, city where the contractor's home office is located, contract amount, date of award, and contract completion date.
 - Two copies of Engineer's Estimate
 - Two copies of Tabulation of Bids
 - Two copies of Certified Bids
 - Two copies of Certificate of Award
12. Send Form DC-86 and Form AD-12 to the Director, Division of Auditing and Accounting.

Director, Division of Auditing and Accounting

13. Sign and date Part H of Form DC-86 and Form AD-12.
14. Send Form DC-86 and Form AD-12 to the Assistant Commissioner Capital Program Management.

Director, Division of Project Management

15. Review, sign, and date Part D of Form DC-86 and the Form AD-12.

Assistant Commissioner Capital Program Management

16. Sign and date Part I of Form DC-86 officially awarding the contract and sign Form AD-12.
17. Send Form DC-86 and Form AD-12 to the Department Secretary.

Department Secretary

18. Sign and date Part J of Form DC-86. Complete the execution of Form AD-12.
19. Return to the Manager, Bureau of Construction Services.

Manager, Bureau of Construction Services

20. Notify Project Manager and the Regional Construction Engineer of Award and prepare contract for execution by Contractor and Department.
21. After execution, distribute copy of the contract, Form DC-86 and bonds to the Regional Construction Engineer.

4.6 Rejecting Bids

Project Manager

1. If a determination has been made to reject the bids, advise the Manager, Bureau of Construction Services, requesting that a Department Action, Form AD-12, be prepared to reject the bids and readvertise the project utilizing the previously committed funds with additional funding, if required.

Manager, Bureau of Construction Services

2. Prepare a Form AD-12 requesting that the bids be rejected and the project readvertised.
3. Send the Form AD-12 to the Director, Division of Project Management.

Director, Division of Project Management

4. Review, sign, and date the Form AD-12.
5. Determine whether the project is funded by the State, or funded by FHWA.
 - If State funded, send the Form AD-12 to the Director, Division of Auditing and Accounting, Step 9.
 - If the project is funded by FHWA, send Form AD-12 to the Supervisor, Federal Aid Section, Step 6.

Supervisor, Federal Aid Section

6. If the project is under Full Oversight obtain FHWA concurrence to reject the bids.
7. If the project is under Alternate Procedures enter the information in your records.
8. Send Form AD-12 to the Director, Division of Auditing and Accounting.

Director, Division of Auditing and Accounting

9. Sign and date the Form AD-12 and send it to the Assistant Commissioner Capital Program Management.

Assistant Commissioner Capital Program Management

10. Review, sign and date the Form AD-12 and send it to the Department Secretary.

Department Secretary

11. Follow Procedure No. 1.302.

Manager, Bureau of Construction Services

12. After receiving a copy of the executed Department Action Form AD-12 from the Department Secretary, send a letter of explanation and return their proposal guarantees to the low bidder and the second lowest bidder. All other bidders that submitted a proposal are also notified.
13. Readvertise the project through the Bureau of Contract Administration Services.

4.7 Change Requests

To state the procedure for processing changes such as Baseline Document Changes (BDC), Design Changes or Construction Changes.

4.7.1 Definitions

Baseline Document		Baseline documents determine the physical and functional characteristics of a project, impacting its form, fit, cost or schedule at any point in time. Generally, if the document is used to design, contract or maintain the project, it should be considered a baseline document. Baseline documents are divided into two categories: 1) contract documents; and 2) programmatic documents (i.e. standard specifications, standard construction details, design manuals, etc.).
Baseline Document Change (BDC) Memorandum		A memorandum (formerly ADU memo) used to generate and distribute changes in a baseline document. The majority of the BDC memorandums will concern programmatic documents. BDC requests concerning contract documents would most likely concern a policy change (i.e., metrication of contract documents).
Baseline Document Change Request		A form submitted by a responsible manager under Section 4.7.2 of this procedure requesting Configuration Management review and action on a perceived need to change a Baseline Document (Programmatic Document). Submit the BDC Request form (see Attachment 7) with the draft of the proposed change.
Baseline Document Change Proposal		A proposal (see Attachment 7) submitted for the Change Control Board's approval which should include: <ol style="list-style-type: none">1. Concept and value for change2. List of affected projects including schedule and cost changes.3. Recommended type and time of implementation.4. Any recommended training.
Change Control Board (CCB)		Established to approve changes to baseline documents, both contract and programmatic. The CCB will review and approve changes and requests affecting design, construction, procurement and baseline documents. The CCB will be composed of the Assistant Commissioner Capital Program Management (Chair) along with the Directors and the Manager, Quality Management Services. The Manager of Configuration Management shall serve as the Administrator, and is responsible for convening and conducting Change Control Board meetings. The Program Manager or designee shall attend the meeting for design and

construction change requests.

Construction Order	<p>The Construction Order is a written order, issued by an NJDOT engineer to the contractor after execution of the contract, authorizing one (1) or more of the following, if applicable:</p> <ul style="list-style-type: none">a. a change in the work;b. adjustment in the basis of payment for the work affected by the change;c. adjustment in the contract time; andd. a change in specifications.
Construction Change Proposal	<p>A form (see Attachment 7) submitted to Configuration Management by the Project Manager under Section 4.7.4 of this procedure requesting the review and action of the Change Control Board on a perceived need to issue a change order to the contractor on a project after execution of the contract.</p>
Contract Documents	<p>As defined in Section 100 of the Standard Specifications for Road and Bridge Construction.</p>
Design Change Proposal	<p>A form (see Attachment 7) used to generate scope changes to projects under design through the Change Control Board.</p>
Design Change Request	<p>A form (see Attachment 7) submitted by a responsible Project Manager under Section 4.7.3 of this procedure requesting Configuration Management review and action on a perceived need to change the scope of a project under design.</p>
Programming Analysis	<p>A brief report evaluating a project's status with regard to the obligation of capital program funds, including, where appropriate, such factors as availability of apportionment balances, availability of obligation authority, relationship to the Department's obligation plan, and possible requirements for modifications or amendments to program authorizing documents (state Capital Program, federal Statewide Transportation Improvement Program).</p>
Priority Analysis	<p>A brief report evaluating a project's priority within the Department's capital program, including, where appropriate such factors as technical priority score, relationship to the Department's capital investment strategy, commitments, and relationship to the sequencing of projects within a corridor.</p>
Design Change	<p>A change in a design stage of a project which modifies the concept as outlined in the proposal to the extent that any one of the following occurs:</p> <ul style="list-style-type: none">1. The cost of scope development, design development or final design increases the programmed amount by

more than the following amount within one (1) fiscal year:

- a. Design - \$100,000,
 - b. Right-of-Way - \$500,000 or 10%, whichever is larger,
 - c. Construction - \$500,000 or 5%, whichever is larger.
2. The schedule changes after Scope Development due to:
- a. Right-of-Way to be acquired changes location or size (does not include uneconomic remainders).
 - b. Additional, previously unidentified permits are required.
 - c. Previously unaddressed environmental impacts are identified.

4.7.2 Baseline Document Change Requests

- | | |
|--|--|
| Initiator (Departmental Unit, Other Agencies and Industries) | 1. Submit the Baseline Document Change request form with the draft of the proposed change to the Supervisor, Configuration Management Section of Quality Management Services. |
| Supervisor,
Configuration Management | 2. Perform a brief technical review of the BDC to determine if change to standard is technically sound. If so, go to Step 3. If not, turn down the request and reply to requestor. |
| | 3. Decide if the BDC is ready for In-House Review. If so, go to Step 4. If not, have the originator and technical support offices upgrade the document and then send to Step 4. |
| | 4. Coordinate the In-House review and incorporate comments. |
| | 5. Coordinate the review and approval from FHWA, if needed. |
| | 6. Decide if the change significantly affects project costs or schedules. If not, recommend the type and time of implementation along with recommended training, if any, and go to Step 10. If yes, Configuration Management, along with input from Program Managers, Design Coordination and Technical Specs, will perform a Time/Cost review of affected projects. |
| | 7. Prepare the BDC Proposal for the Change Control |

Board.

- | | | |
|---|-----|---|
| The Change Control Board | 8. | Vote on the recommendation for change. If no, send it back to the Configuration Management with additional instructions, if any. If yes, go to Step 10. |
| Supervisor,
Configuration Management | 9. | If more information is needed, gather the information and resubmit to the Change Control Board. If not, return the request denial to requestor. |
| | 10. | Process and distribute the BDC Memorandum, including other publishing media (i.e. Electronic Bulletin board, Inter/IntraNet, CD-ROM). |
| Supervisor, Quality Assurance | 11. | If required, develop and provide training to enable staff to perform and/or understand the BDC. |

4.7.3 Design Change Requests

- | | | |
|---|----|--|
| Project Manager | 1. | When a design change in a project appears to be necessary or desirable, prepare a Design Change Request and submit it to the Supervisor, Configuration Management. As part of the gathering of supporting information, 1) gain the review and/or approval of the FHWA District Engineer if Full Oversight, 2) review the scoping history (with the Bureau of Project Scope Development if previously involved), and 3) get a priority analysis and programming analysis from the Director, Capital Program Control and Support Services. |
| Supervisor,
Configuration Management | 2. | Conduct staff review of the Design Change Request to determine cause and merits of change request and coordinate with the Quality Assurance and Improvements Unit on implementing any quality assurance measures. Prepare a Design Change Proposal and present to Change Control Board. |
| Change Control Board | 3. | Forward Design Change Proposal by:
a. Approving it in whole or in part, with or without additional instructions, or
b. Disapproving it.
Forward the Proposal to Configuration Management. |
| Supervisor,
Configuration Management | 4. | Record disposition of Design Change Proposal and notify the Project Manager of the outcome, and copy the Supervisor, Quality Assurance. |
| Project Manager | 5. | If a Design Change Request was approved, process |

the changes to the appropriate contract, cost and schedule documents.

- Supervisor, Quality Assurance
6. When a Construction Change is received, record the information in a database to track all change request patterns.

4.7.4 Construction Change Requests

Project Manager

1. When a construction order in project appears to be necessary or desirable, determine which of the following is the appropriate category:
 - a. For a “Change in Work” (see Part a. of the construction order definition), and the change is greater than \$250,000 or the cumulative total of previously approved construction orders on this project exceeds 20% of the actual Award amount, prepare a Construction Change Proposal and submit it to the Supervisor, Configuration Management. As part of the gathering of supporting information, 1) gain the review and/or approval of the FHWA District Engineer if Full Oversight, 2) review the scoping history (with the Bureau of Project Scope Development if previously analysis from the Director, Capital Program Control and Support Services. Go to Step 2.
 - b. For a Construction Order, which is not attributable to a “Change in Work”, (see Parts b through d of Construction Order definition), process the Construction Order, and submit a copy to the Supervisor, Quality Assurance. Go to Step 6.

Supervisor,
Configuration Management

2. When a Construction Change Proposal for a “Change of Work” is received, arrange to have the Construction Change Proposal placed on the agenda for the Change Control Board and copy the Board Members on the proposal. Notify the Project Manager as to the time and date of the meeting. Review the recommendation and provide comments to the Manager, Quality Management Services.

Control Change Board

3. Dispose of Construction Change Proposal by:
 - a. Approving it in whole or in part, with or without additional instructions, or
 - b. Disapproving it,

Forward the Proposal package to the Supervisor, Configuration Management.

Supervisor,
Configuration Management

4. Record disposition of Construction Change Proposal, copy the Supervisor, Quality Assurance, and notify requestor (Project Manager) of outcome.

Project Manager

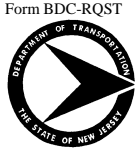
5. If Construction Change Request was approved, refer to Section 5.1 of Procedures Manual. Coordinate any approval conditions with the Resident Engineer. If not approved, notify the Resident Engineer.

Supervisor, Quality Assurance


6. When a Construction Change is received.
 - a. Record the information in a database to track all change request patterns and,
 - b. Determine if the change is the result of a quality issue, including errors and omissions. If so, revise Quality Assurance or Quality Control documents, or issue Quality Advisory Memorandums if appropriate.

Attachment 7 - Change Forms

Attachment A

<p><i>New Jersey Department of Transportation</i></p> <p>Configuration Management</p>		<p>Form BDC-RQST</p> 	
<p>Baseline Document Change Request</p>			
<p>Forward to Manager, Quality Management Services</p>			
Initiator		Submittal Date	
Initiating Office		Telephone	
For Questions or Comments Call:		Telephone	
Name of Document			
Description of Change			
Reason for Change			
Has the document been reviewed by other offices? (If yes, list office and contact person)			
<p>Do Not Write Below This Line</p>			
Baseline Document Change Number			
Config. Mgt. Contact		Telephone	
Affected Baseline Documents			
Sufficient Information Provided?		<input type="checkbox"/> Yes or <input type="checkbox"/> No	
Is Change Accepted for Processing by Configuration Management?		<input type="checkbox"/> Yes or <input type="checkbox"/> No	
Reason if not accepted			
<p>→ _____</p> <p>Manager, Configuration Management</p>		<p>_____</p> <p>Date</p>	

Attachment B

<p><i>New Jersey Department of Transportation</i></p> <p>Configuration Management</p>			<p>Form BDC-RQST</p> 
<p>Design Change Request</p>			
<p>Forward to Manager, Quality Management Services</p>			
Initiator		Submittal Date	
Initiating Office		Telephone	
For Questions or Comments Call:		Telephone	
Route and Section			
Description of Change			
Reason for Change			
Has the change been reviewed by other offices? (If yes, list office and contact person)			
FHWA/State Involvement	<input type="checkbox"/> Full Oversight	<input type="checkbox"/> Alt. Procedures	<input type="checkbox"/> 100 % State
Actual Award Amount	Total Previous Revisions	Current Revision	Total Cost
<p>Do Not Write Below This Line</p>			
Design Change Number			
Config. Mgt. Contact		Telephone	
Affected Projects			
Sufficient Information Provided?			<input type="checkbox"/> Yes or <input type="checkbox"/> No
Is Change Accepted for Processing by Configuration Management?			<input type="checkbox"/> Yes or <input type="checkbox"/> No
Reason if not accepted			
<p>→ _____</p> <p>Manager, Configuration Management</p>			Date

New Jersey Department of Transportation
Configuration Management

Form BDC-PROP




Construction Change Proposal

Forward to Manager, Quality Management Services


Initiator		Submittal Date	
Initiating Office		Telephone	
For Questions or Comments Call:		Telephone	
Change Order Sequential Letter			
Route and Section			
Description of Change			
Current Process or Method			
Concept for and Value of Change, Advantages and Disadvantages			
Effects			
Implementation			
Recommendation			
Original Contingency Amount		Contingency Amount Used	
FHWA/State Involvement	<input type="checkbox"/> Full Oversight	<input type="checkbox"/> Alt. Procedures	<input type="checkbox"/> 100 % State
Actual Award Amount	Total Previous Revisions	Current Revision	Total Cost



Attachment D

<p><i>New Jersey Department of Transportation</i></p> <p>Configuration Management</p>		<p>Form BDC-PROP</p> 
<p>Baseline Document Change Proposal</p>		
<p>Baseline Document Change Number</p>		<p>Submittal Date</p>
<p>Description of Change</p>		
<p>Current Process or Method</p>		
<p>Concept for and Value of Change, Advantages and Disadvantages</p>		
<p>List of Affected Projects</p>		
<p>Recommended Type and Time of Implementation</p>		
<p>Affected Baseline Documents</p>		
<p>Recommended Training</p>		
<p>Recommendation</p>		
<p>Concurrence:</p>		<p>→ _____</p> <p>Manager, Configuration Management</p>



<p><i>New Jersey Department of Transportation</i> Configuration Management</p>		<p>Form BDC-PROP </p>
<p>Design Change Proposal</p>		
<p>Design Change Number</p>		<p>Submittal Date</p>
<p>Description of Change</p>		
<p>Current Process or Method</p>		
<p>Concept for and Value of Change, Advantages and Disadvantages</p>		
<p>Effects</p>		
<p>Implementation</p>		
<p>Recommendation</p>		
<p>Concurrence:</p>		<p>→ _____ Manager, Configuration Management</p>

SECTION 5 CONSTRUCTION

5.1 Regional Construction's Role During Design

5.1.1 Scope Development

Upon request from the Project Manager, the Regional Construction Engineer will assign a Construction Field Manager to the project and identify the potential Resident Engineer. As part of the field scoping inspection for the new project, the Construction Field Manager will make an initial estimate of:

- When the project should start/finish (number of months or construction seasons of work), based on the projected scope of work of the project.
- Any scheduling restraints that are unique to the area of the project.
- The optimum month to bid the project for construction efficiency and to reduce CE costs, based on a sixty day bid, award, execute cycle. This would take into account seasonal restraints and try to avoid multiple winter layovers.

These estimates will be in addition to submitting comments on the applicable questions on Construction's Project Scoping Checklist (Section 3.1, Attachment 2).

Project Scoping is a Team effort. Therefore, it becomes critical that all scope team members thoroughly evaluate a project and fully participate in both the screening and scoping process. Post scoping changes to the scope of work are to be strictly controlled by the Project Manager. All changes to the project scope must be approved by the Change Control Board (CCB).

At the scoping meeting, supervised by the Project Manager, the scope team shall utilize the items as listed above, along with information from the NJDOT GIS system, and the most recent road and/or bridge plans and videolog, if available.

Through input provided by the Scope Team, by the end of Project Screening, the Project Manager will have decided whether Major or Minor Scoping is required. The elements to be considered during scoping will also be determined. If Minor Scoping is all that is needed, it will be done during the Initial Project Screening and the project can then be placed right into the Design Development/Final Design pipeline.

5.1.2 Initial Design Submission

The Designer will establish an estimated, bar chart type, construction schedule based on the proposed staging. For in-house projects, the Design Coordination Unit, with assistance from the Scheduling Unit, will prepare the bar chart.

The construction bar chart, or Primavera Project Planner, will be submitted to Regional Construction by the Designer or Design Coordination (for in-house projects), along with the plans, as part of the review package.

The Construction Field Manager will review the construction bar chart and submit comments, including updates to any information submitted as part of the scoping process, if there are any changes. This review will be completed in conjunction with the Quality Assurance review of the Initial Design Submission. The project scoping checklist can be used as a guide, by the Construction Field Manager and/or a Resident Engineer, in performing the Quality Assurance review.

As part of this review, along with a copy of the Construction Field Manager's bar chart comments, the Regional Construction Engineer is responsible for submitting a list of Contractor furnished equipment required in the field office to the Bureau of Construction Engineering for review and final recommendation to the Project Manager, so that it can be incorporated into the special provisions for the project. Item selection and quantities will be based on the project's work and staffing. The personal use items will be included in the Field Office Set Up (see Attachment 1).

5.1.3 Constructibility Review

The New Jersey Department of Transportation has endorsed constructibility reviews in an effort to improve the total quality of our construction bid package to ensure that designs can be built. The Department will optimize the use of construction knowledge and experience in planning and design to achieve the overall project objectives. The Regional Construction Field Manager is responsible for Constructibility Review and recommendation for all projects.

The requirement for an independent formal constructibility team review shall depend on the type, size, cost, and complexity of the project (typically \$15 million and over, multi-staged, high community impacts). The Project Manager shall make this determination. **For projects that do not require an independent Constructibility Review, the Quality Assurance review team shall also review for constructibility.**

The Construction Field Manager shall take the lead in completing a Constructibility Review on all projects. The Constructibility Review sessions shall be held at the Regional Offices. The review shall be performed on the initial design submission and concurrently with, but independent of, the Quality Assurance review, in accordance with Section 7.

The review team makeup and size depends on the complexity of the project. It shall include, but not be limited to, the following:

- Project Manager
- Field Manager
- Resident Engineer
- Various Design Units (as determined by Project and Field Managers)
- Various Operations Units
- Community Relations (as required, depending on community sensitive issues such as potential impacts on businesses, noise ordinances, and night work).

Also, as part of every project's Constructibility Review, optimum construction scheduling and staging of the project will be considered, including such things as:

- A + B Bidding, as an alternate contracting method.

- Lane rentals or limitations on lane closures to mitigate traffic impacts.
- Incentives for early completion to mitigate impacts.
- Multiple crews and/or shifts to accelerate work and shorten durations.
- Use of night work to mitigate impacts.
- Interim completion dates for stage construction milestones, including winter layover periods.
- Use of items like Quickchange Moveable Barrier, VMS Signing, limited duration detours, etc. to shorten durations and mitigate traffic impacts.
- Higher liquidated damages for untimely completion and/or violation of lane closure times.
- Utility relocation agreements and their scheduling impacts, including possible start of utility relocations prior to start of construction.
- Right-of-Way availability.
- Permit requirements and restraints.

All scheduling comments and information will be submitted to the Project Manager, with a copy to the Regional Construction Engineer and CEMM Staff in the Bureau of Construction Engineering. The Project Manager will input any external commitments and/or program considerations (funding) before passing the information onto the Scheduling Unit of Program Support Services and/or the Designer.

5.1.4 Environmental Permit Review

Upon issuance of a permit(s), the Project Manager should have the terms and conditions reviewed by the E-Team and other units as appropriate, including the Regional Construction Engineer, to determine if they are acceptable. Particular attention should be given to conditions that affect constructibility. The Regional Construction Engineer and the Construction Field Manager shall review the permit(s) and conditions and verify that the project is constructible within the constraints of the permit(s).

If constructible, the Regional Construction Engineer signs the Permit Conditions Review Form attached to the "Acceptance of Revocable Construction Permits" form and returns it to the Project Manager for further processing, including giving it to the Designer so that the terms and conditions can be included in the project plans and specifications. The Regional Construction Engineer keeps a copy of the Permit and Conditions on file, and completes the "Construction Notice" and the "Completion Report" at the appropriate time and submits them to the NJDEP. Copies of the completed forms will also be furnished to the Project Manager.

If constructibility is determined to be infeasible, the Regional Construction Engineer will notify the Project Manager in writing and provide the reasoning for not accepting the permit(s). The Project Manager will take the appropriate action (for example, having a formal appeal filed with the NJDEP) to satisfy the concerns and resubmit the permit package to the Regional Construction Engineer.

On projects for which a permit is received between the End of Final Design Phase Review and the bid date, the Project Manager will coordinate the reviews with the Regional Construction Engineer to expedite the process. The Project Manager will incorporate permit conditions by addendum, with a copy to the Regional Construction Engineer and other units. If for some reason the permit is not received until after the contract is bid, the Project Manager will meet

with the Construction Field Manager, his E-Team and other units as appropriate so that appropriate measures can be taken. **Projects will not be awarded for construction until all permits are received.**

5.1.5 Final Design Submission

The Designer will submit the final plans, special provisions, and construction bar chart schedule (CPM for larger, complex projects) based on the contract quantities and utility time frames, previous submission scheduling information, and the scheduled advertise date supplied by the Project Manager.

The Construction Field Manager will receive the construction bar chart schedule with the final plans and draft specifications for use in recommending contract dates. The Project Manager will also supply the Construction Field Manager with a list of any external commitments, restraints in permits, and any program (funding) restraints, including the scheduled advertisement and award dates of the project.

Upon review of the information supplied, the Construction Field Manager will submit back to the Project Manager for his/her review and approval:

- Quality Assurance review comments.
- Recommendations regarding constructibility.
- The optimum construction start date of field operations to be included in Subsection 108.03.
- Any suggested interim completion dates based on the Constructibility Review comments.
- Suggested substantial completion date(s) to be included in Subsection 108.10 of the contract with liquidated damage levels to be included in Subsection 108.16.
- Suggested all work completion date, including paper work, to be added in Subsection 108.10.
- Recommended Construction Inspection Budget.
- Recommended New Jersey State Police Safety Budget developed in accordance with Attachment 2.

Note: CEMM Staff, Bureau of Construction Engineering, and the Regional Construction Engineer are to be copied on all recommendations supplied by the Construction Field Manager to the Project Manager.

The Project Manager will be responsible for supplying the start and all completion dates for the project to the Scheduling Unit of Program Support Services, who will in turn make any adjustments to the Designer's schedule, update of the PMCS database, and supply the dates to the Technical Specifications Engineer for inclusion into the Master Specification.

The Construction Field Manager should also have a Quality Assurance review of the Final Design plans completed by the potential Resident Engineer during the period of final design review to ensure previous comments have been addressed, communicating any problems directly to the Project Manager for resolution.

5.1.6 Notice of Project Assignment

The Regional Construction Engineer will make the determination regarding assignment of Construction Field Managers and Resident Engineers to upcoming projects. (This procedure is also to be utilized for re-assignments.)

After receipt of bids, the Regional Construction Engineer shall officially notify the Resident Engineer of the assignment. The assignment memorandum shall contain the following information (see Attachment 3):

- The project designation.
- Federal Project Number, if applicable.
- Job Code Number.
- DP Number.
- The Project Manager and his/her telephone number.
- The Construction Field Manager (Resident Engineer's Immediate Supervisor).
- Directions to review the plans, specifications, and prepare for the Preconstruction Conference.

To officially notify all interested parties of the assignment of the Construction Field Manager and the Resident Engineer for all newly bid projects, copies of the assignment memorandum will be sent to the following:

- Director of Construction Services and Materials.
- Executive Director of Regional Operations
- Project Manager
- Construction Field Manager (Resident Engineer's Immediate Supervisor)
- Regional Materials Engineer
- Regional Maintenance Engineer
- Manager, Bureau of Construction Engineering
- Manager, Bureau of Materials
- Supervisor, Federal Aid Coordination (Federal Funded Projects Only)

5.1.7 Contractor's Progress Schedule

This section describes the administrative process of reviewing progress schedules submitted by contractors for construction projects and monitoring construction progress. The procedure is as follows:

- A. The Resident Engineer will examine the schedule and verify that all items pertinent to the project have been accounted for. Progress should be accurately indicated in

accordance with prescribed scheduling, staging, or contract specified milestones and shall conform to technical specifications and special provisions.

- B. Progress schedules will then be sent to the Project Manager for review with a memorandum listing all deficiencies noted by the Resident Engineer. The Project Manager will then submit a complete list of all deficiencies to the Resident Engineer. The Resident Engineer will send a letter to the contractor noting all of the deficiencies and then schedule a meeting with the contractor to discuss and resolve the deficiencies within five (5) working days.
- C. When progress schedules have met with a satisfactory review, they will be stamped, dated, initialed, and distributed. Below is an example of the information required on the stamp:

Reviewed For General Conformity With Plans and Specifications

Resident Engineer _____
(Signature)

Date _____

Project Manager _____
(Signature)

Date _____

Attachment 1 - PERSONAL USE ITEMS

Equipment for conducting the standard method of tests for slump of Portland cement concrete as per current AASHTO T119.

Equipment for conducting the standard method of tests for air content of freshly mixed concrete by the pressure method as per current AASHTO T152.

Equipment for conducting the standard method of tests for air content of freshly mixed concrete by the volumetric pressure method as per current AASHTO T196.

Levels and/or Smart levels

2 meter ruler - engineer/carpenter

30 meter tapes - steel and cloth

15 meter tapes - cloth

Plumb bobs and cords

Line levels and cords

Surface thermometers

Asphalt thermometers

Concrete thermometers

Sledge hammers

Measuring wheel

Lock level

Wet film thickness gauge

Dry film thickness gauge

Polaroid camera with flash (including film)

Lanterns for night work

Reflectorized Hard Hats for each chair in the field office

Reflectorized Safety Vests for each chair in the field office

Attachment 2 - Use of New Jersey State Police

GUIDELINES FOR THE USE OF NEW JERSEY STATE POLICE (NJSP) ON NJDOT CONSTRUCTION PROJECTS

1. NJSP are not to be used as additional safety devices supplemental to the TCP (Traffic Control Plan) or MUTCD (Manual of Uniform Traffic Control Devices).
2. NJSP should not be used as flagmen, except as follows:
 - a. Signalized intersections (one trooper only when the integrity of the existing system is impacted).
 - b. Setup and pickup of lane closures on high volume Interstate highways (as recommended by the Resident Engineer) and use of the Trooper on the project must be planned and needed; otherwise, the Trooper is released for other projects.
 - c. Slowdowns on Interstates (as required) by Resident Engineer.
 - d. Placement and removal of traffic pattern for detour.
 - e. Alternating Traffic - (One trooper may be utilized based on traffic demand). Two flagmen are required with stop/slow paddles as described in the first paragraph of 110.07 of the 1989 Standard Specifications. If, in effect, your present contract does not have a traffic director item, one must be created by change order as recommended by the Resident Engineer.
3. Traffic Directors, if deemed necessary, are to be provided for by contract as per Section 110.07 of the Standard Specifications.
4. NJSP are to be a service to the Resident Engineer (RE), not the contractor. NJSP, with the concurrence of the RE, are to insure that proper safety on the construction site is being exercised.
5. It is imperative that all crews (DOT or Contractor) be capable of establishing, maintaining and removing traffic control devices in the proper manner without need of the NJSP.

All crews must again have sufficient safety devices to satisfy the TCP (i.e., cones, arrow boards, signs, attenuator trucks, etc.) for that operation.

6. The Project Manager is to provide for the use of NJSP, by contract, with the introduction of Traffic Safety Services into Section 110.04 of the Specifications.

Note: Present contracts do not provide for Municipal Police, but may be considered on a project by project basis by direct invoice billing by the municipality, and upon clarification of outstanding liability issues. In addition, a standardized agreement between the DOT and the municipality must be finalized.

7. NJSP hours are to be budgeted for each project. This is to be achieved by the Project Manager, in consultation with the Resident Engineer, and using BC-153-096, during the final design review process.
8. The Project Manager will budget the NJSP man-hours to be provided to the Bureau of Contract Administration Services for inclusion in the AD-12 for advertisement (sample attached).
9. The Project Manager will provide the Resident Engineer with a copy of the AD-12 indicating the NJSP man-hours at the preconstruction meeting.
10. The Resident Engineer will track the NJSP hours through the DC-29A reports and the ACES II program.
11. The Resident Engineer may be required to confirm billable hours to his/her project, and will be required to explain project overruns.

It is the intent that, with the concerted effort of all involved, a contingent of 45 dedicated Construction Troopers will be capable of meeting the Department's demands for a safe and uniform work environment.

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
DEPARTMENT ACTION SLIP**

Date:
Subject: Advertisement
Project:

An understanding has been reached whereby the DOT will reimburse the State Police on a debit and credit basis for the costs of providing a dedicated patrol service. The number of work hours allocated to this project for N.J. State Police coverage is _____.

Check Appropriate Box:	<input type="checkbox"/> Advertisement	<input type="checkbox"/> Award of Contract	<input type="checkbox"/> Final Acceptance/Payment	<input type="checkbox"/> Developer's Agreement
<input type="checkbox"/> Consultant Agreement	<input type="checkbox"/> Interim Agreement	<input type="checkbox"/> Letter of Intent	<input type="checkbox"/> Contract Modification	<input type="checkbox"/> Final Invoice
ROUTE(S)	SECTION(S)	DESCRIPTION		
Year & Item No. Construction Program/Prem. Engr.		Appropriation Account No.(s)		Job No.(s)
Federal/State Project No.	Federal System(s) Type	Federal Fund Sharing \$ _____ %	State Fund Sharing Cash \$ _____ % In-Kind \$ _____ %	
Outside/Other Party Sharing Cash \$ _____ % In-Kind \$ _____ %	Non-Participating-State Share \$ _____ %	Total Amount Cash \$ _____ % In-Kind \$ _____ %	Accounting Use-Req. No.	
EXECUTIVE APPROVALS		Prog. Ref. No.		
_____		Date _____	Certification of Funds Date APPROVED Schedule _____ 19____ FOR Action Certified: COMMISSIONER OF TRANSPORTATION	
_____		Date _____		
_____		Date _____		
_____		Date _____		
Approved by: _____		Date _____		
			Department Secretary	

Attachment 3 - Project Assignment Memorandum

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM**

To: Principal Engineer
Region South, Construction

From: Regional Construction Engineer
Region South, Construction

Phone:

Date:

Subject: NOTICE OF PROJECT ASSIGNMENT
Route 91, Section 2N
Federal Project No. AA-12(234)
Job Code Number: 1100-927
DP Number: 95327

Kindly be advised that you will be assigned as Resident Engineer for the above noted project in the Township of Florence, Burlington County.

Mr./Ms. _____ will serve as the Field Manager and Resident Engineer's Immediate Supervisor.

Mr./Ms. _____ is the Department's Project Manager and can be reached at 609-530-XXXX.

Please review the plans and specifications in detail and prepare for discussion of any unique items to be included as part of the agenda for the Preconstruction Conference.

This will be in addition to your assignment on the Route 92, Section 3B project.

c: Director of Construction Services and Materials
Executive Director of Regional Operations
Project Manager
Field Manager (Resident Engineer's Immediate Supervisor)
Regional Materials Engineer
Regional Maintenance Engineer
Manager, Bureau of Construction Engineering
Manager, Bureau of Materials
Supervisor, Federal Aid Coordination

5.2 Changes During Construction

It is recognized that during the course of construction, changes may be required as governed by Section 104.02 of the NJDOT Standard Specifications.

The Resident Engineer is responsible for notifying the Project Manager of all potential changes as early as practicable so that advance approval may be secured prior to ordering the contractor to perform additional work. The Project Manager is responsible for consulting with the Bureau of Capital Program Coordination when potential changes exceed the project's available contingency balance.

The Resident Engineer has the authority to order minor changes in the Work not involving an adjustment to the unit or lump sum prices, or an adjustment to Pay Items, or an extension of Contract Time, and not inconsistent with the intent of the Contract Documents. Such changes may be effected by Field Order and are binding on the Department and the Contractor. Additional compensation or extension of Contract Time will not be allowed.

The Resident Engineer shall have further authority to order minor non-design changes in the Work which require a net adjustment of \$15,000 or less provided the aggregate of such adjustments does not exceed the available contingencies balance for the project. Such changes may be effected by Field Order, to be followed by a Change Order in accordance with Sections 5.3.1 and 5.3.2, respectively. The Project Manager must be notified in advance of construction order processing.

5.2.1 Design Changes by Regional Construction

The following procedures are to be followed for authorizations, limitations, and documentation for design changes by Regional Construction personnel.

The limitations of this authorization are as follows:

1. It does not apply to those FHWA projects that are Full Oversight.
2. Responsibility and authority for design changes in the field is limited in estimated construction cost to the following amounts at the indicated approval levels:

<u>HIGHEST APPROVAL LEVEL</u>	<u>ESTIMATED COST OF CHANGE</u>
Resident Engineer	0 TO \$25,000.00
Resident Engineer's Immediate Supervisor	\$25,000.01 TO \$50,000.00
Project Manager	OVER \$50,000.00

3. All changes are to be documented in the project records by an authorization form and on the as-built plan sheets.
4. Any changes in original plans that involve items which were originally governed by permit shall not be authorized without the prior concurrence of the Project Manager. The Project Manager shall have the responsibility for supplying and updating all permit

documents for construction.

5. Only changes included in the following tabulation and subject to the listed physical limitations and levels of approval are permissible.
6. The following guidelines are provided for all FHWA funded projects:

The FHWA requires that following an authorization to proceed with a project, all changes in the plans and contract provisions and any extra work receive formal approval by the Division Office prior to the commencement of work if Federal participation is desired. Formal approval is defined as written authorization to proceed. However, under previous agreements with NJDOT and in order to streamline the process, the following guidelines have applied:

- For all major changes to the plans and contract provisions or any major extra work, tentative advanced approval may be given orally and formally approved at a later date. To be eligible for Federal participation, tentative verbal approval must be obtained prior to the commencement of the work start date. Major changes to the plans and contract provisions is defined as an increase or decrease of over 25% of a contract bid item. Major extra work is defined as work outside the original scope of the project or any supplemental item that increases the contract amount by more than \$10,000.
- For all non-major changes to the plans and contract provisions or any non-major extra work, formal approval may be given retroactively to the effective date without prior verbal approval. Non-major changes to the plans and contract provision are increases or decreases of 25% or less of any contract bid item.

These guidelines apply for all of the following actions:

- Field Orders
- Change Orders
- Supplementary Agreements
- Changes of Plan
- Utility Changes
- Notice of Intent to Claim
- Negotiated settlements between a contractor and NJDOT that fall short of arbitration, court judgment, or administrative board review
- VE proposals

<u>CONSTRUCTION CATEGORY OF CHANGE</u>	<u>LIMITATIONS</u>	<u>LEVEL OF ENGINEERING APPROVAL</u>
Change channels or ditches to pipe or vice versa.	Only changes to meet existing field conditions and not a redesign.	Project Manager
Change rip rap of channels	Only to meet existing conditions- materials change may be permitted providing deviation from specifications is not excessive.	Resident Engineer
Increase in pipe diameter, changing pipe grade, changing pipe type.	For short feeders up to 6 meters long and 900 mm diameter. This should be confirmed by telephone review with the Project Manager.	Resident Engineer
Decision to encase or cradle pipe.	Original design may be modified but only in case of poor subgrade. Encasement of utility pipe requires owner's approval.	Resident Engineer
Relocation and addition of inlets or manholes.	Only minor changes to meet field conditions.	Resident Engineer
Permitting private drainage connections, (such as roof drains, cellar drains, commercial, industrial, county or municipal systems) to highway drainage.	Flow from drain proposed for tie must be minor. Construction personnel will immediately consult with Regional Permit forces for determination. Any major connections not called for in the plans shall be submitted to Project Manager for approval.	Resident Engineer
Addition or deletion of fence to meet local conditions and/or to provide continuity.	Limitation - up to 7.5 meters, as long as control of access remains unchanged.	Resident Engineer

<u>CONSTRUCTION CATEGORY OF CHANGE</u>	<u>LIMITATIONS</u>	LEVEL OF <u>ENGINEERING APPROVAL</u>
Lateral limits of pavement to meet existing conditions.	Modification shall involve no major change in concept.	Dollar value maximum as shown in No. 2
Establish advisory speed limits in construction areas.	Advisory limits may be set at 5 to 10 mph less than posted regulatory speed. All regulatory speeds must be approved by the Traffic Signal and Safety Design Unit.	Resident Engineer's Immediate Supervisor
Within the Manual on Uniform Traffic Control Devices, the traffic control plan and the supplementary specifications, altering the location and type of barricades, lights and signs in order to adapt to field conditions.	No limitation.	Resident Engineer
Establish parking and storage sites in construction areas.	No limitation.	Resident Engineer
Relocate electrical pull boxes or light fixtures.	Construction permitted to make such move up to 3 meters.	Resident Engineer
Relocation of Department lighting system wood poles (e.g. behind guide rail).	No limitation on construction. This should be checked with the Electrical Engineering Unit.	Resident Engineer
The treatment of guide rail, such as the addition, deletion, relocation, upgrading, and the addition or modification of SLT's or anchors.	No limitation as long as any changes are in accordance with current design standards.	Project Manager

<u>CONSTRUCTION CATEGORY OF CHANGE</u>	<u>LIMITATIONS</u>	<u>LEVEL OF ENGINEERING APPROVAL</u>
Additions to or deletions from earthwork and decisions regarding wet excavation, stripping, topsoil and unsuitable material.	No limitation.	Dollar value maximum as shown in No. 2
Removal and extension of curb and sidewalk for continuity and meeting existing field conditions.	Only minor changes to meet existing field conditions.	Resident Engineer
Elimination of unused and unneeded curb cuts.	No limitation but Regional Permit Section must be consulted.	Resident Engineer's Immediate Supervisor
Relocation of plant material (landscaping)	Planting material may be moved up to 3 meters.	Resident Engineer

With the preceding limitations, Construction forces would have communicated with the Project Manager on all changes. It is also expected that Design Services would assume responsibility for seeing that Construction has up-to-date standards for all areas where the cited design privileges are in effect.

Procedure

- A. When a Resident Engineer sees a need for a change in the area(s) listed above, he will:
 1. Fill out an "Authorization for a Change under the Project Management System," Form DC-150 (see Attachment 10), in triplicate (see General Note).
 2. Include sketches and other appropriate backup material.
 3. File one copy and submit the original plus one copy through the chain of command to the highest level of authorization required, as shown previously.

- B. Upon receipt of an "Authorization for a Change under the Project Management System" form and backup information, each level in the chain of command, as indicated on the form, up to the highest level required, will review the form and either approve, request additional information or revision, or disapprove.
 1. If approved, the highest level of approval will send one copy of the executed

- form back through the chain to the Resident Engineer and retain the original.
2. If additional information or revision is needed at any level of approval, that level will send everything back through the chain to the Resident Engineer with a written explanation of disapproval, and retain a copy.
 3. If disapproved, the disapproving level will send the original from back through the chain to the Resident Engineer with a written explanation of disapproval, and retain a copy.
- C. When the Resident Engineer gets back an approved "Authorization for a Change under the Project Management System" he will prepare and process a change order if one is necessary. If a change order is not necessary, the design change may be implemented immediately.
- D. The Resident Engineer will note any field changes in design on the as built plans.
- E. When the Resident Engineer gets back a disapproved "Authorization for a Change under the Project Management System," he will file it and go no further.

GENERAL NOTE #1: When the highest approval level is the Resident Engineer, he will fill out DC-150 in triplicate, retain one copy for file, mark the others "Information Only", and forward one to his immediate supervisor and one to the Project Manager.

GENERAL NOTE #2: For Alternate Procedures projects, any change of plan which changes the basic scope of the project or the basic intent of the design will be submitted to the FHWA for concurrence prior to starting any work and/or executing a change order.

In order to obtain FHWA concurrence, the Project Manager shall send a letter to the FHWA requesting their concurrence in the change. Included in the letter will be a description of the proposed change, including reasons for the change. In some cases, a copy of the proposed change of plan and/or a copy of the proposed change order will be required for FHWA approval.

5.2.2 Changes of Plan

A Change of Plan will be provided by the Designer, as approved by the Project Manager, when field conditions or design changes exceed the authority prescribed in Section 5.2.1.

When a Resident Engineer determines that there is a need for a change of the contract work, based on field conditions, which is beyond the area(s) and/or limitations listed above, he/she will:

- Prepare a written request for a formal design change of plan to be prepared and submit the request to the Project Manager. The request should include a description of the problem, any known field data, and a proposed solution, if available. The request should also note any scheduling impacts (critical path relationship) or priority resolution the situation has.

A formal Change of Plan may include the following:

- Revised or additional construction plans necessary to construct the required items.
- Estimate of additional quantities.
- New pay items and special provisions to be negotiated as a Supplementary Agreement in accordance with Section 5.3.3.
- Permit modifications, if required.
- Revised or additional staging details.

The Project Manager is responsible for securing additional funding and/or Quality Assurance reviews necessary prior to implementation.

The Project Manager shall distribute the executed Change of Plan as follows:

- Resident Engineers - 3 copies
- Regional Construction Engineer - 1 copy
- Quality Management Services - 1 copy
- Project Management - 1 copy
- FHWA (full oversight) - 1 copy

5.2.3 Value Engineering Requests by Contractor

All project specifications include an incentive clause (Standard Specifications Subsection 104.12) providing for a 50/50 share in cost savings between the Department and the contractor for VE proposals submitted by the contractor and approved by the Department.

The Resident Engineer forwards a contractor's VE proposal to his supervisor, who forwards it to the Regional Construction Engineer. The Regional Construction Engineer may accept the VE proposal for further study or reject the VE proposal. If the VE proposal is accepted for further study, the proposal is forwarded to the Department Project Manager and the Bureau of VE. The Bureau of VE will forward a copy to FHWA, if appropriate. On Alternate Procedures projects, the Bureau of VE can approve all proposals without FHWA involvement.

The Department Project Management coordinates the review of a contractor's VE proposal. The VE proposal is submitted to all involved units for review and comment. Those units forward any comments to the Department Project Manager.

Upon receipt of approvals and/or comments from the involved units, the Department Project Manager, Bureau of VE and the FHWA determine whether to recommend approval or rejection of the VE proposal. The Resident Engineer is notified of the recommendation by the Project Manager. The Resident Engineer notifies the contractor regarding the approval or rejection of the VE proposal.

Upon completion of the construction order, the Project Manager will notify the Bureau of VE of the actual savings realized from the contractor's proposal.

Attachment 4 - Form DC-150

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
AUTHORIZATION FOR A CHANGE UNDER THE PROJECT MANAGEMENT SYSTEM**

Route _____ Section _____

Local Name _____

Federal Project Number _____

Location of Change _____

Reason for Change _____

Estimated Impact on Time of Completion _____

Estimated Cost _____ Highest Approval Level _____

This Field Authorization is in accordance with conditions and limitations as stated in O.B. 83-4.

Approved

Resident Engineer Date

Resident Engineer's Immediate Supervisor Date

Project Manager Date

5.3 Construction Orders Under NJDOT Standard Specifications

To establish a procedure for writing change orders and field orders, and for negotiating supplementary agreements for alterations to the work under contracts awarded pursuant to provisions of the "New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction, 1989 and 1996, as applicable."

A Construction Order, Form DC 173 A and B (see Attachment 5), shall be initiated for the following reasons:

1. Field Changes or Design Changes:

The Resident Engineer shall request that the Project Manager have the design engineer develop a change of plan and that he give authorization to proceed. If no change of plan is necessary, the Project Manager shall verify this with the appropriate design engineer (refer to current O.B. 83-4). (A concurrence memorandum is necessary for undocumented design changes.)

2. Specification Change

3. Field Orders (see Section 5.3.1 below)

4. Supplementary Agreements (see Section 5.3.3 below)

5. Force Accounts (see Section 5.3.4 below)

6. Adjusting estimated quantities to as-built quantities or whenever an item or group of items requires an adjustment, increases or decreases, or an item or group of items is eliminated. (This can be done by change order or field order.)

Note: Adjustments can be made either for the benefit of the Contractor or the State.

7. As-Builts

8. Extensions or reductions of time

9. Implementation of a decision of the Department in resolving a claim, a settlement of litigation, or a court decision or judgement.

Note: Contingency funds, that are set up during the design phase of a federal project, need to be closely monitored by the Project Manager. Request for changes in contingency funds are initiated by the Resident Engineer in accordance with I.B. (dated 10/2/96 from the Bureau of Construction Engineering).

5.3.1 Field Orders

- A. Purpose of Field Orders (Form DC-173 A and B):
 - 1. To make minor changes in the work that do not involve a supplementary agreement or a time adjustment, in accordance with O.B. 83-4, "Authorized Design Changes by Regional Construction Engineering Forces", and Section 5.4.
 - 2. To increase, decrease, or eliminate items due to field conditions or as a result of as-built calculations. Whenever an item or group of items requires an adjustment (increase or decrease), the contract should be modified. This can be done by field order or change order.
 - 3. To direct the Contractor to proceed with work that requires a Change Order or Supplementary Agreement that has not been issued yet. All negotiations, quantities, and time adjustments are to be included in a Change Order or Supplementary Agreement, which should be issued as soon as possible.
 - a. To transmit a change of plan, which requires negotiations.
 - b. To direct the Contractor to proceed with work to be done on a force account basis. An estimate should be prepared by the Resident Engineer and forwarded to the Project Manager.
 - c. To direct the Contractor to proceed with emergency work.
- B. Preparation of Field Orders
 - 1. The Resident Engineer shall prepare in final form (typewritten, if quantity adjustments are included) all field orders relative to the project, assisted by the Resident Engineer's Immediate Supervisor, when necessary, and with the verbal concurrence of the Project Manager. Field Orders are to be prepared in duplicate, with original signatures on all copies.
 - a. Each copy shall have a sequential order letter.
 - b. The box marked "Field Order" shall be checked off.
 - 2. Nature and Reason of Field Order
 - a. thru e. Refer to Section 5.3.2, A. 2. "a.", "b.", "d.", and "e."
 - e. Listing of Items (increases and decreases only)
 - 1) The work will be listed as Increases or Decreases.
 - 2) Each category shall include:
 - Item Number
 - Item Description
 - Quantity
 - Unit Cost
 - Cost Extension
 - 3) A Form DC-174, Cost Sharing Distribution (see Attachment 6) shall be included.

C. Processing of Field Orders

1. Authority Limitations

- Before any field order is issued to change the work, it will have to be signed by the appropriate Department officials referenced in Operations Bulletin 83-4.

2. The original and a copy of the field order shall be submitted through the Field Manager and the Regional Construction Engineer to the Project Manager for processing. The original Field Order for Alternate Procedures Projects shall be approved for participation by the Project Manager and sent to the Bureau of Capital Program Coordination. The second copy shall be given to the superintendent (Subsection 101.03) and a signed and dated receipt of delivery will be secured. (Transmittal can be made by certified mail, return receipt).

3. Protested Orders - Refer to Section 5.3.2, B. 3. "a." and "b."

4. The Project Manager shall distribute copies to the Resident Engineer, the Regional Construction Engineer, and others as required.

Note: On projects with full FHWA oversight, see Section 5.2 for guidelines. The FHWA should be contacted for extra work field orders no later than three (3) days after work commences.

5.3.2 Change Orders

A. Preparation

1. Initiation

a. The Resident Engineer, with the concurrence of the Immediate Supervisor and the Project Manager shall prepare in final typewritten form all change orders relative to the project (with the exception of those for utility agreements). They are to be prepared in duplicate (triplicate for finals) with original signatures and dates on all copies (refer to Section 4.7 for Change Control Board approval).

- 1) Each copy shall have a sequential order letter, regardless of the type of construction order.
- 2) The box marked "Change Order" shall be marked off.
- 3) The Resident Engineer has the authority to approve Change Orders which require an adjustment of \$15,000 or less, as per Section 5.2.1.

2. Nature and Reason of Order

a. An introductory statement explaining the condition(s) that warranted the order, relative to the plans and specifications, shall be given. Any adjustments made by a construction engineer due to changes in design should be fully explained.

- b. An adjustment over \$25,000.00 for any single item shall require a full explanation. If an item has been adjusted on two or more orders, the explanation shall be included on the document which causes the total adjustment to exceed \$25,000.00.
- c. An explanation shall also be given for how the construction order affects the completion date, regardless of whether an extension, reduction, or no time adjustment is necessary.
- d. Listing of Item(s)

- 1) All item(s) shall be listed under the following categories:

- Road or Bridge
 - Extra(s)
 - Increase(s)
 - Decrease(s)

- 2) Each category shall include:

- Item Number
- Item Description
- Quantity
- Unit Price
- Cost Extension

Each category shall have a summary value total.

- 3) A Form DC-174, Cost Sharing Distribution (see Attachment 2), shall accompany all orders on cost sharing projects, showing to whom the cost is chargeable. If there is multiple participation in the order being processed, a listing shall be included, indicating what items or portions of items are chargeable to the various Federal projects and other agencies. This listing can be included in the body of the order or by attachment.

Information necessary for proper cost distribution will be derived from the "Project Cost Sharing Agreement" with accompanying back up material as submitted to the Region in accordance with Department Procedure 3.124.

Note: A construction engineering (CE) cost is any cost charged to a specific project after the Award of Contract whose worth is not incorporated into the project. Examples of CE costs are construction field office, field office maintenance, and telephone service. For extra work items considered CE cost items (e.g., partnering, vehicles), the percentage of Federal participating amounts must be included on the DC-174, Cost Sharing Distribution form. The CE cost is to be entered on the DC-174 as Contract CE Cost, and the original dollar amount to be entered

on the Participation Summary section of the form is obtained from the detailed Estimate Summary Sheet.

- e. On cost sharing projects, the following steps shall be taken:
- 1) Federal Highway Administration Full Oversight Projects, as per Section 5.2.
 - The Resident Engineer shall attempt to obtain the FHWA Area Engineer's concurrence by means of a telephone call or a project meeting (at the discretion of the FHWA Area Engineer). Verbal approval must be secured prior to the commencement of any work. (For an extra work item less than the \$10,000, a telephone call is not necessary).
 - If the Resident Engineer cannot reach a mutual agreement with the FHWA Area Engineer, he shall inform the Project Manager of the unresolved issue so that he/she reaches an administrative conclusion.
 - The Order, including one of the following concurrence statements will be submitted to the Regional Construction Engineer.

Note:

- (1) Individual Construction Orders that are a result of as-built changes in contract bid items for less than 25% of that item's contract quantity should not be submitted to FHWA until the Final Construction Order.
- (2) FHWA must be notified (transmittal by copy of DC-161) on all notice of claims on full oversight projects. Failure to notify FHWA will result in automatic non-participation.

FULL AGREEMENT

"This Order has been discussed with _____ of the _____ on _____, is mutually agreed upon, and has tentative approval for both content and financial participation."

PARTIAL AGREEMENT

"This Order has been discussed with _____ of the _____ on _____, is mutually agreed upon, and has tentative approval for both content and financial participation with the exception of (explanation) _____."

Note: Confidential information should be put into a memorandum to the Project Manager which will be attached to the Order.

TOTAL EXCEPTION

"This Order has been discussed with _____ (FHWA Area Engineer) of the _____ on _____, who takes exception to both content and financial participation because of (explanation) _____."

- The exception to mutual agreement is to be explained in a separate memorandum which will be attached to the Order.
- The Project Manager will attempt to resolve the issue with the FHWA Area Engineer.
- If the Project Manager cannot obtain mutual agreement, he will approve the order as non-participating or reject the order, and advise the Program Manager of the decision.

Note: The following is a representative list of those construction items that are typically considered ineligible for participation with Federal funds. This list is not all inclusive, and on occasion, the Resident Engineer may encounter items which are questionable. The FHWA suggests the Resident Engineer have a prior discussion with them in such instances. FHWA will participate on a case by case basis if deemed project beneficial.

As a general rule, the following items would not be eligible:

- Any items associated with normal maintenance activities, for instance, cleaning drainage system.
- Payment for re-doing faulty work.

- Traffic damaged items
- Time extensions and additional costs incurred due to utility delays and unavailability of right of way.
- Payment for added survey cost for work added to the contract where the bid items provide for the proration of the survey bid based on the final contract cost.
- Spare parts
- Material and parts not incorporated into the project and turned over to Maintenance.
- Material not meeting contract specifications but incorporated into the project.
- Additional work resulting from unapproved change of plan.

All non-participation is to be explained in the body of the change order or by memorandum of record attached to the change order.

- 2) Federally funded projects under Alternate Procedures (refer to Section 5.2).

FHWA concurrence is not required, but the Resident Engineer is encouraged to contact the FHWA if there are any questions.

The Project Manager will assume the review function of the FHWA, and if there are any questions on Federal Policies, participation levels or regulations, the FHWA should be consulted immediately. After a thorough review, the Project Manager will sign and date the construction order in the normal area, and then sign and date the Change Order in the box reserved for Alternate Procedure projects, indicating the status of participation approval.

All non-participation is to be explained in the body of the change order or by memorandum of record attached to the change order.

- 3) Third Party Participation

Check provisions of agreement to see if prior approval from the third party is required.

For all other cost sharing agencies (New Jersey Transit, New Jersey Highway Authority, New Jersey Turnpike Authority, Port Authority of New York and New Jersey, Municipality, Utility Companies, etc.), the Resident Engineer shall contact the appropriate representative of the agency to obtain concurrence, if required by the agreement, and shall include a concurrence statement in the order.

The Third Party concurrence signature on the transmittal letter will be in lieu of their signature on the Change Order. Submittal of these orders will be done utilizing the example transmittal letter (see Attachment 7). The signed transmittal letter will be forwarded by the Project Manager to the Bureau of Capital Program Coordination.

The Project Manager will be responsible for ensuring that the transmittal letter is returned by the cost sharing party and resolving any disagreements between parties.

B. Processing of Change Orders

NJDOT Projects

1. The Resident Engineer shall submit the change order in its final typewritten form through the Resident Engineer's supervisor to the Regional Construction Engineer for review, his recommending signature and submittal to the Project Manager for approval on behalf of the Department, and for further processing.

Note 1: On all ACES projects, a change order or field order is issued by the Resident Engineer and sent to the computer mainframe after review by the Regional Construction Engineer. The Project Manager can view this change order on the mainframe and approve it. It will then be forwarded electronically to Accounting. The following steps are identical for ACES/non-ACES projects.

Note 2: All signers of construction orders (Change Orders, Supplementary Agreements, and Field Orders) shall have their name typed or neatly printed below their signature.

Note 3: The Project Manager will, upon approval, be required to:

- a) Assign the Construction Order an Order Number where indicated on all pages of the order.
- b) Note the Adjusted Contract Amount on Page 1 and on the DC-174's.
- c) Note the amount of previous extensions and the Adjusted Completion Date on the order.

2. After approval by the Project Manager, an original signature copy shall be sent to the Bureau of Capital Program Coordination.
3. The second original signature copy shall be sent to the Contractor. A signed, dated receipt of delivery to the Superintendent must be secured. Transmittal of the order to the Contractor may be made by return receipt, Certified Mail (see Attachment 8).

If a specific written protest is received from the Contractor, a copy shall be sent to Bureau of Capital Program Coordination and the Resident Engineer via the Regional Construction Engineer.

- a. A general protest - one that is not a specific, detailed statement of the points of disagreement - shall be rejected by the Project Manager, and the Contractor will be given 5 days to respond to the rejection.
- b. The receipt of a specific written protest shall not relieve the Contractor from performing the work according to the order.

4. The Project Manager shall distribute copies to the Resident Engineer; Regional Construction Engineer; Supervisor, Quality Assurance; Cost Control Unit, Program Support Services; and others as required.

Note: It is currently required for the Project Manager to submit all final Change Orders for a project in duplicate to Capital Program Coordination. Accounting has agreed to forward an original executed change order back to the Project Manager on any interim change order providing two (2) are initiated and forwarded by the Project Manager through the system.

Non-NJDOT Projects (New Jersey Turnpike Authority, New Jersey Transit, etc.)

1. 3rd party Resident Engineer sends draft Change Order to NJDOT Regional Construction Engineer (RCE).
2. RCE discusses Change Order with the Federal Highway Administration and Project Manager and determines preliminary approval/participation.
3. RCE notifies 3rd party Resident Engineer of FHWA/NJDOT approval/participation.
4. 3rd party Resident Engineer prepares Change Order and transmit to the Bureau of Capital Program Coordination via the NJDOT Resident Engineer.
5. NJDOT Resident Engineer obtains the recommendations of the Regional Construction Engineer and the approval of the Project Manager and forwards the Change Order to the Bureau of Capital Program Coordination.
6. NJDOT Resident Engineer distributes two (2) copies of Final Change Order to RCE, one (1) copy to FHWA, and one (1) copy to Project Manager.

5.3.3 Supplementary Agreements

A. Initiation of Supplementary Agreement Orders (Form DC 173 A and B)

1. The Resident Engineer shall determine if new and unforeseen work essential to the completion of the contract is covered all or in part by any or a combination of contract items. Any remaining portion shall be classified as Extra Work.

Negotiations shall begin to establish a Supplementary Agreement to perform the Extra Work. The Contractor shall, upon request, furnish the Engineer with adequate detailed cost for such item(s) of work (see Attachment 9 - Supplementary Agreement Guidelines).

- a. If the Contractor's submission is unacceptable, the Department may require the Contractor to proceed under Contract Subsection 109.03 (see Section 5.3.4) by issuance of a Change Order or Field Order.
- b. If the Contractor's submission is acceptable, a Supplementary Agreement Construction Order shall be prepared which shall be conclusive as to all

questions of compensation and time adjustments relative to the subject of the agreement (Subsection 104.02).

B. Preparation of Supplementary Agreement Orders

1. Initiation

The negotiated agreement shall be processed on Form DC-173 A and B in duplicate, with original signatures and dates on all copies.

- a. Each copy of the above shall reflect the same alphabetical sequential order letter.
- b. The box marked "Supplementary Agreement" shall be checked off.

2. Nature and Reason of Order

a. thru d. Refer to Section 5.3.2, A. 2. "a." thru "c." and "e."

e. Listing of Items

- 1) The work shall be listed as an Extra.
- 2) Each item shall include:
 - Description
 - Quantity
 - Unit Price
 - Cost Extension
 - Total Cost Summary

3) A DC-174 Cost Sharing Distribution form shall be included.

f. Special provisions for Supplementary Agreement Orders:

- 1) A statement why the work is considered to be essential to the contract, that the work is not covered by existing contract items (an explanation why the Contractor is being reimbursed through a supplemental item), and reference to appropriate contract provisions.
- 2) The Resident Engineer, with the Project Manager's faxed concurrence, will submit a memorandum to the Regional Construction Engineer. In it will be a statement that the price submitted has been reviewed by the Resident Engineer and has been found reasonable and acceptable as explained.
- 3) In some instances when an agreement cannot be reached, preliminary funds need to be established so that the Contractor commences work immediately and payment can be made. The estimated amount is to be readjusted on final review of documents.

C. Processing of Supplementary Agreement Orders

1. The processing of Supplementary Agreements is the same for ACES and non-ACES projects. The Resident Engineer submits the Supplementary Agreement to his/her Immediate Supervisor and by fax to the Project Manager.
2. After the Supervisor's review and Project Manager's faxed concurrence, it is reviewed by the Regional Construction Engineer. If it is acceptable, the Regional Construction Engineer signs it as recommended, and sends it to the Contractor by mail.
3. The original, with two original signature copies, shall be sent to the Contractor for acceptance (see Attachment 10).
4. After the Contractor returns the two signed agreements, the Regional Construction Engineer sends it to the Project Manager who signs it, approves it on the mainframe in behalf of the Department, and forwards one original to the Bureau of Capital Program Coordination.

Note: A Supplementary Agreement is a bilateral agreement and acceptance should be expected. However, if the agreement is rejected, the contractor may be required to do the work on a force account basis (see Section 5.1.4).
5. The second original signature copy shall be sent to the contractor. Transmittal of the order shall be made by return receipt, Certified Mail.

5.3.4 Force Account

- A. Initiation of Force Account Orders (Form DC-173 and DC-174)
 1. The Engineer shall determine if new and unforeseen work essential to the satisfactory completion of the contract is covered all or in part by any or a combination of contract items. Any remaining portion shall be classified as extra work.

Where the Contractor and the Engineer cannot negotiate a supplementary agreement (see Section 5.3.3) for extra work, the Department may require the Contractor to do such work on a force account basis (Subsection 109.03).

When a price cannot be agreed upon, preliminary funds need to be established so that the Contractor commences work immediately and payment can be made. The estimated amount is to be readjusted on the final review of the documents.

2. Payment adjustments for major contract items (Subsection 104.05) that are increased or decreased by more than 25% from estimated quantities may be made by force account, as provided in Subsection 109.03.
3. Payment for any appropriate compensation because of eliminated items (Subsection 104.06) will be made by force account as provided in Subsection 109.03. However, no profit will be allowed.
4. Payment for Contractor's expenses during delays will be made as provided in Subsection 109.03 and 109.04 (see Attachment 11 - Force Account Guidelines).

B. Preparation of Force Account Orders

1. Initiation

- a. A field order may be used to direct the Contractor to proceed with force account work. This must be followed as soon as possible by a change order establishing the estimated cost and time adjustment, if any, in duplicate, with original signatures on the original and one copy. In all cases a change order must be submitted to establish an estimated cost for a force account, which may require adjustment when the work is completed.
 - 1) Each copy shall have a sequential order letter assigned, regardless of the type of construction order.
 - 2) Check off box marked "Change Order" or "Field Order".
- b. Adjustments to force account work shall be made by change order only. The change order shall adjust payment for the actual cost incurred, as determined by contract Subsection 109.03, or 109.04. An explanation must be included in the change order if the adjustment (over or under) exceeds \$25,000.00. The adjustment shall be treated as an increase or decrease.

2. Nature and Reason of Order

a. thru d. Refer to Section 5.3.2, A. 2. "a." thru "c." and "e."

e. Listing of Items

- 1) When establishing the force account, the work shall be listed as Extra. Each item shall include:
 - Description
 - Force Account
 - Cost (estimated)
- 2) When adjusting the force account, the work shall be listed as an Increase or Decrease. Each item shall include:
 - Item Number
 - Description
 - Force Account
 - Cost
- 3) A DC-174 Cost Sharing Distribution form shall be included.
- f. The statement "This change order is subject to audit by the Department in accordance with Subsection 109.03 or 109.04 of the Contract" is to be included.

C. Processing of Force Account Orders

1. thru 4. Refer to Section 5.3.2, B. 1. thru 4.

Attachment 5 - DC-173 Construction Order

Attachment 6 - DC-174 Cost Sharing Distribution

Attachment 8 - Transmittal Letter/Receipt for Construction Order

CERTIFIED MAIL
RETURN RECEIPT

DATE

Address

Re: Route , Section
Fed. Proj. No. AB-OOOS(000)
D.P. No.: 96240

Attention: (President of Company)

Enclosed is one original signature copy of Change Order number _____ dated _____, which has been issued in accordance with Subsection 104 of the Specifications relative to the subject project.

THIS IS BEING SENT FOR YOUR RECORDS. CONTRACTOR'S SIGNATURE IS NOT REQUIRED ON CHANGE ORDERS. DO NOT SIGN AND RETURN.

Subsection 104.04 of the Specifications describes the procedure and time frame for presenting a written, specific protest concerning the enclosed Change Order should there be a disagreement. The Resident Engineer must be copied on all protests.

Sincerely,

Project Manager

Enclosure

c: Bureau of Capital Program Coordination (w/original)
_____, Resident Engineer (w/attachment)
_____, Regional Construction Engineer (w/attachment)
File

Attachment 9 - SUPPLEMENTARY AGREEMENT GUIDELINES (FOR EXTRA WORK)

The Strict Force Account format should not be used for the submission of Supplementary Agreements for Extra Work.

A simple quotation for commonly encountered items of work will often be sufficient. The Resident can then use a comparison to recently bid projects on weighted averages as justification for acceptance (O.B. 84-1, Section 5.3.3, B.2.f.).

Since Supplementary Agreements are the result of negotiations between the Department and the Contractor, the Resident Engineer's cost estimate can be used as justification for acceptance by memorandum to the Regional Construction Engineer, with the concurrence of the Project Manager.

The Regional Construction Engineer shall determine the adequacy of the "detailed cost data" furnished by the Contractor (Subsection 104.02).

SAMPLE SUPPLEMENTARY AGREEMENT CALCULATIONS

Item Description - 525 mm Reinforced Concrete Culvert Pipe

A - Labor

2 - Laborers (4 hrs. each)	8 hrs.	@	11.70 =	\$93.60
1 - Operator	4 hrs.	@	19.87 =	<u>\$79.48</u>

A. TOTAL = \$173.08

B - Labor-Benefit Costs

Laborers	8 hrs.	@	2.70 =	\$21.60
Operators	4 hrs.	@	4.10 =	<u>\$16.40</u>

B. TOTAL = \$38.00

C - Labor Additives

Work Comp.	6.32/\$100.00 of Payroll
P.H. & P.D	21.76/\$100.00 of Payroll
Social Security	7.15/\$100.00 of Payroll
Federal Unemployment Ins.	0.80/\$100.00 of Payroll
Temporary Disability	<u>7.05/\$100.00 of Payroll</u>

43.08 X 173.08

C. TOTAL = \$74.56

D - Material

525 mm RCCP	5 LM	@	48.00 =	\$240.00
Stone Bedding			=	<u>20.00</u>

D. TOTAL = \$ 260.00

E - Equipment

Backhoe	4 hrs.	@	50.00 =	<u>\$200.00</u>
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E. TOTAL = \$200.00

F - Summary

A.	\$ 173.08
B.	\$ 38.00
C.	\$ 74.56
D.	\$ 260.00
E.	\$ 200.00

F. TOTAL = \$ 745.64

Profit 10% (A) = \$17.30
10% (D) = \$26.00 Subtotal (2) = \$43.30

Overhead 15% (A) = \$25.96
15% (D) = \$39.00 Subtotal (3) = \$64.96

Total Supplementary Agreement = \$853.90

Attachment 10 -Transmittal Letter/Receipt for Supplementary Agreements

DATE

Address

Re: Route , Section
AB-OOOS(000)
D.P. No.: 96240

Attention: (President of Company)

Enclosed is the original and two original signature copies of Supplementary Agreement number _____, dated _____, relative to the subject project.

PLEASE SIGN, DATE, AND PRINT SIGNER'S NAME IN THE SPACE PROVIDED ON ALL COPIES AND RETURN THEM TO ME AT THE ABOVE ADDRESS.

You will receive a fully executed copy of this Supplementary Agreement after it is fully executed by the Project Manager.

Your expeditious reply is requested.

Sincerely,

Regional Construction Engineer

Enclosure

c: _____, Project Manager
_____, Resident Engineer
File

Attachment 11 - FORCE ACCOUNT GUIDELINES (SUBSECTION 109.03)

- 1) Check Project's Supplementary Specification to find any additional markups for subcontractor costs.

- 2) No claims for costs or mark-ups for materials furnished by the Department.

A discount, if offered, will be credited to the State.

The costs for materials obtained from the contractor's stock must be documented to the Resident Engineer's satisfaction.

Materials purchased from outside sources must be itemized and substantiated from an invoice. (Material prices may not include any sales tax).

- 3) Hourly rates for contractor owned equipment will be developed by the Engineer from the "Blue Book".

The hourly rate will be determined by dividing the monthly rate by 176. Weekly, hourly, and daily rates will not be used.

"Estimated operating costs per hour" shall be used for each hour actually in use. No costs shall apply to idle time.

Idle time equipment rental will be paid at one half (1/2) the rate established above.

The Engineer will determine the suitability of all equipment for the work to be done. Rental rates and operator rates will be made at the rates applicable to suitable equipment.

The Contractor will be paid the actual cost including moving on, to, and away from the job, and sales tax if charged for any equipment obtained from outside rental.

- 4) Profit

10% Total material cost (F.O.B. - Freight on Board)

10% Total direct labor costs (actual hours worked multiplied by regular hourly rate).

- 5) Overhead

15% Total material cost

15% Total fringe benefits on direct labor costs (check specification)

15% Total direct labor cost (actual hours worked multiplied by regular hourly rate).

- a. Check the Project's Specifications to see if an extension of time is a condition for payment of overhead.
- b. Extraordinary overhead expense - (Refer to Standard Specifications, Subsection 109.03 f. (Overhead))

NOTE: Most current Special Provisions allow an additional 5% on subcontractor total costs with no exclusion for profit and overhead.

SAMPLE FORCE ACCOUNT CALCULATIONS

Item Description - 300 mm Sanitary Sewer Force Main (Tie-ins by owner)

A. Labor-Direct Cost

1	Labor Foreman	40 hrs. @ 12.70	=	\$ 508.00
3	Laborers, Common	120 hrs. @ 11.20	=	1,344.00
2	Laborers, Pipe Laying	80 hrs. @ 11.70	=	936.00
1	Backhoe Operator	40 hrs. @ 19.87	=	794.80
1	Backhoe Oiler	40 hrs. @ 14.13	=	565.20
1	Loader Operator	40 hrs. @ 18.48	=	739.20
1	Truck Driver	40 hrs. @ 12.00	=	<u>480.00</u>

A. TOTAL = \$5,367.20

B. Labor-Benefit Cost

Laborers	240 hrs.	@ 2.70	=	\$648.00
Operators	120 hrs.	@ 4.10	=	492.00
Teamsters	40 hrs.	@ 2.615	=	<u>104.60</u>

B. TOTAL = \$1,244.60

C. Bond, Insurance, Taxes

Bond Premium	1.00% *
PL & PD	8.80%
Work Comp	6.35%
Insurance	2.00%
Unemployment	5.70%
Social Security	6.05%

29.90% \$5,367.20

C. TOTAL = \$1,604.79

D. Materials

300 mm Ductile Pipe S.S.	160 LM	@ 75.83	=	\$12,132.80
38 mm Stone	250 Mg	@ 11.25	=	2,812.50
Fittings and Clean Outs Supplied by Owner	@ 8.45		=	1,114.82
Misc. Mat'l. from Contractor's Stock				<u>0.00</u>

D. TOTAL = \$16,060.12

* Note 1: Check Supplementary Specification 103.05 for method of bond payment.

E. Equipment

* Backhoe 1.15 CM	40 hrs. @ 51.90	= \$2,076.00
Operating Cost	40 hrs. @ 22.15	= 886.00
+ Loader 1.9 CM L.S.		= 2,821.00
* Truck 7.65 CM	40 hrs. @ 21.88	= 875.20
O.C.	40 hrs. @ 17.20	= 688.00
* Compactor	40 hrs. @ .82	= 32.80
O.C.	40 hrs. @ .30	= 12.00
* Pump 75 mm	40 hrs. @ 4.09	= 163.60
O.C.	40 hrs. @ .70	= <u>28.00</u>

E. TOTAL = \$7,582.60

* Outside Rental includes on and off job, and sales tax

+ Hourly Rate = Monthly Rate

F. Summary

A.	\$5,367.20
B.	\$1,244.60
C.	\$1,604.79
D.\$	16,060.12
E.	\$7,582.60

Subtotal (1) = \$31,859.31

Profit - (allowed on (A) Director Labor Costs and (D) Material Costs)

10%	(A) =	\$ 536.72
10%	(D) =	<u>1,605.96</u>

Subtotal (2) = \$2,142.68

Overhead -

15% (A)	=	\$805.08
** (15% (B))	=	186.69
15% (D)	=	<u>2,408.93</u>

Subtotal (3) = \$ 3,214.01 or * \$3,400.70

** NOTE: Some projects specifications allow for 15% on total fringe benefits.

Attachment 12 - Sample Equipment Rental Rates

5.4 Contract Claims

The Department of Transportation's claims procedure is detailed in Subsection 107.02 of the Contract Specifications as "**THE ADMINISTRATIVE PROCESS FOR THE RESOLUTION OF DISPUTES**". The process is sequential in nature and is composed of five (5) steps:

STEP 1 - REVIEW BY THE RESIDENT ENGINEER/PROJECT MANAGER

STEP 2 - REVIEW BY THE REGIONAL DISPUTE BOARD

STEP 3 - REVIEW BY THE DIRECTOR OF CONSTRUCTION SERVICES AND MATERIALS

STEP 4 - REVIEW BY THE DEPARTMENT CLAIMS COMMITTEE

STEP 5 - REVIEW BY THE CLAIMS REVIEW BOARD

No dispute will be accorded a particular level of review unless the dispute has been reviewed at the preceding level and the Contractor rejects the decision in writing within the time period specified. If the contractor did not escrow his bid documents, in accordance with the contract specifications, the contractor waived his rights to have a claim reviewed by the Claims Review Board.

The Contractor must file the necessary claim form (DC-161) (see Attachment 13), as required by Subsection 107.02, in order to begin the Administrative Process for resolution of contract disputes. The Contractor must also notify the Resident Engineer in writing that all documentation in support of the dispute has been provided to the Resident Engineer and that the Administrative Process should begin. No formal action will be taken by the Resident Engineer until this written notification is received. The documentation provided to the Resident Engineer shall serve as the basis for evaluating the Contractor's position regarding the dispute throughout the Administrative Process. Unless specifically requested by the Department, the submission of additional information by the Contractor at any step of the review process shall cause the process to revert to Step 1. If at any step in the process a dispute is resolved, the Contractor must sign an unconditional release as to any and all matters arising from the dispute.

PRESTEP 1 - DC-161 SUBMITTAL BY CONTRACTOR

The Resident Engineer, upon receipt of a Form DC-161, shall review the submittal to ensure that it is complete and in accordance with Subsection 107.02. If it is not, the Resident Engineer will notify the Contractor as to what information is missing, and the fact that the Contractor must notify the Resident Engineer when all documentation in support of the claim has been provided so that the Administrative Process should begin. The Resident Engineer will copy the Project Manager on all claim related correspondence. The Resident Engineer will also ensure that adequate field documentation on the disputed issue is maintained in a separate project file. The Resident Engineer will copy the FHWA on all notice of claims (DC-161) for all full oversight projects. At this point, the Resident Engineer should initiate appropriate analysis of the claim. The Resident Engineer may require the assistance of the Department's Claims Unit. The Resident Engineer will be required to provide a recommendation regarding claims resolution for concurrence by the Project Manager.

STEP 1 - REVIEW BY THE RESIDENT ENGINEER

The Resident Engineer, upon completion of the claim analysis, will forward his recommendation to the Project Manager for concurrence and presentation to the Change Control Board as required by Section 4.7.4. Upon receipt of the Project Manager's concurrence, the Resident Engineer will render a written decision regarding the matter in dispute within 15 calendar days of receipt of the Contractor's notification that the dispute resolution process should begin. This written decision should be the position of the Department regarding the dispute, after consultation with the Resident Engineer's immediate supervisor and the Project Manager. For FHWA full oversight projects, the Resident Engineer shall also discuss the claim with the FHWA Area Engineer to keep the FHWA informed for financial participation purposes.

The Contractor shall, within 15 calendar days of the receipt of the decision by the Resident Engineer, either accept or reject the decision in writing. If the contractor neither accepts nor rejects the Resident Engineer's decision within 15 calendar days of its receipt, the dispute will be considered withdrawn from the Administrative Process and there will be no further administrative remedy.

If the Contractor accepts the decision of the Resident Engineer, the Resident Engineer will initiate a Supplementary Agreement to implement the decision, in accordance with Operations Bulletin 84-1, that will include the unconditional release as to any and all matters arising from the dispute. This Construction Order cannot be processed with a Contractor protest.

If the Contractor rejects the decision of the Resident Engineer, the dispute information is automatically forwarded by the Resident Engineer to the Regional Dispute Board. This information shall also include a facts sheet, prepared by the Resident Engineer, which incorporates a description of the Contractor's dispute, the Department's field facts as related to the dispute, the supporting basis and documents for the Department's position, and any calculations of how the settlement offer included in the decision was arrived at.

STEP 2 - REVIEW BY THE REGIONAL DISPUTE BOARD

The Regional Dispute Board is a three member board comprised of the Program Manager for the project, the Regional Construction Field Manager, and the Regional Construction Engineer (chairperson).

The Regional Dispute Board will, within 15 calendar days of receipt of the dispute information from the Resident Engineer, schedule and hold a meeting to review the dispute with the Contractor. This time limit may be extended by mutual agreement of the parties. The Regional Dispute Board will, within 15 calendar days of the meeting, issue a written decision, with reasons, regarding the dispute.

The Contractor shall, within 15 calendar days of receipt of the decision from the Regional Dispute Board, either accept or reject it in writing. If the Contractor neither accepts or rejects the Regional Dispute Board's decision within 15 calendar days, the dispute will be considered withdrawn from the Administrative Process. There will be no further administrative remedy.

If the Contractor accepts the decision of the Regional Dispute Board, the Regional Construction Engineer will forward the decision and backup documentation to the Resident Engineer who will initiate a Construction Order to implement the decision, in accordance with Operations Bulletin 84-1, that will include the unconditional release as to any and all matters arising from the dispute. This Construction Order cannot be processed with a Contractor protest.

If the Contractor rejects the decision of the Regional Dispute Board, the Regional Dispute Board chairperson will automatically forward the dispute to the Director of Construction Services and Materials.

STEP 3 - REVIEW BY THE DIRECTOR OF CONSTRUCTION SERVICES AND MATERIALS

The Director of Construction Services and Materials will, within 15 calendar days of receipt of the dispute information from the Regional Dispute Board, schedule and hold a meeting with the Contractor. This time limit may be extended by mutual agreement of the parties. The Director will, within 15 calendar days of the meeting, issue a written decision, with reasons, regarding the dispute.

The Contractor shall, within 15 calendar days of the receipt of the decision by the Director, either accept or reject it in writing. If the Contractor neither accepts or rejects the Director's decision within 15 calendar days, the dispute will be withdrawn from the Administrative Process and there will be no further administrative remedy.

If the Contractor accepts the decision of the Director, the Director of Construction Services and Materials will forward the decision and backup documentation to the Resident Engineer, via the Regional Construction Engineer. The Resident Engineer will initiate a Construction Order to implement the decision, in accordance with Section 5.1, that will include the unconditional release as to any and all matters arising from the dispute. This Construction Order cannot be processed with a Contractor protest. If the Contractor rejects the decision of the Director, there will be no further automatic review of the dispute. Unless the Contractor requests further review in writing, the dispute will be considered withdrawn from the Administrative Process.

STEP 4 - REVIEW BY THE DEPARTMENT CLAIMS COMMITTEE

The Contractor may request, in writing to the Secretary of the Department Claims Committee, that any dispute or disputes unresolved after review by the Director be immediately reviewed by the Department Claims Committee, if any one of the following applies:

1. A dispute or disputes exceed \$250,000.
2. The contract is at least 50 percent complete, based upon the adjusted contract price, and the claimed value of the dispute or combined disputes exceeds the lesser of 10 percent of the adjusted contract price or \$75,000.
3. It is mutually agreed to by the Contractor and the Department.

Additionally, the Contractor may request, in writing at the time of issuance of the Final Certificate, that all unresolved disputes which have gone through the first three steps of the

dispute resolution process and which have not been presented to the Department Claims Committee prior to the issuance of the Final Certificate, be reviewed by the Department Claims Committee as provided in Subsection 109.11. The Contractor's written request must accompany its exceptions of the Final Certificate, with a copy sent to the Secretary of the Department Claims Committee and the Director of Project Management and shall be made within 30 calendar days of the issuance of the Final Certificate.

The Director of Construction Services and Materials, upon receipt of the copy of the request for Department Claims Committee review, will forward the Contractor's claims submission, along with the Director's decision to the Secretary of the Department Claims Committee. The Department Claims Committee will, within 45 calendar days of the receipt of the claims information, schedule a meeting.

The Department Claims Committee, chaired by the Director of Project Management, is governed by Administrative Directive 9.023, and will, within 45 calendar days of the meeting, notify the contractor in writing of its decision of the claim(s), giving reasons for its decision.

The Contractor shall within 15 calendar days of the receipt of the Department Claims Committee decision, either accept or reject it in writing. If the Contractor rejects, or neither accepts or rejects, the Department Claims Committee decision, there will be no further automatic review of the claim. If the Contractor accepts the decision of the Department Claims Committee, the Secretary of the Claims Committee will initiate the Construction Order to implement the decision, if one is required.

STEP 5 - REVIEW BY THE CLAIMS REVIEW BOARD

Review by the Claims Review Board will be in accordance with Subsection 107.02 of the Contract Specifications.

Attachment 13 - Form DC-161 Notice of Claim

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONTRACTUAL NOTICE FORM

The Contractor is advised that there are specific time limits for filing notices under both the contract specifications and the New Jersey Contractual Liability Act, N.J.S.A. 59:13-5. The Contractor must comply with the time requirements of both statute and the specifications in order to fully reserve his claims. The Contractor understands that if he fails to give notice as required by the specifications within the time provided, any claim may be forever barred or limited as provided by the specifications. The Contractor also understands that he shall be forever barred from recovering against the State if he fails to give notice of any act or failure to act by the Engineer or the happening or any event, thing or occurrence within 90 days of such act, failure to act, or happening of such event, thing or occurrence in accordance with N.J.S.A. 59:13-5.

This form must be used to file any notice or protest required by the contract specifications. The timely filing of this form, completed in its entirety, also satisfies the notice requirement of the New Jersey Contractual Liability Act, N.J.S.A. 59:13-5. If the Contractor files this form within the time limits required for a notice pursuant to the specifications, the notice requirement of the New Jersey Contractual Liability act will also be deemed to have been satisfied.

The original of this notice must be mailed to the Resident Engineer at the field office and copies shall be mailed to the following:

Director of Project Management
Department of Transportation
1035 Parkway Avenue
CN 600
Trenton, New Jersey 08625

Regional Construction Engineer

Director of Construction Services and Materials
Department of Transportation
1035 Parkway Avenue
CN 607
Trenton, New Jersey 08625

- (c) the identification of any documents and the substance of any oral communication involved in such conduct;
- (d) in the instance of alleged acceleration of scheduled performance or delivery, the basis for the Contractor's claim of accelerations;
- (e) in the instance of alleged Extra Work, the basis for the Contractor's claim that the work is extra;
- (f) the particular elements of Contract performance for which the Contractor may seek additional compensation under Section 104 including:
 - (1) what Pay Item(s) have been or may be affected by the alleged change;
 - (2) what labor or materials or both have been or may be added, deleted, or wasted by the alleged change and what equipment has been idled, added or required for additional time;
 - (3) to the extent practicable, what delay and disruption in the manner and sequence of performance has occurred and what effect on continued performance has been or may be caused by the alleged change;
 - (4) what adjustments to contract price, delivery schedule, and other provisions affected by the alleged change will result.

8. With relation to claims made or notice given pursuant to Subsections 108.09, 108.11, and 108.14, state in detail the nature of the claim. Include in the description: 1) the specific provisions of the contract, if any, which give rise to the claim, or which claimant believes form the basis of the claim; or which claimant alleges were violated; 2) any breaches of the contract which claimant believes occurred.

9. State the name and address of each person, public body, private organization, company, utility, etc., which claimant alleges caused or is responsible for its damages, losses or injuries.

10. State the specific reasons for making the claim, protest, or notification.

11. State the dollar amount of the claim or protest.

\$ _____

12. State the basis for the calculation of the dollar amount of the claim or protest. Include a listing of all types of costs which are being or were incurred.

(use additional pages as necessary)

I certify that the foregoing statements made by me are true. I am aware that if any statements made herein in willfully false or fraudulent, that I am subject to punishment provided by law. I further certify that I have made a good faith effort to disclose the full nature and extent of this claim in the above answers.

Dated: _____

Signature-Authorized Representative

(Type - Name and Title)

5.5 Project Completion and Acceptance

Definitions

Acceptance Inspection - Any inspection of the project or portion of the project for the purpose of establishing acceptance.

Constructive Acceleration - A requirement that a Contractor complete their work date earlier than one that would reflect the time extensions to which he/she is entitled because of excusable delay.

Design Deficiency - Any deficiency not due to inadequate compliance with the contract plans and specifications.

Interim Completion Date - Any completion date requirement for work which is distinct from the final completion of the project. (Refer to Subsection 108.10 of the Special Provisions).

Partial Acceptance - Acceptance of a portion of the project. This action relieves the Contractor from the responsibility for the protection and maintenance associated with that portion. (Refer to Subsection 105.21 of the Standard Specifications).

Substantial Completion - (Refer to Subsection 101.03 and 105.22 of the Standard Specifications).

Third Party Agency - Any financially participating agency other than the Department or FHWA.

5.5.1 Interim Completion

1. Failure to meet an interim completion date.

The Resident Engineer will notify the Contractor in writing, informing them that they are behind schedule and that the appropriate liquidated damages will be assessed (refer to Attachment "A").

Note: If an extension of time that would effect the interim completion date is under consideration, the matter should be discussed with the Resident Engineer's Supervisor and Project Manager, whereupon the Project Manager will evaluate the relative merits of the extension of time being considered and determine if the delay notice should be sent to the Contractor. Generally, a delay notice should not be sent if damages for constructive acceleration could be incurred.

2. Contractor's Notice

- a) When the Contractor completes a portion of the project that has an interim completion date, he/she is required to notify the Resident Engineer in writing. Upon receipt of the Contractor's notice of interim completion, the Resident Engineer will review and inspect that portion of the project.
- b) If the Resident Engineer determines that the portion of the project is not complete, he/she will notify the Contractor in writing within five (5) working days.

The Resident Engineer's letter will note what work remains to be completed in order for the portion of the project to be considered complete (refer to Attachment "B"). The Contractor is required to renotify the Resident Engineer upon completion of the work.

- c) If the Resident Engineer, with the concurrence of the Resident Engineer's Supervisor, determines that the portion of the project appears complete, he/she will notify the Contractor of the actual interim completion date (refer to Attachment "C"). The date of the Contractor's last required notice of interim completion shall be the actual interim completion date.

5.5.2 Partial Acceptance

1. Contractor's Request

- a) Upon receipt of the Contractor's written request for partial acceptance the Resident Engineer will review and inspect the area(s) to be considered. In order for an area to be accepted under the provisions of partial acceptance the following criteria should be met:
 - All work within the area under consideration must be complete.
 - The area must be opened for the safe the convenient use by the public.
 - The area must not be required by the Contractor for the completion of the remaining areas of the project.
- b) If the Resident Engineer determines that the area(s) should not be considered for partial acceptance he/she will notify the Contractor of the decision.
- c) If the Resident Engineer with the concurrence of the Resident Engineer's Supervisor and Project Manager determines that the area is suitable for partial acceptance, he/she shall set a date for a Partial Acceptance Inspection (refer to Attachment "D"). The date of the Partial Acceptance Inspection shall be set to allow interested parties a minimum of ten (10) working days from the receipt of the notification to review and inspect the area(s) under consideration. The interested parties (refer to Section 5.5.4, 2.d for a list) will be notified.
- d) Interested Parties will inspect the area under consideration for partial acceptance, and provide the Resident Engineer with a corrective action list on or before the date of the Partial Acceptance Inspection. Copies are not to be sent to the Contractor.

3. Evaluation of corrective action for design deficiencies.

Refer forward to Section 5.5.4, 3 and follow the procedure a) through e).

- a) The Resident Engineer will within thirty days from the date of the Contractor's notice of completion, notify the Contractor that the area is not complete and inform them of the required corrective action (refer to Attachment "E"). With the concurrence of the Project Manager, a Construction Order will be issued for any

extra work or any additional work necessary to address any design deficiencies, which are required to be addressed under the contract. The Contractor must initiate another request upon completion of the work for partial acceptance to be considered. If any additional or extra work is required the Resident Engineer will notify all interested parties in writing (refer to Attachment "F"). All interested parties will have the ability to review this additional or extra work in subsequent Acceptance Inspections.

4. Objections to partial acceptance

- a) If any of the interested parties that participated in the inspection objects to the partial acceptance under consideration, the Contractor's request for partial acceptance shall be denied. The Resident Engineer will notify the Contractor in writing that the request has been denied.

5. Approval of partial acceptance

- a) If there is no corrective action required and there are no objections to partial acceptance, the Resident Engineer shall prepare and sign a Memorandum of Partial Completion. Signatures recommending partial acceptance will be secured as required (refer to Attachment "G"). The Resident Engineer will forward the Memorandum to the Regional Construction Engineer.
- b) If the Regional Construction Engineer concurs, he/she shall sign the Memorandum recommending partial acceptance and secure the signature of Executive Director of Regional Operations recommending partial acceptance. The Regional Construction Engineer will forward the memorandum to the Project Manager for approval. The Project Manager will notify the Contractor of the partial acceptance in writing (refer to Attachment "H").
- c) If any additional work is required for an area of the project which has received partial acceptance, the Resident Engineer will notify all of the interested parties (refer to Attachment "I").

5.5.3 Substantial Completion

1. Contractor's Notice

When the Contractor has notified the Resident Engineer in writing that the project is substantially complete the following procedure will be followed:

Note: If Substantial Completion is an interim completion requirement of Subsection 108.10 of the Contract Specifications refer also to Section 5.5.1, Interim Completion of this Operations Bulletin.

- a) Upon receipt of the Contractor's written notice that the project is substantially complete (a notice of final completion may be accepted as a notice of substantial completion) the Resident Engineer and the Resident Engineer's Supervisor will review and inspect the project.

- b) If the Resident Engineer determines that the project is not substantially complete, he/she will notify the Contractor within ten (10) working days (refer to Attachment "J"). The Resident Engineer's letter will note what work remains to be completed in order for the project to be considered substantially complete. The Contractor is required to renotify the Resident Engineer in writing upon completion of the work.
- c) If the Resident Engineer with the concurrence of the Resident Engineer's Supervisor and the Project Manager determines that the project is substantially complete, the Resident Engineer will prepare a Substantial Completion Memorandum recommending that the project be found substantially complete. The memorandum will fix the date of Substantial Completion as the date of the Contractor's last acceptable notice of substantial completion.

The memorandum shall also list all subcontractor's utilized by the Contractor, including any third tier subcontractors, or a statement that no subcontractors were used on the project (refer to Attachment "K").

2. Approval for Substantial Completion

- a) The Resident Engineer will submit the Substantial Completion Memorandum to the Regional Construction Engineer. If the Regional Construction Engineer concurs he/she shall sign the memorandum and forward it to the Project Manager for approval. The approved memorandum will be returned to the Resident Engineer. A copy of the approved memorandum will be submitted to the Bureau of Accounting and Auditing with the next Engineer's Monthly Estimate Input in accordance with current OB 69-2.

Note: A Substantial Completion Estimate is required for all projects utilizing subcontractors.

- b) The Resident Engineer shall submit a completed Final Status Summary, Form DC-155 (Attachment 14) to the Project Manager concurrent with the approved Substantial Completion Memorandum. This summary form shall be thereafter updated and submitted monthly to the Project Manager by the Resident Engineer.

5.5.4 Final Completion and Final Acceptance

1. Failure to meet the contract completion date.

- a) If the Contractor fails to meet the requirements for the contract completion date the Resident Engineer will notify the Contractor in writing, that the Contractor is behind schedule and that the appropriate liquidated damages will be assessed (refer to Attachment "L").

Note: If an extension of time that would effect the contract completion date is under consideration, the matter should be discussed with the Resident Engineer's Supervisor and the Project Manager, whereupon the Resident Engineer's

Supervisor will evaluate the relative merits of the extension of time being considered and determine if the delay notice should be sent to the Contractor. Generally, a delay notice should not be sent if damages for constructive acceleration could be incurred.

2. Contractor's Notice

When the Contractor is complete with all work on the project, he /she is required to notify the Resident Engineer in writing. (The letter should specify the name of the project and state that all work under the contract has been completed.) Upon receipt of the Contractor's notice of completion, the following procedures will be followed:

- a) The Resident Engineer will review and inspect the project to evaluate the notice of completion. In order for the contract to be considered finally complete and ready for final acceptance, all work must be completed. This includes:
- Landscaping work (except the requirements for replacement planting in accordance with Subsection 813.05 of the Contract Specifications)
 - Final cleanup
 - Repairs of any unacceptable work
 - Submission of all documents required

Note 1: The Resident Engineer must review all materials testing results prior to Final Completion and Final Acceptance. The specifications concerning material acceptance has provisions which may require removal or replacement of material or allow for removal and replacement of material in lieu of the application of penalties and reductions.

Note 2: If applicable, the Resident Engineer shall obtain a Memorandum of Acceptance for Turf and/or Plantings from the Bureau of Landscape and Urban Design. If a growing season is needed to develop a stand of grass, the Resident Engineer will proceed with the directions for Final Completion and Final Acceptance except that a retainage amount equal to the value of the stand of grass will not be released until the turf is accepted. The Department Action Form AD-12 for Final Acceptance and Final Payment will note that retainage will be held pending turf acceptance. Full retainage will be released upon notification from the Project Manager to the Director, Bureau of Accounting and Auditing after the turf has been accepted.

- b) If the Resident Engineer determines that the project is not complete, he/she will notify the Contractor in writing within five (5) working days. The Resident Engineer's letter will note what work remains to be completed in order for the project to be considered complete (refer to Attachment "M"). The Contractor is required to renotify the Resident Engineer upon completion of the work.
- c) The Regional Construction Engineer may waive the assessment of liquidated damages for delays in the submission of documents which could not have been

completed by the contract completion date (e.g. telephone bills, force account records, waste disposal manifests, etc.).

d) If the Resident Engineer with the concurrence of the Resident Engineer's Supervisor and the Project Manager determines that the project appears complete, he/she shall set a date for an Acceptance Inspection (refer to Attachment "N"). The date of the Acceptance Inspection shall be set to allow interested parties a minimum of ten (10) working days from the receipt of the notification to review and inspect the area(s) under consideration. The following parties will be notified:

- Project Manager
- Resident Engineer's Supervisor
- Regional Construction Engineer
- Executive Director of Regional Operations.
- Regional Maintenance Engineer (for any Region with jurisdiction)
- Regional Electrical Engineer *
- Regional Traffic Engineer
- Manager, Bureau of Utilities *
- Manager, Bureau of Landscape and Urban Design *
- FHWA * (not required for Alternate Procedures Projects)
- Supervisor of Sign Shop, Bureau of Maintenance Support (Projects with GO signs)*
- Manager, Bureau of Maintenance Engineering (for Bridge Painting contracts only) *
- Third Party Participating Agencies (e.g. NJTPK, NJHA, Port Authority, etc.)*
- Any County or Municipal Engineer with acceptance jurisdiction
- Any other organization involved in the project*

* If applicable to be determined by the Resident Engineer and Project Manager.

e) The Resident Engineer will confirm the date and time of the acceptance inspection with the FHWA Area Engineer on all Federal Aid projects with full oversight. Furthermore, the Resident Engineer will notify the Project Manager that Form FHWA 1446-C must be submitted.

f) The Project Manager will complete, sign, and submit the Form FHWA 1446-C to the FHWA. The form will include a statement noting the date, time and location of the Acceptance Inspection (refer to Attachment "O").

g) Interested parties will inspect the area under consideration for acceptance, and provide the Resident Engineer with a corrective action list on or before the Acceptance Inspection. No copies are to be sent to the Contractor.

3. Evaluation of corrective action for design deficiencies.

- a) The Resident Engineer will prepare a Memorandum of Record, compiling all identified deficiencies noted by any of the interested parties. If the Resident Engineer identifies a particular deficiency as a design deficiency, he/she will contact the initiator of the item in question and the Project Manager to seek mutual agreement as to classifying the item as either a design deficiency or as a construction deficiency.
 - b) The Resident Engineer will prepare a memorandum to the Project Manager, listing all design deficiencies and any disputed deficiencies.
 - c) The Project Manager will review the list and attempt to resolve disputed items with the initiating agency. The Project Manager will decide if any design deficiencies should be corrected under the contract. The Project Manager will also notify the Program Manager of any remaining disputed deficiencies or design deficiencies.
 - d) The Program Manager shall decide the disposition of any remaining disputed deficiencies and or decide if any other design deficiency shall be corrected under the contract. The Project Manager will inform the Resident Engineer of these findings.
 - e) The Resident Engineer will within thirty days from the date of the Contractor's notice of completion, notify the Contractor that the area is not complete and inform him of the required corrective action (refer to Attachment "E"). With the concurrence of the Project Manager, a Construction Order will be issued for any extra work or any additional work necessary to address any design deficiencies, which are required to be addressed under the contract. The Contractor is required to renotify the Resident Engineer in writing upon completion of the work. If any additional or extra work is required, the Resident Engineer will notify all interested parties in writing (refer to Attachment "P"). All interested parties will have the ability to review this additional or extra work in subsequent Acceptance Inspections.
4. Liquidated damages resulting from corrective action for areas requiring interim completion.
- a) The Resident Engineer will discuss the applicability of assessing liquidated damages with respect to the interim completion date with his/her supervisor and the Project Manager if there are construction deficiencies noted for areas that required completion by an interim completion date.
5. Approval of Final Completion and Acceptance
- a) If there is no additional work, extra work, or corrective action required, the last Acceptance Inspection is deemed to be the Final Acceptance Inspection. After the Final Acceptance Inspection has been held and all submissions have been received, the project is ready for Final Acceptance.
 - b) On all Federal Aid projects, with full oversight, if the FHWA Area Engineer noted any corrective action on their Final Report, the Resident Engineer will write a

letter to the FHWA certifying that any identified deficiencies were corrected (refer to Attachment "Q").

- c) The Resident Engineer will write a memorandum to the FHWA notifying them that a Final Acceptance Inspection has been held for all Alternate Procedures projects.
- d) The Resident Engineer will obtain a Letter of Acceptance for projects with areas which are under the jurisdiction of an outside agency. The Resident Engineer will contact the representative of the agency and request an Acceptance Letter. In the event that the Resident Engineer can not obtain a Letter of Acceptance the following procedure will be followed:
 - 1. If no deficiencies have been noted but the agency is unresponsive to the Resident Engineer's verbal request for a Letter of Acceptance, the Resident Engineer with the concurrence of the Resident Engineer's Supervisor will write a letter to the agency within thirty working days following the Final Inspection. The letter will note that the agency did not request any corrective action and request a Letter of Acceptance (refer to Attachment "R").
 - 2. If the agency again fails to respond, the Resident Engineer, with concurrence of his/her Supervisor, will write a memorandum to the Project Manager requesting acceptance without having received written acceptance by the outside agency. The memorandum will note that there were no unresolved deficiencies, but that the agency was non-responsive.
 - 3. If the agency refuses to write a Letter of Acceptance because a design deficiency was not addressed under the contract (as per the decision of the Program Manager), the Resident Engineer will write a memorandum to the Project Manager. The memorandum will request acceptance without having received acceptance by the outside agency. The memorandum will note the reason for the agencies refusal to write a Letter of Acceptance (refer to Attachment "S").

6. Status Memorandum and Certificate of Completion

- a) At the request of the Resident Engineer, the Regional Construction office staff will prepare the Certificate of Completion, Form DC-20 (refer to Attachment "T"). The Resident Engineer will complete and sign the Form DC-20 certifying final completion and recommending final acceptance. The Form DC-20 will then be submitted to the Regional Construction office for the Regional Construction Engineer's signature.
- b) The Regional Construction office will secure the following signatures on the Form DC-20 as required and forward the DC-20 to the Project Manager:

- Executive Director of Regional Operations (for projects with State Maintenance jurisdiction)
- Other Appropriate Parties, including Local Acceptance letters.

This process should take no longer than 10 working days.

- c) If the Project Manager approves he/she will then sign the Form DC-20 certifying final completion and recommending final acceptance.
- d) The Project Manager will prepare a Status Memorandum to the Director of Project Management with copies to: Manager, Bureau of Materials, Director, Bureau of Accounting and Auditing (3), and the Regional Construction Engineer (refer to Attachment "U").

7. Execution of the Form DC-20 and Form AD-12

- a) The Project Manager will prepare and sign a Department Action Slip, Form AD-12, for Final Completion and Acceptance (refer to Attachment "V"). These documents, originals and copies, will be transmitted to the Director of Project Management after concurring signature by the Program Manager. A transmittal memorandum to the Director will be copied to : Manager, Bureau of Traffic Signals and Safety Engineering; Manager, Bureau of Landscape and Urban Design; Manager, Bureau of Maintenance Engineering (Bridge Painting Contracts only) (refer to Attachment "W ").
- b) The Director of Project Management will review the documents, if found acceptable, will sign the Certificate of Completion, Form DC-20, and the Department Action Slip, Form AD-12 for Final Completion and Acceptance.
- c) An original signature copy of the Certificate of Completion and a copy of the Department Action Slip for Final Completion and Final Acceptance will returned to the Project Manager. The Department Action Slip, Form DC-20 will be sent to the Director, Bureau of Accounting and Auditing.
- d) The Project Manager will distribute an original signature copy of the Form DC-20 to the Contractor (refer to Attachment "X"). If applicable, distribute additional copies to the following:
 1. The Bureau of Structural Evaluation and Bridge Management (if the project involved work on structures).
 2. On all Federal Aid projects copies of the Form DC-20 and Form AD-12 will be sent to the Regional Construction Engineer for the preparation of Closeout Documents in accordance with current OB 93-1.
- e) The Project Manager will transmit a copy of the form DC-20 and Form AD-12 to the Regional Construction Engineer and Resident Engineer. Upon receipt of the Department Action Slip, Form AD-12, for Final Completion and Final Acceptance, the Resident Engineer will prepare the Final Estimate in accordance with current OB 69-2.

Note: If the Contractor has submitted a Form DC-161 “Contractual Notice Form” in accordance with Subsection 107.02, the Project Manager will proceed with the Final Completion and Acceptance process, except that the Department Action Slip and Status Memorandum will note that a dispute is pending. If the resolution of the dispute results in a settlement for additional compensation or a decrease in the amount of damages assessed, a Department Action for a second Final Payment will be issued (refer to Attachment “Y”).

Attachment 14 Form DC-155 2/93

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
RESIDENT ENGINEER'S FINAL STATUS SUMMARY**

ROUTE _____ SECTION _____ DESCRIPTION _____
 FEDERAL PROJECT NO. _____ REGION NO. _____
 CONTRACTOR _____

			ROAD	BRIDGE
DC-26 Request on Application of Bit. Mat.	To	Region & Bureau of Materials		
DC-27 Location & Weight Record - Bit. Conc.	To	Region & Bureau of Materials		
Memo - Bit. Conc. Ready for Cores	To	Bureau of Materials		
Bit. Conc. Core Summary	From	Region		
Bit. Conc. Complied Sample Analysis	From	Region		
Bit. Conc. Pavement Deductions				
SURFACE TOLERANCE	To	Region		
Thickness + Voids	To	Region		
Stability + Job Mix Formula ix Formula	To	Region		
Concrete Pavement Core Summary	From	Region		
Memo - Arrangements for Close-out Meeting	To	Region & Contractor		
Date Meeting Held				
List of Work Still to be Done	To	Contractor		
List of Forms & Releases Required	To	Contractor		
Close-out Meeting Memo of Record	To	Region		
FHWA-47 Statement of Mat. & Labor Used for Projects over 1,000,000 *	From	Contractor		
	To	Region		
DC-123 Final Certificate of Compliance *	From	Contractor		
	To	Region		
LB-95A Material Certification *	From	Region		
	To	Bureau of Materials		
DC-23 Tabulation of Working Days	To	Region		
Memo - Project ready for Corrective Action Inspection	To	Resident Engineer's Immediate Supervisor		
Memo - Arrangements for Corrective Action Inspection	From	Resident Engineer's Immediate Supervisor		
Date Corrective Action Inspection Held				
Letter Listing Corrective Action Work	To	Contractor		
Memo - Corrective Action Work Completed Project Ready for Final Inspection	To	Region		
Date of Final Inspection	From	Region		

* FEDERAL-AID PROJECTS

		ROAD	BRIDGE
Memo - Corrective Action for Items Listed on FHWA Form 1446-C "Final Inspection of Federal Aid Project"	From Resident Engineer's Immediate Supervisor		
	From Regional Construction Engineer		
	To Federal Aid Coordinator		
DC-20 Memo Record of Completion & Acceptance	To Region		
Date of Substantial Completion			
Estimate Reducing Retainage	To Region		
Bureau of Landscape As-built Quantities	From Landscape		
Design's As-built Quantities	From Design		
Const. As-builts Completed			
Bureau of Construction Engineering As-built Review			
Contractor Agreed on As-built Quantities			
Final Submission of As-built Calculations	To Design		
Structural Steel Mylars Submitted	To Structural Design		
Foundation Pile Records Submitted	To Structural Design		
Date of Final Acceptance			
Final Construction Order No. _____ With Final Cost Sharing Distribution DC-174	To Region		
Final Estimate No. _____	To Region		
	From		
DC-20 Sign off or Acceptance Letter by Cooperating Agency	To Region		

ATTACHMENT SUMMARY

<u>SAMPLE</u>	<u>DESCRIPTION</u>
A - LETTER	Failure to meet Interim Completion Date
B - LETTER	Rejection of Contractor's Notice for Interim Completion
C - LETTER	Concurrence of Contractor's Notice for Interim Completion
D - MEMO	Partial Acceptance Inspection
E - LETTER	Contractor's Request for Partial Acceptance
F - MEMO	Partial Acceptance Rejection (Additional or Extra Work Requested)
G - MEMO	Recommending Partial Acceptance
H - LETTER	Approval of Partial Acceptance
I - MEMO	Received Partial Acceptance (Additional Work Required)
J - LETTER	Notice of Substantial Completion Rejection
K - MEMO	Substantial Completion Approval
L - LETTER	Notify Contractor is Behind Schedule
M - LETTER	Project is Not Complete (List of Work Still Remaining)
N - MEMO	Acceptance Inspection
O - FORM	Form FHWA-1446C "Final Inspection of Federal-Aid Project"
P - MEMO	Acceptance Inspection (Additional Work Performed)
Q - LETTER	Certifying Identified Deficiencies were Corrected
R - LETTER	Request Letter of Acceptance from Outside Agency
S - MEMO	Outside Agency Refuses to Write A Letter of Acceptance
T - FORM	Form DC-20 "Certificate of Completion"
U - MEMO	Status Memorandum
V - FORM	Form AD-12 "Department Action Slip" (Note: Dispute Pending)
W - MEMO	Final Acceptance and Final Payment
X - LETTER	Form DC-20 "Certificate of Completion"
Y - FORM	Form AD-12 "Department Action Slip" (Note: Dispute Settled)

ATTACHMENT "A"

Date

Prime Contractor Co., Inc.
101 Generic Road
Urban City, New Jersey 07000

Attention: Mr. William Livingston

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

Dear Sir:

This letter is to notify you that you are behind schedule. Subsection 108.10 of the Contract Specifications requires that Ramp A be opened to traffic on or before July 4, 1995. As the work required for Ramp A is not complete, you have failed to meet the requirements for the interim completion date. Accordingly, liquidated damages of \$400.00 per day will be assessed in accordance with Subsection 108.16. Please be reminded of your obligation for notice of interim completion under Subsection 105.23.

Sincerely,

Lewis Morris
Resident Engineer

c: Regional Construction Engineer
Resident Engineer's Supervisor
Project Manager
File

ATTACHMENT "B"

Date

Prime Contractor Co., Inc.
101 Generic Road
Urban City, New Jersey 07000

Attention: Mr. William Livingston

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

Dear Sir:

I have received your notice of interim completion for Ramp A dated July 16, 1995. Be advised that the work is not considered complete and that your notice is hereby rejected. Attached is a list of the work that remains to be completed or corrected.

Liquidated damages will continue to be assessed in accordance with Subsection 108.16 of the Contract Specifications. Please be reminded of your obligation for re-notification of interim completion as required under Subsection 105.23 of the Contract Specifications upon completion of this work.

Sincerely,

Lewis Morris
Resident Engineer

c: Regional Construction Engineer
Resident Engineer's Supervisor
Project Manager
File

ATTACHMENT "C"

Date

Prime Contractor Co., Inc.
101 Generic Road
Urban City, New Jersey 07000

Attention: Mr. William Livingston

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

Dear Sir:

I have received your notice of interim completion for Ramp A dated August 28, 1995. Be advised that the work appears to be complete and your notice is hereby accepted. In accordance with Subsection 105.23 the date of interim completion for Ramp A is August 28, 1995. Liquidated damages in the amount of \$22,000.00 have assessed for the period of July 5, 1995 to August 28, 1995, inclusive (55 days @ \$400 per day) for delays in completion of this work.

Be advised that the determination of interim completion does not constitute acceptance. You are reminded that your obligations under the contract, including Subsections 107.22 and 107.23 as well as for correcting any defective work or materials found prior to Acceptance have not been relieved.

Sincerely,

Lewis Morris
Resident Engineer

c: Regional Construction Engineer
Resident Engineer's Supervisor
Project Manager
File

ATTACHMENT "D"

All Interested Parties

Lewis Morris
Resident Engineer

Rt. 1 Section 1A
Federal Project No.: MOOOS(000)
Partial Acceptance Inspection

A Partial Acceptance Inspection for the following areas of the subject project has been scheduled for November 14, 1995.

- Ramp A
- Rt. 1 Westbound from Kean Avenue (sta. 14+100) to Byrne Road (sta. 14+250)

From today until the date of the inspection, all parties shall inspect the project for Partial Acceptance in accordance with Subsection 105.21 of the Contract Specifications. A corrective action list of deficiencies must be received by my office no later than November 14, 1995. The address and fax no. for my office is:

123 Cahill Avenue
Hughes, NJ 07999
Fax Tel. No.

Only noted deficiencies will be addressed in subsequent inspections for acceptance, except as permitted under Subsection 105.21. Any objections to partial acceptance of these areas should be noted. Please call my office to confirm receipt of any corrective action lists transmitted.

If there are no noted deficiencies and there are no noted objections to partial acceptance, the Contractor will be relieved of his responsibility for maintenance of these areas.

c: File

ATTACHMENT "E"

Date

Prime Contractor Co., Inc.
101 Generic Road
Urban City, New Jersey 07000

Attention: Mr. William Livingston

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

Dear Sir:

I have received your request, dated December 16, 1995, for partial acceptance for the following areas:

- Ramp A
- Rt. 1 Westbound from Kean Avenue (sta. 14+100) to Byrne Road (sta. 14+250)

Be advised that the work is not considered complete and that your request is hereby rejected. The following work remains uncompleted:

1. Disposal of unsuitable excess material stored at Ramp A sta. 1+250 (L 9 m).
2. Clean up of debris Rt. 1 from sta. 4+100 to 4+115.
3. Curb piece missing for inlet, type B at Rt. 1 sta. 3+150 (R 7 m).
4. Damaged curb at sta. 3+550 (R 7 m).

Upon completion of this work, a written request for partial (or final) acceptance must be provided in order for your request to be reconsidered.

Sincerely,

Lewis Morris
Resident Engineer

c: Regional Construction Engineer
Resident Engineer's Supervisor
Project Manager
File

ATTACHMENT "F"

All Interested Parties

Lewis Morris
Resident Engineer

Rt. 1 Section 1A
Federal Project No.: MOOOS(000)

Be advised that following the Partial Acceptance of Ramp A for the subject project, additional work has been performed in this area, and, consequently, the area is no longer considered to be accepted.

This work is detailed by Change-of-Plan N-1-4. Your review of the project for the Partial Acceptance Inspection of November 14, 1995, should be reconsidered.

An Acceptance Inspection will be scheduled at a later date.

c: File

Garret Wall
Regional Construction Engineer

Lewis Morris
Resident Engineer

Rt. 1 Section 1A
Federal Project No.: MOOOS(000)

Memorandum of Partial Completion

The work performed under the subject project for the following area(s) has been completed and is recommended for Partial Acceptance.

- Ramp A
- Rt. 1 Westbound from Kean Avenue (sta. 14+100) to Byrne Road (sta. 14+250)

	Signature	Date
Resident Engineer:	_____	_____
Resident Engineer's Supervisor:	_____	_____
Regional Construction Engineer:	_____	_____
Executive Director Regional Operations	_____	_____

CERTIFICATION OF PARTIAL COMPLETION

In compliance with Subsection 105.21 of the Standard Specifications, I certify that to the best of my knowledge, information and belief, and on the basis of observations and inspections, that the Work for area noted above has been completed in accordance with the terms and conditions of the Contract. The area noted above for the subject project is recommended for partial acceptance.

Project Manager: _____

CONCURRENCE:

Director of Program Management: _____

Date

Prime Contractor Co., Inc.
101 Generic Road
Urban City, New Jersey 07000

Attention: Mr. William Livingston

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

Dear Sir:

The following areas have been inspected and found satisfactory for Partial Acceptance in accordance with Subsection 105.21:

- Ramp A
- Rt. 1 Westbound from Kean Avenue (sta. 14+100) to Byrne Road (sta. 14+250)

Be advised that this determination does not void or alter the terms of the contract, including Subsections 107.22 and 107.23, nor does it relieve your obligation of correcting any defective work or materials found prior to Final Acceptance.

Sincerely,

Thomas Hartman
Project Manager

c: Regional Construction Engineer
Resident Engineer
Resident Engineer's Supervisor
File

ATTACHMENT "I"

All Interested Parties

Lewis Morris
Resident Engineer

Rt. 1 Section 1A
Federal Project No.: MOOOS(000)

Be advised that following the Partial Acceptance of Ramp A for the subject project, additional work has been performed in this area, and, consequently, the area is no longer considered to be accepted.

This work is detailed by Change-of-Plan N-1-4. Your review of the project for the Partial Acceptance Inspection of November 14, 1995, should be reconsidered.

An Acceptance Inspection will be scheduled at a later date.

c: File

Date

Prime Contractor Co., Inc.
101 Generic Road
Urban City, New Jersey 07000

Attention: Mr. William Livingston

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

Dear Sir:

I have received your notice of substantial completion, dated December 16, 1995. Be advised that the project has not been found to be substantially complete and that your notice is hereby rejected. The following work has not been completed:

1. Traffic lines at Alpha Avenue are missing.
2. Bridge Fence at Rt. 1 over Byrne Road must be completed.
3. Signs noted on Plan Sheet 122 are missing.

Upon completion of this work, re-notification of substantial completion must be provided in order for your request to be reconsidered and retainage to be reduced.

Sincerely,

Lewis Morris
Resident Engineer

c: Regional Construction Engineer
Resident Engineer's Supervisor
Project Manager
File

Thomas Hartman
Project Manager

Lewis Morris
Resident Engineer

Rt. 1 Section 1A
Federal Project No.: MOOOS(000)
Substantial Completion

The subject project was inspected on November 30, 1995 and found to be substantially complete as of November 28, 1995.

It is recommended that the project be authorized for substantial completion and the retainage be reduced in accordance with Subsection 109.07.

The following subcontractors were utilized on the project:

1. XYZ Corp.
2. Acme Subcontracting, Inc.

	Signature	Date
Resident Engineer:	_____	_____
<u>CONCURRENCE:</u>		
Resident Engineer's Supervisor:	_____	_____
Regional Construction Engineer:	_____	_____
Project Manager	_____	_____

c: File

Date

Prime Contractor Co., Inc.
101 Generic Road
Urban City, New Jersey 07000

Attention: Mr. William Livingston

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

Dear Sir:

This letter is to notify you that you are behind schedule. Subsection 108.10 of the Contract Specifications requires that all work be complete on or before December 9, 1995. As the work is not complete, you have failed to meet the requirements for the completion date. Accordingly, liquidated damages of \$1,200.00 per day will be assessed in accordance with Subsection 108.16. Please be reminded of your obligation for notice of completion under Subsection 105.23.

Sincerely,

Lewis Morris
Resident Engineer

c: Regional Construction Engineer
Resident Engineer's Supervisor
Project Manager
File

Date

Prime Contractor Co., Inc.
101 Generic Road
Urban City, New Jersey 07000

Attention: Mr. William Livingston

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

Dear Sir:

I have received your notice of completion dated December 16, 1995. Be advised that the work is not considered complete and that your notice is hereby rejected. The following work remains uncompleted:

1. Stage 4 traffic control devices at sta. 8+700 and at Ramp C must be removed.
2. Clean up of debris from sta. 4+100 to 4+115.
3. Submission of the following documents:
 - DC-123
 - FA-8
 - Force Account records for item no. 9012
 - Certification of DBE/WBE goals

Liquidated damages will be assessed in accordance with Subsection 108.16 of the Contract Specifications. Please be reminded of your obligation for re-notification of completion as required under Subsection 105.23 of the Contract Specifications upon completion of this work.

Sincerely,

Lewis Morris
Resident Engineer

c: Regional Construction Engineer
Resident Engineer's Supervisor
Project Manager
File

ATTACHMENT "N"

All Interested Parties

Lewis Morris
Resident Engineer

Rt. 1 Section 1A
Federal Project No.: MOOOS(000)
Acceptance Inspection

An Acceptance Inspection for the following areas of the subject project has been scheduled for January 18, 1996:

From today until the date of the inspection, all parties shall inspect the project for Acceptance in accordance with Subsection 105.23 of the Contract Specifications. A corrective action list of deficiencies must be received by my office no later than January 18, 1996. The address and fax no. for my office is:

123 Cahill Avenue
Hughes, NJ 07999
Fax Tel. No.

Only noted deficiencies will be addressed in subsequent acceptance inspections, except as permitted under Subsection 105.21. Please call my office to confirm receipt of any corrective action lists transmitted.

c: File

Form FHWA - 1446C
(Rev. 2-78)

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

FINAL INSPECTION OF FEDERAL-AID PROJECT
CONSTRUCTED UNDER 23 U.S.C. 117

INSTRUCTIONS: State is to complete items 1 - 7 and submit original and three (3) copies to the Federal Highway Administration Division Office.

1. PROJECT NO.:	2. COUNTY:	3. STATE:
M-000S(000)	Vorhees	New Jersey

4. DESCRIPTION OF IMPROVEMENT AS PROGRAMMED

Route 1 (1953) Section 1A, from the vicinity of Alpha Avenue to Omega Avenue, Township of Hughes, Vorhees County

5. CONTRACTOR'S NAME	6. CONTRACT AMOUNT
Prime Contractor Co., Inc.	\$4,770,209.00

7. NOTICE OF COMPLETION: *The above listed project has been completed and is ready for final inspection.*

Acceptance Inspection: January 18, 1996 @ 10:00 am
Field Office Location: 123 Cahill Ave., Hughes, N.J. 07999

SIGNATURE (SHA OFFICIAL) _____
TITLE Project Manager

8. FEDERAL HIGHWAY ADMINISTRATION INSPECTION MADE BY

9. DATE OF INSPECTION

10. IN COMPANY WITH

11. REMARKS

12.	_____	13. TITLE	_____	14. DATE	_____
	SIGNATURE				

ATTACHMENT "P"

All Interested Parties

Lewis Morris
Resident Engineer

Rt. 1 Section 1A
Federal Project No.: MOOOS(000)

Be advised that following the Acceptance Inspection of December 18, 1995 for the subject project, additional work has been performed. Attached is a list of the additional work.

An Acceptance Inspection for the project will be scheduled upon completion of the work.

c: File

ATTACHMENT "Q"

Date

U.S. Department of Transportation
Federal Highway Administration
840 Bear Tavern Road - Suite 310
West Trenton, New Jersey 08628

Attention: Mr. Dennis Merida
Division Administrator

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

Dear Sir:

This letter is to certify that all of the corrective action noted in the Area Engineer's Final Report for the subject project has been completed. The drainage at sta. 3+250 has been cleaned and the area round the sign at Ramp B has been selectively trimmed to permit better sight distance.

Sincerely,

Lewis Morris
Resident Engineer

c: Regional Construction Engineer
Resident Engineer's Supervisor
Project Manager
File

ATTACHMENT "R"

Date

Vorhees County Engineer
1766 Powell Lane
Wilson, New Jersey 07000

Attention: Mr. William Newell

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

Dear Sir:

A Final Acceptance Inspection for the subject project was held on January 18, 1996. Your office has not indicated any corrective action in response to the acceptance inspection notice dated January 8, 1996.

