NEW JERSEY
DEPARTMENT OF
TRANSPORTATION

2010
WORK ZONE
SAFETY
SET-UP GUIDE
The following modifications apply to Bridge Inspection work.

Note 1. Advance Warning Signs

   The following is added:
   Signs Roll-up Fabric Signs are acceptable for Daylight Operations.

General Notes

   In general, the following phrase will replace “Road Work Ahead” (RWA) or “Road Work 1 Mile” on all such signs specified in any of the following Plates:

   BRIDGE INSPECTION AHEAD
FORWARD

It shall be the responsibility of the person in charge to institute the placing of all appropriate cautionary devices and controls as may be required for the particular job. Traffic protection devices shall be placed in accordance with the diagrams shown in the most current work zone traffic control charts. (laminated charts also known as the workzone safety set-up guide) the charts are incorporated as part of the njdot safety manual by reference. It should be emphasized that these are minimum desirable standards for normal situations and that additional protection should be considered when special complexities and hazards prevail.

It shall be the responsibility of the person in charge based on job site conditions (type of highway, road user conditions, duration of operation, physical constraints, and the nearness of the work space or incident management activity to road users) to find which diagram in the current work zone traffic control charts apply. When conditions do not fit existing work zone traffic control charts follow the actions noted below in paragraph 3 of this section. During any work operation where employees and equipment are engaged in work on or near the main pavement or shoulders of the highway, appropriate protective devices shall be provided to protect personnel and the traveling public. A road crew’s responsibility should be directed toward the safe and expeditious movement of traffic through a construction or maintenance work site, and to the safety of the work force performing these operations.

In particular situations not adequately covered by the provision of this section, the protection of the traveling public and employees on the scene will dictate the measures to be taken, consistent with the general principles of traffic control. Work zone set-ups in accordance with the MUTCD or approved by a traffic engineer shall be used when the specific situation is not addressed by the work zone traffic control charts.

NOTICE:

This pocket reference is intended to provide reasonably current and accurate information and is designed to serve as a field operational reference only. Please refer to the workzone set-up guide and safety manual for complete details.

This pocket reference describes a limited selection of general guidelines and/or minimum requirements for typical situations. It is not possible to include illustrations to cover every situation which requires work site protection.
1. Advance Warning Signs

Signs shall be fluorescent in color, with approved legends and 48" X 48" in size. Distance of the advance warning signs should be increased (if possible) if the sight distance is restricted due to presence of a vertical or a horizontal curve.

2. Arrow Panels

Arrow panels shall meet the MUTCD criteria. If the work area is closer to the taper, a TMA with an Arrow Panel should replace a stand-alone Arrow Panel. The 4-corner configuration is the preferred Caution Mode. Use of the single bar is acceptable when the arrow board does not allow the 4-corner configuration. Tow behind Arrow Panels shall stand alone and be disconnected from the towing vehicle. The towing vehicle shall not remain in the closed lane or shoulder.

3. Cones

Most maintenance operations can be carried out using cones. Only NJDOT issued/approved 28 inches high cones with two reflective tapes shall be used. Faded cones or cones covered with asphalt, tar, paint or other substances that cannot be removed should be discarded.

4. Devices, General Conditions

All devices used for traffic control shall meet the crashworthy criteria as required according to the current FHWA policy. E.g. Devices meeting the NCHRP Report 350 guidance document shall be considered “crashworthy”. The condition of devices shall meet a quality standard for acceptability. For the purpose of determining quality, the most current version of a recognized standard shall be used, such as ATSSA’s “Quality Guidelines for Temporary Traffic Control Devices”.

5. Driver’s View

The person in-charge of the safety or his/her designee, should at least one time, after the safety is set-up, drive and check the set-up from a driver’s view. If the operation is for a longer duration the inspection should be done periodically.
6. Drums
Drums shall be used when the planned closure is for 48 continuous hours or more and the posted speed limit is 45 MPH or more.

7. Emergent Condition
An unplanned, unexpected emergency operation that is necessary to address an immediate hazard to the motoring public. An immediate hazard may be defined as an event that results in an unexpected situation urgently requiring prompt action. Examples include: large debris in the travel lanes; large debris in the shoulder that may find its way into the travel lane; disabled vehicles in the travel lanes or shoulder; snow and ice control; or IMRT response. Other than snow and ice control, reference the NJDOT Safety Standard Operating Procedure entitled, “Traffic Incident Management Safety” for the appropriate workzone safety criteria. Vehicles involved with snow and ice control must have all lights activated and in working order.

8. Flagging
For guidelines on flagging operations, see the Work Zone Section of the NJDOT Safety Manual. Optional Flagger, as referenced on the Charts, to be off the roadway and shoulder.

9. Intersection Options, Chart 25
A planned detour may be requested through Traffic Operations and appropriately signed to direct traffic. Police traffic directors may be utilized to assist with the flow of traffic. In the event that there is heavy truck traffic turning right into the Work Area, an opposing left lane closure may be installed. See Chart 24 for the additional setup.

10. Mobile Operation
Operation that moves intermittently (stops up to 15 minutes) or continuously in the immediate area (approximately 1000 linear feet).

11. Mobile Operation Sign Option
An additional vehicle with a tail-gate mounted "Road Work Ahead" (RWA) sign can be used in place of the RWA advance warning sign.
12. Protection Vehicle with attached Crash Cushion/Truck Mounted Attenuator (TMA)

Protection Vehicles are used to protect the maintenance worker from being directly hit by an errant vehicle. It should be placed at a sufficient distance in advance of the workers and/or equipment being protected so that there will be adequate distance, (but not so much so that an errant vehicle will travel around the Protection Vehicle and strike the protected workers and/or equipment). The suggested distance is 75 - 150 feet or as recommended by the attenuator Manufacturer. Protection Vehicles must be equipped with an arrow panel.

Protection Vehicles are also used to warn traffic of the operation ahead. During a Mobile/Moving operation, where adequate stopping sight distance is available, the Protection Vehicle should maintain the recommended distance as mentioned above and proceeds at the same speed as the work vehicle. The Protection Vehicle should slow down in advance of vertical or horizontal curves that restrict sight distance.

The suggested distance of 75 - 150 feet or as recommended by the attenuator Manufacturer, applies to the Protection Vehicle(s) closest to the work area. The distance for additional Protection Vehicle(s) need to be adjusted to actual site conditions to prevent vehicles from entering the work area.

13. Shoulder Taper (S)

The shoulder taper should be used, when shoulder is closed for operations on the shoulder or the adjacent lane/lanes. The length of the shoulder taper is shown on the chart.

14. Signs on left side

Signs are warranted on the left side of the highway if the highway is:

A. More than two lanes wide in the direction where the work is performed AND
B. The median or the left shoulder is at least eight (8) feet wide.

If the left shoulder or the center median width is less than eight (8) feet, at any of the specific locations required, and there is no other reasonable location close by, then skip that sign and place the rest of the signs. Try to place at least the advance warning signs such as ROAD WORK 1 MILE or ROAD WORK 2 MILES.
15. Spacing of Cones and Drums  Use the Taper Lengths and Number of Cones Chart in this Guide.

16. Taper (L)  The approach taper should be minimum distance as shown on the "Taper Lengths And Number of Cones Chart" of this Guide. If the sight distance is restricted due to the presence of a vertical or horizontal curve the length of the taper should be increased if possible.

17. Traffic Incident Management  An emergency road user occurrence or other unplanned event that effects or impedes the normal flow of traffic. Reference the NJDOT Safety Standard Operating Procedure entitled, "Traffic Incident Management Safety" for the appropriate workzone safety criteria.

18. Variable Message Sign (VMS)  VMS can be used to supplement the existing safety setup. It is to be placed in a clear and visible location off the roadway, with as much sight distance as possible. Traffic Operations should be consulted for appropriate messages, programming and recommended distance placement.
I. PURPOSE

To establish temporary traffic control procedures for traffic incident management and employee safety measures. To address the initial response to the emergency, traffic control devices available on-site shall be used.

II. SCOPE

This procedure covers the required workzone safety criteria needed to perform and support emergency service patrol work and the protection of responding employees. Employees shall follow all other safety procedures for working on or near the roadway. Procedures containing detour approval and enacting the Incident Management Response Team process are not contained within this SOP.

III. DEFINITIONS

Traffic Incident – An emergency road user occurrence or other unplanned event that affects or impedes the normal flow of traffic. Examples include stalled vehicles, traffic crashes and highway spills that block lanes.

Minor Traffic Incident - A category of a traffic incident that has an expected duration less than 30 minutes.

Intermediate Traffic Incident – A category of a traffic incident that has an expected duration from 30 minutes to 2 hours.

Major Traffic Incident– A category of a traffic incident that has an expected duration of more than 2 hours.
IV. PROCEDURE

A. Overview - In order to reduce response time and ensure the safety of the motoring public and employees, temporary traffic control measures shall be implemented. More stringent traffic control measures as outlined by the DOT Workzone Safety Setup Guide, MUTCD or a traffic engineer may be used appropriate to site conditions.

B. Assessment and Categorization of the Traffic Incident (Minor, Intermediate, Major)

1. Within the first 15 minutes, the on scene employee shall estimate the duration of the lane closure and categorize the incident. Re-assessment shall be conducted at 30 minutes and 90 minutes after arriving at the scene, to determine if the category needs to be changed (upgraded to the next level). On-site employee(s) shall initiate traffic control appropriate for original assessment and reassessments.

2. The employee shall establish traffic control and request assistance consistent with the estimated category of traffic incident.