A Letter of Acceptance is requested. If no response is received by February 15, 1996, the Department will proceed with Final Acceptance and find the project complete. Thereafter the responsibility for maintenance will be as required under the appropriate Maintenance Jurisdiction Agreement.

Sincerely,

Lewis Morris
Resident Engineer

c: Regional Construction Engineer
Resident Engineer's Supervisor
Project Manager
File

ATTACHMENT "S"

Thomas Hartman
Project Manager

Lewis Morris
Resident Engineer

Rt. 1 Section 1A
Federal Project No.: MOOOS(000)
Vorhees County Acceptance

The County Engineer for Vorhees County has refused to issue a Letter of Acceptance for the subject project. As noted in the Mr. Newell's letter of February 12, 1995, the County will not issue a Letter of Acceptance until a directional sign at Lincoln Avenue is placed. The Program Manager determined that the lack of a sign is a design deficiency which is not to be corrected under this contract. The location requested is not within the project limits and the sign was not called for in the contract plans. Accordingly, it is requested that the project be accepted without a Letter of Acceptance from Vorhees County.

c: Regional Construction Engineer
Resident Engineer's Supervisor
File

Jacob Marley
Director of Project Management

Thomas Hartman
Project Manager

Rt. 1 Section 1A
From the Vicinity of Alpha Avenue to Omega Avenue,
Township of Apogee, Madison County, Federal Project No.: MOOOS(000),
Final Completion and Acceptance, Final Payment

The above noted project awarded to Prime Contractor Co., Inc., 101 Generic Road, Urban City, NJ 07000 was completed on January 6, 1996.

The status of the project is as follows:

Contract Awarded	January 2, 1994
Contract Start Date	February 12, 1994
Actual Start Date	January 21, 1993
Contract Completion Dates	
Ramp A	July 5, 1995
Entire Work	December 9, 1995
Extensions	
Ramp A	None
Entire Work	34 Days
Adjusted Completion Date	
Ramp A	July 5, 1995
Entire Work	January 12, 1996
Actual Completion Date	
Ramp A	August 28, 1995
Entire Work	January 6, 1996
Final Inspection Date	January 18, 1996

The work performed under the contract consisted of excavation, milling, bituminous paving, drainage, curb, sidewalk, driveway, landscaping, and replacement of one bridge structure.

ATTACHMENT "U" (CON'T)

Re: Status Memorandum Rt. 1 Sec. 1A Page 2

No bituminous cores for thickness or air void testing were taken because the pavement areas were less than the minimum lot area requirements for testing.

The Resident Engineer has reviewed the Bituminous Compiled Analysis test results and all bituminous pavement complied with Subsection 903.03 for Job Mix and Stability requirements.

The Bituminous Surface Tolerance was found to be in substantial conformity by the Resident Engineer in accordance with Subsection 404.18(d).

The Resident Engineer has reviewed the Bridge Deck Surface Tolerance Testing Report and the results are within the tolerances established by Subsection 501.16.

The Resident Engineer has reviewed the concrete strength test results, and all non-pay adjustment items have exceeded the minimum strength requirements; the pay adjustment strength results have lots which exceed the class design strength with no lots having results below the class design strength. A bonus of \$5,905.07 has been established in accordance with Subsection 914.02.

The project has been inspected and found satisfactory as noted in a memorandum from William Gates, Regional Maintenance Engineer, dated January 18, 1995.

The as-built quantities are available.

It is recommended that the project be accepted and Final Payment be authorized in accordance with the as-built quantities and deducting the sum of \$22,000.00 in liquidated damages for the period of July 5, 1995 to August 28, 1995, inclusive (55 days @ \$400.00 per day).

Approved: _____
Project Engineer

- c: ~~Regional Construction Engineer~~
Manager, Bureau of Materials
Director of Accounting and Auditing (3)
File

ATTACHMENT "W"

Jacob Marley
Director of Project Management

Thomas Hartman
Project Manager

Final Acceptance and Final

Enclosed are the original and copies of the Status Memorandum, Certificate of Completion Form DC-20, and Department Action Form AD-12 for the following project:

Project Name/Route - Section

Federal Project No.

Rt. 1 Sec. 1A

M-OOS(000)

CONCURRENCE:

Program Manager _____

- c: Manager, Bureau of Maintenance Engineering
- Manager, Bureau of Traffic Signals and Safety Engineering
- Manager, Bureau of Landscape and Urban Design
- Regional Construction Engineer w/enclosure
- File

ATTACHMENT "X"

Date

Prime Contractor Co., Inc.
101 Generic Road
Urban City, New Jersey 07000

Attention: Mr. William Livingston

Re: Rt. 1 Sec. 1A
Federal Project No.: M-OOOS(000)

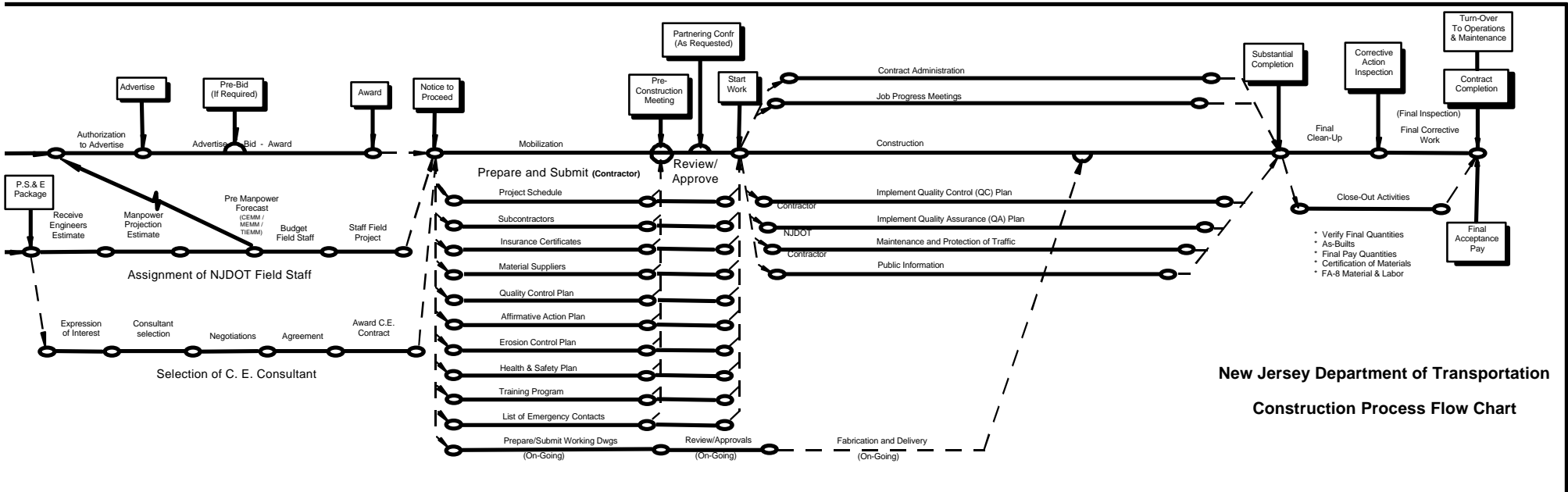
Dear Sir:

In accordance with Subsection 105.23 of the 1989 Standard Specifications, the attached Certificate of Completion, Form DC-20, serves as notice that you have completed the work and all other obligations in accordance with the terms and conditions of the Contract Documents for the above noted project.

Sincerely,

Thomas Hartman
Project Manager

c: Regional Construction Engineer
Resident Engineer
Resident Engineer's Supervisor
File



5.6 FHWA Required Documents

To provide a procedure for transmitting contract documents to the Federal Aid Coordination Section for permanent file in accordance with FHWA requirements.

Alternate Procedure Projects

Upon receipt of the FA-8 from the Contractor, the original is forwarded by the Regional Construction Engineer/Appropriate Bureau Manager to the Supervisor, Federal Aid Coordination, for submittal to the FHWA. The certification compliance letter is to include a statement indicating the date the FA-8 was sent to the Supervisor, Federal Aid Coordination. When a project is less than \$1 million, a completed FA-8 is not required and an N/A is placed in the space provided in Attachment 15. The certification compliance letter will conform to Attachment 15.

Upon receipt of all documents referenced in the example certification compliance letter, the Regional Construction Engineer/Appropriate Bureau Manager will prepare the letter in duplicate. The duplicate will have the following attachments: a copy of the FA-8, the original LB-96, DC-123, DC-173/174 and copies of the other forms cited in the letter. The Regional Construction Engineer/Appropriate Bureau Manager will sign both copies and forward them, with attachments, to the Project Manager. A copy shall be retained in the Regional Construction Office project records.

Upon certification by the Project Manager, the original is sent to the FHWA and the duplicate, with attachments, is sent to the Supervisor, Federal Aid Coordination for permanent file.

The original fully executed final construction order is to be transmitted without attachments. (Two (2) originals are to be prepared and forwarded through the system. Bureau of Accounting and Auditing will return one (1) fully executed document to the Project Manager.)

When a construction order is not processed, N/A is placed in the space provided for the construction order number(s). This will allow the FHWA to quickly process the necessary paper work to closeout the project.

Full Oversight Projects

Upon receipt of the FA-8 from the Contractor, the original is forwarded by the Regional Construction Engineer/Appropriate Bureau Manager to the Supervisor, Federal Aid Coordination, for submittal to the FHWA. The memorandum is to include a statement indicating the date the FA-8 was sent to the Supervisor, Federal Aid Coordination. When a project is less than \$1 million, a completed FA-8 is not required and an N/A is placed in the space provided in Attachment 16. The memorandum will conform to the attached Attachment 16. A copy with attachments will be sent to the Project Manager.

Upon receipt of all documents referenced in the example memorandum, the Regional Construction Engineer/Appropriate Bureau Manager will prepare the memorandum and

forward the original to the Supervisor, Federal Aid Coordination. Copies of all forms cited in the memorandum will be included as attachments.

The original LB-96 "Materials Certification" and one (1) copy is to be transmitted from the Bureau of Materials directly to the Regional Construction Engineer so it may be included with the Compliance Certification Package to the Bureau of Capital Program Coordination.

A copy of the fully executed final construction order is to be transmitted without attachments.

Attachment 15 - Compliance Certification Letter

DATE

Division Administrator
U.S. Department of Transportation
Federal Highway Administration
840 Bear Tavern Road - Suite 310
West Trenton, NJ 08628

Re: Route 100, Section 10C
Fed. Proj. No. M-3000(100)

Dear _____ :

This is to certify that this project was completed in compliance with Alternate Procedures and in accordance with the approved plans and specifications as amended by Change Order Nos. _____ through _____ inclusive. All required documents are on file at the Department's Federal Aid Coordination Section including:

Original:

- ___ LB-96 Materials Certification
- ___ DC-123 Contractor's Final Certificate of Compliance
- ___ DC-173/174 Final Construction Order and Cost Sharing Distribution

Copy:

- ___ Final Certificate of Cost
- ___ AD-12 Department Action Slip (Accepting the Project)
- ___ Written Confirmation that the Final Inspection Deficiencies have been corrected

The original copy of the Form FA-8*, Contractor's Statement of Materials and Labor, was sent to the Supervisor, Federal Aid Coordination on _____.

RECOMMENDED:

CERTIFIED:

()
Regional Construction Engineer
Region North, Central, or South
or Appropriate Bureau Manager

()
PROJECT MANAGER

cc: Supervisor, Federal Aid Coordination

* not required for non-NHS projects.

Attachment 16 - Compliance Certification Memo

NEW JERSEY DEPARTMENT OF TRANSPORTATION MEMORANDUM

TO: Supervisor, Federal Aid Coordination
Bureau of Capital Program Coordination

FROM: Regional Construction Engineer
Region North, Central or South or
Appropriate Bureau Manager

PHONE:

DATE:

SUBJECT: Route 100, Section 10C
Federal Project No. M-3000(100)

Concerning the subject project, copies of the following documents, required for Federal Acceptance, are transmitted for your disposition.

- _____ DC-123 Final Certificate of Compliance
- _____ DC-173/174 Final Construction Order and Cost Sharing Distribution
- _____ Final Certificate of Cost
- _____ AD-12 Department Action Slip (Accepting the Project)
- _____ Written Confirmation that the Final Inspection Deficiencies have been corrected.

The original copy of the Form FA-8*, Contractor's Statement of Materials and Labor, was forwarded to the Federal Aid Coordination Section on _____.

cc: Project Manager - w/attachments

* not required for non-NHS projects.

5.7 Contractor Evaluations

Formal contractor evaluations are completed three times a year. The rating periods are from January 1 to June 30, July 1 to September 30, and October 1 to December 31. Form DC-83 is the official document for these evaluations.

Although a formal evaluation process is to be followed, the Project Manager must continually monitor the contractor and not wait for a three or six month formal review if there is a problem.

The resident engineer would be responsible for notifying the contractor in writing, describing the problem, suggesting corrective action and requesting a timetable and plan for resolution by the contractor. The Project Manager and Program Manager should be copied on this notice. All copies of these letters should be sent to Contract Administration Services.

Contractor Reviews for Deficiencies

- | | | |
|--------------------------|----|--|
| Resident Engineer | 1. | Completes the Contractor's Performance Report. Also completes a report for any subcontractor who has performed \$10,000 worth of work. Indicates corrective actions in the "Remarks" section. |
| | 2. | Forwards the completed reports to the Project Manager for review within three working days from the end of the rating period. |
| Project Manager | 3. | Reviews and signs the Contractor's Performance Report, and includes any pertinent comments. If the overall evaluation or components of the evaluation are less than satisfactory, makes sure that the Resident Engineer properly and fully documents this matter on the report. Returns the report to the Resident Engineer. |
| Resident Engineer | 4. | Forwards the report with a cover letter to the contractor, with copies to the Project Manager, the Program Manager, and the Manager, Contract Administration Services. |
| Project Manager | 5. | If the contractor requests a session to review the performance report, notifies the Resident Engineer, Program Manager, and Manager, Contract Administration Services of the meeting date and time. If it is anticipated that the contractor is requesting the meeting to address a "less than satisfactory" rating, ensures that the Program Manager attends. |
| | 6. | Notifies the Director, Project Management of any issues that were not satisfactorily resolved at this session and requests direction as to any future action to be taken against the contractor. |

SECTION 6 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

6.1 Quality Control Guidelines for Designers

Requirements and submissions do not apply to every project but are to be used as guidelines for development of the project design. The guidelines for each project shall be customized by including only those submission procedures and requirements necessary to assure the quality of the final contract plans, while incorporating constructibility and good engineering practice and including all criteria required to comply with funding and environmental regulations and commitments.

Unique Projects are excluded from these guidelines. They are defined as, but not limited to, the following types of specialized projects:

- Traffic/Electrical
- Utility (Railroad Grade Crossings)
- Landscape
- Highway Lighting
- Bridge Painting
- Fencing
- Minor Deck Patching
- Truck Weigh Stations
- OSHA/PEOSHA
- Fender Repair
- Signing/Striping
- Demolition
- Maintenance Work Orders
- Intelligent Transportation Systems

These guidelines can be customized for each project and used by the Designer and the Project Manager to verify that the indicated items and details have been included on the plans. These guidelines supplement the current NJDOT Sample Plans.

During the preparation of the Consultant's proposal, the Project Manager shall review the Design Submission Guidelines with the Designer and shall use flexibility in their application to the project scope. Additions and deletions to the guidelines shall be clearly identified. Innovative procedures for reducing plan development and review time may be used provided that all applicable federal and state requirements are met.

6.1.1 Submission Guidelines

The Project Manager will, in consultation with Design Coordination, determine the distribution list of those offices that will receive plans for review and comment in accordance with the Scope Team, as defined in scoping. The distribution may also include Non-Scope Team units, such as Jurisdiction and Value Engineering. If a railroad is involved, railroad review will be required.

The Designer shall consult with the Project Manager regarding the number of sets of plans required for each submission. Project Managers are advised to modify distribution lists to include only the offices responsible for reviewing plans. Those units wanting to see plans only for informational purposes can do so at the appropriate design or construction office. This will reduce the number of sets of plans required.

The need for Bureau of Environmental Services (BES) review for those projects will be determined by BES at the scoping stage. If the Project Manager believes that the expertise of BES is needed for an individual project, a written request for review should be submitted to BES.

Transmittal Letter

Each design submission shall include a Transmittal Letter, identifying all items included in the submission, and indicating the most recent construction cost estimate.

Review Comments

Written comments or marked plans shall be submitted to the Design Coordinator not later than the date specified in the transmittal. All major comments shall be brought to the attention of the Project Manager as soon as possible rather than waiting for the meeting. The Design Coordinator is responsible for compiling and reviewing all comments. The Project Manager is responsible for resolving all comments.

All comments will be discussed by the Design Coordinator with the Project Manager, the Designer, and those who made the comments. The Project Manager shall resolve as many comments as possible in the most cost efficient manner (see Section 4.3 and 4.4). If additional information is required to resolve comments, the unit involved will respond to the Project Manager within one week after presentation.

All submissions shall contain the previous submissions comment sets of plan sheets and the written response to each office's comments, stating how the Designer has complied with the comments or giving reasons for non-compliance. Each comment must be addressed either on the plan sheets or in writing.

A Comment Resolution Summary must be approved by the Project Manager prior to further design advancement.

6.1.2 Guidelines For Roadway Plan Development - Initial Submission

These items shall be completed prior to or included in the Initial Design Submission:

Establishment of the Contract Number.

An Electrical Services Inquiry (ESI) shall be submitted to the Bureau of Traffic Signal and Safety Engineering in accordance with Section 11 of the NJDOT Design Manual Roadway.

Calculations on signal loading, conduit fills, signal circuit and minimum roadway overhead clearance shall be submitted to the Bureau of Traffic Signal and Safety Engineering.

If requested, CADD compatible base sheet information shall be submitted to the Bureau of Landscape and Urban Design for their use in completing the landscape design plans.

Six sets of construction plan sheets and specifications depicting railroad involvement shall be sent to the Utilities Unit for submission to the Railroad for comments.

The Jurisdictional Limit Map shall be sent to the Bureau of Research and Engineering Standards.

Environmental Plan Sheet in accordance with Section 8.1.8.

The final draft of any permits shall be submitted for review to the Hydrology and Hydraulics Unit (Stream Encroachment) or the Bureau of Environmental Services (wetlands, waterfront, etc.).

For projects which involve new traffic signals and/or modifications to existing traffic signals, one set of plans shall be sent to the Bureau of Signal and Safety Engineering to identify the above ground clearance of electrical facilities and the locations of utility poles within 30 meters of all existing and proposed signalized intersections.

These plans shall indicate the vertical clearance from existing ground to electrical facility at each utility pole, at each existing traffic signal pole and at the sag point between poles. In addition, the plans must identify all existing and proposed sidewalk and curb, existing underground utilities, existing and proposed guiderail, existing signs, existing and proposed drainage and existing and proposed right of way.

This submission shall occur one month prior to a meeting which will be attended by the designer (the Bureau of Traffic Signal and Safety Engineering for in-house projects), the utility company and the Utility Unit. These plans are specifically for identifying any conflicts which might exist relating to traffic signal and highway lighting design at intersections and all conflicts shall be addressed in the Utility Checklist.

One set of plans, which shall include 1:300 scale staging of signalized intersections, shall be sent to the Regional Traffic Engineer for temporary signal design.

At least two months prior to the Initial Submission, Electrical Plans prepared on CADD Intergraph with diskette, and computer generated lighting calculations (Average Point Method) shall be sent to the Electrical Engineering Unit.

A construction bar chart or Primavera schedule in accordance with Section 4.3.1.

A construction cost estimate shall be submitted in accordance with the current All Design Unit Memorandum, entitled, "Construction Cost Estimates".

Approval shall be provided from the Bureau of Traffic Signal and Safety Engineering for all signal installations.

A report of the lighting and signal system design shall be submitted.

Roadway plans for the initial design submission shall include the following items, as revised for the project:

One set of plans (CADD) shall be submitted to ITS Engineering Unit.

KEY SHEET

1. Key Map:
 - a) north arrow (basis of meridian)
 - b) delineation of proposed project indicated by a solid dark line
 - c) primary and secondary roadways
 - d) waterways
 - e) corporate lines and names
 - f) route, contract number, and description
 - g) beginning and end of project (state/federal), mileposts/stations, stops and resumes and equations
2. Utility list (upper left corner - check for completeness)
3. Design data (lower left corner)
4. Scales (graphic only)
5. Control Section (right corner over Key Map)
6. List of all structures in contract
7. Name of Designer (lower left hand border)
8. Project Category (left corner over Key Map)
9. Right of Way Section (right corner under Key Map)
10. Horizontal Datum
11. Vertical Datum
12. Index of sheets (upper right corner)
13. Federal lengths and state lengths (linear meters and kilometers)
14. Type of highway (left corner under Key Map)
15. Split circle for sheet number (lower right corner)
16. Federal block (15 by 115 millimeter - upper right corner)
17. Signature block (75 by 200 millimeters - lower right corner)

TYPICAL SECTION SHEETS

1. Profile control indicated, base or centerline labeled
2. Percent grade slopes indicated
3. Typical Sections shown for each section change
 - a) for widenings and resurfacings, show the existing conditions including pavement thicknesses, subbases, curbs, lane widths, etc.
 - b) proposed widenings and/or resurfacings should be shown over the existing conditions
 - c) proposed lane, shoulder and auxiliary lane widths shown and labeled (including median)
 - d) existing and proposed right of way lines shown and labeled
 - e) existing and proposed curb and barrier curb shown and labeled
4. Slope limits
5. Slopes for various heights of fill
6. Scales (graphic)

7. Guiderail locations (existing and proposed)
8. Existing pavements and dimensions
9. Typical of channels, ditches, overload placement etc.
10. Types of proposed pavement, bases, curbs
11. Topsoil, fertilizing and seeding, types shown
12. Slopes rounded, tops only
13. Limits in rock cuts, wet excavation, unusable materials, limits for Zone 2 backfill
14. Non-vegetative surface under guiderail
15. Noise barriers

TIE SHEETS

1. Horizontal data, control ties to all PC's, PI's and PT's on the project baseline furnished, and where a field survey line differs from the project baseline (show both)
2. North arrow
 - a) New Jersey State Plane Coordinate System (NAD27) or
 - b) New Jersey State Plane Coordinate System (NAD83)
 - c) true north
 - d) assumed meridian
 - e) meridian taken from previous plans
3. Scales (graphic)
4. List of existing horizontal and vertical control monuments used for project
5. Sufficient information for horizontal and vertical construction layout
6. List of all original right of way and baseline and control line monuments, with notation which were found and/or not found.

CONSTRUCTION PLAN SHEETS

1. The following existing topographic features are shown:
 - a) roadway locations, type of pavement, shoulders, etc.
 - b) drainage, including structures, inverts, ditches, channels, other waterways, outfall locations, basins and flow directions
 - c) existing topography to include 150 meters on either side of the project limits
 - d) bench marks, approximately 120 meter spacing
2. North arrow
 - a) NJ State Plane Coordinate System (NAD27) or
 - b) NJ State Plane Coordinate System (NAD83)
 Vertical Datum
 - a) North American Vertical Datum 1988 (NAVD88) or National Geodetic Vertical Datum 1929 (NGVD29).
3. Scales (graphic)
4. Baseline (construction), right of way lines, existing and proposed, and/or limits of no access lines
5. All roadway dimensions compatible with the typical section, including limits of cut and fill
6. Match lines and stations
7. Equations shown and stationed
8. Begin and end limits of various size curbs and transitions lengths including barrier curb.
9. Standard Legend on first construction plan only

10. Bridge approach slab layout
11. Joint layout shown on concrete pavement construction
12. Beginning and end of project (state/federal), stations and federal nos. shown, stops and resumes shown
13. Inverts and top of grate elevations of proposed and existing drainage structures
14. On projects where rock will be encountered with rock excavation, are combination drains shown
15. Existing and proposed sign structures shown (overhead and ground mounted)
16. Existing utilities
17. Structure numbers
18. Identify wooded areas, swamps, grass, driveway types, etc.

PROFILE SHEETS

1. Existing profile to include 150 meters on each side of the project limits
2. Existing ground line and station elevations
3. Proposed profile
4. Datum reference, vertical control NAVD88 or NGVD29
5. Structure footings and various types of special excavations
6. Scales (graphic)
7. Vertical curve limits
8. Vertical curve design data
9. Existing and proposed structural clearances
10. Proposed design speed for all ramp profiles (if applicable)
11. Begin and end of project limits
12. All railroad crossings

GRADE SHEETS

1. Pavement cross slopes and superelevation rates including transition areas
2. Proposed grades for cross slopes at 7.5 meter intervals where plans deviate from Typical Sections
3. Scales (graphic)
4. Proposed at grade drainage features with elevations
5. Grate and/or rim elevations
6. Detention and retention basins (contoured)
7. Contours for infield areas that are not fully covered by cross sections
8. Proposed lane and shoulder widths
9. North arrow
10. Township and county

TRAFFIC CONTROL AND STAGING PLANS

1. Show all required lane widths for each staging plan
2. Show and grade temporary roadways and cross-overs
3. Show all detours with respective detour signing
4. Show all pay items for temporary work
5. Show any temporary drainage associated with traffic staging
6. Show any temporary traffic signals and associated signal phasing design

7. Show all signing respective of each staging plan
8. Show all traffic control and safety devices that are necessary for each stage of construction.
9. Indicate township and county
10. North arrow
11. Scales (graphic)
12. Indicate allowable working hours

TRAFFIC CONTROL AND LIGHTING PLANS

1. Traffic Signals
 - a) 1:250 scale plans
 - b) proposed traffic signal plans
 - c) anticipated temporary traffic signals
 - d) existing traffic signals to be revised
 - e) location of electrical services and utility lines
 - f) wire elevation layout plan
 - g) utility clearances plan with all signal and lighting standards
2. Highway Lighting
 - a) separate sheets showing all symbols and legends for projects which have two or more load centers
 - b) key sheets showing locations of load centers and areas they serve, locations of the existing and proposed lighting units and locations of sign structures with sign panels
 - c) construction plans showing location of load center, each highway lighting unit (including station and offset), existing highway lighting units (indicating type and wattage of the luminaries with different symbols for existing and proposed) and sign structures and sign panels

CROSS SECTIONS

1. Existing ground line plotted
2. Proposed section template plus baseline plotted correctly
3. Proposed and existing profile grade elevation
4. Datum for each section (horizontal and vertical)
5. Legend
6. Limits of wet excavation
7. Retaining walls, crib walls, abutments, piers and buildings (foundations)
8. Limits of zone 2 backfill with apparent firm bottom
9. Ditch sections
10. Channel sections
11. Limits of excavation and embankment indicated (end sections, equations, bridge sites, etc.)
12. Porous fill, bridge foundation borrow excavation, Zone 1 and Zone 2 materials, or any select embankments clearly indicated
13. Lower right above title block, the location (mainline, ramp Z, etc.) and station to station of the sheet
14. Common line limit for alternate wall designs
15. Match line for overlapping cross sections

EARTHWORK SUMMARY

The earthwork cannot be standardized due to many conditions encountered on various projects. Designers should use the current sample plans for guidance.

INTELLIGENT TRANSPORTATION SYSTEM PLANS

1. Communication conduit layout
2. Key sheet indicating location of all ITS devices
3. System block design
4. Identification of utility conflicts
5. Load center location(s)
6. Location of all traffic signals (proposed and existing)

6.1.3 Guidelines For Structural Plan Development - Initial Submission

Refer to Section 17.3.

6.1.4 Guidelines For Roadway Plan Development - Final Submission

These items shall be completed prior to or included in the Final Design Submission.

The final design submission shall be submitted to the appropriate Quality Assurance units. The submission package shall include:

Environmental Plan Sheet in accordance with Section 8.1.8.

Computer diskette containing Engineer's Estimate data files and two printed copies of the Engineer's Estimate in accordance with the current All Design Unit Memorandum, entitled, "PC Generated Engineer's Estimate".

Computer diskette with the latest Standard Input (SI) and the Designer's Special Provisions, and two sets of the final Special Provisions.

A list of the following:

- Standard Details (Roadway Construction, Traffic Control, Electrical, Bridge) required by sheet number and description.
- Standard Details, as revised or modified, that are included in this submission.
- Non-Standard Details that are included in this submission.

Mylars of all plan sheets, including all standard and non-standard details, consecutively numbered. Indicate the total number of sheets on every sheet. Titles shall be in accordance with the current All Design Unit Memorandum, entitled, "Plan Sheet Titling and Consultant's Signature" and the current Sample Plans.

Roadway plans shall include the following items, as revised for the project:

ESTIMATE - DISTRIBUTION OF QUANTITIES SHEET

1. Proper item nomenclature, no abbreviations
2. Arrangement of items in the order of the standard specifications - insert ten "no items" if there are bridge items; structural items, titled
3. Proper unit designations (linear meters, lump sum, etc.)
4. Provide additional column for cost sharing quantity breakout totals if there are more than one federal project number and/or third party participation
 - a. check if two or more routes are involved, or routes other than NJDOT
 - b) check with the Technical Specification Unit for items participating and non-participating under NJDOT jurisdiction
5. All quantities rounded to whole numbers
6. Suitable amount of "if and where" quantities provided on possible extra work items, not to exceed 10% of the quantity (contact specifications engineer for prior approval)
7. Do not duplicate items, i.e., reset castings vs. reset casting, sanitary sewer
8. Alternate items or groups of items

TYPICAL SECTION SHEETS

1. Finalize typical sections according to initial design review comments.

TIE SHEETS

1. Finalize Tie Sheets according to initial design review comments.

CONSTRUCTION PLAN SHEETS

1. On demolitions
 - a) buildings and tracts defined
 - b) demolition and parcel number
 - c) building described, house number
 - d) cellars, floor slabs
 - e) clearing site area
2. Beginning and end of project (state/federal), stations and federal numbers shown; stops and resumes shown
3. Limits of milling shown
4. Show proposed driveway
5. Limits of removal of concrete base and surface courses, and removal of bituminous concrete overlay clearly shown
6. Complete plan quantities
7. Beam guiderail/impact attenuators

PROFILE SHEETS

1. Finalize according to initial design review comments.

GRADE SHEETS

1. Finalize according to initial design review comments.

TRAFFIC CONTROL AND STAGING PLANS

1. Finalize according to initial design review comments.

TRAFFIC CONTROL AND LIGHTING PLANS

1. Traffic Signals
 - a) all pay items indicated, contract quantities shown on plans and estimate sheets and specified in standard or Special Provisions
 - b) conduit and junction box locations
 - c) block wiring diagrams
 - d) circuitry
 - e) loop detectors and schedule
 - f) signal timing schedule
 - g) load center(s)
 - h) non-standard electrical details
 - i) list of standard electrical details
2. Highway Lighting
 - a) key sheets showing locations of load centers, areas they serve, locations of existing and proposed lighting units (including underdeck lighting units) and the locations of sign structures with sign panels.
 - b) construction plans showing the final location (including station and offset) of each highway lighting unit, revisions to existing lighting systems and temporary highway lighting systems for each stage of construction
 - all pay items with contract quantities shown and specified in standard or Special Provisions
 - conduit and junction box locations
 - foundations
 - wiring diagram
 - circuitry
 - load centers
 - non-standard electrical details
 - list of standard electrical details

CROSS SECTIONS

1. Cut and fill quantities
2. Topsoil quantities and limits
3. Stripping quantities and limits (cuts and fills)
4. Wet excavation and quantities
5. Retaining walls, crib walls, abutments, piers and buildings (foundations)
6. Limits of Zone 2 backfill with apparent firm bottom
7. Ditch sections with quantity, if from sections
8. Channel sections with quantity, if from sections
9. Note describing additional embankment available from project excavation to reduce borrow

10. Check for adequate driveway details and pavement runouts to cover all situations that may be encountered

EARTHWORK SUMMARY

Finalize earthwork summary according to final earthwork quantities.

EARTHWORK CHART SHEET

An earthwork chart should be provided only when the project is a large earth moving project and complex enough to warrant a graphic picture of available embankment sites.

INTELLIGENT TRANSPORTATION SYSTEM PLAN

1. Final device and service locations
2. Fiber optic cable wiring diagrams
3. System block diagrams
4. Traffic signal, CCTV, HAR, and VMS utility conflict corrections
5. Non-standard details
6. Complete plan quantities
7. Signal timing schedule
8. Loop detectors and schedule
9. Load center(s)
10. List of standard electrical details

6.1.5 Guidelines For Structural Plan Development - Final Submission

Refer to Section 17.4.

6.2 Quality Assurance Procedure for Design

Quality Assurance is the process of verifying the effectiveness of quality control measures employed throughout the project delivery process.

All designers are required to develop quality control guidelines. However, as a check to assure that the contract documents are developed in accordance with applicable standards and guidelines, appropriate Department units will utilize Quality Assurance checklists at both the initial and final design submissions. The Department's review does not relieve the designer of the responsibility from submitting quality documents.

The items listed on the Quality Assurance Checklists (Attachments 6.2-1 through 6.2-11) are the major design items that are important to assure accurate development of the project documents. The checklists are intended to focus rather than limit the scope of Department review. The reviewer is encouraged to provide random checks of related design items.

The Department's review units shall provide a memorandum to the Design Coordination Unit at the completion of each review submission stating they have conducted a quality assurance review and shall include any comments in the memorandum. The Design Coordination Unit will compile all quality assurance memorandums and forward the package to the Project Manager for the appropriate action(s).

**QUALITY ASSURANCE CHECKLIST
GEOMETRIC DESIGN UNIT**

	<u>Yes</u>	<u>N/A</u>	<u>No</u>
• Lane Width	_____	_____	_____
• Shoulder Width	_____	_____	_____
• Border Width	_____	_____	_____
• Auxiliary Lane Width	_____	_____	_____
• Shoulder Width Adjacent to Auxiliary Lane	_____	_____	_____
• Stopping Sight Distance Vertical Curves	_____	_____	_____
• Stopping Sight Distance Horizontal Curves	_____	_____	_____
• Pavement and Shoulder Cross Slopes	_____	_____	_____
• Superelevation	_____	_____	_____
• Superelevation Transition Length	_____	_____	_____
• Minimum Curve Radius	_____	_____	_____
• Minimum Grade	_____	_____	_____
• Maximum Grade	_____	_____	_____
• Lane Drop Transition Length and Location	_____	_____	_____
• Lane Addition Transition Length	_____	_____	_____
• Auxiliary Lane Length	_____	_____	_____
• Cross Sections (Slopes, Vertical Curve, Berms)	_____	_____	_____
• Typical Sections - All Elements	_____	_____	_____
• Grades- Spot Check	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
HYDRAULIC DESIGN SECTION**

		<u>Yes</u>	<u>N/A</u>	<u>No</u>
<u>Preliminary and Final Drainage Design Report</u>				
A.	Design Criteria			
	1. NJDOT	_____	_____	_____
	2. State	_____	_____	_____
	3. Federal	_____	_____	_____
B.	Drainage area delineation	_____	_____	_____
C.	Pavement spread	_____	_____	_____
D.	Inlet location and spacing	_____	_____	_____
E.	System sizing (including alternate design)	_____	_____	_____
F.	Outfall protection stone size and cutoff wall	_____	_____	_____
<u>Preliminary and Final Plans</u>				
A.	Inlet type and location	_____	_____	_____
B.	Pipe size, type, and inverts (alternate design indicated on plans)	_____	_____	_____
C.	Low point drainage	_____	_____	_____
D.	Outfall protection detail indicated on plan sheet	_____	_____	_____
<u>Stream Encroachment Application Package</u>				
A.	Completed application, data sheet, and administrative checklist	_____	_____	_____
B.	Application report			
	1. Location map and drainage area map	_____	_____	_____
	2. Color photos	_____	_____	_____
	3. Hydrological calculations	_____	_____	_____
	4. Hydraulic calculations (include HEC-2 files on disk)	_____	_____	_____
	5. Net fill calculations or waiver request	_____	_____	_____
	6. Local and/or public notice Environmental report	_____	_____	_____
C.	Application plans, signed and sealed			
	1. Plan view with datum and property lines noted	_____	_____	_____
	2. Soil erosion plan	_____	_____	_____
	3. Encroachment lines	_____	_____	_____
	4. Topographic contours	_____	_____	_____
	5. Profile and cross sections of stream	_____	_____	_____
	6. Detail of all structures	_____	_____	_____
	7. Roadway profile	_____	_____	_____

D. Permit fee calculation

**QUALITY ASSURANCE CHECKLIST
BUREAU OF ENVIRONMENTAL SERVICES**

The following documentation related to environmental work must be available prior to the hand-off from Project Scope Development to Final Design, or prior to advertisement of a design/build:

	<u>Yes</u>	<u>N/A</u>	<u>No</u>
1. Approved environmental document - FONSI, ROD, CE.	_____	_____	_____
2. Documentation showing the completion of Section 106 consultation (absent mitigation steps).	_____	_____	_____
3. Documentation showing completion of Section 4(f) and 6(f) requirements.	_____	_____	_____
4. Documentation showing consistency with the Clean Air Act conformity requirements.	_____	_____	_____
5. A list of environmental commitments for incorporation into Environmental Plan Sheets.	_____	_____	_____
6. Documentation showing compliance with E.O. 215. Even though approval under this executive order is allowed to occur during final design, it should be done during Scope Development, to avoid last minute project changes required by DEP review.	_____	_____	_____
7. Preliminary plans that incorporate the results of the environmental process.	_____	_____	_____
8. Identification of areas where noise barriers are recommended.	_____	_____	_____
9. For Design Build situations, individual wetland permits should be available prior to advertisement.	_____	_____	_____

The following documentation related to environmental work must be available prior to advertisement.

1. Final noise study report if required.	_____	_____	_____
2. Completion of Section 106 mitigation. This includes field work for archaeological data recovery as well as mitigation for standing historic structures.	_____	_____	_____

3. Approved plans and specifications relating to management of contaminated soils. _____
- Attachment 6.2-3

**QUALITY ASSURANCE CHECKLIST
BUREAU OF ENVIRONMENTAL SERVICES (CON'T)**

	<u>Yes</u>	<u>N/A</u>	<u>No</u>
4. All environmental permits and approvals, including plans for mitigation.	_____	_____	_____
5. Completed re-evaluation (as required).	_____	_____	_____
6. Completed Environmental Plan Sheet, and final plans/specs that incorporate environmental commitments and permit conditions.	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
CONSTRUCTION**

	<u>Yes</u>	<u>N/A</u>	<u>No</u>
<u>Estimate and Distribution of Quantities Sheet</u>			
1. If and Where Directed items should have a purpose and realistic quantities.	_____	_____	_____
2. Check to see if bituminous concrete patch is needed.	_____	_____	_____
<u>Typical Sections</u>			
1. Pavement widths and thickness should be constructible within equipment limits and in accordance with the specifications.	_____	_____	_____
2. Instructions for special conditions and/or construction limits stationing should be noted.	_____	_____	_____
3. Verify that proposed milling and paving to new cross slope can be achieved when compared with existing conditions.	_____	_____	_____
<u>Construction Plan Sheets</u>			
Milling, curb and other item limits should be clearly defined. Variable depth milling should have +/- limits. Verify utility test pit info.	_____	_____	_____
<u>Profile Sheets</u>			
Is handling of runoff during and after construction shown?	_____	_____	_____
<u>Cross Sections</u>			
1. Check top and toe of slopes with those on construction plan sheets to ensure no water is trapped on or diverted to private property. Are drainage provision shown?	_____	_____	_____
2. Earthwork sections must correspond with begin and end stations of project (should not end at plus station).	_____	_____	_____
<u>Detail Sheets</u>			
Are specialty item details shown?	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
CONSTRUCTION (CON'T)**

	<u>Yes</u>	<u>N/A</u>	<u>No</u>
--	------------	------------	-----------

Traffic Control Plan

Adequate signing is needed, especially on detours. Can it be constructed? Adequate work zones and transitions should be provided.	_____	_____	_____
---	-------	-------	-------

Structures

- | | | | |
|--|-------|-------|-------|
| 1. Ensure bridge joint details reflect what is shown on plans. | _____ | _____ | _____ |
| 2. Construction requirements for header should be spelled out, usually after deck pour. | _____ | _____ | _____ |
| 3. Check to see if cofferdam sheeting should be left in place. | _____ | _____ | _____ |
| 4. Location of utility sleeves should be clearly indicated. | _____ | _____ | _____ |
| 5. Are geotechnical and foundations reports available to the contractor and the Resident Engineer? How will piles be driven? | _____ | _____ | _____ |

Specifications

Does the spec have provision for ARAN or rolling straight edge? Check for inclusion of any special item description.	_____	_____	_____
--	-------	-------	-------

Bar Chart

- | | | | |
|---|-------|-------|-------|
| 1. Check duration, contract start (allow 9 weeks from bid date) and completion date. Look for inclusion of restraints. If project can be completed in one construction season, project should be scheduled early in the year. What do you think is the optimum month to bid this project to reduce CE costs and for construction efficiency (avoid winter layover, etc.)? | _____ | _____ | _____ |
| 2. Check for landscape season, pavement clean up, and long life striping in winter months. | _____ | _____ | _____ |

**QUALITY ASSURANCE CHECKLIST
CONSTRUCTION (CON'T)**

		<u>Yes</u>	<u>N/A</u>	<u>No</u>
<u>Permits</u>				
1.	The status of the required permits should be provided. Check to see if they are in hand, being obtained, or will expire prior to completion date.	_____	_____	_____
2.	Dates must be listed in the specs.	_____	_____	_____
3.	Cross reference with Environment commitment.	_____	_____	_____
<u>General</u>				
1.	Will any intended work conflict with existing noise ordinances?	_____	_____	_____
2.	Check to see if guiderail terminal anchorage is shown.	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
STRUCTURES**

	<u>Yes</u>	<u>N/A</u>	<u>No</u>
Plans conform with Foundation Report, Design Appraisal Statement, Hydraulic and Scour Analysis Reports	_____	_____	_____
Bridge aesthetics considered	_____	_____	_____
Attachment details and location of utilities on the structure approved	_____	_____	_____
Previous comments addressed	_____	_____	_____
Geometrics agree with roadway plans	_____	_____	_____
Safety features provided; parapets, guiderail, impact attenuators, etc.	_____	_____	_____
Value engineering recommendations been incorporated	_____	_____	_____
Seismic design and retrofit details provided	_____	_____	_____
Structure complies with all NJDEP and Coast Guard Permits	_____	_____	_____
Structure designed for the attachment of noise barriers, bridge mounted sign support structures, utilities, etc.	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
GEOTECHNICAL ENGINEERING**

	<u>Yes</u>	<u>N/A</u>	<u>No*</u>
Has the Designer addressed structural foundation settlement and stability concerns?	_____	_____	_____
Has the Designer addressed roadway settlement, stability and groundwater concerns?	_____	_____	_____
Has the Designer addressed rock slope stability?	_____	_____	_____
Do the typical sections generally represent the Consultant's Pavement Design Report?	_____	_____	_____
Have the tests boring and geophysical locations been labeled and located on the plans?	_____	_____	_____
Have constructibility issues been addressed?	_____	_____	_____

*NOTE: Any item checked "NO" shall be explained in the space provided below. Attach additional sheets if needed.

**QUALITY ASSURANCE CHECKLIST
BUREAU OF LANDSCAPE AND URBAN DESIGN**

		<u>Yes</u>	<u>N/A</u>	<u>No</u>
<u>Design</u>				
1.	Soil Erosion and Sediment Control report submitted.	_____	_____	_____
2.	All erosion control items included and in conformance with report recommendations and certification requirements.	_____	_____	_____
3.	Necessary landscape items are included in the contract documents.	_____	_____	_____
4.	Non-vegetative surface included under guiderail.	_____	_____	_____
5.	All landscape related commitments are addressed.	_____	_____	_____
6.	Global Warming legislation requirements met.	_____	_____	_____
7.	Federal landscape related requirements and recommendations met.	_____	_____	_____
8.	Noise barrier aesthetics addressed.	_____	_____	_____
9.	Wetland mitigation planting requirements addressed.	_____	_____	_____
<u>Construction Support</u>				
1.	All landscape items have been constructed essentially according to plan.	_____	_____	_____
2.	Soil Erosion and Sediment Control items are installed as required by the Certification.	_____	_____	_____
3.	All public inquiries pertaining to landscape construction issues, including noise barrier aesthetics and environmental mitigation, have been adequately resolved.	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
SURVEY SERVICES UNIT**

	<u>Yes</u>	<u>N/A</u>	<u>No</u>
Horizontal Control was based on published NAD83 monumentation.	_____	_____	_____
Vertical Control was based on published NAVD88 monumentation.	_____	_____	_____
Highway baseline monumentation was found and verified in the field.	_____	_____	_____
Highway baseline monumentation and B.M.'s have been tied into the horizontal and vertical control.	_____	_____	_____
List of horizontal monuments with stations and coordinates has been provided.	_____	_____	_____
List of vertical benchmarks with stations and elevations has been provided.	_____	_____	_____
List of proposed monuments with locations has been provided.	_____	_____	_____
The survey traverse and control network meet 2 nd Order requirements.	_____	_____	_____
The data collected complies with all parts of the survey request.	_____	_____	_____
The Electronic Collection Data is in a format compatible with the requirements of the Department's CADD Unit.	_____	_____	_____
The proper parties have certified to the adequacy of the survey performed.	_____	_____	_____
A detailed survey report addressing all of the above points must be included with the QAC.	_____	_____	_____

NOTE: If any of the above have not been met, a full explanation must be made and approval attached.

**QUALITY ASSURANCE CHECKLIST
UTILITIES DESIGN**

		<u>Yes</u>	<u>N/A</u>	<u>No</u>
1.	Underground Facilities: Conflicts with drainage, structures and other utilities have been addressed.	_____	_____	_____
2.	Overhead Facilities: Aerial facilities are properly located and cleared from overhead structures and work zone equipment.	_____	_____	_____
3.	Grade Changes: No conflicts with utilities or their operations exist because of profile or cross section changes.	_____	_____	_____
4.	Workable Time Frames: Utility schedules have been established in concert with staging of construction and the ability of the Utility Owners to deliver their work, specifications contain the schedules.	_____	_____	_____
5.	Compliance with Scheme of Accommodation: All Utility facilities have been designed and are in conformance with the approved Schemes of Accommodations.	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
TRAFFIC SIGNAL AND SAFETY ENGINEERING**

Initial Submission

Traffic Engineering Review

A. Traffic Signals	<u>Yes</u>	<u>N/A</u>	<u>No</u>
The Preliminary Traffic Signal Design conforms to the MUTCD and NJDOT Standard Design practices.	_____	_____	_____
B. Pavement Markings			
Pavement markings conform to the MUTCD.	_____	_____	_____
Revised passing zones are proposed, if yes specify revisions and initiate required regulations.	_____	_____	_____
Crosswalks are aligned with handicapped ramps.	_____	_____	_____
All necessary regulations, ordinances, and resolutions have been requested or initiated.	_____	_____	_____
C. Signs			
Regulatory			
Proposed signs meet the standards of the MUTCD and NJDOT Sign Manual.	_____	_____	_____
All regulations, ordinances or resolutions to establish the proposed prohibitions or restrictions have been requested or initiated.	_____	_____	_____
Warning Signs			
Warning signs meet the standards of the MUTCD and NJDOT Sign Manual.	_____	_____	_____
Guide Signs			
All overhead sign locations have been identified and preliminary sign designs completed.	_____	_____	_____
The proposed locations meet the standards of the MUTCD.	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
TRAFFIC SIGNAL AND SAFETY ENGINEERING (CON'T)**

		<u>Yes</u>	<u>N/A</u>	<u>No</u>
	Overhead sign lighting requirements have been reviewed and a recommendation has been made based on the sight distance requirements set by the NJDOT.	_____	_____	_____
-				
Electrical Engineering Review Signals				
A.	Highway Lighting			
	Has the Department Design Policy on highway lighting been satisfied?	_____	_____	_____
	The proposed lighting system hardware conforms to NJDOT Standards.	_____	_____	_____
	All utility conflicts with highway lighting systems have been reviewed and resolved.	_____	_____	_____
	The design meets all local and State Standards and is in accordance with the following codes: NEC; NEMA; ASTM; UL; and ANSI.	_____	_____	_____
	Load centers have been identified.	_____	_____	_____
B.	Traffic Signals			
	All traffic signal agreement requirements have been identified and the approval process initiated.	_____	_____	_____
	The selected traffic signal hardware conforms to NJDOT Standards.	_____	_____	_____
Traffic Control and Stage Construction				
A.	Stage Construction			
	The project requires a detour and the agency having jurisdiction has reviewed and approved the proposed detour route.	_____	_____	_____
	Meets the minimum requirements to carry the volume and type of traffic detoured.	_____	_____	_____

Stage construction is required for the project and the proposed staging is constructible. _____

Attachment 6.2-10

**QUALITY ASSURANCE CHECKLIST
TRAFFIC SIGNAL AND SAFETY ENGINEERING (CON'T)**

	<u>Yes</u>	<u>N/A</u>	<u>No</u>
Diversionary roads are required and the design meets the minimum standards.	_____	_____	_____
All aspects of the staging design meets current NJDOT Design and Construction Standards.	_____	_____	_____
All utility conflicts for the stage construction have been resolved.	_____	_____	_____
B. Traffic Control			
Temporary traffic signals are required and the design meets all MUTCD and State Standards and has been structurally certified by a New Jersey licensed professional engineer.	_____	_____	_____
All work zone traffic control devices meet MUTCD and NJDOT Standards.	_____	_____	_____
Safety Engineering			
The proposed guide rail or barrier curb installations, including transition lengths, meet the minimum design standards of the NJDOT.	_____	_____	_____
The proposed end treatments for barrier curb, guide rail or bridge parapits meet NJDOT Standards.	_____	_____	_____
Delineators and raised pavement markers meet the NJDOT Specifications.	_____	_____	_____
Sign posts proposed meet NJDOT Specifications.	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
TRAFFIC SIGNAL AND SAFETY ENGINEERING (CON'T)**

Final Checklist

Traffic Engineering Review

A. Traffic Signals	<u>Yes</u>	<u>N/A</u>	<u>No</u>
Final traffic signal designs conform to MUTCD and NJDOT Standards.	_____	_____	_____
Traffic signal timings have the minimum change, clearance and pedestrian intervals required.	_____	_____	_____
Traffic signal coordination has been provided where applicable.	_____	_____	_____
B. Pavement Markings			
All pavement markings conform to the MUTCD.	_____	_____	_____
All passing zone revisions have been identified and the required regulation has been processed.	_____	_____	_____
All ordinances, regulations, and resolutions have been processed.	_____	_____	_____
C. Signs			
Regulatory			
All signs meet the standards of the MUTCD and NJDOT Sign Manual.	_____	_____	_____
All ordinances, regulations, and resolutions have been processed.	_____	_____	_____
Warning			
All warning signs meet the standards of the MUTCD and NJ Sign Manual.	_____	_____	_____
Guide			
All guide signs meet the standards of the MUTCD and NJ Sign Manual.	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
TRAFFIC SIGNAL AND SAFETY ENGINEERING (CON'T)**

Electrical Engineering Review

		<u>Yes</u>	<u>N/A</u>	<u>No</u>
A.	Highway Lighting			
	The Departments Design Policy on Highway Lighting is satisfactory. _____	_____	_____	_____
	All electrical hardware conforms to NJDOT Standards. _____	_____	_____	_____
	All applicable electrical codes are met. _____	_____	_____	_____
B.	Traffic Signals			
	All traffic signal hardware conforms to NJDOT Standards. _____	_____	_____	_____
	All traffic signal agreements have been processed. _____	_____	_____	_____

Traffic Control and Stage Construction Review

A.	Staging			
	All detours have been approved. _____	_____	_____	_____
	All staging designs are constructible. _____	_____	_____	_____
	All staging designs and diversionary roads meet NJDOT Design and Construction Standards. _____	_____	_____	_____
B.	Traffic Control			
	Temporary traffic signals meet MUTCD and NJDOT Standards and the structural design certification processed. _____	_____	_____	_____
	The traffic signal timing has the minimum change, clearance and pedestrian intervals based on the location and approach speed. _____	_____	_____	_____
	All work zone traffic control devices meet MUTCD and NJDOT Standards. _____	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
TRAFFIC SIGNAL AND SAFETY ENGINEERING (CON'T)**

Yes N/A No

Safety Engineering

All guide rail, barrier curb installations, impact attenuators, delineators, and raised pavement markers meet NJDOT Standards.

All sign posts meet NJDOT Standards.

**QUALITY ASSURANCE CHECKLIST
I.T.S. ENGINEERING**

Initial Submission

A. Plans	<u>Yes</u>	<u>N/A</u>	<u>No</u>
Existing traffic signals, lighting and ITS facility equipment has been verified by field checks.	_____	_____	_____
System concepts conform to the system definition report.	_____	_____	_____
System block diagrams are provided for the communication equipment.	_____	_____	_____
Design exceptions have been identified.	_____	_____	_____
CADD format (level structure, line weights, etc.) has been approved by NJDOT CADD Design.	_____	_____	_____
Communication plans are shown at 1:1000 scale.	_____	_____	_____
Plans show locations of all traffic signals, proposed and existing ITS facility locations, and the location of electric services.	_____	_____	_____
Plans conform to NJDOT, NEC, AASHTO, ANSI, NEMA and utility company standards.	_____	_____	_____
Traffic signal plans and local ITS facilities are shown at 1:300 scale.	_____	_____	_____
Locations for temporary traffic signals have been identified.	_____	_____	_____
B. Specifications			
Specification development for the ITS communication equipment and local devices has begun.	_____	_____	_____
C. Geotechnical Data			
Locations for borings have been identified by station and offset.	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
I.T.S. ENGINEERING (CON'T)**

D. Utilities	<u>Yes</u>	<u>N/A</u>	<u>No</u>
Existing utility conflicts have been identified by field checks and the proposed remedies for each have been included.	_____	_____	_____
All proposed ITS facilities are within the State right of way.	_____	_____	_____
Electric service inquiries for all facilities have been sent to the electric service company.	_____	_____	_____
Draft utility agreements have been forwarded to the utility companies.	_____	_____	_____
Draft agreements for traffic signals and ITS facilities have been forwarded to municipalities and counties.	_____	_____	_____
E. Permits			
Any permits required have been identified.	_____	_____	_____
Permit applications have been completed and forwarded to the relevant parties.	_____	_____	_____
F. Data Collection			
Traffic data collection has begun on specific routes.	_____	_____	_____

Comments/Actions required: _____

**QUALITY ASSURANCE CHECKLIST
I.T.S. ENGINEERING (CON'T)**

Final Submission

A. Plans	<u>Yes</u>	<u>N/A</u>	<u>No</u>
Initial submission comments have been addressed.	_____	_____	_____
Calculations are included for:			
Traffic signal loading	_____	_____	_____
Overhead clearances	_____	_____	_____
Conduit fill	_____	_____	_____
Non-standard details are included	_____	_____	_____
Circuits/load centers	_____	_____	_____
Voltage drop	_____	_____	_____
Structures	_____	_____	_____
B. Geotechnical			
Foundations report is included.	_____	_____	_____
C. Specifications			
Special provisions are complete.	_____	_____	_____
D. Engineer's Estimate			
Engineer's Estimate is complete	_____	_____	_____
E. Utilities			
Electric service inquiries are confirmed.	_____	_____	_____
Final utility agreements are executed.	_____	_____	_____
F. Data Analysis			
Traffic signal timing plans are complete for AM, off peak, and PM periods.	_____	_____	_____

**QUALITY ASSURANCE CHECKLIST
I.T.S. ENGINEERING (CON'T)**

G.	Permits	<u>Yes</u>	<u>N/A</u>	<u>No</u>
	Permits are secured.	_____	_____	_____

Comments/Actions required: _____

6.3 Capital Program Management Quality Assurance Plan Guidelines

6.3.1 Mission Statement

The New Jersey Department of Transportation, in keeping with the February 3, 1994, NJDOT/Industry Quality Assurance Initiative, has established a Quality Assurance System. Every internal unit, consultant, contractor and supplier providing a service to the NJDOT will examine its role in supporting the Department's goal to efficiently manage the Capital Program, and develop its own specific Quality Control/Quality Assurance Plan. The establishment of a universal Quality Assurance Plan will enable the Department to effectively serve the public as we head into the future.

6.3.2 Definitions

Customer - Any internal NJDOT unit that receives a product or service from the unit whose Quality System is being considered. Customers could also include supervisors, coworkers or management. External customers could include FHWA, other agencies, political officials, communities or permitting agencies.

Non-conforming Product - Any product produced by the unit that does not meet the established specifications or requirements for quality as outlined in the unit's procedures and Quality Assurance plan. Products could include items produced, reports, designs, studies, calculations, letters, memos or services performed for the customer.

Product - The result of a Unit's activities or processes. It may include a service provided to a customer.

Quality Assurance (QA) - The process of checking or reviewing work tasks or processes to ensure quality. This is typically conducted by personnel independent of the organizational unit responsible for the task or process.

All those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality. QA includes ensuring that project requirements are developed to meet the needs of all relevant internal and external agencies, planning the processes needed to assure quality of the project, assuring that equipment and personnel are capable of performing tasks related to project quality, ensuring that contractors are capable of meeting and do carry out quality requirements, and documenting the quality efforts.

Quality Control (QC) - The measuring, testing or inspection of a task or process by the personnel who perform the work.

The operational techniques and activities that are used to fulfill requirements for quality. These techniques are used to ensure that a product or service meets

requirements. QC is carried out by the operating forces. Their goal is to do the work and meet the product or service goals. Generally, QC refers to the act of taking measurements, testing and inspecting a process or product to ensure that it meets specifications. Products may be design drawings or specifications, manufactured equipment, or constructed items. QC also refers to the process of documenting such actions.

Quality Oversight (QO) - The administration and review of a Quality Assurance Plan to ensure its success.

Quality oversight is conducted by a unit which is ultimately responsible for project quality where other units have been assigned QA and QC. Quality oversight can range from an informal process of keeping in touch with the QA unit to a second layer of QA activities, depending upon the circumstances. Quality oversight verifies the execution of the quality program.

Unit - Any NJDOT division, bureau, unit or section, under Capital Program Management.

6.3.3 Objectives

The Bureau of Quality Management Services (QMS) was established to provide quality oversight to the Capital Program Management units. QMS will monitor the program, periodically review existing Quality Assurance Plans and conduct Quality Assurance Audits, including frequent job site visits to verify that Quality Control/ Quality Assurance activities are being performed in accordance with the approved Quality Assurance Plans.

QMS will also provide for training of all personnel as needed, promote the use of new technology and products, act as quality assurance representatives in dealing with the FHWA, and recommend improvements as needed. Additionally, QMS will report directly to the Assistant Commissioner of Capital Program Management regarding all quality assurance matters.

The development and utilization of a composite NJDOT Capital Program Management Quality Assurance Plan will enable the Department to continue its commitment toward streamlining the design and Capital Program Management processes. Every unit within NJDOT or that provides a service to the NJDOT is required to make a commitment to the concept of quality assurance so that the Department's goal of producing consistent, high quality work is achieved.

Moreover, in support of the Department's quality assurance mission, all Capital Program Management (CPM) units shall develop and implement a unit Quality Assurance Plan (QAP) for inclusion in a composite NJDOT CPM Quality Assurance Manual. This quality assurance plan guideline shall be followed by all NJDOT CPM

units when developing their QA plans.

6.3.4 Quality Assurance Plan Requirements

In addition to the general unit QAP, a Project Specific Quality Assurance Plan is required for each design project. The procedure is outlined in Section 6.5, Project Specific Requirements. Failure to comply with the approved Quality Assurance Plan, or PSQAP, may result in the issuance of Non-Conformance Reports and Corrective Action Requests (Section 6.6).

6.3.4.1 Management Responsibility

Management shall be responsible for the establishment, oversight, documentation and accountability of a Quality Assurance Plan for their unit.

Quality Assurance Policy

The responsibility for and commitment to a quality assurance policy belongs to the highest level of management. Management shall, therefore, declare and document its commitment to quality. Management shall ensure that the quality assurance policy is understood, implemented, and maintained throughout the organization.

Unit

All personnel who have responsibility for quality assurance or quality control within the unit shall be identified and their interrelationships with management defined. These relationships shall be shown on an **organizational chart**. In particular, the personnel shall be identified who have responsibility to initiate action to prevent quality problems, to identify and record quality problems, to initiate solutions through appropriate channels, and to verify implementation of solutions to quality problems. Those personnel responsible for quality assurance must be independent of those having direct responsibility for the work being performed. This can be accomplished satisfactorily if those assuring quality report to a level higher than those having direct responsibility for the work.

Responsibility and Authority

A person shall be designated as the representative of management who has the responsibility and authority to ensure that management's quality policy is implemented and maintained. Maintenance includes documented review of the policy at appropriate intervals to ensure that it remains suitable and effective.

6.3.4.2 Quality System

Each unit shall implement, document and utilize an effective Quality Assurance Plan which ensures that its products and services meet the customers' requirements.

A total Quality Assurance Plan consists of Quality Control, Quality Assurance and Quality Oversight. This Quality Assurance Plan ensures that the Unit's policies, procedures, work instructions and documentation system are functioning as intended to produce quality products or services.

Quality-System Procedures

The unit shall:

- a) prepare documented work procedures consistent with the requirements of these Capital Program Management Quality Assurance Plan Guidelines and the unit's stated quality policy, and
- b) effectively implement the quality system and its documented work procedures.

For the purposes of these Capital Program Management Quality Assurance Plan Guidelines, the range and detail of the procedures that form part of the quality system depend on the complexity of the work, the methods used, and the skills and training needed by personnel involved in carrying out the activity. Work procedures describe **what** the unit does; Work instructions explain **how** the procedure is carried out. Management shall determine the extent to which work procedures and work instructions are required to effectively meet the goals of its Quality Policy. Work procedures and work instructions do not have to be included in the Unit's Quality Assurance Plan, but should be referenced when applicable.

Quality Planning

The unit shall define and document how the requirements for quality will be met. Quality planning shall be consistent with all other requirements of an unit's quality system and shall be documented in a format to suit the unit's method of operation.

6.3.4.3 Contract Review

Each unit shall establish and maintain documented procedures for contract review and for the coordination of all applicable activities, to verify that its product or services meet the customers' requirements.

Review and Amendment to Contract

The unit shall ensure that all contract commitments are reviewed and agreed upon prior to the execution of the contract, in agreement with the terms of the Quality Assurance Plan. The unit shall also establish the responsibilities for coordinating and conducting contract reviews, distribution of documents for review, and the process for identifying and amending discrepancies within the contract.

Records

Records of contract reviews and amendments shall be maintained and made accessible to personnel directly involved in the contract review process.

6.3.4.4 Design Control

Each unit shall establish and maintain procedures to control and verify that every design meets the customers' requirements and conforms with all applicable established standards.

Design Input

A framework for initial design planning activities shall be established. The designer shall compile, record and verify information on field surveys and inspections. All relevant design criteria, including codes and standards, shall be established and made available to design personnel. Design schedules and cost estimates shall be monitored and adhered to, with documentation of any deviations. The communication interfaces between the consultant, subconsultants, NJDOT units and FHWA shall be identified and described.

Design Output

The designer shall establish methods to ensure that completed designs are functional, meet the needs of the user, are safe and conform to established regulatory standards. Reviews shall be implemented to ensure that all designs are constructable and functional. Furthermore, the design unit shall ensure that only the most recent revisions to written procedures, codes, standards and relevant documents are utilized.

Design Changes

All design changes and modifications shall be identified, documented, reviewed and approved by authorized personnel before their implementation.

6.3.4.5 Document Control

Each unit shall establish and maintain an effective document control system that

includes procedures for creating, controlling, reviewing, approving, publishing and changing all documents that are directly related to the quality of the delivered work.

The unit shall ensure that records, contract drawings, specifications, calculations, studies, quality assurance plan, engineering and construction procedures and other quality related documents are controlled when creating, reviewing, approving, using, revising, and distributing these documents. The pertinent issues of appropriate documents shall be made available at all locations where operations essential to the effective functioning of the Quality System are performed. Changes to documents shall be controlled and reviewed by quality assurance personnel within the unit, including the customer, who reviewed the original document for the area undergoing change. Master document lists shall be maintained showing the latest issue, to preclude the use of non-applicable documents. The storage methods for all documents shall be defined, and obsolete documents either destroyed or clearly marked and segregated, if required for archives.

6.3.4.6 Purchasing/Procurement

Each unit shall ensure that all purchased or procured supplies, materials or services conform to established standards and requirements.

Each unit shall ensure that all contractors/sub-contractors/suppliers it uses have an approved, functioning Quality Assurance/Quality Control Plan in place.

Evaluation of Contractors/Sub-contractors/ Suppliers

The unit shall:

- a) Evaluate and select contractors/sub-contractors/suppliers on the basis of their ability to meet contract requirements, including the quality system and any specific quality assurance requirements.
- b) Define the type and extent of control exercised over contractors/sub-contractors/suppliers. This shall be dependent upon the type of project, the impact of the subcontracted product on the quality of the final product, and, where applicable, on the quality audit reports and/or quality records of the previously demonstrated capability and performance of contractors/sub-contractors/suppliers.
- c) Establish and maintain quality records of acceptable contractor/sub-contractors/suppliers.

6.3.4.6.2 Purchasing Data

Purchasing documents shall contain data clearly describing the product ordered,

including where applicable:

- a) The type, class, grade, or other precise identification.
- b) The title or other positive identification, and applicable issues of specifications, drawings, process requirements, inspection instructions and other relevant technical data, including requirements for approval or qualification of product, procedures, process equipment and personnel.
- c) The title, number, and issue of the quality-system standard to be applied. The unit shall review and approve purchasing documents for adequacy of the specified requirements prior to release.

Verification of Purchased Product

Where specified in the contract, the NJDOT or the NJDOT's representative shall be afforded the right to verify at the subcontractor's premises and the supplier's premises that the subcontracted product conforms to specified requirements. Such verification shall not be used by the supplier as evidence of effective quality control by the subcontractor.

Verification by the NJDOT shall not absolve the supplier of the responsibility to provide an acceptable product, nor shall it preclude subsequent rejection by the NJDOT.

6.3.4.7 Product Identification and Traceability (Inventory Control)

Each unit shall establish an identification and traceability system to ensure that all products, materials and equipment are uniquely identified and traceable through all stages of their use.

Implementation

The unit shall develop and implement an inventory control system to identify items (i.e. materials, equipment, documents, etc.) by the use of stamps, tags, labels, or other approved methods. This identification will allow for the item to be traced through all stages of its use. The unit shall establish and document procedures to handle, store, retrieve, package and deliver products to its customer.

6.3.4.8 Process Control

Each unit shall identify and plan all of the processes and procedures that directly affect the quality of the finished product.

Each unit shall ensure that established processes or procedures are performed under controlled conditions.

Standard Work Procedures

The unit shall ensure that accuracy and consistency are achieved by documenting standard work procedures for every process or procedure that is performed that directly affects the quality of the product. The unit shall ensure the use of suitable equipment, a suitable work environment, qualified personnel and compliance with referenced standards, codes and procedures to produce a quality product.

Monitoring

Processes and product characteristics shall be monitored by personnel not directly responsible for the work and controlled to ensure continuous quality compliance. In situations where testing or corrective action after the fact is not feasible or will not reveal the deficiencies, continuous monitoring and/or product compliance with documented procedures is required (e.g., special processes such as welding, nondestructive testing, and heat treatment).

6.3.4.9 Product Reviews, Inspection and Testing

Each unit shall plan and execute review procedures or inspection and testing procedures, as necessary, to verify the quality of its products.

Review, Inspection or Testing Procedures

Procedures shall be specified, implemented, and the results documented for the review, inspection or testing of incoming products, for reviewing, inspecting or testing work in progress and for final inspection, testing and review of finished work, to ensure compliance with contractual requirements. For design projects, for example, review procedures could include evaluating completed projects by examining the number and types of addenda, change orders, changes of plans, cost overruns, the number and severity of accidents during and after construction, the level of service during and after construction, maintenance costs or public reaction.

Review, Inspection and Testing Status

The status and records of all inspection, testing and reviews shall be readily identified and available. Records of inspected, tested or reviewed products shall indicate the conformance or nonconformance of the product, as well as action taken, if applicable.

Inspection and Test Equipment

Where applicable, the unit shall ensure that all inspection, measuring, and test equipment required to carry out inspection and testing is identified, controlled, calibrated, and maintained in order to demonstrate the conformance of work to the

specified requirements.

Product Review Checklists

Units whose products consist of standardized reports, designs or design phase reviews shall establish and maintain standardized review checklists that are to be used to ensure complete, uniform reviews of the product. These checklists shall be kept updated and controlled (see Section 6.3.4.5).

6.3.4.10 Nonconforming Products

Each unit shall establish procedures for controlling and investigating the cause of nonconforming work, including implementing and recording changes in procedures resulting from corrective action.

Control of Nonconforming Products

Documented procedures shall be established by the unit to assess its nonconforming work. Each unit shall create and maintain records of nonconforming findings which shall include information on all relevant discussions, retesting or rechecking, findings and decisions. Procedures shall be implemented to ensure that the product which does not conform to specified requirements is prevented from being used or submitted inadvertently. For Capital Program Management Units, the primary option for the disposition of nonconforming work is to correct the product to meet specified requirements.

All corrected products shall be re-inspected or rechecked in accordance with the specified quality standards.

6.3.4.11 Corrective and Preventive Action

Each unit shall establish, maintain and document its policy for corrective and preventive action measures.

Corrective Action

Each unit's corrective action plan shall consist of the following:

- a) Reporting and documentation of customer or user complaints.
- b) A comprehensive investigation of the cause of the nonconformity.
- c) Selection of an appropriate corrective action to the process or product.
- d) Changing existing procedures to reflect corrective actions, if necessary.
- e) Monitoring of the effectiveness of the corrective action taken.

Preventive Action

Each unit's preventive action plan shall consist of the following:

- a) The identification of potential causes of nonconformities.
- b) The development of a plan to handle potential nonconformities.
- c) The initiation of the preventive action plan, when warranted, with appropriate follow-up.
- d) The recording and reporting of all preventive action measures.

6.3.4.12 Control of Quality Records

Each unit shall establish procedures for the production, collection, identification, storage, maintenance, distribution and use of all applicable Quality Records.

The unit shall maintain quality records to demonstrate conformance to specified requirements. Quality records shall also be maintained for all vendors, consultants, contractors, sub-contractors and suppliers providing services to the unit. These records shall be legible and easily retrievable in files which provide adequate security and protection. The retention time and disposal dates of these records shall be established and adhered to, respectively.

6.3.4.13 Quality Audits

Each unit shall establish a comprehensive, systematic Quality Audit procedure to ensure that its Quality Assurance Plan is functioning as intended.

The unit shall schedule quality audits on the basis of activity status and importance. Quality audits shall be performed by personnel independent of those having direct responsibility for the activity being audited. Personnel conducting the audits shall have the authority to make prompt changes to the process if significant problems are found. The findings of quality audits shall be documented and presented to personnel responsible for the area being audited. Necessary corrective actions shall be performed and documented by management personnel to rectify deficiencies found by the quality audits.

6.3.4.14 Training

Each unit shall have its personnel adequately trained to perform the unit's functions, consistent with the Quality Assurance Plan.

The unit shall establish a method to identify training needs, including a commitment to secure the necessary resources to provide the identified training. The unit shall include the minimum amount of training required for each job description within its system. The effectiveness of the training shall be monitored to ensure that the goals of the Quality Assurance Plan are being achieved. Training records for all personnel

shall be maintained.

6.3.4.15 Servicing

Each unit shall establish and maintain procedures for performing and verifying that servicing, when necessary, meets specified requirements.

The unit shall establish procedures when servicing is required or desirable. An evaluation shall be performed to measure the effectiveness of the servicing in meeting customer requirements and to ensure that the goals of the Quality Assurance Plan are being achieved. Servicing can include maintenance to the unit's equipment, as well as follow-up servicing to the customers that the unit has supplied a product to.

6.3.4.16 Statistical Techniques

Each unit shall identify the need for statistical techniques required for establishing, controlling, verifying and improving the performance of its product or process.

Procedures shall be established to implement and control the use of any applicable statistical techniques to ensure that their application conforms with acceptable recognized industry standards. Appropriate training in the use of selected statistical techniques shall be provided, as deemed necessary, to conform with the established Quality Assurance Plan.

6.4 Consultant Quality Assurance Plan, Guidelines for the Preparation of

This procedure has been prepared to provide a general outline of the Quality Assurance Plan elements required for all Consultants who provide services to NJDOT. The Quality Assurance Plan elements may not be applicable to all Consultant contracts. The required Quality Assurance Plan elements will be appropriate to the nature of the services provided. The format and numbering sequence from Section 6.4.4.1 to 6.4.4.17 of this procedure must be followed, however, to facilitate the review of the Consultant Quality Assurance Plans.

All Consultants will be required to submit general Quality Assurance Plans to NJDOT for approval as part of the pre-qualification process. A Project Specific Quality Assurance Plan (PSQAP) will be required within 30 days after the Notice to Proceed date (See Section 6.5). Failure of the Consultant to comply with the approved Quality Assurance Plan, or PSQAP, may result in the issuance of Non-Conformance Reports, Quality Issue Reports (See Section 6.6), the withholding of project invoices, or the revocation of Prequalification Status, depending on the severity of the problem and the Consultant's efforts at resolution.

6.4.1 Basic Requirements And Scope

This Section defines the requirements of a quality program that the Consultant shall establish, implement and execute before and during the performance of the design contract to furnish the design, specified materials, baseline survey, design processes and studies that are in conformance with the Design Agreement requirements.

- 1) The Consultant shall be responsible for providing a quality product to the Department under this Agreement. To this end, the Consultant shall have planned and established a PSQAP which shall be maintained throughout the term of the Agreement. The elements of the Consultant's PSQAP shall be imposed on all entities within the Consultant's organization.
- 2) All surveys, design calculations and studies shall be in accordance with standard specifications for bridge and highway design. Failure of the Consultant to follow standard design practice, unless deviations are specifically described in the Agreement, shall constitute justification for rejection of the work.
- 3) During the term of the Agreement, the Consultant's designated Quality Assurance Manager shall perform quality assurance functions. These functions shall include random checks of the PSQAP. These quality assurance functions shall be performed independent of and in addition to the Consultant's quality control responsibilities. NJDOT will continue to perform Quality Assurance reviews of the Initial and Final Design Submissions.

Failure of the Consultant to submit the PSQAP or any required revisions thereto within

the stated time limit shall be sufficient cause to withhold approval of the Consultant's invoices for progress payment(s) until such delinquent submittal is made and accepted by the Project Manager and Manager, Quality Management Services.

6.4.2 Definitions

Quality Policy - The overall quality intentions and direction of the Consultant's organization regarding quality, as formally expressed by the Consultant's management.

Quality Management - That aspect of the overall management function that determines and implements the quality policy.

Quality Procedures - Written instructions for implementing various components of the organization's total Quality System.

Quality Assurance Program Plan - A written description of intended actions to achieve quality for the Consultant's organization.

Quality Assurance Program - The coordinated execution of applicable Quality Control Plans and activities for a project.

Quality Control (QC) - The Consultant's operational techniques and activities that are used to fulfill requirements for quality. These techniques are used to provide a product or service that meets requirements. QC is carried out by the operating forces of the Consultant. Their goal is to do the work and meet the design goals. Generally, QC refers to the act of taking measurements and surveys and checking design calculations to meet contract specifications. Products may be design drawings, calculations, studies or surveys. QC also refers to the process of documenting such actions.

Quality Assurance (QA) - All those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy NJDOT requirements for quality. QA includes the development of project requirements that meet the needs of all relevant internal and external agencies, planning the processes needed to achieve quality, providing equipment and personnel capable of performing tasks related to project quality, documenting the quality control efforts, and most importantly, performing checks necessary to verify that an adequate product is furnished as specified in the Agreement.

Project Specific Quality Assurance Plan (PSQAP) - A written description of intended actions to achieve quality for a specific project.

Quality Oversight(QO) - Activities conducted by the Department to verify the satisfactory implementation of approved Quality Assurance and Quality Control by organizations authorized to do so. QO can range from an informal process of keeping in touch with the QA organization to a second layer of QA activities, depending upon

the circumstances. QO verifies the execution of the quality program.

6.4.3 Submittal

- 1) Within 30 days after the Notice to Proceed, the Consultant shall submit the PSQAP to the Manager, Quality Management Services, for review and approval, with copy to the Project Manager. The Consultant's PSQAP shall include its Subconsultant's PSQAP as described in Section 6.4.4.6, "Control of Subconsultants."
- 2) Within 15 days after receipt of the State's written comments on the preliminary PSQAP, the Consultant shall furnish for the approval of the Manager, Quality Management Services, the final PSQAP, with copy to the Project Manager.
- 3) Submit a letter with the final PSQAP, signed by an officer of the Consultant's Management Organization, appointing the QA Manager and assigning responsibility for implementing the Quality Assurance Plan.

Acceptance of the PSQAP is conditional and shall be predicated on satisfactory performance during design. As the work progresses the Project Manager or Manager, Quality Management Services, may require the Consultant to make changes to the PSQAP as considered necessary to obtain the quality of design required in the Agreement. Quality Management Services will conduct Quality System audits to verify that the Consultant's PSQAP has been successfully implemented.

6.4.4 Quality Program Requirements

The following 17 elements are required for both the Consultant Quality Assurance Plan and the PSQAP.

6.4.4.1 Management Responsibility

Quality Control Policy

The Consultant's management with executive responsibilities shall define and document its policy for quality, including objectives for quality and its commitment to quality. The quality policy shall be relevant to the Consultant's organizational goals and the expectations and needs of the Department. The Consultant shall provide that this policy is understood, implemented and maintained within the Consultant's organization.

Organization

The Consultant shall include in its PSQAP a project organization chart that includes quality assurance and quality control functions. It shall include relationships between project management, key personnel of Subconsultants, design engineering and quality

control. Resumes and responsibilities of the Consultant's Quality Control staff and its Quality Assurance staff shall be provided.

Responsibility and Authority

The Consultant shall assign an independent Quality Assurance Manager not directly responsible for the work to this project who shall manage quality matters for the project and have the authority to act in all quality matters for the Consultant. The Quality Assurance Manager shall be fully qualified by experience and technical training to perform the quality control activities and implement the Project Specific Quality Assurance Plan. The Quality Assurance Manager's responsibilities shall include a method for verifying the implementation of adequate corrective actions for the non-conforming work and notifying appropriate project management personnel. A specific description of the duties, responsibilities and methods used by the Consultant's Quality Assurance staff to identify and correct non-conformities shall be included. The resume of the Quality Assurance Manager must include a description of his duties, responsibilities, and his record of quality control experience.

The responsibility, authority and interrelation of all personnel who manage, perform and verify work affecting quality shall be defined and documented.

Resource

The Consultant shall identify resource requirements and provide adequate resources, including the assignment of trained personnel (see Section 6.4.4.14), for management, performance of work and verification activities including internal quality audits.

6.4.4.2 Quality System

General

The Consultant shall establish, document and maintain a quality assurance program plan as a means of providing a design product that conforms to specified requirements. The quality assurance program plan shall include or make reference to the work procedures and outline the structure of the documentation used in the quality assurance program.

Quality Plan Procedures

The Consultant shall:

- a) Prepare documented procedures consistent with the requirements of this section and the Consultant's or Subconsultant's stated quality policy. Documented procedures may make reference to work instructions that define how an activity is

performed.

- b) Effectively implement the PSQAP and its documented procedures.

Quality Planning

The Consultant shall define and document how the requirements for quality will be met. Quality planning shall be consistent with all other requirements of a Consultant's Quality Assurance Program and shall be documented in a format to suit the Consultant's methods of operation.

6.4.4.3 Agreement Review

The Consultant shall establish and maintain documented procedures for Agreement reviews and for the coordination of all applicable activities, to verify that the services meet NJDOT requirements.

Review and Amendment to Agreement

The Consultant shall review and concur with all Agreement commitments prior to the execution of the Agreement. The Consultant shall also establish the responsibilities for coordinating and conducting Agreement reviews, distribution of documents for review, and the process for identifying and amending discrepancies within the Agreement.

Records

Records of Agreement reviews and amendments shall be maintained and made accessible to personnel directly involved in the review process, in accordance with the terms of the Agreement.

6.4.4.4 Design Control

General

The Consultant shall establish and maintain documented procedures to control and verify that the design meets the specified requirements.

Design Input

A framework for initial design planning activities shall be established. The designer shall compile, record and verify information on field surveys and inspections. All relevant design criteria, including codes and standards, shall be established and made available to design personnel. Design schedules and design cost estimates shall be monitored and adhered to, with documentation of any deviations. A documented procedure for responding to all comments from NJDOT units, which have been

coordinated by the NJDOT Project Manager, shall be established.

Design Output

The designer shall establish methods and implement reviews to determine that completed designs are constructable, functional, meet the requirements of the NJDOT and conform to established regulatory standards. Furthermore, the Consultant shall establish and implement procedures to determine that only the most recent revisions to written procedures, codes, standards and relevant documents are used.

Design Changes

Before their implementation, all design changes and modifications shall be identified, documented, reviewed and reported to the NJDOT for approval.

Organizational and Technical Interfaces

Organizational and technical communication interfaces between different groups which input into the design process shall be defined and the necessary information documented, transmitted and regularly reviewed. These groups shall include the Consultant, NJDOT, outside agencies and any Subconsultants.

6.4.4.5 Document Control

General

The Consultant shall establish and maintain documented procedures to control all documents and data that relate to the requirements of this section including, to the extent applicable, documents of external origin such as studies, reports, calculations, standards and record drawings. These procedures shall control the generation, distribution and confidentiality of all documents, as well as establish a system to identify, collect, index, file, maintain and dispose of all records. Documents and data can be in the form of any media, such as hard copy or electronic media.

Document and Data Approval and Issue

The documents and data shall be reviewed and approved for adequacy by authorized personnel prior to issue. A master list or equivalent document control procedure identifying the current revision status of documents shall be established and be readily available to preclude the use of invalid and/or obsolete documents.

Document and Data Changes

Changes to documents and data shall be reviewed and approved by the same functions or organizations that performed the original review and approval, unless specifically designated otherwise. The designated functions or organization shall have

access to pertinent background information upon which to base their review and approval.

Where practical, the nature of the change shall be identified in the document or the appropriate attachments.

6.4.4.6 Control Of Subconsultants

General

The Consultant shall establish and maintain documented procedures to provide subcontracted or purchased services that conform to specified requirements.

Evaluation of Subconsultants

The Consultant shall:

- a) Select Subconsultants on the basis of their ability to meet Agreement requirements, including the Consultant's PSQAP, and any specific quality control requirements. The Subconsultant shall be required to accept and implement the Consultant's PSQAP, as it pertains to the contract, or to submit their own for review and approval by the Consultant.
- b) Define the type and extent of control exercised by the Consultant over Subconsultants. Include a description of the system used to review and monitor the activities and submissions of the Subconsultant. This control shall be dependent upon the type of service, the impact of a subcontracted service on the quality of the final design and, where applicable, dependent on the quality audit reports and/or quality records of the Subconsultants;
- c) Review quality records of Subconsultants consisting of quality control and quality assurance data for the project (see Section 6.4.4.12).

6.4.4.7 Design Product Identification And Traceability

Where appropriate, the Consultant shall establish and maintain documented procedures for identifying its design product by suitable means from its inception and during all stages of development, design and delivery.

Where and to the extent that traceability is a specified requirement, the Consultant shall establish and maintain documented procedures for unique identification of individual design products. This identification shall be recorded (see Section 6.4.4.12).

Control of Department Supplied Product

The Consultant shall establish and maintain documented procedures for the control of, verification, storage and maintenance of NJDOT-supplied products, such as record drawings or special equipment, provided for incorporation into the contract or for related activities. Any such product that is lost, damaged or is otherwise unsuitable for use shall be recorded and reported to the NJDOT (See Section 6.4.4.12).

6.4.4.8 Process Control

The Consultant shall identify and plan the design, survey, research or servicing processes which directly affect quality and shall carry out these processes under controlled conditions. Controlled conditions shall include the following:

- a) Documented procedures defining the manner of design, survey, research or servicing, where the absence of such procedures could adversely affect quality;
- b) Use of suitable design, survey, research or servicing equipment, and a suitable working environment;
- c) Compliance with referenced standards/codes, quality plans and/or documented procedures;
- d) Monitoring and control of suitable process parameters and end product characteristics;
- e) The approval of special processes and equipment, if applicable;
- f) Criteria for workmanship, which shall be stipulated in the clearest practical manner (e.g., written standards, representative samples or illustrations);
- g) Suitable maintenance of equipment, if applicable, to provide continuing process capability;
- h) A detailed description of unique or "Project Specific" procedures.

The requirements for any qualification of special survey or research work, including the associated equipment and personnel (see Section 6.4.4.14), shall be specified.

6.4.4.9 Purchasing

Purchasing Orders

Purchasing orders shall contain data clearly describing the product ordered, including where applicable:

- a) The type, class, grade or other precise identification;

- b) The title or other positive identification, and applicable issues of specifications, drawings, process requirements, inspection instructions and other relevant technical data, including requirements for approval or qualification of the product, procedures, process equipment and personnel.
- c) The title, number and issue of the quality plan standard to be applied.

The Consultant shall review and approve purchasing orders for adequacy of the specified requirements prior to release.

Verification of Purchased Product

Consultant Verification at Vendor's Premises

Where the Consultant proposes to verify a purchased product at the vendor's premises, the Consultant shall specify verification arrangements and the method of product release in the purchasing order.

Department Verification of Subcontracted Product

The Department's representative shall be afforded the right to verify at the vendor's premises and the Consultant's premises that the subcontracted product conforms to specified requirements. Such verification shall not be used by the Consultant as evidence of effective control of quality by the vendor.

Verification by the NJDOT shall not absolve the Consultant of the responsibility to provide an acceptable product, nor shall it preclude subsequent rejection by the NJDOT.

6.4.4.10 Control Of Non-Conforming Product

General

The Consultant shall establish and maintain documented procedures to determine that a design product that does not conform to specified requirements is not submitted and is prevented from unintended use. These procedures shall provide for the identification, documentation, evaluation and disposition of the non-conforming work, and for notification to the NJDOT and other agencies having jurisdiction thereof.

Review and Disposition of Non-conforming Design Product

The responsibility for review of design products and the authority for the disposition of a non-conforming design product shall be defined in the Project Specific Quality

Assurance Plan.

A Non-conforming design product may be:

- a) Corrected to meet the specified requirements,
- b) Accepted with or without correction by concession,
- c) Regarded for alternative applications, or
- d) Rejected or scrapped.

Where required by the Consultant Agreement, the proposed use or correction of a design product (see Section 6.4.4.10b) which does not conform to specified requirements may be reported for concession to the NJDOT. The description of the non-conformity that has been accepted, and/or any corrections made shall be recorded (see Section 6.4.4.12).

Corrected design products shall be re-checked in accordance with the PSQAP.

6.4.4.11 Corrective And Preventive Action

General

The Consultant shall document in the PSQAP procedures to be utilized to implement corrective and preventive action.

Corrective or preventive action taken to eliminate actual or minimize potential design non-conformities shall be to a degree appropriate to the magnitude of problems and commensurate with the risks encountered.

The Consultant shall implement and record in the PSQAP any changes to the documented procedures resulting from corrective and preventive action.

Corrective Action

The corrective action procedures to eliminate actual non-conforming design products shall include:

- a) The effective handling of NJDOT observations and reports of design product non-conformities, including developing interim measures, if warranted, to correct the actual non-conformity;
- b) Conducting an investigation into the root cause of non-conformities relating to the design product, process and quality system, and recording the results of the

investigation (see Section 6.4.4.12);

- c) Determination of the corrective action needed to eliminate the cause of the design non-conformities;
- d) Application of measures to determine that corrective action has been taken and that it is effective.

Preventive Action

The procedures for preventive action to minimize nonconformities shall include:

- a) The use of appropriate sources of information relating to the quality of the design product (such as concessions, audit results, quality records, service reports and NJDOT complaints) to detect, analyze, and eliminate potential causes of nonconformities;
- b) Determination of the steps needed to deal with any problems requiring preventive action;
- c) Initiation of preventive action and appropriate follow-up reviews to determine that it is effective;
- d) Confirmation that relevant information on actions taken is submitted for NJDOT and Consultant management review.

6.4.4.12 Control Of Quality Records

The Consultant shall establish and maintain documented procedures for identification, collection, indexing, access, filing, storage, maintenance, and disposition of quality records. Records may be in the form of any type of media, such as hard copy or electronic media.

Quality records shall be maintained to demonstrate conformance to specified requirements and the effective operation of the quality system. Pertinent quality records from the Subconsultant shall be an element of these data.

All quality records shall be legible and shall be retained in such a way that they are readily retrievable in files that provide a suitable environment to prevent damage, deterioration or loss. Retention times of quality records shall be established in the PSQAP. Where agreed contractually, quality records shall be made available for evaluation by the NJDOT for an agreed period.

6.4.4.13 Internal Quality Audits

The Consultant shall establish and maintain documented procedures for planning and implementing internal quality audits to verify whether quality activities and related results comply with planned arrangements and to determine the effectiveness of the quality system.

Internal quality audits shall be scheduled on the basis of the status and importance of the activity to be audited and shall be carried out by personnel independent of those having direct responsibility for the activity being audited.

The results of the audits shall be recorded (see Section 6.4.4.12) and brought to the attention of the personnel having responsibility in the area audited. The management personnel responsible for the area shall take timely corrective action on deficiencies found during the audit.

Follow-up audit activities shall verify and record the implementation and effectiveness of the corrective action taken (see Section 6.4.4.12).

6.4.4.14 Training

The Consultant shall establish and maintain documented procedures for identifying training needs and provide for the training of all personnel performing activities affecting quality. Personnel performing specific assigned tasks shall be qualified on the basis of appropriate education, training and/or experience, as required. Appropriate records of training shall be maintained (see Section 6.4.4.12).

6.4.4.15 Servicing Of The Design Product

Where servicing of the Consultant's design product is a specified requirement, the Consultant shall establish and maintain documented procedures for performing, verifying, and reporting that the servicing meets the specified requirements. Servicing of a design product, for example, may include providing for field visits to investigate construction problems or providing related engineering support until the project is complete.

6.4.4.16 Statistical Techniques

Identification of Need

The Consultant shall identify the need for statistical techniques required for special survey or research projects, if applicable.

Procedures

The Consultant shall establish and maintain documented procedures to implement and

control the application of the statistical techniques identified in Section 6.4.4.16.

6.4.4.17 Handling, Storage, Packaging, Preservation And Delivery

General

The Consultant shall establish and maintain documented procedures for handling, storage, packaging, and delivery of the final design, survey or research product.

Handling

The Consultant shall provide methods of handling its final design, survey or research product to minimize damage, deterioration, loss or incorrect identification.

Storage

The Consultant shall use designated areas or files to minimize damage or deterioration to documents, plans, studies or reports prior to use or delivery. Appropriate methods for authorizing receipt to and dispatch from such areas shall be stipulated.

Packaging

The Consultant shall control packaging and labeling processes to the extent necessary to conform with specified requirements.

Preservation

The Consultant shall apply appropriate methods for preservation and segregation of the documents, plans, studies or reports when they are under its control.

Delivery

The Consultant shall arrange for the protection of the documents, plans, studies or reports after final checking. Where contractually specified, this protection shall be extended to include delivery to the destination.

6.5 Project Specific Requirements

The Designer's PSQAP must also follow the requirements of the "Guidelines for the Preparation of Consultant Quality Assurance Plan" or for In-house Designers, the "CPMQAP Guidelines." The PSQAP should be an expansion of the previously approved consultant organization or In-House unit QAP, with all project specific requirements addressed. The PSQAP shall be submitted within 30 days of the Notice to Proceed to the Manager, Quality Management Services, for review and approval, with a copy to the Project Manager. In addition to all of the requirements of the appropriate Guidelines, the PSQAP shall address the following items that are directly relevant to a specific project:

1. Key project staff, a project organization chart, the Designer's function related to shop drawing approval and resolving design field problems during construction, and a description of staff responsibilities for both the project and the quality process (to be placed in Section 6.4.4.1 of the Consultant Quality Assurance Plan (CQAP) or Section 6.3.4.1 of the Capital Program Management unit Quality Assurance Plan (CPMQAP)).
2. A project schedule, and a cost control plan (to be placed in Section 6.4.4.2 of the CQAP or Section 6.3.4.2 of the CPMQAP).
3. A list of specific design standards to be used for the project, a description of the design phase reviews required, a description of the communication system for project matters, a description of the process planned to resolve NJDOT and FHWA comments, a list of applicable computer software to be used on the project, and a description of the procedures to be used for design changes (to be placed in Section 6.4.4.4 of the CQAP or Section 6.3.4.4 of the CPMQAP).
4. A description of the process to be used for maintaining all project records, including minutes of meetings, comments received, correspondence, and review forms to be used (to be placed in Section 6.4.4.5 of the CQAP or Section 6.3.4.5 of the CPMQAP). Quality records shall be maintained as per Section 6.3.4.12 of the CPMQAP or Section 6.4.4.12 of the CQAP.
5. A reference to or a description of the procedure to be used to evaluate subconsultants (to be placed in Section 6.4.4.6 of the CQAP or Section 6.3.4.6 of the CPMQAP).
6. A reference to or a description of the procedures to be used for checking work and performing technical reviews, and a procedure for signing off on all project deliverables (to be placed in Section 6.4.4.8 of the CQAP or Section 6.3.4.8 of the CPMQAP).

7. A description of the procedure for correcting internal non-conformances and the identity of the person responsible for reporting non-conformances or quality issues which have occurred in other organizations involved in the project (to be placed in Section 6.4.4.10 of the CQAP or Section 6.3.4.10 of the CPMQAP). See Sections 6.6.1 and 6.6.3 for instructions and forms for the procedure.
8. Identify the person (Unit Manager, Program Manager, or Principal of the firm) responsible for responding to Corrective Action Requests issued by QMS (to be placed in Section 6.4.4.11 of the CQAP or Section 6.3.4.11 of the CPMQAP). See Section 6.6.2 for instructions and form for the procedure.
9. The procedure to be followed for conducting internal quality audits (to be placed in Section 6.4.4.13 of the CQAP or Section 6.3.4.13 of the CPMQAP).
10. Project specific staff training requirements (to be placed in Section 6.4.4.14 of the CQAP or Section 6.3.4.14 of the CPMQAP).
11. The Designer's communication system for construction matters, including a description of the process planned to resolve NJDOT and other Agency comments, a list of any special equipment or processes to be used on the project, and a reference to the procedures to be followed for shop drawings, changes of plans, change orders and claims (to be placed in Section 6.4.4.4 of the CQAP or Section 6.3.4.4 of the CPMQAP).

These items do not address all possible project specific quality assurance plan requirements, but serve as an example of several key items that will be required for most plans. The Project Manager will determine what specific requirements are relevant to the project, with concurrence from the Bureau of Quality Management Services.

6.6 Quality Assurance Reporting

6.6.1 Notice of Non-Conformance Report

6.6.1.1 Background

The purpose of using a formal non-conformance reporting procedure is to standardize the process of recognizing and reporting problems related to the delivery of the Capital Program. The use of this procedure will also serve to notify a central organization, QMS, of all significant problems that are occurring throughout the spectrum of design and construction. This will enable the Department to track and recognize trends, so that corrective action can be taken to prevent future similar problems from reoccurring on other projects.

The Notice of Non-Conformance form is self explanatory, but the writer must be sure to include all specific details of the problem, keeping in mind that people not familiar with the specifics of every project will be working on the problem.

It is important to remember that the purpose of this procedure is to standardize and improve our project delivery system. This method of reporting problems should not be used as a punitive measure, and in most cases problems should be resolved directly between the involved organizations. For the Project Manager's procedure for dealing with Consultant deficiencies, see Section 19.8.

6.6.1.2 Initiation

The Notice of Non-Conformance form (see Attachment 6.6-1) shall be used by all CPM units involved in the project delivery process.

Notice of Non-Conformance forms can be completed by any person when a problem has been identified that is not immediately resolved. The writer of a Non-Conformance Report must send it directly to the Bureau of Quality Management Services with a copy to the Program Manager. These problems can be errors or omissions, delays which affect the project schedule or the originator's ability to meet project deadlines, late submissions, cost overruns, unauthorized changes to projects, schedules, plans, etc., or non-compliance with established policies, procedures, specifications or Project Specific Quality Assurance Plans. In general, any problem related to the project delivery system or a specific project's quality, schedule or budget can be reported in this manner. These forms should not be used to resolve administrative or disciplinary problems. There are existing policies and procedures that govern these matters.

6.6.1.3 Processing

QMS will review the report and contact the appropriate CPM unit manager, Program Manager, Resident Engineer, or Consultant or Contractor principal of the firm whose

organization has been identified as committing a non-conformance. QMS will ensure that the responsible management takes whatever action is appropriate to correct the non-conformance. In all cases the non-conformance reports sent to QMS will be entered into our database, tracked, and responded to with a Corrective Action Request, if warranted (See Section 6.6.2). The writer of a Non-Conformance Report will be notified by QMS of what action has been taken. If a significant quality problem is reported during design, QMS will notify the Project Manager, and if a significant quality problem occurs during construction, QMS will notify both the Resident Engineer and the Project Manager.

All questions or comments regarding the use of this procedure can be directed to the Project Engineer, Quality Assurance and Audits Unit, (609) 530-6363.

6.6.2 Corrective Action Request

6.6.2.1 Background

The Corrective Action Request form (see Attachment 6.6-2) will be used by the Bureau of Quality Management Services as needed to address Non-Conformance Reports or Quality Issue Reports that have been generated by various organizations involved in the project delivery process.

The purpose of using a formal corrective action request is to simplify the process of recognizing and resolving problems throughout the design and construction process, so that everyone will benefit from quality related improvements. The use of this procedure will also serve to keep all organizations informed of current developments, so that the project delivery process can be kept standardized, as much as possible.

6.6.2.2 Initiation

QMS will file and monitor Non-Conformance Reports or Quality Issue Reports that have been issued by various organizations. When a substantial problem or trend is noticed that adversely affects project quality, a Corrective Action Request will be issued to the organization that has been identified as needing improvements to its processes, procedures, policies or conformance to its Quality Assurance Plan

All Corrective Action Requests will be sent to a specific responsible person who has the authority to make the changes needed. The problem will be explained in detail, and a response time will be given. Depending upon the nature of the work required, the recipient of the Corrective Action Request may be able to make quick, immediate changes to his or her policies, procedures, etc., or may have to develop a task force or work with the QMS Quality Review and Development unit to develop solutions as they relate to overall Departmental standards, processes and procedures. At no time should the Corrective Action Request process hold up the project, if it is at a critical point. In

many cases the purpose of Corrective Action will be to provide benefits to future projects.

6.6.2.3 Response

Any Corrective Action Request received must be responded to by the recipient's Unit Manager, Program Manager, or Principal of the firm. The recipient may be required to describe how the organization has corrected the problem, and provide a plan to ensure that the problem does not occur again. It may also require changes to Policies, Procedures or Specifications. For complex problems, the recipient may be required to include with his or her response the following four items: a) An investigation of how or why the problem occurred, b) a short term immediate solution, if required to keep a project on schedule, c) an interim solution, if required to maintain a program for a longer length of time, and d) a permanent solution. Interim steps may be necessary if it is determined that major changes to Policies, Procedures, Specifications, etc. are required that may take a long time to implement.

It is important to remember that the purpose of this procedure is to improve our project delivery system. It is not meant to be a punitive measure.

All questions or comments regarding the use of this process can be directed to the Project Engineer, Quality Assurance and Audits Unit, (609) 530-6363.

6.6.3 Quality Issue Report

6.6.3.1 Consultant Instructions

The attached Quality Issue Report form (see Attachment 6.6-3) shall be used by all Consultants and sub-consultants involved in the project delivery process.

6.6.3.1.2 Background

The purpose of using a formal quality issue reporting procedure is to standardize the process of recognizing and reporting problems related to the delivery of the Capital Program. The use of this procedure will also serve to notify a central organization, QMS, of all significant problems that are occurring throughout the spectrum of design. This will enable the Department to track and recognize trends, so that corrective action can be taken to prevent future similar problems from reoccurring on other projects.

It is important to remember that the purpose of this procedure is to standardize and improve our project delivery system. This method of reporting quality issues should not be used as a punitive measure, and in most cases project specific problems should be resolved directly between the involved organizations.

6.6.3.1.3 Initiation

Quality Issue Report forms can be sent by a Principal of the Consultant or sub-consultant's firm when a problem has been identified that is not immediately resolved. These problems can be errors or omissions, late submissions, cost overruns, unauthorized changes to projects, schedules, plans, etc., or non-compliance with established policies, procedures, specifications or Project Specific Quality Assurance Plans. In general, any problem related to the project delivery system or a specific project's quality, schedule or budget can be reported in this manner. These forms should not be used to replace existing policies and procedures that govern methods of communication. The intent of this Report is to supplement existing reporting procedures when the quality issue has not been resolved or is very general in nature.

6.6.3.1.4 Processing

The writer of a Quality Issue Report must send it through a Principal of the firm directly to the Bureau of Quality Management Services with a copy to the Program Manager. QMS will review the report and contact the appropriate CPM unit manager, Program Manager, or Consultant principal of the firm whose organization is responsible for resolving the issue. QMS will ensure that the appropriate management takes whatever action is necessary to address the quality problem. In all cases the Quality Issue Reports sent to QMS will be entered into our database, tracked, and responded to with a Corrective Action Request, if warranted. If a significant quality problem is reported during design, QMS will copy the Project Manager, and if a significant quality problem is found during construction, QMS will copy both the Resident Engineer and the Project Manager. The Quality Issue Report form is self explanatory, but the writer must be sure to include all specific details of the problem, keeping in mind that people not familiar with the specifics of every project will be working on the problem. QMS will notify the writer of a Quality Issues Report as to what action was taken.

All questions or comments regarding the use of this process can be directed to the Project Engineer, Quality Assurance Audits Unit, of QMS at (609) 530-6363.

6.6.3.2 Contractor/Supplier Instructions

The Quality Issue Report form (see Attachments) shall be used by all Contractors, sub-contractors and Suppliers involved in the project delivery process. The Bureau of Construction Procurement, Division of Procurement will distribute the Quality Reporting Forms with the Award Package.

6.6.3.2.1 Background

The purpose of using a formal quality issue reporting procedure is to standardize the process of recognizing and reporting problems related to the delivery of the Capital Program. The use of this procedure will also serve to notify a central organization, QMS, of all significant problems that are occurring throughout the spectrum of design

and construction. This will enable the Department to track and recognize trends, so that corrective action can be taken to prevent future similar problems from reoccurring on other projects.

It is important to remember that the purpose of this procedure is to standardize and improve our project delivery system. This method of reporting quality issues should not be used as a punitive measure, and in most cases project specific problems should be resolved directly between the involved organizations.

6.6.3.2.2 Initiation

Quality Issue Report forms can be sent by any person from the Contractor's, sub-contractor's or Supplier's firm when a problem has been identified that is not immediately resolved. These problems can be errors or omissions, late submissions, cost overruns, unauthorized changes to projects, schedules, plans, etc., or non-compliance with established policies, procedures, specifications or Project Specific Quality Assurance Plans. In general, any problem related to the project delivery system or a specific project's quality, schedule or budget can be reported in this manner. These forms should not be used to replace policies and procedures that govern methods of communication under existing contracts and any related partnering agreements. The intent of this Report is to supplement existing reporting procedures when the quality issue has not been resolved or is very general in nature.

6.6.3.2.3 Processing

The writer of a Quality Issue Report must send it through a Principal of the firm directly to the Bureau of Quality Management Services with a copy to the Resident Engineer. QMS will review the report and contact the appropriate CPM unit manager, Program Manager, Resident Engineer, or Consultant or Contractor principal of the firm whose organization is responsible for resolving the issue. QMS will ensure that the appropriate management takes whatever action is necessary to address the quality problem. In all cases the Quality Issue Reports sent to QMS will be entered into our database, tracked, and responded to with a Corrective Action Request, if warranted. If a significant quality problem is a result of the design, QMS will copy the Project Manager, and if a significant quality problem is a result of the construction, QMS will copy both the Resident Engineer and the Project Manager. The Quality Issue Report form is self explanatory, but the writer must be sure to include all specific details of the problem, keeping in mind that people not familiar with the specifics of every project will be working on the problem. QMS will notify the writer of a Quality Issues Report as to what action was taken.

All questions or comments regarding the use of this process can be directed to the Project Engineer, Quality Assurance Audits Unit, of QMS at (609) 530-6363.

6.6.4 Process Improvement Recommendation

6.6.4.1 Instructions

The attached Process Improvement Recommendation (PIR) form (see Attachment 6.6-4) is for use by all employees of CPM, Consultants and Contractors involved in the project delivery process.

6.6.4.2 Background

The purpose of this form is to establish a formal method of reporting recommendations for improvement to the project delivery process. The use of this procedure will allow everyone connected with the delivery process, including Consultants, Contractors and the FHWA, to make suggestions of how we all can improve our process. It is important to remember that the purpose of this procedure is to improve the way we do business. It should not be used to recommend changes to anything other than the processes used to deliver the capital program. Administrative, personnel, legal, statutory or other similar processes should not be included on this form.

6.6.4.3 Initiation

The writer of the PIR should fill in all information needed, following these instructions:

<u>Box</u>	<u>Instructions</u>
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- | | |
|-----|---|
| [1] | Fill out as completely as possible. |
| [2] | Check off the process that is affected. You may check off more than one box. Please add a short description of the process affected if you check "Other" |
| [3] | Identify the problem/area in need of improvement. Be as specific and complete as possible. Discuss the extent and frequency of the problem, the overall effect on the capital program and any other information you feel is important. It is helpful to provide statistics that support the severity of the problem cited, (e.g. occurred on approximately 25% of the projects advertised this fiscal year). Do not discuss the solution in this section. Attach additional sheets if needed. |
| [4] | Suggested improvements should be discussed here. Identify the procedures, forms, processes and/or policies that need to be changed in order to improve the process. If possible, identify what savings (time, cost, rework, etc.) are expected from the solution. The suggestion needs to be specific, however remember that the implemented solution may be different from the suggested improvement. Also, identify the areas of expertise that may be necessary to the makeup of a team to address the identified problem. Attach additional sheets if needed. |

NOTE: Do not fill in any area shaded in gray.


Please return the completed form to the address listed on the form.

6.6.4.4 Processing

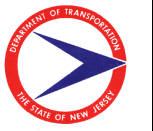
The Bureau of Quality Management Services will receive all PIR forms. The office of Quality Review and Development of QMS will then review all suggestions and process them for any additional action. The action taken may range from a short review process to the formation of larger task forces. Regardless of the action taken, all writers will have formal responses sent to them detailing the final result of their recommendation.


If you have any questions at all regarding this process, please contact the Project Engineer, Quality Review and Development Unit at (609) 530-6363.

Attachment 6.6-1

	<p>New Jersey Department of Transportation NOTICE OF NONCONFORMANCE Quality Management Services</p>	<p><i>For QMS Use Only</i></p> NON No. _____ Date Received _____
<p>FROM Unit/Company : Title: Writer: Address : Telephone :</p>	<p>TO Mr. Brian Strizki Manager, Quality Management Services Address : 1035 Parkway Avenue P. O. Box 600 Trenton, NJ 08625 Telephone: (609) 530-6363</p>	
<p>Organization Committing Nonconformance Unit/Company : Manager/Principal of Firm/Resident Engineer: Address : Telephone:</p>		
<p>Area of Nonconformance:</p> <p> <input type="checkbox"/> Scope <input type="checkbox"/> Environmental <input type="checkbox"/> Permits <input type="checkbox"/> Design <input type="checkbox"/> Right of Way <input type="checkbox"/> Utilities <input type="checkbox"/> Construction <input type="checkbox"/> Project Management <input type="checkbox"/> Program Control <input type="checkbox"/> Survey <input type="checkbox"/> Other _____ </p>		
<p>Route & Section: Fed. Proj. No.:</p>	<p>UPC No.: County/Municipality:</p>	
<p>Project Description:</p>		
<p>Description of Nonconformance: [page 1 of]</p>		
<p><i>For QMS Use Only</i></p> <p>CORRECTIVE ACTION PLAN REQUIRED?: <input type="checkbox"/> YES <input type="checkbox"/> NO</p>		

Attachment 6.6-2

	New Jersey Department of Transportation Corrective Action Request Quality Management Services		<i>For QMS Use Only</i> CAR No. Date Issued:		
	From: Mr. Brian Strizki, Manager Quality Management Services P. O. Box 600 1035 Parkway Avenue Trenton NJ 08625 Telephone: (609) 530-6363	To Unit/Company: Manager/Project Manager: Address: Telephone:			
Area of Nonconformance or Quality Issue: <input type="checkbox"/> Scope <input type="checkbox"/> Environmental <input type="checkbox"/> Permits <input type="checkbox"/> Design <input type="checkbox"/> Right of Way <input type="checkbox"/> Utilities <input type="checkbox"/> Construction <input type="checkbox"/> Project Management <input type="checkbox"/> Program Control <input type="checkbox"/> Survey <input type="checkbox"/> Other:					
<u>Problem Statement:</u> 					
<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"><u>Response:</u></td> <td style="width: 50%;"><u>Due Date:</u></td> </tr> </table> <p>a) Describe cause of quality problem:</p> <p>b) Describe short term/immediate solution:</p> <p>c) Describe interim solution, if applicable:</p> <p>d) Describe Long Term Action required to prevent recurrence:</p>				<u>Response:</u>	<u>Due Date:</u>
<u>Response:</u>	<u>Due Date:</u>				
Corrective Action Plan Accepted By QMS:					
Approved By:	Title:	Date:			

	<p>New Jersey Department of Transportation PROCESS IMPROVEMENT RECOMMENDATION QUALITY MANAGEMENT SERVICES</p>	<p>QMS USE ONLY PIR No. _____ Received: _____</p>
<p>From: [1] Unit/Company: Writer: Address: Telephone:</p>	<p>To: Frank Palise, Supervising Engineer, II Quality Assurance, Improvements & Research 1035 Parkway Avenue P. O. Box 600 Trenton NJ 08625-0600 Telephone: (609) 530-6363</p>	
<p>Process Affected: [2] <input type="checkbox"/> Scope <input type="checkbox"/> Design <input type="checkbox"/> Right of Way <input type="checkbox"/> Utilities <input type="checkbox"/> Environmental <input type="checkbox"/> Construction <input type="checkbox"/> Survey <input type="checkbox"/> Permits <input type="checkbox"/> Project Management <input type="checkbox"/> Program Control <input type="checkbox"/> Other _____</p>		
<p>Identification of Problem/Area in Need of Improvement: [Page 1 of] [3]</p>		
<p>Suggested Improvement/Areas of Expertise Needed on Team: [Page 1 of] [4]</p>		
<p>Immediate Action taken: <u>For QMS use only</u></p>		
<p>Final Action:</p>		

SECTION 7 CONSTRUCTIBILITY

7.1 Current Practices

Construction Industry Institute (CII) defines constructibility as “the optimum use of construction knowledge and experience in planning, design, procurement and field operations to achieve the overall project objectives”. The basis of this concept is that experienced construction personnel need to be involved with the project from the earliest stages to ensure that the construction focus and their experience can properly influence the owners, planners, and designer, as well as material suppliers. This does not necessarily mean that the design or project objectives should be changed to meet constructibility only from a cost standpoint. Constructibility should be used as a design consideration, so that optimum results provide the best of both worlds.

It is common practice in the industrial/commercial industry to develop a project team composed of planners, designers and a variety of construction personnel, whose sole purpose is to review design for constructibility issues. CII notes that projects which emphasize constructibility have four common characteristics.

- Design and construction managers are committed to the cost effectiveness of the whole project. They recognize the high cost influence of early project decisions.
- These managers use constructibility as a major tool in meeting project objectives concerning quality, cost and schedules.
- These managers bring construction aboard early. This means using experienced personnel who have a full understanding of how a project is planned and built.
- Designers are receptive to improving constructibility. They think constructibility, request construction input freely, and evaluate that input objectively.

The “Review” Fallacy

The early involvement of construction personnel who are providing feed-back to designers prevents the “review fallacy”. This syndrome unfortunately occurs in many organizations, particularly the public sector (CII). This happens when construction personnel are excluded from the planning process and are invited only to review completed or partially completed products from the designer. Comments usually have to be limited to minor details. Scope changes at this point are not feasible because of a variety of reasons, including:

- A significant cost has already been spent on the design. Major changes cause delays and increased expenses.
- The designer is defensive because he has committed himself publicly on drawings and he perceives that a change would affect his credibility.

NJDOT has encouraged Region participation in the pre-design phase for many years. If sufficient attention is given the Project Scoping by all parties during its development, a majority

of the future construction problems can be reduced. Figure 1 illustrates how constructibility efforts can result in the largest payoff during the earliest stages of the project.

Identifying Barriers

As with any new concept, there are barriers to implementing a constructibility program into an organization. The most common problems which can be expected by the Department are:

- Complacency with the status quo.
- Resistance by designers, who view such efforts as an intrusion.
- Lack of construction experience both in NJDOT design and construction personnel.
- Designers perception that “we do it”.
- Lack of mutual respect between designers and construction personnel.
- Construction personnel do not respond in a timely manner, and input is too late to be of any value.

Benefits

Early constructibility efforts result in a significant payback to the project. CII research has cited cost reductions of between 6 and 23 percent, benefit/cost ratios of up to 10:1, and large schedule reductions. The intangible benefits are as important as the quantitative benefits and must be recognized accordingly. These include; more accurate schedules, increased productivity, improved sequence of construction, enhanced quality, decreased maintenance, and a safer job.

Constructibility Versus Value Analysis

How does value analysis differ from constructibility reviews? Value analysis and constructibility can be similar in effect, but differ in both scope and manner of analysis. Value analysis overlaps constructibility since its purpose is similar, that is, to achieve the essential functions at the lowest total cost.

Value analysis focuses on function analysis and life-cycle costs, while constructibility is achieved by fully exploiting construction experience in a timely and structured fashion. Constructibility is most beneficial when performed, prior to establishment of a defined scope, during early scoping and design phases. At this time, construction knowledge and experience is least restricted by design decisions, and most capable of affecting the final project (CII).

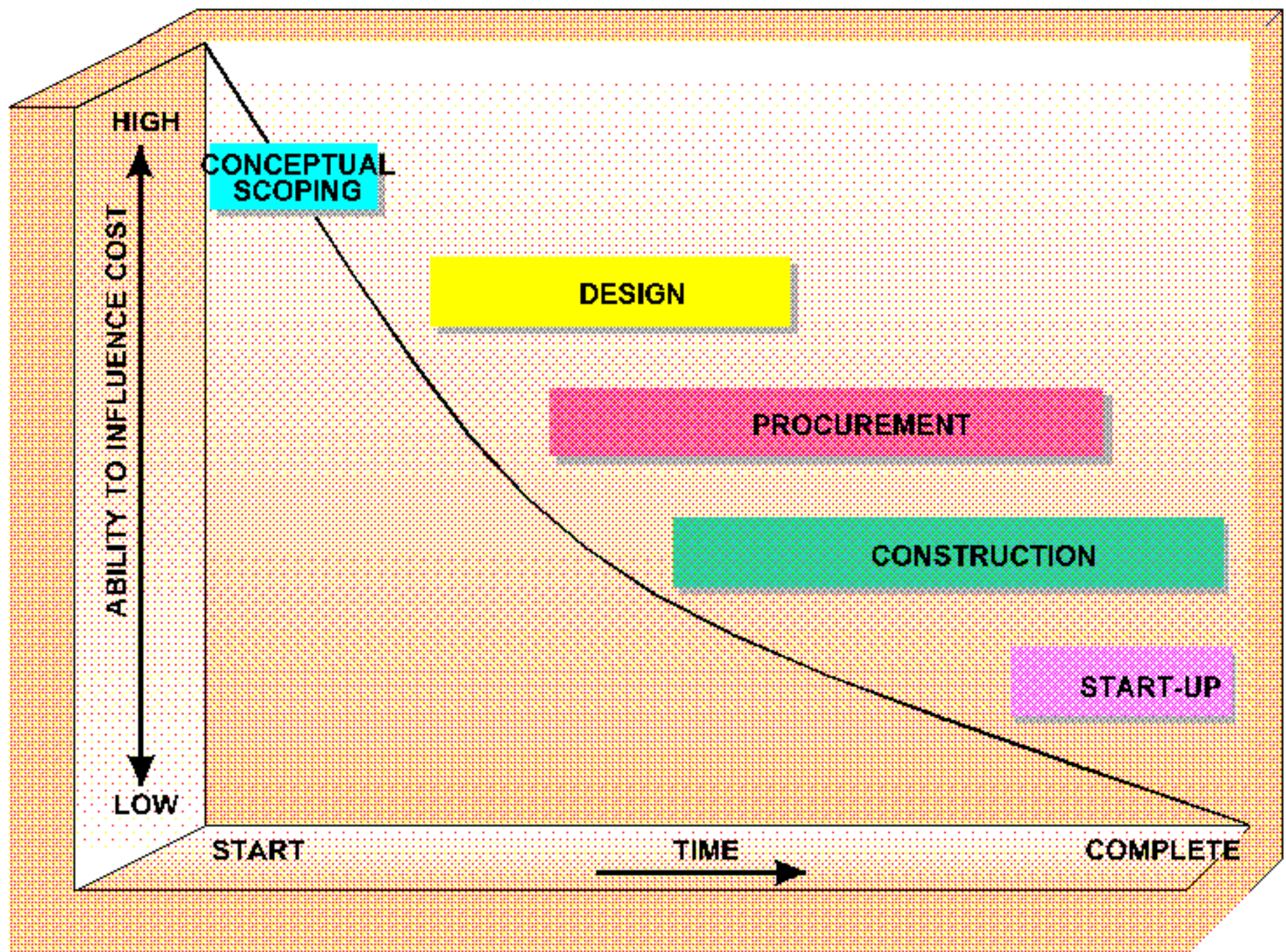


Figure 1: Ability to Influence Final Cost Over Project Life
(Courtesy of Construction Industry Institute)

7.2 Implementation Goal

The New Jersey Department of Transportation has endorsed constructibility reviews in an effort to improve the total quality of our construction bid package to ensure that designs can be built. The Department will optimize the use of construction knowledge and experience in planning and design to achieve the overall project objectives.

In view of our continuing efforts to provide the highest degree of quality and cost effectiveness in our projects, it is the Department's intent to implement constructibility to the fullest degree possible. This applies to all phases of project planning and design.

Constructibility Objectives

- Enhance Early Scoping
- Minimize Scope Changes
- Reduce Design Related Change Orders
- Improve Contractors Productivity
- Develop Construction-Friendly Specifications
- Enhance Quality
- Reduce Delays/Meet Schedules
- Improve Public Image
- Promote Construction Safety
- Reduce Conflicts/Disputes
- Decrease Construction/Maintenance Costs

Philosophy

The Region Construction Representative will provide input to the scoping and design from the standpoint of project intent, constructibility, operation and maintenance. This will be accomplished through field reconnaissance with designers and reviews of design documents at various stages of development. Obtaining feedback from maintenance personnel at this point is very important, since they ultimately live with the finished product and are aware of previous construction deficiencies. The reviews will be scheduled during both the Scope Development and the Design phases.

Studies show that a majority of change orders and/or construction claims arise from plans and specification associated problems. It is extremely important that a concerted effort be made by the Region Construction Representative, to conceptualize the project, understand its problems, and provide thoughtful feedback to the designers. Constructibility issues concerning scope

and design should be recognized and addressed up front, so that a quality set of plans and specifications are produced. The early active involvement of the Region Construction Representatives will also provide them insight into the design intent. This knowledge will be beneficial during the latter construction stage when “minor” field changes are requested by the contractor.

Each project has been assigned a Project Manager in accordance with NJDOT’s “Project Delivery Process”. The Team size will vary, depending on the construction work complexity. The organizational chart below shows a basic project team, with help as needed, from other in-house personnel. The chart also allows the option of utilizing “construction specialists” for difficult tasks. These experts could be obtained from a list, composed of people who are experienced in the contracting industry on specific construction operations.

The project team should meet to discuss constructibility issues throughout the planning/design process. During the development of the Project Scoping, a concerted effort should be made to identify specific constructibility items and determine their impact on the conceptual design. The Department appointed Project Manager’s role is to assure that constructibility issues have been given adequate attention and are resolved. This can be accomplished by holding one or more constructibility review sessions, chaired by the Field Manager. The team should attend the “kick off meeting” held at the start of the design stage.

Follow up meetings can be held at the 60% design phase of the plans. Special emphasis should be given to the 60% stage, since it involves both the Office and Field Review with the Region. Additionally, this may be the last opportunity that any constructibility design changes can be considered without major negative impact to the project. The Project Manager determines the amount of time necessary for this constructibility review, and whether final review is necessary at the 95% stage.

The formal Department procedures for team development and review will be provided at a future date.

PROJECT TEAM		
NJDOT Tech. Units	Project Managers	Construction Specialists (as needed for complex projects)
-- Region Reps.		-- Lighting/electrical
-- Designers		-- Forming/falsework
- Civil		-- Structural steel
- Construction		-- Welding
- Structural		-- Drainage
- Traffic		-- Prestressing
- Environmental		-- Painting
- Utilities and Right of Way		-- Paving
- Landscape and Urban		- Bituminous/Concrete
- Other Agencies		- Bridge Foundations
		- etc.

Lessons Learned

It is important to record the changes made and “lessons learned” during the scoping, design and construction of the project. Easy reference to this collection of ideas, and/or solutions to problems becomes a valuable tool for future projects. Specific lessons learned should be documented at the time they occur, rather than wait until the end of the design or construction stage. Sources of information at the conclusion of the project may be obtained through; change order, Final Plans and Specification Review, Construction Partnering Closeouts, and personal interviews.

Information regarding these issues should be submitted in writing. Within the recommended solution, an assessment of the following factors should be addressed; cost schedule, quality, safety, and whether any changes of the standard specifications are required. Either construction or design personnel can submit a constructibility suggestion. These issues may be summarized and entered into a Continuous Improvement Opportunities data base to be maintained in the Bureau of Quality Management Services. Procedures concerning this topic will be distributed by the Bureau of Quality Management Services at a future date.

7.3 Construction Concepts

The following Construction Concepts have been identified to help during the scoping/design stage. These comments should not be considered as a cook book but are shown to promote thought on the part of the designer or construction personnel. There is no replacement for good engineering judgement, so each case must be considered on its own merit and handled accordingly.

Many of these comments were received from contracting firms who routinely bid and construction projects. Some of the suggestions may at first appear to be a contractor problem and not a NJDOT concern. A true constructibility program, however, must consider all factors to realize the potential benefits of quality and cost savings.

It takes time to design a job that is phased with traffic shifts or other complexities. It also takes time for the constructor to “learn” the job and fully understand the sequencing of operations to build it. This may mean calculating take-off quantities or at least comprehending work needs at various stages throughout the project. Far too often, field personnel have been guilty of glossing over the plans during design reviews, only to later discover those problems in construction.

General

- Are areas available for; stockpiling processed materials, form laydown and fabrication yards, equipment parking, temporary field offices, personnel parking, and purchased material storage? If areas can be secured without excessive cost during the planning stages, efficiency during construction will be improved.
- Will double handling of materials be involved? Is there sufficient space on the project for temporary stockpiling?
- Are relocated utilities shown in their new location on the plans or referenced documents? Are they referenced to the same vertical and horizontal control which will be used by the project?
- When local city plans for utility extensions etc. are included within the NJDOT plans set, do they coordinate with the construction operations, is the stationing compatible with the NJDOT plans, and are they understandable?
- Are the pay items in the bid tabulation apparent in the specifications and on the plans? If items are combined for payment is it clear in the specifications? Conversely, is all of the required work covered by pay items?
- Are work areas accessible for personnel, material delivery or equipment operation? Difficult access for personnel can negatively impact productivity. In addition, difficult access routes frequently present unsafe working conditions. High volume haul routes with constricted openings or bottle necks can adversely impact cost and schedule. Does trucking have a free flow through the site, and can it merge safely into traffic? The consideration for accessibility can be critical. Is access available through other properties?

- Is horizontal and vertical control provided throughout the project, so the project can start without delay?
- Consider major construction methods that “drive” the design during conceptual planning.
- Will weather or local conditions become a factor for the successful completion of the job?
- Are materials readily available in this locale for the project design requirements?
- Are designs configured to enable efficient construction? The desired result is to have an exchange of ideas between construction and design before the “pencil on paper” design activities occur. The following factors should be kept up front in constructibility deliberations. Simplicity is a desirable element of any constructable design. Flexibility for the contractor to select alternative methods of innovative approaches is highly desirable. Sequencing of installation is as much a design consideration as it is a procurement and construction consideration. Designs that require special skills should be minimized in all cases, along with ones that are highly labor intensive (CII).
- Standardize design elements within the project. Both cost and schedule benefits can be realized by standardization if the quantity is sizable. Specific advantages include: increased productivity from repetitive field operations, volume purchase discounts, simplified material procurement, simplified materials management, and reduced design time (CII).
- Investigate the possibilities of allowing access through the R/W fence even on interstate highways, to reduce haul lengths to materials sources.
- Construction efficiency needs to be considered in specification development. Common problem types associated with difficult to construction specifications include: gold-plated designs or specs, unrealistic tolerances and/or requirements, and impractical methods of measurement and payment.
- Constructibility is enhanced by the following considerations. The standard specifications offer clear-cut options (the less new spec writing required, the better--and the probability of error and construction rework is diminished). Special Provision development for a project is done as a distinct project activity with full and early involvement of personnel with appropriate construction knowledge and experience. Clarity is sought as one of the prime characteristics of a good specification. The cost saving potential of “or equal” specifications is balanced against the risk involved. The specifications are up to date and conform with latest industry work methods (CII).

Earthwork and Grading

- Is there heavy brush or light clearing? If there are a substantial amount of trees, can they be sold as merchantable timber? Is there a site where tree stumps can be buried?
- If project is located within federal land, a National Park, State Forests or land, Wildlife Refuges - Indian reservations, check local requirements. Are there restrictions on access to site or other sensitive environmental issues?
- Is special treatment of finished slopes required due to environmental and visual constraints from other agencies? Who is to approve the slope treatment and how is it to be paid for?
- Is removal limit for utilities, major landscaping elements and concrete structure etc., clearly indicated on the plans?
- If concrete removal quantity is sizable, is there an available dump site? Will project embankments accommodate waste concrete?
- If removal item is asphaltic concrete (with environmental concerns for waste), can it be incorporated into the job or is there a dump site available?
- Will blasting be allowed for removal of structural concrete?
- Is there an available site for stockpiling materials for salvage?
- Define limits for sawcutting concrete pavement. If depth of cut is important, then state minimum and maximum.
- Are asphaltic concrete mill widths compatible with standard equipment sizes? Milling machines normally are 1.8 meters or 3.8 meters in width. Partial width cuts are not feasible due to tooth wear and machine capabilities. Small 305 to 457 millimeter machines are available for manhole or minor areas.
- Can materials removed from existing pavement, base materials, etc., be used elsewhere on project?
- Is earthwork phasing compatible with the actual construction and traffic control plan of the job? Define the earthwork needs in each stage. Does each stage balance, or does it require borrow or waste? Is the proposed source of embankment available or presently under traffic? Is there a temporary stockpile site on the job for any excess excavation which will be needed for a future stage? If possible eliminate double handling for excavated material.
- Does horizontal and vertical alignment create special construction problems, i.e., widening on one side of the roadway may be more cost effective than widening on both sides because of physical restrictions.

- Do the driveway, turnouts, or side road vertical grades meet the standards? Have the property owners been contacted and are NJDOT permit laws satisfied?
- When faced with designing staged construction to accommodate traffic on an existing route, review of the local conditions. If the project is in a rural area with minimal conflicts or terrain differences, consider obtaining temporary R/W easements to construct detours around the work sites. This will enhance public safety, the contractors' productivity and the overall job schedule.
- Are shrink and swell factors reasonable? Is there any recent data on similar material in this region? If shrinkable material quantities are significant, consideration should be given to performing insitu field densities at different elevations within the proposed source.
- When earthwork is tabulated for a large project, and it appears that the job will come close to balancing, provide a quantity "cushion" to insure against significant over/underruns which create a change condition in the field.
- If there is a choice on designing a project with waste or borrow, is this a section within a planned corridor which can be used to balance another project? Can you avoid designing adjacent waste and borrow jobs which do not bid concurrently?
- Which product is most economical to deal with - borrow or waste? Consider local conditions for borrow availability or waste sites. Is waste material dirt or rock? Can the project accommodate the waste quantity with widenings, pullouts, slope flattening or berms? If additional excavation is needed to balance embankment, can cuts be flattened or daylighted?
- On large earth work jobs, where it is necessary to haul over existing roadways, designate areas for temporary crossings, or detours so that off highway equipment can be used.
- Consider excavation type for phasing purposes. If job has mix of dirt and rock, what is available when it is time to finish subgrade? Will it be necessary to import borrow?
- Is drill and shoot required? Will traffic be impacted - what is acceptable length of time for highway closures?
- Are roadway cuts wide enough to accommodate drills and excavation equipment 4.5 meters +?
- Are there any impacts on adjacent structures or overhead utilities regarding fly rock? What local laws pertain to the control of fly rock and seismic monitoring?
- Will shallow embankment sections accommodate anticipated rock size? Are there difficult grading operations which can be eliminated?
- Are widths of roadway widenings compatible with equipment sizes? Most placement/finishing units need widths of 3.6 meters + to operate. Anything less becomes a grading tractor/hand labor activity with high costs.

- Is a source available for shoulder build-up material which meets quality standards? Widen existing roadway cuts if possible to create build-up material.
- Is there enough R/W to construct access to roadway widenings? Can pioneer roads feasibly be constructed into excavation or embankment areas? Can pioneer roads outside of the roadway prism be adequately repaired after construction?
- If pioneer roads are not allowed because of environmental constraints, have alternative means of access been reviewed and verified? Are the constraints clear in the specifications or on the plans?
- Can overloads be hauled through the project? Is hauling compatible with existing traffic patterns? Are turnaround areas available for trucking? Consider strengthened structures or use temporary overload haul bridges for increased haul efficiency and reduced impact on public streets.
- Any presence of ground water or active streams? What environmental regulations govern? Will pumping or cofferdams be required?
- Try to minimize restricted areas or irregular shapes which are not compatible for subgrade finishing with normal equipment.

Bases and Pavements

- Minimize low production or hand work areas for placing or finishing.
- Are truck turnaround areas available?
- Can overloads/width be hauled through job or re-routed to take advantage of savings?
- Can permits be obtained to haul over length loads to the job in rural areas?
- Consider the use of 100% milled asphaltic concrete for base course material, backfill, or shoulder build-up.
- If possible, avoid roadway widths for widening projects which are not compatible with standard equipment sizes. Anything less than 3.0 to 3.6 meters in width for base course becomes a grading tractor/hand labor activity. Asphalt paving machines usually have a standard screed width of 3 meters. Overlapping the mat with the machine is acceptable for short distances, but extended used can lead to uneven screed wear.
- Explore possible haul routes through metropolitan areas with local authorities prior to advertisement and list alternatives with known restrictions i.e., dust control, night hauls, trucking volume, etc.
- Do construction phasing plans and details allow for width of conventional concrete paving equipment tracks (750 to 900 millimeters)?

- Are the material sources required for special materials available for the project and within a reasonable haul distance? If a long haul is required, does the type of material warrant the additional expense to the project? If not, are there alternative materials which can be used?

Pipelines and Drainage

- Identify all utility conflicts on plans, if possible, by preliminary potholing. Indicate the type of existing pipeline material on the plans, so that its structural support can be considered when new utility crossing are made. Eliminate known utility conflicts prior to construction to avoid delays. Do plans show locations of relocated utilities?
- Is underground work (new storm drains, pipelines, gas, electric, etc.) sequenced to coincide with or enhance construction phasing? If partial construction is required for pipelines, do temporary cut-off locations conflict with proposed traffic patterns? Will facility need to be functional in its temporary condition?
- Are soil conditions conducive for trenching? Will the underlying material require blasting, or is it sand which has an angle of repose flatter than the area available to excavate? Will utility crossings allow open trenching or require boring?
- Are soil conditions compatible with cast-in-place pipe option?
- Are the diameters of the bored or augered pipe sleeves the correct size for existing soil conditions, i.e., 200 millimeter sleeves versus 300 millimeter cobbles?
- Limit the use of “modified” catch basins. Attempt to incorporate the same catch basin standard throughout the project to improve forming productivity and standardize hardware.
- Check catch basin location and depth to assure that no conflicts will occur with new or existing underground utilities.
- Check pipe culvert locations to assure that; there are no utility conflicts, end treatments provide the required erosion protection, and the structure generally fits the drainage site conditions.
- On a reconstruct item, should the original slope be flattened? Can each location be accessed with equipment - this is especially critical in large cut areas with minimal R/W.
- Does a typical section need to be shown for ditch or channels?
- When designing concrete linings for channels, allow either shotcrete or Class C structural concrete as alternate methods.
- Will linings be needed for detention/retention basins? If a patented lining system is specified, will it need the manufacturers expertise for installation?

- Has consideration been given to temporary drainage through the project during specific construction phases? Do detours need pipe culverts? Will water be inadvertently directed into properties outside of the R/W during the storms?
- Has the ponding area required on the upstream of the culverts been considered? Is drainage easement needed for possible ponding?
- Has offsite drainage been considered? Are temporary easements needed for drainage construction? Do provisions need to be made to grade behind sidewalks or curb and gutter to meet existing contours?

Structures

- Do the special provisions fit the job or have they been simply copied from an old not-applicable project?
- Verify screed elevations and check dead load camber diagram for accuracy.
- Can standard equipment be used to drill caisson foundations? Are boulders a potential problem? Are special measures needed for inspection?
- Are soil conditions compatible for steel piling? Is pre-drilling required? Will piles require a special shoe?
- Is dewatering required for foundation work? Will construction require cofferdams or wet wells and pumps? Consider establishing a bid item force account for dewatering, to reduce the risk cost for unknowns and limit contractor's markups on FA.
- Strive for simplicity in designs to take advantage of constructibility savings, i.e., adjust alignment if possible for bridges in rural areas, to avoid curves within the structure section.
- Avoid heavily skewed bridges. Lengthening to reduce or eliminate skew should be considered.
- Standardize shapes for bridges on the project to maximize form use.
- Avoid irregular structure shapes if possible, for walls or footings in order to save concrete. The labor cost for forming far exceeds the concrete material value.
- Minimize architectural details, particularly where aesthetics are not a factor. Since most inserts are made of plastic or rubber, standardize the detail when possible, so that costs can be lowered from the additional form reuse.
- Is vibrator space provided around reinforcing steel to avoid honeycomb problems? Does steel spacing meet specification requirements?
- Avoid reinforcing steel congestion in pier caps and hinges, caused by the mats of the deck steel, the cap steel, and the column reinforcement.

- Use uniform heights for retaining walls to maximize the use of gang forms.
- Except for long runs of retaining walls, use 600 millimeter minimum steps.
- Consider working area needs during easement procurement. Space is needed adjacent to a major structure for a form laydown site.
- Allow sufficient room between new foundations and existing roadways for the excavation, a working area, and a barrier.
- Does structure site have any overhead utilities which will conflict with operation of cranes? Can the overhead lines be temporarily rerouted, or shut down?
- Can access to structure locations be provided which will permit a free flow for transit mixers or trucking? Is it compatible with traffic patterns and safe to merge? Has pedestrian traffic at the structure location been addressed?
- Design bridges which require falsework construction over traffic conditions, to allow a 4.8 meter minimum clearance to the bottom of the falsework. Safety beams for falsework < 4.8 meters is a high risk item and is constantly receiving traffic hits. Does falsework require illumination for night traffic? Is there a need for pedestrian openings?
- Encourage the use of precast units. If precast girders are used, can they be trucked over the available highway route or is there a load/length problem. Can access be created adjacent to the structure to set and erect the girders? Is it possible to precast the girders on site?
- Consider stay-in-place decking over railroads, high stream beds, or canals where formwork stripping is difficult.
- Is special manufacture required for bridge bearings? Are they readily available or a long lead item? Who should inspect the bearings?
- Make sure the plans show that bearings are to be placed on a level bearing surface, and the orientation of the bearing device relative to the centerline of the substructure is clearly stated. A table indicating the amount and direction of offset to account for temperature/shortening movement should be included.
- Sign foundations - conventional truck-mounted drilling equipment has a 1.8 meter limitation in its ability to reach from the side or back of the truck. Special consideration needs to be given when placing foundations in existing roadways that have steep slopes or other obstacles.
- Verify sign/lighting foundations to assure that they clear all utilities and are out of the sidewalk area.
- Check for utility conflicts and make sure that any requirements for lighting and signing on the structure are shown on the structure plans - not just on the lighting and signing plans.

- Complex slings or bracing systems are often needed to provide temporary support for designed utility ductwork in bridges. Address this need and design the temporary support if required.

Traffic Control Plans

- Insure that detour design fits field needs. Do planned detour grades and existing ground contours appear to reasonably conform to the existing conditions? Does the detour grade coincide with crossroads elevations? Do the detour ends meet the existing or proposed alignment? Does the detour drain properly to avoid ponding on the pavement?
- Is there enough area inside the detour alignment to perform planned work?
- Consider traffic flow for phased construction of elevated or depressed structures. Is there an elevation difference that will require the use of sheet piling or some other technique to maintain traffic lanes?
- Has access for affected local business or residents been considered while the detour is in use?
- Is the traffic control plan in concert with construction phasing? Check staging to verify that detours or roadway segments will be open for traffic at the designated times?
- Is signing diagram clear and understandable? Does signing meet the traffic needs in each phase? If temporary barrier is required, have all staged moves been accounted for?
- Can traffic conflicts be avoided by constructing temporary over/under passes for hauling equipment in high volume areas?
- Are required lanes and closure periods for freeways and local streets, clearly listed in the plans or special provisions?
- Are work zones sufficient in size for the intended construction operation i.e., allow 750 to 900 millimeters for concrete paver tracks for work operations. Can workers, equipment and material deliveries safely enter/exit work zones?
- Have provisions been made for emergency vehicle travel through the detour/road closure/lane closure area?
- Can conduit for lighting or signals be installed during construction sequencing for alignment shown? Is excavated embankment material suitable for conduit trench backfilling?
- If possible, locate underground utilities to meet traffic control constraints for lanes, etc. Assume all trenches to require a backslope when calculating lateral clearance.

- Have utilities been cleared in advance? Has power for temporary lighting/signals been provided?
- Wherever space permits, flare temporary barriers to 10 meters outside roadway edge to reduce the use of sand barrel cushions.

Incidentals

- Riprap - what rock is available in region, angular or rounded? Does it meet the specific gravity and size requirements? Can it be produced on the job, or require hauling or from an offsite source? Is access to each riprap location a problem?
- When riprap involves a long haul, allow an alternate bid for concrete lining.
- Guiderail - Is embankment material free of large rock and suitable for post placement? Verify that designed transitions to existing bridges or concrete barrier meet field needs.
- On guiderail reconstruction, steep existing slopes may require using longer posts to provide adequate post embedment. Also check horizontal and vertical alignment to determine if special traffic control measures are needed. If guiderail is to be adjusted at the same location, is temporary concrete barrier required for traffic protection? Is the barrier accounted for in the traffic control plans?
- Fencing requirements are sometimes scattered on different sheets within the plans. If the fence alignment cannot be shown in sufficient detail on the plan or paving sheets, consider incorporating a separate fence plan for clarity.
- Is temporary fencing needed to protect work sites near farms, pedestrian routes and residential areas?
- Use standard curb and gutter sections as much as possible. This is particularly important in long unbroken runs, since most contractors will use a curb machine and carry standard slip form shapes.
- Consider potential concrete supply for jobs with small concrete quantities, etc. If there is no local commercial supplier, choices may be restricted to a portable plant or long haul transit mixed.

7.4 Maintenance Considerations

- Can the finished product be accessed for routine maintenance i.e., debris fence clean-out, grader ditch/berm reshape over high cuts, retaining wall maintenance, etc.? Will the designed facility require special equipment or other unusual requirements for maintenance which will increase life cycle costs?
- Make certain that catch basins are not located in curb returns or driveways.
- Design catch basins within roadway limits to fall in the gutter pan. Avoid installation in the travel lane where grill could be a maintenance problem from snow plow hits.
- Confirm with Maintenance the appropriate minimum drainage pipe sizes and maximum lengths for each to permit cleaning out blockages.
- Try to avoid significant changes in grade within a drainage system, which may eventually cause silting problems for maintenance, i.e., a 5% median grade entering a catch basin with a lateral pipe at 1%.
- Consider replacing a double barrel concrete box culvert with a single span box, i.e., use 2400 by 1200 millimeter in lieu of two 1200 by 1200 millimeter. This would require some redesign of the Standards, but the maintenance savings for clean out would be beneficial. The constructibility would also be improved, since the square footage in forming costs would reduce substantially.
- Is drainage properly controlled at the ends of structures, i.e., to prevent erosion problems in the abutment areas?
- Does the sidewalk cause ponding at the transitions to the bridge deck?
- Minimize the use of concrete slope paving at abutments whenever possible, to eliminate the constant maintenance problem. Consider instead, low profile retaining walls or extending the span to allow 1:3 slopes.
- Locate controller for signals near power supply to reduce cost and maintenance. Provide conduit for future needs.
- Check locations of junction/pull boxes to ensure that they do not fall in a wheel path of the roadway or driveway.
- Consider flattening embankment slopes whenever possible to eliminate guiderail in higher elevations, i.e., plowed snow collects at guiderail locations causing maintenance problems during freeze/thaw.
- When designing/constructing debris fences upstream of structures, provide maintenance access and a clear sight for visual inspection from the highway.
- Review driveway designed profile, to assure that grade breaks can be negotiated by a vehicle without bottoming out.

- Make certain that traffic signal or light poles are not located in sidewalk area or wheel chair ramp. Is pedestrian push button within reach of disabled?

7.5 Checklist

General

- () Provide work areas when practical.
- () Verify utility locations on plans.
- () Assure utility construction coordination with other Agencies.
- () Are pay items in the bid tabulation covered by the specs?
- () Is all of the required work covered by pay items?
- () Provide access to work areas.
- () Consider access for routine maintenance in design.
- () Consider construction methods that “drive” the design.
- () Is weather a factor?
- () Are materials available?
- () Keep design simple and flexible.
- () Standardize design elements.
- () Do specifications allow work efficiency?
- () Are specifications clear, and conform with current practices?

Earthwork and Grading

- () Clear and grub - how will bush/trees be disposed of?
- () Check local Agency requirements for environmental issues.
- () Is special slope treatment required - how is it paid?
- () Are structure removal limits clearly shown?
- () Review disposal alternatives for concrete/bituminous surfaces.
- () Is blasting allowed?
- () Any available stockpiling sites?
- () Are sawcutting limits specified?

- () Do bituminous concrete removal widths concur with equipment capabilities?
- () Can existing roadway materials be salvaged for other use?
- () Is earthwork phasing compatible with construction requirements?
- () Can easements be economically obtained for temporary detours?
- () Do driveway/turnout grades meet allowable standards?
- () How is shrink/swell factor applied to earthwork tabulation?
- () Are shrink/swell factors reasonable?
- () Provide quantity cushion on large earthwork jobs.
- () Attempt to balance earthwork between several projects on corridor work.
- () Which material is more economical - borrow or waste?
- () Designate temporary crossings for overloads.
- () Consider material type available during staged construction.
- () How long of period can highway be closed for blasting/clearing?
- () Are rock cuts wide enough to accommodate equipment?
- () What are local laws regarding blasting?
- () Will excavated rock fit into available fills?
- () Are roadway grading/fill widths compatible with equipment size?
- () Is local source available for shoulder build-up material?
- () Is there a source available which will meet topsoil specs?
- () Can access be constructed to remote locations?
- () Consider overload hauling through job for large volumes.
- () Any presence of ground water or active streams?
- () Minimize restricted areas that eliminate normal equipment use.

Bases and Pavements

- () Minimize low production or hand work areas.
- () Are truck turnaround areas available?
- () Can overloads/widths be hauled through job?
- () Permits for overlength loads to the job feasible?
- () Use 100% milled bituminous concrete for base course, backfill or shoulders?
- () Design widenings which will accommodate standard equipment.
- () Check out haul routes through metropolitan areas - restrictions?
- () Do phasing plans allow for concrete paving equipment clearance?
- () Are special material sources available and reasonable in haul?

Pipelines and Drainage

- () Identify utility conflicts on plans.
- () Is underground work sequenced with roadway operation?
- () Are soil conditions conducive for trenching?
- () Is cast-in-place pipe compatible with soil type?
- () Are pipe sleeves diameter sizes compatible with existing soil?
- () Try to standardize catch basins for the job.
- () Check for catch basin conflicts with underground utilities.
- () Keep catch basin location in gutter pan.
- () Compare roadway/pipe grades to insure cover.
- () Do designed grades for drainage system encourage silting?
- () Are typical sections shown for dikes or channels?
- () Allow alternates for channel lining designs.
- () Will linings be needed for detention/retention basins?
- () Review potential drainage problems through temporary construction.

- () Has ponding area on upstream end of culverts been considered?
- () Has offsite drainage been considered (beyond construction limits)?
- () Is drainage properly controlled at the ends of structures?
- () Does sidewalk pond water at transition to bridge deck?
- () Confirm minimum pipe sizes with Maintenance for clean out work.

Structures

- () Do Special Provisions fit the job?
- () Verify screed elevations and dead load camber for accuracy.
- () Will caisson drilling require special measures?
- () Are soil conditions compatible for steel piling?
- () Is dewatering required?
- () Strive for simplicity in bridge design.
- () Avoid heavily skewed bridges.
- () Standardize pier shapes for job.
- () Avoid irregular shapes for walls of footings.
- () Minimize architectural details.
- () Allow for vibrator space around rebar.
- () Reduce rebar congestion at pier caps.
- () Design uniform heights when possible for retaining walls.
- () Use 600 millimeter minimum steps for retaining walls.
- () Consider working areas needs around structures.
- () Check for overhead utility conflicts.
- () Consider access to structure site.
- () Does falsework over traffic provide 4.8 meter clearance?
- () Use precast units when possible.

- () Use stay-in-place decking when stripping is a problem (not over traffic).
- () Do bridge bearings require special manufacture?
- () Show clear installation procedures in the plans for bearings.
- () Minimize the use of concrete slope for abutments.
- () Consider existing terrain when locating sign foundations.
- () Check sign/light foundations on bridges for utility conflicts.
- () Is design required for temporary utility ductwork support?

Traffic Control Plans

- () Insure that detour design fits field needs.
- () Does detour allow enough area for planned work?
- () Consider staged construction - vertical elevation differences for traffic lanes.
- () Check access for local business/residents.
- () Is traffic control plan coordinated with job phasing?
- () Does signing meet traffic needs in each phase?
- () Can traffic conflicts be reduced by innovative haul roads?
- () Is freeway closure information clearly shown in plans?
- () Are work zones large enough for equipment access?
- () Can emergency vehicles travel through zones without delays?
- () Does required conduit installation fit construction staging?
- () Design underground utilities, if possible, to fit traffic needs.
- () Is power for temporary/permanent utilities available?
- () Check pull box locations in relation to wheel paths.

Incidentals

- () What is available locally for riprap materials?
- () Is existing embankment suitable for guiderail posts?

- () Design flatter slopes to reduce guiderail in higher elevations.
- () Is fencing plan clear and understandable?
- () Is temporary fencing needed to protect work sites?
- () Is debris fence visible and accessible from roadway?
- () Use standard curb and gutter sections whenever possible.
- () Check driveways/sidewalks for conflicts with utilities.
- () Consider possible concrete supply for small remote jobs.
- () Can temporary barrier be flared 10 meters to eliminate sand barrels?

7.6 Constructibility Review Implementation Plan

NOTE: This implementation plan applies to only those projects that require a formal independent constructibility team review.

7.6.1 Guidelines

- The requirement for an independent formal constructibility team review shall depend on the type, size, cost, and complexity of the project (typically \$15 million and over, multi-staged, high community impacts). The Project Manager shall make this determination.

For projects that do not require a separate review, the Quality Assurance review team shall also review for constructibility.

- For more complex projects (typically \$30 million and over, multi-staged high traffic volume, or high community impacts), an independent formal constructibility team review may be required of the Designer (through their staff not involved with the project or a subconsultant) as part of their Quality Control or performed through a Department task order agreement. This determination shall also be made by the Project Manager. If the Designer is requested to perform a review, the Project Manager shall request documentation from the Designer showing how constructibility issues were addressed.
- The Field Manager from Construction Services and Materials shall take the lead in the review process. Review sessions shall be held at the Regional offices.
- The review team shall be independent of the Quality Assurance (QA) review team in order to obtain objective review comments.
- The review team makeup and size depends on the complexity of the project. It shall include, but not be limited to, the following:
 - Project Manager
 - Field Manager
 - Prospective Resident Engineer
 - Various Design Units
 - Various Operations Units
 - Community Relations (as required, depending on community-sensitive issues such as potential impacts on businesses, noise ordinances, and night work)
- The review shall be performed on the Initial Design Submission (at the end of the Designer Development Phase) and concurrently with the QA review.
- Depending on the type, size, cost, and complexity of the project (see first bullet above), a separate team review may be required (as determined by the Project Manager) for several alternatives during the Scope Development Phase as an on-going process (similar to a Value Engineering study).

An independent team review is not required at the end of the Scope Development. The scope team, which includes the Field Manager, should make a concerted effort to

identify constructibility items, determine their impacts on the project, and attempt to resolve them throughout project scope development.

- The review team shall utilize the Constructibility Guide in performing their review.
- The review team shall utilize the checklist contained in the Guide on a QA review effort level.
- In addition to asking themselves if it's buildable, the review team should also ask: Do the documents communicate sufficient information for bidding purposes? The review team should approach this task from the point of view that they are bidding the contract documents in an attempt to discover discrepancies and incomplete information which would hamper production of an open and competitive bid or result in potential changes.

7.6.2 Responsibilities

1. The Field Manager shall have the following responsibilities:

- Identify the participants of the team with the Project Manager.
- Schedule the review session date with the Project Manager.
- Direct the review team.
- Chair and conduct the review session.
- Coordinate with the review team during the review period.
- Review and approve the Designer's resolution of comments summary and forward it to the Project Manager for concurrence.

2. The Project Manager shall have the following responsibilities:

- Determine if a formal independent constructibility team review is required/warranted.
- Notify the Field Manager of the need to assemble the review team, agree with the Field Manager on the team participants, and schedule the review with the Field Manager
- Provide the Designer a distribution list of the plans and specifications (specifications may not be available).
- Notify the review team and verify participation.
- Oversee the review session.
- Review and concur on the Field Manager's approval of the Designer's resolution of comments summary.

3. The Designer shall have the following responsibilities:

- Distribute plans and specifications and ensure that review team receives it.
- Take minutes of the review meeting.
- Resolve and address comments in a timely manner and prepare a resolution of comments summary indicating how comments were addressed and approved.

7.6.3 Implementation Plan

1. Select a project.
2. The Project Manager will notify the Field Manager of the need to assemble the review team, meet and discuss on who should be on the team, and establish the review schedule and meeting format (e.g. one-to-one or group session).
3. The Project Manager will provide the Designer a distribution list of the plans and available specifications. The review team should receive a full set of plans and available specifications.
4. The Designer will distribute the plans and available specifications to the review unit managers while indicating the review session date. It should be distributed at least two weeks prior to the review session date. The unit managers will then forward the package to a reviewer who becomes part of the review team.
5. While performing their review, reviewers should mark their comments on the plans and also document them separately utilizing the Constructibility Guide checklist. Any critical discoveries should be brought to the attention of the Field Manager in a timely fashion.
6. At the review session, the team meets with the Designer to discuss and resolve most of their comments. The Field Manager will direct the review session. The Designer will prepare the minutes of the meeting.
7. Subsequent to the meeting, the Designer will address the remaining comments and, if necessary, submit revised plans and specifications to the review team for approval. The Designer will document how comments were addressed and approved in the resolution of comments summary and submit to the Field Manager for review and approval.
8. The Field Manager will review and approve of the summary and forward to the Project Manager for review and concurrence.
9. If there is an impasse on resolving comments, the Program Manager shall be notified to resolve the comments.

SECTION 8 ENVIRONMENTAL

8.1 Environmental Processing Options

8.1.1 Procedure for Determining NEPA Classification of Projects and Categorical Exclusion Documentation

Introduction

The Federal Highway Administration (FHWA) and the Federal Transit Administration, published regulations for implementing the National Environmental Policy Act (NEPA) in the August 28, 1987 Federal Register (23 CFR 771). Included in these regulations are procedures for classifying and processing projects in compliance with NEPA. Any project which has the potential of being federally funded in design and/or construction shall follow these procedures.

To determine the appropriate NEPA classification for projects and provide for adequate documentation for Categorical Exclusions, this procedure should be followed, with reference to the Categorical Exclusion Documentation form and the Programmatic Agreement with FHWA on CE certification. Copies of these documents are included at the end of this Procedure section.

Procedure *(Note: Step numbers are keyed to flow chart in Attachment 1)*

1. During the early stages of project scope development and after the initial public reaction to a proposed project is obtained, the Project Manager (PM), in consultation with BES and FHWA decides whether the probable project scope requires an EIS or an EA. This decision is made after comparing the probable project scope to the definitions in 23 CFR 771 that require an EIS or an EA. Actions that require an EIS are defined under 23 CFR 771 as those which significantly affect the environment. Such EIS-type actions include, but are not limited to, a new controlled access freeway or a highway project of four or more lanes on new locations.
2. If an EA or EIS is required, the PM transmits a letter, reviewed and approved by the BES Manager, informing the FHWA that an EA or an EIS will be prepared for the project. The work will then follow the procedures for the preparation of an EA or EIS.

The following procedure is to be used for developing documentation for CE certification to FHWA or for approval by FHWA. It is essential to keep analysis and documentation to only that which is sufficient to support the finding that a project is a CE.

3. When a project meets the criteria for classification as a Categorical Exclusion outlined in 23 CFR 771, the Categorical Exclusion Documentation (CED) form is used by the assigned Environmental, "E Team", staff during the early stages of Scope Development to identify potential for impacts and sensitive areas which will require analysis and those which will not. This form is to be used as a "working document" until all the required information is complete, at which time the conclusions are entered on the CED form.

4. The PM will establish a separate CED File which will contain all documents used in the development and completion of the CED. This will be important to the execution of efficient process reviews by FHWA of projects certified as CEs by the Department.
5. The Bureau of Project Scope Development (BPSD) informs the PM that the proposed project has sufficient engineering information to initiate environmental review. In a memorandum, BPSD provides information to BES consisting of preliminary plans and ROW limits, construction features, publicly owned property and other factors identified in Sections I, II and III - I (Public Reaction) of the CED form. This memorandum also serves as the official request to begin the required environmental analyses to support the NEPA document (CE, EA and EIS).
6. The E Team leader reviews the project information to determine if it is adequate to begin effective assessment of impacts. Additional information from BPSD is requested as needed. Although environmental review should begin during the earliest stage of project scope development, care should be taken to avoid development of final environmental documentation when the scope is too vague. Good judgement shall prevail.
7. PM in consultation with BES E team leader decides whether consultant services are required, or documentation is done in house. If consultant services are required, the assigned BES staff develops brief scope of work and PM initiates task order contracting with appropriate consultant.
8. BES conducts the appropriate degree of analysis to complete the Categorical Exclusion Documentation form. This includes completion of all steps needed to conclude Section 106 and Section 4(f) documentation. Although the form is comprehensive and covers a wide range of areas where significant impacts could be caused, the level of analysis should be guided by the results of Step 3.
9. If the results of the analysis indicate the project will cause significant impacts, proceed to the EIS process. This should be a rare occurrence.
10. The PM and E-Team leader determine if the project is a certifiable CE (it met the screening requirements identified in Attachment 2 of the Programmatic Agreement with FHWA).
11. For certifiable CEs, one copy of the finished CE Documentation form is forwarded to the appropriate Program Manager for review; then to the BES Manager for signature (as "recommended") and to the Director of Project Management for certification. This document is then placed in the CED File and the project will be added to the running list of certified CE's maintained by the BES Manager's office.
12. At the next authorization request, notify FHWA that project was a certified CE.
13. If the results of Step 10 indicate that FHWA must approve the CE, two copies of the completed CE Documentation form, with any necessary attachments (e.g. Sec. 4(f) Evaluation) are presented to the appropriate Project Manager for review; then to the BES Manager for signature ("recommended"); and to the Director of Project

Management for approval. Both copies are mailed to FHWA for concurrence, using a standard transmittal letter signed by the BES Manager. A two week "turn around" from FHWA will normally be requested.

14. BES receives FHWA concurrence, logs information in and sends finished CED to PM.
15. The PM/E Team lists environmental commitments for use in developing the environmental plan sheet, provides information concerning environmentally sensitive parcels to the Bureau of ROW, takes other appropriate follow up actions and files document in CED File.

Attachment 1 - Procedure for Determining NEPA Classification

8.1.2 Programmatic Agreement with FHWA for Approval of Certain Categorical Exclusions

BETWEEN THE FEDERAL HIGHWAY ADMINISTRATION AND THE NEW JERSEY DEPARTMENT OF TRANSPORTATION

The Federal Highway Administration, New Jersey Division, hereinafter FHWA, and the New Jersey Department of Transportation, hereinafter NJDOT, have developed this Programmatic agreement to outline the policy and procedures for environmental processing of certain Class II (CE) Actions as defined in section 23 CFR 771.117 (and as amended) which normally are found to have no significant social, economic and environmental effects.

The FHWA hereby concurs in advance, on a programmatic basis, with NJDOT's designation that those types of projects listed on Attachment 2, and which satisfy the conditions and criteria in Attachment 3, will not result in significant environmental impacts, and are therefore categorically excluded from the requirement to prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS). As outlined in this Agreement, the NJDOT will determine and certify that a project meets Federal environmental requirements, and notify FHWA of its findings.

APPLICABILITY - This Agreement applies to projects which involve Federal funding and/or approvals, and supersedes previous agreements, including the "Group 2- Programmatic" list of CE's. This Agreement does not apply to those projects specifically exempted by regulation from Federal environmental requirements, nor to those projects for which an EA or EIS is required.

PROCESS -

1. NJDOT will conduct an interdisciplinary review, and provide appropriate public involvement opportunities, to determine whether a project meets the conditions of Attachments 1 and 2 of this Agreement. This determination shall be appropriately documented¹ in the project file.
2. NJDOT shall notify the FHWA that CE classification for the project was programmatically determined by the Manager of the Bureau of Environmental Services and certified by the Director of the Division of Project Management, at the time the authorization to proceed with final design, right-of-way acquisition or construction is requested.
3. NJDOT shall provide a quarterly listing of projects processed under this Agreement to FHWA, beginning three months from the execution of this Agreement. Documentation will be retained and accessible to authorized representatives of the FHWA and NJDOT for a minimum of three (3) years following completion of construction. Electronic files meeting Federal and State requirements may eventually replace "hard copy."

¹ "Documentation" as used in this agreement is the appropriate engineering and environmental documentation required for a federally funded highway project. The level of detail reflected in the documentation will vary, depending on the complexity of the project and its likelihood of environmental impacts.

4. NJDOT may request technical assistance from FHWA at any time. Such requests do not override the provisions contained in this Agreement.

AGREEMENT REVISIONS AND TERMINATION - This Agreement and its attachments may be expanded, deleted, modified, or terminated by mutual consent of the Division Administrator, FHWA and the Commissioner of NJDOT or designee at any time. It is anticipated that FHWA will conduct a process review approximately six (6) months from the execution of this Agreement; this review may result in recommendations for revisions.

APPROVAL OF AGREEMENT - The undersigned have reviewed this Agreement and determined that it complies with the laws, regulations and policies applicable to the FHWA and NJDOT. Accordingly, it is hereby approved and becomes effective on the last date noted below.

Attachment 2 - Programmatic Categorical Exclusions

Only the following (30) activities may be designated as CE's under this Agreement without further approval or documentation, provided they do not cause any of the impacts listed on Attachment 3:

1. Activities which do not involve or lead directly to construction, such as planning and technical studies; grants for training and research programs; research activities as defined in 23 U.S.C. 307; approval of a unified work program and any findings required in the planning process pursuant to 23 U.S.C. 134; approval of statewide programs under 23 CFR part 630; approval of project concepts under 23 CFR part 476; engineering to define the elements of a proposed action or alternatives so that social, economic, and environmental effects can be assessed; and Federal-aid system revisions which establish classes of highways on the Federal-aid highway system.
2. Approval of utility installations along or across a transportation facility.
3. Construction of bicycle and pedestrian lanes, paths, and facilities.
4. Activities included in the State's highway safety plan under 23 U.S.C. 402.
5. Transfer of Federal lands pursuant to 23 U.S.C. 317 when the subsequent action is not an FHWA action.
6. The installation of noise barriers or alterations to existing publicly owned buildings to provide for noise reduction.
7. Landscaping.
8. Installation of fencing, signs, pavement markings, small passenger shelters, traffic signals, and railroad warning devices where no substantial land acquisition or traffic disruption will occur.
9. Emergency repairs under 23 U.S.C. 125.
10. Acquisition of scenic easements.
11. Determination of payback under 23 CFR part 480 for property previously acquired with Federal-aid participation.
12. Improvements to existing rest areas and truck weigh stations.
13. Ridesharing activities.
14. Bus and rail car rehabilitation.
15. Alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons.

16. Program administration, technical assistance activities, and operating assistance to transit authorities to continue existing service or increase service to meet routine changes in demand.
17. The purchase of vehicles by the applicant where the use of these vehicles can be accommodated by existing facilities or by new facilities which themselves are within a CE.
18. Track and railbed maintenance and improvements when carried out within the existing right-of-way.
19. Purchase and installation of operating or maintenance equipment to be located within the transit facility and with no significant impacts off the site.
20. Promulgation of rules, regulations, and directives.
21. Modernization of a highway by resurfacing, restoration, rehabilitation. **Reconstruction is not included in this category.** As of this writing, "3R" projects, until full implementation of the NJDOT Capital Project Delivery Guidelines, will be defined as per the FHWA/NJDOT Letter of Agreement (Project Reports, Project Development and Certification Acceptance), dated November 16, 1992.
22. Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting.
23. Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.
24. Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and located on or near a street with adequate capacity to handle anticipated bus and support vehicle traffic.
25. Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.
26. Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.
27. Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.

28. Acquisition of land for hardship or protective purposes; advance land acquisition loans under section 3(b) of the UMT Act.² Hardship and protective buying will be permitted only for a particular parcel or a limited number of parcels. These types of land acquisition qualify for a CE only where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.
29. Bridge painting.
30. Transportation Enhancement Activities.

*NJDOT may **not** “self certify” as a CE projects which involve any of the following four (4) activities, regardless of potential involvement with any of the issues listed in Attachment 2. Documentation which verifies that the particular project will not cause significant environmental impacts must be submitted to FHWA for their approval of its CE classification:*

1. Modernization of a highway by reconstruction, adding shoulders, adding auxiliary lanes (e.g., parking, weaving, turning, climbing), or modifications which result in a redirection of existing movements at an intersection/interchange. (taken from activities in “d” list #1).
2. Bridge rehabilitation, reconstruction or replacement or the construction of grade separation to replace existing at-grade railroad crossings (a.k.a. “d” list #3).
3. Transportation corridor fringe parking facilities (a.k.a. “d” list #4).
4. Construction of new truck weigh stations or rest areas (a.k.a. “d” list #5).

² Hardship acquisition is early acquisition of property by the applicant at the property owner's request to alleviate particular hardship to the owner, in contrast to others, because of an inability to sell his property. This is justified when the property owner can document on the basis of health, safety or financial reasons that remaining in the property poses an undue hardship compared to others.

Protective acquisition is done to prevent imminent development of a parcel which is needed for a proposed transportation corridor or site. Documentation must clearly demonstrate that development of the land would preclude future transportation use and that such development is imminent. Advance acquisition is not permitted for the sole purpose of reducing the cost of property for a proposed project.

Attachment 3 - Programmatic CE Conditions

A PROPOSED PROJECT MUST BE INDIVIDUALLY APPROVED BY FHWA IF:

SECTION 4(f) OR 6 (f): The proposed project results in the use of any property or properties protected under Section 4(f) of the Department of Transportation Act, or Section 6(f) of the Land and Water Conservation Fund Act.

HISTORIC PROPERTIES: Consultation with FHWA and the New Jersey State Historic Preservation Officer (SHPO) has resulted in an agreement that the proposed project results in an "Adverse Effect" upon any properties eligible for or listed in the National Register of Historic Places.

WETLANDS: The proposed project results in the placement of fill in 5 or more acres (2 hectares) of freshwater wetlands or State open waters, or if it requires the placement of fill in tidal wetlands, or if a Nationwide 404 permit applies.

ENDANGERED SPECIES: The proposed project affects species or critical habitat of species protected by the Endangered Species Act.

SOLE SOURCE AQUIFER: The proposed project is located within a designated Sole Source Aquifer *and* the project requires an EPA approval of a groundwater assessment.

NOISE: The proposed project is a Type I Action requiring a noise study in accordance with Section 772 of the Federal Aid Policy Guide.

AIR QUALITY: The proposed project causes any exceedances of the National Ambient Air Quality Standards (NAAQS), or if a Congestion Management Study/Major Investment Study (CMS/MIS) is required.

RIGHT OF WAY: The proposed action requires relocation of any residences or businesses, involves a control of access change or has a high risk of hazardous materials involvement.

Environmental
(Fragnets/Interfaces)

Categorical Exclusions (CE'S)

Section 106 Process

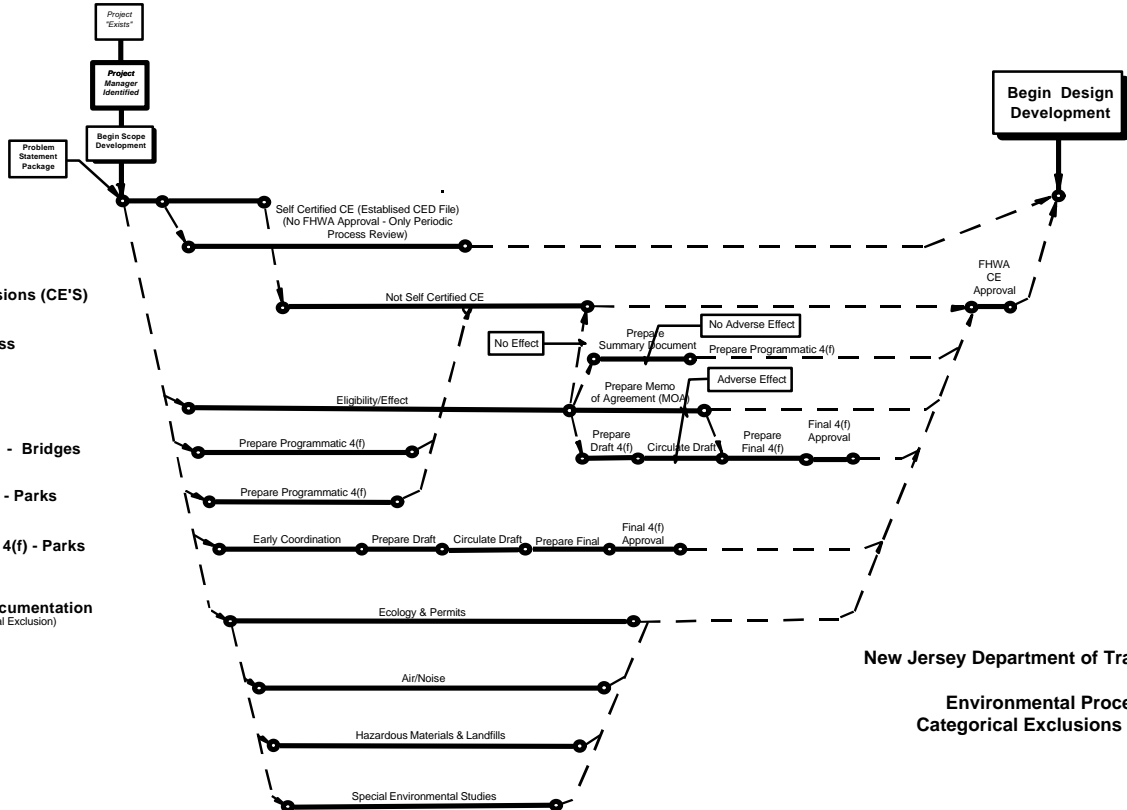
Cultural Resources

Programmatic 4(f) - Bridges

Programmatic 4(f) - Parks

Individual Section 4(f) - Parks

Environmental Documentation
(in support of Categorical Exclusion)



New Jersey Department of Transportation

Environmental Process
Categorical Exclusions (CE'S)

FLOW CHART

Environmental Process Categorical Exclusions (CE's) 11 x 17

Attachment 4 - CE Documentation

NEW JERSEY DEPARTMENT OF TRANSPORTATION
CATEGORICAL EXCLUSION DOCUMENTATION

I. GENERAL INFORMATION

NJDOT Job Code No.	Federal Project No.
Project Management Team	Data Base No.
Route and Section	Structure No.
Local Road Name	
Municipality	County
Type of Project	Length
From	To
Congressional District	Legislative District
ROW Cost	Construction Cost

EXISTING FACILITY	PROPOSED FACILITY
ROW Width	ROW Width
No. of Lanes & Width	No. of Lanes & Width
Shoulder Width	Shoulder Width
Overall Roadway Width	Overall Roadway Width

II. PROJECT DESCRIPTION (attach location map)

A. Project Need (briefly explain why the project is needed)

B. Proposed Improvements (provide a brief description of proposed improvements)

C. Right of Way Takings

Total area needed: _____ est. number of parcels: in fee- _____ easements- _____

Est. number of relocations: residences- _____ businesses- _____ parking spaces-

Community _____ facilities _____ affected:

Area (hectares) of public recreational land taken: _____ out of a total area of _____

III. ENVIRONMENTAL CONSIDERATIONS:

A. Noise

- _____ Sensitive receptors within 65 meters for two lanes or 130 meters for four lanes.
- _____ Project substantially changes the vertical or horizontal alignment of the roadway.
- _____ Traffic volumes or speeds substantially increase.

Conclusion:

- _____ Noise study not required. No significant impact anticipated.
- _____ Potential noise impacts were studied and are discussed in comments. Project still meets CE criteria.

Comments:

B. Air Quality

1. CONFORMITY WITH THE CLEAN AIR ACT AMENDMENTS (CAAA) OF 1990

- _____ There are sensitive receptors (i.e. residences, schools, hospitals) within 65 meters of the project.
- _____ This project is on page ____ of the _____ approved State Transportation Improvement Plan (STIP). A copy of the STIP page is in the project's CED file.

2. CO ANALYSIS

- _____ The project is located in a Carbon Monoxide Non-Attainment Area
- _____ The project is located in a Carbon Monoxide Attainment Area. **If so, no CO analysis needed.**

As defined by the Transportation Conformity Rule of 11/15/93, effective date 12/27/93, this project is a :

- _____ Table 2 type project and therefore does not impact regional emissions and **did not require** Carbon Monoxide analysis.
- _____ Table 3 type project and is located in a Carbon Monoxide attainment Area and therefore did not impact regional emissions and **did not require** Carbon monoxide analysis.
- _____ Table 3 type project located in a Carbon Monoxide Non-Attainment area and required a Carbon Monoxide hot-spot analysis. A CO Analysis was completed at the following intersections:

and the results are:

- _____ Neither a Table 2 or Table 3 type project, therefore it required a Carbon Monoxide hot-spot analysis. This was done at the following intersections:

and the results are:

_____ Table 3 type project and the total eight-hour Carbon Monoxide levels are expected to be reasonably below the NAAQS of 9 ppm. No significant impact is anticipated.

Comments:

C. Ecology & Permits (briefly describe any potential impact(s) under comments)

- | | |
|---------------------------|---|
| _____ Water Quality | _____ Sole Source Aquifer |
| _____ Floodplain | _____ Unique/Endangered Species Habitat |
| _____ Wetlands - hectares | _____ Wildlife |
| _____ Acid Soils | |

Conclusion:

- _____ No significant impact anticipated.
- _____ Further studies needed to obtain permits. Project still satisfies CE criteria. (see comments)

D. Environmental Permits/Coordination Needed

U.S. Coast Guard (Bridge)		NJDEP Waterfront Development	
USACOE Section 404 (Individual)		NJDEP Stream Encroachment - Major	
USACOE Section 404 (Nationwide)		NJDEP Stream Encroachment - Minor	
USACOE Sec. 10 (Navigable Waters)		NJDEP Riparian	
CAFRA		NJDEP Water Quality Certificate	
NJDEP Remediation Approval		USEPA - Sole Source Aquifer	
NJDEP Coastal Wetlands		Delaware Basin Commission	
NJDEP Freshwater Wetlands - GP		D & R Canal Commission	
NJDEP Freshwater Wetlands - IP		Meadowlands Commission	
NJDEP Pollutant Discharge		Pinelands Commission	

Comments: (potential impacts, unique features, sensitive issues)

E. Cultural Resources

Technical Findings:

- _____ No properties in Area of Potential Effect (APE)
- _____ No Effect per FHWA/SHPO Agreement of 1-12-96
- _____ No NR listed/eligible properties in APE
- _____ NR listed/eligible properties in APE (see summary table below)

Archaeology	Architecture				Sec. 106 Finding
	Bridge	Building	District	Other	
					NR listed/eligible property in APE
					NR listed/eligible property - No Effect
					NR listed/elig. property -No Adv. Effect
					NR listed/elig. prop.- NAE w/ Data Recov.
					NR listed/elig. property - Adverse Effect

Conclusion: Consultation Summary (indicate date of concurrence/approval)

- _____ SHPO concurred with Sec. 106 Finding on _____.
- _____ ACHP concurred with No Adverse Effect Finding on _____.
- _____ SHPO approved Data Recovery Plan on _____.
- _____ ACHP approved Data Recovery Plan on _____.
- _____ ACHP accepted MOA on _____.

Comments:

F. Sec. 4(f) Involvement - Historic Sites

- _____ Project results in a use of Historic site(s) on or eligible for the National Register of Historic Places.
- _____ Project results in a "**constructive use**" of Section 4(f) property.

Conclusion:

- _____ A. No Section 4(f) Involvement
- _____ B. Section 4(f) Involvement. Project falls under the **Programmatic Nationwide Section 4(f) Evaluation** and all applicability criteria have been met including agreement of the SHPO with the "No Effect" recommendation.
- _____ C. Section 4(f) Involvement. Project is a **Nationwide Section 4(f)** and all applicability standards have been met including agreement by the ACHP with the "**No Adverse Effect**".
- _____ D. Section 4(f) Involvement. Project is covered under the **Programmatic Nationwide Section 4(f)** for Historic Bridges.

- _____ E. Section 4(f) Involvement. Project has an "**Adverse Effect**". Individual Section 4(f) prepared.

Documentation: If Sec. 4(f) impacts exists - refer to Appendix for documentation.

G. Sec. 4(f) Involvement - Recreational Land

- _____ A. Project requires acquisition from Publicly-owned recreation land.
_____ B. Project results in a "**Constructive Use**" of Section 4(f) property.
_____ C. If either of the above are checked, fill out the following:

Site (use local name):

Lot and Block #:

Total Hectares to be Acquired (consider acquisition and easement):

Total Hectares of Park: Amount of Parkland affected:

- _____ D. Federal DOI Section 6(f) regulations or other Federal encumbrances involved.

Conclusion:

- _____ A. No Section 4(f) Involvement.
_____ B. Section 4(f) Involvement. Project falls under **Temporary Occupancy**; all applicability criteria and conditions have been met (Explain below).
_____ C. Section 4(f) Involvement. Project falls under the **Programmatic Nationwide Section 4(f) Evaluation**; all applicability criteria and conditions have been met.
_____ D. Section 4(f) Involvement. **Individual Section 4(f) Evaluation** was completed, but **no significant impacts are anticipated**.
_____ E. No Section 4(f) Involvement, but any changes made to the project which require use of Section 4(f) land would require compliance with Section 4(f).

Documentation: If Sec. 4(f) impacts exists - refer to Appendix for documentation.

H. Hazardous Materials and Landfills

- _____ Involvement with a known or suspected contaminated site. (If so, explain under comments)
_____ Involvement with underground storage tanks. (If so, explain under comments)

Conclusion:

- _____ Low potential for involvement with contamination, no further investigation required.
_____ Further investigation and/or sampling required to determine extent of involvement with contamination. Project still meets FHWA criteria for a CE.

FOR TUTORIAL USE ONLY

NEW JERSEY DEPARTMENT OF TRANSPORTATION
CATEGORICAL EXCLUSION DOCUMENTATION

I. GENERAL INFORMATION - THIS SECTION WILL BE COMPLETED BY THE PM WITH INPUT FROM SCOPE DEVELOPMENT AND BES.

NJDOT Job Code No.	Federal Project No.
Project Management Team	Data Base No.
Route and Section	Structure No.
Local Road Name	
Municipality	County
Type of Project	Length
From	To
Congressional District	Legislative District
ROW Cost	Construction Cost

EXISTING FACILITY	PROPOSED FACILITY
ROW Width	ROW Width
No. of Lanes & Width	No. of Lanes & Width
Shoulder Width	Shoulder Width
Overall Roadway Width	Overall Roadway Width

II. PROJECT DESCRIPTION (attach map showing project location)

THIS SECTION WILL BE COMPLETED BY THE PM WITH INPUT FROM SCOPE DEVELOPMENT

A. Project Need (briefly explain why the project is needed)

VERY BRIEFLY STATE THE PRIMARY NEED AND PURPOSE OF THE PROJECT. ONLY 2-3 SENTENCES WOULD NORMALLY BE SUFFICIENT.

B. Proposed Improvements (provide a brief description of proposed improvements)

VERY BRIEFLY DESCRIBE THE MAJOR FEATURES OF THE PROPOSED PROJECT. FOR EXAMPLE: WIDEN LANES OR SHOULDERS, REPLACE/REHABILITATE EXISTING BRIDGE, ADD LEFT TURN LANE, CORRECT SUBSTANDARD CURVE, ETC.

C. Right of Way Takings

FILL IN ALL OF THE INFORMATION REQUESTED IN THE BLANK AREAS BASED ON INFORMATION PROVIDED BY THE BUREAU OF ROW.

Total area needed:(hectares) Est. number of parcels: in fee-_____easements-_____

Est. number of relocations: residences-_____ businesses-_____ parking spaces-

Community facilities affected:

Area (hectares) of public recreational land taken: _____ out of a total area of

III. ENVIRONMENTAL CONSIDERATIONS

SECTION III WILL BE COMPLETED BY THE E-TEAM OR ENVIRONMENTAL CONSULTANT. INDICATE WITH AN "X" IN BLANK AREA BELOW IF ANY OF THE LISTED ISSUES PERTAIN TO PROJECT.

A. Noise INDICATE WITH "X" APPLICABLE ISSUES

- _____ Sensitive receptors within 65 meters for two lanes or 130 meters for four lanes.
- _____ Project substantially changes the vertical or horizontal alignment of the roadway.
- _____ Traffic volumes or speeds substantially increase.

Conclusion: INDICATE WITH "X" WHAT CONCLUSION WAS REACHED

- _____ Noise study not required. No significant impact anticipated.
- _____ Potential noise impacts were studied and are discussed in comments. Project still meets CE criteria.

Comments: COMMENT ON ANY SENSITIVE NOISE ISSUES OR OTHER UNIQUE NOISE FACTORS ASSOCIATED WITH THE PROJECT.

B. Air Quality

1. CONFORMITY WITH THE CLEAN AIR ACT AMENDMENTS (CAAA) OF 1990

INDICATE WITH AN "X" IF ANY OF THE LISTED ISSUES PERTAIN TO PROJECT EXPLAIN IN COMMENTS IF THERE ARE ANY UNUSUAL SENSITIVE RECEPTORS.

- _____ There are sensitive receptors (i.e. residences, schools, hospitals) within 65 meters of the project.

COMPLETE THE STIP INFORMATION REQUESTED BELOW

- _____ This project is on page _____ of the _____ approved State Transportation Improvement Plan (STIP). A copy of the STIP page is in the project's CED file.

2. CO ANALYSIS

INDICATE WITH AN "X" THE RELEVANT STATEMENT(S)

- The project is located in a Carbon Monoxide Non-Attainment Area
 The project is located in a Carbon Monoxide Attainment Area. **If so, no CO analysis needed.**

As defined by the Transportation Conformity Rule of 11/15/93, effective date 12/27/93, this project is a :

- Table 2 type project and therefore does not impact regional emissions and **did not require** Carbon Monoxide analysis.
 Table 3 type project and is located in a Carbon Monoxide attainment Area and therefore did not impact regional emissions and **did not require** Carbon monoxide analysis.
 Table 3 type project located in a Carbon Monoxide Non-Attainment area and required a Carbon Monoxide hot-spot analysis. A CO Analysis was completed at the following intersections: INDICATE WHICH INTERSECTION(S) WERE STUDIED

and the results are: INDICATE THE RESULTS OF THE CO ANALYSIS

- Neither a Table 2 or Table 3 type project, therefore it required a Carbon Monoxide hot-spot analysis. This was done at the following intersections: INDICATE WHICH INTERSECTION(S) WERE STUDIED

and the results are: INDICATE THE RESULTS OF THE CO ANALYSIS.

- Table 3 type project and the total eight-hour Carbon Monoxide levels are expected to be reasonably below the NAAQS of 9 ppm. No significant impact is anticipated.

Comments: DESCRIBE ANY UNUSUAL AIR QUALITY SENSITIVE RECEPTORS OR OTHER ISSUES

C. Ecology & Permits

INDICATE BELOW WITH AN "X" IF ANY OF THE LISTED ISSUES APPLY TO THE PROJECT. IF ANY ARE APPLICABLE, BRIEFLY DESCRIBE POTENTIAL IMPACTS UNDER COMMENTS

- | | |
|--|--|
| <input type="checkbox"/> Water Quality | <input type="checkbox"/> Sole Source Aquifer |
| <input type="checkbox"/> Floodplain | <input type="checkbox"/> Unique/Endangered Species Habitat |
| <input type="checkbox"/> Wetlands - hectares | <input type="checkbox"/> Wildlife |
| <input type="checkbox"/> Acid Soils | |

Conclusion: INDICATE CONCLUSION WITH AN "X" BELOW

_____ No significant impact anticipated.

_____ Further studies needed to obtain permits. Project still satisfies CE criteria. (see comments)

Comments:

D. Environmental Permits/Coordination Needed

INDICATE WITH AN "X" ALL APPLICABLE PERMITS/ISSUES THAT ARE ANTICIPATED

U.S. Coast Guard (Bridge)		NJDEP Waterfront Development	
USACOE Section 404 (Individual)		NJDEP Stream Encroachment - Major	
USACOE Section 404 (Nationwide)		NJDEP Stream Encroachment - Minor	
USACOE Sec. 10 (Navigable Waters)		NJDEP Riparian	
CAFRA		NJDEP Water Quality Certificate	
NJDEP Remediation Approval		USEPA - Sole Source Aquifer	
NJDEP Coastal Wetlands		Delaware Basin Commission	
NJDEP Freshwater Wetlands - GP		D & R Canal Commission	
NJDEP Freshwater Wetlands - IP		Meadowlands Commission	
NJDEP Pollutant Discharge		Pinelands Commission	

COMMENTS: BRIEFLY DESCRIBE POTENTIAL UNIQUE FEATURES OR SENSITIVE ISSUES

E. Cultural Resources

Technical Findings: AS A RESULT OF COMPLETED SEC. 106 CONSULTATION WITH THE FHWA AND SHPO INDICATE IF THERE ARE ELIGIBLE PROPERTIES IN THE PROJECT AREA

_____ No properties in Area of Potential Effect (APE)

_____ No Effect per FHWA/SHPO Agreement of 1-12-96

_____ No NR listed/eligible properties in APE

_____ NR listed/eligible properties in APE (see summary table below)

THE FOLLOWING TABLE IS USED TO SUMMARIZE THE DETERMINATION OF EFFECT UPON HISTORIC RESOURCES BASED ON COMPLETED CONSULTATION WITH THE FHWA, SHPO AND THE ACHP (IF NEEDED). INDICATE WITH AN "X" WHICH TYPE OF

HISTORIC RESOURCE(S) IS INVOLVED AND THE APPLICABLE SEC. 106 FINDING ON EFFECT.

Archaeology	Architecture				Sec. 106 Finding
	Bridge	Building	District	Other	
					NR listed/eligible property in APE
					NR listed/eligible property - No Effect
					NR listed/elig. property -No Adv. Effect
					NR listed/elig. prop.- NAE w/ Data Recov.
					NR listed/elig. property - Adverse Effect

Conclusion: Consultation Summary

INDICATE THE APPLICABLE CONSULTATION SUMMARY AND ENTER THE DATE OF THE CONCURRENCE OR APPROVAL.

- _____ SHPO concurred with Sec. 106 Finding on _____.
- _____ ACHP concurred with No Adverse Effect Finding on _____.
- _____ SHPO approved Data Recovery Plan on _____.
- _____ ACHP approved Data Recovery Plan on _____.
- _____ ACHP accepted MOA on _____.

Comments : INDICATE ANY UNUSUAL ISSUES, MITIGATION MEASURES, ETC. WHICH MAY BE APPLICABLE.

F. Sec. 4(f) Involvement - Historic Sites

INDICATE USING AN "X", THE APPROPRIATE STATEMENT

- _____ Project results in a use of Historic site(s) on or eligible for the National Register of Historic Places.
- _____ Project results in a "**constructive use**" of Section 4(f) property.

Conclusion: INDICATE WITH AN "X" THE APPROPRIATE STATEMENT. IF SEC. 4F IS INVOLVED, THEN REFER TO THE DOCUMENT AND FHWA-APPROVAL DATE UNDER "DOCUMENTATION" BELOW -

- _____ A. No Section 4(f) Involvement
- _____ B. Section 4(f) Involvement. Project falls under the **Programmatic Nationwide Section 4(f) Evaluation** and all applicability criteria have been met including agreement of the SHPO with the "No Effect" recommendation.
- _____ C. Section 4(f) Involvement. Project is a **Nationwide Section 4(f)** and all applicability standards have been met including agreement by the ACHP with the "**No Adverse Effect**".

- _____ D. Section 4(f) Involvement. Project is covered under the **Programmatic Nationwide Section 4(f)** for Historic Bridges.
- _____ E. Section 4(f) Involvement. Project has an "**Adverse Effect**". Individual Section 4(f) prepared.

Documentation: If Sec. 4(f) impacts exists - refer to documentation.
 WHEN REQUESTING FHWA FOR CED APPROVAL, ALL SEC. 4F DOCUMENTATION WILL NEED TO BE ALREADY COMPLETED AND APPROVED BY FHWA.

G. Sec. 4(f) Involvement - Recreational Land

INDICATE WITH AN "X" THE APPROPRIATE STATEMENT

- _____ A. Project requires acquisition from Publicly-owned recreation land.
- _____ B. Project results in a "**Constructive Use**" of Section 4(f) property.
- _____ C. If either of the above are checked, fill out the following:

Site (use local name): ENTER NAME OF PARK, WILDLIFE REFUGE, ETC.

Lot and Block #:

Total Hectares Required from Parkland (total of fee acquisitions and easements)

INDICATE TOTAL AREA FOR BOTH FEE ACQUISITIONS AND EASEMENTS

Total Hectares of Park :

- _____ D. Federal DOI Section 6(f) regulations or other Federal encumbrances involved.

Conclusion: INDICATE APPROPRIATE STATEMENT WITH AN "X"

- _____ A. No Section 4(f) Involvement.
- _____ B. Section 4(f) Involvement. Project falls under **Temporary Occupancy**; all applicability criteria and conditions have been met (Explain below).
- _____ C. Section 4(f) Involvement. Project falls under the **Programmatic Nationwide Section 4(f) Evaluation**; all applicability criteria and conditions have been met.
- _____ D. Section 4(f) Involvement. **Individual Section 4(f) Evaluation** was completed, but **no significant impacts are anticipated**.
- _____ E. No Section 4(f) Involvement, but any changes made to the project which require use of Section 4(f) land would require compliance with Section 4(f).

Documentation: If Sec. 4(f) impacts exists - refer to Appendix for documentation.
 WHEN REQUESTING CED APPROVAL FROM FHWA, IF SEC. 4F IS INVOLVED, ALL SEC. 4F DOCUMENTATION WILL HAVE ALREADY BEEN COMPLETED AND APPROVED BY FHWA.

H. Hazardous Materials and Landfills

INDICATE APPROPRIATE STATEMENT WITH AN "X"

CEs not certified Federal Highway Administration
by P.M. Director)

NOTE: WHEN A CED NEEDS APPROVAL FROM FHWA, THE CED FORM CAN BE SHORTENED BY THE PROJECT MANAGER AND E TEAM, SO THAT ONLY SECTIONS I AND II, APPLICABLE ENVIRONMENTAL CONSIDERATIONS, AND PUBLIC REACTION INPUT NEED TO BE SENT TO FHWA.

8.1.4 Section 4(f) Process

Introduction

Section 4(f) of the US Department of Transportation Act (49 U.S.C. 303) requires that transportation projects must avoid the taking of publicly owned recreation land or historic sites unless it has been demonstrated that there are no prudent and feasible alternatives and all steps are taken to minimize harm. This is accomplished through a careful and thorough analysis of alternatives, coordination with agencies with jurisdiction over the property and the preparation of documentation presented to FHWA for approval as described in 23 CFR 771.135.

Types of 4(f) documentation

Nationwide Programmatic - These are Section 4(f) approvals already granted nationwide by FHWA for impacts which are minimal. They are not applicable when a project requires an EIS. They include: Programmatic for Historic Bridges, Programmatic for Historic Sites and Programmatic for Public Recreation Areas. The key criteria for each of these are as follows:

Historic Bridges - The project will have an **adverse effect** upon the historic bridge, the bridge is not a National Landmark and all required consultation under Section 106 has been completed.

Historic Sites - The project must not result in any demolition of a historic structure, site or object, and the Section 106 finding must **not** result in an adverse effect.

Public Parkland - The parkland must be adjacent to the existing roadway of a proposed project, the agency having jurisdiction must agree that no significant loss of the park's use will result and the total land use from the park (fee takes and easements) must not exceed:

Total Area of Park	Total Area Allowed Under Programmatic
Less than 4 hectares	10 %
4 to 40 hectares	0.4 hectares
More than 40 hectares	1 %

For the above cases, documentation needs to be presented to FHWA that the impact fits the programmatic criteria. FHWA approval is given by the NJ Division Office.

Individual Sec. 4(f) - These require the preparation of draft documentation, circulation for comment, final documentation and approval at the Regional level of FHWA. If a 4(f) document is required for an EA or EIS, it is included in these documents and processed concurrently. If 4(f) is required for a Categorical Exclusion, it is prepared and processed as a separate "self standing" document.

Process

1. Identify the presence of publicly owned parkland or historic properties on or eligible for the National Register in the project vicinity. For parkland, this information should be identified during the concept development stage or during the data collection phase of project scope development. Historic sites listed on the National/State Registers should also be identified during these early stages. The identification of sites eligible for the Register requires assessment by qualified professionals and should begin during the data collection stage of project scope development if possible.
2. BPSD develops project design that avoids or minimizes impacts to 4(f) property, documents alternatives that were considered and provides information to BES for use in determining appropriate level of 4(f) documentation.
3. If the impact is limited to a “temporary occupancy” (construction easement, etc.), BES obtains letter from agency with jurisdiction stating impact is acceptable and sends appropriate documentation to FHWA for approval under Project Manager’s signature.
4. If the impact is covered by a programmatic 4(f) approval, BES obtains letter (as in #3), prepares documentation, and sends to FHWA for approval under PM’s signature. If the agency with jurisdiction of the property finds that the project will cause unacceptable impacts, an individual 4(f) document will be required as outlined below. For historic sites and bridges, documentation of the conclusion of the Section 106 process must be included.
5. If the impact requires an individual 4(f) document, consultation with the agency with jurisdiction regarding alternatives and measures to minimize harm is carried out by the PM/BES. The goal should be to arrive at agreement on alternatives and impacts, however agreement is not required for 4(f) approval. If NJDEP-Green Acres funds have been used by the municipality or county, coordination with them is required.
6. BES prepares Draft 4(f) evaluation and submits to FHWA. If an EA or EIS is required also, the Draft 4(f) evaluation is made part of the EA or EIS and processed concurrently.
7. FHWA approves for circulation/availability as part of EA or EIS or as a “self standing” document. The document must be sent to the agency with jurisdiction over the property, the Department of Interior and the municipality for review and comment within a 45 day period.
8. Address comments, prepare Final Section 4(f) document and send to FHWA for approval. FHWA Division office sends it to Region 1 FHWA for approval.
9. After FHWA approves, PM includes any commitments made on the environmental plan sheet, makes sure 4(f) properties are identified as an ESP on ROW plans and makes sure development of plans and specs are consistent with these commitments.

Attachment 5 - Section 4(f) Process

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Section 4(f) Process

8.1.5 Environmental Assessment Process

Introduction

An Environmental Assessment (EA) shall be prepared for a proposed Federal action that is not a Categorical Exclusion and where the significance of environmental impacts is not clearly established (i.e., it does not clearly require the preparation of an EIS). 40 CFR 1508.9 defines when an EA is required and what its intended use is. FHWA regulations for preparing and processing EAs are contained under 23 CFR 771.119.

An EA must be a “concise public document” which briefly provides sufficient evidence and analysis for determining whether it is necessary to prepare an EIS or a Finding of No Significant Impact (FONSI). Unlike an EIS, the EA need not be circulated for comment, but must be made available for public inspection through appropriate notices.

Refer to the attached diagram showing the EA/EIS/EO-215 processes.

Process

1. Following initial scheme development and early project scoping, the Program Manager and BES Manager concur that the proposed project does not meet the criteria for a CE, and it is unclear whether the scope of the project could cause significant environmental impacts. It is important that the project’s purpose and need statements are well developed, compelling and clearly documented.
2. The BES Manager informs the Division FHWA office by letter indicating the project will be processed as an EA and requests FHWA concurrence.
3. In coordination with FHWA, the PM and E Team initiates formal “NEPA “ scoping to identify which aspects of the project may have potential social, economic and environmental impacts, alternatives which might mitigate impacts and identify any consultation requirements which should be performed concurrently with the EA. Scoping meetings with the public and local officials, as well as regulatory agency coordination, is undertaken following FHWA procedures under 23 CFR 771.111. A Notice of Planned Action will be sent to appropriate agencies, local officials and other interested parties identified early in the scoping process.
4. Technical environmental studies are initiated under the direction of the E Team leader, with the exception of Hazardous Waste and Noise and Air Studies, which are initiated under the direction of BES Technical Services Section Chief, focusing on only those environmental issues which may result in adverse impacts and therefore subjected to detailed analyses. Technical studies will not be necessary for issues which FHWA concurs that a detailed analysis is not appropriate.
5. As soon as possible during preparation of the technical studies, when detailed information becomes known concerning cultural resources, Section 106 consultation with FHWA and the SHPO should be initiated to determine if there are any National Register listed/eligible resources in the project’s area of potential effect and, if so, to what degree they will be affected.

6. The EA is prepared based on the findings of the technical environmental studies, and summarizes the results of regulatory agency coordination and public involvement. If Section 4(f) is involved, a Draft Section 4(f) Evaluation is incorporated into the EA.
7. The EA is sent to the Division FHWA office under the signature of the BES Manager for approval after the PM, E Team and BES Manager agree that it is satisfactory.
8. When FHWA approves the EA, they will recommend if a public hearing is warranted (normally the NJ Division FHWA requires a hearing). FHWA public hearing requirements are described in 23 CFR 771.111.
9. The EA will be made available to the public a minimum of 15 days in advance of the public hearing. Comments from the public or regulatory agencies shall be submitted within 30 days following the availability of the EA.
10. Any substantive comments received at the public hearing or by letter are addressed and included in the revised EA. If applicable, a Final Section 4(f) Evaluation must be completed and all Section 106 consultation, Summary Documentation and an executed MOA. If the PM, E Team and BES Manager agree that no significant impacts were identified, then the revised EA is sent to FHWA, under the signature of the BES Manager requesting their concurrence in a FONSI.
11. FHWA will review public and agency comments which have been addressed in the revised EA. If FHWA agrees that no significant impacts were identified, they will make a separate written FONSI.
12. A notice of availability of the FONSI will be sent from the BES Manager to all appropriate Federal, State and local officials and will be made available upon request to the public.
13. A FONSI will not be approved by FHWA until it has been determined that the project has met the conformity requirements of the Clean Air Act.

8.1.6 Environmental Impact Statement Process

Introduction

Regulations for implementing the National Environmental Policy Act contained in 40 CFR 1502 require that an Environmental Impact Statement (EIS) be prepared for any federal action that significantly affects the environment. FHWA regulations for preparing and processing an EIS are contained in 23 CFR 771 which lists the following examples of actions that *normally* require an EIS :

1. A new controlled access freeway
2. A highway project of four or more lanes on new location
3. New construction or extension of fixed rail transit facilities

4. New construction or extension of a separate roadway for buses or HOVs not located within an existing highway facility.

Federal guidelines stress that an EIS should be “concise, clear and to the point”. The document shall provide “full and fair” discussion of significant environmental impacts, reasonable alternatives to avoid/minimize impacts and evidence that the necessary environmental analyses were made. There shall be only brief discussion of issues that are not significant. The EIS also summarizes scoping efforts made to solicit participation and comment from other agencies and the public. The EIS is used by Federal officials in conjunction with other relevant materials to plan actions and make decisions.

Refer to the attached diagram showing the EIS/EA/EO-215 process.

Process

1. Following initial scheme development and early project scoping, the Program Manager and BES Manager concur that the scope of the proposed project is likely to cause significant environmental impacts. It is important that the project’s purpose and need statements are well developed, compelling and clearly documented.
2. The BES Manager informs the Division FHWA office by letter that the project will be processed as an EIS and requests FHWA concurrence.
3. Following FHWA concurrence, the Project Manager (PM) will prepare a Notice of Intent to prepare an EIS, and send it to FHWA for publication in the Federal Register.
4. In coordination with FHWA, the PM and E Team initiates formal “NEPA” scoping to identify the range of alternatives, potential impacts and significant issues to be addressed in the EIS. Scoping meetings with the public and local officials, as well as regulatory agency coordination, is undertaken following FHWA procedures under 23 CFR 771.111. Other Federal agencies with jurisdiction by law must be requested if they are interested in becoming a “Cooperating Agency” (refer to 23 CFR 771.111(d)). The scoping efforts should result in identifying if any agencies desire to become cooperating agencies.
5. Technical environmental studies are initiated under the direction of the E Team leader, with the exception of Hazardous Waste and Noise and Air Studies, which are initiated under the direction of BES Technical Services Section Chief, focusing on only those environmental issues which are anticipated to be significant and therefore subjected to detailed analyses. For issues which FHWA concurs may not be significant, an in-depth and detailed analysis will not be appropriate.
6. As soon as possible during preparation of the technical studies, when detailed information becomes known concerning cultural resources, Section 106 consultation with FHWA and the SHPO should be initiated to determine if there are any National Register listed/eligible resources in the project’s area of potential effect and, if so, to what degree will they be affected.

7. The Draft EIS is prepared in accordance with FHWA guidance and regulations (refer to 23 CFR 771). If applicable, a Draft Section 4(f) Evaluation must be included in the Draft EIS. When the PM, E Team Leader and BES Manager agree that the preliminary document is satisfactory for FHWA review, it is sent to the FHWA Division office for approval under the signature of the BES Manger.
8. Following FHWA approval, the Draft EIS must be filed with the Environmental Protection Agency. A public availability notice will be published in the Federal Register establishing a minimum of 45 days for the return of comments on the Draft EIS.
9. The Draft EIS is circulated for comment (refer to 23 CFR 771.123 for details) to agencies having jurisdiction and to other local public officials.
10. The Draft EIS will be circulated and made available to the public for a minimum of 15 days in advance of a public hearing. FHWA public hearing requirements are described under 771.111(h). In most cases, FHWA Division requires EIS's to have a public hearing.
11. The Office of Community Relations arranges and advertises to hold the public hearing. When the hearing is held, the Draft EIS must be available at the hearing.
12. After the end of the 45 day comment period established in the Federal Register, all regulatory agency and public comments will be considered by the PM and E Team. Appropriate actions will be taken to address any substantive comments which could affect selection or modification of an alternative, community issues or that require further environmental analysis or agency consultation.
13. The Final EIS is prepared by the PM and E Team. A Preferred Alternative must be identified and evaluate all reasonable alternatives considered. It should concisely discuss substantive comments received in response to the Draft EIS, summarize responses and identify any mitigation measures that will be incorporated into the proposed action. Consultation under Section 106 must be completed. If applicable, Section 106 - Summary Documentation, an executed Memorandum of Agreement and/or Final Section 4(f) Evaluations need to be completed and incorporated into the Final EIS. If there are any significant unresolved issues, the Final EIS must identify those issues and the efforts made to resolve them.
14. The Final EIS is submitted to FHWA under the signature of the BES Manager for review/approval after the PM, E Team Leader and BES Manager agree that the preliminary Final EIS is satisfactory.
15. After the Final EIS is approved by FHWA (Region or Washington, D.C.), it is sent to any persons, organizations or regulatory agencies that made substantive comments on the Draft EIS. The Office of Community Relations will publish a notice of availability of the Final EIS and make it available to interested parties.
16. FHWA will file the Final EIS with the USEPA and publish a Final EIS notice in the Federal Register.

17. FHWA will complete and sign a Record of Decision (ROD) no sooner than 30 days after publication of the Final EIS in the Federal Register. The ROD is made available through a public notice.
18. FHWA will not approve the ROD until the project has met the conformity requirements of the Clean Air Act.

8.1.7 Executive Order 215 (EO 215) Process

Introduction

Executive Order 215 governs the environmental documentation required for State-funded projects which exceed one million dollars in construction costs. There are two levels of EO 215 environmental documents which are organized similar to NEPA: *Environmental Assessment (EA)* - applies to projects with construction costs more than one million dollars; and *Environmental Impact Statement (EIS)* - applies to projects with construction costs in excess of five million dollars *and* which involve land disturbance in excess of five acres.

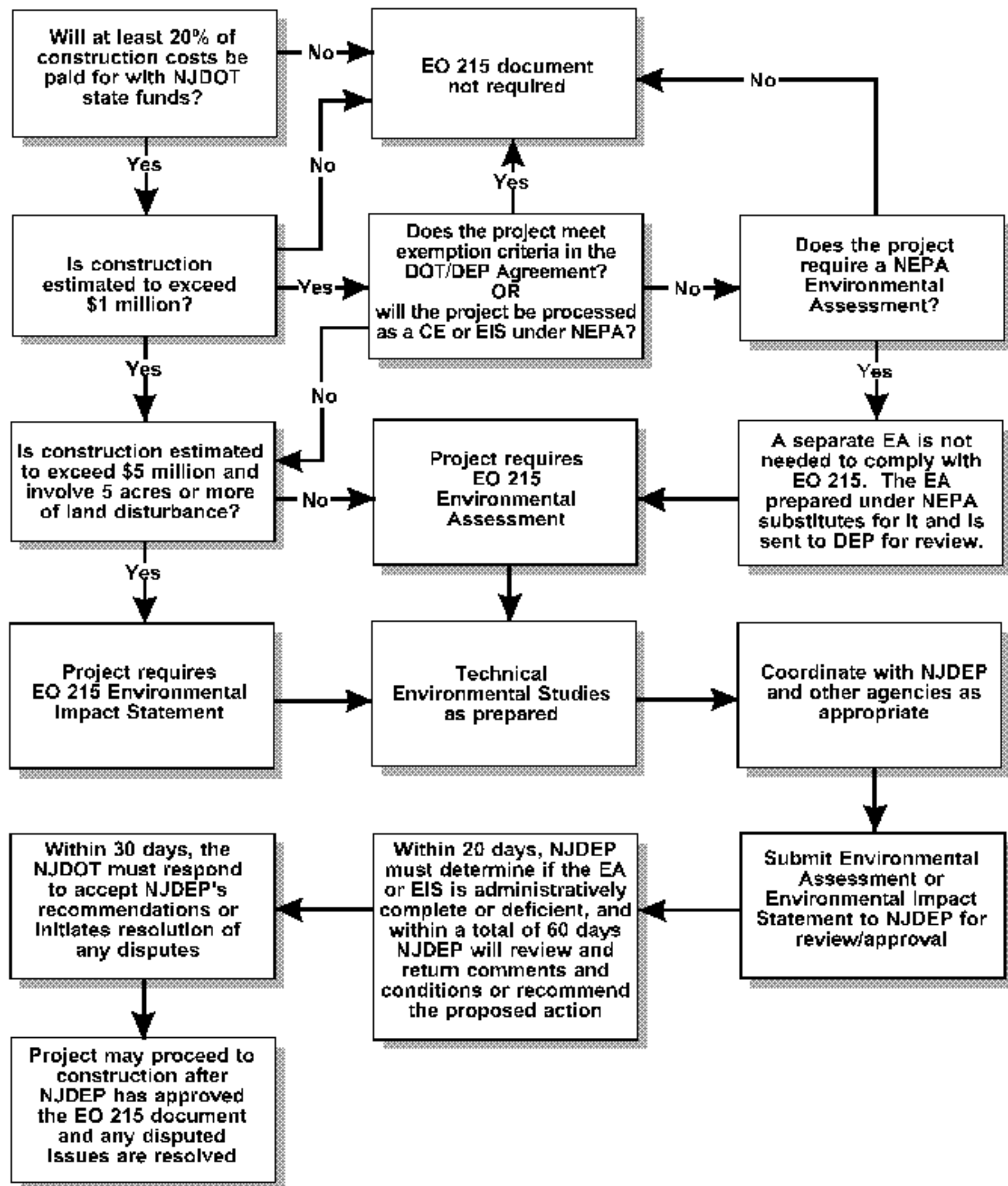
EO 215 does not apply to maintenance or repair projects and facilities or equipment replaced in kind at the same location.

Process (*Note: Refer to attached diagram which shows the EA/EIS/EO-215 processes*)

1. Following initial scheme development and early project scoping, the Program Manager and BES Manager concur that the proposed project has no Federal funding (and that it is unlikely that any Federal funds will be requested in the future), and will determine if anticipated construction costs exceed one million or five million dollars. The preparation of either an EA or EIS will then be determined applicable.
2. Following the EO 215 guidelines for preparing either an EA or EIS, technical environmental studies are initiated under the direction of the E Team leader, with the exception of Hazardous Waste and Noise and Air Studies, which are initiated under the direction of BES Technical Services Section Chief, focusing on only those environmental issues which may result in adverse impacts and therefore subjected to detailed analyses. Consultation with NJDEP - Office of Program Coordination should be undertaken to get their opinion of which environmental issues/impacts will need to be focused upon.
3. As soon as possible during preparation of the EA's or EIS's technical studies, when detailed information becomes known concerning cultural resources, consultation with the NJDEP - Historic Preservation Office should be initiated to determine if there are any State Register listed/eligible resources in the project's area of potential effect and, if so, will there be a need for a Historic Sites Council (HSC) review.
4. The EA or EIS is prepared based on the findings of the technical environmental studies, and summarizes the results of agency coordination and public involvement. If HSC approval is needed for potential cultural resource impacts, the EO 215 document may still be submitted for NJDEP approval with a commitment stating that construction funds will not be authorized until the HSC approval is obtained.

5. The EA or EIS is sent to NJDEP - Office of Program Coordination under the signature of the BES Manager for their approval after the PM, E Team and BES Manager agree that it is satisfactory.
6. NJDEP will review the document for administrative completeness within 20 days of receipt. Subsequent review of an administratively complete document must be completed within 60 days of its receipt. If their review or approval of the project is not provided in writing within 60 days, the project is deemed approved.
7. If NJDEP provides written recommendations within the prescribed time frame, NJDOT must respond within 30 days to either indicate acceptance of NJDEP's recommendations or set forth those issues remaining in dispute. Any remaining disputes must, by regulation, be resolved by the Commissioners of both Departments.
8. The project may proceed with the authorization of construction funds after receipt of NJDEP approval of the EO 215 document and if applicable, the completion of HSC review and resolution of disputes.

Executive Order 215 - Environmental Document Process

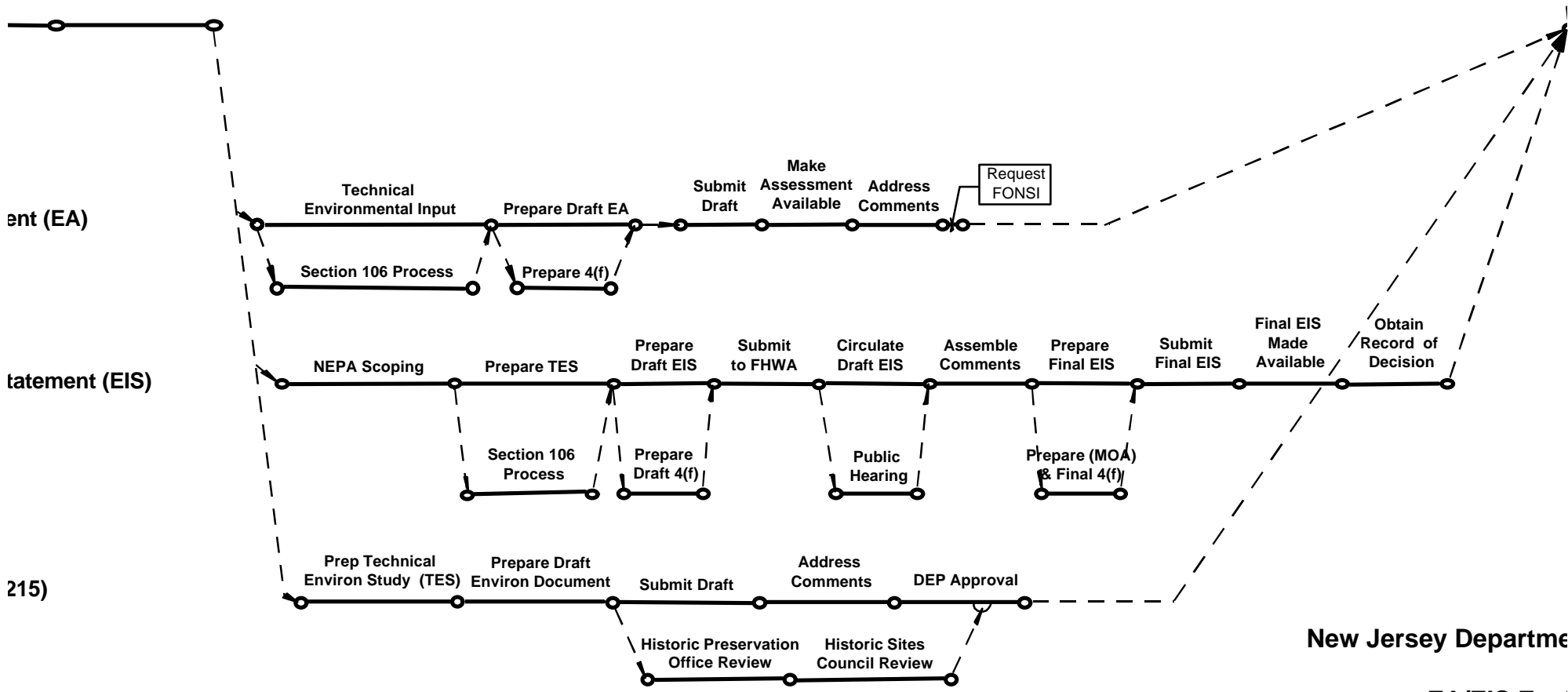


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New Jersey Department
EA/EIS Environmental
Project Development

8.1.8 Environmental Plan Sheets

Introduction

The following outlines the various steps to be used for keeping track of and implementing a project's environmental commitments from the completion of the environmental document through the development of final plans, including an Environmental Plan (EP) Sheet, and construction.

As an important part of the Quality Assurance Plan, the purpose of these actions is to ensure that environmental commitments and other sensitive environmental or land use issues which could affect the design, right of way or construction of a project are properly "tracked" and included into construction plans so that they may be ultimately implemented by the Resident Engineer/contractor.

Process

1. At the conclusion/approval of a project's environmental document, the E-Team and the Project Manager will complete a list of the following items:
 - Environmental commitments which were integrated into the environmental document.
 - Anticipated conditions/constraints that may result from required construction permits.
 - Environmentally Sensitive Parcels (ESPs) such as contaminated property, parkland, historic sites, etc. for which the Bureau of Utilities and Right of Way must be notified in writing. (Note: This is a separate process involving BES, ROW and the Attorney General's Office.)
2. The above list is included in the project's CED file, or if the project is covered by a different environmental document, then the list is inserted into the appropriate main file. Copies of the list are sent to the designer and the Bureau of Project Support.
3. The Project Manager will ensure that the scope of work for final design involves the preparation of the Environmental Plan (EP) sheets which will be included in the project's construction plans for both the Initial and Final Design Submissions and is part of the contract documents for advertisement.
4. The EP sheets are initially based on the information provided through the above list. As detailed design information is generated and when construction permit conditions become clearly defined, the EP sheets are developed and updated among the Project Manager, designer and E-Team. (For details on EP Sheets, refer to the discussion on "EP Sheets - Development and Content" which follows below.)
5. The EP sheets will be checked by the E-Team for accuracy/consistency with commitments, constraints and permit conditions during the plan development stages

and especially during the Environmental Reevaluation (for Federal projects) prior to requests for FHWA authorization for ROW and construction.

6. At the pre-construction meeting, the Resident Engineer, contractor and Project Manager will discuss the information contained in the EP Sheets to ensure compliance during construction.

EP Sheets - Development and Content

The purpose of the Environmental Plan Sheet is to provide the Project Manager, designer, Resident Engineer and construction contractor an easy way to monitor, update and implement during construction all environmental commitments and permit conditions on a project. It will also graphically indicate the location of any sensitive environmental resources, land uses and/or other properties.

Sensitive resources/land uses to be identified on the EP Sheets include: historic sites, parklands, wetlands, regulated streams/floodplains, contaminated properties, conservation lands, endangered/threatened species habitat, daily or seasonal constraints and any others which may pertain to the specific project.

The following information is to be provided on the EP Sheets:

1. Appropriate scale plans of the project will be used so that when the project is small enough, the entire project can be shown on one plan sheet. If the project length is too long to show on one sheet, then only those locations with environmental constraints need to be shown with an indication of the particular constraint.
2. The sheets will clearly indicate areas where the contractor is not permitted to enter upon, store materials or construct in, such as adjacent wetlands, contaminated property, historic sites or parks.
3. Soil erosion and sedimentation control measures (e.g. silt fence, hay bales, turbidity barriers, temporary detention basins, etc.).
4. Notes which reference the appropriate section of the specifications and/or plan sheets which may give important details related to a particular environmental constraint.
5. Notes which reference applicable permits, their expiration dates and, if relevant, "time" or seasonal constraints to any construction activities.
6. Notes which indicate any other specific Department commitment to local authorities (e.g., no work during a town's "Shad Festival", no night work adjacent to a hospital, etc.).

8.2 Section 106 Process

Introduction

All Federal Actions are subject to the requirements of Section 106 of the National Historic Preservation Act of 1966 as amended [16 U.S.C. 470 et seq.]. The work required to comply with this law is described in 36 CFR 800. Review the text of the CFR prior to initiating any work.³ The following is designed only to familiarize the user with the basic steps of the process. Technical assessments must be made by or under the direction of personnel meeting the *Secretary of the Interior's Professional Qualifications Standards* [48 FR 44738-9]. Decisions about eligibility for listing in the National Register of Historic Places are based on the *Criteria for Evaluation*, contained in 36 CFR 60. FHWA (or other Lead Federal Agency) retains the regulatory authority for compliance, although a recent programmatic agreement (see attachment) allows NJDOT to complete a number of the steps in the process independently of the FHWA. Projects not involving a Federal action are subject to the N.J. Register of Historic Places Act [P.L. 1970, c.268, N.J.S.A. 13:1B-15.128, et seq.]. Guidance for compliance with the provisions of that law is found in the following section of this manual.

Essentially, the Section 106 process is comprised of five basic steps. They are:

1. Identification of significant resources (listed or eligible for listing in the National Register of Historic Places).
2. Determining the effects of the project (none, no adverse or adverse effects).
3. If the effects are adverse:
 - A. Consultation with the SHPO on ways to avoid or minimize the effects.
 - B. Development of a Memorandum of Agreement (MOA) for the project if the adverse effect(s) can not be avoided.
4. Preparing appropriate documentation to substantiate the finding and, when appropriate, the Memorandum of Agreement.
5. Providing the Advisory Council the opportunity to comment on the findings for the project.

8.2.1 Description of Process

To facilitate completion of these steps and consider the presence of significant cultural resources as early in the planning process as possible when the widest feasible range of options is open for consideration, the SHPO should be invited to participate in the scoping process. The goals of such involvement include discussion of known historic properties, project needs and scope, and alternative solutions which may reasonably be considered by the Department. Appropriate representatives of local historic preservation groups such as the municipal and county Cultural and Heritage Commissions, county and municipal historic societies, and identified City Historians should be invited to discuss preservation issues as part of the public outreach component of the scoping process.

³ The user is referred to the "Definitions" portion of this document for an explanation of the terms contained in this discussion - notably those for "undertaking", "historic property", "Area of Potential Effects", "Effect" and "Adverse Effect". Precise definitions are included in 36 CFR 800.2.

In order to demonstrate compliance with Section 106 requirements, at a minimum, the following work must be completed:

1. Determine if the project involves activities covered by any of the “no effect” findings included in the interagency agreement of January 12, 1996, (see Section 8.2.3). If so, and no public controversy pertinent to cultural resources issues has been experienced or is expected no further Section 106 work is required. Cite the agreement in the CED.
2. Determine the Area of Potential Effects (APE). This is the area which the project would likely have an effect on the historic property.
3. Determine the need for additional investigations to identify historic properties (archeological, standing structures, engineering features, historic districts, etc.) which may be affected by a project. Determine the appropriate level of investigation to be conducted using either in-house or consultant services. If qualified personnel make the determination that the project is wholly or partially within an area which has been disturbed by previous construction, archaeological testing of the disturbed area may not be required depending on the extent of the disturbance. If additional studies (background research, field inspection, field investigation, etc.) are needed, conduct appropriate technical studies. Prior to the initiation of any field work, the hazardous screening data should be consulted to determine if any known or suspected hazards exist within the area to be investigated. If such sites are of concern, the field strategies should be adjusted accordingly. In such cases the advice of the BES Policy, Support and Special Services Group’s Cultural Resources Specialist should be sought.
4. The technical studies for each of the disciplines will result in a set of recommendations. For the purposes of Section 106, **the consultation process results in a finding that considers the effects of the project on all types of historic properties within the APE.** Thus the finding for the project is equivalent to the worst assessment of effects.⁴ Consultation can be expected to result in one of the following findings:
 - A. No Properties within the APE.
 - B. No National Register listed or eligible properties within the APE.
 - C. National Register listed or eligible properties within the APE/No Effect.
 - D. National Register listed or eligible properties within the APE/No Adverse Effect or No Adverse Effect with Conditions.
 - E. National Register listed or eligible properties within the APE/Adverse Effect.
 - F. National Register listed or eligible properties within the APE/No Agreement on Effect.

Schematics describing the path of the consultation process for each of the first five findings are included in Attachment 6. Specific guidance on the last finding is contained in the 36 CFR 800 regulations. Sample transmittal letters are included in the

⁴ For example, a finding of “No Effect” or “No Adverse Effect with Data Recovery” for identified archeological properties and a finding of “Adverse Effect” for identified historic architectural properties will result in a project finding of “Adverse Effect”.

Attachment 6.⁵ All transmittal letters are sent under the signature of the Project Manager. Copies of these letters should be sent to the FHWA and BES Manager (for the purposes of tracking and quality control).

5. If **no properties** (see definitions) or **no National Register eligible or listed properties** are identified within the Area of Potential Effects, documentation should be prepared by the BES CR Specialist and submitted directly to the SHPO for comment. The SHPO is allotted 30 days to review the submission and provide comments.
6. If National Register eligible or listed properties are identified within the Area of Potential Effects, a determination of effect must be made by qualified professionals--consultant or in-house CR specialist. If **no effect** will result from the proposed construction, the BES CR specialist will prepare a package submitting the finding of no effect to the SHPO for comment. The SHPO is allotted 30 days to review the submission and provide comments. Once the comments of the SHPO are received, this information is incorporated into the CED.
7. If a determination is made that **no adverse effect** will result from the proposed construction, the BES CR specialist will prepare a package submitting the finding of no adverse effect to the SHPO for comment. The SHPO is allotted 30 days to review the submission and provide comments. Once the SHPO's agreement on the finding of effect has been received, the BES CR specialist will prepare documentation in support of the finding for the approval of the FHWA. Two copies of the documentation should be supplied to the FHWA. Once the FHWA has approved the finding, they will forward one copy to the Advisory Council for comment. The Advisory council has 30 days to accept or object to the finding. The CED (or other final environmental document) cannot be approved by FHWA until the concurrence of the Advisory Council is received.
8. If eligible properties are identified which will be **adversely affected** as the result of the construction of the proposed project, efforts to avoid or minimize impacts need to be considered as early in the project planning process as possible. The analysis of alternatives should consider reasonable alternatives to impacting historic properties, as well as be sufficiently detailed to demonstrate compliance with Section 4(f) of USDOT Act of 1966. (4(f) requires demonstration that there are no prudent and feasible alternatives to the taking or use of an historic property; refer to Section 4(f) guidance). **If adverse effects can reasonably be avoided, it is incumbent upon the project manager to revise the project accordingly.** If adverse effects cannot be avoided, appropriate consultation for a finding of adverse effect should be completed as described below.
9. If archeological sites cannot be avoided, **findings of adverse effects to archaeological sites** can be revised to a no adverse effect if it can be determined that data recovery is an appropriate form of mitigation and there is a commitment to

⁵ Sample letters include transmittals to both the FHWA and SHPO should that be necessary.

execute an acceptable data recovery program. The finding becomes “**No Adverse Effect with Data Recovery**”. In order to reach this decision, a data recovery plan or consultant proposal for data recovery must be approved by the SHPO, FHWA and Advisory Council prior to completing consultation and initiating the work. If this is the case, BES Section 106 specialists will prepare the requisite documentation for approval by FHWA, review by SHPO, and acceptance by the Advisory Council. Similarly, a finding of adverse effect for a project involving demolition of an historic bridge may be revised to a finding of no adverse effect if the bridge can be relocated to another location and the historic characteristics maintained.

10. After efforts to avoid or minimize adverse effects has failed, the comments of the SHPO must be obtained. In order to do so, the BES CR specialists will prepare a package submitting the finding of adverse effect to the SHPO for comment. The SHPO should provide comments within 30 days. Once the comments of the SHPO are received, actions which can be taken to offset or mitigate the adverse effects should then be negotiated with the FHWA and SHPO. To initiate this negotiation, the BES CR specialist in consultation with the Project Manager and, if necessary, the FHWA will prepare a draft MOA⁶ describing proposed mitigation measures. In determining appropriate mitigation activities, suggestions made by the SHPO in the context of the consultation comments or during meetings should be given consideration. Mitigation activities must consider any hazardous materials information which is available and be coordinated with any cleanup plans proposed.
11. Documentation in support of the finding of adverse effect and the proposed MOA should also be prepared by the BES CR Specialist in accordance with the requirements established in 36 CFR 800.8. The draft MOA and supporting documentation must be reviewed by the BES Policy, Support and Special Services Group’s Cultural Resources Specialist prior to being submitted concurrently to the SHPO and FHWA for review and comment. This is especially important in the case of process or programmatic agreements. SHPO review will require 30 days. Once comments have been received from both agencies, and agreement has been reached on how to address the comments, the MOA and documentation are revised accordingly. The MOA is then circulated for signature. Regardless of whether the two or three party MOA format is used, signatures are obtained in the following order: NJDOT (Director, Division of Project Management), SHPO, FHWA (Division Administrator) and then the Advisory Council (Executive Director). The Advisory Council has 30 days from receipt of an MOA to accept the agreement, advise the FHWA of needed changes, or choose to comment further on the project. Once executed, the document can be included in the CED file or appropriate final NEPA documents (EA, EIS, 4(f)). If agreement cannot be reached on how to mitigate the adverse effects, additional documentation as required in 36 CFR 800.8(d) is prepared by the BES CR specialist and forwarded to the FHWA

⁶ Memoranda of Agreement should be prepared in accordance with the guidance provided in the Advisory Council’s 1989 book entitled *Preparing Agreement Documents. How to Write Determinations of No Adverse Effect, Memoranda of Agreement and Programmatic Agreements under 36CFR800*. Whenever possible the two party agreement format should be used.

for transmittal to the Advisory Council in accordance with the provisions of 36 CFR 800.5 (e)(6) and 800.6(b).

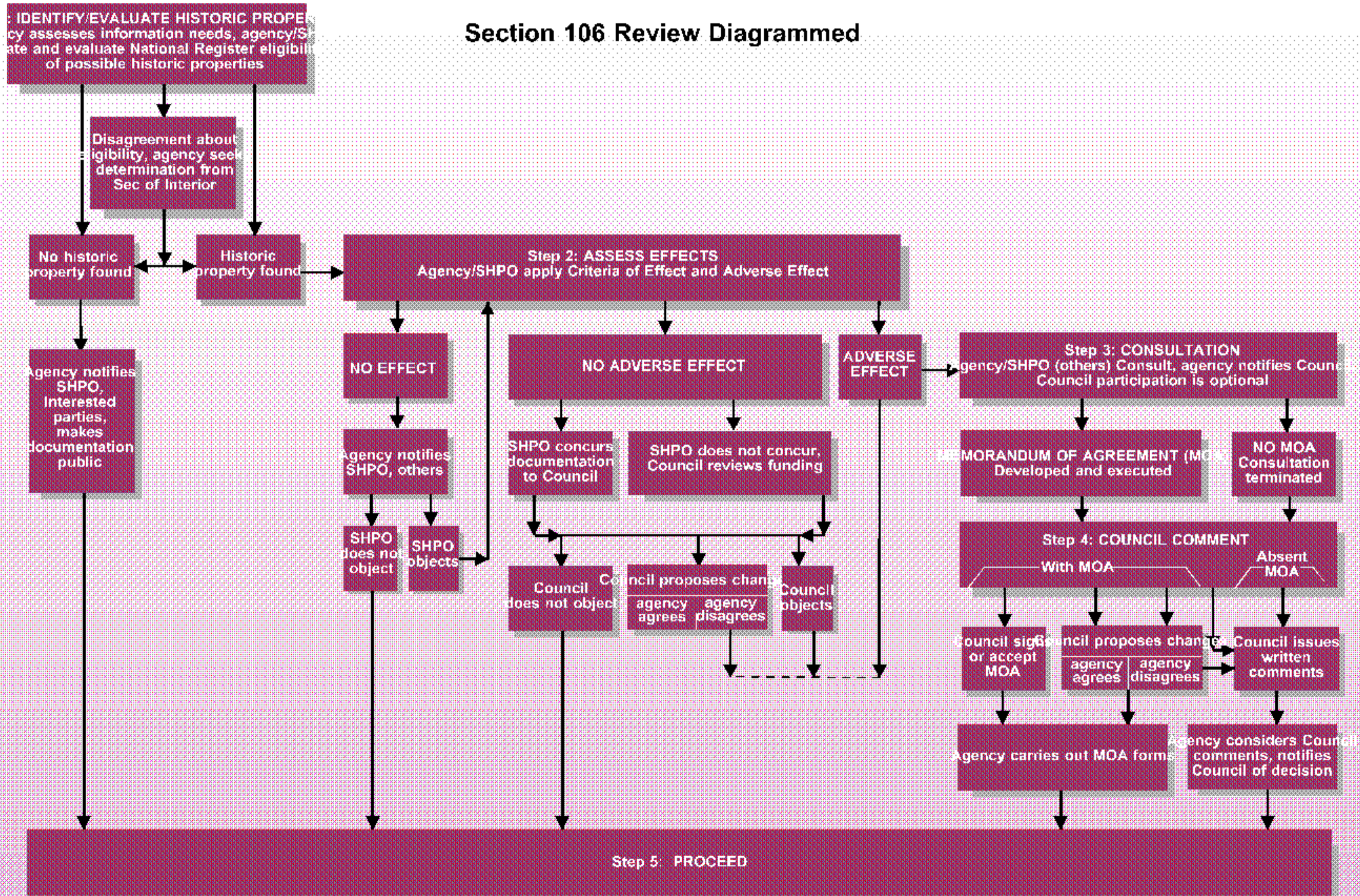
12. Disagreements - In general, as described in the recent programmatic agreement (citation), the FHWA should be involved in the resolution of any disagreements with the SHPO. In addition, the BES Manager should also be involved in the resolution of any disputes with the SHPO and/or FHWA. Copies of any documentation pertinent to the resolution of such disputes must be reviewed by the BES Manager prior to transmittal.

A. Eligibility - If SHPO disagrees on the assessment of eligibility, attempt to resolve disagreement. (This may involve additional research to respond to specific and general concerns.) If efforts to resolve disagreements are unsuccessful, inform CPM managers and seek the assistance of the FHWA in resolving the disagreements. If further efforts fail to resolve disagreements regarding eligibility, the BES CR Specialist will prepare appropriate documentation and forward it to the FHWA for transmittal to the Keeper of the Register. Procedures for this are contained in 36 CFR 63. This provides a 45 day review period for consideration of requests for determinations of eligibility. The opinion of the Keeper on issues of eligibility is final.

B. Effect - If there is disagreement on the finding of effect, attempt to resolve disagreement. If unsuccessful, inform CPM managers and seek the assistance of the FHWA in resolving the disagreements. If further efforts fail to resolve disagreements regarding effects, the BES CR Specialist will prepare appropriate documentation in accordance with the provisions of 36 CFR 800.8(d) and forward it to the FHWA for transmittal to the Advisory Council. The Council shall provide its comments to the FHWA within 60 days; the FHWA must consider the comments of the Council before reaching a final finding of effect.
13. Mitigation - Unless the cooperation of the property owner is obtained, many mitigation activities cannot be initiated until after right-of-way has been purchased or, in the case of condemnation proceedings, legal access to a parcel has been obtained. As a goal, mitigation should be completed before the project can be authorized by FHWA for construction. Historic American Building Survey/Historic American Engineering Record (HABS/HAER) recording must be completed and at least conditionally accepted by the National Park Service. The SHPO staff archeolo-gists should be consulted to reach concurrence that archeological mitigation activities met the goals of the mitigation plan and no additional work is needed. Activities which do not generally impede construction such as preparation of a study; non-technical report; article or book; development of a museum or museum-quality exhibit; development of a walking tour; preparation of a National Register nomination; etc. with the FHWA's concurrence, can be completed after the initiation of construction activities as long as any pertinent data or resources have been collected.
14. Subpart C of 36 CFR 800 contains specific procedures which must be followed for dealing with National Historic Landmarks (800.10), properties discovered during construction (800.11), and emergency work (800.12).
15. Additional approvals may be required for projects meeting specific criteria. The Pinelands Commission conducts an independent review of cultural resources

investigations (thus reports are subject to their reporting standards) and may address cultural resources issues by requiring conditions in their approvals. Archeological investigations on federal lands may require a special permit prior to initiating work in accordance with the provisions of the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-11). Projects which include the expenditure of funds by the State, a County, Municipality or instrumentality thereof will require compliance with the New Jersey Register of Historic Places Act when a New Jersey Register listed property lies within the Area of Potential Effects of the project. Appropriate regulations and guidance governing each of these situations must be consulted.

Section 106 Review Diagrammed



Public may request Council review of agency's findings of these points

DEFINITIONS

For the most part, definitions pertinent to actions that are taken to demonstrate compliance with Section 106 of the National Historic Preservation Act (as amended) can be found in 36 CFR 800.2 ["Definitions"] and 800.9(a) [Criteria of effect and adverse effect"]. A general description of the meaning of these terms is found below. In addition, discussions among the FHWA, SHPO and NJDOT have resulted in the definition of a finding that "no properties" exist within a project area. Further discussion of that concept is included in the definitions listed below.

Undertaking - any federally funded project that can change a National Register of Historic Places listed or eligible resource located within the area of potential effects.

Historic Property - any prehistoric or historic district, site, building, structure or object included in or eligible for inclusion in the National Register.

Area of Potential Effects (APE) - the geographic area within which a project may cause changes to an historic property.

SHPO/State Historic Preservation Office - "SHPO" is used to refer to both the State Historic Preservation Office and the State Historic Preservation Officer. The Officer is the person formally charged with administering the State Historic Preservation Program. The duties of the office staff and officer include, among other responsibilities, the review of projects for compliance with Section 106 regulations and maintaining records of technical studies done for such compliance.

Effect - a project may effect an historic property when it alters the characteristics of the property which make it eligible for listing in the National Register. Such changes may be in the property's location, setting or use. The importance of the changes relates to the reason for which the property has been found to be historic.

Adverse Effect - when a project lessens the integrity of an historic property's location, design, setting, materials, workmanship, feeling or association, the project will cause an adverse effect. In addition to physical damage or destruction of the property, adverse effects may result from changing the setting, introducing roadway elements which look different from the historic features of the property, creating a situation where the noise levels are increased markedly, neglect of a property, etc.

No Properties - those projects for which no structures in excess of 50 years of age or no structures having exceptional importance **and** no archaeological remains or only those remains which can clearly be associated with "roadside scatter" are identified within the project's area of potential effect. This differs from a "no eligible properties" finding in that the latter may include standing structures of sufficient age or importance or archaeological deposits within the area of potential effects. In making the "no eligible properties" finding, a decision is made about the integrity and/or significance of the properties.

FLOW CHART

Section 106 Flow Charts (4)

FLOW CHART

Section 106 Flow Charts (4)

FLOW CHART

Section 106 Flow Charts (4)

FLOW CHART

Section 106 Flow Charts (4)

8.2.2 Programmatic Agreement to Reduce FHWA Involvement

WHEREAS, the New Jersey Department of Transportation (NJDOT) administers state and federally funded highway projects throughout the State of New Jersey as authorized by 23 USC 77; and

WHEREAS, the Division Administrator, Federal Highway Administration (FHWA) is the "Agency Official" responsible for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.) and implementing regulations (36 CFR Part 800 as amended); and

WHEREAS, the FHWA has determined that certain transportation projects constitute "undertakings" which may result in changes in the character or use of historic properties, and has consulted with the State Historic Preservation Officer (SHPO) and Advisory Council on Historic Preservation (Council) pursuant to 36 CFR §800.13; and

WHEREAS, the New Jersey Department of Transportation (NJDOT) employs qualified professional staff and consultants capable of completing many of the steps of the Section 106 review process on behalf of FHWA, and has a considerable track record of successful compliance with Section 106; and

WHEREAS, NJDOT has participated in the consultation, and has been invited to concur in this Programmatic Agreement (PA); and

WHEREAS, the definitions contained in 36 CFR §800.2 are appropriate to define the terms used in this agreement.

NOW, THEREFORE, the FHWA, the Council, and the NJ SHPO agree to the following stipulations in order to satisfy FHWA's Section 106 responsibilities for NJDOT-administered federal aid projects.

STIPULATIONS

The FHWA will ensure that the following measures are carried out:

1. NJDOT, using staff and/or consultants meeting the *Secretary of the Interior's Professional Qualifications Standards* (48 FR 44738-9), will independently perform the work and consultation described in specific sections of 36 CFR §800.4 and §800.5 on behalf of the FHWA as follows:

36 CFR §800.4

- a) Assessing information needs.
- b) Locating historic properties.
- c) Evaluating historical significance.
- d) When no historic properties are found [notification of finding of "no properties"].
- e) When historic properties are found [assessment of effects].

36 CFR §800.5

- a) Applying the Criteria of Effect.
 - b) When no effect is found [notification of finding of “no effect”].
 - c) When an effect is found [application of the Criteria of Adverse Effect].
 - d) When the effect is not considered adverse--Obtain the State Historic Preservation Officer’s concurrence.
2. If consultation with the SHPO results in agreement on a finding of “no adverse effect”, NJDOT will prepare documentation in support of the finding as described in 36 CFR §800.8(a) and forward it to the FHWA. FHWA concurrence in the finding will be sufficient to conclude Section 106 consultation without further review by the Council.
 3. If consultation results in a finding of “adverse affect” or if no agreement can be reached, work required to conclude the Section 106 consultation process will be completed by the FHWA as described in 36 CFR §800.5(e) et seq. Written documentation will be prepared by the NJDOT for use by the FHWA.
 4. NJDOT will notify FHWA when a project falls under to Subpart C-Special Provisions. Using information prepared by the NJDOT, FHWA will then take appropriate actions to implement Subpart C, Special Provisions, of the 36 CFR 800 regulations, especially as they apply to instances involving the protection of National Historic Landmarks (§800.10), the discovery of historic properties during the implementation of an undertaking (§800.11), and emergency undertakings (§800.12).

ADMINISTRATIVE CONDITIONS

1. **Applicability.** This agreement applies to all projects that are administered through the NJDOT and funded by the FHWA.
2. **Disputes.** It is the intent of the FHWA to become actively involved in the resolution of disagreements pertinent to findings of eligibility and effects should they arise. Initially, FHWA will mediate between the NJDOT and SHPO to seek a solution. If no solution is reached, NJDOT and/or its consultants will prepare documentation in accordance with the provisions of 36 CFR Part 63 for transmittal by the FHWA to the Keeper of the National Register to resolve questions of eligibility. In order to resolve questions of effect, NJDOT and/or its consultants will prepare documentation in accordance with the provisions of 36 CFR §800.8(d) for transmittal by the FHWA to the Council for comment as required by 36 CFR §800.6.
3. **Professional Qualifications.** All historic preservation work carried out pursuant to this agreement will be performed by or under the direct supervision of a person or persons meeting the Secretary of the Interior’s Qualifications Standards, 48 FR 44738-9, for the discipline(s) required to complete the necessary work.
4. **Monitoring.** The FHWA, the SHPO and the Council may monitor any activities carried out pursuant to this agreement, and the Council will review such activity if so requested. NJDOT will cooperate with the FHWA, the SHPO and the Council in carrying out these monitoring and review responsibilities.

5. **Amendments.** Any party to this agreement may request that it be amended, whereupon the parties shall consult in accordance with 36 CFR §800.13 to consider such an amendment.
6. **Termination.** Any party to this agreement may terminate it by providing thirty (30) days written notice to the other parties, provided that the parties will consult during the period prior to the termination to seek agreements on amendments or other actions that would avoid termination. In the event of termination, the FHWA will comply with 36 CFR §800.4 and §800.5 with respect to the undertakings covered in this agreement.
7. **Default.** In the event that the FHWA or NJDOT cannot carry out the terms of this agreement, the FHWA will comply with 36 CFR §800.4 and §800.5.
8. **Regulatory Revisions.** In the event that revised regulations are promulgated, it is the intent of the signatories of this agreement to continue to allow NJDOT and/or its consultants to independently conduct the work required in the equivalent provisions of the new regulations on behalf of the FHWA, and to consult to amend this agreement accordingly.

Execution and implementation of this Programmatic Agreement evidences that the FHWA has afforded the Council a reasonable opportunity to comment on the undertakings subject to this agreement, and that the FHWA has taken into account the effects of such undertakings on historic properties.

8.2.3 Undertakings Which Have Limited or No Effect on Cultural Resources in New Jersey

The following undertakings were found by the SHPO to have very limited or no effect on Cultural Resources in New Jersey. This finding was formalized in a January 12, 1996 letter from Deputy SHPO to FHWA Division Administrator subject to the following stipulations:

1. By January 30, 1998, the New Jersey Historic Preservation Office and the Federal Highway Administration and the NJ Department of Transportation will re-evaluate the attached list of undertakings for possible new inclusions and/or deletions relative to their effect on cultural resources.
2. Any undertaking which may cause or which has resulted in public controversy relative to historic preservation shall be submitted to the NJ Historic Preservation Office prior to project execution.
3. This agreement is in effect for Section 106 consultation only, and will not preclude the provisions of the New Jersey State Register Act, N.J.S.A. 13:1B-15.128 et.seq., Subchapter 7, Section 7:4-7.1 Application Procedure for Encroachment Authorization.

NOT INVOLVING CONSTRUCTION:

1. Activities which do not involve or lead directly to construction, such as planning and technical studies grants for training and research programs; research activities as defined in 23 U.S.C. 307; approval of a unified work program and any findings required in the process pursuant to 23 U.S.C. 134; approval of statewide programs under 23 CFR Part 630; approval of project concepts under 23 CFR 476; engineering to define the elements of a proposed action or alternatives so that social, economic and environmental effects can be assessed; and Federal-aid system revisions which establish classes of highways on the Federal-aid highway system.
2. Activities included in the State's "highway safety plan" under 23 U.S.C. 402.
3. Determination of payback under 23 CFR Part 480 for property previously acquired with Federal-aid participation.
4. Ridesharing activities.
5. Program administration, technical assistance activities, and operating assistance to transit authorities to continue existing service or increase service to meet route changes in demand.
6. The purchase of vehicles by the applicant where the use of these vehicles can be accommodated by existing facilities or by new facilities which themselves are within a CE.
7. Purchase and installation of operating or maintenance equipment to be located within the transit facility and with no significant impacts off the site.
8. Promulgation of rules, regulations and directives.
9. Transfer of federal lands under 23 U.S.C. 317 when the subsequent action is not an FHWA action.
10. Acquisition of scenic easements.
11. Bus or rail car rehabilitation.

INVOLVING CONSTRUCTION WITHIN EXISTING RIGHT OF WAY:

Pavement related:

12. Roadway asphalt pavement milling and resurfacing that do not include regrading of berms or slopes.
13. Milling and resurfacing of asphalt bridge decks; maintenance deck patching.
14. Maintenance type pavement repair.
15. Pavement joint repair or replacement.

16. Pavement markings, including raised pavement markings.
17. Upgrading pavement section to accommodate the widening of lanes by re-striping, without increasing total pavement width.
18. Channelizing divisional and refuge islands by road striping.
19. Replacement of bituminous or concrete curb.
20. Replacement of bituminous or concrete sidewalks (in kind).
21. Minor amounts of pavement installation within ROW at toll plazas.

Signing related:

22. Installation and replacement of signs, including overhead.
23. Installation of electronic, variable message signs and traffic sensors at toll plazas.

Electrical related:

24. Upgrade existing traffic signals and railroad warning devices.
25. Restoration of highmast and offset lighting systems.
26. Restoration/replacement/upgrading of under-deck or conventional lighting systems, highmast and offset lighting system.
27. Installation of closed circuit T.V. (CCTV) cameras and Highway advisory Radio system, including remote controlled flashing signs support structures and variable message signs informing motorists of traffic delays and use of alternate routes.
28. Installation of ramp metering control devices or lighting.
29. Installation of a computer link to monitor and control traffic volumes throughout the roadway system.
30. Installation of electronic toll taking equipment at toll plazas.

Roadside safety related:

31. Rock fall mitigation.
32. Repair, replace, or upgrade existing beam guide rail.
33. Install new or replace existing impact attenuators.
34. Replacement of median barriers on existing locations.

Miscellaneous:

- 35. Emergency repairs under 23 U.S.C. 125.
- 36. Alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons.
- 37. Approval of utility installations along or across a transportation facility.
- 38. Jacking of concrete slabs.
- 39. Bridge painting.

8.2.4 The National Register Criteria for Evaluation

The National Register *Criteria for Evaluation* are found in 36 CFR 60. For convenience and clarity, the appropriate text is reproduced below.

Criteria for Evaluation: The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded, or may be likely to yield, information important in prehistory or history.

Criteria Considerations: Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties *will qualify* if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- A. A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- B. A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- C. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or

- D. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
- E. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- F. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- G. A property achieving significance within the past 50 years if it is of exceptional importance.

8.2.5 Sample Letters for Section 106 Consultation

For purposes of clarity and facility, draft transmittal letters are included in Attachment 7 which clearly describe the authority and actions required at various stages of the process. These transmittal letters have utility for most routine projects. Clearly they will require customizing for some projects to address the specific findings, provide additional explanation of work undertaken, cite additional consultation which has taken place, etc.

List of Sample Letters

- No Properties - SHPO Transmittal
- No Eligible Properties - SHPO Transmittal
- National Register Eligible Properties/No Effect - SHPO Transmittal
- National Register Eligible Properties/No Adverse Effect and No Adverse Effect with Conditions - SHPO Transmittal
- National Register Eligible Properties/Adverse Effect - SHPO Transmittal

- No Adverse Effect Documentation - FHWA Transmittal
- No Adverse Effect Documentation - Draft Transmittal FHWA to Advisory Council
- No Adverse Effect Documentation - SHPO Transmittal

- MOA/Adverse Effect Documentation for Review and Comment - FHWA Transmittal
- MOA/Adverse Effect Documentation for Review and Comment - SHPO Transmittal
- MOA for Signature - SHPO Transmittal
- MOA for Signature and Forwarding to Advisory Council - FHWA Transmittal
- MOA/Adverse Effect Documentation - Draft Transmittal to Advisory Council

- Request for a Determination of Eligibility - FHWA Transmittal
- Request for a Determination of Eligibility - Draft Transmittal to Keeper of the Register

- Request to Seek Advisory Council Comments on Effect - FHWA Transmittal
- Request to Seek Advisory Council Comments on Effect - Draft Transmittal FHWA to Advisory Council

Attachment 7 - Section 106 Sample Letters

NO PROPERTIES - SHPO

Date

[Name]
Department of Environmental Protection
NJ Historic Preservation Office
CN 404
Trenton, NJ 08625-0404

Attn: Transportation and Planning Group

Re: Project Name
Municipality
County
NJDOT Proj. No.
Finding of "*No Properties*"

Dear [Name]:

The New Jersey Department of Transportation (NJDOT) is proposing to [cite project, i.e. rehabilitate the Route U.S. 206 Bridge over Stony Brook in Princeton Township, Mercer County] using funds provided by the Federal Highway Administration (FHWA). The proposed undertaking consists of [describe project briefly]. In compliance with the requirements of Section 106 of the National Historic Preservation Act of 1966 (as amended), implemented by the regulations described in 36 CFR 800, and in accordance with the provisions of the programmatic agreement delegating certain FHWA responsibilities to NJDOT, the NJDOT has initiated studies to determine if the proposed project will cause effects to properties included in or eligible for inclusion in the National Register of Historic Places. Cultural Resources investigations resulted in a finding that **no properties** will be affected by the proposed undertaking. Both studies are enclosed for your review and comment. They are being reviewed concurrently by the FHWA.

As the project is currently scheduled for [insert information pertinent to project scheduling], I would appreciate your indicating your concurrence at the conclusion of this letter and returning it to me within 30 days of the receipt of this letter. Should you have any questions during the course of your review or not be able to complete your review by the scheduled date, please contact me at [phone] or [Name - Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: Area Engineer, FHWA
[Name], Bureau of Environmental Services
[Name], Environmental Team Leader

_____ I concur with the conclusions that there are no properties within the Area of Potential Effects as presented in the [project] [archeological/historic architectural] survey report prepared by [name of firm/in-house technical staff].
Note: list both reports if both are transmitted via this letter.

_____ I do not concur for the following reason(s):

Deputy State Historic Preservation Officer

Date

Attachment 7 - Section 106 Sample Letters

NO ELIGIBLE PROPERTIES - SHPO

Date

[Name]
Department of Environmental Protection
NJ Historic Preservation Office
CN 404
Trenton, NJ 08625-0404

Attn: Transportation and Planning Group

Re: Project Name
Municipality
County
NJDOT Proj. No.
Finding of "*No Eligible Properties*"

Dear [Name]:

The New Jersey Department of Transportation (NJDOT) is proposing to [cite project, i.e. rehabilitate the Route U.S. 206 Bridge over Stony Brook in Princeton Township, Mercer County] using funds provided by the Federal Highway Administration (FHWA). The proposed undertaking consists of [describe project briefly]. In compliance with the requirements of Section 106 of the National Historic Preservation Act of 1966 (as amended), implemented by the regulations described in 36 CFR 800, and in accordance with the provisions of the programmatic agreement delegating certain FHWA responsibilities to NJDOT, the NJDOT has initiated studies to determine if the proposed project will cause effects to properties included in or eligible for inclusion in the National Register of Historic Places. Cultural Resources investigations resulted in a finding that **no National Register listed or eligible properties** lie within the Area of Potential Effects of the project. Both studies are enclosed for your review and comment. They are being reviewed concurrently by the FHWA.

As the project is currently scheduled for [insert information pertinent to project scheduling], I would appreciate your indicating your concurrence at the conclusion of this letter and returning it to me within 30 days of the receipt of this letter. Should you have any questions during the course of your review or not be able to complete your review by the scheduled date, please contact me at [phone] or [Name - Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: Area Engineer, FHWA
[Name], Bureau of Environmental Services
[Name], Environmental Team Leader

_____ I concur with the conclusions that there are no National Register listed or eligible properties within the Area of Potential Effects as presented in the [project] [archeological/historic architectural] survey report prepared by [name of firm/in-house technical staff]. *Note: list both reports if both are transmitted via this letter.*

_____ I do not concur for the following reason(s):

Deputy State Historic Preservation Officer

Date

Attachment 7 - Section 106 Sample Letters

NATIONAL REGISTER ELIGIBLE PROPERTIES/NO EFFECT - SHPO

Date

[Name]
Department of Environmental Protection
NJ Historic Preservation Office
CN 404
Trenton, NJ 08625-0404

Attn: Transportation and Planning Group

Re: Project Name
Municipality
County
NJDOT Proj. No.
Finding of "*Eligible Properties/No Effect*"

Dear [Name]:

The New Jersey Department of Transportation (NJDOT) is proposing to [cite project, i.e. rehabilitate the Route U.S. 206 Bridge over Stony Brook in Princeton Township, Mercer County] using funds provided by the Federal Highway Administration (FHWA). The proposed undertaking consists of [describe project briefly]. In compliance with the requirements of Section 106 of the National Historic Preservation Act of 1966 (as amended), implemented by the regulations described in 36 CFR 800, and in accordance with the provisions of the programmatic agreement delegating certain FHWA responsibilities to NJDOT, the NJDOT has initiated studies to determine if the proposed project will cause effects to properties included in or eligible for inclusion in the National Register of Historic Places. Cultural Resources investigations resulted in a finding that National Register listed or eligible properties lie within the Area of Potential Effects of the project.

The historic architecture survey report, prepared by [name of firm/in-house technical staff] identified [number] property(ies) listed in the National Register of Historic Places [and/or] [number] property(ies) eligible for listing in the Register within the Area of Potential Effects of the proposed project. The report concludes that the project will have **no effect** on the qualities which qualify the property(ies) for listing in the Register.

AND/OR

The archeological survey report, prepared by [name of firm/in-house technical staff], resulted in the identification of [number] site(s) listed in the National Register of Historic Places and the location of [number] site(s) eligible for listing in the Register within the Area of Potential Effects of the proposed project. However, the report concludes that the project will not affect the site(s).

Both studies are enclosed for your review and comment. They have been reviewed by the FHWA who concurs with the findings.

As the project is currently scheduled for [insert information pertinent to project scheduling], I would appreciate your indicating your concurrence at the conclusion of this letter and returning it to me within 30 days of the receipt of this letter. Should you have any questions during the course of your review or not be able to complete your review by the scheduled date, please contact me at [phone] or [Name - Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: Area Engineer, FHWA
[Name], Bureau of Environmental Services
[Name], Environmental Team Leader

_____ I concur with the conclusions that National Register listed or eligible properties exist within the Area of Potential Effects as presented in the [project] [archeological/historic architectural] survey report prepared by [name of firm/in-house technical staff]. The project will have no effect. *Note: list both reports if both are transmitted via this letter.*

_____ I do not concur for the following reason(s):

Deputy State Historic Preservation Officer

Date

Attachment 7 - Section 106 Sample Letters

**ELIGIBLE PROPERTIES/NO ADVERSE EFFECT
AND
ELIGIBLE PROPERTIES/NO ADVERSE EFFECT WITH CONDITIONS
SHPO**

Date

[Name]

Department of Environmental Protection
NJ Historic Preservation Office
CN 404
Trenton, NJ 08625-0404

Attn: Transportation and Planning Group

Re: Project Name
Municipality
County
NJDOT Proj. No.
Finding of "*Eligible Properties/No Adverse Effect*"

Dear [Name]:

The New Jersey Department of Transportation (NJDOT) is proposing to [cite project, i.e. rehabilitate the Route U.S. 206 Bridge over Stony Brook in Princeton Township, Mercer County] using funds provided by the Federal Highway Administration (FHWA). The proposed undertaking consists of [describe project briefly]. In compliance with the requirements of Section 106 of the National Historic Preservation Act of 1966 (as amended), implemented by the regulations described in 36 CFR 800, and in accordance with the provisions of the programmatic agreement delegating certain FHWA responsibilities to NJDOT, the NJDOT has initiated studies to determine if the proposed project will cause effects to properties included in or eligible for inclusion in the National Register of Historic Places. Cultural Resources investigations resulted in a finding that **National Register listed or eligible properties lie within the Area of Potential Effects** of the project. However, the proposed undertaking will cause **no adverse effects** to those properties.

The historic architecture survey report, prepared by [name of firm/in-house technical staff] identified [number] property(ies) listed in the National Register of Historic Places [and/or] [number] property(ies) eligible for listing in the Register within the Area of Potential Effects of the proposed project. The report concludes that the project will have an effect which is not adverse on the property (ies) [listed/ eligible for listing] in the Register.

AND/OR

The archeological survey report, prepared by [name of firm/in-house technical staff], resulted in the identification of [number] site(s) listed in the National Register of Historic Places and the

location of [number] site(s) eligible for listing in the Register within the Area of Potential Effects of the proposed project. The report concludes that the project will have an effect which is not adverse on the site(s)

Both studies are enclosed for your review and comment. They have been reviewed by the FHWA who concurs with the findings.

As the project is currently scheduled for [insert information pertinent to project scheduling], I would appreciate your indicating your concurrence at the conclusion of this letter and returning it to me within 30 days of the receipt of this letter. Should you have any questions during the course of your review or not be able to complete your review by the scheduled date, please contact me at [phone] or [Name - Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: Area Engineer, FHWA
[Name], Bureau of Environmental Services
[Name], Environmental Team Leader

_____ I concur with the conclusions that the project will have an effect which is not adverse on National Register listed or eligible properties within the Area of Potential Effects as presented in the [project] [archeological/historic architectural] survey report prepared by [name of firm/in-house technical staff].
Note: list both reports if both are transmitted via this letter.

_____ I do not concur for the following reason(s):

Deputy State Historic Preservation Officer

Date

Attachment 7 - Section 106 Sample Letters

ELIGIBLE PROPERTIES/ADVERSE EFFECT - SHPO

Date

[Name]

Department of Environmental Protection
NJ Historic Preservation Office
CN 404
Trenton, NJ 08625-0404

Attn: Transportation and Planning Group

Re: Project Name
Municipality
County
NJDOT Proj. No.
Finding of "*Eligible Properties/Adverse Effect*"

Dear [Name]:

The New Jersey Department of Transportation (NJDOT) is proposing to [cite project, i.e. rehabilitate the Route U.S. 206 Bridge over Stony Brook in Princeton Township, Mercer County] using funds provided by the Federal Highway Administration (FHWA). The proposed undertaking consists of [describe project briefly]. In compliance with the requirements of Section 106 of the National Historic Preservation Act of 1966 (as amended), implemented by the regulations described in 36 CFR 800, and in accordance with the provisions of the programmatic agreement delegating certain FHWA responsibilities to NJDOT, the NJDOT has initiated studies to determine if the proposed project will cause effects to properties included in or eligible for inclusion in the National Register of Historic Places. Cultural Resources investigations resulted in the finding that the proposed project will **adversely effect** [number] properties [listed or eligible for listing] in the Register.

The historic architecture survey report, prepared by [name of firm/in-house technical staff] identified [number] property(ies) listed in the National Register of Historic Places [and/or] [number] property(ies) eligible for listing in the Register within the Area of Potential Effects of the proposed project. The report concludes that the project will have an adverse effect on [number] property (ies) [listed/ eligible for listing] in the Register. The adverse effects will result from [explain].

AND/OR

The archeological survey report, prepared by [name of firm/in-house technical staff], resulted in the identification of [number] site(s) listed in the National Register of Historic Places and the location of [number] site(s) eligible for listing in the Register within the Area of Potential Effects of the proposed project. The report concludes that the project will have an adverse effect on [number] site(s). The adverse effects will result from [explain].

Both studies are enclosed for your review and comment. They have been reviewed by the FHWA who concurs with the findings.

As the project is currently scheduled for [insert information pertinent to project scheduling], I would appreciate your indicating your concurrence at the conclusion of this letter and returning it to me within 30 days of the receipt of this letter. Should you have any questions during the course of your review or not be able to complete your review by the scheduled date, please contact me at [phone] or [Name - Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: Area Engineer, FHWA
[Name], Bureau of Environmental Services
[Name], Environmental Team Leader

_____ I concur with the conclusions that the project will have an adverse effect on National Register listed or eligible properties as presented in the [project] [archeological/historic architectural] survey report prepared by [name of firm/in-house technical staff]. *Note: list both reports if both are transmitted via this letter.*

_____ I do not concur for the following reason(s):

Deputy State Historic Preservation Officer

Date

Attachment 7 - Section 106 Sample Letters

NO ADVERSE EFFECT DOCUMENTATION-FHWA

Date

[Name]

Division Administrator
Federal Highway Administration
New Jersey Division Office
840 Bear Tavern Road, Suite 310
West Trenton, NJ 08628

Attn: [Name], Area Engineer

Re: Project
Municipality, County
Federal Project No.

Dear [Name]:

The New Jersey Department of Transportation has completed cultural resources studies for the [project]. Briefly, the proposed project consists of [briefly describe project]. Within the Area of Potential Effects of the project, the historic architectural survey report, prepared by [name of firm/in-house technical staff] identified [number] property(ies) listed in the National Register of Historic Places [and/or] [number] property(ies) eligible for listing in the Register within the Area of Potential Effects of the proposed project. The report concludes that the project will have an effect which is not adverse on the property (ies) [listed/ eligible for listing] in the Register.

AND/OR

The archeological survey report, prepared by [name of firm/in-house technical staff], resulted in the identification of [number] site(s) listed in the National Register of Historic Places and the location of [number] site(s) eligible for listing in the Register within the Area of Potential Effects of the proposed project. The report concludes that the project will have an effect which is not adverse on the site(s).

In order to comply with the provisions of 36 CFR 800, documentation in support of the finding of "No Adverse Effect" must be submitted to the Advisory Council for comment in order to complete the Section 106 consultation process. Accordingly, enclosed are two copies of the required documentation--one for your files and one for transmittal to the Advisory Council.

As the project is currently scheduled for [insert information pertinent to project scheduling], I would appreciate your sending the documentation to the Council as soon as possible. To expedite this, a draft transmittal letter has been prepared and is provided to you in paper and disk formats. The disk version is formatted in [program].

Should you have any questions please contact me at [phone] or [Name - Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: Area Engineer, FHWA
[Name], Bureau of Environmental Services
[Name], Environmental Team Leader

Attachment 7 - Section 106 Sample Letters

NO ADVERSE EFFECT DOCUMENTATION-SHPO

Date

[Name]
Department of Environmental Protection
NJ Historic Preservation Office
CN 404
Trenton, NJ 08625-0404

Attn: Transportation and Planning Group

Re: Project Name
Municipality, County
NJDOT Proj. No.
Transmittal of No Adverse Effect Documentation

Dear [Name]:

In accordance with the provisions of 36 CFR 800 the New Jersey Department of Transportation has prepared documentation in support of the finding of no adverse effect with which you concurred on [date of Section 106 consultation comments] for submission to the Advisory Council. A copy of that documentation is attached for your file.

I appreciate your cooperation in completing the Section 106 consultation process.

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: Area Engineer, FHWA
[Name], Bureau of Environmental Services
[Name], Environmental Team Leader

Attachment 7 - Section 106 Sample Letters

**DRAFT
NO ADVERSE EFFECT DOCUMENTATION-ADVISORY COUNCIL**

Project
Municipality
County
Fed. Proj. No.

[Name]
Advisory Council on Historic Preservation
The Old Post Office Building
1100 Pennsylvania Avenue, N.W., No. 809
Washington, D.C. 20004

Dear [Name]:

Using funds provided by the Federal Highway Administration, the New Jersey Department of Transportation proposes to [describe project briefly].

In consultation with the New Jersey State Historic Preservation Office (SHPO), the FHWA has determined that the project will have an effect which is not adverse on the National Register [listed or eligible] [name of resource(s)]. In accordance with the provisions of 36 CFR 800, enclosed is documentation in support of the finding of "No Adverse Effect" for your comment. Should you have any questions or comments during the course of your review, or feel it would be helpful to review the project and documentation with FHWA or NJDOT staff, please do not hesitate to contact [Name-project manager and/or Environmental Team Leader] of NJDOT at [phone number] or [Name - Area Engineer] of the FHWA at [phone number].

Sincerely,

For: [Name]
Division Administrator

Enclosures

cc: [Name], NJHPO, w/o enclosures
[Name], NJDOT Division of Project Management
[Name], NJDOT, w/o enclosures

Attachment 7 - Section 106 Sample Letters

ADVERSE EFFECT DOCUMENTATION WITH DRAFT MOA-FHWA

Date

[Name]

Division Administrator
Federal Highway Administration
New Jersey Division Office
840 Bear Tavern Road, Suite 310
West Trenton, NJ 08628

Attn: [Name], Area Engineer

Re: Project Name
Municipality, County
Federal Project No.

Dear [Name]:

In accordance with the provisions of 36 CFR 800 the New Jersey Department of Transportation (NJDOT) has prepared a Memorandum of Agreement (MOA) and supporting documentation for the [name project] in [Municipality, County]. As you may recall the project will adversely effect [names of National Register eligible and/or listed resource(s)]. In order to mitigate the adverse effects, we propose to [describe mitigation]. Accordingly, a draft Memorandum of Agreement has been prepared which describes these mitigation measures. I would appreciate receiving your comments on these two documents, which are being reviewed concurrently by the SHPO. Once both of your comments have been received, the MOA will be revised accordingly and circulated for signature.

As the project is currently scheduled for [insert pertinent information], I would appreciate receiving your comments as soon as possible. Should you have any questions during the course of your review, please contact me at [phone] or [Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: [Name], Bureau of Environmental Services
[Name], Environmental Team Leader

Attachment 7 - Section 106 Sample Letters

ADVERSE EFFECT DOCUMENTATION WITH DRAFT MOA-SHPO

Date

[Name]
Department of Environmental Protection
NJ Historic Preservation Office
CN 404
Trenton, NJ 08625-0404

Attn: Transportation and Planning Group

Re: Project Name
Municipality
County
NJDOT Proj. No.
Adverse Effect Documentation/Draft MOA

Dear [Name]:

In accordance with the provisions of 36 CFR 800 the New Jersey Department of Transportation (NJDOT) has prepared a Memorandum of Agreement (MOA) and supporting documentation for the [name project] in [Municipality, County]. As you may recall the project will adversely effect [names of National Register eligible and/or listed resource(s)]. In order to mitigate the adverse effects, we propose to [describe mitigation]. Accordingly, a draft Memorandum of Agreement has been prepared which describes these mitigation measures. I would appreciate receiving your comments on these two documents, which are being reviewed concurrently by the FHWA. Once both of your comments have been received, the MOA will be revised accordingly and circulated for signature.

As the project is currently scheduled for [insert pertinent information], I would appreciate receiving your comments as soon as possible. Should you have any questions during the course of your review, please contact me at [phone] or [Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: Area Engineer, FHWA
[Name], Bureau of Environmental Services
[Name], Environmental Team Leader

Attachment 7 - Section 106 Sample Letters

MOA FOR SIGNATURE - SHPO

Date

[Name]
Department of Environmental Protection
NJ Historic Preservation Office
CN 404
Trenton, NJ 08625-0404

Attn: Transportation and Planning Group

Re: Project Name
Municipality
County
NJDOT Proj. No.
Execution of MOA

Dear [Name]:

Enclosed is the [revised] Memorandum of Agreement (MOA) for the [name] project for your signature. As the Department is anxious to complete the Section 106 consultation process as soon as possible, I would appreciate your signing the MOA and returning it to me as soon as possible.

I appreciate your cooperation and that of your staff in bringing this effort to completion.

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: Area Engineer, FHWA
[Name], Bureau of Environmental Services
[Name], Environmental Team Leader

Attachment 7 - Section 106 Sample Letters

MOA FOR SIGNATURE - FHWA

Date

[Name]
Division Administrator
Federal Highway Administration
New Jersey Division Office
840 Bear Tavern Road, Suite 310
West Trenton, NJ 08628

Attn: [Name], Area Engineer

Re: Project Name
Municipality, County
Federal Project No.

Dear [Name]:

Enclosed is the original [revised] Memorandum of Agreement (MOA) for the [name] project for your signature. It has been signed by the Department and the State Historic Preservation Officer. Once you have signed the MOA, please forward it and the enclosed copy of the documentation in support of the MOA to the Advisory Council for their review and acceptance. To expedite this, a draft transmittal letter has been prepared and is provided to you in hard copy and disk formats. The disk version is formatted in [cite program].

If you have any questions, please do not hesitate to contact me at [phone] or [Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: [Name], Bureau of Environmental Services
[Name], Environmental Team Leader

Attachment 7 - Section 106 Sample Letters

**DRAFT
MOA FOR SIGNATURE - ADVISORY COUNCIL**

Project
Municipality
County
Fed. Proj. No.

[Name]
Advisory Council on Historic Preservation
The Old Post Office Building
1100 Pennsylvania Avenue, N.W., No. 809
Washington, D.C. 20004

Dear [Name]:

Using funds provided by the Federal Highway Administration, the New Jersey Department of Transportation proposes to [describe project briefly].

In consultation with the New Jersey State Historic Preservation Office (SHPO), the FHWA has determined that the project will have an adverse effect on the National Register [listed or eligible] [name of resource(s)]. In accordance with the provisions of 36 CFR 800, enclosed is an MOA which has been signed by the SHPO, FHWA and NJDOT, as well as documentation in support of the MOA for your review and signature.

Should you have any questions or comments during the course of your review, or feel it would be helpful to review the project and documentation with FHWA or NJDOT staff, please do not hesitate to contact [Name-project manager and/or Environmental Team Leader] of NJDOT at [phone number] or [Name - Area Engineer] of the FHWA at [phone number].

Sincerely,

For: [Name]
Division Administrator

Enclosures

cc: [Name], NJHPO w/o enclosures
[Name], NJDOT Division of Project Management
[Name], NJDOT w/o enclosures

Attachment 7 - Section 106 Sample Letters

REQUEST FOR A DETERMINATION OF ELIGIBILITY - FHWA

Date

[Name]

Division Administrator
Federal Highway Administration
New Jersey Division Office
840 Bear Tavern Road, Suite 310
West Trenton, NJ 08628

Attn: [Name], Area Engineer

Re: Project Name
Municipality, County
Federal Project No.

Dear [Name]:

Based on cultural resources studies for the [project], the New Jersey Department of Transportation initiated consultation with the State Historic Preservation Officer (SHPO) in [month] of [year]. These studies concluded that [cite findings with respect to eligibility]. Consultation comments dated [cite specific date] resulted in the finding that [cite finding which is source of disagreement, i.e. the Morgan Boulevard Bridge is, in their opinion, eligible for listing in the National Register of Historic Places]. As you are aware, attempts to resolve this disagreement have failed. In order to move the Section 106 consultation process forward, it is now necessary to seek the opinion of the Keeper of the National Register in accordance with the provisions of 36 CFR Part 63.2. Once the request has been submitted, the Keeper will respond in 45 days. To expedite this, a draft transmittal letter has been prepared and is provided to you in hard copy and disk formats. The disk version is formatted in [cite program].

If you have any questions, please do not hesitate to contact me at [phone] or [Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: [Name], Bureau of Environmental Services
[Name], Environmental Team Leader

Attachment 7 - Section 106 Sample Letters

**DRAFT
REQUEST FOR A DETERMINATION OF ELIGIBILITY- KEEPER OF THE REGISTER**

Project
Municipality
County
Fed. Proj. No.

Keeper of the National Register
National Park Service
Department of the Interior
Washington, D.C. 20240

Dear Keeper:

Using funds provided by the Federal Highway Administration, the New Jersey Department of Transportation is proposing to [describe project briefly].

Technical studies conducted for the project resulted in the finding that [describe finding with respect to disagreement on eligibility]. The NJDOT and FHWA concurred in this finding. Review of the studies by the New Jersey State Historic Preservation Officer (SHPO) resulted in the finding that [describe finding with respect to disagreement]. Despite further consultation with the SHPO, we have failed to reach agreement on the finding of eligibility. Consequently, in accordance with the provisions of 36 CFR Part 63, the FHWA is requesting a determination of eligibility. The enclosed documentation has been prepared in accordance with the provisions of 36 CFR Part 63.2(d).

As the project schedule calls for [cite next critical action], I would appreciate receiving your comments as soon as possible, and within the 45 day review period described in the regulations. Should you have any questions or comments during the course of your review, or feel it would be helpful to review the documentation with FHWA or NJDOT staff, please do not hesitate to contact [Name-project manager and/or Environmental Team Leader] of NJDOT at [phone number] or [Name - Area Engineer] of the FHWA at [phone number].

Sincerely,

For: [Name]
Division Administrator

Enclosures

cc: [Name], NJHPO, w/o enclosures
[Name], NJDOT Division of Project Management
[Name], NJDOT, w/o enclosures

Attachment 7 - Section 106 Sample Letters

REQUEST TO SEEK ADVISORY COUNCIL COMMENTS ON EFFECT-FHWA

Date

[Name]

Division Administrator
Federal Highway Administration
New Jersey Division Office
840 Bear Tavern Road, Suite 310
West Trenton, NJ 08628

Attn: [Name], Area Engineer

Re: Project Name
Municipality, County
Federal Project No.

Dear [Name]:

As Section 106 consultation has failed to result in agreement with the SHPO on the finding of effect for the [name] project, the comments of the Advisory Council must now be sought in order to move the consultation process to completion. The procedures for doing so are described in 36 CFR 800.6(b). Accordingly, enclosed for your review and transmittal are two copies of documentation sufficient to support a request to the Advisory Council for their comments and a draft transmittal letter. The documentation has been prepared in accordance with the provisions of 36 CFR 800.8(d) and supports a finding of [cite finding].

As the project schedule calls for [cite next critical action] and the Council's commenting period is 60 days, I would appreciate your review and transmittal of this documentation as soon as possible. To expedite this, a draft transmittal letter has been prepared and is provided to you in hard copy and disk formats. The disk version is formatted in [cite program]. If you have any questions, please do not hesitate to contact me at [phone] or [Environmental Team Leader] at [phone number].

Very truly yours,

[Name]
Project Manager
Division of Project Management

Enclosures

cc: [Name], Bureau of Environmental Services
[Name], Environmental Team Leader

Attachment 7 - Section 106 Sample Letters

**DRAFT
REQUEST FOR ADVISORY COUNCIL COMMENTS ON EFFECT-COUNCIL**

Project
Municipality
County
Fed. Proj. No.

[Name]
Advisory Council on Historic Preservation
The Old Post Office Building
1100 Pennsylvania Avenue, N.W., No. 809
Washington, D.C. 20004

Dear [Name]:

Using funds provided by the Federal Highway Administration, the New Jersey Department of Transportation is proposing to [describe project briefly].

Technical Studies for the project resulted in the finding that [describe finding]. The NJDOT and FHWA concurred in this finding. Review of the studies by the New Jersey State Historic Preservation Officer (SHPO) resulted in the finding that [describe finding]. Despite further consultation with the SHPO, we have failed to reach agreement on the finding of effect. Consequently, in accordance with the provisions of 36 CFR 800.6(b), the FHWA is requesting the comments of the Council on the effects of this undertaking. The enclosed documentation supports the FHWA's finding of [cite finding].

As the project schedule calls for [cite next critical action], I would appreciate receiving your comments as well as your advice on how to best conclude the Section 106 consultation process for this project. Should you have any questions or comments during the course of your review, or feel it would be helpful to review the project and documentation with FHWA or NJDOT staff, please do not hesitate to contact [Name-project manager and/or Environmental Team Leader] of NJDOT at [phone number] or [Name - Area Engineer] of the FHWA at [phone number].

Sincerely,

For: [Name]
Division Administrator

Enclosures

cc: [Name], NJHPO, w/o enclosures
[Name], NJDOT Division of Project Management
[Name], NJDOT, w/o enclosures

8.3 New Jersey Register of Historic Places Process

Introduction

New Jersey State law⁷ requires that the State, a county, municipality or an agent thereof shall not undertake any project that will encroach upon, damage or destroy any portion of an area, site, structure or object listed in the New Jersey Register of Historic Places without the prior consent of the Commissioner of Environmental Protection. The regulations describing how to complete this process are very similar to the federal regulations which guide the Section 106 consultation process (Attachment 8). Important differences include the following:

1. The State Register process considers only those historic properties which are **listed** in the New Jersey Register.
2. The Section 106 process is initiated as early in the project development process as possible and requires consultation at several points. The State Register process cannot be initiated until later in the project development process when plans and specifications are available and mitigation activities are identified.
3. The NJ Historic Preservation Office (HPO) staff reviews an encroachment application and, if there will be an encroachment, makes a recommendation to the Historic Sites Council (HSC). The HSC is charged with making a recommendation to the Commissioner of Environmental Protection, who must then make a final decision on the application.

The *Review Procedures for Projects Encroaching Upon New Jersey Register Properties* are contained in Subchapter 7 of the regulations. Essentially the process is comprised of six steps. They are:

1. Identification of registered properties which lie within the project's area of potential impact;
2. Determining if the project will encroach upon a listed property;
3. Determining if the encroachment can be avoided or minimized, and, if not, appropriate mitigation measures;
4. Preparation of an application for project authorization;
5. NJ Department of Environmental Protection review of the application, and;
6. Acceptance or rejection of conditions of project authorization, if any.

The State Register process, by provision of the regulations, may take as long as 120 days. However, if the project does not constitute an encroachment, the review time may be slightly over 30 days--the time allotted for determining if the application is technically complete. Review times for different aspects of the process are rigorously defined in the regulations. However, the actual length of time required for processing will depend on the amount of previous involvement the HPO staff has had with the project. For example, if a Section 106 review has previously been accomplished or is in process, the review for technical completeness, determination of whether there will be an encroachment and evaluation of

⁷The New Jersey Register of Historic Places Act refers to P.L. 1970, c268, N.J.S.A. 13:1B-15.128, et seq.; the implementing regulations are contained in N.J.A.C. 7:4.

mitigation measures can be expedited. Because of this and the requirement to include fairly detailed plans and specifications, it is often useful to complete the Section 106 consultation process in advance of preparing the application for project authorization.⁸ For less complex projects, the two reviews may proceed concurrently.⁹ In determining the timing of the submission of an application for project authorization, it is critical to remember that the agenda for a meeting must be set 21 days in advance of the meeting and the Historic Sites Council meets every other month. The annual schedule for these meetings may be obtained from the HPO. The HSC meetings are open to the public; the notification process is inclusive¹⁰. Procedures for the review of emergency undertakings are described in N.J.A.C. 7:4-7.3.

Process

In order to complete the application process, the following work must be completed.

1. Determine if any registered properties lie within the project's area of potential impact. If none exist, no further actions are required to demonstrate compliance.
2. If registered properties exist, determine if there will be an encroachment¹¹ according to the criteria listed in N.J.A.C. 7:4-7.4 *Criteria for determining whether an undertaking constitutes an encroachment or will damage or destroy the historic property*. Determine if the encroachment can be avoided or lessened. If not, determine if appropriate mitigation can be accomplished.
3. The BES CR specialist must prepare an application for project authorization using the appropriate application form/format¹² and a transmittal letter (for the signature of the project manager) to the Administrator of the NJ HPO. Information required for the application includes data about the registered property; project description; project need/purpose; alternatives considered and/or other actions proposed to avoid, reduce or mitigate an encroachments; project funding information; permits needed for construction; graphics; plans; specifications; lists of concerned historical societies and preservation groups; a notarized current list of owners of registered properties etc.
4. Within 30 days of the receipt of an application, the HPO staff will review it for technical completeness and sufficiency. If incomplete, the HPO will issue a letter requesting more information. If complete, within 45 days of making the determination, a decision will be made if there will be an encroachment.

⁸When this is done, rather than resubmitting information already on file with the SHPO, many portions of the application can simply refer to the information submitted previously.

⁹In this case, the SHPO has advised NJDOT that the project information must be submitted using the form/format required for State Register Act project authorization. The transmittal letter should request both Section 106 consultation comments and project authorization under the NJ Register of Historic Places Act.

¹⁰Notification procedures are described in 7:4-7.2(e)(1)(i-vi).

¹¹A project will have an encroachment *when the effect of the undertaking on a property listed in the New Jersey Register may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association*.

¹²Application forms are available from the New Jersey Historic Preservation Office

5. If **no encroachment** will result from the proposed construction, the HPO will issue a letter stating this conclusion and the project may proceed without further action.
6. If there **will be an encroachment**, the application will be reviewed by the HSC using the criteria described in N.J.A.C. 7:4-7.4 and the *Standards for Historic Preservation Projects and Guidelines for Applying the Standards* contained in 36 CFR 1207 or subsequent amendments thereto, as well as consideration of the public benefit, whether feasible and prudent alternatives to the encroachment exist and whether sufficient measures can be taken to avoid, reduce or mitigate the encroachment. The HSC will discuss the application during a public meeting (during which the HPO staff reviewer will present the project and a recommendation, the applicant can make a presentation and/or respond to questions, and members of the public--interested persons, elected officials, etc.--may comment) and pass a resolution which is forwarded to the DEP Commissioner. Prior to the end of the 120 day review period, the DEP Commissioner considers the recommendations of the HSC and renders a written decision which authorizes, authorizes with conditions, denies the authorization temporarily for more information or exploration of additional alternatives, or denies the application.¹³
7. If the application is **approved with conditions**, the BES CR specialist must prepare a letter for the signature of the project manager on behalf of NJDOT accepting the conditions in writing within 60 days or the approval will revert to a denial of the application. Similarly, if the conditions are not acceptable to the NJDOT, the approval reverts to a denial. If the conditions are acceptable to NJDOT, once the conditions have been satisfied, the BES CR specialist should prepare a letter to the HPO providing proof¹⁴ that the conditions have been satisfied.
8. If the application is **temporarily denied**, the NJDOT must respond to the Commissioner within 60 days or the temporary denial becomes a full denial. If the NJDOT submits a complete response within the 60 day period, the Commissioner will make a final decision on the project application within 60 days of the receipt of the complete response.

¹³The Commissioner may also direct the conduct of a public hearing on an application prior to taking action on an application.

¹⁴Proof shall be the final product resulting from the condition--final plans and specifications, Historic American Building Survey/Historic American Engineering Record (HABS/HAER) quality documentation with a letter of acceptance by the National Park Service, an archeological data recovery report, etc.

Attachment 8 - New Jersey Register of Historic Places Flowchart

FLOW CHART

NJ Register of Historic Places Process Flow Chart

8.4 Noise Study Process

Introduction

The Federal Highway Administration (FHWA) published regulations for noise analysis under 23 CFR 772. Noise analysis is done for two categories of projects, Type I and Type II. Type I projects are new roadways or improvements which increase capacity (a through travel lane) or change the horizontal or vertical alignment of an existing road. Type II projects are noise barrier retrofits to an existing roadway. Mitigation of traffic noise can include noise walls, earth berms and acoustical insulation of public buildings. Eligibility criteria for the consideration of noise abatement is shown in Attachment 9.

Noise studies are also required for Executive Order 215 documents.

The findings of a noise study will identify noise impacts as defined by Federal Regulation and recommend mitigation measures to be pursued, if any.

Process (See Attachment 11)

SCOPE DEVELOPMENT STAGE

- Step 1** Identify if project is a Categorical Exclusion (CE), EA or EIS.
- Step 2** For CE projects, BES will obtain from Scope Development:
- A. Traffic (Intersection LOS) Data
 - B. Project Plans and Profiles
 - C. Project Description
- Step 3** BES performs a brief qualitative analysis of the effects of the project on noise levels in nearby residential areas. A very few projects may require a quantitative (simplified) analysis. This information is used by BES to complete the documentation for the CE.
- Step 4** For EA/EIS projects, BES will obtain the following:
- A. Environmental Traffic Data from the Travel Projection Unit
 - B. Project Plans and Profiles
 - C. Noise Monitoring Data from the Environmental Services Support Unit (ESSU)
- Step 5** BES staff or a consultant performs the appropriate level of noise analysis. Projects such as new alignments, major road widenings (23 CFR 772), completion of remaining sections of interstate or state highways, etc. will require detailed noise analysis using FHWA approved computer modeling. This includes performing computer analysis of impacts, the identification of recommended noise mitigation measures and preparation of a report on the findings. A completed acceptable final report is forwarded to the Project Manager for review and to BES for incorporation in the environmental EA/DEIS.

DESIGN AND FINAL DESIGN STAGE

Step 6 BES receives engineering information from Designer.

After the FONSI or Record of Decision is issued by FHWA, the following information is needed to complete the Final Noise Study Report which provides final details on mitigation.

DATA REQUIREMENTS FOR FINAL BARRIER ANALYSIS

Design Year Traffic Data -DHV, % truck, speeds.

Plan Sheets (50% design).

Cross Sections by Station.

Photogrammetric mapping showing location and elevation of noise sensitive areas up to 180 meters from alignment depending on scope of project. Require 1:1000 to 1:4000 scale.

Aerial photography or mapping of project area to present noise contours and barrier locations in Final Noise Study Report. Require 1:2000 to 1:4000 scale, covering a corridor up to 180 meters from the alignment.

For projects where noise barriers may need to be added to existing structures, an analysis of what height barriers can be accommodated and the associated cost to modify the structure.

Relative availability of material for earth berms.

Step 7 BES Technical staff completes detailed computer analysis and recommends noise barriers based on reasonable cost and barrier effectiveness utilizing the technical criteria in Attachment 11.

Step 8 BES initiates barrier material selection process and requests assistance from the Bureau of Landscape. Innovative designs and materials which reduce costs are considered. BES calls for review meeting with Project Management to present recommended barriers. Aim is to determine if there are any overriding constraints to proposed barriers.

Step 9 After concurrence of barrier engineering by Project Management, BES presents barriers to FHWA for informal review and preliminary approval.

Step 10 To develop presentation materials for a public information center, Bureau of Research develops videotape showing barrier proposal. Noise levels before and after barriers are incorporated into this video presentation. DOT or consultant personnel develop renderings of the proposed barriers.

Step 11 The Project Manager, with support from BES, through Community Relations, holds meetings with municipal officials and those residents near proposed barriers to explain and demonstrate the characteristics of highway traffic noise, the effects of noise barriers in attenuating traffic noise and types of noise barriers that may be considered. Community Relations requests that municipal officials provide the DOT with a resolution either for or against proposed noise barrier

after completion of the meeting process. This will be used in making the decision on the inclusion of barriers in the project.

- Step 12** BES prepares Final Noise Study which incorporates proposed locations of noise barriers (if any), noise contour maps and community resolutions.
- Step 13** After Project Management approval, Final Noise Study (FNS) transmitted to FHWA for concurrence. Any FHWA comments are then addressed and concurrence received.
- Step 14** BES sends approved FNS to communities. This includes noise contour maps identifying areas of future high noise along project. Communities can use this information in planning future use for undeveloped areas.
- Step 15** Development of structural design, specifications and barrier details during which BES is consulted on design details and modifications which may occur due to design constraints.
- Step 16** During noise barrier installation, Resident Engineer, Materials, BES and Landscape conduct periodic quality control monitoring. Resident Engineer would be the lead in solving problems on unsatisfactory construction practices or inappropriate barrier materials. We learn from our construction experience what designs to use or avoid in the future. At the point of 60% barrier completion, the Project Manager, with support from BES, will provide a formal review to the Resident Engineer. This review will obtain input from Landscape and Structures and Bridges. Resident Engineer will be the lead in coordinating a solution to any problems that develop.

DEFINITIONS

Design Year - The future year used to estimate the probable traffic volume for which a highway is designed. A time ten to twenty years from the start of construction is usually used.

Environmental Document Approval Date - Will be the date of the ROD, FONSI or CE.

dBA - A-weighted decibel, unit used to measure noise which best corresponds to the frequency response of the human ear.

FHWA - Federal Highway Administration.

Impacted Receiver - Any receiver which has a loudest hour Leq that approaches (within 1 dB) or exceeds the Noise Abatement Criteria for the corresponding land use category or exceeds the existing noise levels by 10 dB (see 23 CFR 772 for the description of land use categories).

Insertion Loss - The amount of noise reduction provided by a noise barrier.

Leq - A time measure that accounts for the moment to moment fluctuations in noise levels due to all sources during that time period.

Noise Abatement - Any measure implemented to reduce highway traffic noise levels that achieves at least 5 dBA reduction.

Noise Abatement Criteria (NAC) - Numerical noise criteria promulgated by the Federal Highway Administration and published in 23 CFR 772.

Noise Barrier - A solid structure designed to reduce exterior traffic noise levels at a ground level property adjacent to the highway.

Receiver - Precise location of outdoor activity on any property which is considered to contain noise sensitive land use. A complete list of noise sensitive land uses may be found in 23 CFR 772.

Type I Noise Barrier - A noise barrier designed to abate traffic noise from the construction of a new highway or the physical alteration of an existing highway which significantly changes the alignment or increases the number of through traffic lanes.

8.4.1 Criteria for Community Built Noise Barrier Project within the State's Right of Way

Noise impacted communities can build noise barriers within the State's Right of Way at no cost to the State.

In order to ensure that safety to the motoring public is considered, including future maintenance of the noise barrier, the following process has been established:

1. Where a community desires to build a noise wall within the State Right of Way, a written request must be submitted by the governing body (county, city, town, municipality, etc.) to the Department.
2. Prior to construction of the project, the governing body must enter into a "right of entry" agreement with the Department.
3. The noise barrier design must follow NJDOT design standards and construction specifications and be certified by the requesting engineer as to its compliance.
4. The requesting governing body must assume full maintenance, jurisdiction and responsibility for the noise barrier by means of jurisdictional agreement.
5. The proposed noise mitigation must not create safety or maintenance problems on State highways.
6. Efforts must be made to provide architectural treatment and landscaping for the highway side of the barrier consistent with other treatments on the roadway.

Coordination with Local Officials

In an effort to prevent future traffic noise impacts on currently undeveloped lands, at the conclusion of the Final Noise Study, NJDOT shall inform local officials, within whose jurisdiction the highway project is located, of the following:

1. The best estimation of future noise levels (for various distances from the highway improvement) for both developed and undeveloped lands or properties in the immediate vicinity of the project.
2. Information that may be useful to local communities to protect future land development from becoming incompatible with anticipated highway noise levels.

Attachment 9 - Noise Abatement Criteria

ELIGIBILITY CRITERIA FOR CONSIDERATION OF NOISE ABATEMENT

1. A traffic noise impact is defined as occurring when the predicted traffic noise levels approach (1 dBA) or exceed the noise abatement criteria (Table 1) or when the predicted traffic noise levels substantially exceed (10 dBA) the existing noise levels.
2. For Type I and Type II projects, residential houses or developments must have obtained final site plan approval prior to the environmental document approval date to be considered in the cost effectiveness evaluation.
3. The Department will consider a maximum cost of \$40,000 per residential dwelling to be cost effective using a \$215/square meter cost for Type I and \$270/square meter for Type II.

Dwellings that receive a 3-5 dB reduction but are not noise impacts will be considered through a 1/2 weighting in the cost effective evaluation.
4. Projects not deemed cost effective will be considered by the Department provided the requesting community pays for all additional costs above the \$40,000 per residence limit.
5. Type II projects in New Jersey will be State funded, and meet the same eligibility and technical criteria as Type I projects with the following exception:
 - Communities may accelerate the Type II process with additional cost sharing to below \$40,000 residence cost. This contribution could be easements, materials, dollars, etc.

**TABLE 1
NOISE ABATEMENT CRITERIA¹**

Hourly A-Weighted Sound Level - decibels (dBA)²

Activity Category	Leq (h)³	L₁₀ (h)⁴	Description of Activity Category
A	57 (exterior)	60 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	70 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, schools, churches, libraries, and hospitals.
C	72 (exterior)	75 (exterior)	Developed lands, properties, or activities not included in Categories A and B above.
D			Undeveloped lands.
E	52 (interior)	55 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

¹Source: 23 CFR 772.

²Either L₁₀ (h) or Leq (h) (but not both) may be used on a project.

³The hourly value of the sound level that is exceeded 10 percent of the time (the 90th percentile) for the time period under consideration.

⁴The hourly value of the equivalent steady-state sound level which in a period of time contains the same acoustic energy as the time-varying sound level during the same time period.

TECHNICAL CRITERIA FOR NOISE ABATEMENT

1. The noise barrier insertion loss (dBA reduction) goal shall be to obtain a 5-10 dB noise reduction with a minimum of 5 dBA reduction necessary for a barrier to be approved.
2. Noise barrier heights shall be limited to a maximum of 5.5 meters provided the following criteria are met:
 - a. A minimum of 5 dBA reduction is achieved.
 - b. The mitigated noise level is less than the noise abatement criteria listed in Table 1.
 - c. Wall height over 5.5 meters will be considered if one or both of the above criteria in a. or b. is/are not met.
3. Structural Criteria:
 - a. Based on maximum wall height and risk management, the Wind Loading sign Criteria shown in Attachment 10 shall be used for design of noise barriers.
4. Aesthetic Considerations:
 - a. In general, landscaping shall be used on the highway side of the barrier to reduce visual impact and deter graffiti.
 - b. The Department shall use standardized wall types and designs for most noise barrier applications. Specialized or tailored systems may be considered by the Department when deemed to be cost beneficial.
 - c. In general, the Department shall propose an architectural treatment(s) for any given noise barrier location for comment by the community. Changes in architectural treatment based on input from the community shall be considered by the Department provided that:
 - The cost of the architectural treatment does not increase the cost of the barrier by more than 5%.
 - The architectural treatment does not have any adverse maintenance or safety impacts.

Notes:

- 1) Other higher cost architectural treatments may be approved by the Department, provided the community pays for the additional costs above the 5% cap associated with the proposed treatment.
- 2) The Department will have final approval on any recommendations by the community.

Community Involvement in the Barrier Process

Early communication with the community regarding possible noise abatement is made through the circulation of the draft environmental document. During the design of the project, the New Jersey Department of Transportation (NJDOT) will meet with local officials and impacted residents and present a brief program on highway traffic noise to explain and demonstrate the characteristics of highway traffic noise, the effects of noise barriers in attenuating traffic noise and types of noise barriers that may be considered. Specific details (location, length, height, aesthetic treatment, landscaping, maintenance, drainage, safety, etc.) of noise barriers being studied will also be discussed.

NJDOT will then request a resolution from the local elected officials regarding the abatement proposal. NJDOT will then make a final determination on the reasonableness and feasibility of noise abatement.

Attachment 10 - Noise Wall Design Criteria

NOISE WALL DESIGN CRITERIA

- Table 1 is to be used for both ground mounted and structure mounted sound barriers in flat, unobstructed areas exposed to wind flowing over large bodies of water and extending inland from the shoreline a distance of one half mile.
- Table 2 is to be used in open terrain with scattered obstructions. This category includes flat, open country and grasslands. This exposure shall be used for all sound barriers located on bridge structures, retaining walls, or traffic barriers that are not covered by Table 1.
- Table 3 should be used in urban and suburban areas with open terrain not meeting the requirements for Table 4. **This table should generally be used for ground mounted sound barriers.**
- Table 4 may be used in urban and suburban areas with numerous closely spaced obstructions having the size of single-family dwellings or larger that prevail in the upwind direction from the noise wall for a distance of at least 450 meters.

TABLE 1^a
Minimum Wind Pressure On Sound Barriers Located in Coastal Regions

Distance from average level of adjoining ground surface to centroid of loaded area in each height zone, H (m)	Cc	Minimum Pressure (kPa) for Indicated Wind Velocity			
		130 km/h	145 km/h	160 km/h	180 km/h
0<H≤4.3	1.2	1.92	2.39	2.97	3.59
4.3<H≤8.8	1.37	2.20	2.78	3.40	4.17
greater than 8.8	1.49	2.39	3.02	3.69	4.50

TABLE 2^a
Minimum Wind Pressure On Sound Barriers Located on Bridge Structures, Retaining Walls, or Traffic Barriers

Distance from average level of adjoining ground surface to centroid of loaded area in each height zone, H (m)	Cc	Minimum Pressure (kPa) for Indicated Wind Velocity			
		130 km/h	145 kmh	160 km/h	180 km/h
0<H≤4.3	.80	1.29	1.63	2.01	2.39
4.3<H≤8.8	1.00	1.58	2.01	2.49	3.02
greater than 8.8	1.10	1.77	2.20	2.73	3.30

TABLE 3^a
Minimum Wind Pressure On Sound Barriers Not Located on Structures

Distance from average level of adjoining ground surface to centroid of loaded area in each height zone, H (m)	C _c	Minimum Pressure (kPa) for Indicated Wind Velocity			
		130 km/h	145 km/h	160 km/h	180 km/h
0<H≤4.3	.59	0.96	1.20	1.48	1.82
4.3<H≤8.8	.75	1.20	1.53	1.87	2.25
greater than 8.8	.85	1.34	1.72	2.11	2.54

TABLE 4^a
Minimum Wind Pressure On Sound Barriers Not Located on Structures

Distance from average level of adjoining loaded area in each height zone, H (m)	C _c	Minimum Pressure (kPa) for Indicated Wind Velocity			
		130 km/h	145 km/h	160 km/h	180 km/h
0<H≤4.3	.37	0.57	0.77	0.91	1.10
4.3<H≤8.8	.59	0.81	1.01	1.24	1.48
greater than 8.8	.59	0.96	1.20	1.48	1.82

^aSource: AASHTO, *Bridge Guide and Manual Interim Specifications*, Washington, DC, AASHTO 1992.

Attachment 11- Noise Study Process

FLOW CHART

Noise Study Process

8.5 Air Quality Study Process

The Federal Highway Administration (FHWA) published regulations for air quality analyses under 23 CFR 771. Included in these regulations are procedures for classifying and processing projects in compliance with NEPA. An air Quality analysis is done for new roadways or improvements which increase the capacity of an existing road.

Air Quality Studies are also required for Executive Order 215 Documents.

Section 176(c)(4) of the Clean Air Act (as amended in 1990) requires that transportation plans, programs and projects, which are funded and approved under Title 23 U.S.C. (i.e. FHWA funded projects), conform with State Air Quality Implementation Plans (SIP), and State Transportation Improvement Plan (STIP).

EPA's Transportation Conformity Rule (TCR), part 51.460 (Attachment 12), lists highway project types which are **exempt** from the requirement that a conformity determination be made. Such projects may proceed toward implementation even in absence of a conforming transportation plan and STIP.

TCR part 51.462 (Attachment 12), lists highway project types that are **exempt** from regional emissions analysis requirements. The local effects of these projects, with respect to CO concentrations, must be considered to determine if a hot-spot analysis is required prior to making a project-level conformity determination. These projects may then proceed to the project development process even in the absence of a conforming transportation plan and STIP.

Process

- Step 1 Identify if project is a CE, or EA/EIS in scope.
- Step 2 For CE projects, BES will obtain from the Bureau of Scope Development
 - A. Traffic (Intersection LOS) Data
 - B. Project Plans
 - C. Project Description
 - D. Status from Planning
- Step 3 BES, using Attachment 12 (list of exempted highway project types), determines the extent of analysis required for the project, and performs the necessary analysis. A very few projects may require a quantitative analysis. This information is used as support information for the project manager.
- Step 4 For EA/EIS projects, BES will obtain the following:
 - A. Environmental Traffic Data from the DOT's Travel Projection Unit
 - B. Project Plans
 - C. Background Air Quality Monitoring Data (very few projects) from DOT's Environmental Services Support Unit (ESSU)
 - D. STIP Status from Planning

Step 5

BES performs an appropriate level of detailed analysis. Projects such as new roadway alignments, major road widenings, completion of remaining sections of Interstate or State highways etc. will require detailed air quality analysis using USEPA and FHWA approved computer modeling. The detailed analysis will investigate the air quality impacts of the project and prepare a report of the findings or receive, review and comment on a consultant's draft report and have a completed acceptable final report forwarded to the project manager for his incorporation in the EA/EIS document.

Attachment 12 - EPA Transportation Conformity Rules

EPA TABLE

Exempt Projects

Safety

- Railroad/highway crossing.
- Hazard elimination system.
- Safer non-Federal-aid system roads.
- Shoulder improvements.
- Increasing sight distance.
- Safety improvement program.
- Traffic control devices and operating assistance other than signalization projects.
- Railroad/highway crossing warning devices.
- Guardrails, median barriers, crash cushions.
- Pavement resurfacing and/or rehabilitation.
- Pavement marking demonstration.
- Emergency relief (23 U.S.C. 125).
- Fencing.
- Skid treatments.
- Safety roadside rest areas.
- Adding medians.
- Truck climbing lanes outside the urbanized area.
- Lighting improvements.
- Widening narrow pavements or reconstructing bridges (no additional travel lanes).
- Emergency truck pullovers.

Mass Transit

- Operating assistance to transit agencies.
- Purchase of support vehicles.
- Rehabilitation of transit vehicles.
- Purchase of office, shop, and operating equipment for existing facilities.
- Purchase of operating equipment for vehicles (e.g., radios, fareboxes, lifts, etc.).
- Construction or renovation of power, signal, and communications systems.
- Construction of small passenger shelters and information kiosks.
- Reconstruction or renovation of transit buildings and structures (e.g., rail or bus buildings, storage and maintenance facilities, stations, terminals, and ancillary structures).
- Rehabilitation or reconstruction of track structures, track, and track bed in existing rights-of-way.
- Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet.
- Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR part 771.

Air Quality

- Continuation of ride-sharing and van-pooling promotion activities at current levels.
- Bicycle and pedestrian facilities.

Other

- Specific activities which do not involve or lead directly to construction, such as:
 - Planning and technical studies.
 - Grants for training and research programs.
 - Planning activities conducted pursuant to titles 23 and 49 U.S.C.
 - Federal-aid systems revisions.
- Engineering to assess social, economic, and environmental effects of the proposed action or alternatives to that action.
- Noise attenuation.
- Advance land acquisitions (23 CFR part 712 or 23 CFR part 771).
- Acquisition or scenic easements.
- Plantings, landscaping, etc.
- Sign removal.
- Directional and informational signs.
- Transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities).
- Repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational or capacity changes.

Projects Exempt from Regional Emissions Analyses

- Intersection channelization projects.
- Intersection signalization projects at individual intersections.
- Interchange reconfiguration projects.
- Changes in vertical and horizontal alignment.
- Truck size and weight inspection stations.
- Bus terminals and transfer points.

8.6 Hazardous Waste Process

Introduction

The presence or suspected presence of hazardous waste and/or contaminated soils presents problems affecting right of way acquisitions, project development and construction. Solutions to these concerns involve an array of laws/regulations and require interaction with the New Jersey Department of Environmental Protection (NJDEP) and property owners (see Attachment 11).

Federal law in conjunction with New Jersey's Spill Compensation and Control Act (the Spill Act) provide the basis for dealing with hazardous/contaminated soils. The Spill Act provides for reporting and cleanup efforts when unauthorized discharges do occur and imposes liability for cleanup and removal costs. The Spill Act along with the Hazardous Waste Regulation (N.J.A.C. 7:26) define general provisions, transport fees, identification criteria and oversight for the remediation of Hazardous/Contaminated Sites. The Federal Highway Administration (FHWA) has provided guidance for dealing with these issues through two Transportation Research Board publications: Report 310 (Dealing with Hazardous Waste Sites) and Report 351 (Hazardous Waste in Highway Rights-of-Way) and an August, 1988 interim Guidance - Hazardous Waste Sites Affecting Highway Project Development. The process described below is consistent with FHWA guidance and NJDEP oversight regulations. State funded projects follow the same process. Cooperative lines of communication between the Department and NJDEP on these issues are defined in a Memorandum of Understanding (MOU) signed by the Commissioner of both agencies in June, 1989.

The earlier a hazardous waste/contaminated site is discovered, the more options there are to avoid or at least minimize involvement. Innovative/cost effective means of addressing hazardous waste issues will be looked at whenever feasible. As early as possible in the project development phase, a scoping and/or screening assessment should be done to identify any known or potential sites within the project limits. Generally, every project which includes the purchase of new right of way and or excavation will require such assessments. If such sites are identified and cannot be avoided, then further investigation (sampling) and possible coordination with NJDEP would be needed. These further investigations are needed for a number of reasons and include: compliance with Federal/State Laws or Regulations, protection of DOT staff and construction workers from health hazards, protection of the State from acquiring contaminated right-of-way and avoiding unexpected costs and construction delays.

The evaluation of results of all technical surveys and reports which identify the potential presence of contamination and subsequent action, including coordination with DEP are the responsibility of the Technical Services Section of BES.

Process

1. During Scope Development, BES conducts a hazardous waste scoping assessment to determine the potential for involvement with hazardous/contaminated sites. This is a gross investigation of the project corridor to identify such sites and determine if avoidance/minimizing of involvement is feasible.

2. As part of the CE Documentation, EA or EIS process, a hazardous waste screening is conducted to identify sites of environmental concern within the project area and determine if further investigations are needed. This screening (a/k/a Preliminary Assessment) consists of a field survey or current land use check, DEP environmental file reviews, local and county coordination and a review of historical information (Sanborn Insurance Maps, etc.). If sites of concern are identified and cannot be avoided, then they are labeled as Environmentally Sensitive Parcels (ESP). The procedure for placement of ESP on project plans is given in Section 8.6.2.
3. Based upon the results of the Preliminary Assessment, properties within the proposed right-of-way or easement areas may require sampling to confirm the presence or absence of contamination. In the case of EA's and EIS's, sampling at sites of concern would generally be conducted as part of the technical studies. For CE's, sampling would be conducted when plans depicting right-of-way or excavation areas are available. In either case, sampling will not be conducted on every parcel or site but only on those identified during the Preliminary Assessment as needing further investigation. The initial sampling effort is intended to identify and quantify contaminants that may be within the study area. Generally, no attempt is made at this stage to delineate the extent of contamination. Various measures could be used at this phase to identify involvement such as soil gas surveys, test pits and geophysical studies. If contamination above the soil cleanup criteria is discovered, then coordination is initiated under the DOT/DEP MOU. Property owners are always notified prior to and provided with the results of sampling.
4. If contamination above regulatory concern is discovered, then further study (remedial investigation) is needed during final design to define the size of the problem and evaluate remedial options and costs. The Bureau of Right of Way is advised of the situation via the Environmental Summary Memorandum as described in Section 8.6.2. The property owner is always given the option to conduct the remediation effort. If he/she declines to do so or if the schedule will not allow it, then the Department initiates the cost recovery procedure as given in Section 8.6.1.
5. In addition to discussing the additional sampling results, the Remedial Investigation report presents a conceptual remedial strategy. Once the NJDEP comments on this report (allow 45 days for review), a formal Remedial Action Plan/Soil Re-use Plan is prepared to describe precise soil and groundwater (if necessary) management procedures.
6. If the remediation is to be conducted by the Department's contractor, then a specification will be developed to address these concerns and included in the bid document. A project specific specification would include such items as soil management protocol, sampling requirements and health and safety requirements.
7. During construction, remaining hazardous/contamination issues include:
 - Oversight of remediation activities to assure contractor compliance (i.e., assist resident engineer).

- Advise Resident Engineer with regard to issues/questions that arise relating to remediation.
- Upon completion of such activities, the preparation and submittal to NJDEP (allow 45 days for review) of a Remedial Action Report which details final placement of contaminated soils, final costs and any special measures such as property deed restrictions.

Attachment 13 - Hazardous Waste Process

INSERT HAZARDOUS WASTE PROCESS FLOWCHART HERE

8.6.1 Policy on Cost Recovery in Acquisition of Contaminated Property

1. Agreements for the acquisition of property will always contain clauses designed to protect the Department from liability from pre-existing contamination unless the Department has waived their inclusion.
2. Where contamination is found, the Department will always seek cost recovery unless there are compelling reasons to refrain from cost recovery.

PROCEDURE FOR WAIVER OF ENVIRONMENTAL CLAUSES IN AGREEMENTS

As a matter of policy, the environmental clauses will always be included in the agreements unless there are cogent reasons to delete them.

If, during the course of negotiations, the owner is willing to accept the dollar amount offered but is unwilling to sign an agreement because of the environmental clause, the negotiator shall prepare an analysis and recommendation regarding the modification or waiver of the clauses. This recommendation shall be forwarded to the Manager of Right of Way for concurrence. Authority to waive environmental clauses shall rest with the Project Manager or his designee.

Where BES Preliminary Screening indicates there is no reason to believe that the site is contaminated, waiver of the clauses may be approved on the following basis:

- The property has a low potential for being contaminated such as:
 1. Small residential use.
 2. Vacant land with no indication of dumping or prior industrial use.
 3. The taking is remote from potential sources of contamination.
 4. The area to be acquired is part of an established "landscape" area.
 5. The taking consists of active crop lands.
- The owner lacks the financial ability to perform any remediation and has insufficient or no insurance coverage which covers contamination issues.
- Value of the taking is nominal.
- Any other circumstance which leads to the conclusion that the benefit of waiving the clauses exceeds the minimal risk involved.

In all other circumstances, the clauses must be included although they may be modified, where appropriate, with the concurrence of the Division of Law.

All determinations to modify or waive the environmental clauses must be documented for the file.

PROCEDURES FOR WAIVER OF COST RECOVERY

As a matter of policy, cost recovery must always be sought unless there are compelling reasons to refrain.

In any instance where environmental screening, testing or sampling indicates that remediation will be necessary, the Bureau of Environmental Services shall prepare estimates of the remediation costs. These estimates shall include the Department's cost to meet project needs and the owner's cost to meet the requirements of Highest and Best use. Where contamination is discovered during construction activities, the Resident Engineer will notify the Project Manager and BES and seek a decision regarding cost recovery. BES will then follow the same procedures used where the discovery of contamination is found at an earlier stage.

On the basis of these estimates, BES will submit a recommendation on cost recovery to the Director of Project Management or designee for a decision. This recommendation shall be supported by documentation summarizing important details for the case.

In instances where the potential recovery amount for an individual site, based on the lower of the estimated cost of remediation required for the Department's project or the Department's estimate of the owner's cost of remediation to meet the requirements for the Highest and Best use (present use or as zoned) is less than \$50,000, the determination to waive cost recovery may be made by the Director of Project Management or his designee.

In instances where the potential recovery amount for an individual site is \$50,000 or more, the Director of Project Management or his designee will convene the Cost Recovery Team to analyze facts and circumstances and reach a decision regarding the pursuit of cost recovery actions. This team shall include the Director of Project Management or designee, the Manager of Right of Way, the Project Manager, representatives from BES as well as a representative from the Division of Law, and, when appropriate, representatives from Construction.

The decision not to seek cost recovery would generally be based on a cost/benefit analysis which would include, but not be limited to, consideration of the following:

- The estimated cost for Department remediation to meet the project requirements.
- The DOT's estimate of the owner's cost to remediate to meet the requirements for the Highest and Best use of the property (present use or as zoned).
- Any material supplied by the owner relating to the cost or extent of remediation required.
- The costs (Time, Dollars, Staff and Consultant Resources) involved in preparation and litigation of a cost recovery action.
- The risk factors involved and the Best Case, Worst Case, and Most Probable results of the cost recovery suit.

In the absence of unusual circumstances, cost recovery would not be sought where the cost of preparation and litigation of the case equals or exceeds:

- The estimated cost for the DOT remediation to meet project requirements.
- The DOT's estimate of the owner's cost to remediate to Highest and Best use requirements.
- The Best Case projection of the results of the suit taking into account materials presented by the owner.
- The Worst Case or Most Probable results of the suit if there is a low probability of being able to collect on a award

Cost recovery may also be waived where the dollars involved are not substantial and other circumstances indicate that the benefits from cost recovery are offset by other considerations. Such determinations shall be made on a case by case basis in a manner that would assure consistent treatment.

All determinations to seek cost recovery shall be adequately documented in the case file by memorandum to the Deputy Attorney General assigned to the case marked "Attorney/ Client Privilege-Confidential". All concerned parties shall be notified of the decision by copy of that memorandum.

8.6.2 Environmental Clearance Process for Contaminated Parcels

Environmentally Sensitive parcels (ESP)

Environmental Staff will identify these parcels during the preparation of the documentation for the CE, EA or EIS during the scoping process. These parcels will be brought to the attention of the project manager (via a memo) as well as the Bureau of Right of Way. The purpose of this early identification is to ensure that these ESP's are made known to the project manager so they can be noted on the plans. They will also be brought up to the attention of right of way personnel (i.e., project appraiser) so that the ESP status can be taken into account during the negotiation process. The following process will be followed with regard to ESP's. This procedure has been in effect since 1989. It has been revised to reflect recent changes in the Department's organization.

Following is a list of "sensitive" parcels which need to be noted on the General Property Parcel Maps (GPPM's):

1. Spill Act and Contaminated Soils Properties
2. UST (Underground Storage Tanks)
3. Section 4(f) properties
4. Green Acres Properties
5. Historic Properties (Section 106 Involvement)
6. ADA's (Agricultural Development Areas with 8 year deed restrictions)
7. Landfills

These environmentally sensitive parcels will be identified (using Block and Lot numbers) and the type of sensitive parcel described by BES will be listed in the documentation for the CE,

EA or EIS. BES will send this list to the project manager, stating that the sensitive parcels must be noted on the GPPM's. The environmentally sensitive parcels will be identified on the GPPM's as "Environmentally Sensitive Parcels" (ESP) with the type indicated in parenthesis for each sensitive parcel. For example: ESP (Landfill).

During review of Phase II Plans, BES will inspect the GPPM's to ensure that all environmentally sensitive parcels are identified, The "Tabulation Sheet", a summary page in the plans that lists the EPS Parcels effected, should be checked first. Then, individual plan sheets should be reviewed to verify the notation of all sensitive parcels.

Subsequent reviews should be made at each phase of plans to determine if any changes were made that could affect the sensitive parcels. These subsequent reviews will be coordinated by the project manager with input from the various environmental disciplines as appropriate. The Project Manager should receive a copy of any Plan Review comments.

In addition, during the Environmental Reevaluation process, current plans should be verified for sensitive parcel identification and a description of the ROW status of the parcels included in the ER. The project manager will coordinate this process with input from the various environmental disciplines as needed.

Environmental Summary Memorandum - (Applies to ALL Parcels)

These memoranda (formerly known as environmental clearance letters) are prepared by the Bureau of Environmental Services and transmitted to the Bureau of Right of Way. These memoranda contain the results of the final environmental contamination evaluation of each parcel prior to the negotiation process with the owner. These memoranda are the basis for the selection of and information contained in, the ROW offer letters presented to the property owners. If sampling was conducted on the parcel this will be referenced in the memorandum along with the date that the results were sent to the property owner. Any costs associated with remediation and/or special measures to be taken on the property such as a DECLARATION OF ENVIRONMENTAL RESTRICTION will also be referenced in the memorandum

The standardized format for the six ENVIRONMENTAL SUMMARY MEMORANDA scenarios are given below (see Attachment 14).

- Record Search/Visual Check - No Concerns (**Scenario #1**)
- Record Search/Visual Check/Sampling - No Concerns (**Scenario #2**)
- Record Search/Visual Check/Sampling - Contamination Present without Cost Recovery (**Scenario #3**)
- Record Search/Visual Check/Sampling - Contamination Present with Cost Recovery (**Scenario #4**)
- Record Research/Visual Check/History, UST's or Present Use Concerns - Possible Future Cost Recovery (**Scenario #5**)
- One with Declaration of Environmental Restriction (**Scenario #6**)
- Record Search/Visual Check/Dirty Remainder - No Concern (**Scenario #7**)

ROW Written Offer Letter (Applied to ALL Parcels)

The ROW Offer Letters contained in Attachment 14 include statements concerning the environmental findings in a summary form and will be used by the ROW negotiator. Three versions are formatted for use depending on the environmental findings.

Attachment 14 - Environmental Summary Memoranda

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM**

SCENARIO #1

TO: Bureau of Right of Way

FROM: Bureau of Environmental Services

DATE:

PHONE:

SUBJECT: Route _____; Section _____; Parcel _____
Municipality _____; County _____
Owner:
Environmental Status: (Record Search/Visual Check - No Concern)
Environmental Clause: A

An environmental investigation of the above referenced parcel was conducted by _____ on _____. After reviewing the New Jersey Department of Environmental Protection enforcement files, the National Priority List, the SRP Report, the Known and Suspected List and the Environmental Information Inventory issued by NJDEP, it has been determined by BES that there are no past or present enforcement claims/cases initiated against either the current or former owner(s) of the parcel.

In addition, this environmental investigation included a field inspection of the property. During this field inspection no signs or potential sources of contamination were revealed. Furthermore, the present use of the property and its environmental history do not indicate the likelihood of potential contamination which would require additional investigation and/or remediation.

Based upon the above summarized environmental investigation results, it is BES's opinion that there are no environmental contamination concerns associated with this parcel. As a result, BES anticipates that the acquisition of this parcel will not require any remediation and/or cleanup of hazardous substances or wastes or removal of solid waste. BES's determination of the environmental status of the parcel or Right of Way's acquisition of the parcel, however, does not affect NJDEP's jurisdiction over the property nor does it bind NJDEP in any way.

Attachment 14 - Environmental Summary Memoranda

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM**

SCENARIO #2

TO: Bureau of Right of Way
FROM: Bureau of Environmental Services
DATE:
PHONE:
SUBJECT: Route ____; Section ____; Parcel ____
Municipality ____; County ____
Owner:
Environmental Status: (Record Search/Visual Check/Sampling - No Concerns)
Environmental Clause: A

An environmental investigation, including a field inspection, of the above referenced parcel was conducted by _____ on _____. After reviewing the New Jersey Department of Environmental Protection enforcement files, the National Priority List, the SRP Report, the Known and Suspected List and the Environmental Information Inventory issued by NJDEP, it has been determined by BES that the NJDEP has commenced an enforcement action (DEP file # _____) against the current or former owner(s) of the parcel. DEP has identified the following environmental concerns regarding this parcel (**list issues identified by DEP in the enforcement action**). These environmental concerns have been (**list the status of the DEP case and whether DEP is still investigating these concerns, whether they have required monitoring wells, etc**). (or ... it has been determined by BES that there are no past or present enforcement claims/cases initiated by NJDEP against either the current or former owner(s) of the parcel.)

In addition, as a result of (**list environmental concerns identified during the inspection**) observed during the visual inspection or (**list environmental concerns that indicated sampling was necessary**) concerns, the Department of Transportation conducted (**or hired _____ to conduct**) a Soil/Gas Survey (or Preliminary Environmental Investigation) of this parcel on _____. This survey (investigation) did not reveal any reasons to suspect the existence of contamination within this parcel. Furthermore, the present use of the property and its environmental history do not indicate the likelihood of potential contamination which would require additional investigation and/or remediation. A copy of the environmental sampling report was provided to the property owner on _____.

Based upon the above summarized environmental investigation results, it is BES's opinion that there are no environmental contamination concerns associated with this parcel. As a result, BES anticipates that the acquisition area of this parcel will not require any remediation and/or cleanup of hazardous substances or wastes or removal of solid waste. BES's determination of the environmental status of the parcel or Right of Way's acquisition of the parcel, however, does not affect NJDEP's jurisdiction over the property nor does it bind NJDEP in any way.

Attachment 14 - Environmental Summary Memoranda

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM**

SCENARIO #3

TO: Bureau of Right of Way

FROM: Bureau of Environmental Services

DATE:

PHONE:

SUBJECT: Route _____; Section _____; Parcel _____
Municipality _____; County _____
Owner:
Environmental Status: (Record Search/Visual Check/Sampling -
Contamination Present Without Cost Recovery)
Environmental Clause: D

An environmental investigation, including field inspection, of the above referenced parcel was conducted by _____ on _____. After reviewing the New Jersey Department of Environmental Protection enforcement files, the National Priority List, the SRP Report, the Known and Suspected List and the Environmental Information Inventory issued by NJDEP, it has been determined by BES that the NJDEP has commenced an enforcement action (DEP file #) against the current or former owner(s) of the parcel. DEP has identified the following environmental concerns regarding this parcel (**list issues identified by DEP in the enforcement action**). These environmental concerns have been (**list the status of the DEP case and whether DEP is still investigating these concerns, whether they have required monitoring wells, etc**). (or ... it has been determined by BES that there are no past or present enforcement claims/cases initiated by NJDEP against either the current or former owner(s) of the parcel.)

During this field inspection , _____ was observed. As a result of these, the Department of Transportation conducted (**or hired _____ to conduct**) a Soil/Gas Survey (or a preliminary environmental investigation) of this parcel on _____. This survey (investigation) identified several sources of soil contamination existing within the limits of the subject property. Specifically, _____ found _____ exceeding the NJDEP Non-Residential (Residential) Direct Contact Cleanup Criteria. A copy of the environmental sampling report was provided to the property owner on _____. No specific remedial actions, however, were identified for the property. As part of the environmental studies conducted, _____ prepared an estimate of the total environmental costs that the property owner would incur in addressing the contamination on site in order to develop the property to its highest and best use. The property owner would be expected to incur _____ in costs. In addition, should contamination be discovered on the parcel during construction, the property owner will incur additional cleanup costs since the Department will seek cost recovery for any clean up or remediation costs resulting from such additional contamination.

Notwithstanding the results of the environmental investigation discussed above, BES recommends that Right of Way proceed with the acquisition of the subject property without seeking recovery of the estimated clean-up costs from the property owner. The basis for the decision not to seek cost-recovery is that the cleanup costs are not expected to significantly exceed normal construction costs, the contamination has the characteristics of ID27 and may be remediated on site and the contamination does not present a health risk. BES's determination of the environmental status of the parcel or Right of Way's acquisition of the parcel, however, does not affect NJDEP's jurisdiction over the property nor does it bind NJDEP in any way.

Attachment 14 - Environmental Summary Memoranda

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM**

SCENARIO #4

TO: Bureau of Right of Way

FROM: Bureau of Environmental Services

DATE:

PHONE:

SUBJECT: Route _____; Section _____; Parcel _____
Municipality _____; County _____
Owner:
Environmental Status: (Record Search/Visual Check/Sampling -
Contamination Present With Cost Recovery)
Environmental Clause: E

An environmental investigation, including field inspection, of the above referenced parcel was conducted by _____ on _____. After reviewing the New Jersey Department of Environmental Protection enforcement files, the National Priority List, the SRP Report, the Known and Suspected List and the Environmental Information Inventory issued by NJDEP, it has been determined by BES that the NJDEP has commenced an enforcement action (DEP file #) against the current or former owner(s) of the parcel. DEP has identified the following environmental concerns regarding this parcel (**list issues identified by DEP in the enforcement action**). These environmental concerns have been (**list the status of the DEP case and whether DEP is still investigating these concerns, whether they have required monitoring wells, etc**). (or ... it has been determined by BES that there are no past or present enforcement claims/cases initiated by NJDEP against either the current or former owner(s) of the parcel.)

During this field inspection , _____ was observed. As a result of these observations, the Department of Transportation conducted (**or hired _____ to conduct**) a Soil/Gas Survey (a Preliminary Environmental investigation) of this parcel on _____. This survey (investigation) identified several sources of soil contamination existing within the limits of the subject property. Specifically, _____ found _____ exceeding the NJDEP Non-Residential (Residential) Direct Contact Cleanup Criteria. A copy of the environmental sampling report was provided to the property owner on _____. Furthermore, as part of the environmental studies conducted on the parcel, _____ also estimated the total environmental costs that the property owner would reasonably incur to address the contamination on site in order to develop the property to its highest and best use. The property owner would be expected to incur _____ in cleanup costs. The Environmental Cost Estimate were provided to the property owner on _____ and copies of this document are attached.

Based upon the above summarized environmental investigation results, it is BES's opinion that Right if Way may proceed in the acquisition of this parcel with the understanding that the Department will seek to recover the above delineated cleanup or remediation costs from the property owner. BES's determination of the environmental status of the parcel or Right of Way's acquisition of the parcel, however, does not affect NJDEP's jurisdiction over the property nor does it bind NJDEP in any way.

Attachment 14 - Environmental Summary Memoranda

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM**

SCENARIO #5

TO: Bureau of Right of Way

FROM: Bureau of Environmental Services

DATE:

PHONE:

SUBJECT: Route _____; Section _____; Parcel _____
Municipality _____; County _____

Owner:

Environmental Status: (Record Search/Visual Check/History, USTs or Present
Use - Concerns - Future Recovery)

Environmental Clause: C

An environmental investigation, including a field inspection, of the above referenced parcel was conducted by _____ on _____. After reviewing the New Jersey Department of Environmental Protection enforcement files, the National Priority List, the SRP Report, the Known and Suspected List and the Environmental Information Inventory issued by NJDEP, it has been determined by BES that there are no past or present enforcement claims/cases initiated against either the current or former owner(s) of the parcel. However, due to the present use of the subject property, its environmental history and/or the presence of underground storage tanks ("USTs") and/or piping, there may be some type of contamination located within the parcel which may require additional future investigation or remediation.

During the field inspection no signs or potential sources of contamination were revealed. As a result of the property's prior use, past environmental history and/or the presence of USTs, however, contamination may still be encountered on this parcel during construction. (or In addition, as a result of **(list environmental concerns identified during the inspection)** observed during the visual inspection or **(list environmental concerns that indicated sampling was necessary)** concerns, the Department of Transportation conducted **(or hired _____ to conduct)** a Soil/Gas Survey (or Preliminary Environmental Investigation) of this parcel on _____. This survey (investigation) did not reveal any reasons to suspect the existence of contamination within this parcel. A copy of the environmental sampling report was provided to the property owner on _____.)

Based upon the above summarized environmental investigation results, it is BES's opinion that there are environmental contamination concerns associated with this parcel. BES's determination of the environmental status of the parcel or Right of Way's acquisition of the parcel, however, does not affect NJDEP's jurisdiction over the property nor does it bind NJDEP in any way. As a result, while BES does not anticipate that the acquisition of this parcel will require any remediation and/or cleanup of hazardous substances or wastes or removal of solid

waste, future investigation or remediation may become necessary if contamination is discovered on the parcel during construction. A cost recovery action may also be warranted should contamination be discovered on the site in the future.

Attachment 14 - Environmental Summary Memoranda

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM**

SCENARIO #6

TO: Bureau of Right of Way

FROM: Bureau of Environmental Services

DATE:

PHONE:

SUBJECT: Route _____; Section _____; Parcel _____

Municipality _____; County _____

Owner:

Environmental Status: (Record Search/Visual Check/ Sampling -
Contamination Present - Declaration of Environmental Restrictions)

Environmental Clause: F

An investigation of the above referenced parcel was conducted by _____ on _____. After reviewing the New Jersey Department of Environmental Protection enforcement files, the National Priority List, the SRP Report, the Known and Suspected List and the Environmental Information Inventory issued by NJDEP, it has been determined by BES that the NJDEP has commenced an enforcement action (DEP file # _____) against the current or former owner(s) of the parcel. DEP has identified the following environmental concerns regarding this parcel (**list issues identified by DEP in the enforcement action**). These environmental concerns have been (**list the status of the DEP case and whether DEP is still investigating these concerns, whether they have required monitoring wells, etc**). (or ... it has been determined by BES that there are no past or present enforcement claims/cases initiated by NJDEP against either the current or former owner(s) of the parcel.)

During the field inspection, _____ was observed. As a result of these observations, the Department of Transportation conducted (**or hired _____ to conduct**) a Soil/Gas Survey (a preliminary environmental investigation) of this parcel on _____. This survey (environmental investigation) identified several sources of soil contamination existing within the limits of the subject property. Specifically, _____ found _____ exceeding the NJDEP Non-Residential Direct Contact Cleanup Criteria. A copy of the environmental sampling report was provided to the property.

NJDEP has indicated, however, that it is likely that it would permit the (soil/water/both) contamination to be addressed by the execution of a Declaration of Environmental Restrictions (DER) for the subject parcel. Consequently, the total environmental clean up costs estimated for this parcel would be _____. This represents the cost for placement of the DER on the parcel in order for the property owner to be able to develop the parcel to its highest and best use.

Based upon the above summarized environmental investigation results, it is BES's opinion that Right of Way may proceed in the acquisition of this parcel with the understanding that the Department will seek to recover the above delineated clean up costs from the property owner. BES's determination of the environmental status of the parcel or Right of Way's acquisition of the parcel, however, does not affect NJDEP's jurisdiction over the property nor does it bind NJDEP in any way. Furthermore, it is also understood that the above stated information shall be provided to the appraiser of the parcel and that the appraiser shall take into consideration the supported market effect which the placement of a DER would have on the property (parcel and remainder) (before and after) as of the date of valuation.

Attachment 14 - Environmental Summary Memoranda

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM**

SCENARIO #7

TO: Bureau of Right of Way

FROM: Bureau of Environmental Services

DATE:

PHONE:

SUBJECT: Route _____; Section _____; Parcel _____
Municipality _____; County _____

Owner:

Environmental Status: (Record Search/Visual Check/Dirty Remainder - No Concern)

Environmental Clause: B

An environmental investigation, including a field inspection, of the above referenced parcel was conducted by _____ on _____. After reviewing the New Jersey Department of Environmental Protection enforcement files, the National Priority List, the SRP Report, the Known and Suspected List and the Environmental Information Inventory issued by NJDEP, it has been determined by BES that the NJDEP has commenced an enforcement action (**DEP file # _____**) against the current or former owner(s) of the parcel. There is no indication, however, that contamination exists within the portion of the parcel to be acquired by DOT ("taking area") which would require further investigation or other affirmative action be taken pursuant to DEP guidelines or regulations. (or ... it has been determined by BES that there are no past or present enforcement claims/cases initiated by NJDEP against either the current or former owner(s) of the parcel. Furthermore, there is no indication, however, that contamination exists within the portion of the parcel to be acquired by DOT ("taking area") which would require further investigation or other affirmative action be taken pursuant to DEP guidelines or regulations.)

During this field inspection no signs or potential sources of contamination were revealed within the taking area. In addition, the present use of the property and its environmental history do not indicate the likelihood of potential contamination which would require additional investigation and/or remediation of the taking area. (or In addition, as a result of **(list environmental concerns identified during the inspection)** observed during the visual inspection or **(list environmental concerns that indicated sampling was necessary)** concerns, the Department of Transportation conducted **(or hired _____ to conduct)** a Soil/Gas Survey (or Preliminary Environmental Investigation) of this parcel on _____. This survey (investigation) did not reveal any reasons to suspect the existence of contamination within this parcel. Furthermore, the present use of the property and its environmental history do not indicate the likelihood of potential contamination which would

require additional investigation and/or remediation. A copy of the environmental sampling report was provided to the property owner on _____.

Based upon the above summarized environmental investigation results, it is BES's opinion that there are no environmental contamination concerns associated with this parcel. BES's determination of the environmental status of the parcel or Right of Way's acquisition of the parcel, however, does not affect NJDEP's jurisdiction over the property nor does it bind NJDEP in any way. In addition, should contamination be discovered within the acquisition area during construction, the Department will seek cost recovery for any clean up or remediation costs resulting from such contamination. As a result, although BES anticipates that the acquisition of this parcel will not require any remediation and/or cleanup of hazardous substances or wastes or removal of solid waste, the Bureau of Right of Way should be aware that a cost recovery action may become necessary in the future.

Attachment 14 - Environmental Summary Memoranda

“CLEAN” LETTER

[Date]

**Name and Address of
Property Owner**

Re: Route , Section , Parcel
[Name of municipality], County
[Name of construction project]

Dear :

It is the understanding of the New Jersey Department of Transportation (NJDOT) that the above-referenced property is owned by you. This property is located within the proposed site of the **[name of project]** and is being acquired by NJDOT in accordance with the Eminent Domain Act.

Each property to be acquired by NJDOT is appraised according to law by a competent real estate appraiser. Based on the appraisal which NJDOT has obtained, NJDOT has established its estimate of just compensation for your property. This price is in the amount of NJDOT's approved appraisal of the Fair Market Value of the property.

For your analysis and to assist you in a better understanding of NJDOT's offer, enclosed is a copy of the appraisal report for your property that was prepared by **[name of appraiser]**. The appraisal report provides the applicable comparable sales that were relied on by the appraiser and explains the valuation methods and procedures employed in arriving at the value conclusion. The components of NJDOT's offer are as follows:

1.	Value of property in area to be acquired	_____	_____	_____
		Land	Improvements	Total
2.	Loss of value (damages) to remaining property outside of area to be acquired			_____
	Total Fair Market Value			_____

The following improvements are located in the taking area and are considered to be realty:

The following improvements have been determined to belong to the tenant and are valued at \$_____.

Based on NJDOT's environmental screening of your property, there appears to be no reason for further investigation or any cleanup or remediation as required by the New Jersey Department of Environmental Protection. If you know of any contamination or suspect that any is present on your property, it is essential that you provide NJDOT with any information you have about the environmental condition of your property so that a proper and fair evaluation may be made.

It is NJDOT's position that, under state law, NJDOT is not responsible for the cleanup and remediation and removal of any contamination or solid waste which pre-existed the date of Closing. (A copy of the applicable statute will be provided upon your request.) If any contamination or solid waste should be discovered on your property during construction of the proposed transportation project, you will be notified orally or in writing. NJDOT would then seek reimbursement from you for the costs incurred to remediate the property but not in excess of the expenses that you, as the property owner, would have incurred to clean up or remediate the contamination. Therefore, whether the purchase of your property is accomplished through agreement or through condemnation proceedings, the respective documents will contain language stating NJDOT's position regarding your environmental responsibility as the current owner as discussed above. Copies of the environmental provisions in the standard purchase agreement and condemnation complaint are enclosed for your information.

If you have any questions regarding the offer to purchase the property on the enclosed map or regarding any condition of purchase, please contact the following persons at NJDOT: (Name and telephone number of designated NJDOT employee).

Very truly yours,

Attachment 14 - Environmental Summary Memoranda

“DIRTY” LETTER

[Date]

**Name and Address of
Property Owner**

Re: Route , Section , Parcel
[Name of municipality], County
[Name of construction project]

Dear :

It is the understanding of the New Jersey Department of Transportation (NJDOT) that the above-referenced property is owned by you. This property is located within the proposed site of the **[name of project]** and is being acquired by NJDOT in accordance with the Eminent Domain Act.

Each property to be acquired by NJDOT is appraised according to law by a competent real estate appraiser. Based on the appraisal which NJDOT has obtained, NJDOT has established its estimate of just compensation for your property. This price is in the amount of NJDOT's approved appraisal of the Fair Market Value of the property.

For your analysis and to assist you in a better understanding of NJDOT's offer, enclosed is a copy of the appraisal report for your property that was prepared by **[name of appraiser]**. The appraisal report provides the applicable comparable sales that were relied on by the appraiser and explains the valuation methods and procedures employed in arriving at the value conclusion. The components of NJDOT's offer are as follows:

1.	Value of property in area to be acquired	_____	_____	_____
		Land	Improvements	Total
2.	Loss of value (damages) to remaining property outside of area to be acquired			_____
	Total Fair Market Value			_____

The following improvements are located in the taking area and are considered to be realty:

The following improvements have been determined to belong to the tenant and are valued at \$_____.

You should be aware that your property was valued as if were remediated, where any contamination is present, in compliance with the requirements of the New Jersey Department of Environmental Protection (NJDEP) and subject to any condition as to use that might be imposed under the NJDEP program governing Declarations of Environmental Restrictions on properties as a result of pre-existing contamination in order to develop the property to its Highest and Best Use, as determined by the appraisal. If you know of any additional contamination or suspect that any other is present on your property, it is essential that you provide NJDOT with any information you have about the environmental condition of your property so that a proper and fair appraisal may be made.

Based on NJDOT's environmental screening of your property, further investigation and cleanup or remediation in compliance with New Jersey Department of Environmental Protection ("NJDEP") guidelines and regulations appear necessary. NJDOT contracted with **[name of environmental consulting firm]** to conduct samplings on your property during **[month and year 199]**. The findings of the investigation are discussed in the enclosed report dated **[date of report]**. The report has been provided to NJDEP.

Because the samplings showed **[insert number of samplings]** locations with contaminant concentrations above applicable NJDEP Soil Cleanup Criteria, NJDEP will most likely require additional studies to be conducted so as to delineate the areas of concern. It is NJDOT's position that, under state law, NJDOT is not liable for the cleanup and remediation and removal of any discharge which pre-existed the date of Closing as provided by the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11(d)(4). (A copy of this statute will be provided upon request.) It also should be understood that the NJDOT's acquisition of your property does not in any way affect the jurisdiction of NJDEP over your property and does not bind NJDEP in any way.

The estimated cost for further study, investigation and cleanup or remediation of your property is \$_____. The estimate has not been certified by NJDEP. It is based upon the conclusions of the consultant's report with present NJDEP requirements. The report contains a breakdown of the estimated costs as well as information regarding the contamination that has been identified on the property. The estimate represents the costs that you, as the property owner, would incur to clean up or remediate the contamination based upon current information and is subject to change upon actual excavation of the site.

If sufficient time allows, NJDOT may not object to having you perform the required additional investigation and possible cleanup or remediation in a timely manner and in compliance with NJDEP requirements. The cost of cleanup or remediation may be held in escrow to assure that the funds will be available. These funds may be used by you to perform the cleanup/remediation, with NJDOT approving the invoices as a precondition to the release of the funds.

Should there not be sufficient time or should you decline to perform the cleanup/ remediation, then NJDOT will proceed to do the work. Whether the purchase of your property can be accomplished through agreement or through condemnation proceedings, the respective documents will contain language stating NJDOT's position regarding on your environmental

responsibility as the current owner as discussed above. Copies of the environmental provisions in the standard purchase agreement and condemnation complaint are enclosed for your information.

If you and NJDOT cannot agree on a mutually acceptable agreement, then, upon filing a condemnation complaint, NJDOT will deposit the full amount of the estimated fair market value of the property into court. NJDOT will, however, seek that the Clerk of the Superior Court keep on deposit an amount equal to the estimated or actual cleanup or remediation, including but not limited to oversight costs, and will oppose any efforts to withdraw an amount from the Court that would reduce the sum on deposit below the estimate until the issue of environmental liability and remediation is resolved. If the issue of liability cannot be amicably resolved, then NJDOT may pursue various other legal remedies that may be available.

If you have any questions regarding the offer to purchase the property on the enclosed map or regarding any condition of purchase, please contact the following person at NJDOT: **[name and telephone number of designated NJDOT employee]**.

Very truly yours,

Attachment 14 - Environmental Summary Memoranda

'POSSIBLY DIRTY' LETTER

[Date]

**Name and Address of
Property Owner**

Re: Route , Section , Parcel
[Name of municipality]
[Name of construction project]

Dear :

It is the understanding of the New Jersey Department of Transportation (NJDOT) that the above-referenced property owned by you. This property is located within the proposed site of the **[name of project]** and is being acquired by NJDOT pursuant to its statutory authority under the Eminent Domain Act.

Each property to be acquired by NJDOT is appraised according to law by a competent real estate appraiser. Based on the appraisal which NJDOT has obtained, NJDOT has established its estimate of just compensation for your property. This price is in the amount of NJDOT's approved appraisal of the Fair Market Value of the property.

For your analysis and to assist you in a better understanding of NJDOT's offer, enclosed is a copy of the appraisal report for your property that was prepared by [name of appraiser]. The appraisal report provides the applicable comparable sales that were relied on by the appraiser and explains the valuation methods and procedures employed in arriving at the value conclusion. The components of NJDOT's offer are as follows:

- | | | | | |
|----|---|-------|--------------------|-------|
| 1. | Value of property in
area to be acquired | _____ | _____ | _____ |
| | | Land | Improvements Total | |
| 2. | Loss of value (damages)
to remaining property
outside of area to be
acquired | | | _____ |
| | Total Fair Market Value | | | _____ |

The following improvements are located in the taking area and are considered to be realty:

The following improvements have been determined to belong to the tenant and are valued at \$_____.

Based on NJDOT's environmental screening of your property, it does not appear that further investigation and cleanup or remediation in compliance with New Jersey Department of Environmental Protection ("NJDEP") guidelines and regulations are necessary. However, due to the present use of the subject property, its environmental history and/or the presence of underground storage tanks and/or piping **[delete non-relevant language and modify to suit particular circumstances]**, there is a reasonable likelihood that there may be some type of contamination which may require future investigation and/or remediation although NJDOT's investigation did not reveal actionable levels within the area of the proposed acquisition. If you know of any contamination or suspect that any is present on your property, it is essential that you provide NJDOT with any information you have about the environmental condition of your property so that a proper and fair appraisal may be made.

It is NJDOT's position that, under state law, NJDOT is not liable for the cleanup and remediation and removal of any discharge which pre-existed the date of Closing as provided by the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11(d)(4). (A copy of the statute will be provided upon request.) If any contamination or solid waste should be discovered on your property during construction of the proposed transportation project, you will be notified orally or in writing. NJDOT would then seek reimbursement from you for the costs incurred to remediate the property but not in excess of those expenses that you as the property owner would have incurred to clean up or remediate the contamination. If the issue of liability cannot be amicably resolved, then NJDOT may pursue various legal remedies that are available.

Whether the purchase of your property is accomplished through agreement or through condemnation proceedings, the respective documents will contain language stating NJDOT's position regarding your environmental responsibility as the current owner as discussed above. Copies of the environmental provisions in the standard purchase agreement and condemnation complaint are enclosed for your information. It also should be understood that the acquisition of your property by NJDOT does not in any way affect the jurisdiction of NJDEP over your property and does not bind NJDEP in any way.

If you have any questions regarding the offer to purchase the property on the enclosed map or regarding any condition of purchase, please contact the following person at NJDOT: [name and telephone number of designated NJDOT employee].

Very truly yours,

8.7 Environmental Permitting

Introduction

The following guidance outlines the various general steps in the processing of environmental permits. It is provided to assist in understanding how and when permits are obtained and who is responsible. This guidance does not provide the detailed information about all the various regulations associated with these environmental permits. More specific information on permit regulations and applications can be found in the attached “Guidance for Environmental Permits” or by contacting a Bureau of Environmental Services “E” Team Leader.

8.7.1 General Permit Processing Guidelines

Permit Identification

During the initial scheme development phase of the Scope Development process, a determination will be made by the E-Team leader if wetlands or waterways could be affected by the project. A preliminary identification of the need for permits such as Coastal Area Facilities Review Act (CAFRA), Hackensack Meadowlands Development Commission (HMDC), Pinelands, D&R Canal Commission, Army Corps of Engineers, Coast Guard, DEP Waterfront Development and Stream Encroachment will also be made at this time.

If wetlands will be affected, it will be necessary to make a preliminary evaluation as to whether they will become a significant issue during the permit process. During the development of the initial project schemes, it will be necessary to compile documentation on the feasibility of the schemes and their estimated effects on wetlands. The goal should be to demonstrate avoidance and minimization of wetland impacts. This information will be needed later for the permit applications.

During the development of the initial schemes, a determination should also be made if there will be other significant issues that could affect permit approval. For projects that will require individual freshwater or tidal wetlands permits, CAFRA permits, individual Army Corps or Coast Guard permits, an early coordination meeting should be held with the regulatory agencies to discuss concerns, constraints and suggested alternatives for evaluation. As a guideline, projects with minimal impacts that could qualify for general or nationwide permits will not usually need an early coordination meeting, while those that are controversial, involve large impacts or wetland mitigation could benefit from such a meeting. The project manager should arrange these meetings with involvement of the appropriate E-Team staff.

Wetland Delineation

After development of the initial schemes, the E-Team leader should determine if a wetland delineation is necessary and if suitable locations for wetland mitigation or flood storage will have to be located. It should also be determined if this work, along with subsequent permit applications, will be performed in-house or by consultants. The schedule for preparation, submission and receipt of permits should be formulated and the contractual process for engaging consultants, if necessary, should begin. In developing the work effort and schedule for the project, the on-site delineation of wetlands should be coordinated with the projects

topographic survey so that the wetland boundary can be located at the same time. Use of Global Positioning Technology is encouraged.

The search for suitable wetland/flood storage mitigation sites should begin after the initial scheme selection so that these efforts are conducted within the environmental documentation and ROW processes, and the selected mitigation site can be included in the permit application.

Permit Application Preparation

The preparation of the actual permit application will involve the collection of various types of information and analyses. Some of this information will be obtained during the Scope Development stage including identification of sensitive environmental resources, project need, alternatives and estimated impacts. At the completion of the Scope Development stage, the preferred alternative will be identified and the specific impacts and exact types of permits that are needed (e.g., general or individual Freshwater Wetlands) can be determined. In most cases, the preparation and submission of permit applications will occur during the Design Development stage. However, on certain federally funded projects that require an Environmental Impact Statement (EIS) and an Individual Section 404 and/or 10 permit from the Army Corps of Engineers, the FHWA has developed a procedure that integrates the NEPA process with the permit process (referred to as the Red Book). In these situations, the permit application should be submitted to the Army Corps of Engineers during the preparation of the Environmental Document so that both can be processed simultaneously. The same general process should be applied to cases where freshwater wetland permitting has been delegated to DEP.

For federally funded projects that are Categorical Exclusions and require an Army Corps of Engineers Permit (because they affect navigable waters), both the FHWA approved Categorical Exclusion determination and the Environmental Reevaluation (if appropriate) should be sent to the Army Corps in order to obtain their concurrence that the project qualifies for Nationwide Permit #23.

The information needed for permit applications varies with the type of permit being applied for but there are some items that are commonly required. All applications require a strong and convincing description of project need and alternatives to avoid or minimize impacts. Most applications will require a discussion of the environmental resources that are affected along with an analysis of the measures taken to avoid and minimize impacts. If wetlands are affected by a project, their boundary must be shown on the plans and the acreage of disturbance should be calculated. Most permits require that adjacent property owners and local governments be notified of the proposed activity. The level of engineering detail that is required for an application can range from the "footprint" of disturbance for a freshwater wetlands general permit to detailed hydraulic and hydrologic calculations for a DEP Stream Encroachment permit. The E-Team leader can provide advice on what is adequate. Some permits, such as DEP Stream Encroachment, CAFRA and Waterfront Development require a fee, while others like the Army Corps and DEP Freshwater Wetlands do not.

In the case of a project requiring multiple permits, it is usually desirable to submit them at the same time. However, in some situations such as when a greater level of engineering detail is required for calculating the effects of a bridge on a stream's hydraulics, it may be best to submit other permits, such as Freshwater Wetlands, before waiting for the engineering to be

completed. Generally, Stream Encroachment permits will require the greatest level of engineering and this application will typically be submitted during the drainage design stage. More detailed engineering information will also be needed to address the stormwater concerns (quantity and quality) that are associated with the Stream Encroachment Review.

Another area that may require additional engineering and/or study is the development of wetland mitigation plans. Depending on the site, groundwater sampling or detailed flood studies may have to be performed before mitigation plans can be developed. The area of proposed mitigation also requires a screening to identify potential contamination and a Section 106 review. BES should determine if mitigation can be achieved through the use of wetland banking. It should be noted that the NJDEP can approve a Freshwater Wetland Permit application without a mitigation plan, but they will not usually allow construction to begin until a plan is approved.

The actual assembling of the information needed for a permit application can be performed by a consultant or with in-house staff. The completed application should be reviewed for quality and completeness by the E-Team leader. If a wetland mitigation plan is involved, this should be sent to the Policy Support and Special Services section of BES to be reviewed for quality, feasibility and potential for success. The Project Manager will obtain the Program Managers signature on completed applications.

Upon transmittal of the application to the appropriate regulatory agency, the E-Team will be responsible to track the progress of the application with respect to compliance with regulatory timeframes for review and to keep the Project Manager informed as to the status of the application.

Depending on the type of permit, there are specific time frames for action by the regulator and the applicant. These are not listed here and can be found in the governing regulations. The Project Manager, with the assistance of BES, should integrate these time frames into the projects schedules.

During the permit review, the regulatory agencies may request additional information and these requests should be directed to the Project Manager. The Project Manager should determine the unit that can provide the requested information and determine a schedule for providing a response. The Project Manager will also be responsible to determine if there are any issues that need to be resolved by higher management. The Bureau of Environmental Services will provide advice and responses to the Project Manager in regards to environmental issues.

Projects will not be awarded for construction until all permits are received.

Permit Conditions and Monitoring

Upon issuance of a permit, the Project Manager should have the terms and conditions reviewed by the E-Team and other units as appropriate to determine if they are acceptable. Particular attention should be given to conditions that affect constructibility. If acceptable, a copy should be given to the Design Engineer so that the terms and conditions can be included in the projects plans and specifications, the environmental plan sheet and shown as Environmentally Sensitive Parcels on ROW plans. The Project Manager, with advice from the

E-Team, will review the Initial Design Submission and the final Design Submission Plans to determine if they are in compliance with the permit requirements. In some cases, it may be necessary to request modifications to the permit and this should be identified and performed as soon as practicable.

When a project advances to construction, there typically are notices that must be sent to the regulatory agencies advising them that construction is about to start. The Project Manager should insure that these notices, as well as completion notices, are mailed by the Resident Engineer. During construction, particular attention must be given to avoid unauthorized disturbances and to adequately control erosion and sedimentation. The Project Manager should also track the permit expiration dates and the construction schedule and request permit extensions when necessary.

If during construction there is a change in the scope of impacts or the ability to meet a condition, the regulatory authority must be notified and, if required, a permit modification obtained.

If wetland mitigation was required as a condition of a permit, there is typically a three or five year monitoring period in order to determine if the new wetlands are successfully established. The Bureau of Environmental Services will perform this monitoring and will provide reports to the Project Manager and the regulatory agencies.

If the site is deemed successful by the regulatory agency, the Project Manager initiates the process to transfer the property to the local municipality, county, NJDEP or a non-profit land-holding agency such as the National Lands Trust.

8.7.2 Permit Specification Process Guidelines

The following procedures are useful for general guidance only. Contact the Bureau of Environmental Services (BES) for a detailed analysis of permit requirements for any particular project.

Freshwater Wetlands Individual Permits - required if any of the conditions for Statewide General Permits are not met.

Specific activities requiring permits

- A. The removal, excavation, disturbance or dredging of soil, sand, gravel, or any aggregate material.
- B. The drainage or disturbance of the water level or water table.
- C. The dumping, discharging or filling with any materials.
- D. The driving of pilings.
- E. The placing of obstructions.
- F. The destruction of plant life.

Process for permit applications

- A. Application contents

- 1) A completed LURP-1 form.
 - 2) Construction plans showing wetlands boundary. Maps showing freshwater wetlands are available in BES. However, in all cases, wetlands must be delineated in the field to verify these boundaries.
 - 3) Written description of the project.
 - 4) Description of fill material.
 - 5) An alternatives analysis describing feasible alternatives considered and rejected.
 - 6) The U.S. Geological Survey (U.S.G.S.) quadrangle of the area showing the N.J. State Plane Coordinates.
 - 7) Certified mail receipts that verifies that a copy of application was provided to municipal agencies and adjacent landowners.
 - 8) Copy of legal notice published in local newspaper.
 - 9) Description of ecological resources.
 - 10) A copy of the Letter of Interpretation approved by NJDEP.
- B. Application fee - No fee is required for projects on the state highway system. However, county and municipal roads must pay a fee equal to \$1,000 plus \$250 per 0.1 hectare of wetland affected.
- C. A detailed wetland mitigation plan which provides 0.8 hectares of mitigation for every 0.4 hectare impacted.
- D. Submission - The permit application package will be prepared either by BES, the Lead Unit, a consultant or any combination thereof. In all cases the application package will be reviewed by and submitted through BES.

(Further guidance can be obtained in N.J.A.C. 7:7A et seq. administered by NJDEP. These regulations are available in BES.)

Freshwater Wetlands Statewide General Permits (GP) - are required for any disturbance in a freshwater, non-tidal wetland or open water of less than 0.4 hectare.

Specific activities requiring permits

- A. There are 25 statewide general permits which can be issued, however, those general permits most applicable to NJDOT projects are:
- 1) GP#1 - The repair, rehabilitation, replacement, maintenance or reconstruction of any structure, fill, roadway, drainage ditch, stormwater management facility, etc. existing prior to 7/1/88.
 - 2) GP#4 - Hazardous waste cleanup activities.
 - 3) GP#6 - Activities in isolated wetlands (wetlands not connected to surface water).
 - 4) GP#7 - Activities in man-made ditches or swales.
 - 5) GP#10 - Minor road crossing fills and expansion of existing road crossing fills (less than 30 meters in length).
 - 6) GP#11 - Construction of stormwater outfall structures and stormwater conveyance structures.

- 7) GP#12 - Surveying activities.
- 8) GP#20 - Bank stabilization activities.

Process for permit applications

- A. Application contents
 - 1) A completed LURP-1 form.
 - 2) Complete wetland delineation. Maps showing freshwater wetlands are available in BES. However, in all cases, wetlands must be delineated in the field to verify these boundaries.
 - 3) The appropriate U.S.G.S. quadrangle and N.J. State Plane Coordinates.
 - 4) Confirmation that the project will not affect endangered species.
 - 5) Photographs of the wetland areas.
 - 6) Certified mail receipts that a copy of the application was provided to municipal agencies and adjacent landowners. A legal notice in a newspaper can be substituted for notification to landowners if the project is more than 0.8 kilometers in length.
- B. Application fee - No fee is required for projects on the state highway system. However, county and municipal roads must pay \$250 for the first general permit and \$100 for each additional GP application.
- C. Submission - The permit application package will be prepared either by BES, the Lead Unit, a consultant or any combination thereof. In all cases the application package will be reviewed by and submitted through BES. (Note: For projects in the State Pinelands Area, submit applications to the Pinelands Commission.)

(Further guidance can be obtained in N.J.A.C. 7:7A et seq. administered by NJDEP. These regulations are available in BES.)

Freshwater Wetlands Transition Area Waivers - are required for any disturbance within 15 to 45 meters of a wetland, depending on the value of the wetland. Transition areas are also commonly known as wetland buffers.

Specific activities requiring waivers (also a type of permit).

- A. Removal, excavation, or disturbance of soil.
- B. Dumping or filling with any materials.
- C. Erection of structures.
- D. Placement of pavements.
- E. Destruction of plant life.

Process for waiver applications

- A. Application contents
 - 1) A completed LURP-1 form.
 - 2) A detailed written description of the project including its location showing the lot, block and address.
 - 3) The appropriate U.S.G.S. quadrangle with N.J. State Plane Coordinates of the project.
 - 4) The construction plans including all structures and the freshwater wetlands boundary.
 - 5) Certified mail receipts showing that copies of the application were distributed to municipal agencies.
 - 6) Certified mail receipts showing that notices were sent to municipal construction officials, environmental agencies and all landowners within 60 meters of the portion of the right-of-way near the wetlands and transition area impacts.
 - 7) Written consent by the applicant to allow access to the property by representatives of NJDEP.
- B. Application fee - No fee is required for projects on the state highway system. However, county and municipal roads must pay \$250 for the first waiver application and \$100 for each additional application.
- C. Submission - The permit application package will be prepared either by BES, the Lead Design Unit, a consultant or any combination thereof. In all cases the application package will be reviewed by and submitted through BES.

(Further guidance can be obtained in N.J.A.C. 7:7A et seq. administered by NJDEP. These regulations are available in BES.)

Army Corps of Engineers Individual Permits - are required for the discharge of dredged or fill material (generally larger than an acre in size) in tidal wetlands, wetlands within 300 meters of tidal wetlands and navigable waters.

Specific activities requiring permits

- A. Excavation activities that impact tidal wetlands or navigable waters.
- B. The placement of pilings in tidal wetlands or navigable waters.
- C. The placement of dredged or fill material in tidal wetlands or navigable waters.

Process for permit applications

- A. Application contents
 - 1) A completed standard application form (ENG form 4345).
 - 2) A complete description of the proposed activity.
 - 3) The construction plans showing the wetlands boundary and extent of impacts.
 - 4) A completed Environmental Questionnaire (NAP form 1653).
 - 5) Photographs of the wetlands to be impacted.

- B. Application fee - No fee is required for applications submitted by government agencies.
- C. Mitigation - Wetland impacts must be mitigated at a 2:1 ratio. A detailed mitigation plan must be submitted for approval.
- D. Submission - The permit application package will be prepared either by BES, the Lead Design Unit, a consultant or any combination thereof. In all cases the application package will be reviewed by and submitted through BES.

(Further guidance can be obtained in 33 CFR Parts 320 through 330 published in the Federal Register on November 13, 1986. A copy is available in BES.)

Army Corps of Engineers Nationwide Permits (NP) - are required for the discharge of dredged or fill material (generally less than 0.4 hectares in size) in tidal wetlands or wetlands within 300 meters of tidal wetlands.

Specific activities requiring permits

- A. There are 40 nationwide permits which can be issued, however, those nationwide permits most applicable to NJDOT projects are:
 - 1) NP#1 - The placement of aids to navigation.
 - 2) NP#3 - The repair, rehabilitation, or replacement of any previously authorized structure or fill.
 - 3) NP#6 - Surveying and boring activities.
 - 4) NP#13 - Bank stabilization activities.
 - 5) NP#14 - Fills for minor road crossings.
 - 6) NP#15 - Discharges of material incidental to the construction of bridges across navigable waters.
 - 7) NP#18 - Minor discharges which do not exceed 19 cubic meters.
 - 8) NP#23 - Approved Level of Actions (LOA) categorical exclusions.
 - 9) NP#26 - Discharges of dredged or fill material into headwaters and isolated waters.
 - 10) NP#33 - Temporary structures and discharges.
 - 11) NP#38 - Cleanup of hazardous and toxic waste.

Process for permit applications

- A. Application contents
 - 1) For most NPs, all that is required is a letter with a project description, the USGS quadrangle of the area, the National Wetlands Inventory Map of the area, and preliminary plans showing the wetlands line with impacts.
 - 2) For NP#23, include the completed LOA assessment.
 - 3) For NP numbers 13, 14, 18, 26, 33, and 38, a pre-discharge notification is also required. This includes written notification by certified mail to the Office of New Jersey Heritage, Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries Service.

- B. Application Fee - No fee is required for application submitted by government agencies.
- C. Submission - The permit application package will be prepared either by BES, the Land Unit, a consultant or any combination thereof. In all cases the application package will be reviewed by and submitted through BES.

(Further guidance can be obtained in 33 CFR Part 330 published in the Federal Register on November 22, 1991. A copy is available in BES.)

Stream Encroachment Permits are required for any construction, installation or alteration of any structure or permanent fill along, in or across the channel or flood plain of any stream or any alteration of the stream itself. The purpose of the regulation is to prevent increased flooding, minimize the impacts and effects of construction in existing flood plains and to protect the stream corridor environment. [Refer to 1) NJAC 7:13-1.1 et. seq., NJDEP Flood Hazard Area Control Act Rules, March 20, 1995 and 2) NJDEP Technical Manual for Stream Encroachment, May, 1993.]

Specific Activities Requiring Permits

Activities as described under Items A, B or C below fall under the jurisdiction of the NJDEP Flood Hazard Area Control Act Rules. Requirements for Stream Encroachment Approval should be investigated for such activities.

- A. All development within the larger of the following areas along water courses with drainage areas exceeding 20 hectares shall require a Stream Encroachment permit unless specifically exempted as provided in NJAC 7:13-1.3:
 - 1) The floodplain or areas within the state delineated flood hazard area design flood limits, as defined in NJAC 7:13-1.2;
 - 2) 7.5 meters back from the top of the channel bank; or
 - 3) 15 meters back from the top of the channel bank along waters:
 - a. Containing deposits of acid-producing soils as defined in NJAC 7:13-5.10;
 - b. Classified as Category One, FW-1 trout-associated or FW-2 trout associated;
 - c. Which are a critical part of the habitat supporting a threatened or endangered species of plant or a current population of any species of threatened or endangered animal on a temporary basis for any purpose such as resting, breeding or feeding during any portion of its life cycle; or
 - d. Located within documented, historic habitat for threatened or endangered species of animals, which habitat remains suitable for

breeding, resting or feeding by those species of animal during any portion of its life cycle.

- B. Stormwater outfall structures (and other point sources of stormwater) discharging within the regulated floodplain or flood hazard area or in an area which could affect the quantity or quality of the receiving water body. Discharging of stormwater in these areas shall conform to engineering and environmental standards for Stormwater Management as set forth in NJAC 7:13-2.8.
- C. Activities within or adjacent to any watercourse, with a defined bed and bank, regardless of drainage area, as defined in the Flood Hazard Area Control Act Rules. These activities shall conform to Environmental Standards as set forth in NJAC 7:13-2.1 et. seq.

Process for Permit Applications

- A. Application contents
 - 1) A completed Land Use Regulation Program (LURP-1) Application form.
 - 2) The Engineering Data Sheet (DCR-045). This form will serve as a guide for classifying a project into a minor or major category.
 - 3) The Checklist for Administrative Completeness.
 - 4) The application review fee.
 - 5) Two (2) copies of the Engineer's Report, including:
 - a. USGS location map.
 - b. Color site photographs.
 - c. Description of work and site conditions.
 - d. Engineering calculations (Major Project), including hydrology, hydraulics, 20% net fill, stormwater management, stability analysis for retaining walls over four feet high and fee computation.
 - 6) Three (3) copies of the Environmental Report.
 - 7) Evidence of Local and Public Notifications, for Major Projects.
 - 8) Six (6) sets of signed, sealed and dated plans.
 - 9) Computer diskette containing all backwater analysis or other pertinent computer generated files.
- B. Application Fee
 - 1) Minor Encroachment - Fee of \$300.00 for each project element, such as a headwall, utility crossing, stream cleaning or dredging.

- 2) Major Encroachment - Fee of \$2,000.00 for each project element such as a retaining wall, bridge, culvert, channel improvement or relocation and other projects in or along the channel or portion of channel up to 300 meters, detention basins, and fill or structures requiring review for compliance with 20% net fill limitations.

The fee breakdown is more specifically detailed in the Technical Manual for Stream Encroachment, May 1993, published by the NJDEP.

C. Submission

The permit application package will be prepared either by the consultant or the NJDOT lead unit or a combination thereof. The Bureau of Roadway Design Standards and Services - Drainage Unit, will provide technical and administrative assistance to the Lead Design Unit to prepare the necessary hydrologic and hydraulic analysis and other information required for submission.

Coastal Area Facility Review Act (CAFRA) Permits - are required for certain types of development in the "Coastal Area" (see Figure A).

Specific activities requiring permits

- A. Any public development on land within 45 meters of the mean high water line except for: 1) the maintenance, repair, or replacement of existing water, petroleum, sewage or natural gas pipelines, and associated facilities located completely within paved roadways on paved, gravel or cleared maintained right of way, and 2) the maintenance, repair or replacement of existing and functional railroads and related structures located completely within cleared and maintained right of way.
- B. Any public development in the Coastal Area greater than 45 meters from the mean high water line except for: 1) the construction or extension of a new road, sanitary sewer pipeline, storm sewer system, petroleum pipeline or natural gas pipeline of less than 365 meters in length, 2) the maintenance, repair or replacement of existing water, petroleum, sewage or natural gas pipelines, and associated facilities located completely within paved roadways or paved gravel, or cleared maintained right of way, and 3) the maintenance, repair or replacement of existing and functional railroads, and related structures located completely within cleared and maintained right of way.

Figure A

Process for permit applications

A. Application contents

- 1) Completed LURP-1 permit form.
- 2) 15 copies of an Environmental Impact Statement, the contents of which shall address the appropriate coastal rules.
- 3) Copy of any Tidelands Grant, Lease or License or application of such.
- 4) Verification that certified mail notices with copies of the LURP-1 application and site plan were forwarded to appropriate county or municipal agencies and adjacent landowners. Projects also within the Pinelands Area must contain verification that a copy of the application package has been submitted to the Pinelands Commission.
- 5) Copies of the public notice mentioned in #4.
- 6) 15 copies of construction plans showing the wetlands delineation and the wetland impact area.
- 7) Photographs of the project site.

B. Application fee based on construction cost

- 1) \$0 to \$50,000 - \$1,450 + ½ of one percent of construction cost.
- 2) \$50,001 to \$100,000 - \$1,700 + one percent of construction cost.
- 3) \$100,001 to \$200,000 - \$2,200 + 1/4 percent of construction cost.
- 4) \$200,001 to \$350,000 - \$3,450 + ½ percent of construction cost.
- 5) Greater than \$350,000 - \$5,700 + one percent of construction cost.

(NOTE: the maximum fee that can be charged is \$30,000)

- C. Submission - The permit application package will be prepared either by BES or the designer. In all cases the application package will be reviewed by and submitted through BES.
- D. DEP may, at its discretion, hold a non-adversarial public hearing if it deems it important.

(Further guidance can be obtained in N.J.A.C. 7:7 et seq. administered by NJDEP. These regulations are available in BES.)

Waterfront Development Permits - are required for any activity occurring on land up to the mean high water line within the "coastal area" (see Figure A), and within the Hackensack Meadowlands Development District (HMDC); and up to the mean high water line and 150 meters upland (with limitations) of this line for the rest of the state.

Specific activities requiring permits

- A. Dredging, excavation or filling.
- B. Construction, reconstruction or alteration of a dock, wharf, pier, bulkhead, breakwater, groin, jetty, seawall, bridge, piling, mooring dolphin, pipeline, cable, or any other similar structure.

- C. In areas other than the coastal area and HMDC, the reconstruction, conversion, alteration or enlargement of any existing structure located between 30 to 50 meters from the mean high water line and which results in enlargements greater than 1,500 meters.

Process for permit applications

A. Application contents

- 1) Completed standard construction LURP-1 permit form.
- 2) 10 copies of a Compliance Statement, the contents of which shall address the appropriate coastal rules.
- 3) Copy of any Tidelands Grant, Lease or License or application of such.
- 4) Verification that certified mail notices with copies of the LURP-1 application and site plan were forwarded to appropriate county and municipal agencies and adjacent landowners.
- 5) Copies of the public notice mentioned in #4.
- 6) 15 copies of construction plans showing the wetlands delineation and the wetland impact area.
- 7) Photographs of the project site.

B. Application fee based on construction cost

- 1) \$0 to \$50,000 - \$1,450 + ½ of one percent of construction cost.
- 2) \$50,001 to \$100,000 - \$1,700 + one percent of construction cost.
- 3) \$100,001 to \$200,000 - \$2,200 + 1/4 percent of construction cost.
- 4) \$200,001 to \$350,000 - \$3,450 + ½ percent of construction cost.
- 5) Greater than \$350,000 - \$5,700 + one percent of construction cost.

(NOTE: the maximum fee that can be charged is \$30,000)

- C. Submission - The permit application package will be prepared either by BES or the designer. In all cases the application package will be reviewed by and submitted through BES.

- D. DEP may at its discretion, hold a non-adversarial public hearing if it deems it important.

(Further guidance can be obtained in N.J.A.C. 7:7 et seq. administered by NJDEP. These regulations are available in BES.)

Tidal Wetlands Permits - are required for any activity within wetlands mapped under the State Wetlands Act of 1970. Maps showing these wetlands are available in BES.

Specific activities requiring permits

- A. The maintenance or repair of bridges, roads, highways, railroad beds or the facilities of any utility or municipality which impact tidal wetlands.

- B. The construction of catwalks, piers, docks, landings, footbridges and observation decks.
- C. The installation of utilities.
- D. Excavation of boat channels and mooring basins.
- E. The construction of impoundments.
- F. The construction of sea walls.
- G. The diversion or appropriative use of water.
- H. The use of pesticides.
- I. Driving or causing to pass over or upon wetlands any mechanical conveyance which may alter or impair the natural contour or the wetlands or the natural vegetation.
- J. Filling, excavation or the construction of any structure which impacts tidal wetlands.

Process for permit applications

- A. Application contents
 - 1) Completed standard construction LURP-1 permit form.
 - 2) 10 copies of a Compliance Statement, the contents of which shall address the appropriate coastal rules.
 - 3) Copy of any Tidelands Grant, Lease or License or application of such.
 - 4) Verification that certified mail notices with copies of the LURP-1 application and site plan were forwarded to state, county and municipal agencies and adjacent landowners.
 - 5) Copies of the public notice mentioned in #4.
 - 6) 15 copies of construction plans showing the wetlands delineation and the wetland impact area.
 - 7) Photographs of the project site.
- B. Application fee - The fee is one percent of the construction cost or a minimum of \$500 and a maximum of \$30,000.
- C. Mitigation - Wetland impacts must be mitigated at a 2:1 ratio. A detailed mitigation plan must be submitted for approval.
- D. Submission - The permit application package will be prepared either by BES or the designer. In all cases the application package will be reviewed by and submitted through BES.
- E. DEP may at its discretion, hold a non-adversarial public hearing if it deems it important.

(Further guidance can be obtained in N.J.A.C. 7:7 et seq. administered by NJDEP. These regulations are available in BES.)

Water Quality Certificate (WQC) - is required under Section 401 of the Clean Water Act when a project also requires a Federal Permit. Presently, separate procedures have not been promulgated to obtain this certificate. However, it is automatically issued when either of the following permits are obtained: CAFRA, Freshwater Wetlands, Tidal Wetlands, Waterfront Development and/or Stream Encroachment. When applications are made for these permits, it must be noted on the application form that a WQC is also needed. Compliance with the requirements of the aforementioned permits also means that the WQC requirements have also been met.

Pinelands Permits - are required for new development which occurs within the boundaries of the State Pinelands Area (see Figure B).

Specific activities requiring permits

- A. The clearing or disturbance of 140 square meters or more of undeveloped land.
- B. Any construction or disturbance in a wetland.

Specific activities requiring a narrative description and a copy of the USGS quadrangle

- A. Resurfacing using an impervious material which will not result in an increase in the width of the existing impervious surface.
- B. Maintenance of drainage ditches.

Specific activities requiring a narrative description, a copy of the USGS quadrangle, and construction plans

- A. The replacement in-type of any bridge which involves less than 465 square meters of disturbance.
- B. The replacement of existing culverts meeting specific criteria.
- C. The construction of certain drainage structures.
- D. Roadway intersection improvements involving 275 square meters or less of additional paving and a disturbance of less than 465 square meters on non-impervious surfaces.

Process for permit applications

- A. Application contents
 - 1) Completed Pinelands Commission Application Form.
 - 2) Provide public notice to the municipal clerk, county clerk and the environmental commission of the municipality in which the project is located.

Figure B

- 3) Provide legal notice in a newspaper of regional circulation.
 - 4) Provide adjacent landowner notice to all owners of properties within 60 meters of NJDOT's right of way.
 - 5) Final construction plans showing any wetlands impacts.
 - 6) A completed environmental assessment prepared by NJDOT showing any impacts to cultural resources, endangered species, wetlands, water resources and any other environmental resources.
 - 7) Environmental mitigation showing, among others, a landscape plan using native plant species and a drainage plan showing how any additional runoff will be retained on site.
 - 8) Photographs of the project site.
 - 9) For projects having wetlands impacts, an application for a Freshwater Wetlands General Permit must also be included.
- B. Application fee - There is no application fee required for Pinelands Commission applications.
- C. Submission - The permit application package will be prepared either by BES or the designer. In all cases the application package will be reviewed by and submitted through BES.

(Further guidance can be obtained in N.J.A.C. 7:50 et seq. administered by Pinelands Commission. Also refer to the Memorandum of Agreement between the Pinelands Commission and NJDOT. These regulations are available in BES.)

NJPDES Stormwater Discharge General Permits - are required for construction activities which may result in significant stormwater runoff. It is also related to the certification of a soil erosion and sediment control plan.

Specific activities requiring permits

- A. The clearing or disturbance of more than 2 hectares of land.

Process for permit applications

- A. Application contents
- 1) Name of Project (route and section).
 - 2) Location (municipality and county).
 - 3) Project manager or contact person.
 - 4) Type of Work - new alignment, widening, bridge replacement, intersection improvement, other (specify).
 - 5) Area of disturbance (hectares) or length of project (kilometers).
 - 6) Estimated dates of construction (start to finish).
- B. Application fee - \$200.00.
- C. Submission - The permit application package will be compiled and submitted by BES. Any other projects going to construction at the same time will be submitted together.

- D. The Advertisement for bids for the project should include the following notice Statement: "This highway construction project will involve the disturbance of over 2 hectares of land. In accordance with N.J.A.C. 7:14A - 3.9(b)2, NJDOT has requested an authorization to discharge stormwater to surface water during construction pursuant to the New Jersey Pollutant Discharge Elimination System General Permit Number NJ0088323".

Permit to Construct or Repair a Dam - is required for any structure that would impound water permanently or temporarily and raise the mean water level more than 1.5 meters.

Specific activities requiring permits

- A. Construction of dikes, levees, sheet piling, concrete structures, spillways, etc.

Process for permit applications

- A. Application contents
- 1) Completed standard construction (CP-1) permit form.
 - 2) Completed Application for Permit to Construct or Repair a Dam (form ADM-CR-SD-087).
 - 3) Two sets of construction specifications.
 - 4) Site location map (U.S.G.S. quadrangle).
 - 5) Five sets of all construction plans and details.
 - 6) Two copies of the final Dam Design Report.
- B. Application fee - There is no fee required.
- C. Submission - The permit application package will be prepared either by BES or the designer. In all cases, the application package will be reviewed by and submitted through BES.

(Further guidance can be obtained in N.J.A.C. 7:20 Dam Safety Standards. Copies are available in BES.)

Water Lowering Permit - is required to partially or completely lower a pond, lake or stream. This permit was developed to protect the State's fishery resource.

Specific activities requiring permits

- A. To lower a body of water for:
- 1) General clean-up.
 - 2) Flood control.
 - 3) Safety reasons.
 - 4) Facilitating construction or maintenance activities.
 - 5) Aquatic vegetation control.
 - 6) Fishery management.

Process for permit applications

- A. Application contents
 - 1) Completed standard construction (CP-1) permit form.
 - 2) Completed water lowering data sheet.
- B. Application fee
 - 1) A \$2.00 application fee is required.
- C. Submission - The permit application package will be prepared either by BES or the designer. In all cases the application package will be reviewed by and submitted through BES.

(Further guidance can be obtained in N.J.S.A. 23:5-29 and N.J.S.A. 58:4-9.)

Water Diversion, Dewatering or Allocation Permit - is required to divert surface or subsurface waters for non-agricultural reasons.

Specific activities requiring permits

- A. Divert surface water or groundwater for public or private use.
- B. Dewatering over 375,000 liters per day for more than 31 days.
- C. Well drilling.

Process for permit applications

- A. NJDOT self certifies its own dewatering plans or it reviews and approves plans that are developed by contractors.
- B. NJDOT provides NJDEP with a list of projects which require permits.
- C. NJDOT closely monitors construction activities.
- D. NJDOT makes sure that projects comply with the general conditions of the permits.
- E. There is no permit application fee.

(Further guidance can be obtained in N.J.S.A. 58:1A-1 et seq. and N.J.S.A. 58:4A-14 et seq.) Also refer to the Memorandum of Understanding between NJDEP and NJDOT. A copy is available in BES.

Delaware and Raritan Canal Commission (DRCC) Certificate of Approval - is required for development which occurs within the D & R Canal State Park review zones.

Specific activities requiring permits

- A. Review Zone A - area within 300 meters of the D & R Canal center line.
 - 1) Major project is defined as equal to or greater than 930 square meters of new impervious surface.
 - 2) Minor project - all other projects.
- B. Review Zone B - the drainage areas of the canal, streams which are tributaries to the canal, and streams whose waters may mix with the canal during flooding (see Figure C).
 - 1) Major project is defined as greater or equal than 0.4 hectares of new impervious surface.
 - 2) Minor project - no review required.

Process for permit applications

- A. Application contents (vary depending on Review Zone - see regulations).
 - 1) CP-1 form, pages 1 and 2 only.
 - 2) Engineering report including drainage calculations and planned detention.
 - 3) Project vicinity map.
 - 4) Drainage map for project and surrounding area.
 - 5) Project description and site plan map showing contours, and 100 year flood lines.
 - 6) Construction drawings showing details of basin design.
 - 7) Maintenance agreements for detention basins.
- B. Application fee - none.
- C. Submission - The permit application package will be prepared either by BES or the designer. In all cases the application package will be reviewed by and submitted through BES.

(Further guidance can be obtained in N.J.A.C. 7:45 et seq., administered by the D&R Canal Commission. Copies are available in BES.)

Soil Conservation District Approval - It is not necessary for NJDOT to apply for a soil erosion and sediment control plan certification. By agreement with the Soil Conservation Districts, NJDOT is self-certifying with regard to soil erosion control plans. Soil erosion standards have been adopted fully by NJDOT and with approval of the final plans and specifications, the soil erosion control report is automatically certified.

Figure C

(Further guidance can be obtained in the Soil Erosion and Sediment Control Act Chapter 251, P.L. 1975, and the All Design Unit Memorandum No. 92040 issued on November 30, 1992. Copies are available in BES.)

Sole Source Aquifers - Concurrence from the Environmental Protection Agency (EPA) on a Groundwater Quality Assessment (GQA) is required for certain projects within the boundaries of Sole Source Aquifers (SSA).

Specific activities requiring a GQA

Any project within the boundaries of an EPA - designated SSA that involves the following:

- A. Construction of additional through traffic lanes or interchanges or circles on existing highways.
- B. Construction of a two or more lane highway on a new alignment.
- C. Construction of rest areas with on-site sewage disposal.
- D. Other projects which, in FHWA's opinion, may have an effect on the water quality of the aquifer to the extent that the safe drinking water goals would not be realized.

Process for receiving authorization

- A. Determination
 - 1) BES determines if project is within boundary of a SSA and if project fits above criteria.
- B. Early Notification to EPA
 - 1) BES sends a letter to EPA containing brief project description asking for determination of need for a GQA. FHWA is copied on the letter.
- C. EPA Response
 - 1) If EPA requests a GQA, it is prepared by BES or a consultant for BES review.
 - 2) The process stops if EPA determines that a GQA is not needed.
- D. Distribution of GQA
 - 1) Completed report is sent to FHWA then to EPA for concurrence.

GQA Contents

- A. A description of site topography and hydrology.
- B. A discussion of project area's hydrology, including direction and rate of ground water flow.

- C. An inventory of public and private wells within one mile of the proposed project site's perimeter. If possible, the report should include a map of the wells and provide information including their depth and pumpage rate.
- D. A listing of above ground and underground storage tanks including septic systems at the project site.
- E. A hazardous incident contingency plan which provides measures to monitor and contain fuel spills from road runoff.
- F. A discussion of the mitigation practices considered for road construction and operational phases to prevent impacts to ground water quality.

(Further guidance can be obtained in the 7/9/84 FHWA-EPA Memorandum of Understanding on Sole Source Aquifers. Copies are available at BES.)

Hackensack Meadowlands Development Commission (HMDC) Permits - are required from the Commissioner of the HMDC for all projects within the boundaries of the HMDC jurisdiction (see Figure D).

Specific activities requiring permits

- A. All activities require permits and they must conform to HMDC zoning requirements.

Process for permit applications

- A. If there is right of way acquisition, then the HMDC zoning requirements must be followed. Once conformity with HMDC zoning is established, request the HMDC Commissioner's approval.
- B. If no additional right of way is required, then the request can go directly for the HMDC Commissioner's approval.
- C. There is no application fee.
- D. The application package will be submitted through the Project Manager.

Figure D

8.8 Environmental Reevaluation Process

Introduction

The Federal Highway Administration regulations under 23 CFR 771.129 require the State DOT to consult with the Division FHWA prior to requesting any major approvals to establish whether or not the approved environmental document or CE designation remains valid. FHWA determines when it is necessary to document these consultations.

An Environmental Reevaluation (ER) (Attachment 13) is initiated by the Project Manager (PM) when any of the following criteria apply:

- a) the project's scope, design or ROW has significantly changed;
- b) there has been a significant change in land use adjacent to the project;
- c) new or changed regulations have been promulgated which could change the conclusions of the environmental document;
- d) federal funds for final design are being requested;
- e) federal funds for ROW are being requested;
- f) federal funds for CONSTRUCTION are being requested.

Process

1. If a project was a Certified CE and no significant changes have occurred, the PM signs the ER form and enters it into the CED file.
2. The PM will consult with the assigned BES/E-Team leader when the ER is initiated to discuss any changes that may have been made to the project. The PM will provide updated plans, community input or other information concerning project changes that were made since approval of the environmental document.
3. If ROW authorization is being requested, ROW plans need to be reviewed to prepare the ER.
4. If construction authorization is being requested, final plans must be reviewed. (At this point the discovery of significant project changes will be a **rare** occurrence.) Project permits will have already been obtained (or approvals are imminent) and any permit conditions, restrictions and mitigation measures will be included in plans and specifications.
5. The E Team will assess any project or land use changes for potential impacts that could alter the conclusions of the environmental document.

6. The ER form will be jointly completed by the PM and E Team, and they will determine if any project changes are significant enough to alter the conclusions of the environmental document.
7. For projects which are non - Certified CEs, the PM signs the ER form and forwards it to the BES Manager for review/approval.
8. After the BES Manager approves the ER, it is sent to the Bureau of Capital Program Control/Support Services (BCPC/SS) by the PM when requesting design, ROW or construction authorizations. If the ER is not being used as part of a federal funding request, but has been prepared to document changes in the project or land use, the PM consults with FHWA and sends a copy of the ER to the FHWA Division Administrator.
9. If significant changes to the project or adjacent land use are discovered, consultation with the FHWA is initiated by the PM and results are documented on the ER form under Part "G". The PM and E Team will coordinate with FHWA and take appropriate steps to prepare any additional documentation required to satisfy FHWA regulations or State and federal permits.
10. NOTE- For CE projects which are subject to Army Corp of Engineers Nationwide Permit # 23, consultation with FHWA will be initiated by the PM and documented under Part "G" of the ER form.

Attachment 15 - Environmental Reevaluation

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL REEVALUATION**

Route & Sec.	Fed. Project. No.
Local Rd. Name:	NJDOT Job No.
Municipality:	County:
Environmental Document Type & Approval Date:	
Section 4(f):	NJDOT Project Manager:
Date of Previous Reevaluation:	Type of Authorization Requested:

A. Describe any changes to the project since approval of the environmental document:

Project Design/Scope Change:	ROW Change:
------------------------------	-------------

Explanation of any changes noted above:

B. Reevaluation (Indicate responses below with a “yes” or “no”. If an explanation is needed on any of the following items, enter under “Comments”)

	1. Are any of the above changes significant enough to alter the conclusions of the environmental document ?
	2. Has there been a change in community reaction to the project since approval of the environmental document? Comment on current community reaction under “Comments.”
	3. Has there been a change in land use in the project area significant enough to alter the conclusions of the environmental document?
	4. Have new or changes regulations, or other new factors become known that are significant enough to change the conclusions of the environmental document?

C. Comments

D. Prepared by: _____
 Project Manager, Division of Project Management Date Phone No.

On the basis of this reevaluation, there are no significant changes in the proposed project's scope, right of way, affected environment or anticipated impacts since approval of the environmental document.

STOP HERE IF PROJECT WAS A CERTIFIED CE AND PUT ER IN PROJECT CED FILE

E. Approved by: _____
(needed for non-Certified CEs) Manager, Bureau of Environmental Services Date Phone No.

F. FHWA Consultation: (Only needed if there is potential for significant changes in project or other special reasons)

The Project Manager has consulted with:

FHWA person consulted: _____ Date _____

G. Conclusions: (Indicate response with a "yes" or "no")

	NEPA document still valid
	NEPA document still valid but supplemental documentation needed
	NEPA document is no longer valid. New document required.
	FHWA consultation completed because project subject to Army Corps of Engineers Nationwide Permit # 23

8.9 Environmental Checklist for Project Authorizations

Introduction

Having the requisite environmental approvals and permits and insuring that all commitments and conditions resulting from the environmental and permitting processes have been included in final project plans and specifications prior to final project authorization is an essential part of quality assurance.

Process

The Project Manager, with assistance from BES staff, will complete the Environmental Checklist at the same time the Project Environmental Reevaluation is carried out. The document will be signed by the Project Manager and will be included in the documentation package required for ROW and Construction authorizations (this includes the Reevaluation form). The BES Manager will also receive a copy.

SECTION 9 RIGHT OF WAY

9.1 Overview

SCOPE DEVELOPMENT

A Right of Way representative from one of the three ROW district offices will participate in the development of the project scope as a member of the Scoping Team.

Critical parcels will be identified, which could influence the alignment or affect the selection of design features for a project due to high costs or relocation impacts.

A preliminary property acquisition/relocation budget level cost estimate will be developed along with a projected duration for the acquisition process.

DESIGN DEVELOPMENT

The Project Manager provides the Right of Way Unit with the Project Schedule and any revisions, if applicable.

The designer prepares right of way plans and documents as detailed in the Manual for the Preparation of Right of Way Maps and Descriptions; as set forth in Section 9.2.

The designer submits preliminary right of way plans to Right of Way Technical Support Unit for quality assurance review, initiation of environmental screening, initiation of title searches and preparation of an acquisition/relocation cost estimate.

The project identification summary (environmental re-evaluation, if necessary) is transmitted by Right of Way to the Bureau of Capital Program Coordination, which transmits the funding request to the Federal Highway Administration for authorization and obligation of funds. Upon approval of funding, the district office will prepare the appraisal plan and proceed with the appraisal of **entire acquisitions**. Owner's notification letters will be sent to the owners.

Appraisal assignments are made of the **entire acquisitions** and preliminary project data collection is begun; contracts are negotiated with fee appraisers; the Right of Way Project Supervisor ensures that the title search and environmental screening/remediation cost report is completed; property site surveys are initiated; a draft relocation plan is prepared; and, if applicable, notifies the Project Manager of the need for the initiation of demolition plans/asbestos survey in accordance with Section 9.4.

The designer submits final right of way plans to ROW Technical Support (see Section 9.2.11.B. for submission details) after right of way impacts (i.e. access, utility, drainage and environmental issues) are addressed and resolved. On in-house design projects, the ROW Engineering Unit, in the Bureau of Civil Engineering, prepares the final right of way plans, parcel descriptions and individual parcel maps. This unit also performs a ROW design review of consultant-prepared plans.

The final plans, along with due dates for the completion of acquisition, are transmitted to the concerned ROW District Office by ROW Technical Support. The District is authorized to proceed with the acquisition process on the balance of the parcels (partial takings, easements), after assuring that the access revocation/modification process has been completed. Acquisition from utility or railroad companies and riparian or other DEP owned properties is handled by the ROW Technical Support Unit.

COMPLETION OF ACQUISITION PROCESS

Appraisal and specialist reports or administrative determinations of value are prepared for all parcels to be acquired. Fee appraisal and specialist reports are ordered simultaneously to ensure an appropriate solution to the appraisal problem, if specialist reports have not been secured earlier in the design process.

As appraisals or administrative determinations of value are completed, they are desk and field reviewed by staff reviewing appraisers in the ROW district offices. These reviews are conducted in accordance with applicable regulations and USPAP (Uniform Standards of Professional Appraisal Practice) standards. The appraisal and appraisal review process is presented in the ROW Appraisal/Review Manual. The review also ensures that the appraisal does not contain non-compensable damages. The appraised value is certified by the reviewing appraiser and that value becomes the just compensation to be offered to the owner.

Concurrently with the appraisal process, a workable relocation assistance plan is prepared, accompanied by owner and tenant housing supplements, which will be offered to the owner concurrently with the initiation of negotiations and the tender of just compensation. Negotiations cannot proceed until the owner's housing supplement is computed. Relocation is accomplished in accordance with the ROW Relocation and Property Management Manual.

The registered appraisal, housing supplement, right of way plans, and environmental remediation cost report (if applicable) are provided to the negotiator when he/she is assigned the case. The owner is provided with a written offer of the just compensation which includes the environmental status of the parcel and a copy of the appraisal report. The acquisition/condemnation process and appraisal report is explained to the owner. The negotiation process is presented in the ROW Acquisition Manual.

When an agreement is secured, the file is transmitted to the ROW Technical Support Unit to secure the Department's authorization. The file is then sent to the Title Unit where the title searches are updated and examined to determine current ownership, and existing liens, mortgages, judgments, etc. are to be released or disposed of prior to vesting title in the State. The deed, affidavit of title, mortgage release/discharge documents, etc. are prepared and transmitted to the property owner; respective mortgagors, and lien holders for execution. Upon receipt of the signed closing documents, appropriate check(s) are secured and payment is made to the property owner. The deed is recorded in the County Clerk's Office and the Assessor's Office (statutory requirement) is notified when the deed vesting title to the State is recorded.

N.J.S.A. 20:3-6 states that no action to condemn shall be instituted unless the condemnor is unable to acquire such title or possession through "bona fide" negotiations with the prospective condemnee. These negotiations must include a written offer setting forth the property and

interest to be acquired, the compensation offered to be paid and “reasonable disclosure” of the manner in which the compensation was calculated. If the District Office is unable to secure an agreement with the property owner, a letter is sent to the owner informing the owner that condemnation will be initiated and a Department Action is prepared and transmitted to the ROW Technical Support Unit to initiate condemnation. Individual parcel/complaint map and updated title searches are secured. The condemnation process is described in the ROW Acquisition Manual.

Concurrently with and as part of the acquisition process, eligible residential and commercial occupants are provided relocation assistance and payments, and as necessary, relocated to replacement properties.

At the conclusion of the acquisition process, prior to the Department’s request for authorization of the construction project, Right of Way provides a clearance letter to the Project Manager for use in requesting Federal authorization to advertise for bids. Where right of way was not required, the Project Manager will issue the “clearance” letter.

9.1.1 Right of Way Procedure

OBJECTIVE

Acquire and take possession of real estate for transportation purposes in accordance with the Capital Program project development schedule and in a cost effective manner that allows construction schedules to proceed as planned. Right of Way Acquisition includes property appraisals, appraisal registration, acquisition through bona fide negotiations, the eminent domain process, if necessary, relocation of families and businesses, and title clearances and closings.

RESPONSIBILITIES

Acquire all property needed for transportation purposes in fee, easement, license, or grant, in accordance with a pre-established time schedule and within an estimated budget for property acquisition costs and staff cost. All necessary relocation is also performed within the predetermined schedule and budget.

ORGANIZATION

Right of Way is decentralized, with district offices established in three geographic areas of the State, dependent upon the project workload. Each district office is divided into teams responsible for several projects each (depending on the size and complexity). The teams are responsible for the appraisal, appraisal review, negotiations and relocation and property management functions.

The headquarters office is comprised of the Office of the Manager of Right of Way and the Technical Support and Title Units. The Technical Support Unit is responsible for programming and funding, audit of district operations, quality control, utility, railroad and riparian acquisitions and property management and provides technical guidance to district offices. The Title Unit is responsible for obtaining clear title, conducting title closings, providing payments to property

owners and condemnation proceedings, all of which results in the vesting of title in the Department.

AUTHORITY

Acquisition of real property is governed by the State's Eminent Domain Act of 1971, N.J.S.A. 20:3-1, et seq. For the acquisition of both Federal and State funded project, the Department follows the Federal Highway Administration's policies as contained in 23 CFR, Parts 710-713, and 49 CFR, Part 24.

SCOPE DEVELOPMENT

Project Manager

Transmits Problem Statement Package to Manager, Right of Way; includes project information and notification of time and location of Scoping Team Meeting.

Manager, ROW

Assigns project and transmits Problem Statement Package to Manager, ROW District Office.

Manager, ROW District

Assigns project to ROW District Engineer and ROW Project Team.

Right of Way District Engineer (District Office)

Prepares in advance to discuss ROW issues; secures input from assigned ROW Project Team; and attends Scoping Team Meeting. Identifies acquisitions requiring cost to secure or specialist reports for inclusion into designer contract (or secure services of a qualified sub-consultant, if prime consultant does not have in-house expertise.)

ROW Project Team (District Office)

Prepares right of way budget level cost estimates, as needed, and provides ROW input to ROW District Engineer.

DESIGN DEVELOPMENT

Project Manager

After receiving approval to proceed with design, the Project Manager notifies Design Coordination notification of the Kick-off Meeting for in-house design projects.)

ROW Technical Support Unit

Prepares man-hour estimate.

Designer

Prepares preliminary ROW plans and documents in accordance with ROW Procedures (Section 9.2). (**Note:** For in-house design projects, ROW Engineering performs this function.) Submits Preliminary ROW Plans to Manager, ROW Technical Support and Project Manager. (see Section 9.2.11.B. for submission details)

ROW Technical Support Unit

Secures final acquisition/relocation cost estimates from District Office initiates title searches and transmits preliminary plans to ROW District Office.

Project Manager

Prepares and submits the Project Identification Summary (PIS) form to the Manager, ROW Technical Support; obtains Environmental Reevaluation and transmits it to Capital Program Coordination, as applicable (see Section 8.9).

ROW Technical Support Unit

Upon receipt of the Project Identification Summary form, prepares the project cost summary, job number form and Department Action and then transmits the authorization package to Capital Program Coordination for submission of the funding request to the FHWA by the Federal Aid Coordinator (see Section 20.5), with a copy to the Project Manager. 100% State funded projects do not require FHWA approval.

Bureau of Capital Program Coordination

Submits the authorization package to the FHWA.

FHWA

Approves funding request.

ROW Technical Support Unit

Upon FHWA approval, circulates a Department Action Form. Transmits project to ROW District Office to proceed with the acquisition process of entire takings. Provides District with ROW acquisition schedule. (**Note:** ROW Technical Support is responsible negotiations of utility, railroad and riparian parcel acquisitions.)

ROW District Office

Oversees appraisal and review assignments of entire takings; begins preliminary data collection, negotiates contracts with fee appraisers and specialists. Ensures that the title search and environmental screening/remediation cost report is completed, property site surveys are initiated and a draft relocation plan is prepared. Initiates property acquisition and relocation process for entire acquisitions.

Designer

Consultant design projects: Consultant prepares and submits final ROW plans to Manager, ROW Technical Support after all ROW impacts (i.e. access, utility, drainage, environmental issues) are addressed and resolved.

In-house design projects: ROW Engineering Unit prepares the final ROW plans, parcel descriptions, agreement forms and individual parcel maps.

ROW Technical Support Unit

Performs a review of the final ROW plans. Transmits final ROW plans to ROW District Office to proceed with the acquisition process for the balance of the parcels (partial acquisitions, easements). Informs District of ROW acquisition schedule.

FINAL DESIGNROW District Office

Proceeds with appraisals and Administrative Determinations of Value; appraisal review and registration for the balance of the parcels. Initiates property acquisition (and relocation if necessary) process for all remaining properties (in accordance with the ROW Appraisal and Review; Acquisition; Property and Relocation and Title Manuals), cognizant of the due date for completion of acquisitions/relocations.

Monitors the progress of all acquisition activities, keeping the Project Manager informed of any changes to the schedule.

Upon completion of negotiations, transmits agreement and condemnation cases to Manager, ROW Technical Support for review and forwarding to ROW Manager.

Interim process (pipeline projects) regarding condemnation (individual parcel) map requests: ROW District office will request condemnation maps from the Acquisition Section of Technical Support, who notifies the Project Manager. The Project Manager determines who will prepare the condemnation maps and coordinates with the consultant or makes a request to the Manager, Technical Support (Acquisition Section) for in-house preparation of the condemnation maps. (See Section 9.2-48).

Project Manager

Pipeline Project-Interim Process: request condemnation maps from designer or ROWE.

Manager, ROW

Authorizes the agreement or condemnation action. Transmits cases to Title Unit.

ROW Title Unit

Agreement Cases: Updates and examines title searches, prepares and transmits title instruments to owner for execution; satisfies property liens; records title documents; secures check and transmits payment to property owner.

Condemnation Cases: Updates and examines title searches; computes interest and transmits check to property owner.

ROW Technical Support Unit

Condemnation Cases: Prepares legal pleadings; secures Law Division approval; files pleadings; secures payment for deposit into court; processes judgment/award documents.

ROW District Office

Continuance of settlement discussions of condemnation cases. Secures physical possession.

Project Manager

Keeps in contact with the ROW District Office requesting frequent updates on the status of all ROW parcels being acquired. Note: this information is updated regularly and is posted on the ROW network shared area for use by Project Managers in securing right of way status.

Assists ROW in resolving design conflicts prior to preparation of the PS&E, requests a ROW clearance letter from the Manager, ROW stating that physical and legal possession has been received and that all necessary relocations have been accomplished.

ROW Technical Support Unit

Provides right of way clearance letter to Project Manager, including copy to the Engineering Documents Unit, when Right of Way is required, otherwise the letter is issued by the Project Manager.

Engineering Documents Unit

Requests the Designer to submit two sets of signed and sealed GPPM mylars for each county. Packages all GPPM mylars for filing and forwards the mylars to Manager, Title Unit.

ROW, Title Unit

Files general property parcel maps with the appropriate County Clerks Office. The GPPM shall be filed in accord with the "Map Filing Law". The Map Filing Law states that for GPPMs not yet conforming to the MFL, the County Clerk can require proof of advertisement of construction bids (meaning first publication for the solicitation of bids) showing a date on or before July 1, 2001.

9.2 PREPARATION OF ROW DOCUMENTS

9.2.1 Introduction - Table of Contents

These procedures have been developed to establish uniformity in the preparation of ROW Maps and Descriptions.

Scoping procedures outlined in the NJDOT Procedures Manual, balance, among many other factors, the impact of the proposed design with the ROW impacts. This limits, but does not preclude, the designer from adjusting the proposed ROW acquisitions to minimize their size and impact upon the remaining property. The designer should also be aware that the ROW design does not have to follow the precise contours of the roadway (e.g.: slopes). Where it appears that it may be beneficial, the ROW line and easement lines may be reasonably expanded to enhance the ease of construction of the project. The designer, therefore, shall prepare the ROW design, balancing the impact upon the property and the cost of acquisition while maintaining the safety, constructibility, cost of construction and staying within the basic scope of the project.

This manual is to be used on NJDOT projects, as well as Public Transportation projects, Local Aid projects and Developer projects. Every instance which a designer may encounter is not covered in this manual. When used in conjunction with sound engineering, surveying knowledge and good judgment, this manual should enable the designer to prepare accurate ROW documents efficiently.

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9.2.2 DEFINITIONS AND ABBREVIATIONS

DEFINITIONS AND ABBREVIATIONS USED

AGRICULTURAL DEVELOPMENT AREA (ADA) (with 8 year deed restrictions): Property that cannot be used for other than agriculture for 8 years. The property owner enters into an agreement with the County Agriculture Board resulting in a restrictive covenant being attached to the property.

AGREEMENT: Contract between the owner of the subject property and the Department of Transportation for conveyance of fee or lesser interest of lands set forth in the description; conveys equitable title as compared to legal title.

ACQUISITION SECTION OF TECHNICAL SUPPORT (AS): Section within the office of ROW responsible for handling condemnation cases.

BLOCK: A square or portion of an incorporated municipality as shown on the official municipal tax map; a grouping of lots assigned the same number on the official tax map.

BUREAU OF ENVIRONMENTAL SERVICES (BES): Office responsible for all environmental recommendations within the NJDOT.

CONDEMNATION: The act of filing of a complaint seeking entry of a final judgment confirming the proper exercise of the Power of Eminent Domain and the recording of a Declaration of Taking in the Book of Deeds with the County recording officer.

COURSE: A boundary of a property that can be described by distance, bearing and/or arc length.

DECLARATION OF TAKING (DT): The means by which title to a property is acquired after a condemnation complaint is filed.

DEED: Conveyance of legal title; a writing signed by the owner of the property conveying real property to another.

DESCRIPTION: The legal description of the property identifying the location, including, but not limited to county, municipality, street, street number block and lot, metes and bounds of the property, as well as description of the easement rights, if any.

DOMINANT ESTATE (DE): An existing private easement across a fee parcel being acquired.

EASEMENT: A right to use land of another for a specific or particular purpose consistent with the grant under which it was made.

EMINENT DOMAIN: The power of government to acquire real property, including improvements, subject to the provisions of the Eminent Domain Law of 1971.

ENCUMBRANCE: A lien upon real property.

ENTIRE TRACT MAP (ETM): A plan used to show the location of all parcels to be acquired and their remaining area.

ET AL: And others, and another.

ET CON: And husband, also ET VIR.

ET SEQ: And following.

ET UX: And wife.

GENERAL PROPERTY PARCEL MAP (GPPM): A plan used to show the property to be acquired. This map shall be signed and sealed by a licensed surveyor and filed by NJDOT's Office of Title in the County courthouse where the deed was obtained.

GRANT: An instrument which conveys some estate or interest in the lands which it embraces.

GRANTEE: The person to whom a grant is made; the one who acquires the property.

GRANTOR: The person by whom a grant is made; the one who transfers the property.

INDIVIDUAL PARCEL MAP (IPM): A plan that depicts a parcel and related parcels, having unity of ownership and associated easements. It is used for appraising and negotiating acquisition; it is also used as the map attached as an exhibit to a condemnation complaint and declaration of taking where and when condemnation is pursued. It must be based upon and totally consistent with the GPPM.

KEY SHEET: The first ETM sheet. It identifies the area to be acquired for the ROW of a specific section of a highway.

LOT: A fractional part or subdivision of a block, according to a survey.

MEAN HIGH WATER LINE: The line formed by the intersection of the tidal plane of mean high tide with the shore.

METES AND BOUNDS: A description of real property which begins at a specified starting point (point of beginning or P.O.B.) and proceeds, clockwise or counter clockwise, around the parcel or easement utilizing directions, distances (metes) and monuments (bounds) as descriptive elements of the property lines and property corners. An area is also generally given in the deed. This type of land description is usually based on an actual land survey.

MONUMENTS: Tangible landmarks indicating boundaries.

NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT): The agency in the State of New Jersey responsible for the State highway system.

NORTH AMERICAN DATUM 1983 (NAD 83): The official plane coordinate system for the NJDOT.

OFFICE OF ACCESS DESIGN (OAD): Office with the responsibility for all access issues relating to State highway projects. They review and set the driveway design within the limits of the project.

PARCEL: Property to be acquired for highway purposes, described by metes and bounds.

PROJECT MANAGER (PM): Representative of the NJDOT who oversees the project.

REMAINING AREA (RA): Property retained by the owner of the fee after a portion of the fee parcel is acquired, including areas of any associated easements.

RIGHT OF ENTRY (ROE): A right to enter the property of another for a temporary purpose given by the owner of the fee to the NJDOT. This is to be obtained by a representative of the NJDOT. This can also include the right to enter prior to commencement of condemnation or tender of a deed for a permanent easement or parcel. It is always to be in writing, signed by the owner of the property or authorized corporate officer where a corporation is involved.

RIPARIAN GRANT: The grant by the State Tidelands Resource Council of its right to area within the flow of the mean high tide or which was historically flowed by the mean high tide and was artificially filled in without the appropriate consent or permission of the State, as reflected upon the tidal claims map maintained by the N. J. Department of Environmental Protection, Division of Coastal Resources, Bureau of Tidelands.

RIPARIAN RIGHTS: The rights of the owner of land on the bank of a watercourse relating to the water, its use and ownership of soil under the watercourse. In Section 9.2, the term is used only to described those rights of landowners abutting on tide flowed lands.

RIGHT: A real estate interest in a property (e.g. access, drainage, slope, etc.)

RIGHT OF WAY (ROW): Land owned or to be acquired by NJDOT for highway purposes.

RIGHT OF WAY ENGINEERING (ROWE): The unit that is responsible for the in-house design of ROW documents and the review of design consultants' documents.

SERVIENT ESTATE (SP): A parcel to be acquired subject to an existing private easement which serves a neighboring property.

SLOPE RIGHTS: An easement over the lands of others abutting the ROW line, upon which cuts and fills may be constructed and maintained subject to the terms thereof.

TAB SHEET: The last GPPM sheet. It contains a tabulation or listing of owners.

TIDAL WATERS: Any watercourse affected by tides.

TIDELANDS CLAIM LINE: The line that defines the lands now or formerly flowed by the mean high water line and claimed to be owned by the State of New Jersey.

TITLE: Ownership. Shown on ETMs, GPPMs and IPMs adjacent to the parcel bubble.

UNDERGROUND STORAGE TANKS (UST): Subsurface containers which (1) store motor fuel for noncommercial purposes (more than 4160 L), (2) store heating oil (more than 7570 L) or (3) store any quantity of fuel/oil for commercial purposes. Sites that have such containers are subject to the NJDEP regulations.

9.2.3 ROW Document Preparation Schedule

SCHEDULE

In order to prepare the ROW documents and at the same time minimize acquisition delays, the following schedule is established for ROW document submissions. All days are calendar days.

- A. An Initial Meeting with the PM, the ROWE Unit and the designer shall be held prior to the development of any ROW documents. The ROWE Unit will supply the designer with sample ETMs, GPPMs, IPMs and descriptions at the meeting (**These samples may be obtained earlier, upon request to ROWE.**). The designer is responsible for scheduling the meeting. When a sub-consultant will be preparing the ROW documents, the prime consultant shall also attend the meeting. The ROW procedure will be customized for the project at this meeting.
- B. A Preliminary Submission shall be submitted in accordance with the schedule established by the PM. ROWE will perform a quality assurance review and review of the documents to assure conformance to current standards. Comments will be returned to the designer no later than 3 weeks after the Preliminary Submission date.

C. A Final Submission shall be submitted in accordance with the schedule established by the PM. The letter of transmittal shall state the number of parcels to be acquired for the contract and list all parcels that were changed since the preliminary submission.

Note: Any change in these schedules must be requested through the PM.

9.2.4 Documents Required

Documents required in the preparation of ROW maps include, but are not limited to:

- Metes and bounds survey of the property to be acquired in accordance with N.J.S.A. 46:23-9.9 et seq. & N.J.A.C. 13:40-5.1 (minimum survey detail requirements as promulgated by the State Board of Professional Engineers and Land Surveyors), whether an entire or a partial acquisition.
- Latest deeds, wills, easements, leases and other property rights documents.
- Current development maps, tax maps, zoning maps, or master plans.
- Road return books, where applicable.
- Filed maps establishing public rights of way.
- Vacations for streets that have been abandoned.
- Dedications.

These documents will be helpful in laying out the existing properties and showing existing public ROW in all affected areas where ROW maps are needed.

9.2.5 Material Specifications

Plan sheets for ETMs and GPPMs shall be of synthetic film, such as Mylar, and shall be 100 micrometers thick and matted on both sides. Markings shall be in ink. Erasures and changes shall be made in accordance with instructions given for the material used so as not to harm the permanent original tracing.

IPMs shall be submitted on print paper and are limited to a maximum of 30" x 42". Parcels may be submitted on 8 ½" x 13", 11" x 17", 15" x 21", 18" x 24", 22" x 36" and 24" x 36" size paper. For large parcels where match lines are necessary, plan sheets are limited to 22" x 36". The designer should use the smallest legible map size that shows the parcel and conforms to the requirements of Section 9.2.9. IPMs may also be in equivalent ISO metric sizes.

IPM descriptions shall be prepared on 8 ½" x 11" paper.

GPPM sheets shall be ISO A1 sheets (594 mm by 841 mm).

Riparian Grant applications shall be prepared on 8 ½" x 11" paper.

9.2.6 ROW Parcels Acquired in Fee

The acquisition of property by the State of New Jersey for highway purposes is accomplished by “fee” parcels. These parcels appear on ETMs, GPPMs, IPMs, and in descriptions. Guidance for “fee” parcels is contained in each of those sections.

The types of “fee” parcels are as follows:

- Entire acquisition - Whole property is acquired with no RA.
- Partial acquisition - A portion of the property is acquired and the owner has RA.
- Riparian - A parcel to be acquired within tidal waters. Use “T” with the parcel number.
- Utility - A parcel to be acquired to provide replacement for the utility company's land interest lost under the terms of an "Order" or "Agreement" issued by the NJDOT. Use “U” with the parcel number.
- Servient Estate - A parcel to be acquired subject to an existing private easement which serves a neighboring property, e.g. an access easement or common driveway. Use "SP" with the same parcel number as that of the unencumbered fee. (See Attachments A and B)
- Dominant Estate - A parcel associated with an existing private easement on another property being acquired. Use "DE" with a parcel number designated for the owner of the easement (a different number than that of the servient estate parcel number). (See Attachments A and B)

9.2.7 Common ROW Easements Parcels

The acquisition of property rights less than a fee interest for a particular use by the State for highway purposes is accomplished by easement parcels. These parcels appear on ETMs, GPPMs, IPMs, and in descriptions. Guidance for “easement” parcels is contained in each of those sections.

The most common types of easement parcels are as follows:

- Slope - E parcels
- Grading - E parcels
- Drainage - E parcels
- Temporary Diversionary Road - E parcels
- Utility - UE and AE parcels
- Bridge - E parcels
- Construction and Maintenance - E parcels
- Site - S parcels
- Private - PE and PAE parcels
- Sight Triangle - E parcels

9.2.8 Denial of Access Parcels

Denial of access parcels are a separate category from those in Sections 9.2.6 and 9.2.7. They are parcels set up for limiting direct access only and are designated as DA parcels. Use the following procedure:

- A. Delineate "NO ACCESS".
- B. Delineate every point at which access is denied by acquisition by a vertical leader line and arrows.
- C. Show no area.

Note: For access that is denied administratively or by regulation, see Section 9.2.9.B.2.m.4) and Section 9.2.9.C.2.b.

9.2.9 ROW Document Preparation - General Information:

The preparation of all ROW maps shall comply with N.J.S.A. 46:23-9.9 et seq. and N.J.A.C. 13:40-5.1 (minimum survey detail requirements as promulgated by the State Board of Professional Engineers and Land Surveyors).

A. ENTIRE TRACT MAP:

1. KEY SHEET

a. CHECKLIST

- Scale
- Title Block
- Construction project reference
- Map showing location of the project
- The term KEY MAP
- Limits of ROW section
- Adjacent ROW section(s)
- Designer's name
- Surveyor's name
- Project location

b. PROCEDURES

- 1) The Key Sheet shall be the first sheet, covering the entire ROW section. It should indicate the project area, showing partial coverage of adjoining sections, including kilometer posts (mileposts) at the beginning and end of the project.
- 2) The Key Sheet shall be prepared at a convenient scale to show the entire ROW section plus the adjacent ROW section(s).

- 3) Place the Title Block in the lower right hand corner. Obtain the Title Block information from the ROWE Unit. See Attachment C, substitute "ENTIRE TRACT MAP" for "GENERAL PROPERTY PARCEL MAP"
- 4) Place the name of the construction project to the left of the Title Block as a reference for this ROW project.
- 5) Center the map on the sheet. It shall show corporate lines, names of counties, municipalities, major highways, streets, any geographical and man made features (lakes, rivers, railroads, etc.) and a North Arrow that shows the basis for the northing orientation.
- 6) Center the term KEY MAP below the map showing the project location with a bar scale also centered below.
- 7) Show the limits of the ROW section outside of the KEY MAP by lines extending into the map to the locations on the subject route that are the beginning and end of that section.
- 8) Show the adjacent ROW sections in the same manner as in 7) above.
- 9) Show the designer's name and the surveyor's name on the outside of the left longitudinal border starting at the lower left hand corner of the border.
- 10) Show the project location by highlighting the subject route on the KEY MAP and designating the limits of the project in a similar method to the NJDOT Sample Plans for construction projects, available from the Bureau of Quality Management Services, Engineering Documents Unit.

2. CHECKLIST FOR REMAINING ETM

- Scale
- Title Block
- North Arrow
- Designer's name
- Existing ROW
- Baselines (Existing & Proposed)
- Block and lot for each property
- Existing deed information
- Proposed parcels
- Parcel number
- Parcel area
- Remaining area

- Adjacent owners
- Proof of public ROW
- Building and structures
- Owner of record
- Municipal and county lines
- GPPM layout

3. PROCEDURES FOR ETM PREPARATION

- a. Scale: 1:2000 Metric throughout (may use 1:1000, if approved by the ROWE Unit). Inserts at other scales are permissible, if necessary for clarification. Show the entire areas of the properties involved. Only sheets reflecting parcels to be acquired should be included.
- b. Use the standard NJDOT Title Block (150mm x 90 mm). A sample Title Block is provided at the end of Section 9.2.9.
- c. Provide a North Arrow. NAD 83 is the NJDOT's official system. Other coordinate systems may be used with the permission of the ROWE Unit.
- d. Show the designer's name and the surveyor's name on the outside of the left longitudinal border starting at the lower left hand corner of the border.
- e. Show the existing ROW lines and dimension the width of all roadways. Orient the main baseline with stations increasing from left to right whenever possible.
- f. Show existing baseline stationing, if possible. Show the proposed baseline in the same manner.
- g. Show the block and lot for each property to be acquired.
- h. Show course - deed bearing and distance noted by the line representing it. It is unnecessary to repeat deed information shown on the GPPM except for clarification. Show deed book and page or any instrument conveying property rights, when not shown on GPPM. Show the complete outline of the entire property for each owner.
- i. Show the proposed parcel by completely outlining the property to be acquired with a heavy solid line.
- j. Show the parcel number (inside parcel if possible).
- k. Show entire remaining area adjoining the parcel (required for fee and easement parcels). RA is calculated as the deed area minus the fee parcel acquisition area.
- l. Show current names of all adjacent owners.
- m. Show proof of existence of streets. Show official width, name and source of information, providing road return book and page where applicable. Public ROW may need to be checked for jurisdictional control and zoning. Show the name, date and index references of public ROW created by municipal resolution, filed development map, tax map, deed calls, or other related documents. Note the date and location of information for vacations or abandonments (Road Return Book and page, name, date and index references. Show map references and file number if available.).
- n. Within the area to be acquired and within the area of the remaining lands, show all buildings and structures, driveways, parking lots, internal

roads and other important features that exist as of the time frame the maps are turned over to the NJDOT for acquisition. Current aerial photo location verified in the field by visual observation at the time maps are submitted to the NJDOT for acquisition of included parcels and associated easements may be used, except when these features are within 30m (100') of the parcel. Where within 30m, locate all items noted above accurately in the field by survey and properly draw on the ETM in accordance with in-field survey notes and in accordance with generally accepted standards. Show the type of land (wooded, swamp, farm, etc. as per legend or note on ETM sheet). In-field verification shall occur prior to the time the ETM is submitted to the NJDOT for acquisition of parcels and associated easements depicted on the ETM. If any changes have occurred since the time the ETM was originally prepared, it shall be updated in accordance with the above stated requirement.

- o. Show last owner of record, inside parcel, if possible. Latin abbreviations et ux, et al or et vir may be used in owner's name.
- p. Show all municipal and county lines.
- q. Index the layout of the GPPM sheets on the ETM.

B. GENERAL PROPERTY PARCEL MAP

GENERAL

The preparation of the GPPM shall comply with N.J.S.A. 46:23-9.9 et seq. and N.J.A.C. 13:40-5.1 (minimum survey detail requirements as promulgated by the State Board of Professional Engineers and Land Surveyors). The ROW Title Unit or other designated unit within the NJDOT will file each sheet of the GPPMs with the appropriate County recording officer when all parcels contained within an individual GPPM have been acquired.

Note: Place the following statement, as part of the Standard Legend (See Attachments D and E), on the first GPPM sheet. "The proposed parcel courses and the north arrow depicted may differ from the system utilized to plot the deed distances and courses. Also, place the Map Filing Statement, as part of the Standard Legend, on the first GPPM sheet. When a combined Standard Legend/Tab Sheet is used, which would be the last GPPM sheet, place a statement on the first GPPM sheet that the Map Filing Statement is located on the Tab Sheet.

1. CHECKLIST (EXCEPT FOR TAB SHEET)

- Title Block
- Legend
- Scale
- Material
- Layout
- Revision Block
- County
- Municipality
- Designer
- Reference
- Baselines

- Topography
- Field ties
- Properties plotted
- Existing and proposed ROW Lines
- Parcels to be acquired
- Proposed easements
- Riparian grant applications
- Environmentally sensitive parcels
- Drainage

2. PROCEDURES

- a. Obtain ROW Title Block information from the ROWE Unit. The lower right hand corner of all sheets shall have an area of 90 mm vertical by 150 mm horizontal for the Title Block (See Attachment C). It is required that the licensed Land Surveyor's Title Block, which shall comply with N.J.A.C. 13:40-1.1, 1.2, and 1.3, et seq. (including signature and original seal), be placed above the NJDOT Title Block.
- b. Show the standard legend (See Attachments D and E) on the first GPPM. A combination legend and tabulation sheet may be used on the last GPPM, if approved by the ROWE Unit. It can be furnished by the ROWE Unit. Line weights shall comply with those shown on the standard legend.
- c. Use the same scale as used for the construction plans, normally 1:300 (metric). Metric scales of 1:300 and 1:600 are required. If a metric scale is used, show English equivalents in parentheses and an English bar scale.
- d. Overlap images on successive GPPM sheets by a **minimum of 25mm (1")**. **Show the entire parcel on the GPPM sheet.** Number the sheet in pencil, place a 19 mm diameter circle in lower right corner of the 90 mm by 150 mm space reserved for the Title Block. Number the ETMs, including the Key Sheet, separately from GPPMs, which include the Tab sheet.
- e. Place revision block in upper left longitudinal margin.
- f. Show county and municipality designated in upper right corner of each sheet (except for Key Map and Tab sheet).
- g. Show the name of the prime consultant, sub-consultant or in-house unit that prepared the ROW plans in the lower left longitudinal margin.
- h. Show construction project reference (Route and Section) to the left of the Title Block. Provide all references used to determine the existing ROW.

i. BASELINES:

- 1) Mark all control lines on the GPPMs (baselines, survey lines, etc.).
- 2) When there is more than one new baseline, use the controlling base line as Baseline "A", others as Baseline "B", Baseline "C", Baseline Ramp "D", etc. W.B. (Westbound) and E.B. (Eastbound) baselines may be used on dual highways.
- 3) Show existing and new baselines accurately. Indicate their relationship by providing actual ties and offsets. Provide ties to every P.C., P.C.C., P.T. and P.I. between the existing and the new baseline.
- 4) Calculate stations and coordinates of P.C., P.C.C., P.T., P.I., equation stations, and record to the nearest .001 m (.01 foot) from traverses calculated, adjusted and tied into NAD 83, or other approved coordinate systems, to a minimum closure accuracy of 1/10,000 by field survey methods.
- 5) Show grid bearings to nearest second, if warranted by accuracy of field work and computations.
- 6) Tie baselines of side streets into the NJDOT Baseline by field survey methods with sufficient information and monumentation given for complete layout.
- 7) Include complete layout information for proposed realignment of intersecting streets.
- 8) Coordinate the establishment of county and municipal baselines, along with the existing ROW width, with the county and municipal engineers.
- 9) Number curves and tabulate curve data elsewhere on the same GPPM sheet.
- 10) Show existing monuments designating or controlling existing baselines, station offset and coordinates to all existing monuments.
- 11) Show proposed monuments for baseline or ROW (please note Section r (12) of the Map Filing Law for setting monuments).
- 12) On the first sheet of the GPPM include the Surveyor's certification (Lic. # and signature) that the monuments have been or will be set as shown.

- j. TOPOGRAPHY (Refer to IPM Procedures, Section 9.2.9.C.2.e, for standards).
- 1) Show existing buildings, bridges and other permanent structures.
 - a) Type, use (e.g. 2-1/2 sty. Brick Dwelling, 1 sty. Masonry Dwelling, Commercial, etc.) and house number.
 - b) Offsets to structures on the RA less than 3m (10') from the proposed ROW line or from the proposed slope line shall be measured and shown from the proposed ROW line to the nearest 0.01m (0.1').
 - c) All overhangs of structures within 3m (10') of proposed ROW line shall be shown and labeled to nearest 0.01m (0.1').
 - 2) Show above and below ground physical features within 30m (100') from the proposed ROW or proposed slope line, including, but not limited to:
 - transmission lines
 - railroads
 - inlets
 - manholes
 - drainage pipes
 - headwalls
 - retention and detention basins
 - sewage systems - municipal, corporate or individual septic system. Obtain as-built location plans from municipality, if possible, or field investigate, as necessary, to ascertain location – both existing and proposed
 - wells
 - driveways, parking lots and paved areas - type: concrete, gravel, blacktop, etc.
 - trees, shrubbery and outlined wooded areas
 - fences, signs and light standards
 - retaining walls
 - all water lines, all gas lines and underground storage tanks
 - concrete pads, islands, pumps, and appurtenances - show offset distance to the nearest 0.03 m (tenth of a foot) within 3 m (10')
 - other utility lines and facilities - for example, valve boxes, hydrants, traffic control boxes, etc.
 - existing floodway, floodplain and wetlands limits (show these limits for the entire property using an inset)
 - guiderail

- k. FIELD TIES TO FOUND PROPERTY CORNER MARKERS shall be obtained by surveys within the limits of the project. Only show property corners found in the field and identify what the markers are (iron pipes, monuments, etc.). Provide station and offset from the proposed baseline to the nearest 3mm (0.01').
- l. PROPERTIES PLOTTED - Show the following information:
- 1) Deed dimensions (Plotting).
 - a) Label courses as per deed description.
 - b) Show Latin abbreviations et ux, et vir, or et al on GPPMs and ETMs, if necessary.
 - 2) Deed book and page or Will book and page (show this information within the property, if possible).
 - 3) Tract number and tract lines.
 - 4) Exceptions outlined and noted.
 - 5) Easements outlined and identified as follows: width; purpose; location of street or utility within easement; deed book and page.
 - 6) Current names of adjacent owners.
 - 7) Private ROW outlined and identified as follows: width, purpose; location of road or path, etc.; Deed book and page.
 - 8) Public ROW (may need to check jurisdictional control).
 - a) Streets with official width, name and source of information (provide road return book and page, where applicable).
 - b) Municipal resolution, filed development map, tax map, deed calls, etc. (show name, date and index references).
 - c) Vacations or abandonments, including date and location of information (provide road return book and page, name, date and index references).
 - d) Map references and file number, if available.
 - 9) Development name and owner's name (from filed maps, if available).
 - 10) Block and lot; house number, if available: land use and/or zoning.

- 11) All previously acquired land by NJDOT shall indicate the route, section, parcel number and date of acquisition.

m. LOCATIONS OF EXISTING AND PROPOSED ROW LINES.

- 1) Designate lines enclosing an intersection with direct traffic connection to and from the main route as proposed ROW for the main route. For those intersections with an overpass or underpass only, designate lines set as proposed for the cross street as proposed line of said cross street and in descriptions as northerly or westerly lines of said cross street. When questions arise in applying these rules, contact the ROWE Unit.
- 2) Set points, stations, offsets, angles and/or bearings shown accurately and clearly. Provide sufficient information to enable the laying out of the ROW lines from the GPPM.
 - a) Show set points to proposed ROW lines and easement lines from the proposed base line by stations and offsets.
- 3) Use solid heavy line weight to designate proposed ROW lines with small circles accurately defining each angle or direction change in the line (See Attachments D and E).
- 4) Label all existing and proposed ROW lines to indicate where access is denied by acquisition. Also, where access is denied administratively or by regulation, such action shall be indicated on the GPPM for the easement or fee parcel being acquired. Use the same format as when showing "No Access", but use the following note: Access Denied administratively or by regulation.
- 5) Mark proposed and existing ROW lines "Proposed ROW Line", "Existing ROW Line", "Proposed Line" or "Existing Line".

n. PARCELS TO BE ACQUIRED

Parcels to be acquired shall initially encompass only the property that is required for the ROW (in fee, license, grant or easement). The RA shall not be set up as an acquisition prior to the Final ROW Submission. Should it be determined by ROW Technical Support, during the acquisition process, that such a RA is an uneconomic remainder or is landlocked because access is to be denied or is needed for other legal purposes (for example: Mitigation of damages to the RA of another owner), it shall be designated as a separate parcel using the "parent" parcel number with the prefix "X" and the next sub-letter (For example, the RA for parcel 15 would become X15B). **At no time** should a RA, which is not to become part of the physical and permanent part of the ROW, be acquired without the authorization of ROW Technical Support.

- 1) Delineate parcel with heavy lines (see standard ROW legend). Show a bearing and distance for each course. Describe each course of the proposed parcel with a metes and bounds description (distances with English equivalents in parentheses).
- 2) Parcel number (inside parcel if possible).
 - a) Begin with lowest number (obtained from the ROWE Unit) and increase in direction of stationing.
 - b) Where more than one right is required from an owner for various construction needs, set up only one parcel and identify each additional right (except utility parcels). **This procedure only applies where the rights are contiguous to the subject parcel. Set up separate parcels when the rights are not contiguous.**
 - c) On the GPPM the "SP" and "DE" designation shall be used to identify the area to be acquired that includes a fee parcel and an existing private easement. Two different parcel numbers should be used to identify the component parts of the acquisition on the GPPM; one for "SP" (owner of the fee parcel) parcel and one for the "DE" parcel (under the name of the holder of the easement). (See Attachments A and B)
- 3) Parcel area
 - a) Show square meters in urban areas for areas less than 1 hectare - calculated to the nearest 0.1 square meter, with English equivalent areas in parentheses.
 - b) Show hectares in rural areas - calculated to the nearest 0.0001 hectare \pm .
 - c) Show the easement area where delineated (ditch, drainage easement, diversionary road, slope, etc.).
- 4) Show the remaining area and label it R.A. Where the highway leaves remaining areas on both sides show this as: R.A. North and R.A. South, or R.A. East and R.A. West.
 - a) For example: *R.A. = 2.6479 Ha (6.543 Ac) or R.A. = 96.9 SM (1,043 SF)*. RA - Calculate by subtracting the parcel area from the deed area, except for areas subject to public ROW (e.g. roadways). Place a note on each GPPM that contains an RA indicating this method of calculation.

- b) Total area should equal the deed area.
 - c) When only an easement is required, give the total area of the property as the remaining area.
- 5) Subdivision of parcel - Parcel 21 becomes Parcel 21A and Parcel 21B, and Parcel 21A becomes Parcel 21A1 and Parcel 21A2, if again divided. The original parcel number should remain and, if necessary, arrows should be added to show extent of parcel before subdivision.
- 6) Types of Parcels - Add a letter before the parcel numbers as noted in 9.2.6. The types of parcels are as follows:
- Entire acquisition
 - Partial acquisition
 - Riparian
 - Utility
 - Servient Estate
 - Dominant Estate
- 7) Structures - The area under bridges (to the outer extent of the wingwalls, abutments and footings), culverts (crossing under highway and ramp sections), and other permanent structures (e.g., sign structures), including their footings, shall be acquired in fee, when practical (See Bridge Easements under EASEMENTS AND RIGHTS TO BE ACQUIRED) (See Attachments F and G) and other areas as directed by the “scoping team” (see Construction and Maintenance Easements for the additional area required for construction of the structure.). For structures over water, the designer shall obtain a letter from the N. J. Department of Environmental Protection, Division of Coastal Resources, Bureau of Tidelands, confirming any existing riparian rights or the lack thereof.
- o. EASEMENTS AND RIGHTS TO BE ACQUIRED - All easements, both permanent and temporary, shall be tied to the proposed baseline by stations and offsets (except where noted). However, easements which constitute a substantial use of a property (easements that are so intrusive that they allow no other use for the area of the easement, for example, slopes formed with rock backfill) should be treated like acquisitions in fee, that is each course of this type of easement should be described by metes and bounds. Easement areas, including easements that constitute a substantial use of a property, are not deducted from the RA. Any type of easement that is not included in a property acquisition is designated by a letter, for example: *parcel E1, UE8, TE9*, and so on. For easements to be acquired from property designated as riparian lands by NJDEP, use the procedure for the type of easement that the parcel would have been if it had not been over

tidelands and add the letter T in front of the parcel number. See RIPARIAN GRANT APPLICATIONS, Section p. below.

- 1) SLOPE EASEMENTS: Show proposed slope line, if outside of proposed ROW line. See the standard ROW legend.

Note: This proposed slope line is not the same as the slope line shown on the construction plans. This slope includes wash and spread. See Attachment H for the sketch showing Slope E and Slope EW. In areas where the Department has acquired slope rights the easement parcel will be the computed area between the previously acquired slope line and the new EW Slope Line. If the owner has filled or cut his property to the grade of the highway and no deed of release was issued by the Department, any new slope which falls within this previously acquired slope area will not require an easement parcel, however, if a deed of release for the slope easement was issued, a new slope easement parcel is required.

- a) Dimension slope offsets at 20 m station intervals from ROW line. Slope offsets shall be shown to the nearest 0.1m.
- b) Show slopes previously acquired (reference to Route, Section and date of acquisition).
- c) Show proposed slope easement area for each parcel, excluding existing slope areas previously acquired. Show multiple slope areas individually and totaled.
- d) Label the slope ratio for all slopes on the GPPM. It is important that this be done so that the effect, if any, on the remaining lands can accurately be determined. Label the slope as: Slope "E" (1:4), Slope "E.W." (1:2), Slope "E.W." (1:1½), etc (See Attachment H).

- 2) GRADING RIGHTS

- a) Delineates a right of entry to grade the remaining lands in accordance with any change of grade along the road improvement. The time period for the entry and a detailed explanation of the work should be included within the description.
- b) Slopes 1:6 (6:1) or flatter are considered "Limit of Grading" areas (For Limit of Grading for driveways, see d), below).
- c) Show no area on the GPPM or description.

d) See Section 14 of the NJDOT Procedural Manual for Access Adjustments/ Modifications/ Revocations. **DRIVEWAY GRADING OUTSIDE OF THE ROW IS NOT AN EASEMENT.**

(1) Place the following note on the GPPM when the property owner has executed a ROE - Access: **“This property owner has executed a ROE for construction of the driveway(s) and associated site improvements identified on this plan.”** This note should only be used in cases where there is no other right of way involvement (if the owner had not signed the ROE, a Site Parcel would have been required). Also, before putting the note on the GPPM, check the plan showing what is to be constructed against the plan attached to the ROE to be certain that they agree and the proposed construction has not changed.

(2) OAD will not send out a ROE letter to the owner if other ROW (fee or easement) is being acquired on that property (See Attachment I). If the ROE is not signed, the designer must prepare ROW documents for a Site Parcel easement (see paragraph 11), this section).

(3) Show a short dashed line indicating the limits of the driveway work with 1.5 m (5') minimum additional distance outside the physical limits of the work for construction purposes and label this line “Limit of Grading”.

(4) Show an area for “Limit of Grading”.

(5) Use the appropriate clause in the description.

e) Do not consider slopes along graded driveways as part of the roadway toe or top of slope (this is the limit of grading). Carry roadway slopes across each driveway as though the driveway did not exist. This slope line across the driveway represents the toe or top of slope for support of the highway. Use the appropriate slope clause.

3) DRAINAGE EASEMENTS

a) Show pipes, headwalls and other drainage appurtenances.

- (1) Proposed drainage system shall indicate direction of flow. Do not show pipe size.
 - (2) Easement areas shall encompass proposed headwalls and other drainage structures.
 - (3) Set the drainage easement by width of easement from centerline of pipe or structure (not by station and offset from the proposed baseline). Determine the width of the easement by pipe size, structure size, depth of excavation and other factors. A minimum width of 3m (10') is recommended. However, provide enough area to enable the proper construction, including access to the site, and future maintenance of the drainage structure.
 - (4) Show areas individually and, in the case of multiple drainage easement areas, provide a total area.
- 4) TEMPORARY DIVERSIONARY ROAD EASEMENTS
- a) Show the traveled way, berms, slopes, and drainage system affecting the RA.
 - b) The limits of the temporary diversionary road shall include slopes and be marked "Temporary Diversionary Road". Dimension the temporary diversionary road from the existing ROW line or set from baseline. Show an area.
- 5) UTILITY EASEMENTS
- a) Set by width of easement from centerline of utility facility.
 - b) Show easement area.
 - c) Location and type of utility within the easement.
- 6) BRIDGE EASEMENTS
- a) To be used only when a fee acquisition is not practical.
 - b) Delineate the proposed easement for the area required to construct and maintain the structure, including access to the site.
 - c) Set bridge easement lines a minimum of 4.5 m (15 feet) from the structure

- d) The designer shall include a clause in the description (see Section 9.2.9.C.4) **specifically prohibiting the storage of any combustible, hazardous and/or toxic material within the easement area, that could cause a fire, corrosive damage to the structure, or that would be a potential health hazard to any personnel performing their duties around or on the structure.**
 - e) Show easement area.
- 7) CONSTRUCTION AND MAINTENANCE EASEMENTS
- a) Retaining walls, culverts, cofferdams and other structures not included in 6) above.
 - (1) Delineate and label any footings "Limit of Footing".
 - (2) Set construction and maintenance easement lines by width of easement from structure (not by station and offset). In the case of retaining walls where ROW was not acquired in fee to the back face of the footing, set the proposed ROW line on the back face of the proposed wall.
 - (3) Set the easement width sufficient to construct, inspect and maintain the structure (including the footing). The easement shall include a means of access to the site.
 - (4) Show easement area.
- 8) PRIVATE EASEMENTS
- a) Delineate and dimension limits of easement.
 - b) Label easement "Private Easement".
 - c) Show easement area.
 - d) The same procedures used in a) - c) above also apply to the PAE.
- 9) AERIAL EASEMENTS (For utility pole overhangs only.)
- a) Delineate and dimension width of easement.
 - b) Label easement "Aerial Easement"
 - c) Show easement area.

- 10) SITE PARCELS (Temporary Rights of Entry for Construction of Driveways and related work)
 - a) Use when the ROE is not signed by the property owner.
 - b) Delineate by a dashed line labeled "Limit of Site Parcel", including 1.5 m (5') additional outside the physical limits of the driveway work for construction purposes.
 - c) Show area.
 - 11) SIGHT TRIANGLE EASEMENTS
 - a) Delineate and dimension limits of easement.
 - b) Label easement "Sight Triangle Easement".
 - c) Show easement area.
 - 12) EXISTING EASEMENTS (Dominant Estate)
 - a) A separate parcel shall be assigned to the existing easement that is affected by any acquisition.
 - b) Existing easements shall be shown as a parcel with the property for which it serves (not as a part of the property which it crosses or upon which it is physically located). (See Attachments A and B)
 - c) Delineate the dimension and limits of the easement.
 - d) Label the existing easement as DE (Dominant Estate). Label the underlying fee within the existing easement as a SP (Servient Estate) parcel. Note: See Section 9.2.9.B.2.n.2).c) herein.
 - e) Show Dominant Estate easement area.
- p. RIPARIAN GRANT APPLICATIONS.
- 1) Define the existing mean high water line for parcels bordering on or inclusive of a natural tidal water course; or define the tidelands claim line for lands which are formerly flowed by the mean high tide, as shown on the tidelands claims maps. These tidelands claims maps are filed in each county and municipality where these tidelands are located. Copies may be purchased from the Bureau of Tidelands Management, NJ Dept. of Environmental Protection, PO Box 439, Trenton, NJ. All tidelands claims lines

are also in digital format, on the CD ROM entitled “GIS Resource Data - NJ Dept. of Environmental Protection Series 1, Volume 4” and can be purchased from NJ Dept. of Environmental Protection’s Map and Publications.

- 2) The application form for a tidelands grant is found in Section 9.2.10. The designer shall submit the prints and application as shown in Attachment N for each submission. The Manager, ROW Technical Support will forward the application and required documents to the Bureau of Tidelands Management, NJ Dept. of Environmental Protection.

q. ENVIRONMENTALLY SENSITIVE PARCELS

- 1) Define environmentally sensitive parcels as early as possible in the design process (see Section 8.6.2 of the NJDOT Procedural Manual). These parcels will be identified by the BES, “E Team” during the preparation of the documents for the Categorical Exclusion (CE), Environmental Assessment (EA), Environmental Impact Statement (EIS) or EO 215 (state funded projects).
- 2) Acquisition from any of the following properties will qualify them as environmentally sensitive parcels:
 - Spill Act and Contaminated Soils Properties
 - UST (Underground Storage Tanks)
 - Section 4(f) properties
 - Green Acre properties
 - Historic Properties (Section 106 Involvement)
 - ADAs (Agricultural Development Areas with 8 year deed restrictions)
 - Landfills
- 3) Identify environmentally sensitive parcels on the GPPM as “Sensitive Area” with the type indicated in parenthesis for each sensitive area. For example: “*Sensitive Area (Landfill)*”. In areas where the GPPMs are too congested, list and describe the sensitive parcels within a box located in the lower left corner, if space permits. If not, place where space allows. For example:

<i>Sensitive Parcels</i>	
<i>Parcel #</i>	<i>Type</i>
28	UST
47	Historic
53	Landfill

3. TAB SHEET - Provide a tabulation sheet and number it as the last GPPM, with the parcel numbers, parcel areas, owner’s names, addresses, etc.

a. CHECKLIST

- Title Block
- Plan sheet number
- Parcel numbers
- Parcel areas
- Easements
- Location
- Ownership (show names exactly as indicated in the deed)
- Deeds
- Remarks
- Revision block
- Designer's name
- Standard ROW legend (optional)

b. PROCEDURES

Sample Tab Sheets are available from ROWE and can be included in the material distributed at the initial meeting. The "STANDARD ROW LEGEND" may be placed on the TAB SHEET for projects that have a small number of parcels to save room on the first GPPM sheet. Get approval from the ROWE Unit to use this combined sheet.

C. IPM PREPARATION

GENERAL

Base the IPM on the GPPM and include the following note on it: "Parcel information is based upon a survey performed by (Surveyor's Name and Place of Business) on (Date) as shown on the GPPM entitled Rt. _____, Sec. _____, to be filed in (County). IPMs are not required to be signed and sealed by a licensed Land Surveyor.

Prepare an IPM for each parcel to be acquired (see Section 9.2.5 for IPM sizes). When there are multiple parcels under the same ownership, contiguous to the same remainder, show all the parcels on one IPM. Show the ROW and pertinent construction information for ± 15 m (50 feet) on each side of the parcel. Generally, the scale of the IPM should be the same as the scale of the GPPM. Smaller scales (e.g. 1:600) may be used with the permission of ROWE and inserts at a larger scale may be used for clarification. Show the owner's entire property. An entire tract insert is permitted for large properties, generally at the same scale as the ETM (see samples of IPMs). However, IPMs that show the entire property without the use of an entire tract insert, are preferred. Match lines and additional sheets may be used in the preparation of the IPM. Show a note describing the calculation method used for the RA, e.g. calculated by subtracting the parcel area from the deed area, except for areas subject to public ROW (e.g. roadways).

When providing additional IPMs for condemnation cases, fold all sheets to 8½" x 11" with the Title Block showing (See Attachments J and K). Provide a border, approximately 15 mm (1/2") around all IPMs (except that the top border shall be 38 mm [1-½"]). Along the upper left margin, place the name of the designer (consultant or ROWE).

1. CHECKLIST

- Sets
- Access
- Baselines
- Slopes
- Topography
- Existing easements
- Existing street widths
- Proposed easements
- Deed Information
- Scaled distances
- Adjoining owners
- North Arrow
- Bar scale
- Parcel bubble
- Title Block
- Parcel number
- Inserts

- Contiguous fee parcels
- Color code
- Line weights
- IPM reviewer Checklist
- IPM description

2. PROCEDURES

- a. Sets - Show sets from the proposed baseline to the proposed ROW lines by stations and offsets along with references to the GPPM and the Construction Plan. Set all parcel lines that are proposed ROW lines or proposed street lines from the baseline. In addition, designate proposed easements by baseline stations and offsets.
- b. Access - Label all existing and proposed ROW lines to indicate where access is denied by acquisition. Also, where access is denied administratively or by regulation, such action shall be indicated on the IPM for the fee parcel or easement being acquired.
- c. Baselines - Show and label all baselines used to set the parcel or to locate the parcel in the description. Show baseline bearings, radii, central angles, P.T., P.C., P.C.C. and P.I. stations affecting the setting of the ROW line. When two intersecting base lines are used for setting the ROW, show the equation.
- d. Slopes - Show and label slopes within the remaining area of the subject parcel with offsets. When there are two or more separate slope easements, show the area of each and a total slope area. Show and label slope rights acquired previously, "Slope Rights Previously Acquired".
- e. Topography - Show all structures, trees, sidewalks, underground and above ground utilities, etc., within the subject property and adjoining streets and highways. Also show any feature that could affect the value of the property (e.g. *wetlands*). Do not show topography in adjoining properties, except where it affects the subject property (e.g. *shared driveways, row houses, wetlands that are continuous from those located on the subject property or within the areas of the parcel, landfills, etc.*). To further clarify and delineate the property impacts, add the following additional information on each IPM: the distance, to the nearest 30 mm (0.1'), from the proposed ROW line to any building or appurtenance, including overhangs, commercial signs, pump islands, canopies, oil tanks, wells, detention/retention basins, parking spaces and septic locations within 30 m (100') of the proposed ROW line. Base the IPM on the same topographic survey as the GPPM, so that they shall be consistent with each other.
- f. Existing Easements - Show all existing easements (e.g. *utility, private, drainage, bridge, etc.*) within the subject property, dimensioned and

identify the holder of the easement. When there is an acquisition of a existing private easement, a separate parcel shall be set up under the name of the owner of the easement and shown only on the IPM associated with that owner.

- g. Existing Curb and Traveled Way - Show existing edge of pavement and/or the existing curb line.
- h. Existing Street Widths - Show the existing ROW width of the highway or street. Show and name all streets that affect the subject property.
- i. Proposed Easements - Show and label all proposed easements within the remaining area with dimensions or offsets. When there are two or more easements of the same kind, each shall have its individual area labeled. Inserts at enlarged scales may be used for clarification in the case of multiple and/or overlapping easements.
- j. Deed Information - Show deed bearings, distances, radii and arc lengths (or file map or survey map information, deed book(s)/page and block/lot number) along property lines of the parcel and remaining area. Never mix deed and other map information.
- k. Scaled Distances - Use scaled distances under the following conditions;*
 - 1) When the subject property is made up of more than one lot and it appears that the information comes from different deeds and there is no total deed distance.
 - 2) When the deed line runs to the center of the roadway, in addition to the deed bearing.
 - 3) When the property line is intersected by the parcel, in addition to the deed bearing.

* Identify scaled distances as "(s)" on plans. Show scaled distances in English to the nearest foot (metric equivalent), on each course inside the fee parcel area and on the adjoining remaining property lines. Also, show a scaled perpendicular distance from the existing ROW line to the proposed ROW line.
- l. Adjoining Owners - Show owners of all property adjacent to the parcel.
- m. North Arrow - Show a north arrow with the basis for its northing orientation.
- n. Bar Scale - Show above Title Block. If an entire tract insert is used, show bar scale for the insert.

- o. Parcel Bubble - Show the parcel bubble (title area) in the form as depicted in Attachment L.
- p. Title Block (See Attachment M) - Show the ROW route and section, section limits, parcel number(s), municipality, county and the date the IPM was prepared.
- q. Parcel - Indicate by a line and arrow from the title circle to the parcel or by a smaller circle within or adjacent to the parcel. Indicate parcels on the entire tract insert with a small circle. When two or more fee parcels are contiguous, indicate each by a small parcel circle showing the area, and the main title shall have the circles connected either horizontally or vertically and show the total area.
- r. Contiguous fee parcels - Describe together only the outer boundary of those parcels joined in the title (parcel bubble area). Easement or utility parcels, even when they adjoin a fee parcel, require a separate title listing.
- s. Serviant and Dominant Estate Parcels - Acquire Dominant Estate (DE) parcels under the name of the owner of the easement as a separate parcel and depict on a separate IPM from that used to show the acquisition of the underlying fee parcel (SP) which shall be established under the name of the owner of the fee. Also the "SP" parcel shall be shown in red with dimensions and area and the "DE" parcel shall be shown in pink with dimensions and areas. (See Attachments A and B)
- t. Color Code - Highlight the parcel and all proposed easements in the following colors (no line is ever double colored):
 - 1) Red - Parcel Area.
 - 2) Yellow - Slope Easement Area.
 - 3) Purple - Bridge Easement Area.
 - 4) Blue - Utility Easement Area.
 - 5) Orange - Denial of Access when it extends beyond the parcel limits.
 - 6) Green - Drainage Easement Area, Ditch Easement Area, Channel Easement Area and Riprap Easement Area.
 - 7) Brown - Limit of Grading, Construction and Maintenance Easement Area, all Temporary Easements and any other easements not otherwise covered above.
 - 8) Pink - Existing private easement area.

4. DESCRIPTION

IPM descriptions are to be attached to agreements prepared by ROW Negotiators and may be attached to condemnation complaints and Declarations of Taking, where agreements are not consummated.

a. Checklist

- Date, initials of writer and typist
- *All that certain land and premises* clause
- Title block quotation
- Parcel description
- Block and lot clause
- Clauses
- *SUBJECT HOWEVER* clause
- Color code

b. PROCEDURE

- 1) Place the date, initials of the writer and typist in the upper left corner.
- 2) Insert clause: "All that certain land and premises, situated, lying and being in the _____ of _____, in the County of _____ and the State of New Jersey and more particularly described as follows:"
- 3) Insert GPPM Title Block and IPM Title Block map quote clause.
- 4) Describe the parcel boundaries.
- 5) Insert clause: "Being also know as Lot _____ in Block _____ on the tax map of the _____ of _____."
- 6) Insert other clauses : See Typical Clauses.
- 7) Include the IPM color code clause as the last clause in description: "*The above described premises are color coded "Exhibit B" in the following manner: _____ (List all codes involved with the parcel) _____*".

- c. Typical Clauses: The following are standard clauses and **are for example only**. It is important that the designer take into account that, unless stated otherwise, the responsibility of maintenance of the property, unrelated to the State's improvements, is to be assumed by the owner of the fee interest and not by the NJDOT, unless specifically spelled out within the terms of the description. If the designer concludes that greater rights are needed, they must be specifically set forth in very

certain terms. A very detailed and particularized description may be required to ensure that the appropriate rights are acquired and that the full impact of the easement is understood. Standard clauses may not be sufficient under such circumstances. Descriptions for all temporary easements shall contain language identifying when the easements starts and when it is to be terminated. The first clause after the parcel description begins with *TOGETHER WITH* and each subsequent clause begins with *AND ALSO* (except for existing utility easement clause which begins with *SUBJECT TO*). The normal closing clause is the "All Right, Title and Interest, etc." clause except when there is a *SUBJECT TO* clause. The color code statement follows these clauses and is the last entry on the description. Use the following typical clauses as models in preparing descriptions:

1) DENIAL OF ACCESS

"any direct access which the owner may have to and from the Freeway; (EXCEPT that the owner shall have direct access to and from Smith Street;) (EXCEPT that the owner shall have direct access as far as the line marked "ACCESS PERMITTED") as shown on the aforesaid map."

NOTE: This clause shall only be used where access is being acquired as directed by OAD. (see Section 9.2.9.C.2.b.) When acquisition of this right is not required because access is denied administratively or by regulation, the following note shall be placed on the description to indicate this condition: "It is hereby noted that access to the abutting highway, to the extent shown on the aforesaid map, has been denied by administrative action pursuant to the State Access Management Act, N.J.S.A. 27:7-89 et seq., and Code, N.J.A.C. 16:47-1.1, et seq., or is denied under regulation by the State Highway Management Code, N.J.A.C. 16:47-1.1, et seq."

2) SLOPE: (Long Clause): (fill or cut >1.5 m) (5 feet)

"the permanent right to form and maintain slopes for grading the said State Highway (or Street, etc.) as far as the line marked "Slope E.W." (or "Slope E.") on the aforesaid map, including the right to topsoil; seed, plant trees, vines and shrubs, so as not to interfere with points of access. Maintain the same so as to stabilize the soil, prevent erosion and/or to improve the aesthetic aspects of the highway, except for driveways, parking lots, or other paved areas that are to remain, which will be replaced with equal or better paving materials. PROVIDED, HOWEVER, that the slope easement may be annulled only after the State has been given sufficient notice to remove the aforementioned stabilizing and landscaping items and by furnishing and maintaining adequate support or protection for the highway so as to make the continuance of the slope right unnecessary."

3) SLOPE: (Short Clause): (fill or cut \leq 1.5 m) (5 feet)

“the permanent right to form and maintain slopes for grading the said State Highway (or Street, etc.) as far as the line marked "Slope E.W." (or "Slope E.") on the aforesaid map, including the right to topsoil and seed and to maintain the same so as to stabilize the soil, prevent erosion and/or to improve the aesthetic aspects of the highway, except for driveways, parking lots, or other paved areas that are to remain, which will be replaced with equal or better paving materials. PROVIDED, HOWEVER, that the slope easement may be annulled by furnishing and maintaining adequate support or protection for the highway so as to make the continuance of the slope right unnecessary.”

4) DRAINAGE

“the permanent right to access, construct, reconstruct and maintain an open ditch (subsurface drains), (headwalls) and appurtenances at the location shown on the aforesaid map.”

or

“the permanent right to construct, reconstruct and maintain an open ditch as shown on the aforesaid map.”

NOTE: See Section 9.2.9.B.2.o.3).a).(3) for instructions on establishing the easement size.

5) TEMPORARY DIVERSIONARY ROAD

“The temporary right to construct and maintain temporary diversionary road, utility facilities, and appurtenances at the location shown on the aforesaid map. This right shall begin from the date of notice from the State’s resident engineer for use during the construction of the bridge and highway and shall terminate at the completion of the work, which shall be for a duration of ___ months. When the bridge and highway are completed and prior to opening to traffic, the land will be graded and seeded. All other items, including trees, shrubs, etc. will not be restored. If the State, within its sole discretion, determines that the temporary easement or right needs to be extended in order to complete the Work, such right may be extended simply by written notice from the Resident Engineer to the owner or its assigns. The extension may be up to a period not to exceed ___ months from the originally projected ending time frame. In such event that this temporary right is extended, payment will be made semi-annually during the extended term of the temporary right, based upon the ‘per-monthly’ rate set forth in the State’s offer letter.”

6) TEMPORARY MUCKING AREA

“the temporary right to remove unsuitable material and replace with suitable material as far as the line marked "Limit of Unsuitable Material" as shown on the aforesaid map.” This right shall begin from the date of notice from the State’s resident engineer and shall terminate upon the completion of this work, which shall be for a duration of ___ months. If the State, within its sole discretion, determines that the temporary easement or right needs to be extended in order to complete the Work, such right may be extended simply by written notice from the Resident Engineer to the owner or its assigns. The extension may be up to a period not to exceed ___ months from the originally projected ending time frame. In such event that this temporary right is extended, payment will be made semi-annually during the extended term of the temporary right, based upon the ‘per-monthly’ rate set forth in the State’s offer letter.”

7) PUBLIC UTILITY

SUBJECT, HOWEVER, to the easement of (name of Public Utility Company) and all other public utility easements, recorded or unrecorded, affecting the herein described premises.

NOTE: This clause is to be used in connection with a highway construction project when the parcel to be acquired is subject to a specific public utility easement.

8) PRIVATE UTILITY

SUBJECT, HOWEVER, to all right, title and interest that the Algonquin Transmission Company may have in and to the above described premises.

NOTE: This clause is to be used when the parcel to be acquired is subject to a specific privately owned utility, such as Transco, Algonquin, etc.

9) RIGHT, TITLE AND INTEREST CLAUSE

All right, title and interest that the owner may have in Smith Street (insert name of contiguous road), contiguous to the above described property as shown on the aforesaid map.

NOTE: This clause is to be used in the description when the property abuts or is contiguous to a dedicated thoroughfare, whether existing or a paper street.

NOTE: For SP parcels use the following language.

All right, title and interest that the owner may have in the parcel designated as SP (insert number) contiguous to the above described premises as shown on the aforesaid map.

NOTE: For DE parcels use the following language.

All right, title and interest that the owner may have in the parcel designated as DE (insert number) contiguous to the above described premises as shown on the aforesaid map.

10) BRIDGE EASEMENT

“A right, in perpetuity, to construct and maintain a bridge (viaduct) and/or associated approaches and roadways within the area depicted on the aforesaid map. This easement shall further include the right, in perpetuity, to re-enter in the future to reconstruct, improve or enlarge said bridge (viaduct) or associated approaches and roadways within the aforesaid easement area. This easement right shall also include, by way of example and not limitation, the right to enter and re-enter from time to time, along with equipment, personnel and materials, for the purposes of a) constructing footings, abutments, piers, wing walls, retaining walls, decks, parapets and all related elements, appurtenances and structures associated with or needed for the construction and maintenance of a bridge or viaduct; b) perform maintenance, repair and related activities; and c) perform inspections within the aforesaid area. The owner, or its assigns, shall retain the right to use the area of the easement, as depicted on the aforesaid map, so long as such use does not interfere with the rights set forth herein and does not adversely affect the physical integrity of the structures constructed or to be constructed or that may be reconstructed, enlarged or improved in the future within the area of the easement as depicted on the aforesaid map. However, the owner or its assigns shall not have the right to a) erect or construct any building or structures (exclusive of parking lots) within the area as depicted on the aforesaid map, b) park or store vehicles on a continuous long term basis (such continuous period shall not extend more than ___ hours); c) store material or carry out or permit any activity which in any manner involves or includes combustible, hazardous or toxic material that has the reasonable potential of causing, directly or indirectly, a fire, explosion, implosion, or corrosive damage; or d) store material in such a manner or carry out or permit any activity that could have the potential of causing, directly or indirectly, a detrimental effect upon the physical integrity of the structure constructed or to be constructed, or that may be reconstructed, enlarged or improved in the future within the area of the easement as depicted on the aforesaid map. The owner, or its assigns, also, shall not use the easement area in any manner which could reasonably cause, directly or indirectly, a potential health hazard, safety hazard to the traveling public or any personnel of the State or the contractor performing work, maintenance or inspection services on or around the structure. Similarly, the owner, or its assigns, shall not do anything

which shall unreasonably prevent or interfere with entry or re-entry by personnel of the State or a contractor, or their material or equipment to the area of the easement as depicted on the aforesaid map when carrying out or implementing the rights created under this easement. Access to the easement area shall be as designated on the aforesaid map, except where access is not so designated, access shall be permitted across the remainder in such a manner so as to minimize adverse impact upon the use of the remainder. Any permitted improvement removed by the State within the area of the easement during entry, which is not within or near the footprint of a structure, will be reasonably be replaced in kind by the State. Upon ten calendar day written notice from the State, the owner or its assigns shall vacate the area of the easement as depicted on the aforesaid map and remove all property which may interfere with the construction, reconstruction, enlargement, improvement, maintenance, repair, inspection or operation within the reasonable discretion of the State until written notice is provided by the State that the construction or operation has been completed, except in the event of an emergency which threatens the safety of the traveling public, the owner, or its assigns, shall immediately vacate the area of the easement upon receipt of oral or written notice.”

NOTE: This easement shall only be used with the approval of the ROWE; in most cases, a fee interest should be acquired for the construction of a bridge or viaduct subject to an access easement where necessary [See 11) below]. A similar form of clause may be used where only a wing wall or footing is being constructed or where bridge is small in size and does not allow one to traverse or store underneath; in such instances, 18) or 19) below should be used and modified to reflect exact purpose and intent.

11) OWNER’S ACCESS EASEMENT (OAE) UNDER VIADUCT OR BRIDGE WHERE FEE INTEREST HAS BEEN ACQUIRED

“EXCEPT however, reserving to the owner, or its assigns, a nonexclusive right of ingress and egress under the bridge or viaduct, across the acquired right-of-way, within the limits of the area as shown on the aforesaid map or at such other location which may be re-established by the State, from time to time at its discretion, and at its expense, on a permanent or temporary basis, within the area of the State’s right-of-way. Such access way shall, however, be ___ meters (___feet) in width, shall permit two way traffic and shall be constructed or relocated so as to accommodate vehicles from the point of ingress or egress along the border of the remainder(s) as shown on the aforesaid map; after the access way is constructed or relocated in the future, all maintenance of the improved access way, short and long term, shall be the responsibility of the owner or its assigns, exclusive of highway drainage except that drainage which serves only the remainder(s) and/or the access road, shall also remain the responsibility of the owner or its assigns. The access way shall not be used for storage of any personal

property of the owner or its assigns or of anyone else and parking or storage of vehicles shall not be permitted for any reason, except on a temporary basis in conjunction with maintenance of the access way or drainage system only and not to exceed a 12 hour period without the written consent of the State, which consent may be denied within its discretion. The access way within the area of the ROW may be used for access by the State and its contractor(s) without notice and at the State's discretion, but shall not be open to the public."

NOTE: This clause is to be used in conjunction with fee acquisitions only where there is a need to provide access to a remainder, such as where the remainder will be landlocked or will not retain reasonable access but for an access way beneath bridge or viaduct and is to be used only where conditions so permit. Thus, it is necessary to tailor this clause to the specific conditions of the property for which access is being provided, so as to minimize any damages to the remainder and to properly accommodate planned structures or future reconstruction. The intended areas of the access way needs to be identified and situated so as to accommodate construction, future reconstruction, maintenance, inspection and other activities. Terms may have to be changed depending upon the purpose of the access way and the use or potential highest and best use of the remainder. If the access way will not accommodate all types of vehicles which could conceivably be using the access way, such clause needs to be amended accordingly. Similarly, if the access way is to be used by vehicles in the other adjacent property, further amendments need to made.

12) GRADING ON OWNER'S LAND

"the temporary right to enter upon the remaining lands of the owner for the purpose of grading as far as the line marked "Limit of Grading" as shown on the aforesaid map. The right shall begin from the date of notice from the State's resident engineer and shall terminate upon the completion of this work; which shall be for a duration of ___ months. If the State, within its sole discretion, determines that the temporary easement or right needs to be extended in order to complete the Work, such right may be extended simply by written notice from the Resident Engineer to the owner or its assigns. The extension may be up to a period not to exceed ___ months from the originally projected ending time frame. In such event that this temporary right is extended, payment will be made semi-annually during the extended term of the temporary right, based upon the 'per-monthly' rate set forth in the State's offer letter."

or

"the temporary right to enter upon the remaining lands of the owner for the purpose of paving, constructing curb and grading as far as the line marked "Limit of Grading" as shown on the aforesaid map. This right

shall begin from the date of notice from the State's resident engineer and shall terminate upon the completion of this work, which shall be for a duration of ___ months. If the State, within its sole discretion, determines that the temporary easement or right needs to be extended in order to complete the Work, such right may be extended simply by written notice from the Resident Engineer to the owner or its assigns. The extension may be up to a period not to exceed ___ months from the originally projected ending time frame. In such event that this temporary right is extended, payment will be made semi-annually during the extended term of the temporary right, based upon the 'per-monthly' rate set forth in the State's offer letter."

NOTE: See Section 9.2.9.B.2.o.2).(a-e) for instructions.

13) BUILDING ENCROACHMENT

"It is further agreed that the owner shall have the right to use that portion of the ___ story building, which is within the proposed ROW, during its natural period of usefulness without the right of extending same or causing same to become longer lasting and that upon the termination of the useful life of the structure, the owner will be required to demolish said portion of building and all rights of the parties hereto will be extinguished."

14) FLOOD FRINGE AREA

"a permanent easement for flood control purposes at about Station_____ (Baseline Stationing), specifically the acquisition of the owner's right to place embankment, or to erect any buildings or structures within the limits designated as the "Flood Fringe Area" as shown on the aforesaid map."

15) PLACING FILL AGAINST STRUCTURE

"The permanent right to enter upon the remaining lands of the owner to place fill against the existing (type of structure) structure as shown on the aforesaid map. The owner or its assigns shall not have the right to remove said fill without the written consent of the State and can only be annulled where the owner or its assigns has provided and agrees to maintain adequate alternate support or protection for the highway and only after reasonable notice has been provided to the State. The fill will not exceed a height of ___meters (___feet): the fill shall be topsoiled and seeded or paved;"

NOTE: This clause shall only be used with approval of the ROWE Unit; an inset shall be prepared and shown on the IPM which shall identify limits and height of fill, as well as the angle of the slope and other relevant dimensions and characteristics, including landscaping or paving type.

16) TEMPORARY EROSION CONTROL

“the temporary right to enter upon the remaining lands of the owner for the purpose of constructing and maintaining erosion control facilities and appurtenances including the right to construct and maintain temporary fence as far as the line marked "Line of Temporary Erosion Control" for use during the construction of the channel, culvert, and highway, as shown on the aforesaid map. This right shall begin from the date of notice from the State’s resident engineer, and shall terminate when the new channel, culvert and highway are completed , which shall be for a duration of ___ months, and prior to opening to traffic, the land will be graded and seeded; all other items, including trees, shrubs, etc., will not be restored. If the State, within its sole discretion, determines that the temporary easement or right needs to be extended in order to complete the Work, such right may be extended simply by written notice from the Resident Engineer to the owner or its assigns. The extension may be up to a period not to exceed ___ months from the originally projected ending time frame. In such event that this temporary right is extended, payment will be made semi-annually during the extended term of the temporary right, based upon the ‘per-monthly’ rate set forth in the State’s offer letter.”

17) SITE PARCEL

“Parcel S ____, at about Station ____, consisting of the temporary right to enter upon the remaining lands of the owner with personnel, material, and equipment for the purpose of constructing curbing, or paving, or grading a driveway and appurtenances, as far as the line marked “Limit of Site Parcel”, as shown on the aforesaid map. This right shall begin from the date of notice from the State’s resident engineer, and shall terminate upon the completion of the work, which shall be for a duration of ___ months. If the State, within its sole discretion, determines that the temporary easement or right needs to be extended in order to complete the Work, such right may be extended simply by written notice from the Resident Engineer to the owner or its assigns. The extension may be up to a period not to exceed ___ months from the originally projected ending time frame. In such event that this temporary right is extended, payment will be made semi-annually during the extended term of the temporary right, based upon the ‘per-monthly’ rate set forth in the State’s offer letter.”

18) CONSTRUCTION AND MAINTENANCE EASEMENT

“the permanent right to enter upon the remaining lands of the owner or its assigns with personnel, equipment and materials for the purpose of constructing and maintaining a (insert what is to be constructed, e.g. retaining wall, noise wall) and appurtenances within the State’s ROW. The permanent right to access and perform maintenance and repairs

upon the (repeat what is being constructed) and appurtenances as far as the line marked "Construction and Maintenance Easement", as shown on the aforesaid map."

NOTE: This clause to be used when the permanent sections of the structure will be constructed and maintained within the easement area on the remainder.

19) TEMPORARY CONSTRUCTION AND PERMANENT MAINTENANCE EASEMENT

"The temporary right to enter upon the remaining lands of the owner or its assigns with personnel, equipment and materials for the purpose of constructing a (insert what is to be constructed, e.g. retaining wall, noise wall) and appurtenances within the State's ROW. Such right shall begin from the date of notice from the State's resident engineer and shall terminate upon completion of the work, which shall be for a duration of ___ months. If the State, within its sole discretion, determines that the temporary easement or right needs to be extended in order to complete the Work, such right may be extended simply by written notice from the Resident Engineer to the owner or its assigns. The extension may be up to a period not to exceed ___ months from the originally projected ending time frame. In such event that this temporary right is extended, payment will be made semi-annually during the extended term of the temporary right, based upon the 'per-monthly' rate set forth in the State's offer letter. This also includes the permanent right to access and perform maintenance and repairs upon the (repeat what is being constructed) and appurtenances as far as the line marked "Temporary Construction and Permanent Maintenance Easement", as shown on the aforesaid map."

NOTE: This clause is to be used when no permanent part of the structure shall be within the easement area. See Section 9.2.9.B.2.o.6) for instructions.

20) UTILITY EASEMENT

"Parcel UE ____, at about Station _____ consisting of the permanent right to construct, place and maintain utility facilities and appurtenances as shown on the aforesaid map and the permanent right to perform maintenance and repairs."

NOTE: The designer shall confer with the utility companies and the Utility and Railroads Engineering Unit for the specific rights to be acquired.

21) TEMPORARY CONSTRUCTION EASEMENT

“the temporary right to construct _____, (e.g. curb) and appurtenances within the limits of the "Temporary Construction Easement", as shown on the aforesaid map. This right shall begin from the date of notice from the State’s resident engineer, and shall terminate upon completion of said work, which shall be for a duration of ___ months. If the State, within its sole discretion, determines that the temporary easement or right needs to be extended in order to complete the Work, such right may be extended simply by written notice from the Resident Engineer to the owner or its assigns. The extension may be up to a period not to exceed ___ months from the originally projected ending time frame. In such event that this temporary right is extended, payment will be made semi-annually during the extended term of the temporary right, based upon the ‘per-monthly’ rate set forth in the State’s offer letter.”

NOTE: This clause to be used when there is no need to maintain the facility being constructed such as curbs to become property of remainder or “costs of cures in kind.” Facilities constructed on the remainder should, to the greatest extent possible, comply with intent of applicable zoning ordinances.

22) AERIAL UTILITY EASEMENT

“the permanent right to install aerial utility facilities and appurtenances and the right to provide maintenance, repair and replace such facilities and appurtenances over the remaining lands of the owner and its assigns along _____ contiguous to the above described property, as shown on the aforesaid map.”

23) PRIVATE EASEMENT

“Parcel PE (or PAE) _____, at about Station _____, consisting of the permanent right of ingress and egress for the owners of Lot ___ Block _____, _____, across lands of _____ in Lot ___ Block _____ as far as the line marked "Proposed Easement Line" as shown on the aforesaid map.”

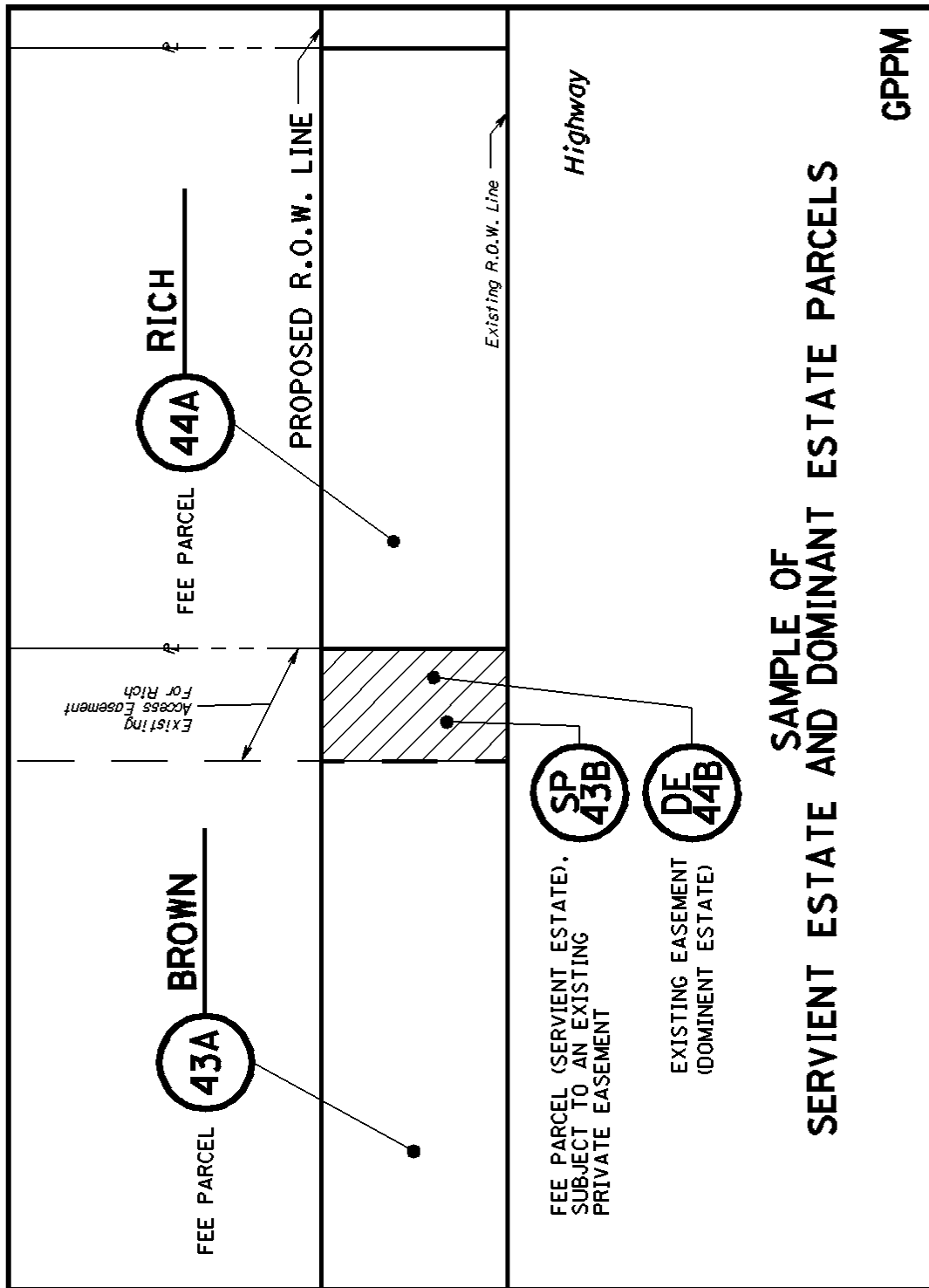
NOTE: This clause should reflect all properties that are to use or may use the private easement. This clause applies to easements being created to provide access to remainders or to properties where access was denied and is to be distinguished from existing private easements (DE Parcels). The PE clause should not be used where an access road for maintenance purposes is needed by the State. Instead a special clause would have to be drafted using PAE (Private Access Easement) as the pre-fix to the parcel, but using the same color as the PE parcel. The PAE pre-fix may be used where access is needed by the State on a permanent basis from a public roadway to a fee parcel under a bridge, viaduct, a drainage, utility, construction or maintenance easement. Where a specific access route is not feasible or will result in significant

damages to the remainder, a 'floating' easement may be used. This shall take the form of a general right to use a private ring road, parking lot, internal circulation road or driveway which connects or intersects with the easement or fee parcel to which access is sought. Use of such easements for the State's access to fee parcels or easements should be used only when necessary and should be flexible so as not to unreasonably restrain potential development of a RA. When no specific route is to be depicted, the pre-fix PAE should not be used, although the right may be described as a right of non-exclusive ingress and egress to (parcel or easement) and from (describe public road from which access is sought) for purposes of performing maintenance, repair and inspection across the remaining lands with personnel, equipment, and material. Because of the diversity of rights that may be needed, no standard clause is provided; the required language will be dependent upon the surrounding circumstances. Thus, consultation with ROWE shall be required in such instances and the particular clause chosen must be approved.

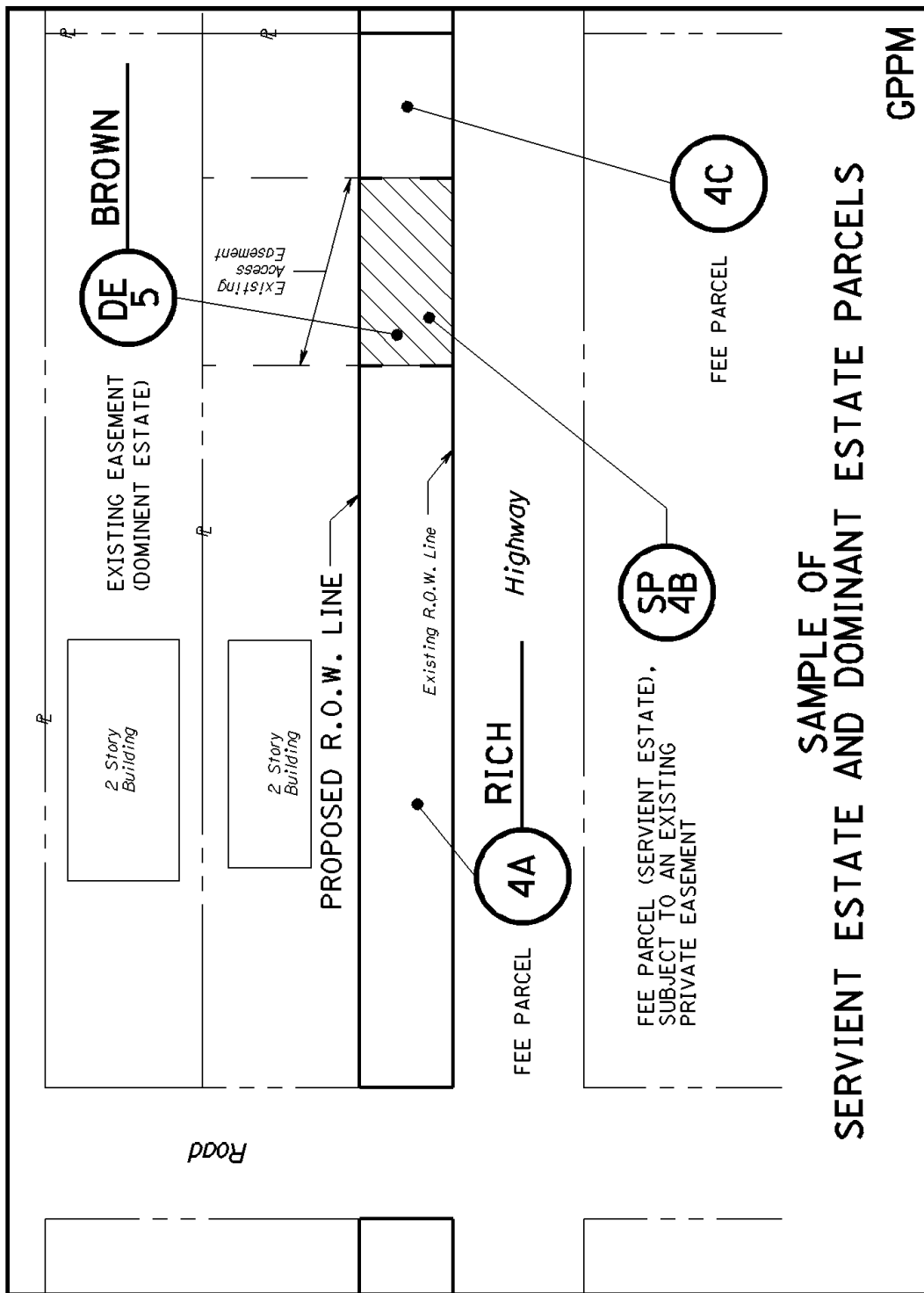
24) SIGHT TRIANGLE EASEMENT

"consisting of a permanent restriction against the use of any portion thereof for any structure, growth or physical impediment that would in any manner infringe upon a free and open line of sight over the same, to the extent shown on the aforesaid map."

ATTACHMENT A



ATTACHMENT B



SAMPLE OF
SERVIENT ESTATE AND DOMINANT ESTATE PARCELS

GPPM

ATTACHMENT C

SAMPLE OF G.P.P.M. TITLE BLOCK

SCALE : FULL SIZE (mm)

NEW JERSEY DEPARTMENT OF TRANSPORTATION

GENERAL PROPERTY PARCEL MAP

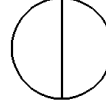
ROUTE U.S. 1 (1953) SECTION 5

From South of Deans Road
to North of Route 26

Showing Existing Right of Way
And Parcels To Be Acquired In The

Townships of South Brunswick
and North Brunswick

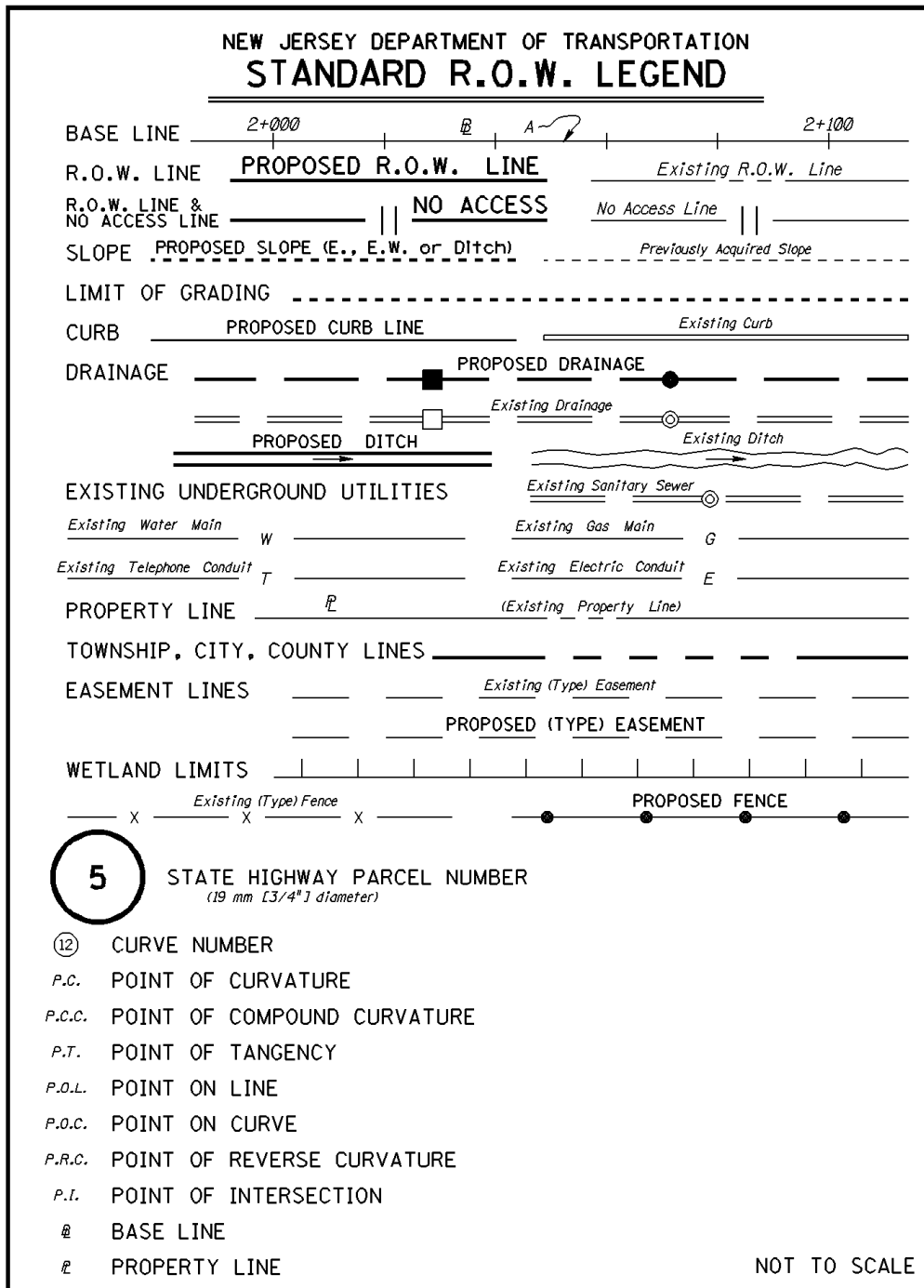
County of Middlesex
March 1994



LOWER RIGHT-HAND CORNER OF BORDER

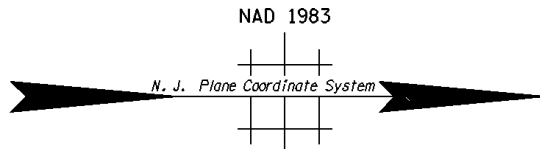
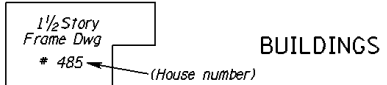
PROJECT: ROUTE U.S. 1 (1953)
SECTION 5E & 6S

ATTACHMENT D



ATTACHMENT E

- ⊕ CENTER LINE
- ≡ SURVEY LINE
- (1) DEED COURSE NUMBER
- (m) MEASURED
- (c) CALCULATED
- (±) MORE OR LESS
- (D) DEED DATA
- (sur.) SURVEY DATA
- D.A. DEED AREA
- 94 TAX MAP BLOCK NO.
- 94 FILED MAP BLOCK NO.
- 21 TAX MAP LOT NO.
- 21 FILED MAP LOT NO.
- 6987 DEED BOOK
- 586 PAGE
- WATER GATE VALVE
- W ○ GAS GATE VALVE
- G ○ POLE
- POLE
- Hyd. HYDRANT
- DECIDUOUS TREE
- SHRUB
- EVERGREEN TREE
- HEDGE
- SWAMP
- R.A. REMAINING AREA



IF NOT IN N.J. PLANE COORDINATE SYSTEM, REMOVE GRID AND NOTATION FROM NORTH ARROW

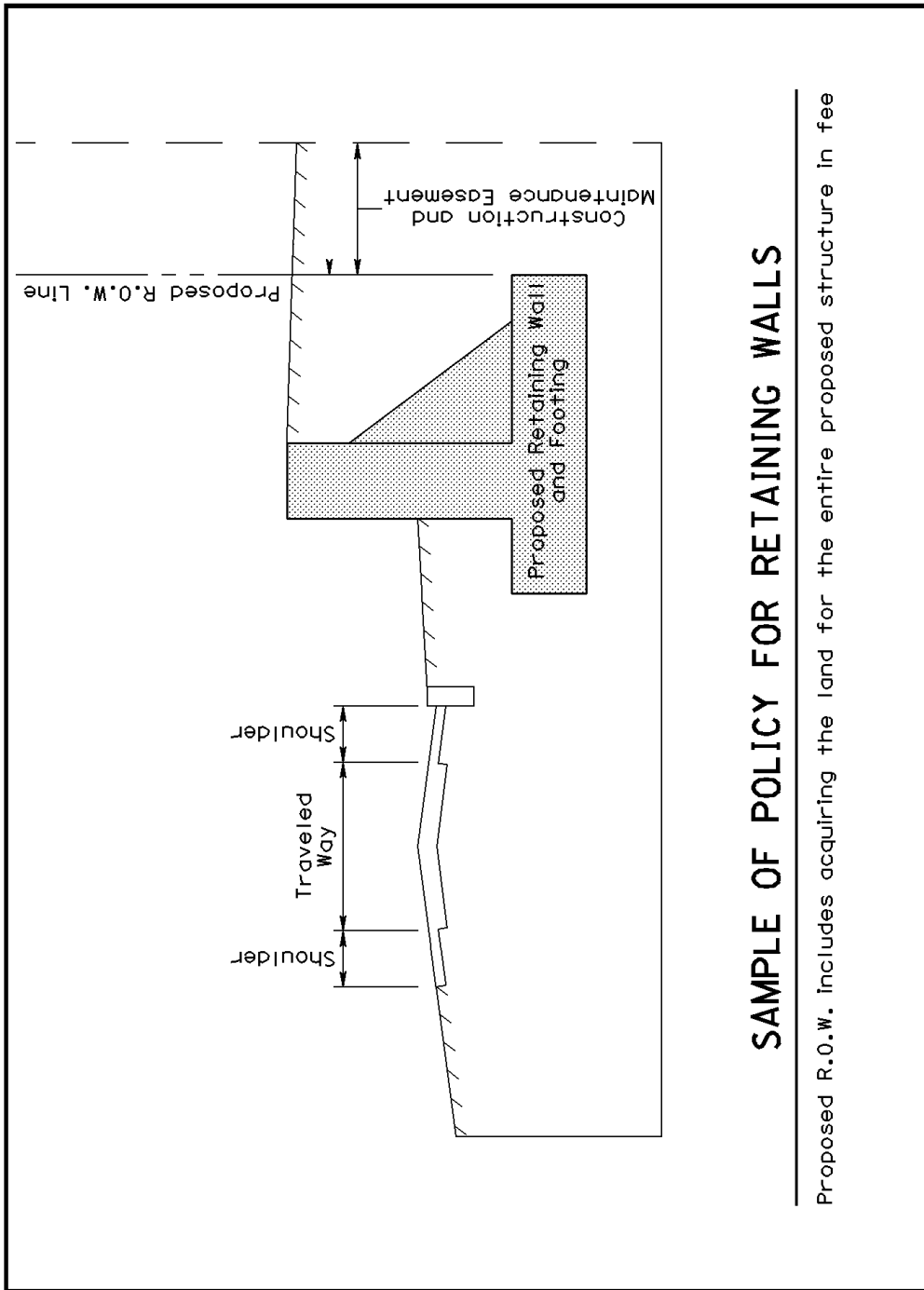
Note:
The proposed parcel courses and the north arrow depicted may differ from the system utilized to plot the deed distances and courses.

_____ SHEETS FILED IN THE OFFICE
OF THE _____ COUNTY CLERK

DATE :
FILE NO. :

NOT TO SCALE

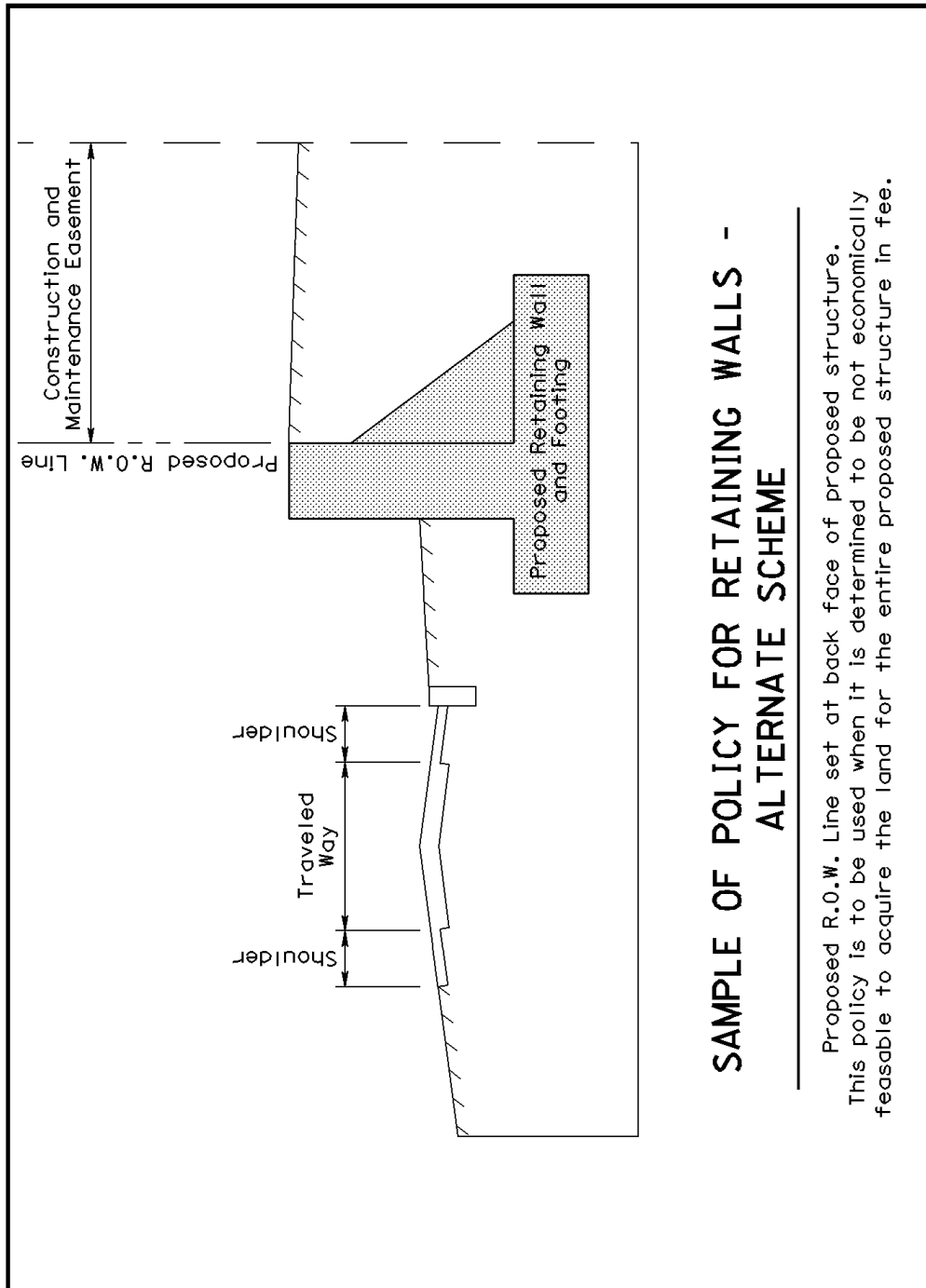
ATTACHMENT F



SAMPLE OF POLICY FOR RETAINING WALLS

Proposed R.O.W. Includes acquiring the land for the entire proposed structure in fee

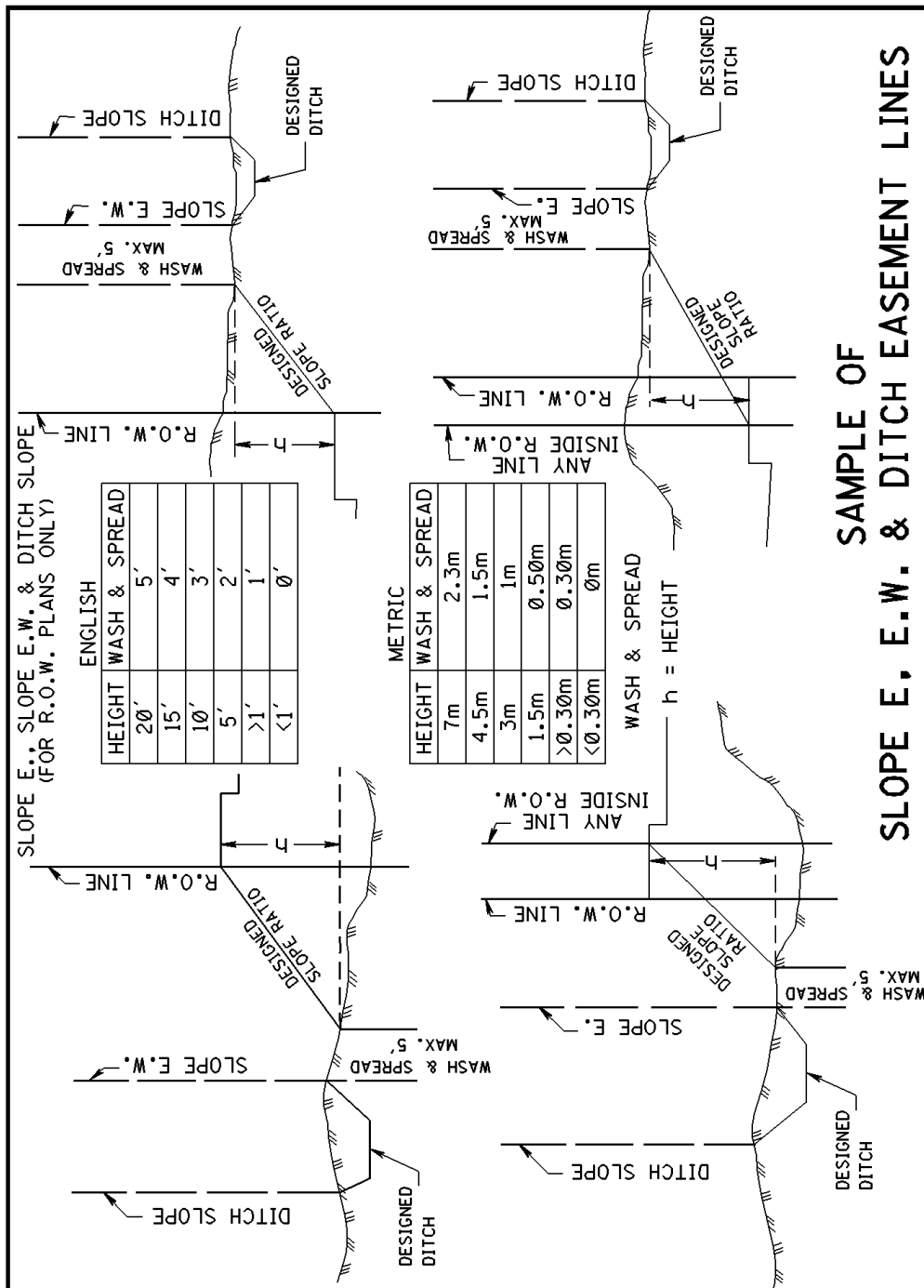
ATTACHMENT G



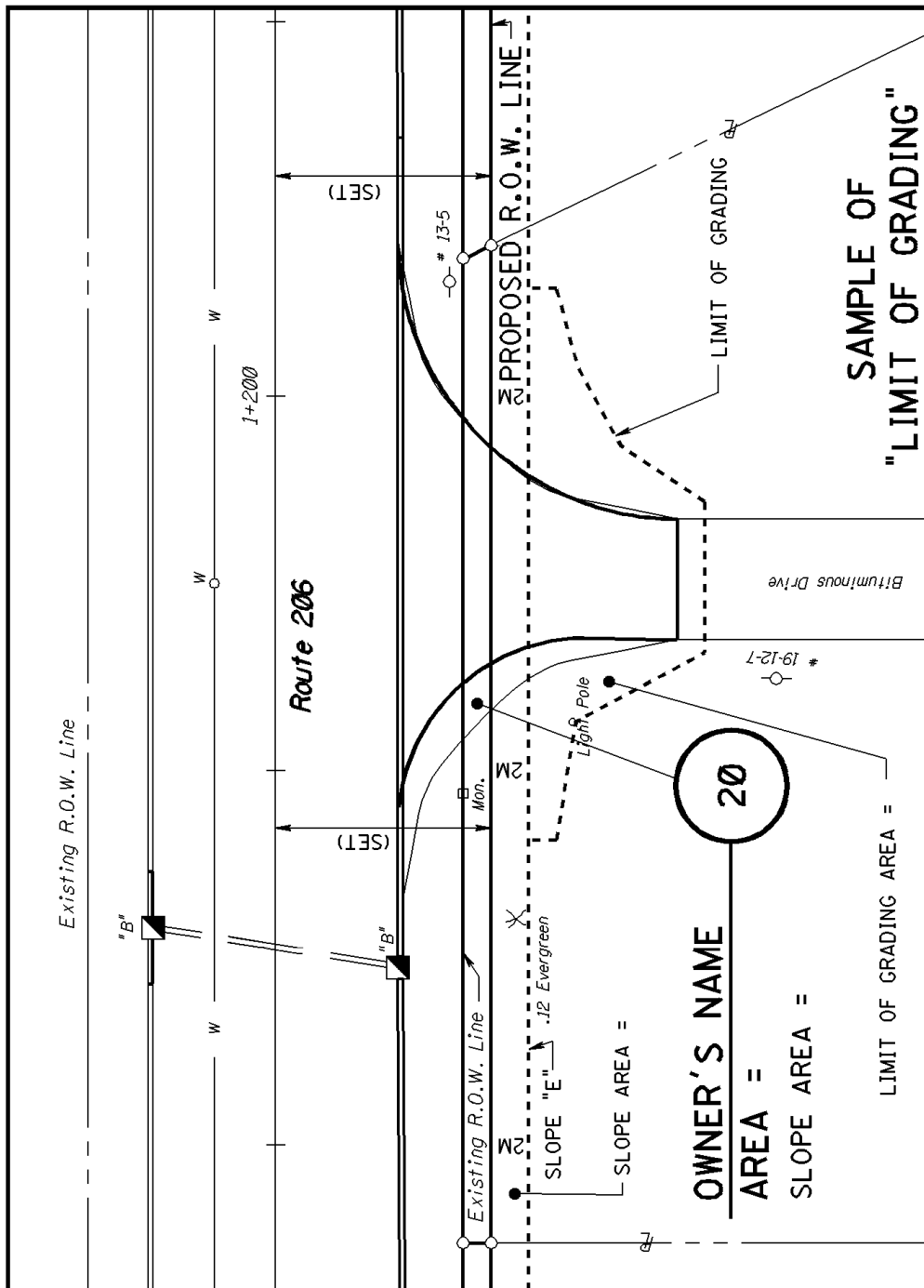
**SAMPLE OF POLICY FOR RETAINING WALLS -
ALTERNATE SCHEME**

Proposed R.O.W. Line set at back face of proposed structure.
This policy is to be used when it is determined to be not economically
feasible to acquire the land for the entire proposed structure in fee.

ATTACHMENT H



ATTACHMENT I



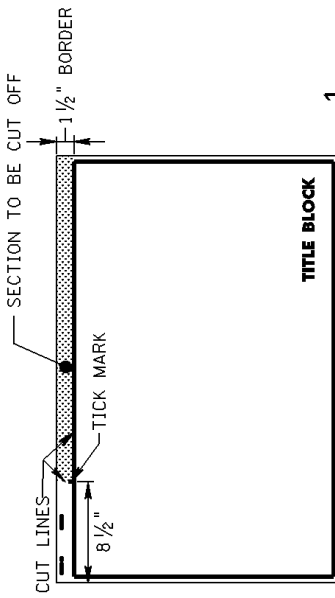
"LIMIT OF GRADING"

OWNER'S NAME
AREA =
SLOPE AREA =

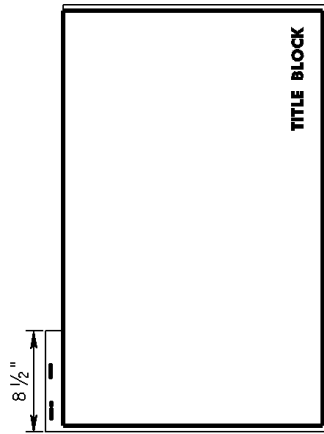
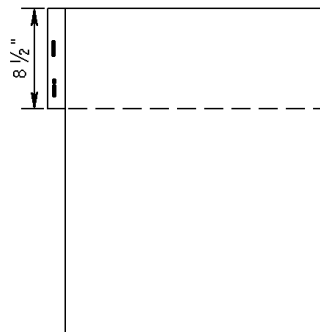
ATTACHMENT J

FOLDING PROCEDURE FOR IPM PRINTS

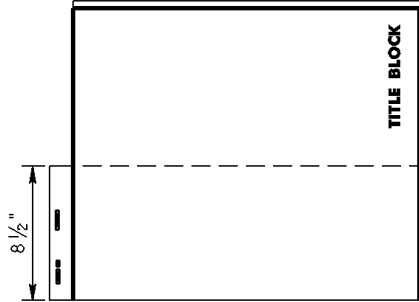
SEE NEXT PAGE FOR GENERAL NOTES



EXAMPLE: 36" X 24" IPM



MAP AFTER TRIMMING



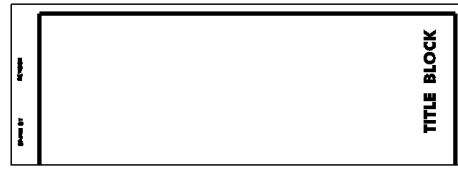
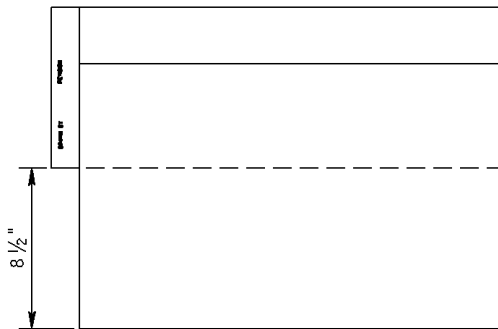
SECOND FOLD

FIRST FOLD

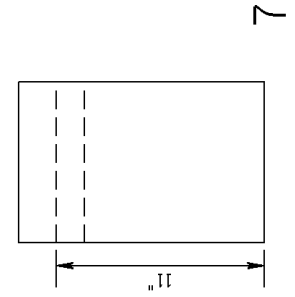
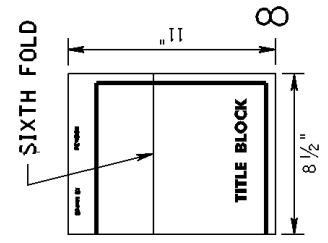
ATTACHMENT K

GENERAL NOTES

1. - WHEN THE MAP IS DRAWN, A SMALL TICK MARK SHOULD BE PLACED AT THE VERTICAL CUT POINT IN THE TOP BORDER, 8 1/2" FROM THE LEFT EDGE OF THE MAP AS SHOWN IN SEQUENCE 1.
2. - FOR MAPS OF SIZES OTHER THAN THE ONE SHOWN, FOLLOW THE SEQUENCE UNTIL A FINAL SIZE OF 8 1/2" x 11" IS ATTAINED. IT IS DESIRABLE THAT THE WHOLE TITLE BLOCK BE VISIBLE ON THE FOLDED MAP, BUT THIS IS NOT POSSIBLE ON ALL ALLOWABLE MAP SIZES. DO NOT MAKE EXTRA FOLDS TO DISPLAY ONLY A SMALL PORTION OF THE TITLE BLOCK.
3. - IF THE LAST HORIZONTAL FOLD IS LESS THAN 8 1/2" WIDE, THAT PORTION SHOULD BE FOLDED SO AS TO LIE ALONG THE RIGHT EDGE OF THE FOLDED MAP.
4. - FOLDING IS REQUIRED ONLY WHEN MAPS ARE TO BE USED FOR CONDEMNATION.



5 6



7

ATTACHMENT L

Circle size proportional to map size

The Latin abbreviations et ux, et vir and et al may be used

21

JOHN SMITH, ET UX

AREA = 316.0 sm ± (3398 SF ±)
 TOTAL SLOPE EASEMENT AREA = 194.5 sm ± (2091 SF ±)
 DRAINAGE EASEMENT AREA = 40.5 sm ± (436 SF ±)
 R. A. = 2191.5 sm ± (23564 SF ±)

Note:
 NF is to be used on IPM's

Note:
 All easement areas follow parcel area with total areas given when there are two or more easements of the same kind

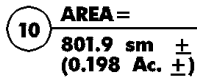
The parcel may be indicated by a line and arrow from the title circle to the parcel or by a smaller circle within or adjacent to the parcel. Parcels on the entire tract insert will be indicated with a small circle.

**SAMPLE OF
 TITLE AREA (ALL MAPS)**

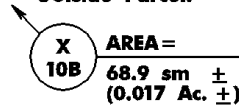
ATTACHMENT M

When two or more fee parcels are contiguous, each shall be indicated by a small parcel circle showing the area:

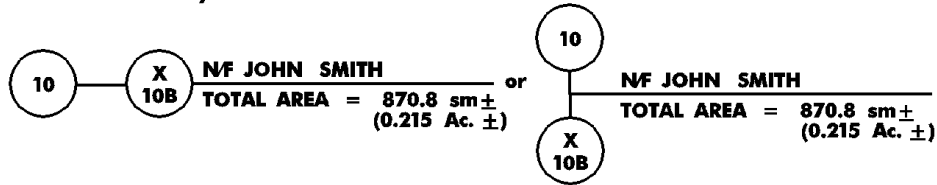
Inside Parcel:



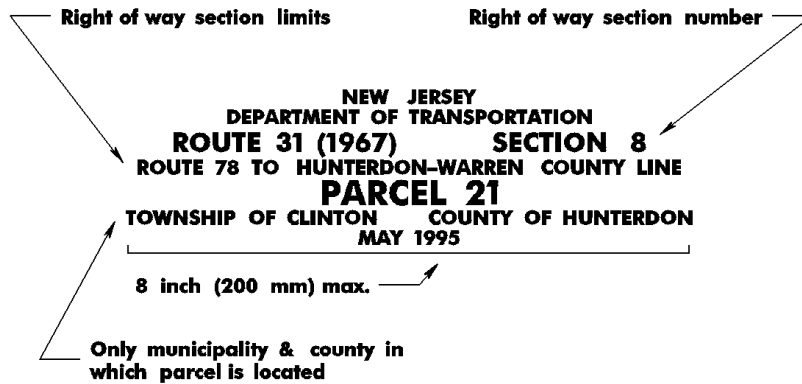
Outside Parcel:



and the main title will have the circles connected either horizontally or vertically and show the total area:



Contiguous fee parcels are the only parcels joined in the title because they will be described together in the description. Easement or utility easement parcels, even when they adjoin a fee parcel, require a separate title.



SAMPLE OF
I.P.M. TITLE BLOCK

9.2.10 Application of Upland Owner on Tidal Water for a Lease or Grant of Riparian Land

To the Bureau of Tidelands Management in the Land Use Regulation Program of the Department Of Environmental Protection:

WHEREAS, a State Highway designated as Route _____ Section _____, _____(ROW section limits) as heretofore been laid out and construction provided for pursuant to the provisions of Title 27 of the Revised Statutes of New Jersey; and

WHEREAS, portions of the said State Highway are over tidal lands, lands owned and/or claimed to be owned, pursuant to Titles 12 and 13 of the Revised Statues of New Jersey;

NOW, THEREFORE, I, _____, Manager of ROW, Department of Transportation of the State of New Jersey, acting for and in the name of the State of New Jersey, do hereby apply for a grant of tidelands as indicated on a map entitled: (insert Map Quote)

Parcel T (insert description) or TE (insert description).

THE STATE OF NEW JERSEY, Department of Environmental Protection, Division of Coastal Resources, Bureau of Tidelands, AT THE RECEIPT OF THIS APPLICATION, is requested to make the herein above described GRANT to the STATE OF NEW JERSEY, Department of Transportation in accordance with and subject to the provisions of an act of the New Jersey Legislature entitled: "A further supplement to an act entitled: 'An act to ascertain the rights of the State and riparian owners in the lands lying under the waters of New York Bay and elsewhere in the State', approved April eleventh, one thousand, eight hundred and sixty-four", which said supplement was approved March 16, 1916.

Applicant recognizes that the State is under no obligation to make the grant or lease desired and the issuance of same is within the sole and absolute discretion of the State.

Applicant recognizes that the action of the Tidelands Resource Council is subject to the approval of the Commissioner of the Department of Environmental Protection, the Attorney General and Governor, and that no grant is valid unless and until actually delivered.

We therefore request the State to consider this application and if in the State's discretion, decide to issue a grant or lease, to fix the fair consideration or annual rental for the conveyance and to designate the lands now or formerly under tidewater that may properly be included in the conveyance and to fix such other terms and consideration of said conveyance as may be deemed appropriate.

Date: _____

Manager of ROW
Department of Transportation

Witness:

9.2.11. ROW Documents Submission

A. GENERAL

1. All documents shall be completely checked before being submitted.
2. Plans shall be checked for compliance with this manual's checklists and procedures. The design of all ROW parcels, slopes, drainage, etc., including temporary features, shall facilitate the building of the highway to its complete and final design.
3. The ROW line shall only indicate what is required for highway purposes. The Office of ROW shall determine whether to acquire any additional property (for example, an uneconomic remnant).
4. A complete ROW submission shall include:
 - ETMs, with a Key Sheet
 - GPPMs, with a Tab Sheet
 - IPMs
 - Descriptions
 - Riparian application, if needed
 - Other documentation - Deeds, tax maps, etc.
5. The PM, in coordination with the ROWE Unit, may waive the requirement to include any of the above. The PM may request a copy of the ROW submission. This copy should be sent directly to the PM and is not part of the Preliminary or Final ROW Submission.
6. There shall be an explanation of the research done for each parcel, pertinent development maps, tax maps, deeds, vacations, abandonment, dedications and other municipal or corporate resolutions that could affect the ROW negotiation process.

B. SUBMISSION PACKAGING

1. The designer shall submit the ROW documents for the required submission, Preliminary or Final, to the units listed in Attachment N. All documents for a Preliminary Submission shall be stamped "Preliminary".
2. The consultant designer shall fill out and submit Attachment O to ROWE with the Preliminary and Final ROW Submissions.
3. The designer shall submit one set of final mylars of the GPPMs and ETMs, without signatures and seals, as per the specifications in Section 9.2.5, to the Engineering Documents Unit with the final design submission of the construction plans. The Designer shall provide and hold two sets of signed and sealed GPPM mylars, per each county, and submit them when notified by the Engineering Documents Unit. (see Section 9.1.1, Final Design)

ATTACHMENT N

SEND TO LABELED FOR		Manager, ROW Technical Support; Attn: Project Coordination and Funding									
		Distric	Headquarters	Title Section	* R.O.W. Engineering	Railroad & Utility, DEP Owned Parcels If Utility, RR	Engineering Document Unit	FHWA	Bureau of Environmental Services	TOTALS	
ROW PLANS (PRINTS)	SUBMISSION PRELIMINARY	2	1	1	2	1	1	1	1	10	
	FINAL	2		2		9		1	1	15	
IPM'S (PRINTS)	SUBMISSION PRELIMINARY	3		1	10%					10%	
	FINAL					2				6	
DESCRIPTIONS	PRELIMINARY	1	1	1	1	2				6	
	FINAL	4		1		2				7	
CURRENT DEEDS	PRELIMINARY			2	1					3	
	FINAL										
TAX OR DEVELOPMENT MAPS	PRELIMINARY				1					1	
	FINAL	1		2						3	
1/2 SCALE ROW PLANS (PRINTS)	PRELIMINARY										
	FINAL				1					1	
ROW PLANS (SEPIA MYLARS)	PRELIMINARY										
	FINAL	1			1			1		3	
CONSTRUCTION PLANS (PRINTS)	PRELIMINARY	1			1					2	
	FINAL	1								1	
APPLICATION FOR RIPARIAN GRANT	PRELIMINARY				1			1		2	
	FINAL	1						3		4	
DESCRIPTIONS ON 90mm DISKETTES	PRELIMINARY										
	FINAL	1			1					2	

* SEND ALL MATERIAL LABELED FOR R.O.W. ENGINEERING DIRECTLY TO THAT OFFICE. ALL OTHER MATERIAL IS TO BE SUBMITTED AND LABELED AS NOTED ABOVE.

ATTACHMENT O

**CONSULTANT QUALITY CONTROL CHECKLIST
ROW DOCUMENTS**

Route _____ Section _____

 Federal Project _____ County _____
 State Project No. _____

() Preliminary Submission () Final Submission

	<u>YES</u>	<u>NO</u>	<u>NA</u>
1. All right-of-way plans (ETMs, GPPMs & IPMs), and descriptions have been prepared in accordance with the requirements outlined in Section 9.2 of the NJDOT Procedures Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. All right-of-way lines and easement lines have been identified and are consistent between the right-of-way plans and construction plans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The access control has been established in accordance with direction from the Project Manager/other offices within NJDOT and is in accordance with all applicable laws, regulations, FHWA and NJDOT policies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. All comments regarding the right-of-way plans and descriptions have been addressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. A field check was conducted on _____ to verify that all buildings and other important features are accurately shown on the ROW plans (<u>final submission only</u>).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NOTE: Any item checked **NO** shall be explained in the space provided below.
 Attach additional sheets if needed.

Item No. _____

Consultant _____
 Project Manager _____ Date _____
 Sub-consultant* _____
 Project Manager _____ Date _____

* If applicable

9.2.12 ROW Engineering Process

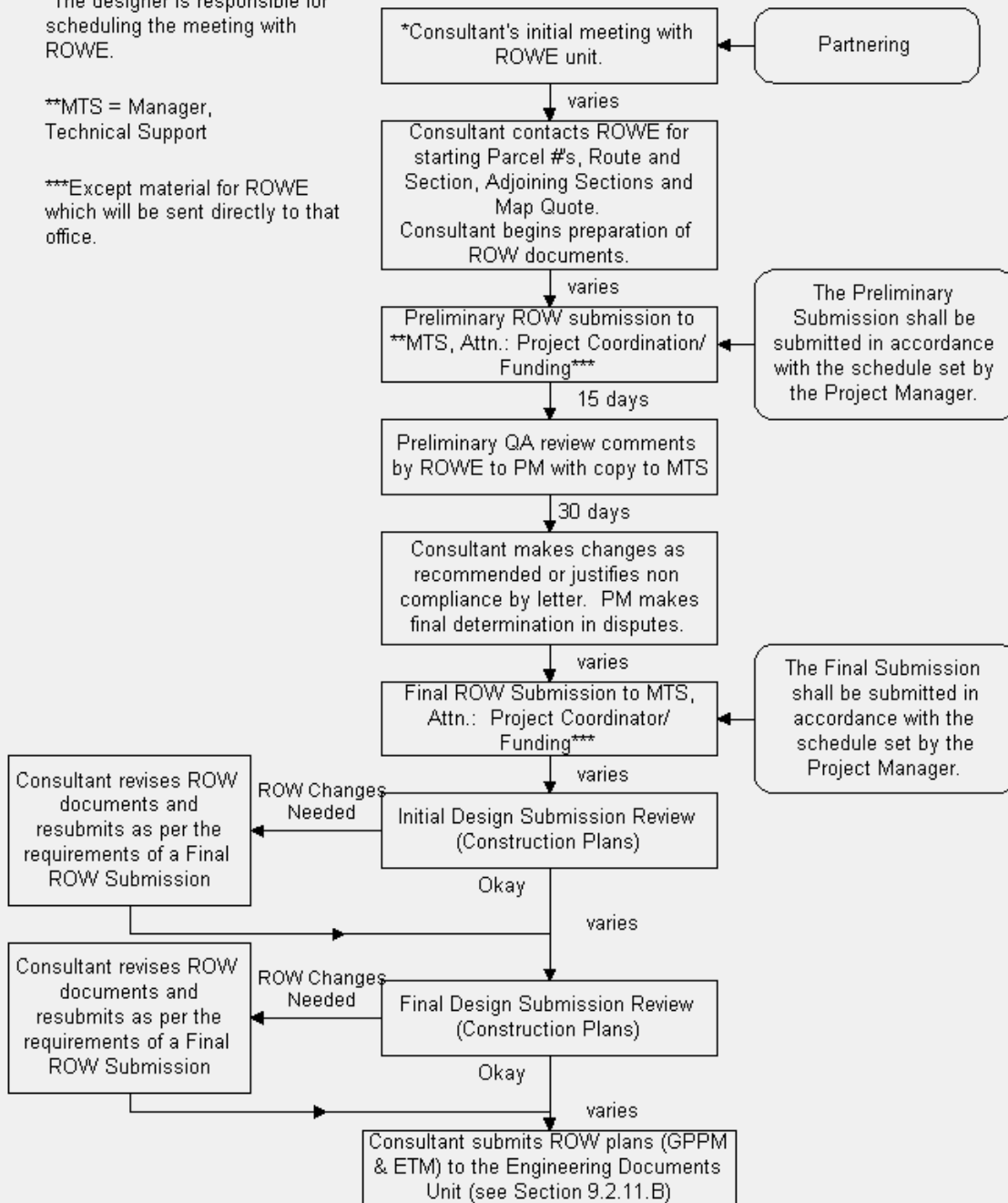
NOTES:

*The designer is responsible for scheduling the meeting with ROWE.

**MTS = Manager, Technical Support

***Except material for ROWE which will be sent directly to that office.

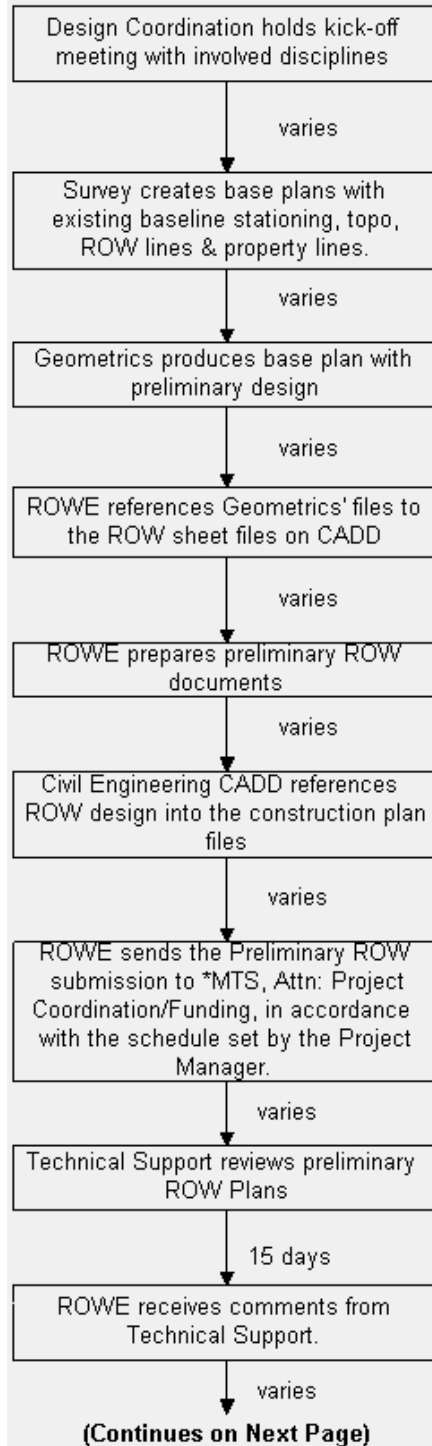
A. CONSULTANT DESIGNER



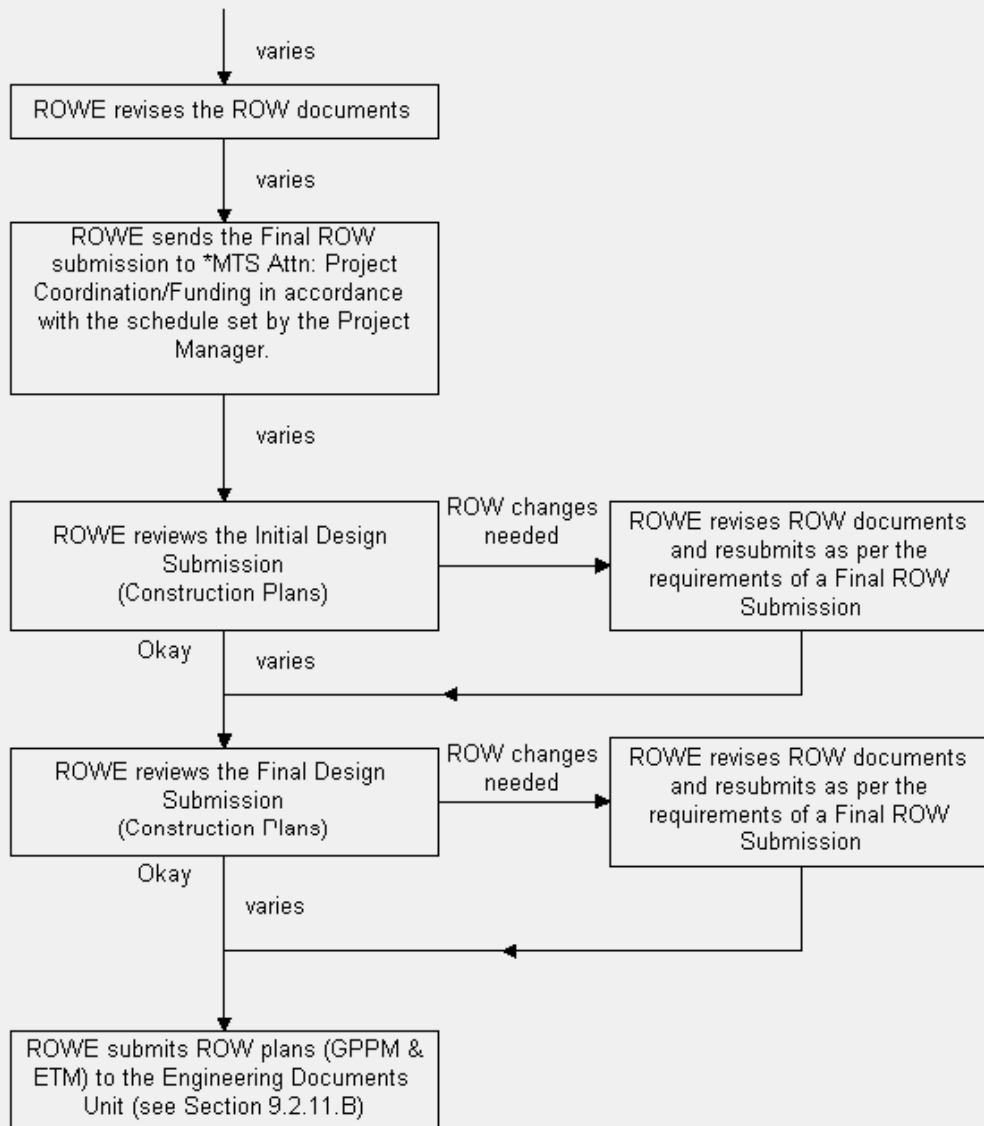
B. IN-HOUSE DESIGNER

NOTES:

*MTS = Manager,
Technical Support



B. IN-HOUSE DESIGNER -- continued



9.2.13 Process For Eliminating A Parcel

- A.** The PM contacts the Project Coordination/Funding Unit within ROW Technical Support, by memorandum or e-mail, with a copy to ROWE, requesting the acquisition status of a parcel to be eliminated.
- B.** After the parcel acquisition status is determined, Project Coordination/Funding will advise the PM whether the parcel can be eliminated. A parcel cannot be eliminated if the NJDOT has already taken possession of it. However, a parcel may be eliminated after a Declaration of Taking is filed, but only if the property owner agrees.
- C.** If the parcel can be eliminated, the PM will contact the design consultant or ROWE, if the PM desires the work to be done in-house. The designer will update the ETM and GPPM, showing the parcel elimination using the following procedure:
 - 1. Draw an "x", through the parcel number. Print "Eliminated" on the GPPM and ETM near the affected parcel number. Place the parcel number, date and "Eliminated" in the revision block.
 - 2. Draw a line through the parcel on the Tab sheet and place "Eliminated" and the date in the remarks column.
- D.** The designer shall submit the revised ETM and GPPM to ROW Technical Support, Project Coordination/Funding as outlined in Attachment I, Final Submission.

9.2.14 Process For Revising A Parcel

- A.** The designer shall notify the PM that a revision is necessary. Consultant designers are advised to contact ROWE before beginning any work on a revision. The PM then requests the acquisition status of a parcel to be revised from the Project Coordination/Funding Unit within ROW Technical Support by memorandum or e-mail, with a copy to ROWE. All revisions made to ROW plans after the Final Submission must be made only with the authorization of the PM.
- B.** After the parcel acquisition status is determined, Project Coordination/Funding will contact the PM and advise whether the parcel can be revised. A parcel cannot be revised if the NJDOT has already taken possession of it. However, a parcel may be revised after a Declaration of Taking is filed, but only if the property owner agrees.
- C.** If the parcel is already owned by the NJDOT, a new parcel will have to be added to include whatever rights are needed for that parcel.
- D.** If the parcel can be revised, the PM will place that parcel "on hold" with the Office of ROW and will contact the design consultant or ROWE (if the work is to be done in-house), who will revise the ROW documents.

E. Changes to the ROW after the final ROW submission that would necessitate another appraisal shall require a revision number (e.g. area changes, adding or removing slope, drainage, denial of access, limit of grading, etc.).

F. The following procedure shall be followed for revisions to the ROW documents:

1. Change the parcel number on the ETMs, GPPMs, IPMs, and descriptions. For example:

	Original	1 st . Revision	2 nd Revision
Parcel	8	R8	2R8
Easement Parcel	E8	ER8	E2R8
Utility Parcel	U8	UR8	U2R8
Utility Easement Parcel	UE8	UER8	UE2R8
Tideland Parcel	T8	TR8	T2R8
Tideland Easement Parcel	TE8	TER8	TE2R8
Landscape Parcel	L8	LR8	L2R8

2. Specify all revisions in the revisions block of the ETMs (not including the Key Sheet) and the GPPMs. Show the parcel number, date and, under the revisions column, the revised parcel number and the revision. For example:

Parcel	Date	Revision
48	01-02-98	Parcel 48 to parcel R48; Revised parcel area
R35	02-15-98	Parcel R35 to 2R35; Slope area added
E20	03-06-98	Parcel E20 to ER20; slope area revised

G. The design consultant or ROWE shall submit the revised ROW documents to ROW Technical Support, ATTN: Project Coordination/Funding, as outlined in Attachment N, Final Submission. Specify all revisions in the revisions block, showing date, parcel affected, and the reason for the revision.

9.2.15 Process For A Condemnation Case

A. When negotiations have reached an impasse, the District Office Supervisor contacts the supervisor of the Acquisition Section (AS) of ROW Technical Support to advise that this case must go through the condemnation process.

B. The supervisor of the AS is responsible for obtaining the proper number of condemnation maps (IPMs) and descriptions. The number of copies is based on the number of parties having an interest in the subject parcel and the number required by NJDOT personnel (the average is 30 copies).

C. The supervisor of the AS must contact the PM, who decides who will supply the condemnation documents. NOTE: The decision by the PM as to who supplies the condemnation map is based on the designer’s contract/proposal, time considerations,

where the existing color copies of the IPM's are located and whether any revisions to the IPMs are required. **The PM should have the designer supply the condemnation material for consultant designed projects.**

- D.** If the PM chooses the consultant and authorizes him to supply the condemnation material, then the consultant is responsible for supplying all the condemnation material (including properly folded IPMs) to the AS, while copying the PM on all transmittals. The PM may request that the consultant and the AS deal directly with each other on any questions that arise.
- E.** If the PM chooses to have ROWE supply the condemnation material, ROWE will be responsible for making the color copies of the IPM. The AS will be responsible for providing ROWE with a color copy of the IPM and a copy of the complaint description (both supplied to the AS at the Final ROW Submission).
- F.** If the project is being designed in-house, ROWE will be responsible for supplying the required number of copies of the description and IPM, properly folded, to the AS.
- G.** The AS is responsible for the proper distribution of the condemnation material.

9.2.16 ROW Parcel Dedication Requirements

The requirements and process for a ROW dedication package can be found in N.J.A.C. 16:47-4.20. Any dedicated (donated) parcel, including parcels involved in standard ROW projects, shall follow this process.

9.3 Jurisdictional Maps and Agreements

DEFINITIONS

Jurisdictional Agreement

A formal written contract, between NJDOT and the counties, municipalities, commissions, developers and authorities involved with NJDOT, to establish the limits of jurisdiction for the maintenance and control of highways, jughandles, bridges and interchanges. The Jurisdictional Agreement, when fully executed, becomes a legal document binding all parties included.

Jurisdictional Base Map (JBM)

A Jurisdictional Base Map indicates basic highway features, such as, roadway limits, right of way lines, street names, structures, railroad crossings, drainage, corporate boundary lines, corporate names, a north arrow, etc. and is devoid of any information relating to jurisdictional limits, legend and title block.

Jurisdictional Limit Map (JLM)

A map, which is an appendix to the Jurisdictional Agreement, delineating the authority and limits of jurisdictional responsibility for highway maintenance and control.

Highway Maintenance

Highway maintenance is defined as upkeep of the highway area, and includes but is not limited to upkeep of pavement, curb, drainage, berms, slopes, guiderail, signs, sign structures, delineators, pavement markings, mowing, landscaping, fencing, snow removal and ice control.

Highway Control

Highway control, is defined as regulation and management of the highway area. It includes but is not limited to control of access, permits for roadway openings, driveways and utilities, review of all proposed geometric changes, setting speed limits, no parking zones and other traffic controls.

Introduction

These guidelines will apply to all projects, and will supersede any previously issued guidelines regarding jurisdictional procedures. Exceptions may be granted as warranted by the Jurisdictional Control Unit Supervisor.

Determining the Need for a JLM

The necessity for jurisdictional limit maps shall be determined by the Jurisdictional Control Unit. Generally, all projects will require the preparation of jurisdictional limit maps unless either of the following conditions apply:

1. Projects involve only NJDOT highways and/or appurtenances within the project limits.

2. Projects for which the limits of construction were previously covered by a JLM and the new construction will not alter the existing geometrics of the highway.

Designer Requirements

When the project limits have been determined, or no later than the Initial Design Submission date, the designer shall contact the Jurisdictional Control Unit to determine if the project shall require a JLM. Plans clearly delineating the beginning and end of a project and the Project Scope shall be supplied to the Jurisdictional Control Unit to facilitate their determination. The Jurisdictional Control Unit shall advise the designer within 10 working days as to the need for a Jurisdictional Limit Map. When a determination has been made that a JLM is required, the designer shall submit two copies of the required Jurisdictional Base Map to the Jurisdictional Control Unit as soon as the geometry and right of way of the proposed project are finalized.

The designer's requirements continue as stated in "Map Review and Acceptance" section.

MAP PREPARATION

Plan Sheet Size and Scale

Jurisdictional limit maps are to be prepared on ISO A1 (594 by 841 mm) reproducible mylars with a 50 mm border on the left and a 15 mm border elsewhere. The maps are to be drawn utilizing a scale of 1 inch equals 100 feet (1:1000) (see Figure A). Where practical, double banding is permitted to limit the number of sheets. If a scale of 1 inch equals 100 feet (1:1000) is not practical, the designer must acquire approval from the Jurisdictional Control Unit before using any alternative scale.

Intersections and Interchanges

If a project includes any portion of an intersection or interchange, the entire intersection and/or interchange shall be shown. This does not apply to an intersection and/or interchange involving only State highways.

Jurisdictional Base Map Checklist

Below is a list of common items which shall appear on the Jurisdictional Base Map prior to developing and preparing the JLM:

1. Final Alignments Only

The Jurisdictional Base Map shall indicate only those features that will exist following completion of construction.

2. Right of Way Lines (for all roadways/jughandles/ramps)

- a. The following right of way information shall be reflected on the JBM: right of

way lines shall be labeled. If a no access situation exists, the limits of no access shall be identified. If a no access line coincides with a right of way line, it shall be labeled as the right of way line and drawn with the no access symbol. No access lines which are separate from the right of way line shall be labeled "no access".

- b. Right of way lines shall be of uniform line weight and clearly delineated.
- c. Paper street rights of way shall be shown. The note "Paper Street" shall appear below the street name.

3. Baselines

- a. A baseline for the NJDOT highways shall be included. In cases when the roadway has several baselines, the most prevalent baseline shall be shown and identified (BASELINE A, B, etc.).
- b. Baseline control points (i.e., PC, PT, PCC) shall not appear on the JBM. However, back and ahead stationing data shall appear.

4. Drainage

Drainage which services the highway and extends outside NJDOT right of way must be shown with flow arrows. If such drainage outside NJDOT right of way exists and an appropriate drainage easement was never acquired, that portion outside the right of way cannot be shown.

Drainage easements shall be shown on the map and labeled "Drainage to be maintained by NJDOT", or the appropriate authority.

5. Roadway

- a. All edges of roadways, jughandles and ramps shall be shown with a solid line.
- b. Dash lines, where a shoulder exists, shall be omitted.
- c. Entrances to private drives shall be omitted. A note should be included on all maps stating "PRIVATE DRIVES NOT AFFECTED BY THIS AGREEMENT".

6. Street Names

- a. All roadways shall be identified by name or designation, as they are posted in the field.
- b. In situations of a road having more than one name, the "local" name shall appear in parentheses, such as: ROUTE 33 (NOTTINGHAM WAY), COUNTY ROUTE 533 (MERCERVILLE - WHITEHORSE ROAD).
- c. If a private road exists, it shall be labeled as "PRIVATE ROAD".

7. Structures Over and Under State Highways

Areas under elevated structures shall be indicated by dashed lines.

8. Railroad Crossings

At railroad crossings, the following note shall be added to the JBM:

NOTE: RAILROAD PROPERTY NOT AFFECTED BY THIS AGREEMENT.

9. Other Checklist Items

- a. Names of counties and municipalities.
- b. Corporate boundary lines between counties and municipalities.
- c. North arrow.
- d. Bar scale, noted "scale in feet".
- e. Title block (leave blank for input from Jurisdictional Control Unit).

10. Items Which SHALL NOT Appear on the JBM

- a. Topography (buildings, trees, guide rail, etc.).
- b. Tax map data (lot lines, block and lot numbers).
- c. Survey data (except as noted for baselines).
- d. Boring symbols.
- e. Private drives.
- f. Right of way widths.
- g. Construction notes; such as beginning and end of project, and meet existing pavement, etc.
- h. Heavy lines indicating proposed features.

Map Review and Map Acceptance

- A. When the Jurisdictional Base Map is completed in accordance with the JBM checklist, two copies shall be forwarded to the Jurisdictional Control Unit for review.

1. Any deviation from the JBM checklist may result in the Jurisdictional Base Map being returned to the designer without additional comment.
 2. If the submitted Jurisdictional Base Map is in conformance with the checklist, comments shall be provided to the designer to develop the JLM. A copy of the Jurisdictional Base Map shall be returned to the designer as a WORKSHEET with comments regarding:
 - (a) Jurisdictional limits and notations
 - (b) Jurisdictional title block
 - (c) Jurisdictional legend
- B. Upon receipt of the WORKSHEET, the designer shall incorporate all of the comments onto the original drawing of the Jurisdictional Limit Map.
1. When all of the comments, changes, and additions are completed by the designer, and a check has been made to ensure no comments were omitted, two copies shall be forwarded to the Jurisdictional Control Unit for review. At this time, the WORKSHEET shall also be returned to the Jurisdictional Control Unit.
- C. Steps A and B of this section shall be repeated until all comments have satisfactorily been incorporated onto the Jurisdictional Limit Map. The Jurisdictional Control Unit will advise the designer when the map has been completed satisfactorily.
- D. When the JLM has been completed, the designer shall send five copies to the Jurisdictional Control Unit for in-house reviews and file copies. The original drawing shall be retained in the event the in-house reviews result in a map change.
- E. Following completion of the in-house reviews and any subsequent changes, the designer will be instructed to forward the original drawing(s) and nine prints of each drawing to the Jurisdictional Control Unit.
- F. The designer shall notify the Jurisdictional Control Unit of any design changes which may occur following completion of the limit map. The designer shall be responsible to make those changes.

Agreement Execution

- A. The Jurisdictional Control Unit will prepare all Jurisdictional Agreements and obtain approval from the Attorney General's Office. The Agreement (including JLM) shall then be submitted to the appropriate public or private agency for execution.
1. Additional map changes may become necessary as a result of unforeseen circumstances, negotiations, compromises, etc. during the Agreement's execution phase. These changes shall be made by the designer. The original drawing shall be returned to the designer, with a worksheet indicating the changes.

- a. If a consulting firm prepared the JLM, and is still actively engaged in the project, it shall be the responsibility of that firm to make such changes to the map.
- b. Maps prepared by in-house forces, and projects which no longer have a consultant available, shall be revised by in-house forces.

Jurisdictional Limit Map

9.4 Demolition of Buildings and Asbestos Removal

Procedures for Identifying Buildings to be Demolished and or Asbestos Removal as part of a Design Project

At the Initial Design Submission, the Consultant identifies all parcels that have structures which are to be demolished. A request is made by the Project Manager to the Bureau of Contract Administration (BCA) for an Asbestos Survey (refer to Section 19.4 - Task Order Agreements).

If the results are negative, BCA notifies those persons who are affected and the demolition of buildings may proceed as per Standard Specifications (right of way must be acquired).

If the results are positive for asbestos, abatement must occur prior to any demolition taking place. A proposal for the abatement (Plans, Specifications and Air Monitoring) is submitted to BCA.

When asbestos plans and specifications are completed they are submitted to the BCA for review. After reviewing the plans and specifications, BCA incorporates into the project.

When the project is awarded, the asbestos consultant acting on the behalf of the Department will control and monitor the abatement until all hazardous material has been removed.

The asbestos consultant will then furnish the Department with a final report for our records. With receipt of this report the abatement file will be closed and the demolition may proceed as per Standard Specifications.

SECTION 10 UTILITIES

Virtually every highway construction project in the State of New Jersey impacts utility facilities. The Designer shall examine and seek alternatives to minimize or eliminate the impact on utility facilities.

NJSA 27:7-44.9, amended in 1983 requires the State of New Jersey to reimburse Utility Owners for utility facility work required as the result of a highway project administered by the Commissioner of Transportation.

The treatment of utility facilities located within the existing or proposed highway right-of-way require coordination among the Project Manager, Designer, the New Jersey Department of Transportation Utility Design Engineer (UDE) and the Utility Owners.

The responsibilities of the Designer and the UDE are as follows:

A. DESIGNER:

1. Determine the location (horizontal and vertical) of all existing utility facilities within the limits of the work.
2. Determine conflicts and/or involvement with utility facilities.
3. Develop Schemes of Accommodation, and Utility Owner Design Authorization describing the work to be performed to accommodate each utility affected by the project.
4. Prepare Utility Plan, engineering text and supplemental specifications reflecting the approved Scheme of Accommodation and include utility facility information in the construction contract documents.
5. Coordinate all activities with the Project Manager.

B. UTILITY DESIGN ENGINEER (UDE):

1. Participate with the Utility Owner and the Designer in developing Schemes of Accommodation.
2. Interpret applicable standards and policies and identify betterments.
3. Establish utility owner funding for both preliminary engineering and construction.
4. Review and approve Scheme of Relocation, Utility Owner Design Authorization, Engineering Text, Specifications, and Utility Plans.
5. Prepare Utility Agreements and process for execution.
6. Coordinate all activities with the Project Manager.

10.1 Scope Development

Initial Contact

The UDE, upon assignment of the project, will participate in the Scoping process with the Project Manager, and Department's Lead Design Units. During this process the proposed project will be reviewed to determine the effect on existing utility facilities.

The UDE, will determine the owner of all existing utilities and railroad facilities within the project limits.

The UDE shall send the Initial Contact Letter (Attachment 1) requesting the name, address, and telephone number of the owner's engineer assigned to the project.

Establish Engineering Funding

The UDE will make a reconnaissance of the project, estimate engineering costs to be incurred by the Utility Owners, advises the Project Manager, and requests utility engineering funding from Capital Program Coordination (CPC). (CPC will establish funding source: State, Federal, 3rd Party, etc.)

Prepare Utility Agreement

Upon receipt of utility engineering funding approval, the UDE prepares Utility Agreements for each utility and transmits them to the Utility Owners for execution. The Agreement Transmittal Letter shall include the date of authorization for the owners to incur engineering costs.

Verify Existing Utilities

The Designer shall show the existing utilities on the base plans. Each Utility Owner shall verify that the information on the plans is accurate and will add the type, size, depth, operating restrictions and limiting factors imposed by highway construction.

Preparation of the base plan shall include location of existing utilities obtained from field survey (poles, valves, manholes, pipeline markers, cable markers, etc.). In addition, the base plan Designer may use the services of a Subsurface Utility Engineering (SUE) firm to mark out (mains, duct banks, bury cables, etc.) while surveying the project in order to locate and indicate the underground utility facilities.

The Designer shall supply two (2) sets of base plans indicating the utilities obtained from the survey information to each of the Utility Owners and request the Owner to verify its facilities and add facilities which are not shown on one set of the base plans to be returned to the Designer.

NOTES:

- Base plan utility items may vary with individual project scope.
- Designer and Utility Owner shall determine the best method of communicating with each other (i.e., meetings, exchange of written correspondence, and/or electronic communication).

Develop Preliminary Relocation Cost Estimate

The UDE will develop and provide a preliminary relocation cost estimate to the Project Manager at the conclusion of Scope Development. This estimate will be a forecast used to program utility relocation costs for funding.

10.2 Design Development

Identify Conflicts, Develop Schemes of Accommodation and Utility Owner Design Authorization.

The Designer, with the assistance of the UDE assigned, will develop Schemes of Accommodation with each of the Utility Owners. (Note: The UDE is responsible for interpreting policies and procedures with respect to utility arrangements.) The Designer shall:

- (a) Make every effort to avoid conflicts with utility facilities by modifying the design features above and below ground.
- (b) Determine the effect of the proposed highway construction on the existing utility facilities.
- (c) Develop Scheme of Accommodation (work may involve alternate schemes including profiles and cross sections where necessary).
- (d) Applicable polices, regulations, Department and utility construction standards will effect the Scheme of Accommodation.

Identify Conflicts

Utility Accommodations are part of the overall design process. The Designer must identify potential utility facility conflicts as the project is developed and record them on the Utility Owner Design Authorization Document in the location and existing facility columns.

Utility conflicts may occur in the vicinity of footings, drainage, excavation and embankment, structures, sign structures, traffic signals, highway lighting, guide rail and changes in horizontal and/or vertical alignment, noise walls. Conflicts may also occur with the placement and operation of construction equipment.

The Designer should be cognizant of the possibility that utilities being designed by the Owners may conflict with each other.

Develop Scheme of Accommodation

The Designer, when developing Schemes of Accommodation, should take into consideration at least the following:

temporary facilities	environmental permits
safety issues (OSHA)	easements and right of way
de-energizing	maintenance of traffic items
back feeding	soil erosion and sediment control
utility facility operational constraints	items
constructibility issues	work hour restrictions
highway lighting	contaminated soil
traffic signal facilities	construction staging

Utility excavation shall be included in the project analysis for soil erosion and sediment control. Utility work performed by the State's contractor requiring soil erosion control items, must be included in the State's overall contract. Utility work performed by the Utility Owner must include the owner's soil erosion control.

Scheme of Accommodation drawings shall be color coded as follows:

- Red for existing facilities to be removed or abandoned.
- Yellow for proposed temporary facilities.
- Green for permanent facilities to be constructed for or by the Utility Owner.
- Blue for facilities to be constructed for or by the utility owner at its sole cost and expense.

Utility Owner Design Authorization

Authorization by a Project Engineer, Utilities, BURW for the Utility Owner to develop detailed plans and estimates for their work in accordance with the approved Scheme of Accommodation. The Document describes existing facilities in conflict and the proposed accommodation within the proposed project.

Master Plan

The Designer shall record the existing and proposed configuration of all utility facilities on a "master plan." The scale of the "master plan" will be large enough to detail the relationships between utility facilities. The "master plan" will provide visual assurance that underground facilities are not in conflict with each other and that utility poles are not in conflict with underground facilities.

The "master plan" will be color coded as follows:

- Red for electric facilities.
- Yellow for gas facilities.
- Blue for water facilities.
- Orange for communication facilities.
- Purple for cable television facilities.
- Green for sanitary sewer facilities.

Meet With Owners

The Designer shall meet with the Utility Owners to finalize the Scheme of Accommodation and Utility Owner Design Authorization. The Designer shall invite the Project Manager and UDE to the meeting. It may be prudent to coordinate the underground and aerial utilities at separate meetings. The meetings should include an exchange of information consisting of the character of the proposed highway construction, utility construction standards, utility service requirements, etc., allowing refinement of the Scheme of Accommodations and Utility Owner Design Authorization.

Approval of Scheme of Accommodation

The Designer shall schedule a meeting with the UDE and Project Engineer, Utilities assigned to the project for approval of the Scheme of Accommodation and Utility Owner Design Authorization.

The Designer shall forward to each Utility Owner:

- A. Approved Utility Scheme of Accommodation and Utility Owner Design Authorization.
- B. A set of the latest construction contract plans for reference.
- C. A request for the Utility Owner to prepare detailed plans and estimates for their work.

Detailed Plan and Estimate

The Designer shall maintain contact with the Utility Owners, furnishing them with additional highway construction information as required for the development of Owner Detailed Plans and Estimates.

The Utility Owner will proceed with the preparation of the Detailed Plans and Estimates as required.

Each Utility Owner should be requested to furnish the Designer with four copies of the Owner Detailed Plans and Estimates. The Designer in turn shall forward two sets of Owner Detailed Plans and Estimates to the UDE.

When utility facilities are to be included as part of the State's overall construction project, the Designer shall prepare estimates for the work as well as the specifications and details to be included in the State's contract documents. A separate copy of this estimate shall be transmitted to the UDE for review.

Upon receipt of the Detailed Plans and Estimates, the Designer shall review them for compliance with the approved Utility Owner Design Authorization and Scheme of Accommodation plan. The Designer will note deviations and obtain UDE approval before proceeding.

Utility Plan, Contract Plans and Supplemental Specifications

The Designer shall prepare utility agreement plan sheet/sheets indicating the following:

- A. Title Block.
 - 1) Project description and agreement number assigned by UDE.
- B. Key Map.

C. Plan indicating utility work.

- (1) Plan Scale shall be selected so that facilities may be clearly shown on the least number of plan sheets [one sheet utility plans are preferred].
- (2) Plan Size (fold standard contract plan sheets sized 594 by 841 mm to an outside dimension of 216 by 356 mm), which includes a 15 mm wide margin along the left side. Smaller plans in a multiple of 216 by 356 mm are acceptable with prior approval of the UDE.
- (3) Overall project limits.
- (4) Individual utility items of work.
- (5) Existing roadways and bridges.
- (6) Proposed roadways and bridges.
- (7) Proposed and existing right-of-way lines.
- (8) Proposed "No Access" lines.
- (9) Existing owners' utility facilities.
 - a. Size (diameter, voltage, pairs, etc.)
 - b. Type of construction
 - c. Depth-cover (if warranted)
 - d. Test pit information (if warranted)
 - e. Material
 - f. Right-of-way parcels and easements (when required)
 - g. Proposed drainage and sign facilities (if warranted)
- (10) Proposed utility facilities (temporary and permanent).

D. Engineering text.

- (1) Description of each utility item to be constructed.
- (2) Schedule for the Utility Owner to perform the work.
- (3) Notes indicating order of work and advance work required where applicable.

E. Color legend.

- (1) Green - proposed facilities
- (2) Red - facilities to be removed.
- (3) Yellow - temporary facilities.
- (4) Blue - betterment facilities (facilities at owner's expense)

F. General notes.

The letter of transmittal to the UDE shall contain a certification to the effect that:

"The Scheme of Accommodation reflected in the documents is the most economical and feasible and conforms with law, Department policy, Department standards, utility owner policy and utility owner standards."

Required documents for each Agreement to be submitted by the Designer at this time are as follows:

- A. Utility Plan. Each Utility Agreement will require a reproducible and 16 colored and folded prints; Railroad Agreements will require a reproducible and 25 colored and folded prints or as directed by the UDE.
- B. Utility owners' Detailed Plans and Estimates.
- C. Two copies of supplemental specifications for the following:
 - 1. Section 105.09 - Utility work to be performed by the owners.
 - 2. All specifications for utility items to be constructed by the State's contractor.

Contract Plans.

The Designer shall show each Utility Owner's proposed facilities on the Contract Plans.

Supplemental Specifications.

The Designer shall prepare supplemental specifications indicating the following:

- a) General notes affecting the utility work.
- b) Generic description of each utility item of work.
- c) Schedule for the Utility Owner to perform the work.
- d) Notes indicating order of work and advance work required where applicable.

Review Plans and Modify Utility Agreements.

UDE shall review proposed construction plans and specifications to assure utility facilities are accommodated.

UDE will prepare the Agreement Modification attaching the utility plan request budget approval by the Project Manager, and transmit copy to CPC requesting utility construction funding.

Authorization for Utility Owner Construction

After funding is secured from CPC the UDE will issue the Utility Agreement Modification authorizing the Utility Owner to perform its construction.

Project Construction.

UDE will assist the Resident Engineer with utility involvement, prepare Agreement Modifications, request funding and issue Agreement Modifications for utility construction as necessary.

Project Close-Out

UDE shall inspect the project after construction to determine that all utility construction work is complete, prepare final Agreement Modifications and Department Actions to close the utility portion of the project.

Attachment 1 - Utility Accommodation Policy

INITIAL CONTACT LETTER

Date

Utility Contact Name
Utility Contact Title
Utility Owner Name
Utility Owner Address

RE:
Route ____ (1953), Section ____
Project Description
Project Location
Utility

Designer
Company Name
Company Address
Designer Name
Designer Telephone Number

Dear *Utility Contact*:

The New Jersey Department of Transportation (NJDOT) has engaged us to develop contract plans and specifications for (*subject project, brief description of the project, project limits, and anticipated advertising date if known*).

In accordance with NJDOT Utility and Railroad Steps of Procedure, our preliminary investigation disclosed that (*name of utility owner*) is franchised to operate within the proposed project limits and may have facilities affected by the State's proposed construction.

Should you have existing or proposed plant within the project limits, it is necessary for us to verify your facilities and enter into engineering dialog with (*name of utility owner*).

Please complete the following questionnaire and return to us by (*Date _____*)

(___) Owner Engineer to be contacted is:
Name _____
Title _____
Address _____

Telephone Number _____

(___) We **DO HAVE** existing facilities within the project limits.

(___) We **DO NOT HAVE** existing facilities within the project limits.

(___) Other (*Owner comment*) _____

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Questions concerning this matter should be directed to_____.

Thank you for your cooperation in this matter.

Sincerely,

Designer Name

Designer Title

Attachment

Copy to: Manager, Utilities
 Bureau of Utilities and Right of Way

ENGINEERING FUNDING REQUEST

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MEMORANDUM

To: Chief, Bureau of Program Coordination

From: Manager, Utilities

Phone:

Date:

Subject: Utility Engineering Programming Request

Listed hereunder are the estimated costs for Utility Owner Engineering, relocation and/or rearrangement as required by the subject project:

AGREEMENT NO.	UTILITY OWNER	ESTIMATED COST ENGINEERING

	Total Estimated Cost	
--	-----------------------------	--

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We will develop and enter into a Engineering Agreement with the above Utility Owners and request funds for construction at a later date. Construction by the owners will be authorized by a construction authorization (Agreement Change Order) issued by us after construction funding is authorized.

It is anticipated that relocation of facilities will be accomplished by State's contractor under, and chargeable to, the project's construction contract account. Said relocation costs are not included herein. The construction costs shown are for construction engineering and inspection.

Will you please initiate programming for the above Engineering for Utility Reconnaissance and Plan Preparation with the Department and/or Federal Highway Administration at your earliest convenience. The project's design is currently underway and therefore Engineering costs are anticipated immediately.

(Railroad/Utility) Engineering has previously been programmed and is being funded under Item _____ of the 19____ and Federal Project No. _____.

No (railroads/utilities) are involved in this project.

Any questions pertaining to this matter should be directed to Mr. _____ of this office at (____) _____.

FMIS Form T-AC-1643 is attached.

Attachment

c: _____, Project Manager

AGREEMENT TRANSMITTAL LETTER

Date: _____

Mr./Mrs./Miss/Ms. _____

Re:

Dear Mr./Mrs./Miss/Ms. _____:

Enclosed herewith are three (3) copies of proposed Utility Agreement _____ covering the understandings between the State of New Jersey and the _____ for the design engineering and subsequent construction authorization of _____ facilities in connection with construction of the above referenced project.

Will you please take the following actions:

- Have two copies of the Agreement signed, attested to and embossed with your official seal affixed.
- Type or print the name and title of the signer and attestor beneath each signature on the Agreement.
- Prepare a resolution authorizing execution of this Agreement. Said resolution must identify the signer of the Agreement by name.
- Return two (2) signed copies of the Agreement to this office. The third copy is for your files.
- Remit your check in the amount of \$_____ payable to the New Jersey Department of Transportation covering Betterment costs included in State's Contract.

Please do not date the Agreement, it will be dated upon execution by the Department.

Please be advised that Owner Engineering charges for the subject project have been approved as follows:

- A. Estimated cost _____
- B. Capital Construction Program _____
Year _____
Number _____
- C. Effective date for Engineering _____

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Engineering costs include design, plan preparation, meetings, contract administration, consultant fees, tests pits and any other effort on your part necessary to accommodate the project.

The Designer will forward to you the approved Utility Owner Design Authorization with a schematic drawing indicating the location of your existing and proposed facilities, and the current proposed highway plans to assist you in developing.

- A. Owner plans.
- B. Owner cost estimates.
- C. Preconstruction notice time
- D. Estimated construction time to accomplish your proposed work.

Upon completion of your plans and estimates, please forward 4 complete sets to the Designer so that they may prepare the Utility Plan, State Contract Plans, and Specifications, which must include your existing and proposed facilities.

The Utility Design Engineer will prepare a construction modification to this Agreement to cover the rearrangement of your facilities necessitated by the proposed project.

The State will accept billing for engineering as soon as Utility Agreement is fully executed. Invoices containing engineering charges should include reference to the Agreement number and this letter.

Thank you for your cooperation in this matter.

Sincerely,

Manager, Utilities
Bureau of Utilities and Right of Way

Enclosures

c:

UTILITY OWNER DESIGN AUTHORIZATION

**UNDERGROUND ACCOMMODATION
PROJECT DESCRIPTION
UTILITY OWNER
(Facility Type)**

Agreement No. _____
Sheet No. ____ of ____

LOCATION	EXISTING FACILITIES	PROPOSED ACCOMMODATION TEMPORARY AND PERMANENT	REMARKS
<ul style="list-style-type: none"> • Length of Route or Road Name • Station and Offset Right or Left • Repeat as Needed 	<ul style="list-style-type: none"> • Length of main or conduit from beginning station to ending station; size, type of material, class of service. • Indicate as above. 	<ul style="list-style-type: none"> • State what is to be constructed, lowered, etc, using the terms at left. • State what is to be removed and/or abandoned. • Indicate as above. 	<ul style="list-style-type: none"> • Reserved for comment and/or approval by DOT Project Engineer.

General Notes:

1. Who is doing the work?
- 2,. How are services being handled?
3. Is the work in kind or betterment?

Other Issues to Address:

1. Environmental permit restrictions on when accommodation work can be performed (i.e. work in a stream).
2. Time of year and/or day restrictions on when accommodation work can be performed (i.e. transmission gas main in winter).
3. The effect of staging on the accommodation.
4. The effect of highway grades on the accommodation.

UTILITY OWNER DESIGN AUTHORIZATION

**AERIAL ACCOMMODATION
PROJECT DESCRIPTION
UTILITY OWNER
(Facility Type)**

Agreement No. _____
Sheet No. ____ of ____

LOCATION	EXISTING FACILITIES	PROPOSED ACCOMMODATION TEMPORARY & PERMANENT	REMARKS
<ul style="list-style-type: none"> • Route or Road Name. • Station Right or Left and Pole # to Station Right or Left and Pole #. • Repeat as Needed. 	<ul style="list-style-type: none"> • Aerial plant length from beginning station to ending station. • Wire size, type of material, class of circuit. • Indicate as above 	<ul style="list-style-type: none"> • State what is to be constructed, lowered, transferred, etc, using the terms at left. • State what is to be removed. • Indicate as above. 	<ul style="list-style-type: none"> • Reserved for comment and/or approval by DOT Project Engineer.

General Notes:

1. Who is doing the Work?
2. How are services being handled?
3. Is the work in kind or betterment?

Other Issues to address:

1. Clearing site/tree trimming.
2. Time of year and/or day restrictions on when accommodation work can be performed (i.e. electric transmission lines in summer).
3. The effect of staging on the accommodation.
4. The effect of highway grades on the accommodation.

CONSTRUCTION FUNDING REQUEST

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MEMORANDUM

TO: Chief, Bureau of Program Coordination

FROM: Manager, Utilities

DATE:

PHONE:

SUBJECT: Construction Funding Request

Enclosed (is one copy each) (are two copies each) of the proposed Utility Agreements required as a result of the construction of the above referenced project. The Agreements are as follows:

AGREEMENT/ MODIFICATION NO.	COMPANY/ MUNICIPALITY	ENGINEERIN G	CONSTRUCTION AUTHORIZATION COST	AGREEMENT TOTAL
	Total Estimated Cost			

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- Amounts shown are for costs incurred by the _____. Utility facilities will be relocated/rearranged and funded as part of State's contract. Said construction costs are not included herein.

Utility Agreement Nos. _____ cover utility relocation work that will be performed by the owners and reimbursed by the State under the terms of their respective Agreements.

Utility Agreements Nos. _____ reflect facility relocation work that will be performed and paid for under the State's construction contract. Only the Utility owner's plan review, inspection and/or field services costs are being funded by the Utility Agreement.

Utility Agreement Nos. _____ indicate that certain work will be performed for the Utility owner by State's contractor at Utility owner's sole cost and expense. The cost of said work is not included herein.

Utility Agreement Nos. _____ indicate that certain work will be performed by State's contractor for the Utility owner at State expense. The cost of said work is to be funded under the construction contract account and is not included in this funding request for the Utility Agreements.

Utility Agreement Nos. _____ are "no-conflict" Agreements and do not require any construction funding.

Utility Agreement No. ____ will require an additional Engineering appropriation of \$_____ in order to adequately fund the Agreement. Previous authorization was under Item ____ of _____, and Federal Project No. _____.

Railroad Agreement RRA-_____ covers railroad engineering, flagging and inspection costs that railroad will incur as a result of this project.

No railroads are involved in this project.

The drafts of the Construction Modification to the Agreements are being forwarded for your review and appropriation of the funds required to progress the relocations and/or construction services.

The estimated total for the Agreements is \$_____. Of this amount, \$_____ is for Engineering which has been previously funded under Item ____ of the _____, and Federal Project No. _____. Federal participation is now being requested for \$_____.

Copies of the executed Agreements will be furnished you upon execution by the Commissioner of Transportation.

Enclosures

c: _____, Project Manager

SECTION 11 GEOTECHNICAL

11.1 Scope Development

The purpose of this document is to provide an outline of the geotechnical engineering activities and guidelines recommended for the performance of services provided by the NJDOT Geotechnical Unit or Consulting Engineers. The level of information collected will be only that necessary for determination of feasibility of specific scheme, methods of construction and to help better define construction costs for use in Design Development.

11.1.1 Subsurface Exploration

A. GENERAL

1. The designer is to prepare a subsurface exploration program for the project. Prior to developing this program, the designer should initiate a search for all existing subsurface information within the project limits. Generally, scoping test boring requests should be initiated as soon as sufficient information is available concerning horizontal/vertical geometry and structure locations. Preliminary test borings, may be requested at any time prior to this. To assist in the preparation of a program, the designee should refer to the appendices entitled **Suggested Methods and Procedures for Test Borings** and **Guidelines for Spacing and Depths of Test Borings**.
2. The designer is responsible for providing the field layout of the proposed test borings. The stakeout shall consist of a hub driven flush, and a lath with the boring number and the elevation of existing ground shown on it. In heavily wooded and shrubby areas, additional markings should be provided to direct boring crews to the sites. For water boring locations, a suitable range pole system may be required. In tidal streams, a tide gauge should be provided.

A tabulation of the as-staked data including station, offset, reference line, and existing ground elevation, should be provided prior to the commencement of drilling operations. In addition, a tabulation of boring locations referenced to the New Jersey Plane Coordinate System, and GIS compatible, should also be provided. The location data must be referenced to a baseline which is shown on the appropriate construction plans for the project.

3. All completed borings are to be properly plotted and labeled on the construction plans, or on the plan sheet index, if available. In addition, if the borings are for structural design, they should also be plotted and labeled on the Structural Sketch sheet for each structure in the bridge plans.
4. Preliminary laboratory testing programs if deemed necessary should be submitted with the boring request. When cohesive soils are encountered during the boring operations, the designer should recommend any immediate revisions or additions to the program to obtain additional samples suitable for appropriate laboratory testing (i.e. undisturbed samples).

Requests for field tests, such as in-situ vane shears, should be submitted with the original boring request, or as soon as possible thereafter.

B. REQUEST FOR SUBSURFACE EXPLORATION

1. When submitting a subsurface exploration request, the Designer should provide background information on the scope of the project, available information on soil contamination, and the following information:
 - a) A tabulation of proposed borings with station, offset, purpose, proposed roadway cut/fill depth, and estimated quantity of soil/rock.
 - b) Roadway profiles showing proposed and existing borings.
 - c) Typical sections and cross sections, when applicable (such as for rock cut areas).
 - d) Structure plot plans with proposed borings and bottom elevation of proposed footings, on ISO A4 sheets.
2. The exploration request plans should consist of two sets of the following:
 - a) A Key Sheet.
 - b) 1:1000 or 1:2000 scale plans on standard ISO A1 sheets with borings plotted and labeled. If 1:1000 or 1:2000 scale plans are not available, alternate scaled may be substituted.

C. SUBSURFACE EXPLORATION PROGRAM REVIEW PROCESS

1. The Geotechnical Engineering Unit will review the Designer's request, and, if necessary, conduct meetings with the Designer to finalize the exploration program.
2. The review process will also address soil contamination and the need for Health and Safety oversight during drilling, as recommended by the Bureau of Environmental Services.
3. After finalization of the boring program and determination of Health and Safety needs, the Designer will be advised if the borings can be performed by the Department's forces, or if it will be necessary for the designer to obtain the services of a drilling subcontractor.

D. SUBSURFACE EXPLORATION BY NJDOT

1. The designer shall provide additional sets of the finalized test boring location plans, as required, using the NJDOT numbering system provided by the Unit during the review. These numbers should also be used when labeling borings on the appropriate construction plan sheets.

2. The Department will supervise and inspect the borings, identify the samples, and provide the Designer with final typed logs.
3. During the performance of the borings, any unusual or unanticipated subsurface conditions will be brought to the Designer's attention to facilitate possible revisions to the exploration program.
4. The Designer shall provide final as-drilled boring location plans on standard ISO A1 sheets, 100 micrometer mylar. A print of the mylar shall be submitted for approval within 20 days of receipt of all final boring logs.

E. SUBSURFACE EXPLORATION BY CONTRACT

1. Upon notification that the borings cannot be performed by NJDOT forces, the Designer shall:
 - a) Provide contract documents for review and comment.
 - b) Provide additional copies of the finalized plans and contract documents, if requested.
 - c) Submit resumes to the Geotechnical Engineering Unit for inspectors to be used during the performance of the boring contract.
 - d) Received bids, and provide two copies of each bid proposal, tabulation of bids, and award recommendations.
 - e) Provide a copy of the executed contract, performance bond, and insurance certificates.
 - f) Within five days of completion of each week during actual drilling activity, submit "Weekly Contract Drilling Reports" (forms provided by the Geotechnical Engineering Unit), and one copy of the inspectors' field logs for all borings completed that week. The logs will contain sample identifications, after Burmister, and detailed rock descriptions including rock type, color, condition, percent recovery, and Rock Quality Designation after D. Deere.
 - g) Prepare and submit final typed logs on ISO A4 sheets, including the name of the contractor and drilling personnel, within 20 days of completion of all borings.
 - h) Prepare and submit final as-drilled boring location plans on standard ISO A1 sheets, 100 micrometer mylar. A print of the mylar shall be submitted to the Unit for approval within 20 days of completion of all borings.
 - i) Certify that the contractor has complied with all directions regarding clean-up and restoration of work areas and that all selected samples and cores have been inspected for delivery. Also, provide one week notice for delivery of samples and cores for storage by the Department.

Field and Laboratory Tests

During the performance of borings or immediately following the completion of all borings, the Designer shall submit to the Geotechnical Engineering Unit, a laboratory testing program for soil and rock samples. Upon review of the program, the Geotechnical Engineering Unit will advise the Designer of the availability of NJDOT forces to perform testing. In the case of non-availability, the Designer will be authorized to perform the testing by using his own forces or a recognized Geotechnical Laboratory based upon a fee proposal.

11.1.2 Geotechnical Engineering Studies and Reports

General

Upon completion of all subsurface exploration and laboratory testing, the Designer shall submit to the Geotechnical Engineering Unit two (2) copies of the following, sufficient to determine feasibility of specific schemes and methods on construction to help better define construction costs.

- A. Preliminary Geotechnical Roadway and Rock Engineering Report.
- B. Separate Preliminary Geotechnical Foundation Engineering Reports for each structure. If conditions warrant, a single report for multiple structures may be submitted as determined by the Geotechnical Engineering Unit.
- C. Preliminary Pavement Design Report, which shall be presented separately from other reports.

Upon submission of the Scope Development Package, the Project Manager shall submit to the Geotechnical Engineering Unit four (4) copies of the following:

- A. A finalized Geotechnical Roadway and Rock Engineering Report.
- B. Finalized separate Geotechnical Foundation Engineering Reports for each structure.

When computer programs are used in the preparation of these reports, the name, source and theoretical basis of each program should be provided in the appropriate report. Disks containing input/output files should also be provided.

Geotechnical Roadway Engineering Report

This report shall include all studies performed with regard to Roadway Foundation design and shall consist of:

- A. General project description including the geological condition, boring location sheets, soil and rock profiles with borings and groundwater elevations superimposed, and all other pertinent subsurface information.
- B. Description of all laboratory testing and evaluation of the test results.

- C. The geotechnical roadway analysis should include, but not be limited to, the following, if required:
1. **Settlement Concerns:** (i.e., amount and rate of settlement).
 2. **Slope Stability Concerns:** (i.e., stability of slope of roadway fills and cuts).
 3. **Slope Stabilization Concerns:** (i.e., stabilization of slope with geosynthetic reinforcements).
 4. **Ground Modification Concerns:** (i.e., wick drains, dynamic deep compaction, stone columns, etc.).
 5. **Economic Analysis of Stabilization Techniques.**
- Note:** Computations for which analyses have been performed, references and cost estimates should be provided in this report.
- D. Conclusions and recommendations.

Rock Engineering Report

This report shall include studies and evaluations related to rock slopes or other applications and shall consist of:

- A. A compilation of all data which are significant to the stability of rock slopes from detailed line mapping of rock exposures, from core drilling observations and identifications, from field and laboratory tests, and from existing data, such as publications, maps, aerial photos and other previous work.
- B. A geologic structural analysis determining structural domains and design sectors, developing a rock mass model using stereographic projection, investigating the possible failure modes, and synthesizing of strength parameters for stability analysis.
- C. Blasting and excavating considerations, remedial and stabilization measures, and cost estimates.
- D. Width of top of rock recommendations.
- E. Catchment area design recommendations.
- F. Geophysical surveys when appropriate.
- G. A summary table of information, recommendations and cost.

Note: The Consultant's attention is particularly directed to publications on rock engineering prepared by D. U. Deere, A. J. Hendron, and by D. R. Piteau and Associates, Ltd.

Geotechnical Foundation Engineering Report

This report shall contain foundation design criteria for each substructure unit and shall include:

- A. Summary of all subsurface exploration data, including boring location sheets, subsurface soil profile, exploration logs, laboratory or in-situ test results, and groundwater information. The soil profile should include existing water table and the standard penetration blow counts.
- B. Interpretation and analysis of subsurface data. Laboratory testing shall be performed as necessary to determine the engineering properties, including unit weight, shear strength, compressive strength and compressibility.
- C. Settlement and stability concerns.
- D. Comparison and discussion of feasible foundation type.
- E. Cost comparisons of foundation alternatives.
- F. Proposed method of dewatering, where necessary.
- G. Estimated depth of scour, where applicable. Scour protection should be evaluate where required.
- H. Seismic concerns of foundations in accordance with AASHTO Standard Specifications for the Seismic Design of Highway Bridges, with current interims. The result of the investigation and analysis, as a result of earthquake motions, should include the determination of potential hazards and seismic design requirements related to (1) slope stability, (2) liquefaction, (3) fill settlement, and (4) increase in lateral earth pressure.
- I. Constructibility and/or pile driveability for the proposed foundation. Other temporary and/or permanent sheeting or cofferdams should be discussed relative to their constructibility.
- J. All pertinent information regarding the existing structure, when the proposed foundation involves alterations to an existing structure or is close to an existing structure. Special methods of construction and their effect on the existing structure should also be included.
- K. Illustrations:
 - 1. Roadway Plans for each structure to appropriate scale folded to the format of the report.
 - 2. General soils profile for each structure.
 - 3. Cross sections at specific locations where analyses have been performed.
 - 4. Tables and graphical illustrations.

Pavement Design Report

A. PROJECT DESCRIPTION

The intent of the project (i.e., proposed improvements to mainline, ramps, shoulders, access roads and detour roads) should be described along with all construction considerations/limitations (i.e., maintenance of traffic during construction, utilization of detour roads, etc.). Other considerations should be grade limitations or constraints in conjunction with curbs, clearance under bridges, cross slopes, maximum superelevations, etc. A project location (key) plan also should be included.

B. DATA COLLECTION

All of the following should be provided with this report:

1. Existing and future ADT traffic volumes and Total Truck percentage (obtained through the Project Manager).
2. 80 kN (18 Kip) Equivalency Factors (obtained through the Project Manager).
3. Most recent as-built plans.
4. Superimposed profile of existing and assumed grades.
5. Existing and assumed typical sections for each roadway requiring pavement design.

The NJDOT Geographic Information System (GIS) should be explored for the availability of the information above. If unavailable, the information should be obtained from the Project Manager.

C. ANALYSIS OF SUBGRADE SOIL

Subgrade soil should be investigated by the Designer. This information may be obtained from, but not limited to:

- Existing borings
- Test pits
- Auger borings
- Shallow borings
- Rutger's Engineering Soil Survey Maps

D. PAVEMENT CONDITION ANALYSIS

For resurfacing and rehabilitation projects, the Designer should perform a visual surface distress identification utilizing SHRP's **Distress Identification Manual for the Long-Term Pavement Performance Project (SHRP-P-338)** or *its most recent update*. Color photos may be included in the report to aid in presenting the existing pavement condition.

Analyses should also be performed to determine the remaining strength of the existing pavement. These analyses could include use of various Non-Destructive Testing (NDT) procedures, Resilient Modulus Testing, or pavement coring for strength evaluation.

E. PAVEMENT ASSESSMENT

Pavement assessment should be performed using Standard NJDOT Pavement Sections, the most recent version of the "AASHTO Guide for the Design of Pavement Structures", or other acceptable procedures. When directed, a cost analysis comparing flexible, rigid and/or composite pavement sections should be included. Special consideration shall be given to recycling of existing pavement materials consistent with the current state of the practice.

The Pavement Assessment Report shall also include:

- Illustrations of the pavement design method used along with a listing of the design parameters utilized.
- The name of the program, if a computer program has been used in the analysis, and a listing of both input and output files.

11.2 Design Development

The purpose of this document is to provide an outline of the geotechnical engineering activities and guidelines recommended for the performance of services provided by the NJDOT Geotechnical Unit or Consulting Engineers for use in Final Design Development.

11.2.1 Investigation

A. GENERAL

1. The Designer is to prepare a subsurface exploration program for the project. Prior to developing this program, the designer should initiate a search for all existing subsurface information within the project limits. Generally, final design test boring requests should be initiated as soon as sufficient information is available concerning horizontal/ vertical geometry and structure locations. Preliminary test borings, may be requested at any time prior to this. To assist in the preparation of a program, the Designer should refer to the appendices entitled **Suggested Methods and Procedures for Test Borings** and **Guidelines for Spacing and Depths of Test Borings**.
2. The Designer is responsible for providing the field layout of the proposed test borings. The stakeout shall consist of a hub driven flush, and a lath with the boring number and the elevation of existing ground shown on it. In heavily wooded and shrubby areas, additional markings should be provided to direct boring crews to the sites. For water boring locations, a suitable range pole system may be required. In tidal streams, a tide gauge should be provided.

A tabulation of the as-staked data including station, offset, reference line, and existing ground elevation, should be provided prior to the commencement of drilling operations. In addition, a tabulation of boring locations referenced to the New Jersey Plane Coordinate System, and GIS compatible, should also be provided. The location data must be referenced to a baseline which is shown on the appropriate construction plans for the project.

3. All completed borings are to be properly plotted and labeled on the construction plans, or on the plan sheet index, if available. In addition, if the borings are for structural design, they should also be plotted and labeled on the General Plan and Elevation sheet for each structure in the bridge plans.
4. Preliminary laboratory testing programs, if deemed necessary, should be submitted with the boring request. When cohesive soils are encountered during the boring operations, the Designer should recommend any immediate revisions or additions to the program to obtain additional samples suitable for appropriate laboratory testing (i.e. undisturbed samples).

Requests for field tests, such as in-situ vane shears, should be submitted with the original boring request, or as soon as possible thereafter.

B. REQUEST FOR SUBSURFACE EXPLORATION

1. When submitting a subsurface exploration request, the Designer should provide background information on the scope of the project, available information on soil contamination, and the following information:
 - a) A tabulation of proposed borings with station, offset, purpose, proposed roadway cut/fill depth, and estimated quantity of soil/rock.
 - b) Roadway profiles showing proposed and existing borings.
 - c) Typical sections and cross sections, when applicable (such as for rock cut areas).
 - d) Structure plot plans with proposed borings and bottom elevation of proposed footings, on ISO A4 sheets.
2. The exploration request plans should consist of two sets of the following:
 - a) A Key Sheet.
 - b) 1:1000 or 1:2000 scale plans on standard ISO A1 sheets with borings plotted and labeled. If 1:1000 or 1:2000 scale plans are not available, alternate scaled may be substituted.

C. SUBSURFACE EXPLORATION PROGRAM REVIEW PROCESS

1. The Geotechnical Engineering Unit will review the Designer's request, and, if necessary, conduct meetings with the Designer to finalize the exploration program.
2. The review process will also address soil contamination and the need for Health and Safety oversight during drilling, as recommended by the Bureau of Environmental Services.
3. After finalization of the boring program and determination of Health and Safety needs, the Designer will be advised if the borings can be performed by the Department's forces, or if it will be necessary for the Designer to obtain the services of a drilling subcontractor.

D. SUBSURFACE EXPLORATION BY NJDOT

1. The Designer shall provide additional sets of the finalized test boring location plans, as required, using the NJDOT numbering system provided by the Unit during the review. These numbers should also be used when labeling borings on the appropriate construction plan sheets.
2. The Department will supervise and inspect the borings, identify the samples, and provide the Designer with final typed logs.

3. During the performance of the borings, any unusual or unanticipated subsurface conditions will be brought to the Designer's attention to facilitate possible revisions to the exploration program.
4. The Designer shall provide final as-drilled boring location plans on standard ISO A1 sheets, 100 micrometer mylar. A print of the mylar shall be submitted for approval within 20 days of receipt of all final boring logs.

E. SUBSURFACE EXPLORATION BY CONTRACT

1. Upon notification that the borings cannot be performed by NJDOT forces, the Designer shall:
 - a) Provide contract documents for review and comment.
 - b) Provide additional copies of the finalized plans and contract documents, if requested.
 - c) Submit resumes to the Geotechnical Engineering Unit for inspectors to be used during the performance of the boring contract.
 - d) Received bids, and provide two copies of each bid proposal, tabulation of bids, and award recommendations.
 - e) Provide a copy of the executed contract, performance bond, and insurance certificates.
 - f) Within five days of completion of each week during actual drilling activity, submit "Weekly Contract Drilling Reports" (forms provided by the Geotechnical Engineering Unit), and one copy of the inspectors' field logs for all borings completed that week. The logs will contain sample identifications, after Burmister, and detailed rock descriptions including rock type, color, condition, percent recovery, and Rock Quality Designation after D. Deere.
 - g) Prepare and submit final typed logs on ISO A4 sheets, including the name of the contractor and drilling personnel, within 20 days of completion of all borings.
 - h) Prepare and submit final as-drilled boring location plans on standard ISO A1 sheets, 100 micrometer mylar. A print of the mylar shall be submitted to the Unit for approval within 20 days of completion of all borings.
 - i) Certify that the contractor has complied with all directions regarding clean-up and restoration of work areas and that all selected samples and cores have been inspected for delivery. Also, provide one week notice for delivery of samples and cores for storage by the Department.

Field and Laboratory Tests

During the performance of borings or immediately following the completion of all borings, the Designer shall submit to the Geotechnical Engineering Unit, a laboratory testing program for soil and rock samples. Upon review of the program, the Geotechnical Engineering Unit will advise the Designer of the availability of NJDOT forces to perform testing. In the case of non-availability, the Designer will be authorized to perform the testing by using his own forces or a recognized Geotechnical Laboratory based upon a fee proposal.

11.2.2 Geotechnical Engineering Studies and Reports

GENERAL

Upon completion of all subsurface exploration and laboratory testing, the Designer shall submit to the Geotechnical Engineering Unit two (2) copies of the following:

- A. Geotechnical Roadway and Rock Engineering Report.
- B. Separate Geotechnical Foundation Engineering Reports for each structure.
- C. Pavement Design Report, which shall be presented separately from other reports.

Upon submission of the final construction documents, the Designer shall submit to the Geotechnical Engineering Unit four (4) copies of the following:

- A. A finalized Geotechnical Roadway and Rock Engineering Report, two of which should be unbound and suitable for reproduction. This final report should include modifications and changes made during the phase reviews and should reflect the final roadway design shown on the final construction plans.
- B. Finalized separate Geotechnical Foundation Engineering Reports for each structure, two of which should be unbound and suitable for reproduction. This final reports should include modifications and changes made to the foundation design during the phase reviews and should reflect the final foundation designs shown on the final construction plans.

When computer programs are used in the preparation of these reports, the name, source and theoretical basis of each program should be provided in the appropriate report. Disks containing input/output files should also be provided.

Geotechnical Roadway Engineering Report

This report shall include all studies performed with regard to Roadway Foundation design and shall consist of:

- A. General project description including the geological condition, boring location sheets, soil and rock profiles with borings and groundwater elevations superimposed, and all other pertinent subsurface information.

- B. Description of all laboratory testing, evaluation of the test results, and the selection of soil and rock parameters used for the roadway foundation design.
- C. The geotechnical roadway analysis should include, but not be limited to, the following, if required:
 - 1. **Settlement Analysis:** (i.e., amount and rate of settlement).
 - 2. **Slope Stability Analysis:** (i.e., stability of slope of roadway fills and cuts).
 - 3. **Slope Stabilization Analysis:** (i.e., stabilization of slope with geosynthetic reinforcements).
 - 4. **Ground Modification Analysis:** (i.e., wick drains, dynamic deep compaction, stone columns, etc.).
 - 5. **Economic Analysis of Stabilization Techniques.**
- Note:** Computations for which analyses have been performed, references and cost estimates should be provided in this report.
- D. Explanation of instrumentation program in conjunction with the analyses above (i.e., piezometers, settlement platforms, slope indicators, etc.).
- E. Conclusions and recommendations.

Rock Engineering Report

This report shall include studies and evaluations related to rock slopes or other applications and shall consist of:

- A. A compilation of all data which are significant to the stability of rock slopes from detailed line mapping of rock exposures, from core drilling observations and identifications, from field and laboratory tests, and from existing data, such as publications, maps, aerial photos and other previous work.
- B. A geologic structural analysis determining structural domains and design sectors, developing a rock mass model using stereographic projection, investigating the possible failure modes, and synthesizing of strength parameters for stability analysis.
- C. Blasting and excavating considerations, remedial and stabilization measures, and cost estimates.
- D. Width of top of rock recommendations.
- E. Catchment area design recommendations.
- F. Geophysical surveys when appropriate.
- G. A summary table of information and recommendations.

Note: The Designer's attention is particularly directed to publications on rock engineering prepared by D. U. Deere, A. J. Hendron, and by D. R. Piteau and Associates, Ltd.

Geotechnical Foundation Engineering Report

This report shall contain specific foundation design criteria for each substructure unit and shall include:

- A. Summary of all subsurface exploration data, including boring location sheets, subsurface soil profile, exploration logs, laboratory or in-situ test results, and groundwater information. The soil profile should include the elevation of the proposed and/or existing footings, existing water table and the standard penetration blow counts.
- B. Interpretation and analysis of subsurface data. Laboratory testing shall be performed as necessary to determine the engineering properties, including unit weight, shear strength, compressive strength and compressibility.
- C. Settlement and stability analyses, where applicable, including the pertinent soil parameters, computations and cross sections.
- D. Selection of type of foundation:
 1. Structures supported on spread footings:
 - a) Method of foundation soil stabilization when required, limits of excavation, method of compaction, allowable soil bearing pressures, estimated differential and total residual settlement.
 2. Structures supported on pile foundations:
 - a) Type of piles, design capacity of individual piles, estimated negative friction (if any), group action, estimated tip elevation and/or minimum pile tip elevation of each pile, recommendations regarding the number and location of test piles, wave equation analysis, dynamic monitoring (Pile Driving Analyzer), pile load test(s) (when required), and recommendations for special construction procedures (when necessary).
 - b) When a Wave Equation Analysis is required, the ultimate pile capacity during driving should be stated in the report and shown on the plans. This capacity should include the ultimate pile capacity (pile design load times factor of safety) and the frictional driving resistance of any soil layers penetrated by the piles which are unsuitable for load bearing. Examples of layers unsuitable for load bearing would be:
 - 1) Layers subject to future scour or erosion.
 - 2) Layers subject to strength loss during earthquakes (liquefaction).

- 3) Layers which will settle due to future or existing loads, including lowered groundwater levels. This settlement could result from consolidation of any compressible strata above the pile tips.

Note: The ultimate pile capacity during driving should be used to develop driving criteria so that the driving resistance of unsuitable layers is not included in the permanent ultimate pile capacity.

- c) When a minimum pile tip elevation is required, the maximum soil resistance to overcome during driving should be determined and stated in the report. The maximum soil resistance, if greater than the ultimate pile capacity during driving, should be shown on the plans. This value would be used to verify the proposed hammer system for advancing the piles to the minimum tip elevation. The ultimate pile capacity during driving should still be used to determine the final driving criteria.
- d) The factors of safety to be applied to the ultimate geotechnical pile capacity should be in accordance with the most recent AASHTO Standard Specifications for Highway Bridges.

Note: A factor of safety of 2.0 may be used by the designer if sufficient data on prior pile driving and/or load tests at the structure location are available.

- E. Cost comparisons of foundation alternatives, including different types of piles, when applicable.
- F. Proposed method of dewatering, where necessary.
- G. Estimated depth of scour, where applicable. Scour protection should be provided where required.
- H. Seismic design and analysis for the foundations in accordance with AASHTO Standard Specifications for the Seismic Design of Highway Bridges, with current interims. The result of the investigation and analysis, as a result of earthquake motions, should include the determination of potential hazards and seismic design requirements related to (1) slope stability, (2) liquefaction, (3) fill settlement, and (4) increase in lateral earth pressure.
- I. Constructibility and/or pile driveability for the proposed foundation. Other temporary and/or permanent sheeting or cofferdams should be discussed relative to their constructibility.
- J. All pertinent information regarding the existing structure, when the proposed foundation involves alterations to an existing structure or is close to an existing structure. Special methods of construction and their effect on the existing structure should also be included.
- K. Illustrations:

1. Roadway Plans for each structure to appropriate scale folded to the format of the report.
2. General soils profile for each structure.
3. Cross sections at specific locations where analyses have been performed.
4. Tables and graphical illustrations.

Pavement Design Report

A. PROJECT DESCRIPTION

The intent of the project (i.e., proposed improvements to mainline, ramps, shoulders, access roads and detour roads) should be described along with all construction considerations/limitations (i.e., maintenance of traffic during construction, utilization of detour roads, etc.). Other considerations should be grade limitations or constraints in conjunction with curbs, clearance under bridges, cross slopes, maximum superelevations, etc., which must be addressed in preparing the Pavement Design Report. A project location (key) plan also should be included.

B. DATA COLLECTION

All of the following should be provided with this report:

1. Existing and future ADT traffic volumes and Total Truck percentage (obtained through the Project Manager).
2. 80 kN (18 Kip) Equivalency Factors (obtained through the Project Manager).
3. Most recent as-built plans.
4. Superimposed profile of existing and proposed grades.
5. Existing and proposed typical sections for each roadway requiring pavement design.

The NJDOT Geographic Information System (GIS) should be explored for the availability of the information above. If unavailable, the information should be obtained from the Project Manager.

C. ANALYSIS OF SUBGRADE SOIL

Subgrade soil should be investigated by the Designer. This information may be obtained from, but not limited to:

- Existing borings
- Test pits
- Auger borings
- Shallow borings
- Rutgers Engineering Soil Survey Maps

D. PAVEMENT CONDITION ANALYSIS

For resurfacing and rehabilitation projects, the Designer should perform a visual surface distress identification utilizing SHRP's **Distress Identification Manual for the Long-Term Pavement Performance Project (SHRP-P-338)** or *its most recent update*. Color photos may be included in the report to aid in presenting the existing pavement condition.

Analyses should also be performed to determine the remaining strength of the existing pavement. These analyses could include use of various Non-Destructive Testing (NDT) procedures, Resilient Modulus Testing, or pavement coring for strength evaluation.

E. PAVEMENT DESIGN

Pavement design should be performed using Standard NJDOT Pavement Sections, the most recent version of the "AASHTO Guide for the Design of Pavement Structures", or other acceptable procedures. When directed, a cost analysis comparing flexible, rigid and/or composite pavement sections should be included. Special consideration shall be given to recycling of existing pavement materials consistent with the current state of the practice.

The Pavement Design Report shall also include:

- Illustrations of the pavement design method used along with a listing of the design parameters utilized.
- The name of the program, if a computer program has been used in the analysis, and a listing of both input and output files.

Attachment 1 - Suggested Methods and Procedures for Test Borings

SUGGESTED METHODS AND PROCEDURES FOR TEST BORINGS

METHODS FOR ADVANCING BORINGS

Borings are to be advanced by driving casing, hollow stem auger, or drilling fluid. When casing or drilling fluid is used and the required depth for sampling is reached, the casing is to be cleaned out in such a manner as not to disturb the material to be sampled immediately below the casing. Clean out methods where water is directed downward onto the soil to be sampled are to be discouraged.

Bore holes in which groundwater observations are to be made should be stabilized with biodegradable drilling fluid, if this method of advancing the boring is used.

STANDARD PENETRATION TEST

The standard penetration test (SPT) is made by driving a 35 mm ID split tube sampler (as described in ASTM D 1586) 450 mm into undisturbed soil with a 63.5+/- kg drop hammer free falling from a height of 760 mm with the blows for each 150 mm of penetration recorded. The rope and cathead method of actuating the hammer is required with no more than 2.25 loops on the cathead. The total blows for the second and third 150 mm increments of penetration is the standard penetration test (SPT) and is designated by the letter "N". Refer to ASTM D 1586 for additional information.

The SPT for each boring is to be taken at the surface and at intervals not exceeding 1.5 m. Two or more consecutive tests are to be made starting at the approximate bottom elevation of structure footing. Also, the SPT should be made where changes in material or consistency are indicated.

Representative samples of the materials recovered are to be retained in sample jars, and the jars immediately labeled to indicate the project, boring number, sample number, and depth. If possible, the jars are to be filled to the top with the material as representative of the undisturbed state as possible. All wash samples should be so identified.

UNDISTURBED SAMPLING

Undisturbed samples normally shall be obtained with a nominal 75 mm diameter brass Shelby tube, 600 mm, equipped with a ball check valve. Prior to taking undisturbed samples, the bore hole should be cleaned out using a jet clean-out auger for the last 150 mm to 300 mm above the desired sample elevation.

The tube shall be pressed by hydraulic pressure at a uniform rate for about 3 seconds with care being taken not to rotate the sampler. After pressing, allow 10 to 15 minutes for sample to swell, then rotate drill rods two revolutions to shear base of sample prior to pulling the tube. A press of 450 mm is recommended.

The bottom 25 mm of soil should be removed from the tube and preserved as a jar sample. The tube should be sealed on both ends with a microcrystalline wax, capped, taped and waxed again. The tube should be labeled to show the project, boring number, sample number, depth, recovery, and top and bottom of tube.

Undisturbed samples should always be handled carefully in a vertical position and transported in special containers to minimize shock. Tube samples should be stored in a heated structure and not subjected to vibration.

Undisturbed samples normally should be obtained at 1.5 m intervals followed by a split spoon sample after each tube. However, continuous tubes may be required in thin soft deposits or other frequencies may be specified, depending on the project.

If recoveries are poor with the Shelby tube equipment, a stationary piston sampler should be used. Special care should be taken to lock the inner rods to the casing.

FIELD IDENTIFICATION OF SAMPLES

Soil samples shall be identified by methods proposed by Burmister ("Suggested Methods of Test for Identification of Soils" by D.M. Burmister, 1958).

Rock cores shall be identified by lithologic name and by descriptive terms relating to color, structure, mineralization and weathering. Recovery shall be ratio of the length of the recovered core to the length of coring run, expressed as a percentage. Also to be recorded is the Rock Quality Designation (RQD), after Deere. The RQD is the ratio of core recovered counting only those pieces 100 mm long or longer to the length of coring run, expressed as a percentage (see Deere, Don U., "Geologic Considerations", Rock Mechanics Seminar, April and May, 1968).

PENETROMETER TEST

The penetrometer test should be performed with a pocket penetrometer on cohesive soil samples obtained from the SPT.

A series of readings (three or more) should be taken and the average unconfined compressive strength recorded for both horizontal and vertical directions.

ROCK CORING

Rock coring shall be accomplished with diamond core bits and double tube M-series core barrels. Coring shall generally be performed in 1.5 m runs except that shorter runs may be necessary in boulder areas until top of rock is confirmed. The drilling pressure, speed and water flow should be adjusted and only straight drill rods should be used to obtain as much recovery as possible.

Prior to coring, the bore hole should be cleaned with a chopping bit and stabilized with the casing seated on the top of rock.

When drilling in boulder deposits, it may be necessary to begin the boring with larger casing and coring sizes, and reduce core size as required to advance the boring.

When drilling angle holes for special purposes, the angle and direction of plunge of the bore hole should be recorded.

The recovered core is to be placed directly into the core box from the core barrel in the exact arrangement as in the barrel. Place the core in core boxes so that it will "read" like a book (i.e., the top of each core run shall be placed to the left of the box).

Suitable separators should be placed between coring runs and between borings, with boring number and core run identification clearly written on the separators. The contents of each box (boring and run numbers) should be labeled on the inside and outside of the lid, and on the outside of one end of the box.

GROUNDWATER OBSERVATIONS

The water level, initial and 24 hours after completion of the boring, shall be recorded or the "caved-in" depth shall be recorded as wet or dry.

When required, 25 mm minimum diameter perforated or slotted plastic pipe shall be left in the bore hole and sealed from surface water. Record the length of pipe installed on the boring log. Readings shall be taken periodically to establish the free water surface.

When necessary to obtain groundwater data for stability analyses in rock formations, multiple piezometer installations shall be made. First an NX core boring should be drilled to determine the elevations for the porous points. Then the first porous point is surrounded by sand at the selected elevation and separated from the next porous tube by a bentonite-cement slurry. No more than three tubes per NX core hole should be installed. The tubes from the porous points should be color coded and protected at the surface with casing and a suitable locked cap.

RETRACTABLE PLUG SAMPLES

Retractable plug samples shall be taken by driving a 25 mm diameter sample barrel with a 10 kg drop hammer falling 300 mm. The number of blows for each 300 mm of penetration should be recorded. The sample barrel shall be lined with 150 mm long brass tubes.

Continuous samples generally are to be taken of the first 2 m of soil and then for 1 m of each 1.5 m of soil penetrated thereafter. A full tube of each different clay soil shall be capped, taped, and tested in the laboratory for total density, ignition loss, and natural moisture content. In addition, jar samples of each material shall be preserved and identified after Burmister.

PRIORITIES AND ORDER OF WORK

At structure sites, install perforated plastic pipe at the opposite ends of the structure, in the deepest test borings to be performed at that footing.

In roadway fill and cut areas, initially take 10 to 20 percent of the deepest borings spaced throughout the project. Groundwater observation wells should be installed in these borings. The remainder of the roadway borings should be adjusted according to initial findings.

Representative soil samples from the initial borings should be sent to the laboratory for classification tests, which can serve as guides for the remaining samples. Gradation analyses should be performed on granular soils, whereas, samples of cohesive soils should be tested for natural moisture content and plasticity.

PRESENTATION OF DATA

The bore hole data shall be presented on an approved log form (see attachment). These field logs shall be finalized by the Engineer and shall indicate level of proposed cut or fill and/or footing bottom at the boring location, as applicable.

NOTES

This addendum is not intended to be either all inclusive or exacting, but to serve only as a guide to methods of exploration.

No mention is made of geophysical exploration primarily because it is not routinely used in our work. However, this does not preclude the use of geophysical surveys for highway work. Consideration should be given to using such surveys if conditions are appropriate for a particular project.

Attachment 2 - Guidelines for Spacing and Depths of Test Borings

GUIDELINES FOR SPACING AND DEPTHS OF TEST BORINGS

SPACING

A. EMBANKMENTS

At least one boring every 30 to 150 m along the alignment.

In compressible, cohesive soils, UD borings every 60 to 150 m, depending on information obtained from initial borings or other sources.

The proposed spacing should take into account the height of the proposed embankment and the anticipated subsurface condition.

B. CUTS

At least one boring every 30 to 150 m along the alignment.

In rock, one to two NX size borings every 30 to 60 m. Borings should be located so that problematic areas such as the ends of hills, saddles, and photo lineaments or suspected faults are investigated as well as the dominant structures.

C. STRUCTURES

For structures, at least one boring every 15 m along the proposed footing and at least two borings per footing, except for relatively small footings, in which case one boring could be sufficient.

For walls and culverts, at least one boring every 15 to 30 m.

For noise barriers, at least one boring every 30 to 60 m.

For temporary or left-in-place structures, sufficient borings should be taken for design and constructibility evaluations.

For subsurface structures (pipes, electrical conduit, manholes, inlets and other similar structures), in areas with boulders, shallow bedrock or high groundwater, borings should be taken at 30 to 150 m intervals along the proposed subsurface structure.

DEPTH CRITERIA

A. EMBANKMENTS

For an embankment height smaller or equal to 9 m, the initial 10-20% of borings shall penetrate to depths equal to 2 times the height of the embankment (but not to exceed 15 m) except to penetrate below compressible soils, in which case: penetrate approximately 4.5 m (4 samples at 1.5 m intervals) into coarse or fine grained soils with Standard Penetration Test value (N) larger than 30.

For an embankment height greater than 9 m, initial 10-20% of borings to penetrate to a depth of 1-1/2 times height of embankment except to penetrate below compressible soils, in which case: penetrate approximately 4.5 m (4 samples at 1.5 m intervals) into coarse or fine grained soils with Standard Penetration Test value (N) larger than 30 or 2 to 3 m into rock or glacial till.

Remainder of embankment borings to be adjusted to reflect initial findings. This may include scheduling UD borings and telescoping into firm materials.

Retractable plug borings to be carried into firm materials below compressible soils.

B. CUTS

Borings in cut areas to extend a minimum of 2.5 m below proposed profile grade. When compressible materials are encountered, depths of borings shall be extended as necessary.

C. STRUCTURES

For structures on shallow foundations, at least one boring per footing to penetrate not less than 7.5 m (6 samples at 1.5 m intervals) into granular or non-compressible soils (such as till) with N values exceeding 30 per sample or at least 3 m into rock. The depths of remaining borings to be determined based on initial results.

For structures on deep foundations, a minimum of 6 m below the anticipated pile or shaft tip elevation. Where pile or shaft groups will be used, at least two times the maximum pile group dimension below the anticipated tip elevation, unless the foundation will be end bearing on rock in which case a minimum of 3 m of rock core shall be obtained at each exploration location to assure the boring has not been terminated on a boulder. For shafts supported on or extending into rock, a minimum of 3 m of rock core, or a length of rock core equal to at least three times the shaft diameter for isolated shafts or two times the maximum shaft group dimension for a shaft group, whichever is greater, shall be obtained to assure the exploration has not terminated in a boulder and to determine the physical characteristics of rock within the zone of foundation influence for design.

For retaining walls, extend the boring to a minimum depth of 2 times the wall height or a minimum of 3 m into bedrock.

For temporary sheeting, extend the boring to a minimum depth of 2 times the wall height.

NOTES

Schedule test pits to investigate extent of landfill and miscellaneous fills, to locate utilities, to obtain large samples, to determine pavement sections and subgrade conditions, to obtain rock data, etc.

It is stressed that these criteria are meant to serve as guidelines, and the program should be adjusted depending on the type of project, time requirements, geology, etc.

SECTION 12 LANDSCAPE

Landscape and Urban Design provides complete landscape architectural services to the Department for transportation projects. The unit produces landscape design plans, specifications and details that integrate the proposed transportation facility into the environment and designs functional and aesthetic roadside treatments and urban streetscapes. It also assures that the roadside surface is designed and constructed to prevent erosion and produce a stable condition. The unit also provides technical and design assistance during construction to facilitate the landscape portion of the project and to resolve with the public, project impacts, utilizing landscape architectural treatments.

The unit is responsible for the certification of Soil Erosion and Sediment Control Plans and provides design assistance in obtaining environmental permits. Other responsibilities include the coordination of roadside aesthetics, the Department's Roadside Rehabilitation Program, Global Warming Tree Planting Program, and Scenic By-Ways Program.

Attachment 1 and this procedure describes the processing of a typical Department project.

12.1 Scope Development

Project Scoping

- Recommend level of landscape involvement.
- Recommend in-house or consultant assisted design.
- Recommend aesthetic impacts.
- Coordinate project with Scenic Byways Coordinator and Project Manager.

Project Programming Input

- Prepare Man-hour Cost Estimate.
- Assist in consultant selection process.
- Review consultant Proposal.

Preliminary Environmental Input

- Review draft environmental document (Ex. EA EIS for landscape related commitments).

12.2 Design Development

Review Right-of-Way Plans

- Determine X-Parcels to be retained for landscape purposes.

Soil Erosion and Sediment Control Input

- Determine if report address all erosion control items adequately.
- Recommend revisions when necessary.

Provide Landscape Architectural Services for Environmental Permit Submission.

- Coordinate with Bureau of Environmental Services to prepare conceptual planting plans for D.E.P. permit submission and submission to other agencies.

General Aesthetic Input

- Determine aesthetic treatments for noise barriers, retaining walls and other structures.
- Recommend urban streetscape treatments.

Initial Community Involvement

- Coordinate with the Bureau of Community Involvement to participate in preliminary meetings with the public to solicit input concerning landscape architectural treatments.

Review Initial Submission

- Verify compliance with quality assurance checklist.
- Confirm need for landscape design work and request CADD compatible data from designer for plan sheet preparation.

Final Design Development

Initiate Landscape Design Process

- Prepare Landscape Design Plans, Specifications, Engineer's Estimate and Details.
- Implement quality control procedures and submit to Designer.

Community Involvement

- Coordinate with the Bureau of Community Involvement to present the landscape plan at the public information center.
- Adjust landscape plans as needed in response to community input.

Review Final Submission

- Verify compliance with quality assurance checklist.
- Initiate Soil Erosion Sediment Control Certification procedure.

Soil Erosion Sediment Control Certification

- Assure proper Soil Erosion and Sediment Control items are in place.
- Certify to the local Soil Erosion Conservation District and Department of Agriculture.

Construction

Construction Project Programming

- Prepare Man-hour Cost Estimate

Construction Support

In coordination with the Resident Engineer:

- Assure quality and quantity of landscape materials.
- Recommend acceptance of landscape construction items.
- Resolve individual homeowner concerns utilizing landscape items.
- Provide final design input for landscape items.

Attachment 1 - Landscape Process

FLOW CHART

Landscape and Urban Design

Scope Development -- Design Development

FLOW CHART

Landscape and Urban Design

Final Development -- Construction

SECTION 13 HYDROLOGY/HYDRAULICS

13.1 Drainage Design Report

The following steps outline the drainage design process once the vertical and horizontal geometry is set.

1. GATHER AVAILABLE DATA - Once the Geometric Unit has established a vertical and horizontal alignment and roadway surface elevations are set, the Hydrology and Hydraulics Unit can begin the process of designing the drainage system. Data required to proceed includes:
 - USGS Topographic Maps
 - USDA Soil Survey Maps
 - Zoning and/or Land Use Maps
 - Aerial photographs
 - Stream flow records

2. ADEQUACY/CONDITION OF EXISTING SYSTEM - Prior to designing any new drainage system, this unit will perform a field investigation of existing drainage facilities within the project limits. This evaluation will include:
 - Delineation of tributary drainage areas
 - Determining runoff to all inlet points using Roadway Design Manual procedures
 - Determining if inlet spacing is adequate based on gutter flow spread and by-pass analysis
 - Determining need for cleaning existing pipes and structures
 - Checking the physical condition of stormwater outfall protection

3. SELECTION OF PROPOSED COLLECTION SYSTEM - Based on typical sections, alignment and other constraints, this unit will select an appropriate collection system. These may include:
 - Curbed roadway with inlets and pipe system
 - Earth berm with inlets and pipe system
 - Umbrella section with roadside sales

4. DESIGN OF PROPOSED COLLECTION SYSTEM - The proposed collection system will be determined by:
 - Delineating the tributary drainage areas
 - Determining the runoff to all inlet points using Roadway Design Manual procedures
 - Determining inlet spacing using gutter flow spread and by-pass analysis
 - Determining all utility conflicts which may interfere with the new drainage system

5. DESIGN CONVEYANCE SYSTEM. - This unit will utilize computer software to perform the hydraulic computations to design the conveyance system. An alternative analysis will be required for certain projects. The conveyance system will either be:
 - Piped flow
 - Open channel flow
6. DESIGN OF STORMWATER OUTFALL STABILIZATION PROTECTION - Outfall stabilization need will be determined and designed as needed.
7. DESIGN OF WATER QUALITY FACILITIES - Systems outletting into streams may be required by NJDEP to be provided with facilities for stormwater treatment. These may include:
 - Swales along side the roadway
 - basins (detention, retention, or seepage)

13.2 Stream Encroachment Permit Application

A Stream Encroachment Permit, from the New Jersey Department of Environmental Protection (NJDEP), is required for the construction, installation or alteration of any structure or permanent fill along, in, or across the channel or flood plain, of any stream. A Stream Encroachment permit is also required for any alteration of the floodplain or the stream itself. Any waterway with a drainage area of 20 hectares or greater is considered to be a stream by NJDEP.

The requirement, preparation and processing of the Stream Encroachment Permit is covered under the Flood Hazard Area Regulations, N.J.A.C. 7:13-1 et seq.

Stream Encroachment Permit applications shall be prepared following the guidelines outlined in the NJDEP Technical Manual for Stream Encroachment. The Hydrology and Hydraulics unit will prepare and submit the permit application package for all in-house projects and will review applications prepared by consultants. The in-house preparation of Stream Encroachment Application can begin once the vertical and horizontal geometry is set and stream cross sections are taken. The application preparation process will include the following steps:

1. PRE-APPLICATION CHECKLIST - A Pre Application checklist will be prepared by this unit and submitted to NJDEP requesting a Pre-Application meeting. The pre-application meeting is set-up before any significant design and analysis of the regulated elements is complete. The information submitted in the checklist will include:
 - Project description
 - Location map
 - Preliminary plans
 - Property survey map
 - Tax lot and block designation
 - Other pertinent information
2. PRE-APPLICATION MEETING - A representative from this unit along with personnel from our Environmental Permits Unit will attend the meeting. This meeting is used mainly to:
 - Discuss applicable procedures, rules, and regulations
 - Identify potential problems
 - Familiarize NJDEP reviewer with project
3. PREPARATION OF PERMIT - This unit will complete the required forms:
 - LURP-1 Application Form (see Attachment 1)
 - Administrative Completeness Checklist (see Attachment 2)
4. ENGINEERING REPORT - The engineering report will be prepared by this unit and will contain all of the project information and computations, which may include any of the following, HEC-1, HEC-2, TR-20, TR-55, outfall stability and any other analysis required for the project. The report includes:

- Site location and drainage area map
 - Basic site and design information
 - Color Photographs
 - Hydrological calculations to determine discharge
 - Hydraulic Calculations for analysis and design of elements
 - Storm water management calculations
 - Net fill calculations or waiver
 - Stability analysis of any retaining walls
 - Soil erosion stabilization design computations
5. ENGINEERING PLANS - The plans will be assembled by the CADD technician assigned to this unit. The permit plans will be developed using the base plan developed by the geometric unit. Information required to be shown on the plans includes:
- Basic plan information (Scale, datum, north arrow, title block, etc.)
 - Property lines
 - Topographic contours
 - Encroachment lines
 - Plan, Profile and cross-sections for stream
 - Detail of proposed structures
 - Details of the nearest upstream and downstream structures
 - Soil Erosion and Sediment Control provisions
6. NOTIFICATIONS - Notifications are required for certain projects as outlined in N.J.A.C. 7:13-2.2 and 5.3(b). This unit will prepare such notices and ensure their mailing or publication.
- Letter of notification to abutting property owners (Major projects)
 - Public notice in a local newspaper (Special concern projects)
7. ENVIRONMENTAL REPORT - The Environmental Report is prepared in conjunction with the Environmental Permits Unit personnel.
- Summary of environmental impacts as a result of project
8. APPLICATION REVIEW FEE - A fee is paid for each permit based of type of regulated elements and their number on the project. This Unit will compute the fee amount and prepare a voucher for payment to NJDEP.
- Compute fee
9. SUBMIT PERMIT APPLICATION - This unit will assemble all of the required material, have plans and calculations signed and sealed by a Professional Engineer, prepare a transmittal letter, and submit the entire package to NJDEP for review. The package will include:
- Permit application forms
 - Two copies of the engineering report

- Environmental report
- Five sets of engineering plans (signed and sealed)
- Review Fee
- Computer disk with hydraulic files
- Proof of notifications

Once the package passes the administrative review for completeness, the technical review can take up to 90 days and under certain conditions NJDEP may extend review time to 120 days. Public hearings and fact finding meetings may be held by NJDEP (NJDOT personnel to attend), if required for the project. As a result of the technical review, NJDEP may require that revisions be made to the design of the regulated elements.

Once the technical review is complete, a conditional permit valid for five years is issued. The permit conditions must be agreed to by NJDOT Regional Director's and an affidavit of acceptance is sent to NJDEP. Additionally, notifications are also sent by the Construction Engineer when work on the regulated element is started and when complete.

Attachment 1 - Land Use Regulation Program Application Form

**State of New Jersey
Department of Environmental Protection
Land Use Regulation Program Application Form (LURP #1)**

PLEASE PRINT OR TYPE THE FOLLOWING: (Complete all sections unless otherwise noted)

NOTE: If you are applying for a CAFRA Permit by Rule, you need to complete Items 1 thru 16 and the signature area on page 3 only.

1. Applicant Name _____ Daytime Phone # _____
 Address _____
 City _____ State _____ Zip _____
2. Agent Name _____ Firm _____
 Address _____ Phone # _____
 City _____ State _____ Zip _____
3. Project Name _____ Location (Street Address) _____
 Municipality _____ County _____
 Block(s) _____ Lot(s) _____
 State Plane Coordinates N _____ feet E _____ feet
 Nearest Waterway _____ Watershed _____
4. Total Fees _____ Fees Paid * _____ Project Cost _____ Check Number _____
 (See attached fee schedule) *(Official Use Only)
5. Project Description: _____

FOR OFFICIAL USE ONLY	
File Number:	Permit Code:
Date Received:	Project Manager:
20th Day:	Project Engineer:
90th Day:	Date Entered:
ASU Date:	Points Assigned:
XRef#:	

6. Application(s) for: (Please check all that apply)

Stream Encroachment:	Permit	_____	Waiver	_____
CAFRA:	Individual Permit	_____	General Permit	_____
	Exemption Request	_____	Permit by Rule	_____
Freshwater Wetlands:	Individual Permit	_____	General Permit (Specify #)	_____
	Transition Area Waiver	_____	Letter of Interpretation	_____
	Exemption Request	_____	Open Water Fill Permit	_____
Waterfront Development:	Residential	_____	Commercial	_____
Upland Waterfront Development:	Residential	_____	Commercial	_____
Water Quality Certificate:		_____	Tidal Wetlands (1970)	_____
Federal Consistency Determination:		_____	Jurisdictional Determination:	_____
Permit Modification (specify):	_____			
Other (specify):	_____			

7. Indicate below if any of the following approvals, denials or certifications were received for the project site or are required for the proposed project:
- In Column A, indicate application status: (P for - pending, A for - approved, D for - denied, T for - to be applied for, or O for - other (explain other)).
 - In Column B, indicate application, permit, or docket number.

	A	B		A	B
CAFRA Permit	___	_____	Stream Encroachment Permit	___	_____
CAFRA Exemption	___	_____	Stream Encroachment Waiver	___	_____
Waterfront Development Permit	___	_____	Water Quality Certificate	___	_____
Tidal Wetlands (1970) Permit	___	_____	Tidelands (Riparian) Conveyance	___	_____
Statewide General Freshwater Wetlands Permit	___	_____	Dam Construction or Repair Permit	___	_____
Freshwater Wetlands Letter of Interpretation	___	_____	Pinelands Certificate of Filing	___	_____
Freshwater Wetlands Transition Area Waiver	___	_____	D & R Canal Commission Certif.	___	_____
Individual Freshwater Wetlands Permit	___	_____	Federal Permits (Specify)	___	_____
Freshwater Wetlands Exemption	___	_____	State Permits (Specify)	___	_____
Permit Modification (specify # and type)	_____				

APPLICANT SIGNATURE *

* All applicants must complete this section including those applying for Permit by Rule.

I certify under penalty of law that the information provided in this document is true and accurate. I am aware that there are significant civil and criminal penalties for submitting false or inaccurate information. (If corporate entity, print/type the name and title of person signing on behalf of the corporate entity).

Signature of Applicant/Owner

Signature of Applicant/Owner

Date

Date

A. PROPERTY OWNER'S CERTIFICATION

I hereby certify that the undersigned is the owner of the property upon which the proposed work is to be done. This endorsement is certification that the owner grants permission for the conduct of the proposed activity. In addition, I hereby give unconditional written consent to allow access to the site by representatives or agents of the Department for the purpose of conducting a site inspection or survey of the project site.

In addition, the undersigned property owner hereby certifies:

- 1. Whether any work is to be done within an easement - Yes _____ No _____
- 2. Whether any part of the entire project (e.g., pipeline, roadway, cable, transmission line, structure, etc.) will be located within property belonging to the State of New Jersey -
Yes _____ No _____

Type or Print Name and Address of Owner,
if different from Item 1 on Page 1

Date

Signature of Property Owner

B. APPLICANT'S AGENT

NOTE: Notary seal is required when an agent is used.

I _____, the Applicant/Owner, authorize to act as my agent/representative in all matters pertaining to my application the following person:

Name _____

Occupation/Profession _____

(Signature of Applicant/Owner)

AGENT'S CERTIFICATION

Sworn before me
this day of

I agree to serve as agent for the above-mentioned applicant. _____ 19 ____

(Signature of Agent)

Notary Public

C. STATEMENT OF PREPARER OF PLANS, SPECIFICATIONS, SURVEYOR'S OR ENGINEER'S REPORT

I hereby certify that the plans, specifications and engineer's report, if any, applicable to this project comply with the current rules and regulations of the New Jersey Department of Environmental Protection with the exceptions as noted.

Signature

Type: Name and Date

Position, Name of Firm

(revised through June 1995)

Attachment 2 - Stream Encroachment Administrative Checklist



**State of New Jersey
Department of Environmental Protection**

STREAM ENCROACHMENT ADMINISTRATIVE CHECKLIST

ADMINISTRATIVE CHECKLIST AND ENGINEERING DATA SHEET, REVISED SEPTEMBER 6, 1995

To apply for a stream encroachment permit, please complete this form and submit the necessary information as detailed in the attached application to the following address:

Postal Mailing Address:
NJDEP Land Use Regulation Program
CN-401
Trenton, NJ 08625

Street Mailing Address (Courier Service):
NJDEP Land Use Regulation Program
501 East State Street, Station Plaza Five, First Floor
Trenton, NJ 08609

Your project will need a stream encroachment permit if you have proposed:
Certain minor activities in these areas are not regulated and do not require a stream encroachment permit. For more information, please contact the Department or refer to the *Flood Hazard Area Control Act Rules*.

- ☞ Construction, grading, or other disturbance within a 100-year flood plain.
- ☞ Construction, grading, or other disturbance within a stream-buffer (either 7.5 m or 15 m: see 1 below)
- ☞ The construction of a point discharge within or discharging to a 100-year flood plain.

The following items must be submitted for all projects:

- ☞ This checklist sheet.
- ☞ The project review fee.
- ☞ One completed LURP-1 application form with original signatures.
- ☞ Two sets of location maps.
- ☞ Two sets of mounted color photographs of the site.
- ☞ Three copies of an environmental report for the project.
- ☞ Six sets of signed and sealed, individually folded drawings of the project.

The following items are necessary only for certain projects:

- ☞ Proof of local notice.
- ☞ Hardship waiver with analysis.
- ☞ Calculations (one signed and sealed copy of each that apply).
 - ☞ Net-fill.
 - ☞ Hydrologic.
 - ☞ Hydraulic.
 - ☞ Storm water management.
 - ☞ Water quality.
 - ☞ Stability analysis.
 - ☞ Soil erosion and sediment control plans.

Please answer the following questions:

1. The channel will have a 15 m wide stream-buffer if any one of the following is answered "yes". Otherwise, the channel will have a 7.5 m wide stream buffer.

yes	no	
<input type="checkbox"/>	<input type="checkbox"/>	Does this project affect a trout associated watercourse?
<input type="checkbox"/>	<input type="checkbox"/>	Does this project affect a Category-One watercourse?
<input type="checkbox"/>	<input type="checkbox"/>	Does this project affect a watercourse associated with threatened or endangered species?
<input type="checkbox"/>	<input type="checkbox"/>	Will the proposed work expose deposits of acid-producing soils?

2. Flood plain limits. Please check one.

<input type="checkbox"/>		The flood plain referenced for this project is based on a New Jersey Flood Hazard Area map.
<input type="checkbox"/>		The flood plain referenced for this project is a FEMA tidal flood elevation.
<input type="checkbox"/>		The flood plain referenced for this project is a FEMA flood study which was based on a fully developed watershed, or where a regional storm water management plan exists.
<input type="checkbox"/>		The flood plain limits are unknown and calculations have been submitted to delineate it.
<input type="checkbox"/>		The flood plain limits are known and do not need to be delineated for this project.

3. Does this project involve any of the following?

If any one of the following is answered "yes", then this project is a major project.

yes	no	
<input type="checkbox"/>	<input type="checkbox"/>	New bridge or culvert.
<input type="checkbox"/>	<input type="checkbox"/>	Replacement bridge or culvert that is at all different from the existing structure.
<input type="checkbox"/>	<input type="checkbox"/>	Review of net-fill calculations not associated with the construction of one single-family home.
<input type="checkbox"/>	<input type="checkbox"/>	Detention or retention pond located partially or completely within the flood plain.
<input type="checkbox"/>	<input type="checkbox"/>	Review of hydrologic or hydraulic calculations for a flood plain study.
<input type="checkbox"/>	<input type="checkbox"/>	Substantial channel improvement, realignment or relocation.
<input type="checkbox"/>	<input type="checkbox"/>	Proposed retaining wall greater than 30 m in length and more than four feet high.
<input type="checkbox"/>	<input type="checkbox"/>	Any stream encroachment activity associated with a commercial site of any size where more than one acre of the site lies within a flood plain.
<input type="checkbox"/>	<input type="checkbox"/>	Any stream encroachment activity associated with a residential subdivision of more than ten acres no matter how much of the site is located within a flood plain.

4. If any one of the following questions is answered "yes", then proof of local notice is required for this project.

yes	no	
<input type="checkbox"/>	<input type="checkbox"/>	Is this a major project as determined in question number 3 above?
<input type="checkbox"/>	<input type="checkbox"/>	Is this site adjacent to a trout-associated watercourse?
<input type="checkbox"/>	<input type="checkbox"/>	Will the proposed work expose acid-producing soils?
<input type="checkbox"/>	<input type="checkbox"/>	Does this project request a hardship exemption of the rules?

5. Net-fill within the flood plain. Please check one.

<input type="checkbox"/>		No net-fill is proposed within the flood plain.
<input type="checkbox"/>		The amount of fill to be placed within the flood plain is negligible and obviously meets the limitations of the rules without having to review net-fill calculations.
<input type="checkbox"/>		Net-fill calculations have been prepared to prove that this project meets the limitations of the rules.

6. Hydrologic and hydraulic calculations.
If any one of the following is answered "yes", then hydrologic and hydraulic calculations must be submitted.

yes	no	
<input type="checkbox"/>	<input type="checkbox"/>	This project involves the construction of a new bridge or culvert where none currently exists.
<input type="checkbox"/>	<input type="checkbox"/>	This project involves the construction of a replacement bridge or culvert that is different in size, shape, skew, location or alignment from the existing structure.
<input type="checkbox"/>	<input type="checkbox"/>	The peak flood will change as a result of this project.
<input type="checkbox"/>	<input type="checkbox"/>	The size, shape, skew, location or alignment of the stream channel will be altered as a result of this project.
<input type="checkbox"/>	<input type="checkbox"/>	The limits of the flood plain are unknown and need to be delineated in order to demonstrate compliance with the requirements of the rules, such as net-fill limitations, lowest floor elevations, or storm water management.
<input type="checkbox"/>	<input type="checkbox"/>	The limits of the flood plain are unknown and need to be delineated in order to establish stream encroachment lines.

7. Storm water management.
If any one of the following is answered "yes", then storm water management calculations must be submitted. Note: This question does not apply to the construction of one single-family home.

yes	no	
<input type="checkbox"/>	<input type="checkbox"/>	This project involves the creation of one or more point discharges.
<input type="checkbox"/>	<input type="checkbox"/>	The volume and/or rate of storm water runoff from the site will increase as a result of this project.
<input type="checkbox"/>	<input type="checkbox"/>	More than 465 square meters of new impervious area is proposed.

8. The review fee for this project has been calculated as follows:

Number of minor elements _____ x \$300 = _____
 Number of major elements _____ x \$2000 = _____
 Total = _____

NOTE: For a culvert or bridge constructed for a driveway serving one single-family home, the review fee is \$1400 if net-fill calculations are necessary and \$1000 if not. The review fee for all other projects is calculated as shown above.

SECTION 14 ACCESS

This section describes the major access permit process. For the process of modifying or renovating driveway access, refer to Section 3.5 for a description of these activities along with the organizational summary of the Bureau of Civil Engineering, Driveway Design Unit.

14.1 Access Permit Process (refer to Attachment 1)

- The potential applicant calls Major Access Permits within the Bureau of Utilities and Right of Way.
- The customer service representative explains the Access Code requirements.
- The applicant requests a pre-application meeting.
- The case manager holds a pre-application meeting and coordinates with Project Management, if there is a capitol project in the development's area.
- The applicant submits an access application.
- The case manager determines whether the application is complete.
- The applicant revises the application, if necessary, per the case manager's comments.
- The case manager reviews the application and coordinates with Project Management, if there is a capitol project in the development's area. This step may involve negotiation with the involved parties.
- The case manager issues a permit, which is sent to the applicant for signature.
- The applicant signs the permit and returns it to the case manager.
- The case manager executes the permit and sends a copy to the permittee.

Attachment 1 - Access Permit Process

14.2 Developer Agreement Process (refer to Attachment 2)

- The case manager prepares the agreement and sends it to the applicant.
- The developer reviews the agreement and returns it to Major Access Permits with comments.
- The case manager and DAG review the agreement with developer comments, prepares the final draft and send it to the developer.
- The developer either concurs with the agreement and signs it, or develops comments on the agreement. This step can be iterative.
- The developer returns the agreement to Major Access Permits.
- When the parties agree, Major Access executes the agreement and returns a copy to the developer.

Attachment 2 - Developer Agreement Process

14.3 Wireless Antenna Process (refer to Attachment 3)

- The carrier submits a concept application.
- Major Access Permits reviews the application for completeness and transmits it to FHWA and Department units, as appropriate, for review.
- The review units make a field visit to the site, develop comments and send them to Major Access Permits.
- Major Access Permits advises the carrier of location approval or recommends an alternative location.
- The carrier decides whether to proceed.
- If the carrier decides to proceed, a detailed application is submitted to Major Access Permits.
- Major Access Permits determines application completeness and when complete, submits it to the review units.
- The review units submit comments to Major Access Permits.
- Major Access Permits prepares and forwards the license agreement to the carrier. This step may involve negotiations with the involved parties.
- The carrier signs the agreement and forwards it to Major Access Permits for execution.
- Major Access Permits obtains Department approval of the site license and notifies the carrier.
- Major Access Permits notifies Accounting to set up an account and the fee payment schedule.

Attachment 3 - Wireless Antenna Process

SECTION 15 MOBILITY MANAGEMENT

15.1 NJDOT Bicycle and Pedestrian Policy

Bicycling and walking are viable and important transportation modes and offer untapped potential for meeting transportation needs and providing recreational benefits. Provisions for bicycling and walking are important and necessary elements in comprehensive solutions to transportation problems and needs. Opportunities should be sought to address transportation needs and deficiencies through the improvement of bicycle and pedestrian access. These modes can supplement transit use and replace some motor vehicle use by serving short trips of less than 8.0 kilometers. Short trips represent approximately sixty percent of all personal trips.

The Department's short and long range policy, as stated in the New Jersey Transportation Plan, is intended to increase non-motorized travel options by routinely integrating bicycling and walking into transportation systems and promoting bicycling and walking as the preferred choice for short trips.

Bicycle and pedestrian issues will be incorporated into activities of all units of the Department. Basic research should include data collection and analysis for non-motorized modes. Beginning at the earliest stage of needs analysis and problem definition, and continuing throughout the project development process, bicycle and pedestrian traffic should be incorporated in the planning, design, construction, and management of all transportation projects and programs funded or processed by the NJDOT.

Projects are to be designed and constructed, and systems maintained, to accommodate shared use by motor vehicles, bicycles and pedestrians. Additionally, both incidental and independent projects should be initiated to specifically address bicycle traffic and pedestrian needs and to improve those conditions in the existing transportation system that inhibit these mode choices. Where a need is identified, bikeways, walkways and other facilities designed to encourage bicycling and walking should be designed and constructed.

NJDOT BICYCLE AND PEDESTRIAN PROCEDURE

The following procedure is to be used for implementing the Bicycle and Pedestrian Policy for the New Jersey Department of Transportation regarding the planning and design of transportation projects and the operation of the transportation system funded or processed by the NJDOT; the development of NJDOT transportation programs; and, the assessment of bicycle pedestrian needs.

GENERAL RESPONSIBILITIES

All Bureaus that initiate, scope or design projects:

- Refer to the two manuals, Bicycle Compatible Roadways and Bikeways and Pedestrian Compatible Planning and Design, as well as the Roadway Design Manual and the Design Manual Bridges and Structures for guidance about bicycle and pedestrian accommodations and develop projects in accordance with these guidelines.

Bureau of Suburban Mobility (Bicycle/Pedestrian Advocate)

- Coordinate with other units to incorporate bicycle and pedestrian considerations in transportation planning, projects and programs.
- Provide technical assistance to Department units and local and county governments, initiate professional training programs.
- Provide information on traveling by bicycling or walking.
- Initiate or conduct studies to determine bicycle and pedestrian needs.
- Track projects and programs to ensure that bicycle and pedestrian considerations are developed as proposed.

Bureau of Research

- Conduct research to increase understanding of the needs of bicyclists and pedestrians and the use of these travel modes in New Jersey.

Bureau of Geographic Information Systems

- Incorporate and regularly update the inventory of bicycle facilities on all State Highways.
- Develop and regularly update an inventory of pedestrian facilities on State highways.
- Develop and regularly update an inventory of independent, multiple use trail facilities in New Jersey.
- Coordinate development of a similar inventory of facilities on county and municipal roadways.

Bureau of Data Development

- Develop data regarding pedestrian and bicycle facilities on State highway.
- Collect data regarding pedestrian and bicycle usage.

Bureau of Statewide Planning

- Incorporate bicycle and pedestrian considerations in all transportation planning efforts and initiate the Bicycle/Pedestrian Scoping Process.
- Analyze the potential for bicycle and pedestrian travel to meet some of the state's transportation needs.
- Refine methods to evaluate the air quality benefits of investments in bicycle and pedestrian facilities for the State Implementation Plan for Air Quality.
- Coordinate with MPO's to determine if a bicycle or pedestrian master plan has been developed in project vicinity.

Bureau of Transportation and Corridor Analysis

- Incorporate bicycle and pedestrian considerations in all transportation planning efforts and initiate the Bicycle/Pedestrian Scoping Process.
- Analyze the potential for bicycle and pedestrian travel to meet transportation needs.
- Collect and analyze information about bicycle use and pedestrian activity in corridor studies; needs assessments and other studies.
- Identify bicycle and pedestrian projects as solutions to address transportation needs.

Bureau of Project Scope Development

- Incorporate bicycle and pedestrian considerations in the initial scoping for projects.
- Incorporate appropriate bicycle and pedestrian facilities or accommodations in all projects.
- Identify bicycle and pedestrian needs and issues in the development of Scoping Summary documentation, by making use of the Bicycle/Pedestrian Scoping Process.
- Submit the Bicycle and Pedestrian Certification Questionnaire to the Bicycle Advocate.

Bureau of Environmental Services

- Determine whether bicycle and pedestrian needs have been identified as part of the level of action for projects.
- Identify potential impacts to bicycle/pedestrian facilities.

Bureau of Major Access

- Ensure compliance with bicycle and pedestrian policy and design guidelines for all projects constructed in accordance with a State Highway Access Permit.
- Identify needed bicycle and pedestrian facilities which should be incorporated into development plans and off-site improvements which are included in developer agreements.
- Require applicants to complete and submit a Certification Questionnaire as part of any major highway access permits.

Project Management

- Ensure that during Scope Development, the need for including a designated bikeway or pedestrian facility as part of the project is evaluated in accordance with the Bicycle/Pedestrian Scoping Process.
- For any projects for which the highway section has been changed, assure that bicycle and pedestrian facilities originally incorporated in the project scope have been maintained, or else reevaluate the need for bicycle and pedestrian facilities (in conjunction with the Bicycle/Pedestrian Advocate).
- For projects which have been scoped to incorporate specific needed bicycle and pedestrian facilities, assure that the facilities are designed to comply with the appropriate pedestrian and bicycle guidelines.
- Assure that all project plans include provisions for bicycle and pedestrian compatibility.

Bureau of Structural Evaluation

- Incorporate bicycle and pedestrian compatible design as an element of the Bridge Management System.

Bureau of Traffic and Electrical Engineering

- Incorporate appropriate bicycle and pedestrian facilities or accommodations where required.
- Assure that bicycle and pedestrian requirements have been analyzed and incorporated into any regulatory action.
- Identify pedestrian needs at all traffic signals and assure that adequate provisions have been incorporated into the signal system design and intersection design.
- Establish a proactive role in assuring that cross-walks are provided where warranted to enhance pedestrian safety.
- Assure that highway striping and signing plans accommodate bicyclists and pedestrians in accordance with the Department's guidelines.
- On roadway resurfacing and maintenance projects, identify and incorporate measures which can enhance bicycle and pedestrian safety and compatibility.
- Specify and install bicycle sensitive traffic actuated signals, situated in the bicyclists path and mark as needed for actuation.
- Specify and install pedestrian actuated signals wherever pedestrian traffic can be expected.
- Develop lighting designs providing adequate illumination to assure the safety of pedestrians.

Regional Construction Offices

- Assure quality control for bicycle and pedestrian compatible design during construction, including: smooth surfaces on shoulders; outside lanes free of dangerous seams and expansion joints; appurtenances flush with pavement.
- Maintain safe environment for bicyclists and pedestrians during construction.
- For designated facilities, assure adequate supervision of construction.

Regional Maintenance Offices

- Maintain rights-of-way to assure safe access for bicyclists and pedestrian including litter pick-up, road sweeping, vegetation management and snow removal.

PROJECT SPECIFIC PROCEDURE

During Concept Development:

1. Bicycle and pedestrian considerations must be identified in the Problem Statement Package prior to the initiation of scope development.

During Scope Development:

1. The Bureau of Suburban Mobility prepares the Bicycle and Pedestrian Scoping Checklist and the Bureau of Project Scope Development prepares a Certification Questionnaire for all projects.
2. The Project Manager completes the Certification Questionnaire at the end of Scope Development and forwards the Scoping Checklist and the Certification Questionnaire to the Bicycle/Pedestrian Advocate.

The Bicycle/Pedestrian Advocate will:

1. Review the Certification Questionnaire.
2. Work with the Project Manager to develop means of achieving full implementation of the NJDOT Bicycle Compatible Roadways and Pedestrian Compatible Planning and Design Guideline, and alternative strategies where full implementation is not feasible.
3. Evaluate (in consultation with the State Bicycle Advisory Council) incidental bicycle and pedestrian facility projects generated by the result of the Scoping Checklist, along with independent projects initiated outside the highway planning process.

Attachment 1 - Bicycle/Pedestrian Questionnaire

BICYCLE AND PEDESTRIAN CERTIFICATION QUESTIONNAIRE

Project Title:

Project Location:

Project Description:

(type of project; include typical cross section and level of action report)

1. The **Scoping Checklist** has been completed and sent to the Bicycle/Pedestrian Advocate.

Yes ___ No ___

2. The project will provide the minimum conditions for:

Bicycle compatible highway design Yes ___ No ___

Pedestrian compatible highway design Yes ___ No ___

Please describe accommodation:

3. If the project will not accommodate bicycle and/or pedestrian traffic through either facilities or compatible design, the reason is:

Lack of adequate right of way Yes ___ No ___

Historic preservation requirements Yes ___ No ___

Environmental constraints Yes ___ No ___

Bridge geometrics Yes ___ No ___

If yes is answered to any of the above please explain:

4. The Bicycle and Pedestrian Scoping Checklist has indicated that the highway or transportation project is suitable for:

A designated bicycle facility Yes ___ No ___

A pedestrian facility Yes ___ No ___

5. A designated bicycle facility will be included in the design of the project?

Yes ___ No ___

Please describe:

A pedestrian facility will be included in the design of the project?

Yes ___ No ___

Please describe:

6. If the Scoping Checklist has indicated suitability for a facility and if neither a facility nor compatible design are feasible, has the lead unit consulted with the Bicycle/Pedestrian Advocate to seek alternatives?

Yes ___ No ___

Please explain alternative agreed upon or under consideration:

**SECTION 16
TRAFFIC/SAFETY**

SECTIONS 16.1, 16.2 AND 16.3 ARE UNDER DEVELOPMENT

16.4 Intelligent Transportation Systems

Introduction

The ITS Engineering Unit is responsible for the design of all ITS facilities. These facilities include computerized Traffic Signal Systems, Incident Management Systems, VMS signs, HAR, ramp metering, system detection, Weigh-in-Motion (WIM), Automated Vehicle Classification (AVC), speed monitoring, emergency call, and Roadway Weather Information (RWIS) systems.

Design Development

The following is the design process for a Computerized Signal System and/or Incident Management System.

1. The designer will contact all pertinent state and local authorities and state agencies to discuss the project.
2. The designer will obtain and review all existing plans, studies, environmental impact documents and other pertinent information.
3. The designer will field survey the entire project for preparation of plans.
4. Designer prepares System Definition Report outlining the advantages and disadvantages of each alternate scheme of Traffic Control that is currently available or can be developed with current technology. The report shall include, as a minimum, the following major elements:
 - a. Report on existing traffic conditions
 - b. System operations
 - c. System detection
 - d. Closed Circuit Television
 - e. Variable Message Signs
 - f. Highway Advisory Radio
 - g. Communications backbone
 - h. Control Center
 - i. Operations and Maintenance
 - j. Opinion of probable construction cost
 - k. Identify required permits
5. The designer will identify all required boring locations for proposed structures. Provide a geotechnical evaluation report, if and when directed by the Chief, Bureau of Geotechnical Engineering.
6. Identify all existing utilities within the project limits. Investigate and resolve any

overhead or underground conflicts with the proposed or existing traffic signal equipment.

7. The designer shall perform initial data collection (“before” evaluation of a project):

- a. Traffic Control parameter data collection
- b. Traffic Signal data
- c. ATR counts
- d. Manual counts

All Traffic Counts shall be summarized in fifteen (15) minute intervals.

8. The designer shall perform an analysis of the initial traffic data.

- a. Develop up to three (3) timing plans per intersection to be placed into the database at system startup. Traffic signal timings and offsets shall be optimized through the utilization of currently available computer based software.
- b. Develop traffic control parameters to be placed in the database to allow the system to select the designated timing plan based on a time-of-day/day-of-week schedule.

9. The designer shall provide services in accordance with the procedures of the Office of Community Involvement as required.

10. Traffic Control Data Base Preparation – The designer shall analyze the traffic data collected by the system during the observation period of construction and develop final traffic signal timing and patterns. The designer shall develop two (2) AM peak plans, two (2) PM peak plans, three (3) off peak plans, and two (2) weekend plans including traffic responsive parameters to allow the system to select each plan.

11. Traffic Data Verification:

- a. The designer shall verify the data being reported by the system by manual measurement of the free flow traffic speed on each link along the traffic control network.
- b. To fine tune the system, the designer shall verify the volume data reported by the system by manual counts on each link in the traffic control network.
- c. The designer shall prepare a before and after evaluation report which evaluates the effectiveness of the new traffic control system.

12. Data Base Preparation (“after” study):

- a. The designer shall prepare the data base that is updated during the observation

period as required for the fully operational system.

- b. After the system has been fine tuned, the designer shall conduct an “after” speed study similar to the “before” study conducted in the initial data collection (Step 7).
- c. The designer shall compare the results and project the travel time saving and all quality benefits.

Plans and Specifications

1. Prepare plans and specifications for a computerized system as described in the System Definition Report and approved by the Department.
2. The plans and specifications shall include all necessary hardware and software for a completely operational system.
3. The plans shall include the installation of Variable Message Signs, Highway Advisory Radio, Closed Circuit Television, and Control Center modifications to comply with the requirements of the system design.
4. The plans shall include the installation of loop detectors for the monitoring of side street queuing.
5. The plans shall include any modification to existing signalized intersections necessary because of overhead utility conflicts and/or non-compliance with the Manual on Uniform Traffic Control Devices.
6. The designer shall prepare the following plans:
 - a. 1:1000 scale plans of the communications conduit layout and location of all ITS devices
 - b. System block diagram
 - c. Traffic signal plans and local ITS facilities on 1:300 scale
 - d. Fiber optic cable wiring diagram
 - e. Construction details
 - f. Electric service locations

Construction Engineering

1. Review shop drawings.

2. Witness the testing of the base traffic control systems software working in conjunction with the signalized intersections and traffic detection sites.
3. Witness the testing of all systems software and traffic control software with all modes of operation.
4. Witness the testing of all component equipment at the site.
5. Review all test procedures and test results.
6. Provide assistance in the inspection of field, central and remote hardware at various stages of construction.

SECTION 17 STRUCTURES

17.1 Procedures for Federal Aid Approval

1. Preliminary plans and supporting data for tunnels, unusual and movable bridges, unusual hydraulic structures and unusual geotechnical structures shall be reviewed by the Division Administrator and submitted to the Washington Headquarters through the regional office with review comments and recommendations for approval as appropriate. Supporting information submitted with the initial request for review and approval shall include environmental concerns and suggested mitigation measures, studies of alternate span arrangements and bridge types, approach layouts, plan and profile sheets, controlling clearance requirements, roadway geometry, design specifications, design criteria, special provisions and construction cost estimates. Supporting data should also include hydraulic and scour design studies and reports, including scour prediction and mitigation measures, geotechnical reports and studies, and substructure and foundation type. Early and complete submission of hydraulic and geotechnical studies and recommendations is essential to expedite approval.
2. In addition to those structures which must be submitted to Washington Headquarters, preliminary plans and supporting data for bridges with a deck area greater than 11,600 square meters shall be reviewed by the Division Administrator and submitted to the Regional Federal Highway Administrator with review comments and recommendations for approval.
 - a) Supporting data shall include information as listed in Paragraph 1 above and, in the case of dams and levees, evidence of coordination with the State or Federal agency responsible for the safety of dams within the State.
 - b) The Regional Federal Highway Administrator may seek Washington Headquarters advice and guidance before taking approval action.
3. Preliminary plans for all structures which do not need to be approved by Washington Headquarters or the Regional Federal Highway Administrator shall be submitted to the Division Administrator for approval. Supporting documentation shall include information listed in Paragraphs 1 and 2 above.

17.2 Structure Sketch Procedures

1. Prior to beginning of any work on the preliminary bridge plans, six (6) sets of Structure Sketches shall be submitted to the Design Coordination Unit for approval of geometrics and clearances. Generally, bridge sketch plans should be submitted at the same time as the Highway Section Submissions, if applicable. For bridges carrying a railroad, and for bridges carrying highways over a railroad, six (6) additional sets of Structure Sketch Plans shall be concurrently submitted for review.
2. These plans shall be on 210 by 297 millimeter size paper, and shall be one-line drawings showing the width and make-up of the intersecting approach roadways, the skew angle and the proposed bridge geometry.
3. The approval of Structure Sketches does not constitute approval of structure type selection which is part of the work in the Preliminary Bridge Plan Submission.

17.3 Preliminary Bridge Plan Submissions - Initial Submission

The preliminary bridge plan submission (to be submitted after approval of Structure Sketch Plans) may include, but is not limited to, the following data:

PLAN SHEETS

- a. If the contract has more than one structure, a Key Plan for Structures sheet is necessary.
- b. General Plan and Elevation sheet for each bridge.
- c. A Plan Sheet to show the physical features of the approach roadway for about 150 meters each side of the bridge.
- d. Plan sheets to detail stage construction on a structure (if different than that proposed for the Roadway Construction).

DESIGN APPRAISAL STATEMENT

- a. This document shall provide information which supports the structure type selections. An analysis of the seismic response of the proposed structural members should be included.
- b. Alternative design requirements for bridges with a deck area greater than 11,600 square meters should be considered, and a recommendation, with justification, should be provided.

FOUNDATION REPORT AND RECOMMENDATION

- a. This document shall provide complete detailed information which supports the selection of the proposed foundation type. An analysis of the seismic response of the underlying bedrock and soil should be included.
- b. Refer to Section 11 of the NJDOT Procedures Manual for required foundation design criteria.

CONSTRUCTION COST ESTIMATE

A preliminary budget cost estimate, arrived at by applying current average weighted unit prices to approximate quantities of major items, with allowances for items not measured and contingencies, shall be included.

GENERAL GUIDELINES

- a. If the preliminary submission involves new or unusual features of design, operation or specifications outside the scope of the NJDOT Bridge Design Manual, AASHTO Specifications or previously approved NJDOT Standards, supporting information to justify their use should be submitted for approval prior to the Preliminary Submission.

- b. It is intended that the approved preliminary plan, with alterations, will serve as the final General Plan and Elevation drawing.
- c. When there is more than one bridge or structure in a contract, it is preferred that the preliminary submissions for all the bridges and structures be submitted at the same time; however, submissions on an individual bridge basis will be accepted.
- d. Preliminary bridge plans shall be on 594 by 841 millimeter sheets, in bound sets.
- e. The Bureau of Structural Engineering will review and approve preliminary bridge submissions prior to FHWA concurrence. For Alternate Procedures projects, the Bureau of Structural Engineering will provide approval of preliminary bridge submissions to the Project Manager.
- f. The number of preliminary bridge documents by type to be submitted shall be determined just prior to the scheduled submission. For planning purposes, the designer can expect to provide twenty (20) sets of plans, six (6) copies of the Design Appraisal Statement, six (6) copies of the Foundation Report, and six (6) copies of the cost estimate. In addition, six (6) additional copies of the plans will be required for each bridge over a railroad for each railroad affected by the structure.

GENERAL NOTES

Design criteria shall be shown in the right hand corner of the General Plan and Elevation Sheet for each structure. The design criteria shall be in accordance with the NJDOT Design Manual for Bridges and Structures.

17.4 Structural Design Submissions - Final Submission

GENERAL PRESENTATION

- a. Contract drawings shall be on 594 by 841 millimeter sheets. They shall be in black ink or non-smudge pencil on polyester drafting film such as mylar or herculene (minimum 80 micrometers thickness). Contract drawings shall also be transmitted electronically as per the Structural Design CADD Standards.
- b. When preparing design drawings, every effort shall be made to draw the plans, sections, elevations and details accurately to scale. Generally, the scales should be large enough to show clearly all dimensions and details necessary for construction of the structure. Preferably, plans, sections, and elevations should be drawn to a scale not less than 1:50 and details to a scale not less than 1:30, except on the General Plan and Elevation Sheet.
- c. All lines on the drawing shall be dense in opacity and of sufficient width so as to have some residual density when reduced 50% photographically. All characters shall be open, bold, uniform and formed with a dense but not wide line. Space between the letters shall be one-half the width of the widest letter, and space between the lines of lettering shall be one-half the height of the tallest letter.
- d. All detail views shall be placed on the drawings with adequate space between them, and drawn large enough to be easily read when reduced 50% photographically. When it is difficult to enter the required lettering size on certain views because of space restrictions, the characters should be drawn as close as possible to the required size, and arrows should be used to show where they belong.
- e. Each sheet of design contract drawings shall be thoroughly checked and initialed by the designer and the checker.
- f. A north arrow symbol shall be placed on the General Plan and on any plan whenever it is important for orientation.
- g. Designers must be particularly careful that sufficient "over-all" and "tie-in" dimensions and geometric data are given on the plan.
- h. Showing of details or dimensions in more than one place shall be kept to a minimum.
- i. If, because of lack of space on a particular sheet, it is necessary to place a view or a section on another sheet, both sheets should be clearly cross-referenced.
- j. When misinterpretation is possible, the limits of pay items shall be clearly indicated on the corresponding details of structure.
- k. Abbreviation of words shall generally be avoided, and those abbreviations which are not in common use shall be explained.

- l. Use of terms such as (10 equal spaces = 18.8 meters) shall be avoided. Instead, the notation should read (10 spaces @ 1.88 meters = 18.8 meters).
- m. Graphic Bar Scales shall be shown on Plan Sheets.
- n. The following shall be included with the Final Plan submission:
 - 1. Two (2) sets of the Design and Quantity Calculations.
 - 2. Four (4) copies of each of the Special Provisions, Construction Bar Chart and Engineer's Estimate.

KEY PLAN TO STRUCTURES

This is usually the first sheet in the bridge plans in contracts that have two or more structures. It includes:

- (1) Index to Bridge Drawings.
- (2) Relative location of new bridges, culverts, retaining walls, overhead sign structures and bridge mounted signs.
- (3) Relative locations of existing bridges to be altered or demolished.

The plan is intended as a quick reference for all the structure work in the contract plans. A scale of 1:1000 or 1:2000 is desirable. Use of bridge numbers, overhead sign structure numbers, wall numbers, culvert numbers, etc. in addition to names, is required.

Structure numbers shall also be shown in the index.

GENERAL PLAN AND ELEVATION

This is usually the first sheet for each structure. It includes:

- (1) Index of Drawings
This lists the Bridge Sheet titles and numbers for the structure.
- (2) Summary of Quantities
This lists each item and its estimated Contract Quantity for the structure.
- (3) General Notes
This lists the criteria used in designing the structure.
Hydraulic and hydrologic data are shown for waterway structures.

(4) Profiles

These show proposed profile lines, vertical curve information, tangent grades, original ground line, stationing and proposed finished grade elevations.

(5) Plan

This is a plan view of the entire structure. It indicates:

Relative position of the structure

Skew of the structure

Certain dimension, such as:

(a) Lane widths

(b) Lengths of spans from center to center of bearings

(c) Sidewalk and parapet widths

(d) Proposed slope protection location

Point of minimum vertical clearance

Location of borings

Stationing

Bearings of baselines

Locations of subsurface and above ground utilities and complete information therefor

Geometrics

Working and control points

Beginning and end of bridge (stationing)

Temporary sheeting limits

(6) Elevation

This is a pictorial illustration of the structure. It indicates:

General appearances of the completed structure

Approximate original ground line and assumed rock line

Minimum vertical clearance (actual and required)

Locations of fixed and expansion bearings

Approximate clearances (actual and required)

Temporary construction clearances

(7) Section

This is usually a section taken through the plan view. It indicates:

Transverse deck grades (cross-slopes)

Transverse dimensions of the superstructure

Number of girders and spacing dimensions

Approximate original ground line and assumed rock line

Approximate pile positions

Location of utilities

Finished grade line

PILE PLAN

This is a plan view of footings and piles. It includes:

- Stationing
- Bearings of baselines
- Pile Design Capacity and Ultimate Design Capacity
- Relative position of footings
- Location of test piles and/or load tests
- Pile tip details
- Pile splice details
- Pile tip elevations
- Pile cut-off elevations
- Batter of piles
- All dimensions required to construct piles and footings
- Number of piles in each footing unit and total estimated length of piles in each footing unit
- Numbering system of piles for identification purposes.
- Notes indicating types of piles
- Notes concerning any special requirements; such as, removal of unsuitable materials, minimum tip penetration, or any other special considerations, shall be included on this sheet.

ABUTMENTS

These sheets include:

(1) Plan

A plan view of the abutment which includes:

- Bearing lines
- An outline of the abutment footing
- Location, spacing and clearances of horizontal reinforcement steel in the footing
- Footing and abutment dimensions
- An outline of the abutment walls
- Locations of section views
- Bearing locations

(2) Elevation

A front view of the abutment and walls which includes:

- Pertinent dimensions and elevations
- Typical reinforcement steel locations, spacing and clearances
- Locations of horizontal construction joints
- Relative pile locations in completed foundation
- Batter of walls and piles

(3) Sections

Typical sections through abutment walls which include:

Pertinent dimensions and elevations
Typical reinforcement steel locations, spacing, cover and clearances
Locations of horizontal construction joints
Batter of walls and piles
Relative pile locations in completed foundations

These sheets also include:

- a. Estimated quantities of items incorporated on the sheet.
- b. Details of bent reinforcement bars.
- c. Reinforcement bar lists - These are used in computing net theoretical mass.
- d. Details of foundation and bridge excavation pay limits.
- e. Details of epoxy waterproofing pay limits.
- f. Details of concrete slope protection.
- g. Details of joint and joint sealing.

PIERS

These sheets include:

(1) Plan

A top view of the pier which indicates:

Pertinent dimensions
Bridge seat elevations
Column spacing
Bearing locations
Locations of section views
Bearing lines

(2) Elevation

A side view of the pier which usually indicates:

Pertinent dimensions and elevations
Locations of section views
Reinforcement steel location, spacing, cover and clearances
Spiral reinforcement pitch

Relative pile locations in completed foundation

(3) End Elevation

An end view of the pier. It may indicate:

Reinforcement steel location, spacing, cover and clearances
Architectural details (rustication strips, chamfers, etc.)
Epoxy waterproofing pay limits
Pertinent dimensions
Relative pile locations in completed foundation

(4) Sections

Sections taken through the columns and cap beams to better indicate dimensions and reinforcement steel locations.

(5) Estimated Quantities

Estimated quantities of the items incorporated in the pier.

This sheet may also include:

- (a) Detail of foundation excavation pay limits in the pier area.
- (b) Details of bent reinforcement bars.
- (c) Reinforcement bar lists - These are used in computing net theoretical mass.

SUPERSTRUCTURE

STRUCTURAL STEEL SHEETS

These sheets usually include:

(1) Framing Plan

A top view of the centerlines of the steel girders. This view usually indicates:

Lengths of stringers from centerline of bearings to centerline of bearings
Locations of and spacing between diaphragms
Identification of individual stringers
Bearing lines
Angle between centerline of bearings and stringers
Elevations of the tops of the stringers at the centerline of bearings
Skew of bridge
Sizes of diaphragm channels
Location and identification of utilities

(2) Elevations

Side views of the different girders. These views usually indicate:

- Shear connector spacing
- Transverse intermediate stiffener spacing
- Flange dimensions
- Length of plates
- Depth of web plates
- Splices

(3) Shear Connector Details

(4) Diaphragm Details

(5) Sections at pertinent locations

(6) Schedule of Cambers and Deflections

(7) Shear Lock Device Details

(8) Estimated Quantities

Estimated quantities of structural steel and shear connectors.

(9) Notes

These might include the size of bolts or rivets, type of steel, weld symbols and sizes, structural steel paint system designation and finish coat color, notes concerning Notch Toughness, Fracture Control Plan, and welding inspection testing symbol requirements.

STRUCTURAL STEEL BEARINGS

This sheet usually includes front and side elevation views of the bearings. It indicates:

- Dimensions of bearing components
- Sizes and locations of welds

PRESTRESSED CONCRETE BEAMS

These sheets will usually include:

(1) Framing plan
Centerline of bearings

Top view of the centerlines of the beams and diaphragms. This usually indicates:

- Spacing between beams and between diaphragms
- Identification of individual beams

- Spacing of utility supports
- (2) Estimated quantities
- (3) Details of Beams and reinforcement
- (4) Details of diaphragms
- (5) Construction notes
- (6) Design criteria
- (7) Location and identification of utilities

DECK SLAB

This sheet will usually include:

- (1) Plan

A top view of the deck slab. This usually indicates the size and location of reinforcement steel and joints.

- (2) Sections

A typical section through the deck slab usually indicates:

- Deck thickness
- Haunch thickness
- Typical reinforcement steel location
- Location of profile line, transverse grades
- Pertinent dimensions
- Utilities location and identification
- Overlays
- Sections through deck joints usually indicates:
 - Pertinent dimensions
 - Reinforcement locations
 - Notes pertaining to joints and sealers

- (3) Small scale schematic diagram showing the following minimum information:

- (a) Baseline and other control lines - Stations at 5 meter intervals
- (b) Cross-slope percentages
- (c) Elevations @ 5 meter intervals
- (d) Horizontal curve layout information
- (e) Contours at 2 meter intervals between variable cross-slopes

This information is used by the Review Engineer and Designer to determine if adverse geometrics precludes the use of machine finishing of the bridge deck.

- (4) Details
 - Copper waterstop
 - Prefomed joint sealer and installation
- (5) Reinforcement Steel Bar List - These are used in computing net theoretical mass
- (6) Estimated quantities
- (7) Small scale diagram showing concrete placing sequence for continuous spans.

DETAIL SHEETS

There may be one or more sheets under this heading. The details may be typical or specific. These may indicate:

- Parapets
- Chain link fence
- Bridge railings
- Junction boxes
- Abutment form panel arrangement and scoring
- Anchor bolts
- Pay limits for foundation and bridge excavation
- Rigid metallic conduit sleeves
- Lighting standard foundations
- Deck joints
- Utilities
- Granite masonry or Stainless Steel Pier Protection
- Scour countermeasures
- Fender systems
- Seismic details
- Navigational lighting and access

Conglomerations of "Typical Details", such as Foundation Excavation, Structural Details, Wall Sections, etc. all on the same sheet, should be avoided. Typical structural details should be shown with the structural steel drawings, foundation excavation payment limits should be shown on the abutment and pier drawings, etc.

STANDARD DRAWINGS

Reproductions (594 by 841 millimeters) of the Standard Drawings. No charge will be made for reproductions furnished for the purpose of insertion into contract plans in which the State is participating or overseeing.

The use of the above, together with other standard drawings, will be permitted for use with bridge plans; however, the following guidelines shall be observed:

- (1) For contracts that contain more than one bridge, applicable standard detail sheets shall be provided with each structure.
- (2) Applicable details which apply to the structure should be indicated on the plan sheet should be marked "OMIT" for the non applicable details.
- (3) Reference to the Standard Drawings should be included in the Index of Drawings shown on the General Plan and Elevation Sheet.

CULVERTS

This is a sheet showing culvert type structures. They usually include:

- (1) Plan

This is a plan view of the entire structure. It indicates:

- Length of culvert sections
- Overall dimensions
- Reinforcement steel
- Stations
- Skew to base lines
- Stage construction

- (2) Elevation

This is a front view of the culvert which indicates:

- Pertinent elevations
- Types and locations of wall joints
- Invert elevations
- Reinforcement steel
- Location of section views
- Location of utilities
- Cut-off walls

- (3) Sections

Typical sections through culvert and retaining walls which indicates:

- Pertinent dimensions and elevations
- Reinforcement steel
- Location of joints
- Batter of walls

These sheets also include:

- (a) Estimated quantities of items incorporated on the sheet.
- (b) Details of bent reinforcement bars.
- (c) Reinforcement bar lists.
- (d) Details of foundation and channel excavation payment lines.
- (e) Details of epoxy seal coat payment lines.
- (f) General Notes indicating design criteria and hydrologic data.
- (g) Foundation data, as required.

RETAINING WALLS

(1) Plan

A top view of the wall and footing which indicates:

- Pertinent dimensions
- Location of piles (if not shown on the footing and pile location plan)
- Reinforcement steel location, cover and spacing in footings
- Boring locations and identification
- Back of wall drainage details

(2) Elevation

A side view of the wall which usually indicates:

- Pertinent dimensions and elevations
- Location of section views
- Reinforcement steel location, cover and spacing
- Pile locations in the finished structure
- Wall identification numbers
- Back of wall drainage and flow line elevations

(3) Sections

Sections taken through the wall to better indicate dimensions, reinforcement steel locations, concrete cover for rebar, pile locations, elevations

(4) Estimated Quantities

Estimated quantities for the items incorporated in the wall

This sheet may also include:

- (a) Detail of foundation excavation pay limits

- (b) Details of bent reinforcement bars
 - (c) Reinforcing bar list
- (5) Alternate Proprietary Walls
 - Plan sheets shall include, but not be limited, to the following:
 - (a) Plan and Elevation Sheet
 - Control data for horizontal and vertical alignment
 - Plan and elevation view of wall
 - Boring locations
 - Limits of Common Structure Volume
 - Design parameters; such as, allowable bearing capacity
 - Seismic Criteria
 - (b) General Details
 - End of wall interfaces
 - Wall/barrier details
 - Excavation, temporary sheeting
 - Architectural Treatments

DEMOLITION OF EXISTING BRIDGES

This sheet is a schematic outline with general information necessary to assist bidders in determining the extent of the work.

The minimum information is:

- (a) Plan, elevation and typical sections with key dimensions and elevations
- (b) Extent of removal and staging
- (c) Estimate of the quantities of the principal item to be removed.
- (d) Route and Section number under which the bridge was built.
- (e) Microfilm file reference number (7 digits).
- (f) Any other information which, in the judgment of the engineer, will be of value to all concerned.

The following note shall be indicated on this sheet:

The information presented hereon is for informational purposes only and is not guaranteed to be correct. Bidders shall visit the site before submitting bids to ascertain the extent of the work.

If the original bridge plans are available, a half-tone reproduction of the General Plan and Elevation sheet, modified to suit, should be considered for inclusion in the above Plans.

OVERHEAD SIGN STRUCTURES

The sheets for overhead, cantilever and bridge mounted sign supports, are usually located at the end of the bridge plans.

SPECIALTY SHEETS

These sheets can include:

- Fender systems
- Modifications of railroad electrification facilities
- Protective shield over electrified railroad tracks

TEMPORARY STRUCTURES

(a) This sheet is a schematic outline of the temporary bridge to provide bidders with minimum criteria.

The information includes:

(1) GENERAL NOTES

This lists the criteria in designing the structure such as applicable specifications (AASHTO, AREA), minimum design loading and permissible increases in allowable stresses.

Hydraulic and hydrologic data are shown for waterway structures.

(2) PROFILES

These show proposed profile lines, vertical curve information, tangent grades, original ground line, stationing and proposed finished grade elevations.

(3) PLAN

This is a plan view of the entire structure. It indicates:

- Skew of the structure
- Certain dimensions, such as:
 - Lane Widths
 - Sidewalk Widths
- Location and identification of borings

Location of subsurface and above ground utilities

(4) ELEVATION

The schematic elevation illustrates:

Original groundline and assumed rockline

Minimum vertical clearances

Minimum lateral clearances

- (b) All of the documents and procedures required shall apply to temporary structures. All certificates and permits required shall be obtained during the design phases. Any changes in the plan during advertising or construction will necessitate application for amendments to the permit.
- (c) Approach roadways for temporary structures shall be detailed in the roadway plan portion of the Contract Plans.

17.5 Sign Structures - Plan Presentation Procedures

- (a) The Bureau of Structural Engineering shall be contacted for design and installation criteria of Variable Message Sign Structures.
- (b) Contract plans for sign support structures shall include, but shall not necessarily be limited to, the following:

- (1) Key Plan to Structures:

- Location of overhead, cantilever and bridge mounted sign structures will be shown on the Key Plan to Structures sheet.

- Boring locations and numbers in conjunction with subsurface and overhead utilities may be shown on this sheet.

- (2) Elevation of Structures:

- This plan sheet is a single line diagram showing the sign structures in elevation and including the following information:

- Principle dimensions
 - Total sign design area limits
 - Sign location on structures
 - Sign identification
 - Stations
 - Roadway dimensions
 - Vertical and horizontal clearance dimensions
 - Guide rail locations
 - Bottom of footing elevations
 - Borrow excavation, bridge foundation limits, (when required)
 - Pile plan (if other pile types used)
 - Temporary sheeting (if necessary)
 - Utilities adjacent to footings
 - Estimated quantities

- (3) Plan View of Structures

- Roadway Lane Width
 - Roadway Station of Structure
 - Boring locations
 - Direction of Traffic Flow
 - Footing Schematic Outline
 - Location of Piles, Temporary Sheeting (if applicable)
 - Location of Utilities Adjacent to Footing

- (4) Standard Contract Plans:

OVERHEAD

Standard Contract Plan Plates completed in accordance with Standard Design Instruction Drawing Plates.

CANTILEVER

Standard Contract Plan Plates completed in accordance with Standard Design Instruction Drawing Plates.

- (5) Detail plans for other type sign support structures, such as bridge mounted sign structures, developed on an individual structure basis.
- (6) Electrical and Lighting Plans (usually included with Roadway Plans).

17.6 High Tower Lighting - Plan Presentation Procedure

Contract Plans for tower lighting footing details shall include, but not necessarily be limited, to the following:

1. Key Plan To Tower Lighting Footings

If the contract is exclusively a lighting contract, a Key Plan Sheet shall be provided.

2. Tower Lighting Footing Details

Plan

Elevation

Pedestal Section

Reinforcement Steel Bar List

Rebar Bending Details

Existing Ground Line Elevations

Bottom of Footing Elevations

Tower Lighting Identification Numbers

Location by Station and Offsets

Boring Locations and Identification Numbers

Estimated Quantities

Design Criteria

Wind Pressure Diagram

Light Tower Diagrams

General Notes

Foundation Excavation Details

Borrow Excavation, Bridge Foundation Placement Limits

Pile Plan

17.7 Bridge Deck Rehabilitation Procedures

The **Preliminary Bridge Plan** submission shall include, but not be limited to, the following data:

1. Key Map plan sheet indicating the location of the work in the contract.
2. Deck Plan and Cross-Section for each bridge scheduled for deck rehabilitation.
 - (a) Plan should indicate all geometrics on the bridge deck, and geometrics beyond each end of bridge if they influence staging and overlay construction operations.
 - (b) Existing As-built Profile with elevations if significantly different from original plan profiles and cross-slopes.
 - (c) Proposed profile elevations and cross-slopes.
 - (d) Cross-Section through superstructure with pertinent information about existing conditions, such as dimensions including lane widths, stringer spacing, cross-slopes, utilities through superstructure, etc.
 - (e) Cross-Section through superstructure indicating proposed work. This information can be superimposed on (d) if it can be achieved to show the information clearly. Traffic and construction staging should also be shown.
 - (f) List of proposed Contract Pay Items.
 - (g) Any other proposed special details and information pertinent to the work.
 - (h) Preliminary Cost Estimate based on preliminary quantities.
3. Design Appraisal Statement
4. Report of Deck Evaluation Survey (if survey was authorized).

Design Plan Submission:

1. Deck Plan and Bridge Cross-Section Sheet with final contract pay items and quantities.

Grid lines at 1.5 meter intervals shall be plotted on the Deck Plan. Plotting these grid lines on the Contract Plans will facilitate the following:

 - (a) Indicating areas scheduled for repair.
 - (b) Plotting contour lines from results of half-cell electrical potential difference testing under the Deck Condition Survey.
 - (c) Indicating as-built/existing and proposed profile elevations at 3 meter intervals.

- (d) Plotting contract as-built information.
- 2. Sheets showing details for Repair Types and all other details for special work.
- 3. Engineer's Final Construction Cost Estimate.
- 4. Traffic and Construction Staging Sheets.
- 5. Special Provisions.
- 6. Bar chart showing duration of construction phases.

After Award of Construction Contract:

- 1. Bridge Deck Evaluation Survey (when warranted and authorized). (Specifications require that the contractor submit written notice not less than 14 calendar days in advance as to when the site will be available for a survey).
- 2. The Designer shall attend the Pre-Construction Conference and advise the Resident Engineer of the extent and plan of action for Bridge Deck Evaluation Survey, if required.

LATEX MODIFIED CONCRETE (LMC) OVERLAY

- (a) The following are guidelines for the construction of an LMC overlay on an existing deck slab with a bare concrete surface:

1996
Standard
Specifications
Subsections

Construction Procedures

- | | |
|-----------|---|
| 518.04 1. | Deck Condition Survey (by D.O.T. or Consultant when directed). |
| ---- | 2. Outline repair areas designated on plans and as may be prescribed after Deck Condition Survey. |
| 518.04 3. | Sawcut repair areas. |
| 518.07 4. | Scarify to depth specified on plans. |
| 518.07 5. | Determine if other areas beyond the initial sawcut peripheries should be prescribed for repairs. |
| 518.07 6. | New sawcuts for any additional repair limits areas. |

- 518.04 7. Remove deteriorated concrete in designated areas.
- 518.04 8. Clean existing rebars by sandblasting, waterblasting, or wirebrushing.
- 518.04 9. Supplement existing reinforcement with new rebars as required.
- 518.04 10. Fill repair areas with material specified. (Material must be compatible with overlay.)
- 518.04 11.
518.06(H) Cure repair areas (time depends on repair material used).
- 518.06(C) 12. Sandblast or waterblast entire surface to remove loosened chips of concrete, curing compound and laitance from repair areas, and all other residue. Contact surfaces between the LMC overlay and curb surfaces, and the edge of previously placed lanes of overlay shall also be blasted. Chipping with hand tools or pneumatic scabblers may be required to remove oil intrusions. Wet area and cover with polyethylene.
- 518.06 13. Place LMC .
- 14. Prepare information for as-built plans showing:
- (a). Outline of repair areas with the following information at each location:
Repair material used.
Repair Type (B or C).
Nominal depth of repair.
- (b). Location and length of supplementary rebars.
- (b) The following are guidelines for the construction of an LMC on an existing deck slab with a Bituminous or Asphaltic Concrete Surface pavement:

1996 Standard
Specifications
Subsections

Construction Procedures

- | | | |
|---------------------|-----|---|
| 201.04 | 1. | Remove B.C. overlay. |
| 201.04 | 2. | Remove waterproofing (if any). |
| 518.04 3. | | Deck Condition Survey (by DOT or consultant, when directed). <ul style="list-style-type: none"> (a) Outline repair areas. (b) Designate Repair Types (B or C). (c) Confirm that repair material specified on plans shall be used. (Construction change order required if change is warranted). |
| 518.04 4. | | Sawcut repair areas. |
| 518.07 5. | | Scarify to depth specified on plans. |
| 518.07 6. | | Determine if other areas beyond the initial sawcut peripheries should be prescribed for repairs. |
| 518.07 7. | | New sawcuts for any additional repair limits designated. |
| 518.04 8. | | Remove deteriorated concrete in designated areas. |
| 518.04 9. | | Clean existing rebars by sandblasting, waterblasting, or wirebrushing. |
| 518.04 10. | | Supplement existing reinforcement with new rebars as required. |
| 518.04 11. | | Fill repair areas with material specified. (Material must be compatible with overlay.) |
| 518.04
518.06(H) | 12. | Cure repair areas (time depends on repair material used). |
| 518.06(C) | 13. | Sandblast or waterblast entire surface to remove loosened chips of concrete, curing compound and laitance from repair areas, and all other residue. Contact surfaces between the LMC overlay and curb surfaces, and the edge of previously placed lanes of overlay shall also be |

blasted. Chipping with handtools or pneumatic scabblers may be required to remove oil intrusions. Wet area and cover with polyethylene.

518.06 14.

Place LMC overlay

15. Prepare information for as-built plans showing:

- (a) Outline of repair areas with the following information at each location:
 - Repair material used.
 - Repair type (B or C)
 - Nominal depth of repair.
- (b) Location and length of supplementary rebars.

WATERPROOFING AND BITUMINOUS CONCRETE OVERLAY

- (a) The following are guidelines for the construction of Bituminous Concrete (B.C.) Overlay on an existing bridge deck with B.C. or A.C. surface pavement. (This type of Protective System is used only when approved on a project to project basis during the Preliminary Phase design stage).

1996
Standard
Specifications
Subsections

Construction Procedures

201.04 1.

Remove B.C. or A.C. overlay

201.04 2.

Remove waterproofing (if any)

518.04 3.

Deck Condition Survey (by DOT or consultant when directed).

- (a) Outline repair areas.
- (b) Designate Repair Type (B or C).
- (c) Confirm that repair materials specified on plans shall be used. (Construction change order required if change is warranted).

518.04 4.

Sawcut repair areas.

- 518.045. Remove deteriorated concrete in repair areas.
- 518.046. Clean existing rebars by sandblasting, water blasting, or wirebrushing.
- 518.047. Supplement existing reinforcement with new rebars as required.
- 518.048. Fill repair areas with material specified.
- 518.04
518.06(H)
518.06(C) 9. Cure repair areas (time depends on repair material used).
- 518.06(C) 10. Sandblast or waterblast entire surface to remove loosened chips of concrete, curing compound and laitance from repair areas, and all other residue. Projections shall be removed by grinding or other approved method. Surface of concrete must be clean in accordance with membrane waterproofing manufacturer's recommendations.
- 518.05 11. Place membrane waterproofing in accordance with manufacturer's recommendations.
- 404.20 12. Place Bituminous Concrete Surface Overlay to thickness specified on plans.
- 13. Prepare information for as-built plans showing:
- (a) Product name of membrane waterproofing placed.
 - (b) Outline of repair areas with following information at each location:
Repair material used.
Repair Type (B or C)
Nominal depth of repair.
 - (c) Location and length of supplementary rebars.

17.8 Procedure for Obtaining Standard Structural Related Permits

1. NJDEP WATER QUALITY CERTIFICATE

- (a) From the New Jersey Department of Environmental Protection at approximately the time of the Preliminary Submission.
- (b) Water Quality Certification is required for those projects that need a US Army Corps of Engineers Section 404 or 10 Permit and projects requiring US Coast Guard Permits.

2. NJDEP STREAM ENCROACHMENT PERMIT

All documents concerning hydraulic and hydrologic data shall be furnished to the NJDOT Drainage Unit for application to the New Jersey Department of Environmental Protection.

3. TIDELANDS GRANT, LEASE OR LICENSE

- (a) The application is made by the Right of Way Unit to the Bureau of Tidelands, New Jersey Department of Environmental Protection.
- (b) Documents similar to those required for US Coast Guard Permit shall be prepared.

4. NJDEP COASTAL AREA FACILITIES REVIEW ACT PERMIT (CAFRA)

The Bureau of Environmental Services, with engineering input, makes the application for the entire project permit to the New Jersey Department of Environmental Protection.

5. US COAST GUARD SECTION 9 PERMIT

- (a) A United States Coast Guard (USCG) Permit is required for all bridge construction or reconstruction projects across navigable waters of the United States except as noted in Part (d) below. As stated in Title 23 Code of Federal Regulations (CFR), Part 650, Subpart H., the USCG has the responsibility to determine whether a USCG Permit is required for the improvement or construction of a bridge over navigable waters, except for federally aided bridges, in which case the FHWA exercises that responsibility. The USCG also has the responsibility to approve the bridge location, alignment and appropriate navigational clearances in all bridge permit applications.

The Manager, Bureau of Structural Engineering will make application for a USCG permit. The design unit shall initiate coordination with the USCG at an early stage of project development and provide opportunity for the USCG to be involved throughout the environmental review process in accordance with 23 CFR Part 771. Required documents are to be prepared by the Designer (see Attachment 1). The Bureau of Environmental Services shall be kept advised of this application process for tracking and scheduling purposes.

Per 23 CFR 650, Subpart H, the following items must be considered for bridges requiring a USCG Permit:

1. The Design Unit shall accomplish sufficient preliminary design and consultation during scope development to investigate bridge concepts, including the feasibility of any proposed movable bridges, the horizontal and vertical clearances that may be required, and other location considerations which, included with any proposal for a movable bridge, provide a comparative analysis of engineering, social, economic and environmental benefit and impacts.
2. The Designer shall consider hydraulic, safety, environmental and navigational needs along with highway costs when designing a proposed navigable waterway crossing.
3. For bridges where the risk of ship collision is significant, the Design Unit shall consider, in addition to the USCG requirements, the need for pier protection and warning systems as outlined in FHWA Technical Advisory 5140.19 "Pier Protection and Warning Systems for Bridges Subject to Ship Collision", dated February 11, 1983.
4. Special navigational clearances shall normally not be provided for accommodation of floating construction equipment of any type that is not required for navigation channel maintenance. If the navigational clearances are influenced by the needs of such equipment, the USCG should be consulted to determine the appropriate clearances to be provided.
5. For projects which require FHWA approval of plans, specifications and estimates, preliminary bridge plans shall be approved at the appropriate level by the FHWA for structural concepts, hydraulics and navigational clearances prior to submission of the permit application.
6. If the project contains alternative designs for the same configuration (fixed or movable), the permit application shall be prepared in sufficient detail so that all alternatives can be evaluated by the USCG. If appropriate, the USCG will issue a permit for all alternatives. Within 30 days after award of the construction contract, the Manager, Bureau of Structural Engineering shall notify the USCG of the alternative which was selected.

For more information concerning the USCG Permit process, refer to the Bridge Permit Application Guide available through the USCG, and 23 CFR 650, Subpart H available through the FHWA.

- (b) Requirements for this permit application are listed herein.

- (c) Under the law, a Coast Guard permit is not required if the proposed construction, reconstruction, rehabilitation or replacement is over waters which conform to either of the following criteria:
1. The waterway is not to be used or is not susceptible for use in its natural condition or by reasonable improvement as a means to transport interstate or foreign commerce and is not a tidal waterway.
 2. The waterway is tidal; however, it is used only by recreational boating, fishing and other small vessels less than 6.4 meters in length.

The appropriate District Offices of the US Army Corps of Engineers should be contacted if the susceptibility of channel improvement for navigation is unknown. The USCG District Office at the address below should be contacted if the types of vessels using the waterway is unknown.

- (d) For federal-aid bridges which cross waterways with navigational traffic where it is believed that a Coast Guard permit may not be required, supporting information shall be provided early in the scope development to the FHWA to enable them to make a determination that a permit is not required and that proposed navigational clearances are reasonable.

For waterways where the USCG has not declared jurisdiction, the Coast Guard will be notified by sending a Notice of Planned Action on an individual project basis. The documents shall be prepared by the design unit and sent to the address below:

For Projects North of Toms River, address to:

Commander
Third Coast Guard District
Governors Island
New York, New York 10004
Telephone Number: 212 - 668 - 7994

For Projects South of Toms River, address to:

Commander
Fifth Coast Guard
431 Crawford Street
Portsmouth, VA 23704 - 5004
Telephone Number: 804 -398 - 6222

Construction in waters exempt from a Coast Guard permit may be subject to other Coast Guard authorizations such as approval of navigation lights and signals and timely notice to local mariners of waterway changes; therefore, the Coast Guard should be notified whenever the proposed action may substantially affect local navigation.

6. NJDEP WATERFRONT DEVELOPMENT PERMIT

The Bureau of Environmental Services, with engineering input, makes the application for the entire project permit to the NJDEP.

7. NJDEP FRESHWATER WETLANDS PERMIT

The Bureau of Environmental Services, with engineering input, submits the entire application to the NJDEP.

8. US ARMY CORPS SECTION 404 and 10 PERMITS

The Bureau of Environmental Services submits these applications, with engineering input, to the District Engineer, Philadelphia District or New York District.

9. PINELANDS COMMISSION PERMIT

The Bureau of Environmental Services submits the entire application, with engineering input, to the New Jersey Pinelands Commission.

(REFERENCES: Coast Guard Authorization Act of 1982; Section 123(b) of the Federal Aid Highway Act of 1987; 23 CFR 650 (H) dated April 1, 1991.)

10. NAVIGABLE WATERWAYS IN NEW JERSEY

The listing of navigable waterways is not a complete list and is shown for quick reference to be used as a guide to those waterways upon which the US Coast Guard has made a determination that they are exercising jurisdiction.

This listing was taken from the Coast Guard Publication Bridges Over Navigable Waters of the United States, Part 1, Atlantic Coast. If doubt exists as to whether a section of waterway in question has been deemed navigable, the US Coast Guard should be contacted at (212) 668-7165.

Intercoastal Waterways:

Barnegat Bay	Great Channel
Beach Thorofare (Atlantic City)	Ingram Thorofare
Beach Thorofare (Margate)	Inside Thorofare
Beach Thorofare (Ocean City)	Ludlam Thorofare
Broad Thorofare	Manahawkin Bay
Cape May Canal	Manasquan River
Crook Horn Thorofare	Middle Thorofare
Grassy Sound Channel	Point Pleasant Canal

Absecon Creek
Absecon Inlet
Alloway Creek
Arthur Kill
Assiscunk Creek
Avalon Canal
Babcock Creek
Barnegat Bay
Bass Harbor
Bass River
Beach Creek
Beach Thorofare
Beaver Creek
Beaver Dam Creek
Bellmans Creek
Berry Creek
Berry Creek Canal
Bidwell (Biddle) Creek
Big Creek
Big Sheepshead Creek
Big Thorofare
Black Creek
Branchport Creek (Pleasure Bay)
Bull Creek
Cape Island Creek
Cedar Creek
Cedar Swamp Creek
Cheesequake Creek
Clam Thorofare
Cohansey River
Colby's-Bobby's Run
Compton Creek (Shoal Harbor)
Cooks Creek
Cooper River
Corson Inlet
Crafts Creek
Crammers Creek
Crosswick Creek
Debbies Creek
Delaware River
Dennis Creek
Dividing Creek
Dock Thorofare
Double Creek
Duck Thorofare
East Creek
Elizabeth River
Flat Creek
Forked River
Patcong Creek

Fortescue Creek
Grassy Sound Channel
Graven Thorofare
Great Channel
Great Egg Harbor Bay
Great Egg Harbor Inlet
Great Egg River
Great Thorofare
Hackensack River
Hope Creek
Hudson River
Jobs Creek
Jonathans Thorofare
Kill Van Kull
Lawrence Brook
Leonards Thorofare
Little Silver Creek
Little Salem River
Little Sheepshead Creek
Little Timber Creek
Lovelands Thorofare
Luppatacong Creek
Manahawkin Bay
Manahawkin Creek
Manantico Creek
Manasquan Creek
Matawan Creek
Maurice River
Middle Thorofare
Milburn Creek
Mill Creek
Mill Tail Creek
Mullica River
Muskee Creek
Nacate Creek
Navesink River (Swimming River)
Newark Bay
Newton Creek
Newton Creek North Branch
Newton Creek South Branch
Noes Creek
Nut Swamp
Oceanport Creek
Oldmans Creek
Old Turtle Creek
Overpeck Creek
Oyster Creek
Passaic River
Parkers Creek
Sluice Creek

Pemberton Creek
Pennsauken Creek
Pennsauken Creek South Branch
Piles Creek
Post Creek
Pleasure Bay (Branchport Creek)
Raccoon Creek
Rahway River
Rancocas River (Creek)
Rancocas River (Creek) South Branch
Raritan River
Richardsons Channel
Risley River
Salem Canal
Salem River
Scotch Bonnet Thorofare
Second River
Shark River
Shark River (North Channel)
Shark River (South Channel)
Sheepshead Creek
New Jersey Ship Channel
Shrewsbury River

South River
Stockton Lake Brook
Stow Creek
Stump Creek
Swimming River (Navesink River)
Tennents Brook
Toms River North Branch
Toms River South Branch
Toms River Jakes Branch
Town Neck Creek
Townsend Inlet
Troutmans Creek
Tuckahoe River
Tuckerton Creek
Wading River
Watsons Creek
West Creek
Westecunk Creek
Whirlpool Creek
Willet Thorofare
Woodbridge Creek
Woodbury Creek

Attachment 1 - Sample Letter of Application for USCG Permit

**DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD**

MAILING ADDRESS

2100 Second Street, S.W.
Washington, D.C. 20593-0001
Staff Symbol: G-NBR
Phone: (202) 267-0368

COMDTPUB P16591.3A

COMMANDANT PUBLICATION P16591.3A

Subj: BRIDGE PERMIT APPLICATION GUIDE

1. **PURPOSE.** This guide was prepared to assist federal, state and local agencies, as well as members of the general public, when applying for a Coast Guard permit to construct a new bridge or causeway or reconstruct or modify an existing bridge or causeway across navigable waters of the United States.
2. **ACTION.** District Commanders.
3. **DIRECTIVE AFFECTED.** This guide supersedes COMDTPUB P16591.3 dated 11 April 1985.
4. **DISCUSSION.** Federal law prohibits the construction of any bridge across the navigable waters of the United States unless first authorized by the Coast Guard. This guide shall be distributed to state or local agencies who routinely apply for Bridge Permits and to other prospective applicants when requested. If the procedures described in this handbook are followed, it will expedite the permitting process. Questions regarding a specific project should be directed to the Bridge Administration staff of the Coast Guard district where the project is located. This edition of the Bridge Permit Application Guide has relatively minor changes and is being reprinted because existing supplies have been depleted.

Chief, Office of Navigation Safety
and Watering Services

DISTRIBUTION - SDL No. 132

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H																											

NON-STANDARD DISTRIBUTION: See Page 2.

SAMPLE LETTER

Sample Letter of Application for Permit

Commander (obr)
Ninth Coast Guard District
1240 East Ninth Street
Cleveland, Ohio 44199

Dear Sir:

Application is hereby made by (*name of consultant or engineering firm*) (*name of applicant*) at (*address*) for approval by the Commandant, U.S. Coast Guard, of the location and plans of a (*type of bridge structure*) to be constructed (*or modified*) across the (*name of waterway*) at (*city*), (*state*), _____ kilometers (miles) above the mouth of the waterway as shown on the attached plans.

Federal funds will/will not be utilized and have been/are being applied for. Federal agencies which must grant approvals, easements, or other actions for this project include

The bridge will have a/no significant impact on the human environment. The impacts on the human environment are as follows: (*briefly describe key issues*)

An environmental analysis describing these effects has been prepared in the format of Section 102(2)(C) of the National Environmental Policy Act of 1969 and is enclosed.

There are/are no wildlife and waterfowl refuges, recreational areas, public parks or historic sites in the vicinity or in the way of the (*type of structure*) or its approaches. (*as appropriate*)

Legal authority for the (*type of structure*) is found in the General Bridge Act of 1946. The laws of the State of _____ do not require us to obtain a state permit for this work (*or enclose state permits*).

Enclosed herewith is a letter of authorization from (*structure owner*) and an extract of (*the motions from Corporate meetings, etc.*) authorizing me to make this application.

This (*type of structure*) will replace the existing (*type of structure*) at (*city, state*), and will be removed when the new (*type of structure*) is completed. (*If applicable*)

Sincerely,

- Encls. (1) Original and three copies of map of the vicinity and plans of (*type of structure*)
(2) Environmental Analysis (or two copies of FHWA Final EIS or FONSI) as appropriate
(3) Authorization for applicant to make application
(4) Evidence of ownership of old (*type of structure*)
(5) Water quality certification under 33 U.S.C. 1251 (or copy of letter requesting same)
(6) CZM consistency statement
(7) State agency concurrence in CZM consistency certification

CHECKLIST

ENCLOSURES TO APPLICATION FORM (as applicable)

- letter authorizing agent to act in applicant's behalf
- letter authorizing modification or removal of another's bridge
- State license to construct the proposed bridge
- extract from a corporation's charter
- proof of ownership of the land the proposed bridge will be located on
- extracts of motions from meetings authorizing construction of the proposed bridge
- water quality certificate
- CZM consistency statement
- state concurrence with consistency certificate
- environmental document
- other federal, state and local permits
- identification of property owners adjacent to proposed bridge site

Drawings

LOCATION MAP

- show the location of the proposed bridge in red
- show the location of existing bridge
- show wildlife and waterfowl refuges, historical and archaeological sites, public parks and recreation areas
- show graphic scale
- show north arrow
- show direction of streamflow by use of an arrow
- show towns in project vicinity

PLAN VIEW

- show properties adjacent to the proposed bridge and identify respective owners
- show length and width of bridge (proposed and, as appropriate, existing)
- show fendering system and indicate type of construction materials
- show banks of the waterway
- show navigation channel limits
- show and identify structures immediately adjacent to the proposed bridge and their pier alignment in relation to the proposed bridge
- show graphic scale
- show north arrow
- show horizontal clearance normal to the channel axis
- show channel axis

ELEVATION VIEW (looking upstream)

- show the navigational opening in red
- show the horizontal clearance normal to the channel
- show the vertical clearance above the appropriate datum
- show the elevation of the waterway bottom
- show the amount of fill
- show the graphic scale

TITLE BLOCKS

- () indicate applicant
- () indicate waterway name and mile point
- () indicate the location of project (city, county, state)
- () indicate date of plans
- () indicate sheet number

17.9 Working Drawing Procedures

1. Within five working days of Project Management receiving notice of Award of Contract of a Project, the “Working Drawings Procedure Letter Input Data Memo” shall be submitted to the Bureau of Structural Engineering, Structural Design Unit. (see Attachment 2). A copy of the award letter should be attached, if possible.
2. After receiving the “Working Drawings Procedure Letter Input Data Memo” the Structural Design Unit shall prepare a letter to the Contractor, providing the notice to submit working drawings, and the procedure for submittal, review and processing of working drawings in accordance with Subsection 105.04 of the NJDOT Standard Specifications (1989) (see Attachments 3 and 4, for Consultant and In-house designed projects, respectively). The procedures shall provide, but not be limited to, the following information:
 - a) The name and location of the Designer (Consultant Engineering Firm or In-House Design Unit).
 - b) The details for the Contractor’s approval stamp and the appropriate location for placement of the stamp on the drawings.
 - c) Seven copies of all working drawings are to be sent to the Consultant or In-House Design Unit to review for conformance with design concepts. (When Railroads are involved, four additional copies per agency will be submitted.)
 - d) Copies of the transmittal letter to the Consultant or In-house Design Unit shall be sent to the Resident Engineer; Manager, Design Coordination; Manager, Structural Design; Manager, Traffic Signal and Safety Engineering; and, where applicable for Movable Bridges, Electrical Engineering/Draw Bridge Operations.
 - e) If approved, six copies will be submitted to the appropriate NJDOT processing unit (Bridge, Roadway, Traffic Signal and Safety, Electrical/ Mechanical components for Movable Bridges) for distribution.
 - f) If corrections are required, the working drawings shall be revised by the contractor and resubmitted as above.
 - g) Contractors are responsible for informing sub-contractors of the working drawing procedures.
3. A copy of the Working Drawing Procedure letter is sent to the following:
 - Consultant or In-house Design Unit
 - Resident Engineer
 - NJDOT Design Processing Unit
4. The Consultant or In-House Design Unit is notified by copy of the Working Drawing Procedure Letter to:

- a) Send one copy of their transmittal letter to the Resident Engineer, and the appropriate review/processing unit, for drawings returned to the contractor for corrections.
 - b) Resolve comments from both the Design Unit and the Railroad company(s), when applicable, prior to submittal to the NJDOT Design Processing Unit.
 - c) Submit six, properly signed and stamped, copies of the Working Drawings to the appropriate NJDOT Design Processing Unit, when the Working Drawings are approved.
5. The Resident Engineer is notified by copy of the Working Drawing Procedure Letter that:
- a) The contractor is required to submit the signed original working drawing tracings (mylars) to him prior to the completion of the project.
 - b) The original tracings are then forwarded to the Structural Design Unit or appropriate NJDOT processing unit.
6. For Consultant designed projects, the Consultant shall send the approved Working Drawings to appropriate review/processing unit as follows:
- | | | |
|---|---|---|
| Bridge and Structural Items | - | Structural Design |
| Roadway Items | - | Design Coordination |
| Electrical, Sign Face Layout, -
Guide Rail and Safety Features | | Traffic Signal and Safety Engineering |
| Electrical/Mechanical
(Movable Bridges) | - | Electrical Engineering/
Draw Bridge Operations |
7. For Projects designed by NJDOT In-House Design Units, the Contractor shall submit Working Drawings for the review, approval and processing units are as follows:
- | | | |
|---|---|---|
| Bridge and Structural Items | - | Structural Design |
| Roadway Items | - | Design Coordination |
| Electrical, Sign Face Layout, -
Guide Rail and Safety Features | | Traffic Signal and Safety Engineering |
| Electrical/Mechanical
(Movable Bridges) | - | Electrical Engineering/
Draw Bridge Operations |
8. The NJDOT review/processing unit shall distribute approved working drawings as follows:
- One copy to the Resident Engineer

- Two copies to the Bureau of Materials
- One copy to the unit's file
- Remaining copies to the Contractor

Attachment 2 - Working Drawings Procedure (Letter Input Data)

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM**

TO: Manager
Structural Design
FROM: _____
Project Manager
PHONE: _____
DATE: _____
SUBJECT: Working Drawings Procedure Letter Input Data

Please send the Contractor instructions regarding submittal of working drawings based on the information provided below:

ROUTE: _____ **SECTION:** _____
STRUCTURE NAME: _____
MUNICIPALITY: _____ **COUNTY:** _____
CONSTRUCTION JOB NUMBER: _____
FEDERAL PROJECT NUMBER: _____ **D.P. NUMBER:** _____

CONTRACTOR NAME AND ADDRESS: _____

ATTENTION: _____

DESIGN UNIT NAME AND ADDRESS (CHECK ONE BOX ONLY)

CONSULTANT FIRM: _____ **OR** **NJDOT**

ATTN: _____

RAILROAD AGENCY/AGENCIES AND CONTACT PERSON

ATTN: _____ **ATTN:** _____

RESIDENT ENGINEER

NAME: _____
ADDRESS: _____

CONSTRUCTION SPECIFICATIONS: _____ **1989 SPECIFICATIONS**
_____ **OTHER (SPECIFY)**

If this Project requires special details or unusual handling of Shop Drawings, please indicate below:

Attachment 3 - Letter to Contractor (Consultant Designed Project)

date

Contractor
(Address)

Attention:

Re: Working Drawings, Rte. _____ Sec.
Federal Project No. _____, D.P. No.

Gentlemen:

Pursuant to Subsection 105.04 of the NJDOT Standard Specifications (1989) and the Special Provisions, you are required to review, approve, sign, date and submit all working drawings (see Subsection 101.03 of the above mentioned Standard Specifications for definition of "Working Drawings"), to the Consultant indicated below:

Consultant
(Address)

The Contractor's approval of each working drawing shall be in the form of an approval stamp. This stamp must contain the Contractor's company name, signature, date and the word "Approved". This stamp shall be located directly above the Title Block on the original tracing for each 594 by 841 mm working drawing, which is required to be furnished to the Resident Engineer prior to completion of the project. Future revisions to the original tracing shall have the date within the approval stamp updated with each revision to verify that the revision was reviewed and approved by the Contractor.

All working drawings for which a 210 by 297 mm submittal size is acceptable (see Special Provisions for detailed listing), the approval stamp shall be placed on a cover sheet attached to each individual working drawing submitted. For 210 by 297 mm sets of calculations, one cover sheet with the approval stamp and an embossed seal with an original signature of a Professional Engineer licensed to practice in the State of New Jersey shall be attached to each individual set.

The following procedure shall be observed:

- A. Send seven prints/copies of all working drawings to the above mentioned Consultant so that they may review the drawings for conformance with the design concepts. For drawings that require review by the railroad agency/agencies, an additional four (4) prints are to be submitted per each agency involved. One copy of the transmittal letter shall be sent concurrently to the following as appropriate:

1. Resident Engineer (in all cases).
2. Manager (Roadway Items)
 Design Coordination
 NJDOT, CN 600
 6th Floor E&O Building
 1035 Parkway Avenue
 Trenton, New Jersey 08625
 Phone No. (609) 530-2448 Fax No. (609) 530-5557
3. Manager (Bridge Items)
 Structural Design
 Attention: [Name]
 NJDOT, CN 615
 5th Floor E&O Building
 1035 Parkway Avenue
 Trenton, New Jersey 08625
 Phone No. (609) 530-2664 Fax No. (609) 530-2005
4. Manager (Electrical, Sign Face Layout,
 Traffic Signal and Safety Engineering Guide Rails and Safety Features)
 NJDOT, CN 613
 7th Floor E&O Building
 1035 Parkway Avenue
 Trenton, New Jersey 08625
 Phone No. (609) 530-2600 Fax No. (609) 530-4567
5. Electrical Engineering/Draw Bridge Operations (Electrical/Mechanical
 100 Daniels Way Components of Movable
 Freehold, New Jersey 07728 Bridges)
 Phone No. (908) 308-4030 Fax No. (609) 308-0160

If these drawings are determined to be in conformity, the Consultant will forward six prints/copies of each working drawing to the appropriate NJDOT approving authority as shown above and NJDOT, in turn, will return two prints/copies of each working drawing to you bearing both the Consultant's stamp and the NJDOT stamp indicating that the working drawings are in general conformance with the design concepts of the project. The working drawings will be returned directly to you unless written instructions are otherwise provided.

- B. Working drawings requiring corrections and/or changes will be returned directly to you by the Consultant. The corrections and/or changes shall be made and approved by you and the working drawings shall then be resubmitted as above.
- C. Changes to approved working drawings, subsequent to the first submission, shall not be initiated by the Contractor unless written approval is provided by the appropriate NJDOT authority (Road, Bridge, etc.). See Subsection 105.04 of the Contract Special Provisions for working drawing requirements. For your information we have attached the Title Block formats (see Attachment 5). Please be advised that drawings submitted which do not conform to the required format will be returned for correction.

- D. Notify any Subcontractors of the working drawing content requirements and approval procedures so the processing of working drawings can proceed with reasonable promptness.

The Consultant is hereby notified (via copy of this letter) of the following:

Send one copy of their transmittal letter to the Resident Engineer, and to either this Office or to the appropriate NJDOT Approving Authority as mentioned in Item A in the event the drawings are returned to the Contractor for correction and/or change.

Submit four copies of working drawings which require railroad agency review and approval to the following respective agency/agencies:

(Agency/Agencies) or N/A
(address)

Comments from both the railroad and your office shall be incorporated in the working drawings before any subsequent action is taken. Refer to Section 1.13.2(c) of the NJDOT Design Manual, Bridges and Structures, for further clarification.

The Resident Engineer is hereby notified (via copy of this letter) that as per Subsection 105.04 of the Special Provisions, the Contractor is required to submit the signed original working drawing tracings (sepia not accepted) to you prior to completion of the project. Upon receipt, the original bridge related tracings are to be forwarded to this Office and the original roadway, sign, traffic, electrical and electrical/mechanical (moveable bridges) related tracings are to be forwarded to the appropriate NJDOT office(s) for permanent record use and storage.

In order to expedite the processing of Bridge shop drawings, it is requested that the Contractor, Consultant and Resident Engineer complete the appropriate section of the attached form and return to NJDOT, Structural Design, CN 615, Trenton, New Jersey 08625-0615.

Should there be any questions regarding the information and/or procedures contained herein, please call (609) 530-2664.

Note: Please be advised that Shop Drawing submission is no longer required for reinforcing bars.

Sincerely,

Manager
Structural Design

Attachment

Attachment 4 - Letter to Contractor (In-House Designed Project)

"Approved". This stamp shall be located directly above the Title Block on the original tracing for each 594 by 841 mm working drawing, which is required to be furnished to the Resident Engineer prior to completion of the project. Future revisions to the original tracing shall have the date within the approval stamp updated with each revision to verify that the revision was reviewed and approved by the Contractor.

All working drawings for which a 210 by 297 mm submittal size is acceptable (see Special Provisions for detailed listing), the approval stamp shall be placed on a cover sheet attached to each individual working drawing submitted. For 210 by 297 mm sets of calculations, one cover sheet with the approval stamp and an embossed seal with an original signature of a Professional Engineer licensed to practice in the State of New Jersey shall be attached to each individual set.

The following procedure shall be observed:

- A. Send seven prints/copies of all working drawings to the above mentioned appropriate NJDOT Design Unit so that they may review the drawings for conformance with the design concepts. For drawings that require review by the railroad agency/agencies, an additional four (4) prints are to be submitted per each agency involved. One copy of the transmittal letter shall be sent concurrently to the Resident Engineer.

If these drawings are determined to be in conformity, the NJDOT Design Unit will forward two prints/copies of each working drawing to you bearing the NJDOT stamp indicating that the working drawings are in general conformance with the design concepts of the project. The working drawings will be returned directly to you unless written instructions are otherwise provided.

- B. Working drawings requiring corrections and/or changes will be returned directly to you by the NJDOT Design Unit. The corrections and/or changes shall be made and approved by you and the working drawings shall then be resubmitted as above.
- C. Changes to approved working drawings, subsequent to the first submission, shall not be initiated by the Contractor unless written approval is provided by the appropriate NJDOT authority (Road, Bridge, etc.). See Subsection 105.04 of the Contract Special Provisions for working drawing requirements. For your information we have attached the Title Block formats (see Attachment 5). Please be advised that drawings submitted which do not conform to the required format will be returned for correction.
- D. Notify any Subcontractors of the working drawing content requirements and approval procedures so the processing of working drawings can proceed with reasonable promptness.

The NJDOT Design Units are hereby notified (via copy of this letter) of the following:

The Design Unit will send one copy of their transmittal letter to the Resident Engineer, in the event the drawings are returned to the Contractor for correction and/or change.

Submit four copies of working drawings which require railroad agency review and approval to the following respective agency/agencies:

(Agency/Agencies) or N/A
(Address)

Comments from both the railroad and the Design Unit shall be incorporated in the working drawings before any subsequent action is taken. Refer to Section 1.13.2(c) of the NJDOT Design Manual, Bridges and Structures, for further clarification.

The Resident Engineer is hereby notified (via copy of this letter) that as per Subsection 105.04 of the Special Provisions, the Contractor is required to submit the signed original working drawing tracings (sepia not accepted) to you prior to completion of the project. Upon receipt, the original bridge related tracings are to be forwarded to this Office and the original roadway, sign, traffic, electrical and electrical/mechanical (for movable bridges) related tracings are to be forwarded to the appropriate offices for permanent record use and storage.

In order to expedite the processing of Bridge shop drawings, it is requested that the Contractor, Consultant and Resident Engineer complete the appropriate section of the attached form and return to NJDOT, Structural Design, CN 615, Trenton, New Jersey 08625-0615.

Should there be any questions regarding the information and/or procedures contained herein, please call (609) 530-2664.

Note: Please be advised that Shop Drawing submission is no longer required for reinforcing bars.

Sincerely,

Manager
Structural Design

Attachment

Attachment 5 - Title Block Formats

SAMPLE A

SAMPLE B

SECTION 18 COMMUNITY RELATIONS

18.1 Overview

Community Relations is aimed at improving NJDOT's community relations function by:

- Making project managers jointly responsible, with the OCR staff, for community relations activities on specific projects or packages of projects and requiring a community relations component in project status reports (PMCS); and
- Establishing early and on-going mechanisms and procedures for outreach to and interaction with the public so that early public buy-in of the Department's projects can be accomplished.

These guidelines are intended to discuss more fully the manner in which those recommendations should be implemented.

18.1.1 Immediate Implementation

The following steps should be implemented immediately:

- Require Project Managers, at the time of their appointments, to work with OCR staff to gain an understanding of community relations issues affecting particular projects and to develop community relations plans of action. OCR staff will be responsible for all scheduling and logistics necessary to implement the plans.
- Include a community relations component in project status reports (see Section 18.2).
- Ensure adequate OCR resources to: conduct analyses of community relations issues by region; identify local stakeholders; engage in project-related community outreach; respond to public inquiries and comments; and conduct post-project assessments of community relations activities.
- Establish a closer working relationship with the MPOs in order to allow better communication and information sharing and to allow the Department to employ the resources of the MPOs.
- Develop and maintain a master list of public organizations and citizens' groups with an interest in transportation policies and issues and notify them of all capital projects (see Section 18.2).
- Develop specific procedures to ensure timely, appropriate, and on-going public involvement in the new capital project delivery process (see Section 18.2 for detailed guidelines).
- Provide on-going training for the Project Managers, Design Coordinators, and other NJDOT technical staff in the importance, techniques, and value of community relations and outreach.

NOTE: Additional recommendations which may be implemented in the future can be found in Section 18.4.

18.1.2 Miscellaneous Recommendations

The Director of Project Management and Director of the Office of Community Relations should develop, special procedures and processes to be followed for those projects which are likely to result in litigation.

18.2 NJDOT Lead Projects

18.2.1 Generalized Community Outreach/Agenda Formation/Problem Identification

The OCR staff will identify transportation issues in each Region and determine the types of agendas that can be formed around them for inclusion in the Department's Strategic Capital Investment Plan.

- **Preliminary Analysis** - The OCR staff will, at this juncture, prepare a preliminary analysis of anticipated public reactions to various types of projects or packages of projects in each region. These analyses should also include:
 - information regarding previous NJDOT projects in the region (when available);
 - a general plan for promoting NJDOT initiatives in the region; and
 - A list of key community stakeholders who may take the lead in supporting or opposing future NJDOT projects. (The list of key stakeholders will serve as the genesis of future project mailing lists and, where appropriate, will be added to the Master List of persons, groups, and organizations to be notified of all the Department's capital projects.)

These analyses will be further updated and refined, as needed, during the problem identification process.

18.2.2 Concept Development

During the Planning phase (or during the Scoping Phase, for non-planning originated projects), the Department will inform the public of its plans through informal meetings with

- local planners and municipal engineers;
- MPO staff; and
- local and state elected officials (through officials' briefings).

The general public will be informed initially of the Department's plans through notices in the local print and electronic media (i.e., press releases, paid advertisements, and public service announcements) and public information centers.

- **Mailing List** - A mailing list will be developed for each project or package of projects. Initially, the list will include, in addition to the key stakeholders identified during the agenda formation/problem identification stages, those property owners or tenants who could be directly affected by the project. The list will be expanded as project scope becomes clearer through press releases and advertisements in the local media urging members of the public to submit their names and mailing list sign up sheets at information centers, public meetings, and public hearings. Persons and groups on the mailing list will receive notices of information centers, public meetings, and public hearings, as well as copies of brochures and other material related to the project.
- **Brochures** - For each information center, public meeting, and public hearing, a brochure will be prepared summarizing, in language accessible to the layperson, alternatives developed to date and their impacts. The brochures will be sent to persons and groups on the mailing list; distributed at information centers, public meetings, and public hearings; and made available to the public at the Department's Regional Public

Affairs Offices. The brochures will also include self-addressed paid postage forms for the submission of written comments and for requests to be included on the mailing list, along with a questionnaire to solicit public input regarding the community relations activities associated with the project.

Needs assessment/alternatives analysis (NA/AA) work also occurs during the planning phase, the purpose of which is to ensure public understanding of the problem, give full consideration to all potential solutions, and establish initial community buy-in of the proposed projects. For major projects, a formal public meeting, held in conjunction with an information center, may be advisable to present project alternatives.

When initial community buy-in has been achieved, a pro-project constituency will be identified, along with local stakeholders (ideally, local or state elected officials) who are willing to take responsibility for promoting the project at the local level.

- **Local Focus Groups** - When substantial public opposition remains after the completion of NA/AA work, the NJDOT staff involved in the project (e.g. Planning, Project Management, Environmental/Historical, Office of Community Relations) shall prepare and present to the Commissioner a briefing on the project, including recommendations for action. The Commissioner will then determine whether the project should be abandoned, or whether, in the Commissioner's view, the project is of sufficient regional or statewide importance to warrant proceeding.

In the latter case, as well as in the case of projects which are anticipated to generate significant community impacts, the Commissioner may direct that a local focus group be established to provide an additional level of community input. Such a group should consist of a representative sample of local stakeholders who are likely either to benefit or to be negatively impacted by the proposed project, as well as selected local technical officials and those local elected officials who are in support of the project.

- **Proposed Project Community Relations Plan** - At the inception of a project, a proposed community relations plan will be developed for each project or package of projects based upon the public input received.

These plans will range from a minimal effort for those projects which enjoy substantial public support and which are likely to result in few public impacts, to a more thorough and detailed plan for controversial projects or for those projects or packages of projects likely to result in significant public impacts. The plans will include community relations activities for all remaining phases of the capital project delivery process.

18.2.3 Scope Development

At this point in the process, a project is said to "exist," and a Project Manager is appointed. Immediately following their appointments, the Project Managers will be briefed by the OCR staff on the community relations aspects of the project.

Project Managers will also be provided with:

- a summary of the preliminary analysis of anticipated public reaction to NJDOT projects in the relevant region, including the list of key stakeholders:

- a summary of the community relations activities which have take plan to date, including the results of the local focus group, if one was formed;
- the names of local stakeholders willing to promote the project to the community; and,
- a copy of the proposed community relations plan for the project.

The Project Manager, with the assistance of the Regional Public Affairs Officer (RPAO) assigned to the project, will then finalize the community relations plan and determine the scheduling of future public participation, as well as designate the NJDOT technical staff who will participate in the community relations process.

- **Project Status Reports (PMCS)** - Following the finalization of the project community relations plan, the Project Manager will enter into the project status report a brief description of the key elements of the plan, along with a summary of public input accomplished to date.

The Project Manager will also be responsible for entering the community relations plan into project schedules (i.e., into Primavera) and for updating the results of further community input as the project progresses.

- **Public Hearings** - As scope development nears completion, a formal public hearing may be required by FHWA, NEPA, or the permit applications process. These hearings will be scheduled, advertised, and conducted in accordance with FHWA, NEPA, or the permit application process guidelines.

For major projects, more than one public hearing may be warranted. In such cases, a Notice of an Opportunity for a Public Hearing should be advertised in the local media and sent to those persons and groups on the project mailing list.

If a strong interest in a subsequent public hearing is expressed, the RPAO will arrange such a hearing. If, however, the number of parties requesting an additional public hearing is small (i.e., five or fewer), the RPAO and the Project Manager may opt to hold an informal session with those parties to determine whether their concerns can be resolved without the necessity of a full public hearing.

- **EIS/EA** - When necessary, EIS/EA activities will occur as scope development nears completion.

For those projects which require the preparation of an Environmental Impact Statement (EIS), copies of that document should be made available at local public libraries and at the Regional Public Affairs Offices. A notice of the availability of the EIS should be sent to all individuals and groups on the project mailing list.

At the completion of the scoping phase, a community-wide public meeting will be held to afford the public a final opportunity for input and comment and to achieve maximum community buy-in of the project. Subsequent public forums will be for progress reports only.

18.2.4 Design Development

At completion of scoping a public forum (in the case of major projects, a public meeting, preceded by an information center) should be held to present a detailed picture of the project, including plans, estimates, construction impacts, etc. The primary purpose of this forum is to verify compliance with the community's wishes.

18.2.5 Construction

After a contract has been awarded to build a project, but before actual construction begins, a public construction information center may be held to inform the public about what will happen during the construction phase, when it will happen, and who can answer questions about what is occurring.

During the actual construction phase, there will be signing in the project area, directing the public to contact the resident engineer, located at the work site, if they have questions or concerns connected with the construction.

The Community Relations Process discussed in this section is diagramed in Figure 2.

18.2.6 Post Project Assessment

When a project has been completed, OCR staff shall prepare an assessment of the community relations activities associated with the project for the purpose of identifying which activities were beneficial and which activities need improvement. That information will then be incorporated into the appropriate preliminary analyses for future projects.

18.3 Basic Responsibilities

18.3.1 Key Players

Director, Capital Project Management
Director, Office of Community Relations
Project Managers
Regional Public Affairs Officers (RPAOs)
Statewide/APMG Public Affairs Officers

18.3.2 Responsibilities

- **Regional and Statewide Public Affairs Officers** - Responsible for all community relations activities which occur prior to the assignment of a Project Manager at the beginning of the scope development phase, including:

- preparation of preliminary analysis of anticipated public reaction to NJDOT projects;
- preparation of general plan for promoting NJDOT initiatives;
- identification of key stakeholders;
- advertising, arranging, and conducting meetings, workshops, and public information centers during the planning phase;
- developing an initial project mailing list;
- preparing project brochures during planning phase;
- identifying local stakeholders willing to promote project at the community level;
- establishing local focus groups, when necessary;
- preparing a proposed Project Community Relations Plan;
- briefing the Project Manager on community relations activities undertaken with regard to specific projects.

Responsible, following the appointment of a Project Manager, for the following activities, which will be coordinated with the Project Manager:

- amendments to the community relations plan for the project;
 - preparing advertisements and notices of public information centers, meetings, and hearings;
 - preparing brochures to be distributed at public forums;
 - preparing agendas for public forums;
 - updating the project mailing list;
 - distribution of EIS documents and notices of EIS availability;
 - logistics for all public forums, including meeting location, set-up, displays of maps, handouts, sign-in sheets, greeting attendees, and, in consultation with the Project Manager, determining who will conduct or chair meeting programs;
 - preparing post project assessment reports.
- **Director, Capital Program Management** - Responsible for notifying (or designating someone to notify) the Director of the Office of Community Relations of the appointment of all Project Managers.

- **Director, Office of Community Relations** - Responsible for reviewing Proposed Project Community Relations Plans, determining the level of OCR staff support to be provided to the Project Managers and for maintaining on-going liaison with the state's MPOs.
- **Project Managers** - Responsible for directing in conjunction with OCR staff, all community relations activities during Scope Development, Design, and Construction phases, including:
 - approving, finalizing, and amending project community relations plans;
 - scheduling (i.e., timing) of all public information centers, meetings, and hearings;
 - determining which NJDOT technical staff will be made available at each public forum;
 - approving all advertisements, notices, and brochures;
 - approving agendas for all public forums;
 - deciding when more than one formal public hearing on a project will be held.
 - entering, updating, and tracking public input on project status reports (PMCS) and project schedules (Primavera)

18.4 Guidelines - Future Implementation

The following recommendations require the use of outside consultants. However, it should be noted that consultants should serve in a support capacity only; they should not be used to replace NJDOT staff in direct dealings with the public.

- Begin a program of general community outreach, with the assistance of an outside consultant, to identify important transportation issues and to determine what type of agenda can be developed around those issues. This activity should take place at the same time the Department puts together its Strategic Capital Investment Plan (SCIP) and should be updated as that Plan is updated.

- Enlist an outside consultant to assist in designing an optimal customer service program and to determine which NJDOT unit should take the lead in this area, the level of resources (e.g., phone lines, customer services representatives, etc.) needed to establish and operate such a program, the components of which may include, but need not be limited to, the following:
 - establishing customer assistance telephone lines at NJDOT headquarters and in the regions;
 - placing these numbers at the top of NJDOT's telephone directory listings;
 - developing a list of the most common public inquiries and answers for same, to be used by the RPAOs and OCR support staff, who will be responsible for handling these inquiries;
 - establishing an 800-number hotline during the construction phase of major projects to elicit public comments and suggestions of a non-emergency nature.

SECTION 19 PROFESSIONAL SERVICES

19.1 Initiating Professional Services

The Project Manager is responsible for identifying professional services needed for project delivery. Professional services needs must be anticipated, defined, and secured in such a manner as to not adversely impact project delivery.

The first step in the process of procuring any professional services will be the definition of the scope of services to be performed. A well defined scope of services is critical to successful project management. This step is where the most value is added to the process. The Project Manager should consult with the appropriate in-house technical experts to identify all activities required in accordance with the Process Delivery Network depicted in Section 3.5.

19.1.1 Approval to Initiate Professional Services

Prior to initiating any new agreement, or modification to an existing consultant agreement, approval from the Division Director must be obtained. The Project Manager shall prepare a written request to proceed with any agreement or modification processes described in this section. This also applies to Task Order Agreements.

This written request must provide the following:

- A brief description of the scope of professional services required.
- The estimated cost of this work. An order of magnitude, or “ballpark”, estimate is to be developed by the Project Manager for this purpose. Detailed design cost estimating, such as that performed by the Bureau of Program Support Services, or a consultant preparing a proposal for agreement modification, shall be deferred until approval is obtained from the Director.
- Current Capital Program years for Design, Right of Way, and Construction.
- Reason for requesting professional services. Appropriate justification should include impacts to project and program delivery.
- Indication that in-house forces have been contacted regarding performing the work, and the reasons why the work cannot be done by in-house forces.
- If a modification to an existing consultant agreement, provide a copy of the section(s) of the original agreement providing the legal and contractual authority to add the work by modification. Include a copy of the scope of services included in the Original agreement.
- Concurrence line for signature by the Program Manager.
- Approval line for signature by the Director.

Upon receipt of approval by the Director, the Project Manager may proceed with the procedures described in sections 19.2, 19.4, or 19.6, as appropriate.

19.1.2 Funding for Professional Services

New projects are initiated through the process described in Section 2.2 “Project Selection and Capital Programming”. Selected projects will be assigned to the Division of Project Management for Final Scope Development. At the conclusion of Final Scope Development, the Project Manager will submit the Scope Development Package to the Capital Program Development Committee for review. If approved, the project will then be available for design, right-of-way, and construction.

Prior to requesting approval to initiate professional services for a new project, the Project Manager should verify that the proposed project is included in the approved Capital Program and that it is included in the Annual Element of the appropriate Transportation Improvement Program (TIP) if federal funds are involved.

Based on the final scope of work for the project, the Project Manager should develop estimates of consultant and in-house costs. In-house costs are to be broken down by organizational unit. The development of these cost estimates shall be in accordance with Section 3.4 “Cost Baselines”. Initial Baseline Budget approval must be obtained prior to requesting professional services. The funding process for new design work continues after selection and negotiation with the submission of a funding request memorandum to the Bureau of Capital Program Coordination which is described in Section 19.3.

Similarly, the funding process for additional design work by modification to a current consultant agreement, as described in Section 19.6, requires a funding request memorandum to the Bureau of Capital Program Coordination which includes a description of the additional work, consultant cost estimate, and in-house cost estimate. This funding request is to be included as an attachment to the Baseline Change Request.

Funding for construction engineering/inspection services, including any design consultant agreement modification required for shop drawing review should be requested concurrent with the estimated construction costs, prior to advertisement for construction, based on the budget established by the Project Manager and Regional Construction Engineer (as recommended by the Field Manager during the Final Design Review and Prepare PS&E activity time periods). The Regional Construction Engineer shall recommend if inspection services are to be provided by Department staff, consultant(s), or a combination of both. The PS&E submission to the Bureau of Contract Administration Services should include this funding information.

The following subsections describe tasks which are to be performed by the Project Manager’s Agreement Coordinator. The Agreement Coordinator assigned to each Program Manager is essentially the “branch office” of the Bureau of Contract Administration Services. Responsibilities of the Bureau of Contract Administration Services are summarized in Section 19.4.

19.2 Consultant Selection

A consultant is to be selected to provide professional services when the expertise required is not available in the Department, or when the Department's workload is such that the professional services required cannot be completed within the required time frame. Consultant selection is to be initiated only upon approval of the Director as per Section 19.1.1.

Consultants are firms or businesses, individuals, Colleges, and Universities who, for a negotiated fee, render professional services pertaining to: research development, planning, design, right of way appraisal, acquisition, environmental engineering and mitigation, in conjunction with the improvement, betterment, maintenance, and operation of local and State highways and bridges, public transportation systems, paratransit systems, and aeronautical systems.

The following procedure ensures that a qualified consultant is obtained through an equitable selection process, in accordance with NJSA Title 23 and 48, and the Federal-Aid Policy Guide 23 CFR 172A, which is included as Attachment 1.

Consultant selections for professional services are qualifications-based, with fee negotiations occurring only after a consultant selection has been approved. Expressions of Interest are solicited from all prequalified consultants via the Department's Electronic Bulletin Board.

19.2.1 Consultant Prequalification

Prequalified Consultant - means those Colleges, Universities, individuals, firms or businesses that have been approved by the Department to provide consultant services for specific disciplines and classification levels, through the prequalification Form PS-03, in response to a Department advertisement, direct mail-out or other notification. In addition, all consultants must be Cost Basis approved through the Bureau of Auditing as a final step in the prequalification process.

The Bureau of Professional Services annually places a general solicitation advertisement in appropriate media sources requesting interested consultants to process a prequalification Form PS-03 and obtain classification approval for providing various professional services, such as but not limited to:

- Access Review
- Aerial and Topographical Surveys and Mapping
- Bridge Inspection
- Construction Engineering and Inspection
- Environmental Engineering (all types)
- Geotechnical Design
- Highway Design
- Landscape Architecture
- Research and Development
- Right of Way Appraising
- Structural Design

- Traffic Engineering
- Transportation Planning (all modes)
- Transportation Management Systems

A complete listing of prequalification disciplines, Form PS-03, project types and evaluation criteria are provided in Attachment 2.

The approval classification for prequalifications are as follows:

Estimated Project Fee:

<u>Level</u>	<u>Estimated Project Fee</u>
A	Less than \$500,000
B	\$500,000 to \$1,499,000
C	\$1,500,000 or more

The appropriate major disciplines and approval classification must be determined by the Project Manager prior to requesting a solicitation for professional services. Major disciplines are those comprising 30% or more of the professional services being requested.

As part of the prequalification process, the consultant must have an approved Quality Assurance Plan. The consultant QAP must adhere to the requirements of the "NJDOT Capital Program Management Guidelines for the Preparation of Consultant Quality Assurance Plan." The consultant QAP must be submitted to and approved by the Bureau of Quality Management Services prior to the request for prequalification.

19.2.2 Project Type Criteria

Prior to the initiation of the consultant selection process the Project Manager will have identified funding in accordance with Section 19.1. The consultant cost estimate developed to establish the Initial Baseline Budget will then be used to determine the project selection type as follows:

Simple Projects

1. Any project regardless of fee involving an emergency situation or a constricted time frame.
2. Projects having an estimated fee of \$500,000 or less.
3. Projects having limited scopes of work such as: Resurfacing, Bridge Deck Patching, Construction and Bridge Inspection.

Standard Projects

Multi-disciplined project, highly specialized projects, or projects having an estimated fee of more than \$500,000.

Consultant selections for Simple projects will be based on the rating and ranking of Expressions of Interest. For Standard projects, the rating and ranking of Expressions of Interest

Interest will be used to develop a “short-list” (minimum of 3 firms) of consultants, from which a Technical Proposal will be evaluated as the basis for final selection.

19.2.3 Request for Professional Services

The Project Manager’s Agreement Coordinator shall prepare a request for professional services from the appropriate Division Director to the Moderator/Secretary of the Consultant Selection Committee, Bureau of Professional Services, which contains the following:

1. Transmittal memorandum which includes:
 - Brief Project Description (give Route and Section). “The division of Project Management is currently undertaking preliminary work leading to the development of the subject Agreement. This Agreement (project) provides for...leading to the development of...and is in support of...and is essential for...” Once a format like this is developed it can be used for other letters during the project’s initiation stage. Also mention the type of Agreement (Cost Plus, etc.) that is intended. Various Agreement types are listed in Section 19.3.1.
 - The Type of Project (selection process Simple or Standard) you are initiating. EXAMPLE: The preliminary estimate for this project is \$2,475,000.00 (this is the Consultant cost only); therefore, we are requesting a list of prequalified Consultants under the Standard Project Consultant Selection Process. This statement sets the course of action for the Selection.
 - Disciplines and the classification level requested as determined in Section 19.2.1.
 - Funding Type/Source identification with program year and item number as verified by the Bureau of Capital Program Coordination in accordance with Section 19.1.
2. Completed Expression of Interest Package on floppy disk with a hard copy to be used to post the request for Expressions of Interest to the Department’s Electronic Bulletin Board. This package includes the following:
 - Scope of Work added to the disk.
 - Expression of Interest Letter - select the appropriated type Simple or Standard. Provide the due date based on allowing a range of 5 to 10 working days as determined by the Project Manager.
 - Expression of Interest Rating Form with weights of rating criteria indicated.
 - Workload Disclosure Form.
 - Statement of Joint Venture.
 - Current Performance of the Project Manager Form*

- Past Performance of the Firm Form*
- Commitments of Project Manager and Key Staff Form*
- (*See Section 19.2.6)

The Expression of Interest files are available on Project Management's shared directory and should be copied to a floppy disk and modified to insert required information using Word Perfect 6.0 to 6.1. A sample EOI package is included as Attachment 3.

Upon receipt of the above, the Bureau of Professional Services posts the request for Expressions of Interest on the Electronic Bulletin Board on Tuesdays and Thursdays by 11:00 am. The Project Manager's Agreement Coordinator must track and monitor the remaining Selection/ Agreement activities utilizing the tracking form included in Attachment 4.

Upon completion of the Expression of Interest Package, the Project Manager is to finalize the development of the detailed scope of work that will be provided to those consultants directed to submit technical and fee proposals. This activity must be performed concurrently with the ratings of Expressions of Interest so that it is completed prior to the approval of consultant selection (Simple) or when a short list is approved (Standard).

19.2.4 Review Team for Simple Projects

For Simple projects, Expressions of Interest will be rated in accordance with Section 19.2.6 by a review team established by the Project Manager as follows:

The Project Manager, with a minimum of two others, reviews, evaluates, and ranks the Expressions of Interest. This Group shall consist of the following:

- Project Manager
- Additional members, depending on the project, shall be the appropriate Division Director or designee (Design or Construction), or a representative from the Bureau of Environmental Services, or the Bureau of Project Scope Development.

The Project Manager convenes the Group which reviews, evaluates, and ranks the Expressions of Interest, within 10 working days.

19.2.5 Technical Evaluation Committee for Standard Projects

For Standard Projects, Expressions of Interest will be rated in accordance with Section 19.2.6 by a Technical Evaluation Committee, established by the Project Manager, comprised of the following:

- Project Manager
- Member, Bureau of Professional Services

- Additional members, depending on the project, shall be the appropriate Division Director or designee (Design or Construction), or a representative from the Bureau of Environmental Services, or the Bureau of Scope Development. One to three disciplines should be represented.

The Project Manager convenes the TEC which reviews, evaluates, and ranks the Expressions of Interest within 10 working days.

This same Technical Evaluation Committee will later evaluate Technical Proposals submitted by “short listed” consultants in accordance with Section 19.2.8.

19.2.6 Expressions of Interest Rating and Ranking

Expressions of Interest are to be rated according to the criteria and weights included in the Expressions of Interest Rating Package which was provided to the Bureau of Professional Services for posting to the Electronic Bulletin Board. Any modification to the Standard EOI Rating Criteria and weights, or any additional forms required to be submitted with Expressions of Interest, must be included on the Word Perfect disk provided to the Bureau of Professional Services in accordance with Section 19.2.3.

The Project Manager is to develop an Expression of Interest Rating Guide to be used by the Review Team or Technical Evaluation Committee. This guide provides the basis for scoring each of the rating criteria to be evaluated. A sample Expression of Interest Rating Guide for Design Projects, with corresponding modification to the Standard EOI Rating Criteria and Weights, and additional forms required in the EOI Package is included as Attachment 5.

Copies of the rating guide and EOI Rating Criteria and Weights form is to be provided to all members of the Review Team/Technical Evaluation Committee. All Expressions of Interest are then to be rated, scored, and returned to the Project Manager within 10 working days.

The ranking of Expressions of Interest is then used as the basis for the following recommendation to the Consultant Selection Committee:

- For Simple Projects, the consultant submitting the top ranked Expression of Interest is recommended for selection.
- For Standard Projects, the consultants submitting the highest ranked Expressions of Interest will be recommended in a short list of firms (minimum of three) from which technical proposals will be requested.

Concurrent with this activity, the Project Manager will have finalized the detailed Scope of Work and updated the independent consultant cost estimate in anticipation of selection/ “short listing” by the Consultant Selection Committee.

19.2.7 Consultant Selection Committee

The Consultant Selection Committee is responsible for:

- Reviewing the justification for engaging consultant services

- Reviewing and approving the recommended “short list” of consultants submitting Expressions of Interest for Standard projects.
- Recommending each consultant selection, based on evaluation of the professional and technical qualifications necessary for satisfactory performance of the required services, to the Deputy Commissioner for concurrence and final approval.

The Bureau of Contract Administration Services is responsible for:

- Reviewing all draft Consultant Selection Committee packages.
- Concurring with or rejecting the Project Manager’s recommendation for selection or short list.
- Maintaining the integrity of the selection process.

The Consultant Selection Committee is currently comprised of the following:

- Assistant Commissioner Capital Program Management
- Assistant Commissioner External and Governmental Affairs
- Assistant Commissioner Finance and Administration
- Executive Director, Division of Aeronautics and Freight Systems
- Director, Division of Civil Rights/Affirmative Action
- Director, Capital Program Control and Support Services
- Director, Division of Procurement

The results of the Expressions of Interest ratings and ranking are compiled by the Agreement Coordinator with the Project Manager’s recommendation into the draft Consultant Selection Committee Package. The Program Manager is responsible for concurring with the Project Manager’s recommendation. The draft package is then reviewed by the Bureau of Contract Administration Services. After review and concurrence, the final package is then forwarded, under the signature of the Director, Division of Project Management to the Bureau of Professional Services, Secretary/ Moderator of the Consultant Selection Committee, for the Committee’s selection of a Consultant for Simple Projects, or for the Committee’s approval of the recommended “short list” for Standard Projects.

This Consultant Selection Committee Package must be submitted to the Bureau of Contract Administration Services eight (8) working days prior to the Consultant Selection Committee meeting which is held on the second and fourth Monday of each month. The Bureau of Contract Administration Services will represent the Division of Project Management at the Consultant Selection Committee meeting.

The Consultant Selection Committee transmittal memorandum will include a recommendation with appropriate justification as follows:

- For Simple Projects, a recommendation for selection with a description of the factors responsible for the distribution of Expressions of Interest rating scores and the significance of criteria weighting. Also include the purpose for the selection in relation to Departmental goals and policies for Capital Program implementation.

- For Standard Projects, recommending a “short list” of consultants (minimum of 3) based on the ranking of Expression of Interest, a description of the factors responsible for the distribution of Expressions of Interest rating scores, and other factors influencing the recommended cut-off score limiting inclusion in the recommended “short list”.
- For Standard Projects, a recommendation for selection based on the evaluation of Technical Proposals which includes a description of the significance of the evaluation criteria and distribution of scores. Also include the purpose for the selection in relation to Departmental goals and policies for Capital Program implementation.

Recommendation packages prepared by the Project Manager’s Agreement Coordinator must also include the following in each short listing and/or final selection package:

1. A brief description of the project. Include or attach discipline listing.
2. County(ies) affected by the project.
3. Scope of Work upon which Expressions of Interest were based.
4. An independent cost estimate breakdown, by task, providing full anticipated cost of project, even if total funding is not available at this time. Also include DBE goal, if applicable. If scope cannot be completely defined, provide the CSC with an anticipated minimum and maximum for the project.
5. List of Consulting Firms being considered for the job(s) (listed in ranking order -- high to low).
6. The name and title of the project manager from each of the consulting firms considered for selection.
7. The approved ASCE grade levels for each.
8. Consultant’s office location (by County) out of which the work will be performed, not Home Office location.
9. Funding source, year and Item Number.
10. Whether it is a Federal or State Project.
11. Summary of the Reviewers’ rating sheets showing the average rating for each evaluation criteria and the weighting of each rated criteria.
12. Copy of each evaluator’s rating sheet with a clear designation as to which unit, or Bureau, did the review.
13. Copies of at least the top ten ranked, including ties and those above recommended comparable line, consultant’s “Disclosure” forms for outstanding billable work with the Department. Please be sure the company’s name is clearly evident on each individual disclosure sheet. (Submit this for “Expressions of Interest” only. The CSC does not take the consultant’s outstanding work into account for technical proposals.)

The original and seven (7) copies of the above package are to be provided to the Secretary/ Moderator, Consultant Selection Committee; one (1) copy is to be provided to the Bureau of Contract Administration Services.

In addition, Bureau of Contract Administration Services is to be provided with one copy of each Expression of Interest or Technical Proposal for all “short listed” consultants to bring to the Consultant Selection Committee meeting.

Project Managers are expected to check the references of the firms being considered for selection. This information will be brought to consultant selection committee meetings and discussed as part of the criteria used in making selections. This may be accomplished by including this criteria as suggested in the sample EOI Rating Guide included as Attachment 6.

19.2.8 Technical Proposal

For Standard Projects, the Bureau of Professional Services will advise the Project Manager of the Consultant Selection Committee action approving the “short list”.

The Project Manager will be directed to request detailed Technical Proposals from a minimum of three consultants “short listed” for evaluation by the Technical Evaluation Committee previously established for the rating of Expressions of Interest.

The Agreement Coordinator will prepare and send under the direction of the Project Manager a solicitation package notification to all “short listed” firms which contains the following:

1. Requirement that all Technical Proposals be prepared in accordance with the Project Delivery Process Network logic, activities, and procedures described in this Manual.
2. Request for Technical Proposal to be submitted within 10 to 20 working days as determined by the Project Manager. Description of Technical Proposal requirements, generally limited to 25 pages with 15 additional pages of attachments, describing the consultant’s proposed manner of performing the services required for project(s), specific experiences related to the project or similar projects, as well as proposed innovative concepts or methods of project delivery. Provide in the request for Technical Proposal the evaluation criteria to be used for evaluation by the Technical Evaluation Committee.
3. Request for Fee Proposal prepared in accordance with the standard scope of services provided by the Project Manager, to be submitted in a separately sealed envelope concurrently with the Technical Proposal. Description of Fee Proposal requirements, generally stating the consultant’s proposed costs for providing the services described in the Technical Proposal. Fee Proposals are to include a breakdown of services by title, approved wage rate escalated to design mid-point, Direct Expenses and Interim Overhead rate as approved by the Department’s Bureau of Auditing. Proposed fixed fee is also to be included. All subconsultant costs are to be similarly broken down. Sealed Fee Proposals are to be forwarded to the Bureau of Contract Administration Services for safekeeping during final negotiations.
4. Agreement type to be used for this contract. This was previously determined in accordance with Sections 19.2.3 and 19.3.1.
5. Requirements for oral presentations to the Technical Evaluation Committee. Oral presentations should be scheduled during the Technical Proposal rating period so that the Technical Evaluation Committee can include oral presentation ratings in the final evaluation of all “short listed” consultants.

A meeting may be scheduled with all consultants during the Technical Proposal preparation time period so that consultant’s inquiries may be responded to. The solicitation notice should

also advise consultants of the presence and availability of any existing studies or plans of the project area.

Evaluation criteria for Technical Proposals must be developed by the Project Manager. Criteria previously developed for rating Expressions of Interest must be reevaluated and modified for use in the evaluation for Technical Proposals. Additional criteria may be based on, but not limited to, the following:

- Presentation of the Proposal
- Understanding of the Project Scope
- Innovation and ingenuity
- Experience on similar projects
- Key personnel assigned to the project
- EEO and MBE qualifications
- Additional project-specific criteria
- Oral presentation (if required)

Upon receipt of the Technical Proposals, the Project Manager's Agreement Coordinator will distribute a copy to each member of the Technical Evaluation Committee, with a blank rating form listing the selected evaluation criteria, relative weighting, and scoring ranges as determined by the Project Manager. A sample copy of such a form used for Technical Proposal Evaluation is included as Attachment 6.

The Technical Evaluation Committee will then evaluate and score all Technical Proposals within 5 to 10 working days and return completed rating forms to the Project Manager. The Project Manager's Agreement Coordinator will then compile all ratings and prepare a ranking summary form which is to be signed by each member of the Technical Evaluation Committee. The Project Manager should schedule and conduct a meeting of the Technical Evaluation Committee to discuss the Committee's recommendation.

The Project Manager's Agreement Coordinator then prepares the Consultant Selection Committee Package in accordance with Selection 19.2.7.

19.2.9 Selection Approval Process

The Moderator/Secretary of the Consultant Selection Committee assigns the Selection Number and Agreement Number and presents the package listing the Firms in order of ranking to the Consultant Selection Committee for selection.

The Consultant Selection Committee will then consider the recommendations presented to the Committee and select a Consultant based on Department Policy and comparative evaluations of the professional and technical qualifications necessary for satisfactory performance of the required services.

The moderator/secretary of the Consultant Selection Committee recommends the selected Consultant to the Deputy Commissioner for concurrence and final approval through the Executive Decision Document.

The Deputy Commissioner reviews the Consultant Selection Committee action and informs Professional Services of the approval or rejection of the selection. If disapproved, the Moderator/Secretary of the Consultant Selection Committee shall follow the directions given by the Deputy Commissioner.

The Bureau of Professional Services notifies the Bureau of Contract Administration Services of the outcome of the Consultant Selection. For Standard Projects, the selected consultant's Fee Proposal is then opened by the Bureau of Contract Administration Services and provided to the Project Manager.

The Project Manager is responsible for tracking the above activities and assisting the Bureau of Professional Services in expediting their completion.

19.2.10 Notification to Consultants

The Bureau of Contract Administration Services is responsible for providing notification of Consultant Selection Committee actions to all consultants submitting Expressions of Interest or Technical Proposals.

For Simple Projects, upon approval of the selection by the Deputy Commissioner:

1. The Project Manager is to notify the selected consultant, scheduling a Scope of Work meeting, and requesting a Technical and Fee Proposal to be submitted within 5 working days of the meeting. Details of the Scope of Work meeting are included in Section 19.3.2.
2. The Bureau of Contract Administration Services is to notify all remaining consultants submitting an Expression of Interest of their non-selection. Consultants who respond to the Project Manager requesting a review of the Expressions of Interest rating and ranking are to be referred to the Bureau of Contract Administration Services who is to provide only the following information:
 - The requesting consultant's own numerical score.
 - The maximum numerical score possible for the project.
 - The ranking of other firms but not the numerical scores.
 - A description of how the firm did in each evaluation category. The firm may not know their numerical score by category.
 - The names of the reviewers of the Expression of Interest and Technical Proposals shall not be given out. The contact person for the consultant inquiring as to the above information is only the Bureau of Contract Administration Services.

For Standard Projects, upon approval of the "short list" by the Consultant Selection Committee:

1. The Project Manager's Agreement Coordinator is to notify the "short listed" consultants by preparing and sending the solicitation package notification described in Section 19.2.8.

2. The Bureau of Contract Administration Services is to notify all remaining consultants submitting an Expression of Interest of their failure to be included in the “short list” as per the guidance provided above under Simple Projects, Item 2. Sealed Fee Proposals are to be retained by the Bureau of Contract Administration Services until successful negotiations are completed with the selected consultant.

For Standard Projects, upon approval of the selection by the Deputy Commissioner:

1. The Project Manager is to notify the selected consultant, scheduling the anticipated completion of the Department’s review of the Technical and Fee Proposals, and a tentative date for the one day negotiating session.
2. The Bureau of Contract Administration Services is to notify the remaining “short listed” consultants of their non-selection, advising that their sealed Fee Proposals will be retained by the Bureau of Contract Administration Services. At that time, if the consultant has provided a stamped, self-addressed envelope, the Fee Proposal will be returned. Otherwise, the consultant will be instructed regarding his ability to pick up the sealed Fee Proposal.

***Attachment 1 - Administration of Engineering and Design
Related Service Contracts***

SUBCHAPTER B - PAYMENT PROCEDURES

PART 172 - ADMINISTRATION OF ENGINEERING AND DESIGN RELATED SERVICE CONTRACTS

Subpart A - Procurement Procedures

Sec.	
172.1	Purpose and applicability.
172.3	Definitions.
172.5	General principles.
172.7	Methods of procurement.
172.9	Compensation.
172.11	Contract modifications.
172.13	Monitoring the contract work.
172.15	Alternate procedures.

Authority: 23 U.S.C. 112(b), 114(a), 302, 315, and 402; 49 CFR 1.48(b) and 18; 48 CFR 12 and 31; 41 U.S.C. 253 and 259; and Sec. 1060, Pub. L. 102-240, 105 Stat. 1914, 2003 (1991).

Source: 56 FR 19802, April 30, 1991, unless otherwise noted.

Sec. 172.1 Purpose and applicability.

- (a) To prescribe policies and procedures for contracting to ensure that a qualified consultant is obtained through an equitable selection process, and that prescribed work is properly accomplished in a timely manner, at a reasonable cost.
- (b) This regulation applies to all engineering and design related service contracts financed with Federal-aid highway funds. Agencies with approved Certification Acceptance Plans (CA), Secondary Road Plans (SRP), and/or Combined Road Plans (CRP) shall submit for the Federal Highway Administration's (FHWA) approval, procedures consistent with this regulation if they intend to utilize Federal-aid highway funds for any of the above contract types. The use of procedures codified in State statutes to select consultant firms is also acceptable. Other types of negotiated contracts should be administered under the requirements of the common grant management rule, 49 CFR 18.

Sec. 172.3 Definitions.

As used in this part:

Competitive negotiation. Any form of negotiations that utilizes (1) qualifications-based procedures complying with Title IX of the Federal Property and Administrative Services Act of 1949 (Pub. L. 92-582, 86 Stat. 1278 (1972)); (2) equivalent State qualifications-based procedures; or (3) a formal procedure permitted by State statute.

Consultant. The individual or firm providing engineering and design related services as a party to the contract.

Contracting agency. The State highway agency or local governmental agencies which have responsibility for the procurement.

Contract modification. An agreement modifying the existing contract, such as an agreement to accomplish work beyond the scope of the original contract.

Engineering and design services. Program management, construction management, feasibility studies, preliminary engineering, design, engineering, surveying, mapping, or architectural related services.

Extra work. Any services or actions required of the consultant above and beyond the obligations of the original or modified contract.

Fixed fee. A dollar amount established to cover the consultant's profit and business expenses not allocable to overhead.

Prerenegotiation audit. An examination of a consultant's records made in accordance with generally accepted auditing standards.

Private sector engineering and design firms. Any individual or private firm (including small business concerns and small businesses owned and controlled by socially and economically disadvantaged individuals as defined in 49 CFR part 23) contracting with a State to provide engineering and design services.

Scope of work. All services and actions required of the consultant by the obligations of the contract.

Sec. 172.5 General principles.

- (a) Need for consultant services in management roles. When Federal-aid highway funds participate in the contract, the contracting agency shall receive approval from the FHWA before hiring a consultant to act in a "management" role for the contracting agency. This concept should be limited to situations where unique or unusual circumstances exist and where the contracting agency has provided adequate justification to explain its reason for using a consultant in this role and the reason it cannot perform the work.
- (b) Written procedures. The contracting agency shall prepare written procedures for each method of procurement it proposes to utilize. These procedures and all revisions shall be approved by the FHWA and describe, as appropriate to the particular method of procurement, each step used:
 - (1) In preparing a scope of work, evaluation factors and cost estimate for selecting a consultant,
 - (2) In soliciting proposals from prospective consultants,

- (3) In the evaluation of proposals and the ranking/selection of a consultant,
 - (4) In negotiation of the reimbursement to be paid to the selected consultant,
 - (5) In monitoring the consultant's work and in preparing a consultant's performance evaluation when completed, and
 - (6) In determining the extent to which the consultant, who is responsible for the professional quality, technical accuracy, and coordination of services, may be reasonably liable for costs resulting from errors or deficiencies in design furnished under its contract.
- (c) Prenegotiation audits. The contracting agencies shall prepare prenegotiation audits to provide the necessary data to assure that the consultant has an acceptable accounting system, adequate and proper justification of the various rates charged to perform work, and is aware of the FHWA's cost eligibility and documentation requirements.
- (1) Prenegotiation audits and the resultant audit opinions are required for all contracts expected to exceed \$250,000 and for contracts of less than \$250,000 where:
 - (i) There is insufficient knowledge of the consultant's accounting system,
 - (ii) There is previous unfavorable experience regarding the reliability of the consultant's accounting system, or
 - (iii) The contract involves procurement of new equipment or supplies for which cost experience is lacking.
 - (2) The use of an independent audit, an audit performed by another State/Federal agency or an audit performed by another local governmental agency is acceptable if the information is current and of sufficient detail.
 - (3) Prenegotiation audits may be waived when sufficient audited consultant data is available to permit reasonable comparisons with the cost proposal.
- (d) State responsibility in local agency contracts. The State highway agency shall ensure that procurement actions by or through other State agencies or local agencies comply with this regulation. When Federal-aid highway funds participate in the contract, a local agency shall use the same procedures as used by the State to administer contracts not under CA, the SRP or the CRP. These contracts shall be subject to the prior approval of the State highway agency and the FHWA. Nothing herein shall be taken as relieving the State of its responsibility under Federal-aid highway laws and regulations for the work to be performed under any agreements entered into by a local agency.
- (e) Disadvantaged Business Enterprise (DBE) program. The contracting agency shall give consideration to DBE firms in the procurement of engineering and design related service contracts subject to 23 U.S.C. 112(b) (2).

- (f) Contractual responsibilities. The contracting agency or State highway agency shall be responsible for the settlement of all contractual/administrative issues. All settlements shall be reviewed and approved by the FHWA before Federal-aid highway funds can participate in any additional costs.

Sec. 172.7 Methods of procurement.

This regulation addresses three methods of procurement for the hiring of consultants to perform engineering and design related services specified in 23 U.S.C. 112(b) (2). These methods are: competitive negotiations which follows qualifications-based selection procedures or another selection procedure permitted by State statutes; small purchase procedures for small dollar value contracts; and non-competitive negotiations where specific conditions exist allowing negotiations to take place with a single firm.

- (a) Competitive negotiation. Competitive negotiation should be used for the selection of a consultant to provide engineering and design related services. The following procedures shall apply to the competitive negotiation process:
- (1) Scope, evaluation factors and cost estimate development. The contracting agency shall prepare:
 - (i) A scope of work before issuing a Request for Proposal that reflects a clear, accurate, and detailed description of the technical requirements for the services to be rendered and a list identifying the evaluation factors and their relative importance.
 - (ii) A detailed cost estimate, except for contracts awarded under small purchase procedures, with an appropriate breakdown of specific types of labor required, work hours, and an estimate of the consultant's fixed fee (considering the risk and complexity of the project) for use during negotiations.
 - (2) Soliciting proposals.
 - (i) Solicitation. The solicitation process shall be by advertisement (project, task or service), by mailing Requests for Proposals to certified/prequalified consultants, or any other method that ensures qualified in-State and out-of-State consultants are given the opportunity to be considered for award of a contract. It shall include a process where either:
 - (A) General interest is solicited for performing the work; responding consultants are ranked based on an evaluation of their qualification statements (submitted with their letters of interest or on file with the contracting agency); and proposals are requested from three or more firms starting with the highest ranked firm, or
 - (B) Proposals are solicited from all consultants that are interested in being considered for the work.

- (ii) Request for proposal. The request for proposal shall:
 - (A) Provide a description of the scope of work and identification of the evaluation factors including their relative importance as included in Paragraph (a) (1) of this section.
 - (B) Specify the method(s) of payment (lump sum, cost plus a fixed fee, cost per unit of work, or specific rate(s) of compensation).
 - (C) Request the submission of a proposal. Priced proposals may be used in the selection phase if allowed for under a State statute, but shall not be used in the selection phase when qualifications-based procedures are used.
 - (D) Allow sufficient time for the consultant to prepare and submit the proposal.

(3) Analysis and selection.

- (i) The consultants' proposals, containing the information required by Paragraph (a) (2) of this section, shall be evaluated and ranked by the contracting agency. This process shall include an analysis of the proposals in comparison to the evaluation factors. In addition, the consultants' applicable work experience, present workload, past performance, staffing capabilities, etc., should be evaluated and included in the ranking process.
- (ii) The award of engineering and design related services shall:
 - (A) Utilize qualifications-based procedures that either comply with the provisions of Title IX of the Federal Property and Administrative Services Act of 1949 (Pub. L. 92-582, 86 Stat. 1278 (1972), as amended) or utilize equivalent State qualifications-based procedures, or
 - (B) Utilize a formal procurement procedure that is established by State statute or is subsequently established by State statute.
- (iii) The contracting agency shall retain acceptable documentation of the proposal, evaluation and selection of the consultant. Records shall be maintained in accordance with the provisions of 49 CFR 18.42.

(4) Negotiation responsibilities.

- (i) The negotiator shall use all resources available to conduct effective negotiations, including but not limited to, the refined scope of work, the evaluation factors and their relative importance, the agency's cost estimate as required in Paragraph (a) (1) of this section, and the audit opinion issues as a result of the prenegotiation audit required in Sec. 172.5(c) of this part.

- (ii) The negotiator shall separately negotiate the dollar amounts for elements of cost and a fixed fee except for services normally negotiated on a per unit (includes costs and fees) cost.
 - (iii) The contracting agency shall maintain records of negotiations to document negotiation activities and set forth the resources considered by the negotiator. Records shall be maintained in accordance with the provisions of 49 CFR 18.42.
- (5) Execution of contracts. The proposed contract including the agreed upon cost figures shall be submitted to the FHWA for approval prior to its execution.
- (b) Small purchases. Contracting agencies may use small purchase procedures for the procurement of engineering and design related services when the contract cost does not exceed \$25,000.
- (c) Noncompetitive negotiation. Noncompetitive negotiation may be used to obtain engineering and design related services when the award of a contract is not feasible under small purchase or competitive negotiation procedures. The contracting agency shall submit justification and receive approval from the FHWA before using this form of contracting when Federal-aid highway funds are used in the contract.
 - (1) Circumstances under which a contract may be awarded by noncompetitive negotiation are limited to the following:
 - (i) The service is available only from a single source, or
 - (ii) There is an emergency which will not permit the time necessary to conduct competitive negotiations, or
 - (iii) After solicitation of a number of sources, competition is determined inadequate.
 - (2) The contracting agency shall comply with the following procedures for noncompetitive negotiations:
 - (i) Establish a process to determine when noncompetitive negotiation will be used,
 - (ii) Develop an adequate scope of work, evaluation factors and cost estimate as required in Paragraph (a) (1) of this section,
 - (iii) Conduct negotiations as required in Paragraph (a) (4) of this section, and
 - (iv) Submit the proposed contract and cost estimate to the FHWA for approval.

Sec. 172.9 Compensation.

- (a) Contracting agencies may establish cost principles for determining the reasonableness and allowability of costs. Federal reimbursement shall be limited to the Federal share of the costs allowable under the cost principles in 48 CFR 31 (Federal Acquisition Regulations). Any references included in 48 CFR 31 to other parts of 48 CFR do not apply to these contracts.
- (b) Applicable cost principles shall be referenced in each contractual document.
- (c) Methods of payment.
 - (1) The method of payment to compensate the consultant for all work required shall be set forth in the original contract and in any contract modifications thereto. It may be a single method for all work or may involve different methods for different elements of work. The methods of payment which shall be used are: lump sum, cost plus fixed fee, cost per unit of work or specific rates of compensation.
 - (2) Compensation based on cost plus a percentage of cost or percentage of construction cost shall not be used.
 - (3) When the method of payment is other than a lump sum, the contract shall specify a maximum amount payable which shall not be exceeded unless adjusted by a contract modification.
 - (4) The lump sum method shall not be used to compensate a consultant for construction engineering and inspection services except when the agency has established the extent, scope, complexity, character and duration of the work to be required to a degree that fair and reasonable compensation including a fixed fee can be determined.
- (d) Fixed fees.
 - (1) The determination of the amount of the fixed fee shall take into account the size, complexity, duration, and degree of risk involved in the work. The establishment of the fixed fee shall be project specific.
 - (2) Fixed fees normally range from 6 to 15 percent of the total direct and indirect cost. Subject to the approval of the FHWA, a fixed fee over 15 percent may be justified when exceptional circumstances exist.

Sec. 172.11 Contract modifications.

- (a) Contract modifications are required for any modification in the terms of the original contract that change the cost of the contract; significantly change the character, scope, complexity, or duration of the work; or significantly change the conditions under which the work is required to be performed.
- (b) A contract modification shall clearly outline the changes made and determine a method of compensation. FHWA approval of contract modifications shall be obtained prior to beginning the work except as discussed in Paragraph (d) of this section.

- (c) Overruns in the costs of the work shall not warrant an increase in the fixed fee portion of a cost plus fixed fee contract. Significant changes to the Scope of Work may require adjustment of the fixed fee portion in a cost plus fixed fee contract or in a lump sum contract.
- (d) In unusual circumstances, the consultant may be authorized to proceed with work prior to agreement on the amount of compensation and execution of the contract modification, provided the FHWA has previously approved the work and has concurred that additional compensation is warranted.

Sec. 172.13 Monitoring the contract work.

- (a) A public employee qualified to ensure that the work being pursued is complete, accurate and consistent with the terms, conditions, and specifications of the contract shall be in responsible charge of each contract or project. The employee's responsibilities include:
 - (1) Scheduling and attending progress meetings with the consultant and being involved in decisions leading to change orders or supplemental agreements,
 - (2) Being familiar with the qualifications and responsibilities of the consultant's staff,
 - (3) Visiting the project and/or consultant's offices on a frequency that is commensurate with the magnitude, complexity and type of work. This includes being aware of the day-to-day operations for Construction Engineering Service contracts, and
 - (4) Assuring that costs billed are consistent with the acceptability and progress of the consultant's work.
- (b) A final performance evaluation report, except for contracts awarded under small purchase procedures shall be prepared by the public employee in responsible charge of the contract and shall be submitted to the State highway agency's contracting office. The report should include, but not be limited to, an evaluation of such items as timely completion of work, conformance with contract cost and the quality of work. A copy of the report shall be sent to the firm for its review and/or comments and any written comments submitted to the contracting agency by the firm shall be attached to the final report.
- (c) Contracting agencies should include a clause in engineering contracts requiring the consultant to perform such additional work as may be necessary to correct errors in the work required under the contract without undue delays and without additional cost to the owner. However, in general, a consultant should not be held responsible for additional costs in subsequent related construction resulting from errors or omissions which are not a result of gross negligence or carelessness.

Sec. 172.15 Alternate procedures.

- (a) This is a process whereby the contracting agency can be authorized to substitute its contract review and approval actions for those of the FHWA. Before a contracting agency can operate under the alternate procedures concept, it shall submit procedures to the FHWA that include the following:
 - (1) A formal request to operate under the alternate procedure concept.
 - (2) The written procedures, as required by Sec. 172.5(b) of this part, it will follow, and
 - (3) A statement signed by the chief administrative officer of the contracting agency certifying that it will conform with its written procedures, the provisions of this regulation, and all applicable Federal and State laws and administrative requirements.
- (b) The alternate procedures and all revisions shall be approved by the FHWA.
- (c) The alternate procedures concept may apply to all Federal-aid highway funded contracts.
- (d) A copy of the original executed contract and all contract modifications shall be submitted to the FHWA.

Attachment 2 - Consultant Prequalifications

INSERT FORM PS-02
Pages 23-29

INSERT FORM PS-02
Pages 23-29

INSERT FORM PS-02
Pages 23-29

INSERT FORM PS-02
Pages 23-29

INSERT FORM PS-02
Pages 23-29

INSERT FORM PS-02
Pages 23-29

**NEW JERSEY DEPARTMENT OF TRANSPORTATION
DIVISION OF PROCUREMENT
BUREAU OF PROFESSIONAL SERVICES**

DEFINITIONS FOR TYPES OF PROJECTS FOR CONSULTANT SELECTION

Simple Projects - (any one of the following)

1. Any project, regardless of fee, involving an emergency situation or a constricted time frame.
2. Projects having an estimated fee of \$500,000 or less.
3. Projects having limited scopes of work such as: Resurfacing, Bridge Deck Patching, Construction and Bridge Inspection.

Standard Projects

Multi-disciplined projects, highly specialized projects, or projects having an estimated fee of more than \$500,000.

DEFINITIONS FOR PREQUALIFICATIONS OF CONSULTANTS

Simple Level A

Prequalification of Consultants for project types having an estimated fee less than \$500,000.

Routine Level B

Prequalification of Consultants for project types having an estimated fee of at least \$500,000 but less than \$1,500,000.

Complex Level C

Prequalification of Consultants for project types having an estimated fee of \$1,500,000 or more.

**CONSULTANT PREQUALIFICATION
EVALUATION CRITERIA**

DISCIPLINE:

	Level - A Simple	Level - B Routine	Level - C Complex
1. Staff Size by Expertise			
2. Number and Size of Similar Projects			
3. Years Experience of Firm			
4. Years Experience of Key Staff			
5. Equipment			
6. Other			

Attachment 3 - Expression of Interest Package

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MEMORANDUM

TO: Secretary/Moderator
Consultant Selection Committee

FROM: Manager, Bureau of Contract
Administration Services

DATE:

PHONE:

SUBJECT: Expressions of Interest
FY - 97 Task Order Preliminary Engineering Agreement
Cost Plus Fixed Fee

Please post the attached Expression of Interest letter on the Electronic Bulletin Board. The following information is in compliance with your memorandum of _____ stating Revisions Involving the Consultant Selection Process.

BRIEF DESCRIPTION

Preliminary Engineering "Scoping" for the Bureau of Project Scope Development (BPSD), which includes: identification of the problem, providing Community Involvement Support, analyzing existing data and obtaining additional background information as required, developing schemes and cost estimates, performing an Alternatives Analysis providing information to obtain a Level of Action Determination, and preparation of the Engineering Proposal for transfer to the Project Management Section.

This Agreement will provide BPSD with the capability to more efficiently meet the compressed project schedules for its own activities and will provide BPSD with the capability to assist others in their priority assignments, thus greatly contributing to the on-time project delivery which is critical to the Department's ability to deliver its Fiscal Year Capital Programs.

TYPE OF PROJECT/CONSULTANT COSTS

Funding for this Preliminary Engineering Agreement is limited to an amount not to exceed \$350,000.00; therefore, this project shall follow the Simple Project Consultant Selection Process.

FUNDING TYPE/SOURCE

Funding is from Item No. XXX of the 1997 Construction Program, 100% State.

DISCIPLINES AND CLASSIFICATION LEVEL

B-1, Bridge Design Level B

G-2, Geotechnical Design Level A

H-1, Highway Design Level C

T-1, Traffic Engineering Level B

H-3, Hydrology, Hydrogeology, Hydraulics Level A

GENERAL SCOPE OF SERVICES

TASK ORDER PRELIMINARY ENGINEERING AGREEMENT

- A. The CONSULTANT shall perform the following tasks:
1. Public Involvement, including:
 - a. Introductory Public Meetings (Public Information Centers).
 - b. Meetings with Local Officials.
 - c. Developing material (handouts and graphics) for meetings.
 - d. Providing 3D Computer Modeling of proposed schemes for presentation purposes.
 2. Topographic Mapping for base maps of the study area (development of alignment alternatives, environmental constraints, etc.). This work effort includes photogrammetry, and submittal of information on Intergraph Compatible compact disks.
 3. Traffic Data Collection, including:
 - a. Automatic Traffic Recorder Counts.
 - b. Manual Classification Counts.
 - c. Turning Movement Counts.
 - d. Accident Location Diagrams and Analysis.
 4. Traffic Studies to determine:
 - a. Major Origins and Destinations of corridor travels, existing and projected.
 - b. Existing and Future Traffic Volumes.
 - c. Levels of Service and Capacity Analysis.
 - d. Trip Generation/Trip Distribution, Modal Split Analysis
 5. Surveying: Field survey to establish horizontal and vertical contours on topographic mapping.
 6. Cost Estimates, including:
 - a. Right of Way.
 - b. Construction.

c. Utility Relocation.

7. Design, including:

a. Development of 1:1000 scale or larger Preliminary Design of Concepts.

b. Development of 1:300 scale Design Plans.

c. Preparation of Design Exceptions.

d. Development of Structural Designs.

Note: If Design is undertaken on CADD, all information provided shall be compatible with the Microstation Intergraph System.

8. Soil Boring Program, identifying subsurface conditions.

9. Hydraulic/Hydrologic Studies, identifying potential roadway and adjacent area flooding, and developing a means to mitigate.

10. Preparation of Related Reports, studies, maps, photographs, renderings/drawings, etc.

11. Alternatives Analysis, describing the various alternatives studied (based on proposed design schemes, traffic and transportation needs), including a recommendation to advance an alternative to final design, and reasons why others are rejected.

12. Computer Generated Data and Information, providing assistance in assessing and manipulating computer generated data and information.

EXPRESSION OF INTEREST FOR NJDOT SIMPLE PROJECTS

RE: (Name of Project)

Dear Consultant:

The NJDOT's competitive consultant selection process has yielded the attached list of consultant firms from which one may be selected to perform work associated with the above-referenced project.

Because your firm is on this list, you are invited to submit an Expression of Interest in the project which is described in the attached scope of work.

The following is (are) the discipline(s) and level of service for which firms must be prequalified with the NJDOT prior to responding to this Expression of Interest.

(List Disciplines and Level of Service)

Firms wanting to Joint Venture may do so by completing and returning the attached Statement of Joint Venture with the submission of their Expression of Interest. However, firms doing so must be prequalified with the NJDOT and by joint venture meet the discipline(s) and level of service(s) requirements for this project.

The Expression of Interest shall be no more than three typed, single sided, 210 by 297 mm sheets in length. Anything in excess of this page limitation will not be read or considered. The Expression of Interest must contain the following information:

1. A statement that your firm is interested in performing the work described in the attached scope.
2. The address of the office in which the work would be performed.
3. The name, title, and ASCE grade of the individual who would be assigned as your project manager.
4. A listing of work areas you would subcontract out to other firms, the names of the firms you would anticipate using as subconsultants, and the subconsultant project manager.
5. A narrative demonstrating your understanding of the project work and detailing your firm's particular ability to perform this work.
6. A statement certifying that the Consultant will make a good faith effort to meet the established goals.
7. Return the attached workload disclosure form completed and signed with your Expression of Interest. (DISCLOSURE FORM IS TO BE SEPARATE FROM ANY BOOKLET TYPE PROPOSAL TO FACILITATE COPYING)

8. The staff you propose in an Expression of Interest MUST be used in the performance of the project. When proposing same staffing in multiple Expressions of Interest, please disclose the following: A. Confirm all projects utilizing same staff will be completed on time (or) B. Selection for one project would mean voluntary withdrawal from consideration for other projects utilizing same staff.

Resumes of key personnel must be attached to the Expression of Interest. Each resume shall be a maximum of two, single sided, 210 by 297 mm sheets in length and should highlight education, professional credentials, and work performance on projects similar to that described in the attached scope. You must include the resume of the project manager, as well as the resume(s) of _____.

Your Expression of Interest must be received by the NJDOT no later than the close of business on (date) to be considered for evaluation. _____ copies of the Expression of Interest should be sent to:

(NJDOT Project Manager)
(Address)
(Telephone Number)

If your firm is not interested in performing this work for any reason, please notify the NJDOT Bureau of Contract Administration Services of this fact. If your firm does not respond to this request for an Expression of Interest by the due date set forth above, it will be concluded that you are not interested in performing the work for this project.

Expressions of Interest will be reviewed and evaluated. Attached is a copy of the Rating Sheet with weights indicated. Recommendations to the Consultant Selection Committee will be based on these evaluations, as well as your statement to meet established goals for this project.

[USE ONE OF THE TWO FOLLOWING PARAGRAPHS WITH REGARDS TO DBE GOALS:]

The Goal for this project is _____% (State 10%, Federal 16%)*. An updated DBE/WBE/MBE list may be obtained by contacting the Bureau of Professional Services at (609) 530-2452. Failure to meet the established goal may be cause for canceling negotiations with a selected firm and selecting a new firm.

(OR)

The Goal for this project is 0%. If you plan to subcontract any work, we encourage the use of Certified DBE/WBE/MBE. An updated listing may be obtained by contacting the Bureau of Professional Services at (609) 530-2452.

We anticipate that a consultant selection will be made for this project during the month of _____.

*Goals for State funded projects shall be a total of 10% minimum consisting of: WBE 3% minimum plus MBE 7% minimum. Goals for Federally funded projects shall be a total of 16% minimum consisting of: DBE's and/or WBE's to satisfy the goal.

Sincerely,

(NJDOT Project Manager)

Enclosures

c: Bureau of Professional Services

EXPRESSION OF INTEREST FOR NJDOT STANDARD PROJECTS

RE: (Name of Project)

Dear Consultant:

The NJDOT's competitive consultant selection process has yielded the attached list of consultant firms from which one may be selected to perform work associated with the above-referenced project.

Because your firm is on this list, you are invited to submit an Expression of Interest in the project which is described in the attached scope of work.

The following is (are) the discipline(s) and level of service for which firms must be prequalified with the NJDOT prior to responding to this Expression of Interest.

(List Disciplines and Level of Service)

Firms wanting to Joint Venture may do so by completing and returning the attached Statement of Joint Venture with the submission of their Expression of Interest. However, firms doing so must be prequalified with the NJDOT and by joint venture meet the discipline(s) and level of service(s) requirements for this projects.

The Expression of Interest shall be no more than three typed, single sided, 210 by 297 mm sheets in length. Anything in excess of this page limitation will not be read or considered. The Expression of Interest must contain the following information:

1. A statement that your firm is interested in performing the work described in the attached scope.
2. The address of the office in which the work would be performed.
3. The name, title, and ASCE grade of the individual who would be assigned as your project manager.
4. A listing of work areas you would subcontract out to other firms, the names of the firms you would anticipate using as subconsultants, and the subconsultant project manager.
5. A narrative demonstrating your understanding of the project work and detailing your firm's particular ability to perform this work.
6. A statement certifying that the Consultant will make a good faith effort to meet the established goals.
7. Return the attached workload disclosure form completed and signed with your Expression of Interest. (DISCLOSURE FORM IS TO BE SEPARATE FROM ANY BOOKLET TYPE PROPOSAL TO FACILITATE COPYING)

8. The staff you propose in an Expression of Interest MUST be used in the performance of the project. When proposing same staffing in multiple Expressions of Interest, please disclose the following: A. Confirm all projects utilizing same staff will be completed on time (or) B. Selection for one project would mean voluntary withdrawal from consideration for other projects utilizing same staff.

Resumes of key personnel must be attached to the Expression of Interest. Each resume shall be a maximum of two, single sided, 210 by 297 mm sheets in length and should highlight education, professional credentials, and work performance on projects similar to that described in the attached scope. You must include the resume of the project manager, as well as the resume(s) of _____.

Your Expression of Interest must be received by the NJDOT no later than the close of business on (date) to be considered for evaluation. _____ copies of the Expression of Interest should be sent to:

(NJDOT Project Manager)
(Address)
(Telephone Number)

If your firm is not interested in performing this work for any reason, please notify the NJDOT Project Manager of this fact. If your firm does not respond to this request for an Expression of Interest by the due date set forth above, it will be concluded that you are not interested in performing the work for this project.

Expressions of Interest will be reviewed and evaluated. Attached is a copy of the Rating Sheet with weights indicated. Recommendations to the Consultant Selection Committee will be based on these evaluations, as well as your statement to meet established goals for this project.

[USE ONE OF THE TWO FOLLOWING PARAGRAPHS WITH REGARDS TO DBE GOALS:]

The Goal for this project is _____% (State 10%, Federal 16%)*. An updated DBE/WBE/MBE list may be obtained by contacting the Bureau of Professional Services at (609) 530-2452. Failure to meet the established goal may be cause for canceling negotiations with a selected firm and selecting a new firm.

(OR)

The Goal for this project is 0%. If you plan to subcontract any work, we encourage the use of Certified DBE/WBE/MBE. An updated listing may be obtained by contacting the Bureau of Professional Services at (609) 530-2452.

We anticipate that a consultant selection will be made for this project during the month of _____.

(OPTIONAL: A presentation will be made on (date, time and location) to discuss the scope of work for this project in greater detail for any interested party.)

If you have any questions regarding any aspect of this project, you may call the NJDOT Project Manager identified above.

*Goals for State funded projects shall be a total of 10% minimum consisting of: WBE 3% minimum plus MDB 7% minimum. Goals for Federally funded projects shall be a total of 16% minimum consisting of: DBE's and/or WBE's to satisfy the goal.

Sincerely,

(NJDOT Project Manager)

Enclosures

c: Bureau of Professional Services

EXPRESSION OF INTEREST

RATING FORM

CRITERIA	WEIGHT*	POINTS*	TOTAL
1) Location		x	=
2) Project Manager		x	=
3) Key Staff		x	=
4) Understanding of Project		x	=
5) Particular Ability to Perform Work (Including Prior Experience and Appropriateness and Ability of Subconsultant)		x	=
6) Special Innovative Concepts or Benefits to Bring to the Project		x	=
7) Other _____		x	=

GRAND TOTAL _____

*USE WHOLE NUMBERS ONLY AS INDICATED BELOW.

POINTS	High	=	5	Weighting -	Most Important	=	5
			4				4
			3				3
			2				2
	Low	=	1		Least Important	=	1

TO ALL CONSULTANTS

FIRM NAME _____

Re: Workload Disclosure Form

PROJECT DESCRIPTION _____

Dear Consultant:

The purpose of this form is to disclose the outstanding work your firm has with the Department. The outstanding work is defined as all work your firm anticipates to bill the Department in the next 18 months. Do not include work to be performed by your Subconsultants. However, work your firm has as a Subconsultant should be included. Include recent Consultant Selections (unexecuted Agreements), all executed Agreements, Letters of Intent and Modifications with outstanding work and Modifications that under normal conditions should be executed and billable in the next 18 months.

The Consultant Selection Committee will only consider workload at the time of reviewing this Expression of Interest (EOI) for selection and or short listing. If this project requires a technical proposal (Standard projects only), workload will not be considered again.

The undersigned certifies that the foregoing information regarding outstanding work is true and accurate as of _____. I am aware that if any of the foregoing information provided herein is willfully false, I am subject to punishment as provided by law.

Certification: _____
Signature of Principal of the Firm Print Principals Name

Please complete this form and submit as a separate sheet, **NOT** bound with your EOI submission.

List each Agreement and Modification separately.

DISCLOSURE

TOTAL OUTSTANDING WORK
ANTICIPATED TO BE BILLED/INVOICED
FOR THE NEXT 18 MONTHS FROM THE
DATE OF THIS EXPRESSION OF
INTEREST LETTER

TOTAL OUTSTANDING WORK
NOT ANTICIPATED TO BE
BILLED/INVOICED FOR THE
NEXT 18 MONTHS (check
with Department Project Managers
for durations)

AGREE# MOD# DESCRP. \$ _____

AGREE# MOD# DESCRP. \$ _____

TOTAL \$ _____

TOTAL \$ _____

STATEMENT OF JOINT VENTURE

STATE OF NEW JERSEY)
) SS:
COUNTY OF)

We, the undersigned, being duly sworn according to law, upon our respective oaths depose and say that:

1. Each of the following named Consultants are pre-qualified with the New Jersey Department of Transportation to respond to Expressions of Interest for work of that Department.

(A) _____; _____; _____;
 () Individual () Partnership () Corporation

(B) _____; _____; _____;
 () Individual () Partnership () Corporation

(C) _____; _____; _____;
 () Individual () Partnership () Corporation

2. The Consultants listed in Paragraph 1, above, have entered into a joint venture agreement for the special purpose of carrying on the work hereafter described in Paragraph 5 of this Statement.

3. Under the terms of the joint venture agreement, the assets of each of the Consultants named in Paragraph 1, above, will be available for the performance of the work of the joint venture and for the satisfaction of any obligation or liability incurred by the joint venture. If any of the Consultants named above is a partnership, the assets of the individual members of such partnership will also be available to satisfy any obligations or liability of the joint venture.

4. This statement of joint venture is executed so that the named Consultants may under such joint venture, compete for the work described in Paragraph 5 of this Statement. If the joint venture is selected to perform the work, the contract for the work shall be executed by any person authorized to bind any Consultant to this joint venture, and when so executed shall bind this joint venture and each and every Consultant named herein, severally and jointly.

5. The work for which this joint venture has been entered into is identified as:

6. Each person signing this Statement of Joint Venture is duly authorized and empowered to execute this Statement in the name of and on behalf of the Consultant as stated in the attached Authorization of Signature, and each person signing this Statement and each Consultant represents under penalty of law that the facts set forth herein are true and correct to the best their knowledge, information, and belief.

Subscribed and Sworn to before me
this _____ Day of
_____, 19____

(A) _____
(Name of Consultant)

By _____
(Type or Print)

Subscribed and Sworn to before me
this _____ Day of
_____, 19____

(B) _____
(Name of Consultant)

By _____
(Type or Print)

Subscribed and Sworn to before me
this _____ Day of
_____, 19____

(C) _____
(Name of Consultant)

By _____
(Type or Print)

TO BE EXECUTED BY EACH JOINT VENTURER

**SIGNATURE AUTHORIZATION
STATEMENT OF JOINT VENTURE**

(A) _____ hereby certifies that
(Name of Consultant)

_____ has been and is hereby empowered
(Name of Representative)

to sign the foregoing Statement of Joint Venture as the

authorized representative of _____ for the special
(Name of Consultant)

purpose therein expressed.

ATTEST _____
(Corporate Secretary, (Seal necessary if Corporation) (if Corporation))

(B) _____ hereby certifies that
(Name of Consultant)

_____ has been and is hereby empowered
(Name of Representative)

to sign the foregoing Statement of Joint Venture as the

authorized representative of _____ for the special
(Name of Consultant)

purpose therein expressed.

ATTEST _____
(Corporate Secretary, (Seal necessary if Corporation) (if Corporation))

(C) _____ hereby certifies that
(Name of Consultant)

_____ has been and is hereby empowered
(Name of Representative)

to sign the foregoing Statement of Joint Venture as the

authorized representative of _____ for the special
(Name of Consultant)
purpose therein expressed.

ATTEST _____
(Corporate Secretary, (Seal necessary if Corporation) (if Corporation))

Attachment 4 - Consultant Selection Tracking Form

CONSULTANT SELECTION/AGREEMENT TRACKING FORM: STANDARD PROJECTS

Instructions: The Project Manager completes the scheduled completion dates upon finalizing the request. These calculations are based on the number of workdays from the third column. The responsible department/individual will complete the remaining information, including actual completion date, and place appropriate comments that impact the schedule.

Dept.	Activity Completed	# of Workdays (Goal)	Scheduled Completion Date	Actual Completion Date	Comments	Signature
Proj. Manager	Finalizes request					
Prof. Serv.	Solicits EOI	1				
Proj. Manager	All responses received	* 5-10				
Tech. Eval. Committee	Reviews and ranks all EOI's	10				
Director, Project Management A/C-CPM	Review and evaluate EOI - recommends shortlist	3				
Proj. Manager	Sends out RFP	1				
Proj. Manager	RFP's received	* 10-20				
Tech. Eval. Committee	Evaluates all RFP's	* 5-10				
Consult. Selec. Committee	Select a consultant	11				
Deputy Commissioner	Approves selection	2				
Proj. Manager	Completes negotiations	12				
Proj. Manager	Finalizes draft agreement	16				
Proj. Manager	Executes Final Agreement/ NTP	5				
TOTAL		90-110				

* as determined by the Project Manager

CONSULTANT SELECTION/AGREEMENT TRACKING FORM: SIMPLE PROJECTS

Instructions: The Project Manager completes the scheduled completion dates upon finalizing the request. These calculations are based on the number of workdays from the third column. The responsible department/individual will complete the remaining information, including actual completion date, and place appropriate comments that impact the schedule.

Dept.	Activity Completed	# of Workdays (Goal)	Scheduled Completion Date	Actual Completion Date	Comments	Signature
Proj. Manager	Finalizes request					
Prof. Serv.	Solicits EOI	1				
Proj. Manager	All responses received	5-10				
Proj. Manager	Completes, scores and ranks EOI's	10				
Consult. Selec. Committee	Recommends a consultant	1				
Deputy Commissioner	Approves the contract	2				
Proj. Manager	Receive technical and fee proposal	10-20				
Proj. Manager	Negotiating completed	10				
Proj. Manager	Finalize Draft Agreement	16				
Proj. Manager	Execute Final Agreement/ NTP	5				
TOTAL		70-85				

Attachment 5 - Expression of Interest Rating Guide

STANDARD RATING CRITERIA AND WEIGHTS

EXPRESSION OF INTEREST FOR DESIGN PROJECTS

DESIGN PROJECTS
EXPRESSION OF INTEREST

RATING FORM

CRITERIA	WEIGHT	POINTS*	TOTAL
1) Project Manager	5	x	=
2) Key Staff/Discipline Leaders including assignment of DBE work	4	x	=
3) Project Understanding	4	x	=
4) Past Performance (evaluated by checking references)	3	x	=
5) Resource Availability	2	x	=
6) Special Innovative Concepts or Benefits to Bring to the Project	2	x	=
7) Location	1	x	=
GRAND TOTAL			_____

*USE WHOLE NUMBERS ONLY AS INDICATED BELOW.

POINTS	High	=	5	Weighting -	Most Important	=	5
			4				4
			3				3
			2				2
	Low	=	1		Least Important	=	1

STANDARD INFORMATION TABLES
TO BE SUBMITTED WITH EXPRESSIONS OF INTEREST

PAST PERFORMANCE OF THE FIRM

List below a minimum of 3, maximum of 5 projects completed within the past 2 years that are similar to the proposed project.

PROJECT	TYPE	CLIENT	CLIENT CONTACT (Name and Phone #)	CONSULTANT'S Project Manager	DESIGN COST	CONSTRUCTION COST (include Utilities)

CURRENT PERFORMANCE OF THE PROJECT MANAGER

List below a minimum of 3, maximum of 5 current or recently completed projects that are similar to the proposed project.

PROJECT	TYPE	CLIENT	CLIENT CONTACT (Name and Phone #)	ROLE OF THE PROPOSED PM	DESIGN COST	ESTIMATED CONSTRUCTION COST

EOI RATING GUIDE

This document is intended as a guide and was developed for broad-based application to Expressions of Interest submitted for design projects. It is realized that project specifics may dictate the need to alter the guidelines. In such a case, the Project Manager should revise the guidelines prior to review of the EOIs and distribute the revised guidelines to all reviewers.

EOI RATING GUIDE

Evaluation Category: Project Manager

Instructions: Assign a '1' if criteria is met, a '0' if it is not. Sum the points to arrive at the score for the category. Criteria that rely on past performance will be evaluated by checking references. Contact will be made by the Department Project Manager and information shared with the other raters.

CRITERIA

SCORE (1 - yes 0 - no)

Served as Project Manager on similar projects (any agency)

Served as Project Manager on similar projects with NJDOT

Delivered past projects on time and on budget

Demonstrated communication and leadership skills on past or current projects.

Possesses relevant technical skills

TOTAL _____

EOI RATING GUIDE

Evaluation Category: Key Staff and Discipline Leaders, including assignment of DBE work

Instructions: Average rating for all categories governs

Rating	Experience in Specific Work	Technical Expertise	Team Approach DBE Assignment
5	4 or more active or completed similar projects in last 5 years at NJDOT for key personnel in all major disciplines.	All key staff with appropriate licenses and degrees in specific fields. Technical leadership and innovation evidenced.	Coordinated team approach proposed for project delivery. DBE assignment well integrated.
4	2 or 3 active or completed similar projects in last 5 years at NJDOT for key personnel in all major disciplines.	All key staff with appropriate licenses and keeps current in field. Average technical expertise in project disciplines.	DBE assignments addressed, but not coordinated in team approach.
3	1 active or completed similar project in last 5 years at NJDOT.	Minimal technical expertise as required by prequalification.	DBE assignments addressed, but disjointed without team approach.
2	Similar work for other agencies.	N/A	Anticipates but does not specifically assign DBE work.
1	No similar experience	N//A	DBE assignment not addressed.

EOI RATING GUIDE

Evaluation Category: Project Understanding

Instructions: Assign points as follows:

Rating	Description
5	Demonstrates thorough and comprehensive understanding of scope presented in request for EOI. Identifies potential problems and describes how they will be resolved. Comments on key components of this project, i.e. Permits, ROW, Landscape, Traffic Control, etc.
4	Demonstrates thorough understanding and expands on scope presented in request for EOI.
3	Demonstrates basic understanding of scope given in request for EOI.
2	Only brief reiterates scope. Project understanding cannot be determined by content of Expression of Interest.
1	The EOI is not project specific, providing no evidence of project understanding. Also , this rating would apply for Expressions of Interest that include assumptions which are clearly inappropriate for the project scope.

EOI RATING GUIDE

Evaluation Category: Past Performance

Instructions: For consistency, and in order to minimize the significant amount of telephone contacts involved in this section of the evaluation, the Project Manager shall prepare this “Past Performance” rating section.

The scores prepared by the Project Manager shall be applied across the board to all of the raters’ score sheets for this section.

The Project Manager shall score each consultant, based on the conversation with each reference, and average out the scores to provide an overall score for that consultant. For each interview, the consultant is to be scored according to their average score for schedule, quality, budget and guidance. For example, if the consultant required less than average guidance, acceptable quality plans, and met the schedule, but was less than acceptable with respect to budget (i.e., frequent minor overruns), then the consultant score for that particular interview would be 3 - “Acceptable”.

If a listed reference declines to provide a reference, do not count this in the scoring and proceed to the next listed reference. A minimum of three (3) references must be contacted.

Rating	Description
5	<i>Significantly Above Standard.</i> Documents prepared were of highest quality, delivered ahead of schedule, under budget, and with minimal guidance from agency project management.
4	<i>Above Standard.</i> Documents prepared were generally of high quality, delivered on or ahead of schedule, within or under budget, and with less than average guidance from agency project management.
3	<i>Acceptable.</i> Documents prepared were of acceptable quality, delivered on schedule, within budget, and with average guidance from agency project management.
2	<i>Acceptable with Reservations.</i> Documents prepared were of minimal quality, and exhibited failure to implement quality control at consultant; delivered late; and/or budgets exceeded, and with more than average guidance from agency project management.
1	<i>Marginally Acceptable.</i> Documents prepared were of poor quality, majority of documents delivered late, budget exceeded, and with guidance often required from agency project management.
0	<i>Unacceptable.</i> Poor performance by consultant resulted in removal from project due to failure to perform.

EOI RATING GUIDE

Evaluation Category: Resource Availability

Instructions: Based on the *Commitments of Project Manager and Key Staff* form required in the EOI, assign a score of 1, 3, or 5 to the proposed Project Manager and the Key Staff in accordance with the criteria below.

Then average the scores to provide a total *Resource Availability* rating.

Rating	Description
5	Commitment by consultant evidenced by proposed dedication of Project Manager and Key Staff commensurate with the project scope.
3	Relationship between project needs and minimum commitment of resources required for project delivery is insufficient for evaluation purposes. Rate all consultants 3.
1	Consultant is unwilling to commit Project Manager and Key Staff warranted by project scope.

EOI RATING GUIDE

Evaluation Category: Special Innovative Concepts or Benefits to Bring to the Project

Instructions: Based on the contents of each consultant's EOI, assign a score of 1, 3, or 5 to this evaluation category.

Rating	Description
5	Consultant offers special innovative concepts or benefits to bring to the project that have the potential for significant cost and schedule reductions.
3	Consultant offers special innovative concepts or benefits to bring to the project, however, the potential for significant cost and schedule reductions is uncertain.
1	Consultant offers no special innovative concepts or benefits to bring to the project.

EOI RATING GUIDE

Evaluation Category: Location

Instructions: The Project Manager is to determine based on project specifics if the location criteria are to be applied to the location of the consultant's office with respect to the Department's offices, the project site or both. Then the following will be used to assign points. Location criteria is only to be used if applicable to project delivery.

Rating	Description
5	Consultant's office is within 1-50 kilometers of the NJDOT office and/or their office is within that same amount of miles of the project site.
4	Consultant's office is within 51-100 kilometers of the NJDOT office and/or their office is within that same amount of miles of the project site.
3	Consultant's office is within 101-150 kilometers of the NJDOT office and/or their office is within that same amount of miles of the project site.
2	Consultant's office is within 151-250 kilometers of the NJDOT office and/or their office is within that same amount of miles of the project site.
1	Consultant's office is beyond 250 kilometers of the NJDOT office and, beyond 250 kilometers of the project location.

Attachment 6 - Technical Proposal Evaluation Form

Average Score by Criteria

No.	Criteria	Weight	Consultant Score			
			1	2	3	4
1	Understanding of Project Work	4	16.00	16.00	12.00	13.00
2	Innovative and Ingenuity Applied to Project	5	22.50	20.00	15.00	16.25
3	Team Organization, Project Management	3	12.00	12.00	9.00	9.75
4	Experience, General and Specific	3	13.50	13.50	10.50	11.25
5	Ability to Perform Work, Scheduling	3	12.00	12.00	9.75	11.25
6	Location of Office	1	4.00	3.75	3.75	2.75
7	Support of DBE Goals	1	3.75	3.25	3.75	3.75
	TOTAL		83.75	80.50	63.75	68.00

Points: 5 = Outstanding

4 = Excellent

3 = Good

2 = Fair

1 = Poor

Individual Category Score = Weight x Points

Maximum Possible Score = 100

19.3 Consultant Agreement

Upon completion of the qualifications-based selection process described in Section 19.2, the Project Manager will continue the process until such time as the Consultant Agreement is fully executed and a "Notice to Proceed" is issued.

Primary tasks described in this section are to be conducted concurrently where indicated. The Project Manager's Agreement Coordinator is to continue tracking and monitoring the remaining agreement activities utilizing the tracking form included in Attachment 5.

19.3.1 Agreement Types

The Project Manager shall determine the type of Agreement which best suits the project. A preliminary determination of Agreement type should have been included in the Request for Professional Services described in Section 19.2.3. The Agreement type described below is provided to "short listed" consultants in the solicitation package notification for Standard Projects in accordance with Section 19.2.8, and to the selected consultant for simple projects at the Scope of Work meeting described in Section 19.3.2.

One of the following three (3) Agreement types shall be selected:

1. Cost Plus Agreement

- Definition

The Cost Plus Agreement is a form of agreement which reimburses the Consultant for his costs (salary, overhead, direct expenses), in addition to a predetermined amount as a Net Fee.

- Reason for Selection

The Agreement is required when the State cannot precisely define at the time of negotiations the extent, scope, complexity, character or duration of the study, or cannot justify by the review of the proposal the Consultant's ability to do so.

- Agreement Terms

The State will reimburse the Consultant for the following:

- (a) Salary Costs
- (b) Overhead
- (c) Direct Expenses
- (d) A Net Fee (profit)

Ceilings will be established for (a), (b), and (c) above.

The Fee, Item (d), is a fixed amount and does not vary with costs. However, the Fee can be adjusted if an increase in the Scope of Work is warranted.

The Consultant's proposal should include a detailed breakdown of items (a), (b), and (c) above.

When there has been a change in the scope, complexity, duration, etc. of the services to be performed, or additional work is requested, the State will execute a Contract Modification to compensate the Consultant for his work.

2. Fixed Price Agreement (Lump Sum)

- Definition

The Fixed Price Agreement is a direct development from the Cost Plus Agreement. It reimburses the Consultant for his/her costs (salary, overhead, direct expenses), and a Net Fee, payable as a Fixed Price (No Cost Adjustments) over the life of the Agreement.

- Reason for Selection

The Agreement is workable only if the State can precisely define at the time of negotiations the extent, scope complexity, character and duration of study and the Consultant can justify a proposal of the same.

- Agreement Terms

The State will pay the Consultant a Fixed Price amount adjusted over the project estimated life of the Agreement based on the following:

- (a) Salary Costs
- (b) Overhead
- (c) Direct Expenses
- (d) A Net Fee (profit)

All of the above are compiled based on estimated duration of the services.

The Consultant's proposal should include a detailed breakdown of items (a), (b), and (c) above. The Consultant assumes full responsibility for all cost over the Fixed Price.

Under the terms of a Fixed Price Agreement, Contract Modifications are executed only for Extra Work as specified by the State. Extra Work is work outside the scope or services stated in the Agreement.

3. Salary Cost Times a Multiplier, Plus Direct Non-Salary Expense Agreement

This agreement combines some of the advantages and disadvantages of both the Cost Plus and Fixed Price Agreements. **This type of agreement is not eligible for Federal participation.**

- (a) Under this Agreement the Profit and Overhead (the Multiplier) are fixed for the

life of the Agreement.

- (b) If the Agreement is Modified for Extra or Additional Work tasks, no matter how difficult or how simplified the new task is, the Multiplier is not increased or decreased, it is fixed for the life of the Agreement.
- (c) If the firm becomes more efficient or inefficient in controlling administrative costs, the Overhead remains unchanged, it is fixed for the life of the Agreement.
- (d) Thus the Multiplier, determined at the outset, remains fixed for all work and services.

A comparison of Cost Plus Agreements with Fixed Price (Lump Sum) Agreements is provided below:

Agreement Criteria	Fixed Price (Lump Sum)	Cost Plus
Degree of risk for the actual cost of performance	The Department will only pay the agreed upon price when the work is completed regardless of the actual cost. If the actual cost is greater than the Agreement price, the Consultant bears the entire loss. If the actual cost is less than the price, the Consultant has a larger profit.	The Department reimburses the Consultant for all allowable costs incurred during the performance of the Agreement.
Project Scope	The extent, scope, complexity, character and duration of the project must be well defined	Should be used when the extent, scope, complexity, duration or character cannot be fully determined.
Project Price	Negotiated; but greater burden placed on price negotiation since price not subject to adjustment.	Negotiated; but considered an estimate subject to adjustment based on actual cost.
Cost Allowability Criteria	Federal cost principles and Department policies and regulations.	Federal cost principles and Department policies and regulations.
Cost Basis Approval Required	Yes	Yes
Payment Methodology	Percentage of completion applied to fixed price.	Reimbursement of actual costs incurred.
Record Keeping/Audit Requirements	The Consultant must maintain detailed accounting records that comply with Federal and Department regulations.	The Consultant must maintain detailed accounting records that comply with Federal and Department regulations. Interim and final audits will be completed to determine actual allowable costs.
Allowable Costs	Negotiated price must be based on actual allowable costs as defined by the Federal cost principles and Department policies. Costs that would not be paid on a cost plus	Costs will be defined by the Federal cost principles and Department policies.

	agreement cannot be included in the fixed price Agreement.	
Out of Pocket Expenses	Can be included in the fixed price amount or paid on an actual cost basis in addition to the fixed price amount. In either case, direct expenses must be based on actual allowable costs.	Reimbursement for allowable costs.

19.3.2 Pre-Proposal Meeting

The Project Manager is to conduct a Pre-Proposal meeting for all Simple Projects as specified in the selected consultant's notification.

The Project Manager, by this time, should have completed the detailed scope of work and independent cost estimate for the Consultant's services. The Project Manager's Agreement Coordinator should have obtained the specific "Model Agreement" from Professional Services, and should have obtained cost information (allowable direct expenses, interim overhead rate, etc.) from Auditing.

The Project Manager shall conduct the meeting with the Consultant to review the scope of work and the various items pertaining to contract administration, and request that a Technical/Fee Proposal be submitted within 10 working days of that meeting. The Bureau of Contract Administration Services should be represented by the Agreement Coordinator.

The items to be discussed are as follows:

- Scope of work (review thoroughly with the Consultant and resolve any questions or issues).
- All proposals are to be prepared in accordance with the Project Delivery Process Network logic, activities, and procedures described in this Manual. A standard scope of services broken down by activity will be provided by the Project Manager.
- The agreement (review the conditions of the specified type of agreement which best fits the type of project to be undertaken [Cost Plus Fixed Price, Cost Times a Multiplier]).
- Provide the firm's allowable direct expenses and the firm's interim overhead rate (this information is obtained from the Bureau of Auditing).
- Inform the consultant to use only Department approved titles and wage rates, and the rates must be for the most recent quarter.

19.3.3 Technical and Fee Proposal Evaluation

The Project Manager shall initiate the evaluation of Technical and Fee Proposals as follows:

- For Standard Projects, immediately upon approval of the selection by the Deputy Commissioner.

- For Simple Projects, immediately upon receipt of the Technical/Fee Proposal from the selected Consultant (within 10 working days of Pre-Proposal meeting).

In order to successfully negotiate a final proposal which meets the Department's goals for cost, quality, and schedule, the Project Manager must have performed a detailed review of Technical and Fee Proposals. The Project Manager's Agreement Coordinator is responsible for soliciting and compiling all review comments. The following activities must be conducted concurrently so that the evaluation will be completed within 10 working days:

1. Task Evaluation - The proposal is to be evaluated to ensure that all tasks necessary for project delivery are included in the scope of services to be provided. Tasks which may be unnecessary, or which may be performed more efficiently by in-house staff, are to be eliminated. The following sources should be consulted when performing the task evaluation:
 - Detailed Scope of Work developed by the Project Manager and provided to the Consultant for the development of the Technical/Fee Proposal.
 - Scope Development Package.
 - Quality Control Guidelines for Designers, Section 6.1, specifically those Design Submission guidelines applicable to the project.
 - The Design Coordinator assigned to the project, as well as other in-house functional units such as the Bureau of Structural Engineering, to provide technical assistance.
2. Schedule Evaluation - The Consultant's Design Schedule should be evaluated against the project's Baseline Design Schedule to ensure project delivery in accordance with Department goals. The Baseline Design Schedule is developed by the Project Manager towards the conclusion of Final Scope Development and must be completed prior to receipt of the Consultant's Technical Proposal.
3. Cost Evaluation - The Consultant's Fee Proposal is to be evaluated for total cost, detailed cost analysis, and cost accounting principles approved by the Bureau of Auditing.

The Consultant's total proposed cost is to be evaluated for conformance to:

- The Project Manager's independent cost estimate initially developed by the Bureau of Program Support Services, Cost Control Unit for budget development.
- The project's Initial Baseline Budget, previously recommended for approval by the Project Manager.
- The Department's Soft Cost Target goal.

A detailed cost analysis must then be performed by the Project Manager's Agreement Coordinator comparing the costs associated with each task by evaluating man-hour

estimates, wage rates, and direct expenses. The proposed overhead rate is to be noted for negotiation purposes. The basis for this cost analysis will be the detailed independent cost estimate previously prepared for the Project Manager by the Bureau of Program Support Services in accordance with Section 3.4. The Consultant's Proposed Fixed Fee is compared with the Department's Calculated Fixed Fee in accordance with Attachment 7.

The Bureau of Auditing will evaluate the cost proposal and produce an Advisory Report approving wage rates, interim overhead, and direct expenses.

19.3.4 Final Proposal Negotiation

The most important factor in successful negotiations is preparation by the Project Manager. A detailed evaluation of the Technical and Fee Proposal will identify:

- misunderstandings concerning tasks to be performed.
- variations in estimates of man-hour effort required to complete agreed upon tasks.
- alternate staffing and associated wage rates proposed.
- additional overhead costs associated with the particular firm.
- excessive Fixed Fee requested.
- excessive design schedule duration.

Negotiation tactics will vary based on the agreement type and any divergence identified in the proposal evaluation, however, all negotiations must be documented by the Project Manager. Therefore, the following steps shall be taken:

1. Upon completion of the Technical and Fee Proposal evaluation described in Section 19.3.3, the Project Manager's Agreement Coordinator is to prepare a summary of the evaluation, which may reference a marked-up proposal for substantial detailed comments.
2. Minor Proposal comments may be transmitted to the Consultant via facsimile or other appropriate means, with the Consultant to make revisions and submit a Final Proposal (5 copies) immediately upon receipt.
3. Proposal comments requiring negotiation are to be submitted in writing to the Consultant in advance of the one day negotiating session which was previously scheduled for the conclusion of the proposal review period. Inform the Consultant that the Department's preference is for negotiations to be completed that same day.

4. Conduct the negotiating session by first reaching agreement on the specific tasks to be performed by the Consultant. The design schedule should concurrently be discussed if required. Cost negotiations cannot be successful where disagreement over tasks exists.
5. Tactics for cost negotiations should be developed based on the agreement type and the results of the cost evaluation performed in accordance with Section 19.3.3. Successful cost negotiations will be based on the final contract ceiling regardless of methods employed by the Project Manager.

In the past, for Cost Plus Agreements, negotiations with Consultants were primarily focused on estimated man-hours assigned to each task, and the distribution of those man-hours across appropriate staff levels. Upon completion of man-hour negotiations, the Consultant would assign wage rates assumed to be in effect at the design mid-point. In this way, direct labor costs were negotiated, a maximum overhead rate was applied, and lastly, fixed fees were negotiated using existing Department guidelines. This approach may be effective based on the results of the detailed cost evaluation.

Providing the Consultant with contract flexibility by eliminating wage rate and overhead caps, and by abolishing the 10% senior staff limit will require negotiation based on a reasonable contract ceiling. This ceiling will be estimated based on the Department's man-hour estimate, using average wage, overhead, and fixed fee rates representative of the project discipline. For negotiation purposes, this ceiling must be broken down by task. If a Consultant wishes to dispute the overall or specific task ceiling, a discussion of man-hours will be required. In this case, the Department and Consultant may be using significantly different wage rates and staff distribution. The problem may be simply that the Consultant's interim overhead rate is far beyond that used by the Department in calculating a reasonable cost ceiling. In either case, both parties must find common ground upon which to build successful negotiations. Since protracted negotiations will not be tolerated, the burden will be far greater on Consultants to provide justification for such variations.

6. Upon completion of successful negotiations, the Project Manager is to direct the Consultant to submit a Final Proposal within 5 working days. Concurrently, the Project Manager is to prepare the Final Baseline Budget and Schedule for approval.
7. If successful negotiations cannot be completed within the one day session, or if significant progress has not been made, negotiations are to be concluded. The Project Manager is to document failed negotiations, preparing a recommendation to rescind the original selection and proceed to the next highest ranked firm on the selection list established at the Consultant Selection Committee meeting.

19.3.5 Agreement Preparation

Prior to the conclusion of proposal evaluation, the Project Manager's Agreement Coordinator should have requested and received a copy of the "Model Agreement", for the agreement type selected, on disk from the Bureau of Professional Services.

Upon receipt of the Final Proposal, the Agreement Coordinator will prepare and distribute the draft agreement as follows:

1. The Agreement Coordinator, utilizing the Audit Report and the final negotiated Consultant cost, enters the costs (salaries, overhead, direct expenses, profit), the interim overhead rate, Subconsultants' costs and the total agreement amount, in the proper areas of the agreement (Cost Plus Fixed Fee). The overall list of direct expenses is included in the Cost Plus Fixed Fee and Multiplier Agreements. If the agreement is Fixed Price, enter the Prime Consultant's and subconsultants' Fixed Price amounts, and total Fixed Price amount for the agreement. If it is a Multiplier Agreement, enter the multiplier, salaries, and direct expense amounts for both the Prime Consultant and any Subconsultants, and enter the total agreement amount.

The Agreement Coordinator enters the Consultant's name and address and describes the project, both on the first page of the agreement.

The Agreement Coordinator references the proposal under the agreement's "Statement of Consultant's Work and Services".

The Agreement Coordinator identifies the Department's Project Manager and the Consultant's contact person for work under the agreement, and lists the firm's name on the signature page.

2. If there are no changes to the agreement's standard language, forward the agreement to the Bureau of Contract Administration Services for Deputy Attorney General review. Any proposed changes to the standard language are to be avoided, but if necessary should have been resolved with the BCAS and the Deputy Attorney General prior to submittal of the Consultant's Final Proposal.

Forward the Consultant's Final Proposal and Draft Agreement utilizing final proposal costs, to the Bureau of Auditing for review and comment.

Forward Draft Agreement to the Consultant for review and comment.

3. The following steps are concurrent:
 - Consultant reviews Draft Agreement and forwards comments to the Project Manager.
 - The Bureau of Contract Administration Services reviews the Draft Agreement.
 - The Bureau of Auditing reviews the Final Proposal and Draft Agreement and forwards comments to the Project Manager.
 - The Deputy Attorney General reviews the checklist and the Draft Agreement.
4. Following the Audit review and comments, prepare the funding request to the Bureau of Capital Program Coordination for use of 100% State funds for the project, or for Federal authorization of funds, if Federal funds are involved. If Federally funded, also

include the state force cost estimate for the various units that will be working on the project. This cost estimate shall be developed with input from the Cost Control Unit of the Bureau of Program Support Services as per Section 3.4.

5. The funding process for new design work continues after selection and negotiation with the submission of a Project Programming Request to the Bureau of Capital Program Coordination which includes the following:
 - Transmittal Memorandum
 - Description of the Scope of Work
 - Project Location Map
 - Consultant Cost Estimate
 - In-house Cost Estimate
 - Copy of Final Baseline Budget Approval
 - Project ID and Summary form for Federal Authorization Request
 - Job Number Request form

A sample of the above package is included in Attachment 8 for reference. For projects involving federal funds, a copy of the above shall be sent to the Federal Aid Coordinator.

6. FHWA reviews the request for Federal authorization of funds and responds to the Bureau of Capital Program Coordination with copy to the Project Manager. The Bureau of Capital Program Coordination prepares and processes the Federal Project Agreement (PR-2). This is an independent task not part of the process.

The Agreement Coordinator incorporates appropriate comments and forwards the Final Agreement to the Consultant for signature.

19.3.6 Execution of Agreement

1. The Consultant signs and returns the Final Agreement to the Project Manager.
2. The Project Manager's Agreement Coordinator forwards the Final Agreement and checklist to the Deputy Attorney General for signature.

Note: For projects which a Department Certification has been established with the DAG's office, send Agreement, AD-12 and checklist to the Bureau of Capital Program Coordination. For all other projects, forward checklist and Final Agreement to DAG for signature, then send Agreement, AD-12 and Checklist to Bureau of Capital Program Coordination. Send a copy of the Agreement Checklist to the DAG's office for their file.

3. The Agreement Coordinator should have already prepared, and be ready to submit the Agreement package (AD-37 Referral Form, AD-12 Department Action Slip, Agreement, and signed Agreement checklist) to the following for signature/approval:
 - Program Manager, signs AD-12.
 - Bureau of Contract Administration Services reviews the Agreement package.

- Bureau of Capital Program Coordination, verifies funding and attaches Federal Aid Project Agreement Form PR-2 for Accounting's use.
 - Bureau of Agreement Accounting, Capital Accounting Section, certifies the Funds on AD-12 and establishes the account.
 - Director, Division of Project Management signs AD-12.
 - Assistant Commissioner, signs AD-12 and signs the Agreement.
 - Department Secretary, executes Agreement package.
4. Bureau of Capital Program Coordination - processes agreement package (Consultant Agreement, Federal Project Agreement and AD-12) and forwards to the Bureau of Agreement Accounting.
 5. Bureau of Agreement Accounting - processes agreement package and forwards to appropriate Assistant Commissioner.
 6. Assistant Commissioner - sign agreement and forwards to Department Secretary.
 7. Department Secretary - executes agreement package.
 8. Bureau of Contract Administration Services - issues Notice to Proceed to the Consultant with a copy to the Project Manager.
 9. The Bureau of Contract Administration Services distributes the Agreement to:
 - Bureau of Agreement Accounting (original).
 - Bureau of Capital Program Coordination (Federal Projects only).
 - Federal Highway Administration for full oversight projects. For projects developed using Alternate Procedures, a copy will be transmitted to FHWA upon request.
 - Bureau of Professional Services.
 - The Consultant.
 - Project Manager.
 - Bureau of Program Support Services (copy of AD-12 only)
 10. The Project Manager notifies the Consultant of the "Project Kick-off Meeting".

Attachment 7 - Fixed Fee Procedure

PROCEDURE FOR CALCULATING FIXED FEE

The following procedure is to be used to calculate a fixed fee to be used as the basis for negotiations.

Fixed fees are firm, no-risk, dollar amounts established to cover the consultant's profit and business expenses not allocable to overhead. Fixed fees are negotiated on facts pertinent to the specific project, including: size, complexity, duration and degree of risk. Fixed fees are not solely based on a percent of salaries plus overhead. The expression of fee as a percent of consultant costs is only used as a test of the prudence of the fee proposal. The fixed fee is negotiated separate from other costs.

EVALUATE PROJECT SPECIFICS

1. **Size**

- a. Small - Project having a total estimated fee of \$500,000 or less.
- b. Large - Projects having a total estimated fee of more than \$500,000.

2. **Complexity**

- a. Simple - Projects having limited scopes of work such as resurfacing, bridge deck patching, restoration, and construction inspection.
- b. Standard - Projects of moderate scope such as rehabilitation, new or reconstruction.
- c. Complex - Multi-disciplined, highly specialized projects such as major/ unusual.

3. **Duration**

- a. Standard - Projects with a schedule considered appropriate for project size and complexity. The standard schedule shall be developed by the Project Manager prior to Consultant Selection in accordance with the NJDOT Procedures Manual.
- b. Aggressive - Projects where the Designer has proposed a design schedule reduced by more than 10% of the standard schedule developed by the Project Manager.

4. **Degree of Risk**

- a. Level 1 - Contracts with low risk of claims or lawsuits. Contracts which typically would fall in this category include studies, surveys, systems management, landscape, inspections, etc.
- b. Level 2 - Contracts with average risk of claims or lawsuits. Contracts which

typically fall in this category include most designs of standard complexity and duration. The risk of claims or lawsuits may increase with public exposure. For example, a small resurfacing project with a Level 1 schedule could be classified as a Level 2 degree of risk if the roadway has a high truck percentage, is heavily traveled, and if a complex maintenance of traffic plan or night work may be required.

- c. Level 3 - Contracts with high risk of claims or lawsuits. Contracts which fall in this category include those involving hazardous materials, experimental designs or bonus/ penalty clauses. Factors affecting Level 1 and 2 categories also affect Level 3.

RATING PROJECT SPECIFICS

1. **Size**

- a. Small - 15
- b. Large - 20

2. **Complexity**

- a. Simple - 10
- b. Standard - 15
- c. Complex - 20

3. **Duration**

- a. Standard - 15
- b. Aggressive - 20

4. **Degree of Risk**

- a. Level 1 - 20
- b. Level 2 - 30
- c. Level 3 - 40

FIXED FEE DETERMINATION PROCEDURE

1. Add the rating points assigned to each criteria and divide by 100 (maximum points available) to determine the project specifics factor.
2. Multiply the project specifics factor times 0.30 to determine the fee factor.
3. Multiply the fee factor times the estimated direct labor costs to obtain the total fee.

4. Negotiate based on the above figure.
5. Upon completion of successful negotiations, verify that the final Fixed Fee falls within the allowable Federal Acquisition Regulations range of 6 to 15 percent. This verification must use the Consultant's actual interim overhead rate as approved by the Bureau of Auditing.

EXAMPLES

1. A highway design project with typical project specific ratings would include small size, standard complexity and duration with average risk of claims. The estimated consultant direct labor is \$200,000. The consultant's approved interim overhead rate of 120%.

Add rating points: $15+15+15+30 = 75$
 Project specifics factor: $75/100 = 0.75$
 Fee factor: $0.75 \times 0.30 = 0.225$
 Total fee: $0.225 \times \$200,000 = \$45,000$
 Assume negotiations result in a final Fixed Fee of \$45,000.

Therefore,

\$200,000	Direct Labor
\$240,000	Overhead
<u>\$ 45,000</u>	Fixed Fee
\$485,000	Total plus Direct Expenses

Verify Fixed Fee range: $\$45,000 \text{ divided by } \$440,000 \times 100\% = 10.2\%$

2. A highway design project with minimum project specific ratings. The estimated consultant direct labor is \$100,000. The consultant's approved interim overhead rate is 120%.

Add rating points: $15+10+15+20 = 60$
 Project specifics factor: $60/100 = 0.60$
 Fee factor: $0.60 \times 0.30 = 0.180$
 Total fee: $0.180 \times \$100,000 = \$18,000$
 Assume negotiations result in a final Fixed Fee of \$18,000.

Therefore,

\$100,000	Direct Labor
\$120,000	Overhead
<u>\$ 18,000</u>	Fixed Fee
\$238,000	Total plus Direct Expenses

Verify Fixed Fee range: $\$18,000 \text{ divided by } \$220,000 \times 100\% = 8.2\%$

3. Assume complex project with maximum project specific ratings. The estimated consultant direct labor is \$500,000. The consultant's approved interim overhead rate is 140%.

Add rating points: $20+20+20+40 = 100$

Project specifics factor: $100/100 = 1.00$

Fee factor: $1.00 \times 0.30 = 0.30$

Total fee: $0.30 \times \$500,000 = \$150,000$

Assume negotiations result in a final Fixed Fee of \$150,000.

Therefore,

\$500,000	Direct Labor
\$700,000	Overhead
<u>\$150,000</u>	<u>Fixed Fee</u>

\$1,350,000 Total plus Direct Expenses

Verify Fixed Fee range: $\$150,000 \text{ divided by } \$1,200,000 \times 100\% = 12.5\%$

4. Assume the above consultant's approved interim overhead rate is 110%. Total fee calculation would remain unchanged.

Therefore,

\$500,000	Direct Labor
\$550,000	Overhead
<u>\$150,000</u>	<u>Fixed Fee</u>

\$1,200,000 Total plus Direct Expenses

Verify Fixed Fee range: $\$150,000 \text{ divided by } \$1,050,000 \times 100\% = 14.3\%$

Attachment 8 - Project Funding Request

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MEMORANDUM

TO: *Manager, Bureau of Capital Program Coordination*

FROM: *Project Manager*
Division of Project Management

DATE:

PHONE:

SUBJECT: *NJ 139 Sec (1) Contracts #1, #2, #3*
Project Funding Request

Attached is a Project Identification Summary form, location map, new T-AC 1643 (Job Number Request), the consultant's cost proposal dated _____, and State Force Account man-hour estimates pertaining to the above captioned project.

The first project will be for the concrete encasement removal on the 12th Street, 14th Street, and Conrail Viaducts. We are requesting Federal authorization for \$694,418.00 of which \$555,534.40 is FF which will allow the Department to retain a consultant to perform design services for the NJ 139 Sec (1) Contract #1 project. This figure includes \$50,000.00 for in-house NJDOT staff to make the necessary certifications and reviews.

The second project will be for the deck replacement, seismic retrofitting, and superstructure replacement on the 12th Street and 14th Street Viaducts. We are requesting Federal authorization for \$1,480,993.00 of which \$1,184,794.40 is FF which will allow the Department to retain a consultant to perform design services for the NJ 139 Sec (1) Contract #2 project. This figure includes \$111,000.00 for in-house NJDOT staff to make the necessary certifications and reviews.

The third project will be for the design build phase on the Hoboken Avenue and Conrail Viaducts. We are requesting Federal authorization for \$1,700,992.00 of which \$1,360,793.60 is FF which will allow the Department to retain a consultant to perform design services for the NJ 139 Sec (1) Contract #3 project. This figure includes \$50,000.00 for in-house NJDOT staff to make the necessary certifications and reviews.

Attachments

c: R. Stout

PROJECT PROGRAMMING FORMS

PROJECT IDENTIFICATION AND SUMMARY
REQUEST FOR FEDERAL AID PROJECT APPROVAL/AUTHORIZATION

To: Federal Aid Coordination Section

Date:

From: Initiating Unit Division of Project Management
Project Manager

Phone:

Note: This form shall be completed fully. Line items which are not applicable should be marked "NA". A "Location Map" shall be provided with project limits designated.

Project Limits: (provide full description including municipality(s) and county(s):

Route(s): NJ 139

Section(s): Contract #2

City of Jersey City

County of Hudson

Mileposts: 0.3 to 1.5 Project Length: 1.2 miles (1.9 km)
Highway Type: FP Structure Nos.: 0904-153,154

Work Effort: P.E. up to completed Env. Doc. ; Environmental Work ; Final Design ;
Right of Way ; Utilities ; Other . (Check One)

Requested Phase of Work (Detailed Description):

Prepare preliminary design phase of this project. The remaining design will be accomplished as a CCM to the proposed contract.

Federal Aid Data: (complete if known)

Metro. Planning Org. NENJ Ref. No. 053A

Class of Funds: Bridge

Alternate Procedures Full Oversight

Environmental Documentation: (check one)

C.E.# E.A. FONSI E.I.S. (Year _____ No. _____)

EO #215 To Be Determined

Date of Federal Concurrence:

GENERAL PROJECT SCOPE

Note: If an Environmental Document has been approved, attach in place of completing the following impacts check off.

Anticipated	Yes	No	Anticipated Impacts	Yes	No
Design Exception	{X}	{ }	Public Support	{X}	{ }
Increase in Number of Traffic Lanes	{ }	{X}	Local Government Support	{X}	{ }
Right of Way	{X}	{ }	Wetland Involvement	{ }	{X}
New Alignment	{ }	{X}	Floodplains	{ }	{X}
Realignment	{ }	{X}	Stream Encroachment	{ }	{X}
Detour(s)	{X}	{ }	Riparian	{ }	{X}
Structure Repairs	{X}	{ }	Parkland (Section 4f)	{ }	{X}
Rehabilitation	{X}	{ }		US Coast Guard	{ }
Replacement	{X}	{ }	US Corps of Engineers		{ }
New	{ }	{X}		CAFRA	{ }
Utility Relocation(s)	{X}	{ }	Displacements Residential Business	{ }	{X}
RR Crossing	{X}	{ }		{ }	{X}
Traffic Signal(s)	{X}	{ }	Farm Land	{ }	{X}
Sign Structure(s)	{X}	{ }	Archaeology (Sect. 106)	{ }	{X}
Highway Lighting	{X}	{ }	Noise	{ }	{X}
Driveway(s)	{ }	{X}	Hazardous Material(s)	{ }	{X}
Bicycle Compatible	{ }	{X}	NP Federal Costs	{ }	{X}
Jurisdictional Agreements	{X}	{ }		{ }	{X}

FUNDING SUMMARY

- List Applicable Costs -

Consultant(1)	\$1,369,993.00
State Forces(2)	\$ 111,000.00
Total Cost	\$1,480,993.00
Federal Share	\$1,184,794.40
State Cost	\$ 296,198.60
Other Costs... \$	
<hr/>	\$
Non participating	\$

Notes:

- (1) Provide Consultant Proposal/Scope of Work
- (2) Provide State Forces Breakout by unit and scope as prepared by the Bureau of Program Support Services

PROJECT SCOPE DEFINED

Include a detailed description of the proposed project, the project justification, anticipated Right-Of-Way needs and other pertinent data that would best describe the project scope (attach additional sheets if necessary):

Contract number 2 will be for the deck replacement, seismic retrofitting, and superstructure rehabilitation for the 12th Street and 14th Street viaducts.

Note: Request for Right-Of-Way and PS&E Approval shall be accompanied with a current (date within three months) Environmental Reevaluation.

Figure

Form T-AC-1643

19.4 Task Order Agreement Process/Procedure

The responsibilities of the Bureau of Contract Administration Services (BCAS) are as follows:

- Preparing and processing new agreements and contract modifications for additional funds.
- Retaining an inventory of all agreements and modifications to the agreements.
- Retaining an inventory of all task orders against the agreements.
- Determining which agreement(s) will be used to provide for the individual task order requests by the Project Managers.
- Tracking the balances against the agreements (obligated funds through executed task orders, not the unbilled costs within task orders).
- Coordinating with the Program Managers and other managers within Capital Program Management at the end of the calendar year to determine funding needs for the next fiscal year or when the cost threshold of executed task orders approaches 80% of the agreement total.
- Preparing the request to the Director, Capital Program Control and Support Services, to have funding included in the Annual Capital Construction Program or for additional funds from the existing Capital Program for the various task order agreements.
- Acting as a member of the Technical Evaluation Committee for all task order agreements.

The Project Manager will be responsible for:

- Approving all requests for task orders.
- Executing task order notices to proceed.
- Providing input into new task order agreements requirements for the next fiscal year or additional funding required within the existing fiscal year.
- Reviewing and approving all proposals.
- Reviewing and approving all invoices and resolving any accounting problems that occur from invoicing.
- Ensuring that task order ceilings are not exceeded.
- Providing information to BCAS as requested to complete monthly or special reports.
- Acting as member of the Technical Evaluation Committee for Task Order Agreements

(the third member of TEC will be either from the Bureau of Environmental Services, Bureau of Scope Development, or Design Services, as appropriate for scope of work).

PROCEDURE FOR TASK ORDER SERVICES

1. Project Manager submits memorandum to BCAS requesting services, including the estimated cost, description, and time frame for the work and justification, if a specific consultant is requested. Other Bureaus may initiate requests for services, which must be approved by the respective Project Manager.
2. BCAS will determine if an existing agreement is available to provide these services and notify the Project Manager which agreement to use, or if none is available.
3. Project Manager requests Consultant to submit proposal within 5 working days.
4. Project Manager reviews proposal and negotiates final ceiling.
5. If final ceiling is within original request, the Project Manager will execute the Task Order with the Consultant utilizing the Task Order Form and Transmittal Sheet (Attachment 9), with copy to BCAS. If the final negotiated ceiling exceeds the original estimate, the Project Manager will contact BCAS to increase the estimated ceiling or renegotiate with the Consultant to reduce services.
6. Project Manager monitors Consultant performance, reviews and approves invoices, and copies BCAS to allow tracking of costs and performance.
7. Project Manager advises BCAS when the task order services are completed and the actual amount invoiced.

Attachment 9 - Task Order Form and Transmittal Sheet

TRANSMITTAL SHEET

To: _____

_____ FILE

From: _____
Project Manager

**EXECUTED TASK ORDER
CCM AGREEMENT**

PROJECT: _____

DISCIPLINE: _____

AGREEMENT NUMBER: _____

JOB NUMBER: _____

TASK ORDER NUMBER: _____

CONSULTANT: _____

COMMENTS

TASK ORDER AGREEMENT
TASK ORDER

REGION: _____ TASK ORDER NO.: _____ SALARY COST: _____

WORK AUTHORIZATION DATE: _____ OVERHEAD: _____

CONSULTANT: _____ PROFIT: _____

AGREEMENT DATE: _____ DIR. EXPENSES: _____

AGREEMENT NO.: _____ TOTAL COST: _____

AGREEMENT BALANCE: _____

JOB NO.: _____ PROJECT NO.: _____ NOS.: _____ THRU: _____

SCOPE OF SERVICES:

APPROVED: _____
Project Manager Date

Program Manager Date
Division of Project Management

ACCEPTED AS PER TERMS OF SCOPE OF WORK AND PROPOSAL:

Consultant Date

c: Consultant
Accounting w/Proposal
Contract Administration Services
Professional Services

19.5 Construction Engineering and Inspection Services

Professional services required for Construction Engineering and Inspection are to be directed through the Project Manager, as recommended by the Regional Construction Engineer, and coordinated by the Bureau of Contract Administration Services.

In accordance with Section 4.3, during the Final Design Submission review, the Regional Construction Engineer will prepare a recommended Scope and Budget for Construction Engineering and Inspection Services. The Regional Construction Engineer shall recommend if the services shall be provided by Department staff, consultant(s), or a combination of both.

The Project Manager will review and approve the final CE Budget. If consultant services are required, the Project Manager will proceed with the Selection and Agreement Processes described in Sections 19.2 and 19.3, respectively, with the following modifications:

1. All Consultant Construction Engineering and Inspection Services Agreements are classified as "Simple Project", even if the total cost ceiling exceeds \$500,000. Fixed Price Agreements are discouraged unless the scope, extent, and duration of services provided can be fully defined.
2. Upon receipt of the Scope of Work for CE Services from the Regional Construction Engineer, and approval of the Final CE Budget by the Project Manager, the Project Manager's Agreement Coordinator is to initiate the request for professional services in accordance with Section 19.2.3. For Federally funded projects, a separate funding request is not required for CE services, if the Federal authorization to advertise for construction includes adequate CE services funding.
3. The Project Manager and a minimum of two (2) others, including the Regional Construction Engineer, will review the Expressions of Interest and provide the combined ratings and their recommendations for selection to the Consultant Selection Committee.
4. The Project Manager and Regional Construction Engineer, along with Auditing, will review the Proposal. The Project Manager, after consultation with the Regional Construction Engineer, has final approval for the scope and budget.
5. The Resident Engineer and/or Field Manager will review each invoice for hours worked, etc., by the Consultant, sign Form AC-1641, and forward both to the Project Manager for approval and processing of the invoice.

In addition, if it is determined by the Project Manager that Construction Services are required by the design consultant, the Project Manager shall modify the designer's contract in accordance with Section 19.6.

19.6 Consultant Agreement Modifications

Changes to the design consultant's contract are considered to be a Scope Change and must be evaluated in accordance with Section 4.7, Change Requests. A proposed Scope Change must be evaluated for all associated impacts to the project's budget and schedule. A change to the consultant's agreement under the \$100,000 threshold may result in additional Right of Way or Construction costs which would require approval of the Change Control Board.

Changes to the Consultant Agreement under \$100,000 where Change Control Board approval is not required:

1. The Project Manager obtains approval to initiate the Consultant Agreement Modification in accordance with Section 19.1.1. Determine if the change is **Extra Work** (entitled to Fixed Fee) or **Additional Work** (may not be entitled to Fixed Fee). Extra Work is defined as new and unanticipated work essential to the satisfactory completion of the project. Additional Work is defined as work that is supplementary to and already part of the existing Scope of Work.
2. The Project Manager is to develop detailed estimates of additional costs (including Design, Construction, ROW, and Utility costs) associated with the potential budget and the schedule impacts. Concurrently, the Project Manager will request the designer to submit a preliminary proposal with cost and schedule impact estimates as may be warranted to supplement the Project Manager's efforts. Additional cost and schedule estimating assistance may be obtained through the Bureau of Program Support Services.
3. The Project Manager is to negotiate the design costs, consultant CE costs (Consultant to review shop drawings), and schedule impacts with the consultant and come to an agreement. Modifications for consultant CE costs to a design agreement must be made timely so that they are executed prior to execution of the construction contract for the project. A technical review of the proposal may be obtained through the Bureau of Design Coordination. If there is a modification to a consultant inspection agreement (construction engineering), negotiation and review should be coordinated with the Regional Construction Engineer. The Project Manager's Agreement Coordinator is to perform a cursory Audit Review of Proposal to check for the following items:
 - Wage rate conformance with latest Approved Wage Rates (confer with the Bureau of Professional Services).
 - Perform fixed fee calculation in accordance with Section 19.3.3.
 - Allowable direct expenses.
 - Interim overhead rate is correct (use the interim overhead rate for calculating ceilings).
 - Audit requirements for Fixed Price Contracts.
4. The Project Manager is to prepare a **Baseline Change Request** when a change in scope is necessary or desirable in order to meet project objectives. Indicate appropriate justification and all anticipated budget and schedule impacts. The package is to be completed by the Agreement Coordinator and is to include as attachments the following:

- Copy of approved Request to Initiate Professional Services (Section 19.1.1).
 - Funding Request Memo (will initiate an Identification of Funds memo to Project Manager; provide a copy of the memo and the proposal to the Federal Aid Coordinator to initiate request for FHWA approval/authorization, if applicable).
 - Soft cost analysis.
 - Copy of negotiated proposal.
 - Revised schedule, if required.
5. The Agreement Coordinator is to circulate the package listed in Step 4 to the Program Manager, the Director of Capital Program Control and Support Services, and the Director of Project Management for concurrence.
 6. Upon approved of the Baseline Change Request, the Project Manager will request the Agreement Coordinator to prepare and send two (2) originals of the Consultant Agreement Modification (CAM) to the Design Consultant for signature.
 7. After the consultant signs the CAM, the Project Manager signs the CAM, and the Agreement Coordinator circulates two (2) originals to: the Program Manager; the Manager, Contract Administration Services; the Manager, Bureau of Capital Program Coordination; the Division of Accounting and Auditing; and the Director, Division of Project Management with a copy to the Manager, Program Support Services. Attachments to be circulated with the CAM include:
 - Copy of final negotiated proposal.
 - Soft cost analysis.
 - Identification of funding memo.
 - FHWA approval/authorization memo (only if federally funded).
 8. The Agreement Coordinator is to distribute the executed Modification as follows:
 - Original to Design Consultant.
 - Original to Accounting and Auditing.
 - Copies to Project Manager, Contract Administration Services, and Federal Aid Section (only if federally funded), Professional Services, Program Support Services (copy of Modification only, no other attachments)

Changes to the Consultant Agreement in excess of \$100,000:

1. Follow Steps 1 through 3 listed above.
2. Submit the designer's proposal to the Bureau of Auditing for review. Include the comments provided in the Audit Report in negotiations conducted with the designer.
3. Submit a Design Change Request in accordance with Section 4.7.3 in place of the Baseline Change Request at Step 4 above.
4. Upon approval of the Change Control Board, proceed with Steps 6, 7, and 8 above, also including the preparation of a Department Action Form AD-12 by the Agreement

Coordinator, and circulate with the CAM package described in Step 7 above. Include the AD-12 with the copy to the Manager, Program Support Services.

Department Action Form AD-12 circulation is as follows:

- Program Manager*
- Manager, Capital Program Coordination
- Manager, Bureau of Agreement Accounting
- Director, Project Manager*
- Assistant Commissioner, Capital Program Management
- Department Secretary*

(* denotes signature)

19.6.1 Transfer of Monies Within a Contract

The following Contract Modification is required for the transfer of funds within an agreement, while maintaining the contract ceiling.

This modification only inserts the language into the project agreement(s) which is (are) necessary for the potential transfer of money. However, the Consultant is still required to make a specific request to the Project Manager for each project, and receive approval for the actual transfer of funds:

CONSULTANT CONTRACT MODIFICATION

WHEREAS, the Department of Transportation, State of New Jersey ("State") has determined that the removal of overhead and wage rate ceilings from consultant agreements will increase consultant flexibility and advance the State's interest in securing a high quality work product;

WHEREAS, the State wishes to allow for such flexibility in agreements that have already been executed by the State and a Consultant without raising the overall cost ceiling that was negotiated by the parties; and

WHEREAS, _____ ("Consultant") wishes to have the option of increasing its flexibility with regard to wage and overhead rates on executed agreements;

NOW, THEREFORE, the Consultant and the State agree that the agreements listed below shall be modified as follows:

1. The following language shall be added to the payment terms of the agreements:

"If, during the duration of this Agreement, the CONSULTANT determines that the costs to be incurred in any of the cost categories set forth herein will be less than the category limitations contained in those cost categories, the CONSULTANT may ask the STATE to transfer the excess monies to any of other categories. The CONSULTANT must provide the STATE with a complete written justification for the transfer and gain

approval from the STATE before incurring costs in excess of a category limitation.”

2. The agreements to which this Consultant Contract Modification apply are:

<u>Agreement Number/Date</u>	<u>Description</u>	<u>Department/Project Manager</u>
------------------------------	--------------------	-----------------------------------

3. All other terms and conditions of the above-referenced agreements shall remain in full force and effect.

ACCEPTED _____
(Consultant)

DATE _____

APPROVED _____
Assistant Commissioner
The State of New Jersey
Department of Transportation

DATE _____

19.7 Invoice Processing

The Project Manager is responsible for:

- Reviewing Consultant invoices to ensure that all required documentation has been provided and either approving the invoice for payment or declaring it deficient and returning it to the Consultant or requesting additional information. Review responsibilities for invoices for environmental services is provided in Attachment 9. Invoice processing for construction inspection services is provided in Section 19.5.

The Program Manager is responsible for:

- Providing concurrence with the Project Manager's decision to approve or deny payment.

Accounting is responsible for:

- Processing all invoices approved by the Project Manager and issuing payment to the Consultant.

Consultant invoices will be considered for payment if the amount is greater than 2% of the total contract cost for contracts up to \$100,000 or greater than \$2,000 for contracts in excess of \$100,000 (unless the Consultant's written justification for such payment is approved by the State or there has been no project work performed in the last three months and the State has been so notified).

Consultant progress reports must accompany invoice submittals in order for a Project Manager to make a clear assessment of payment justification.

Invoices must be processed by the Project Manager within 10 calendar days of receipt by the Department. (According to the "New Jersey Prompt Payment Act", February 1996, the total turnaround time for payment shall be 60 calendar days from the receipt of a properly executed State invoice.)

The Consultant shall perform the following:

1. Submits invoice to the Project Manager for payment. Invoices must be submitted in duplicate and must include a summary of expenditures, and backup documentation. In addition, a progress report covering the period of the invoice must be submitted in accordance with the established format (Attachment 10).

The Consultant shall prepare invoices for payment for work performed under an agreement on forms supplied by the State.

The Consultant shall submit a separate invoice for each billing under an agreement, and a separate invoice for each billing under a Consultant Agreement Modification for Extra Work. Each invoice shall contain, but is not limited to, the following:

- A project identification number and, when applicable, the Consultant Agreement Modification number.
- The Agreement date.
- The billing period covered by the invoice.
- The amount of the current billing and the amount for the items listed as follows:

For Cost Plus Fixed Fee Agreements:

- a. Salary Expense
- b. Payroll Burden and Overhead
- c. Non-Salary Direct Expense
- d. Subcontractor Expense
- e. Proportional Amount of Fixed Fee
- f. Retainage

For Fixed Price Agreements:

- a. Subcontractor Expense
 - b. Retainages
- The total amount of the Agreement.

Appropriate support documents for all items shall be attached to each invoice (i.e., receipts).

The secretarial assistant, Project Management Group shall perform the following:

2. Maintains an Invoice Control Log Book for the Program Manager, logs in the date the invoice was received, and tracks the invoice processing within the Group.
3. Gives the original invoice package to the Project Manager and files the copy in the Project Management group files. Attaches a blank FMIS Expense Distribution Form AC-1641.

The Project Manager shall perform the following:

4. Reviews the invoice to ensure that the following requirements are met:
 - consultant signature is provided.
 - the payment amount requested exceeds the minimum amount needed for processing (see Policy Section above).
 - all relevant work with regard to the invoices has been performed.
 - the percentage of total contract cost invoiced matches the percentage of work actually completed.
 - sufficient supporting documentation has been provided.
 - federal, nonparticipating tasks are billed separately.

Note: The invoice must be approved or denied by both the Project Manager and Program Manager within 10 calendar days of receipt.

5. Completes the FMIS Expense Distribution Form AC-1641 with appropriate job number.
6. If any of the requirements in Step 4 have not been met, calls the Consultant to explain the deficiency and completes a Deficiency Notification form, AR-PP1, signs it, attaches it to the original invoice package, and forwards it to his or her supervising Program Manager for concurrence.
7. If all requirements in Step 4 have been met, signs the original invoice and FMIS Expense Distribution Sheet (Materials Received), and gives the entire package to the Program Manager for concurrence.

The Program Manager shall perform the following:

8. Signs either the FMIS Expense Distribution Sheet (Recommended for Approval) or the Deficiency Notice Sheet, thereby stating concurrence with the Project Manager's decision and gives the entire package to the Group's secretarial assistant.

The secretarial assistant, Project Management Group shall perform the following:

9. Records the date the invoice was approved/denied in the invoice Log Book and transmits the signed original package to either Accounting (if the invoice has been approved) or the Consultant (if the invoice has been found deficient).

Attachment 9 - Environmental Invoices

**Procedure for Processing Environmental Invoices
within the Division of Project Management**

- Step 1 Consultant sends invoice to Project Manager. Project Manager decides who should receive invoice, E-Team leader or BES Technical Services Section Chief. **Note:** Prior to commencement of detailed technical studies, all invoices should be sent to the E-Team leader for processing. Once the CE Documentation determines that detailed technical studies are needed, invoices for Air, Noise and Hazardous Waste studies should only be sent by the Project Manager to the Section Chief of BES's Technical Services section. All invoices for other environmental areas should continue to be sent by the Project Manager to the E-Team leader.
- Step 2 E-Team leader and/or Technical Services Section Chief (or their designee) reviews invoice and signs the materials received/services performed section on Form AC-1641.
- Step 3 E-Team leader or Technical Services Section Chief (whomever has "lead") forwards invoice and Form AC-1641 to the Project Manager.
- Step 4 Project Manager signs invoice and "recommended for approval" section of Form AC-1641. Forwards invoice and Form AC-1641 to Program Manager.
- Step 5 Program Manager signs "recommended for approval" section of Form AC-1641, then forwards same to Bureau of Accounting Operations for processing.

Attachment 10 - Progress Report Format

PROGRESS REPORT FORMAT

The intent of this document is to establish minimum requirements and contents for consultant monthly progress reporting to NJDOT.

Monthly consultant progress reports should include:

Summary of Work Performed

General narrative of accomplishments during the reporting period, summarized by Activity ID#, including any particular problems encountered or decisions made. Summarize the accomplishments resulting from any meetings or site visits conducted during the reporting period. This section should relate to the projected activities in the Short Term Workplan from the previous period's report.

Tabular Cost/Schedule Analysis

For each activity, tabularize budget cost, total cost incurred to date, actual start/actual finish dates for each activity, % completion for each activity based upon actual progress (not based on \$ expended) and % completion for the total project. Subconsultant and prime consultant work should be summarized in the same format.

Example:

Activity ID#	Activity Description	Budget \$	Cost to Date	% Comp	Start Date	Finish Date	Project %
2050	Appraise Right of Way	\$10,000	\$9,000	100	10SEP95	15OCT95	10.53
2170	Prepare Drainage Design	\$15,000	\$10,000	66	15SEP95		10.58
2240	Conduct Supplemental Surveys	\$20,000	0	0			0.00
2300	Prepare Permit Applications	\$50,000	\$20,000	50	15AUG95		26.32
		\$95,000	\$39,000				47.43

Project Schedule

This section should include a graphic representative of the consultant's schedule including the original duration of all activities, the actual start of any activities in progress, the remaining duration of all activities, key interrelationships between activities, major NJDOT interface or decision points, major submissions or project reviews.

Short Term Workplan

This section should include a detailed description of the Consultant's workplan for the upcoming period, including all meetings planned with NJDOT support units or outside agencies, deliverables or submissions planned, and any major activities that will either commence or be completed during the period.

Scope Modifications

Identification and discussion of any issues the Consultant believes may impact the scope of the project, necessitating either increases in the cost or duration of the design effort. The discussion should also include estimates of any additional time and cost that may result from a change in the scope of the project.

19.8 Consultant Performance

It is the policy of the New Jersey Department of Transportation to regularly monitor the performance of consultants and contractors. The Project Manager shall review the Terms and Conditions of all Agreements for performance requirements. Documentation of a consultant's performance shall be ongoing and will be provided in the form of memorandums furnished to the consultant. Contractor performance reviews will occur as required, but no less than three times a year. Any immediate concerns regarding the contractor's performance should be addressed at the time of occurrence. In instances where in-house design services are used, the Project Manager should monitor performance in a similar manner, as appropriate.

Consultant Reviews

For consultant work, this procedure applies to all professional services contracts which includes capital project design, technical inspection, and similar contracts administered by all NJDOT Departments that has a Project Manager assigned to them.

Although the consultant performance procedure provides a step-by-step process for documenting poor work performance, the Project Manager should document instances where the consultant is performing up to or exceeds the expectations of the assignment.

Some of the more common items that the Project Manager may review or report on (either as a problem or for satisfactory work performance) relating to consultant performance are as follows:

- The quality and timeliness of the:
 - Consultant of QA Plan and Procedures
 - drawings
 - cost estimates
 - specifications
 - responses to requests and comments
 - design calculations and the associated narrative

- Working relationship with the:
 - subconsultant
 - NJDOT Operating Groups
 - NJDOT Engineering Department
 - Other Agencies (as applicable)

- Other items that the Project Manager may report on:
 - design within scope and budget
 - economy of design
 - attitude/cooperation
 - initiative
 - innovative concepts
 - judgment

knowledge
level of NJDOT support required
monitoring and scheduling
senior management involvement
consultant's compliance with QA Plan and Procedures

It is also the policy of NJDOT Capital Program Management to make visits, as it deems necessary, to the office of consultants and their subconsultants who have been retained for design projects. These visits will allow the Project Manager to perform the necessary monitoring of consultant and subconsultant activities and will also provide information needed to confirm job progress and expedite consultant payments. Office visits can serve several different purposes and should be tailored to the project needs, and would include:

- An overview of the consultant's operation to acquire an overall impression of how the firm functions and the amount of effort being devoted to the NJDOT contract.
- Review of consultant progress and work being performed.
- Investigation of any suspected irregularities.

The Project Manager (and, if required by the Project Manager, other technical staff) will make monthly visits to the consultant's offices throughout design development to review the consultant's operations and progress of the consultant's work. When submissions show inadequacies, additional office visits will be required between submissions as may be deemed necessary by the Project Manager.

When in-house design forces are used, the Project Manager must periodically monitor and visit with the in-house design team and evaluate their performance.

When a design consultant is retained for construction engineering services, the Project Manager will continue to monitor and notify the designer in writing of any problems (or successes). Typical items that may be addressed in this stage, in addition to those items noted above, are the timeliness of shop drawing reviews, quality and timeliness of field design drawings, and knowledge of payment procedures. The Resident Engineer or Field Manager may provide input when appropriate.

When professional service firms are hired for RE and inspection services, items that should be reviewed and reported by the Project Manager are the quality and timeliness of the consultant's monthly reports, the quality and timeliness of technical inspection performed by the consultant, the quality and timeliness of the Consultant's field reports, monitoring of safety requirements, monitoring of the contractor's Quality Program, and the quality and timeliness of the review of additional work orders. The NJDOT Resident Engineer or Field Manager should perform the actual review and notify the Project Manager.

Upon the completion of all consultant service contracts, the Project Manager will prepare a Project Summary Report addressing the above performance items.

Consultant Evaluations: Architectural/Engineering and/or Design Services

Project Manager:

1. Upon arrival at the consultant's office, provides an introduction identifying the employees who will be involved in the design review.
2. Requests that NJDOT representatives be taken immediately to the appropriate area where the NJDOT, work is being conducted.
3. Meets with the consultant Project Manager and requests names and experience of the project group, inquires how the project group is organized, where they are located, and the procedures used for assigning, supervising, and checking work.
4. Requests copies of job related information or files such as correspondence, plans, drawings, studies, and time cards, as needed.
5. Discusses project status, upcoming deliverables and all relevant project issues.
6. Walks through the entire office area to note facilities, general quality of the office, etc.
7. Selects, at random, one or more personnel assigned to the project, and inquire as to their understanding of the project.
8. Interviews personnel working on the project. Look at calculations, drawings, and studies in sufficient detail to make an evaluation of progress beyond the last progress milestone submission.
9. Makes estimate of percent complete of each discipline.
10. Checks for conformance to previous comments.
11. Checks for adherence to scope of work.
12. Examines time cards and other documents as appropriate to the particular problem and discuss with personnel.
13. Prior to leaving the consultant's office, conducts an exit interview for the purpose of briefing the consultant's management of the findings of the visit. (This interview should include a discussion of any adverse findings or deficiencies noted during the visit and gives the consultant

the opportunity to explain any discrepancies).

14. Within five days of the visits, develops a summary report that includes the following information:
 - name of the consultant
 - date(s) of visit
 - address of consultant
 - consultant contract number
 - brief description of the project
 - names and units of the NJDOT representatives who conducted the visit
 - purpose of the visit
 - any noteworthy findings during the visit (including the exit interview)
 - action to be taken by the consultant
 - comments, including the need for follow-up
 - signatures
15. Forwards a copy of the report to the Consultant Project Manager and one copy to Contract Administration Services.
16. Follows-up on any adverse findings and monitors the progress of any corrective action plan developed by the consultant and approved by the NJDOT Project Manager.

Consultant Evaluations: Engineering and Inspection Services

Field Manager or Resident Engineer

1. Continuously monitors CE&I Services through observations of site work and review of pertinent documentation. Considers written evaluations at the following junctures, however, ensures that the CE&I consultant is notified in writing at the time when a work product is considered inefficient.
 - preconstruction
 - construction 25%
 - construction 50%
 - construction 75%
 - post-construction
 - agreement close-out

For observed unacceptable work, see "Consultant Reviews for Deficiencies" (Part C).

2. Within five days of an unacceptable specific construction milestone, develops a summary report that includes the following information:
 - name of the consultant
 - dates of review
 - address of the consultant
 - consultant contract number
 - brief description of the project
 - noteworthy findings
 - action to be taken by the consultant
 - comments, including the need for follow-up
 - signatures
3. Forwards a copy of the report to the Project Manager for review and approval.
- Project Manager** 4. Forwards a copy of the report to the Consultant Project Manager and one to Contract Administration Services.
- Field Manager or Resident Engineer** 5. Follows up on any adverse findings and monitors the progress of any corrective action.

Consultant Reviews for Deficiencies

- | | |
|------------------------|--|
| Project Manager | 1. Upon becoming aware that the consultant is not performing work in an acceptable manner, immediately sends a letter to the consultant reporting the specific deficiencies. Copies of the letter shall be sent to the Program Manager, the Manager, Contract Administration Services, the Director, Project Management, and the Manager, Quality Management Services. |
| | Note: The Project Manager, in many cases, will be notified by in-house design support staff of a non deliverable or problem area. If the problem is not serious, the Project Manager may provide a verbal warning with an agreed upon due date prior to a written warning. |
| | 2. Ensures that the letter contains suggestions (when appropriate) for correcting deficiencies, a deadline for any required recovery plan, and actions that may be taken by NJDOT if the Consultant does not remedy the deficiencies. |
| | 3. Meets with the consultant to resolve the problem. Include the consultant senior management where necessary. |
| Consultant | 4. Takes immediate action to correct the deficiencies or provides a detailed recovery plan (within 5 days of receipt |

of the letter) for correction of the deficiency.

Project Manager

5. Reviews the recovery plan and either approves it or advises the consultant to revise the recovery plan.
6. Monitors the consultant's progress towards correcting the deficiency by the agreed upon deliverable date. Informs the consultant if the actions taken do not appear in compliance or on schedule with the recovery plan deliverables.
7. Upon the due dates of the specific deliverables, informs the consultant in writing whether the deliverable was satisfactorily completed or whether the concern is still open. Copies of this response shall be sent to the Program Manager, the Director, Project Management, the Manager, Contract Administration Services, and the Manager, Quality Management Services.
8. If the consultant has not corrected the deficiency by any revised agreeable date, prepare a Notice of Non-Conformance as per Section 6.6.1, with a copy for the Program Manager.

Manager, QMS

9. If the Manager, QMS, in conjunction with the Program Manager, Project Management, determine that the consultant's non-performance of deliverables, errors and omissions, or non-conformance with the approved Project Specific Quality Assurance Plan (PSQAP) has not been satisfactorily resolved, the consultant shall be terminated from the project as per the Agreement.
10. If the consultant fails to satisfactorily correct the deficiency by any revised agreeable date, whether the deficiency is in a specific deliverable or a major non-conformance with the approved PSQAP, the Manager of Quality Management Services shall rescind the consultant's prequalification status.

19.9 Consultant Closeouts

When final design nears completion, the Project Manager should prepare a Project Summary Report and begin closeout activities.

If the consultant is to provide construction support services, the design portion of the contract should end. In some cases, where there are no construction support provisions in the contract, then the entire contract agreement must end. This process is commonly referred to as closeout.

A final invoice represents the last chance to compensate the consultant for a satisfactory job, or withhold money due to incomplete work. It is important that the Project Manager review the entire file, especially information related to the deliverables and consultant's performance. Section 19.8 specifies that the Project Manager document all instances where the consultant did not satisfactorily perform or deliver on a timely schedule. The Project Manager should ensure that these problems were corrected prior to closeout. The Project Manager should check with Quality Management Services and Contract Administration Services to ascertain that there are no other outstanding issues or findings either from a contractual standpoint or from a quality audit or quality control standpoint. In addition to reviewing the project files, the Project Manager, prior to closeout, should develop a punchlist of items contractually required for completion or delivery just prior to or at the time of closeout. NJDOT reserves the right to retain payment until these punchlist items are completed.

Consultant Contract Closeout

- | | |
|--|--|
| Project Manager | <ol style="list-style-type: none">1. Prepares Project Summary Report addressing consultant performance in accordance with Section 19.8.2. Requests the consultant to submit a Final Invoice to CAS, if closeout is recommended. |
| Manager, Bureau of Contract Administrative Services | <ol style="list-style-type: none">3. Receives a signed invoice and consultant progress report requesting final payment when the Project Manager has determined that the work is complete.4. Reviews the invoice to ensure that the following requirements are met:<ul style="list-style-type: none">• The consultant signature is provided.• Punchlist of items contractually required for completion to ensure that all work has been completed.• The release clause is included.5. Prepares AD-12 to closeout agreement, verifying work has been completed to the satisfaction of the Department. Recommends final invoice payment and that any unused |

funds be canceled upon final audit.

6. Notify FHWA through Capital Program Coordination. If the design has been funded using Federal funds, but it is anticipated that State funds will be used for construction, forwards a letter to FHWA closing out preliminary engineering and right of way contracts.

7. If it is assessed that the work has been completed, approves and forwards invoice to Accounting for payment. If the work has not been completed (as defined by the examples provided in the "Policy" section), notifies the consultant that the work has not been met, and prepares a deficiency notification to the invoice and forwards it to the supervising program manager for concurrence.

Program Manager

8. Reviews the deficiency notification to ensure that it is accurate and complete.

Project Manager

9. Determines with the consultant when the "open items" will be satisfactorily completed and accepted by NJDOT.

10. Upon satisfactory completion of all open items, recommends release of final payment or retainage upon receipt of final invoice. If completion of the open item delays the project, where NJDOT incurs additional costs, NJDOT may deduct this from the final payment or backcharge the consultant.

SECTION 20 FUNDING

20.1 New Project - State Force Account

- Project Manager -** (Federal Projects Only) - Prepare funding memorandum, project identification and summary form, and job number Form TAC-1643, and submit to Manager, Bureau of Capital Program Coordination.
- 100% State funded projects need only provide job number Form TAC-1643.
- Capital Program Coordination -** Verify project's inclusion in State Transportation Improvement Program and Capital Construction Program and Federal Obligation Plan. Assign job number and UPC number and refer project to Federal Aid Coordination Section (Federal projects only) for submission to FHWA. On 100% State funded projects, job numbers are provided directly to Project Manager.
- Federal Aid Coordination -** Prepare Federal authorization request letter, Federal Form PR-37, enter project in State FMIS PA-18, link job number to Federal project number in PA-20, and enter request in Federal Electronic Data Sharing System (EDS). Send authorization request to FHWA.
- FHWA -** If approved, authorize project for accumulation of funds and approve DOT entry into EDS. Return authorization request letter with concurrence indicated. If not approved or approved with conditions, notify Federal Aid Coordination with reasons.
- Federal Aid Coordination -** Verify EDS action for accuracy, provide data for State FMIS update, notify Project Managers of approval, and prepare Federal PR-2 with detailed estimate of project. Send PR-2 to General Accounting. If project was not approved by FHWA, refer to Project Manager for resolution.
- Federal Aid Coordination -** Enter PR-2 data into Federal EDS Sharing System, and forward to FHWA for approval.
- FHWA -** Approve EDS entry, sign PR-2, and return to Federal Aid Coordination along with approved Federal PR-37.
- Federal Aid Coordination -** Review Federal PR-37, and send copy to General Accounting for input into FMIS.

20.2 New Project - Professional Services

- Project Manager -** Prepare funding memorandum to the Bureau of Capital Program Coordination requesting identification of funds and, where appropriate, FHWA authorization for the proposed work. This request must be accompanied by a scope of work and an estimate of the consultant and in-house costs. A job number request form (TAC-1643) must accompany this memorandum for new projects. For Federally funded projects, a copy of this memorandum together with a copy of the consultant proposal (if available) and a unit by unit breakdown of state forces must also be provided. Also to be provided is a completed Project Identification and Summary form with all pertinent data (refer to Section 19).
- Capital Program Coordination -** Ascertain that the proposed project is included in the current Capital Program and State Transportation Program (STIP) and Federal Obligation Plan. Through the Bureau of Accounting, identify and activate new job number and, where required, new UPC number. Provide job number to Federal Aid Coordination where required. Respond to Project Manager with memorandum identifying funding source, job number and UPC number. A copy of this memorandum is provided to the Federal Aid Coordinator instructing him to prepare an authorization request to FHWA. In the event the project is to be funded with 100% State funding, requisition the required funds on the Department of Treasury MACS-E conversation. Provide the FRA requisition number to the Project Manager.
- Federal Aid Coordination -** Assign new Federal agreement ID where required, prepare authorization request to FHWA including proposal or scope of work, fiscal data sheets (federal PR-37), STIP data, and level of action determination (where applicable). Input financial data into EDS and DOT FMIS conversation PA-18. Link Federal agreement ID and State job number in conversation PA-20. Send request to FHWA.
- FHWA -** If approved, authorize project for accumulation of costs, approve DOT entry on EDS. Return approval to DOT Federal Aid Coordination with concurrence indicated. If not approved or approved with conditions, notify Federal Aid Coordinator.
- Federal Aid Coordination -** Verify EDS for accuracy, provide data for State FMIS

update, and notify Project Manager of disposition of request. Indicate approval on PA-18.

- Project Manager -** Proceed with consultant selection process. Prepare consultant agreement together with completed Department Action (AD-12), including job number, funding source, federal agreement ID (where applicable), and requisition number. Send to Bureau of Capital Program Coordination for processing.
- Capital Program Coordination -** Review Department Action (AD-12) for completion and verify information. Non-Federal projects are sent directly to Bureau of Capital Accounting after review (see Capital Accounting Procedures for continuation of process).
- Federally funded projects require preparation of Federal Form PR-2 (or PR-2A for modification) by the Federal Aid Coordinator.
- Federal Aid Coordination -** Assure Federal authorization of funds, prepare detailed estimate of costs and federal PR-2 (or PR-2A). Update FMIS PA-18 Federal EDS and submit agreement, PR-2, and detailed estimate to Bureau of Capital Accounting (for non-electronic signature projects; electronic signature projects are sent with PA-18 certification).
- Bureau of Capital Accounting -** Sign PR-2 (or PR-2A), and return to Federal Aid Coordination. Department Action (AD-12) is processed for final execution (see Capital Accounting Procedure). Copy of final executed Agreement should be provided to Federal Aid Coordination.
- Federal Aid Coordination -** Sign PR-2 (or PR-2A) and transmit to FHWA.
- FHWA -** Sign PR-2 (or PR-2A), approve EDS entry, and return executed PR-2 (or PR-2A) to Federal Aid Coordination.
- Federal Aid Coordination -** Verify EDS action and provide data for State FMIS update.

Note: This is the point where the State is eligible for reimbursement by FHWA for costs incurred. Costs incurred prior to this action will run in “suspense” as will costs in excess of the amount authorized. Also, note that should the scope of work or the estimated costs of the project vary significantly from the original authorization request, a revised request may be required prior to the PR-2 initiation.

20.3 Consultant Agreement Modification

Project Manager -	Prepare funding memorandum requesting a fund source to the Bureau of Capital Program Coordination. Identify project, description of the scope of work, and estimated cost, contract modification number, job number (where appropriate), federal project number and estimate of state force need and send to the Manager, Bureau of Capital Program Coordination with a copy to the Federal Aid Coordinator.
Manager, Bureau of Capital Program Coordination -	<p>Review request for funding availability including, where required, inclusion in the current Capital Program and State STIP. Requisition State funds where required.</p> <p>Prepare a response to initiator with funding source requisition number. When required, send copy of request to Federal Aid Coordinator requesting him to seek Federal authorization or approval of work. A copy is also sent to the Bureau of Capital Accounting.</p>
Federal Aid Coordinator -	Prepare letter to the FHWA requesting approval of the modification. Actual processing depends on amount, scope, and whether project is under full oversight or alternate procedures. Where authorization is required, EDS and PA-18 procedures are also followed.
FHWA -	Approve or authorize request and approve EDS entry. Notify Federal Aid Coordinator of approval.
Federal Aid Coordinator -	Verify EDS update, provide FMIS update and notify Project Manager of approval.
Project Manager -	Prepare Contract Modification and circulate with Department Action (AD-12) for signatures through the Bureau of Capital Program Coordination.
Bureau of Capital Program Coordination -	Verify Department Action (AD-12) information including fund availability. Projects not linked to any federal agreement are sent to the Bureau of Capital Accounting (see Capital Accounting Procedures). Federally funded projects or projects linked to a Federal Agreement ID are given to the Federal Aid Coordinator for preparation of a modified Federal Project Agreement (PR-2A).

Federal Aid Coordination - Verify funding, prepare detailed estimate and PR-2A into State FMIS, PA-18 and Federal EDS. Attach PR-2A to Contract Modification and send to Bureau of Capital Accounting.

Note that due to the nature of the Federal Financial System, only one modification to the Federal agreement can be made at one time. The Project Manager should be aware that processing delays may result when modifications to the Federal project agreement (PR-2) are processed too close together although the Federal project agreement may include several actions.

Bureau of Capital Accounting - See Capital Accounting Procedure. Sign PR-2A and return to the Federal Aid Coordinator.

Federal Aid Coordinator - Sign PR-2A and send to FHWA with required documentation for final approval.

FHWA - Sign PR-2A and approve EDS entry to establish eligibility for Federal reimbursement. Return PR-2A to Federal Aid Coordinator.

Federal Aid Coordinator - Verify EDS data, approve PA-18 entry and provide data for State FMIS update.

20.4 Utility Authorizations

Project Manager/Manager, Bureau of Utilities -

Prepare memorandum to Manager, Bureau of Capital Program Coordination requesting Utility Preliminary Engineering/Utility Reconnaissance programming. This memorandum should include an itemized list of the companies involved and an estimated cost for each company. A job number TAC-1643 form should also be provided for new projects.

Manager, Bureau of Program Coordination -

Establish job number, verify funding availability and inclusion in Federal Obligation Plan, and requisition State funds where required. Notify Bureau of Utilities. For federally funded work, notify Federal Aid Coordinator to request federal authorization of funds.

Federal Aid -

Establish Federal Agreement ID, prepare Federal fiscal Data Coordination Sheet and authorization request, including State Transportation Improvement Program for Utility Reconnaissance data funding. Link job number and agreement ID with FMIS conversation PA-20, enter into FMIS PA-18. Send request to FHWA.

FHWA -

Approve request, authorize cost accumulation data, approve EDS entry, and return approval to Federal Aid Coordination.

Federal Aid Coordinator -

Verify EDS approval, provide data for State FMIS update, approve PA-18 entry, and notify Project Manager and Bureau of Utilities.

Project Manager -

Notify Utility companies of approval to incur costs.

Bureau of Utilities -

At the time Utility Construction is required, prepare memorandum to Manager, Bureau of Capital Program Coordination (federal projects only; State projects should skip to Utility Agreement step) and send with copy of draft Utility agreements where required.

Bureau of Capital Program Coordination -

Verify inclusion for Construction in State's Capital Program, Federal Obligation Plan, and State Transportation Improvement Program. Provide memo/draft agreements to Federal Aid Coordinator. If funds are not available, notify Bureau of Utilities.

Federal Aid Coordinator-	Prepare federal authorization request, including STIP data, enter into Federal EDS warehouse, and send request to FHWA.
FHWA -	Authorize funds and approve EDS entry, and notify Federal Aid Coordinator.
Federal Aid Coordinator -	Verify EDS action. Notify Bureau of Utilities of approval of construction; indicate approval of PA-18 and provide data for State FMIS update.
Bureau of Utilities -	Prepare final Utility Agreements and circulate for signature with Department Actions to the Bureau of Capital Program Coordination.
Bureau of Capital Program Coordination -	Review Department Action, verify inclusion in current Capital Program and STIP, where required requisition State funds on MACS-E. Non-Federal agreements are processed to the Bureau of Capital Accounting. Federal projects are given to the Federal Aid Coordinator.
Federal Aid Coordinator -	Verify agreement against previously authorized Federal funds; prepare PR-2, detailed estimate, update State FMIS, PA-18, and enter financial data into Federal EDS. Forward agreements to Bureau of Capital Accounting for further processing.
Bureau of Capital Accounting -	See Capital Accounting Procedures. Send signed PR-2 to Federal Aid Coordinator.
Federal Aid Coordinator -	Sign PR-2 and send to FHWA.
FHWA -	Sign PR-2 and approve EDS entry establishing eligibility for Federal reimbursement of costs. Return PR-2 to Federal Aid Coordinator.
Federal Aid Coordinator -	Verify EDS action and provide data for State FMIS update.

20.5 Right of Way

Division of ROW -	Verify funding source from Capital Program Coordination. For Federally funded projects, obtain Federal Agreement ID from Federal Aid Coordinator. Prepare ROW Cost Summary RE-27 and job number Form TAC-1643. Send together with ROW key sheets to Project Manager for transmittal of authorization package to the Bureau of Capital Program Coordination.
Capital Program Coordination -	Verify funding availability in Capital Program and State Transportation Improvement Program. Obtain job number and link with project's UPC number. For non-Federally funded work, requisition State funds through MACS-E and transmit ROW RE-27 to the Bureau of Capital Accounting. For federally funded projects, request the environmental reevaluation, where required, from Project Manager, prepare Federal authorization request, enter data into PA-18 and EDS, link job number and Federal agreement ID, and transmit the ROW authorization package to FHWA.
FHWA -	Authorize Federal participation and approve EDS entry. Return approval to Federal Aid Coordinator.
Federal Aid Coordinator -	Notify Project Manager, verify EDS action, provide update to State FMIS system, and prepare detailed estimate and Federal PR-2. Transmit PR-2 and RE-27 to Bureau of Capital Accounting. Update PA-18 and Federal EDS.
Capital Accounting -	See Capital Accounting Procedures. Sign Federal PR-2 and return to Federal Aid Coordinator.
Federal Aid Coordinator -	Sign PR-2 and transmit to FHWA for approval.
FHWA -	Sign PR-2 and return to Federal Aid Coordinator. Approve EDS action.
Federal Aid Coordinator -	Verify EDS action and provide data for State FMIS update.

20.6 Construction Award

Construction Administration Services -

Prepare Department Action for approval of plans and specifications and authority to advertise. Send to Bureau of Capital Program Coordination.

Capital Program Coordinator-

Review Department Action for accuracy, insure project inclusion in Capital Program, State Transportation Improvement Program, note project as multi-year and/or advance construction, where applicable, requisition any State funds required and transmit to Capital Accounting (see Capital Accounting Procedures).

Contract Administration Services -

Compile and submit to the Federal Aid Coordinator the PS&E package, including Plans and Specifications (where required), estimates (including State force C.E.), environmental reevaluation, design certification, and utility clearance. Where possible, any contract modifications for CE services by the design consultant and any consultant inspection services requests should also be provided.

Federal Aid Coordination -

Complete fiscal data sheet (PR-37) with funding and project type breakouts, compile PS&E package, prepare submission letter, including STIP data and design acceptance where required. Enter fiscal data into EDS warehouse and State FMIS PA-18, and submit for federal authorization of funds. Note that if a project has been submitted under advance construction procedures a subsequent authorization request converting the project to regular Federal Aid must be submitted and approved by FHWA prior to award of contract.

FHWA -

Authorize project and approve EDS entry. Notify Federal Aid Coordinator of project's authorization and any conditions to the approval.

Federal Aid Coordination -

Verify EDS entry, provide data for State FMIS update and notify Project Manager of project's approval to advertise and/or authorization of funds and/or conditions of approval.

Contract Administration -

See contract advertisement and award process.

Federal Aid Coordinator -

Upon modification of award of contract, receipt of bid analysis, and receipt of Department Action for award of contract, arrange for adjustment of non-participating cost

on Department Action where required. Sign and transmit to Capital Accounting the Certification of Award, prepare detailed estimate and PR-2, and send to Capital Accounting.

Non-Federal Department Actions for award are sent directly to Capital Accounting, unless the award amount exceeds the amount indicated on the original Department Action. The Department Action for award is then sent to the Bureau of Capital Program Coordination. Capital Program Coordination will provide the additional funds award and send the action to Capital Accounting.

- Capital Accounting -** See Capital Accounting process. Sign PR-2 and return to Federal Aid Coordination.
- Federal Aid Coordinator -** Sign PR-2 and send to FHWA.
- FHWA -** Sign PR-2 and return to Federal Aid Coordinator. Approve EDS entry.
- Federal Aid Coordinator -** Verify EDS data; provide input for State FMIS.

20.7 Construction Orders

Resident Engineer -

Upon approval to issue change order/supplemental agreement by Project Manager/Change Control Board, prepare written change order and forward to appropriate chain of command to the Bureau of Capital Program Coordination.

Bureau of Capital Program Coordination -

Review funding requirements, requisition State funds where applicable, and provide Change Order/Supplemental Agreement to Federal Aid Coordinator (send directly to Bureau of Capital Accounting for non-Federal projects).

Federal Aid Coordinator -

For Interstate and Non-Certification Acceptance projects, send change order to FHWA for approval.

FHWA -

Sign Change Order/Supplemental Agreement as approved and return to Federal Aid Coordinator.

Federal Aid Coordinator -

Review change for potential use of contingency funding. Process Change Order/Supplemental Agreement through PR-2A (modified Federal project agreement) process. Note that the Federal financial system can accept only PR-2A transactions at a time. Change Orders that are processed too close together (or not close enough so they may be grouped) can be delayed.