C. Traffic Control by Category

1. Every effort shall be made to remove the incident from the travel lane(s). The cause of the incident shall be relocated to the shoulder or off the road as soon as is practical. Employees shall approach the incident in a manner consistent with safe work practices that do not unnecessarily expose them to traffic. Appropriate warning devices and procedures for the Traffic Incident Category, as outlined below, shall be implemented.
2. Employees shall always be aware of:
   - Their visibility to oncoming traffic
   - Roadway geometrics
   - The need for warning devices
   - Approaching traffic

3. Minor Traffic Incident Category –

   Safety lights shall be activated. The arrow display or variable message board (VMS) shall be activated when available. If additional warning is needed, cones and warning signs may be placed in addition to the lights and arrow display/VMS being activated.

4. Intermediate Traffic Incident Category –

   Safety lights shall be activated. The arrow display or variable message board (VMS) shall be activated when available. Cones, signs and a flare line (when it will not constitute a fire hazard) shall be placed as warning devices in addition to the lights and arrow display/VMS being activated. Additional protection/warning devices shall be installed. The additional protection shall include at least one of the following, in the priority order given:

   a) A truck mounted attenuator equipped protection vehicle (TMA) as soon as practical. [During normal work hours, Operations shall be contacted for durations in excess of 60 minutes.]
   b) A uniformed law enforcement officer
   c) A second advance warning vehicle with activated safety lights, an arrow display/VMS and additional cones and signs.
   d) A trained flagger

The decision on which additional protection is required, shall consider the actual traffic speed at the incident.
Major Traffic Incident Category –
Safety lights shall be activated. The arrow display or variable message board (VMS) shall be activated when available. Operations shall be contacted to provide traffic control in accordance with the NJDOT Safety Manual.

D. Training

1. All employees responsible for assisting motorist and responding to traffic incidences shall be trained on these safety procedures.

2. Supervisors shall ensure that only trained employees are assigned this work.

3. Training documentation shall comply with Safety SOP TRAIN.
## TAPER LENGTHS AND NUMBER OF CONES CHART

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<td>Taper</td>
<td>Shoulder Taper</td>
<td>Taper</td>
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<td>Length L (Ft.)</td>
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<td>Length S (Ft.)</td>
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## TAPER LENGTHS AND NUMBER OF CONES CHART

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AREAS IN A TRAFFIC CONTROL ZONE

TERMINATION AREA
LETS TRAFFIC RESUME NORMAL DRIVING
100 FT PER LANE OF DOWNSTREAM TAPER
WHERE SPACE IS AVAILABLE

ACTIVITY AREA
SET ASIDE FOR ACTUAL WORK,
WORKERS, EQUIPMENT, VEHICLES, MATERIAL,
STORAGE, AND TMA

ROLL AHEAD DISTANCE
ATTENUATOR TRUCK

BUFFER SPACE (WHERE SPACE AVAILABLE)
PROVIDES PROTECTION FOR TRAFFIC AND WORKERS
NO STORAGE OF EQUIPMENT OR MATERIAL
IN THIS AREA

TRANSITION AREA
MERGER TAPER
MOVES TRAFFIC OUT OF ITS NORMAL PATH

SHOULDER TAPER
BEGIN CLOSURE TO TRAFFIC

ADVANCE WARNING AREA
TELLS TRAFFIC WHAT TO EXPECT AHEAD

ADVANCED WARNING SIGNS
LEGEND

- Cone/Drum
- Sign
- Work Vehicle
- Truck with attached attenuator (TMA)

Use this sign in addition to the 1 MILE sign when the speed limit is 65 MPH

Use only if highway is undivided

Eliminate signs for opposite direction

- Arrow Panel
- Variable Message Sign (VMS)
- Stop/Slow safety sign paddle
- W Width of closed road
- L Taper Length
- S Shoulder Taper
1. The ROAD WORK AHEAD sign may be replaced with other appropriate signs such as the signs such SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

2. The ROAD WORK AHEAD sign may be omitted where:
   The work space is behind a barrier or guide rail, or
   More than 2 feet behind the curb, or
   15 feet or more from the edge of any roadway.

3. See General Notes for cone spacing.
MOBILE OPERATION ON RIGHT SHOULDER

PROTECTION VEHICLE
(USE TMA WITH THE PROTECTION VEHICLE FOR SPEED LIMIT OF 45 MPH OR OVER)

SEE GENERAL NOTE #12

SHOULDER CLOSED

UP TO 2 MILES

ROAD WORK AHEAD

SEE GENERAL NOTE #11
MOBILE OPERATION IN CENTER MEDIAN

SIGN EVERY 2 MILES

WORKERS IN MEDIAN

CENTER MEDIAN

SIGN EVERY 2 MILES
SHORT-TERM STATIONARY OPERATION

IN CENTER MEDIAN

1000'- FREEWAY EXPRESSWAY
500'- RURAL
350'- URBAN

WORKER AREA

350'- URBAN
500'- RURAL
1000'- FREEWAY EXPRESSWAY

WORKERS IN MEDIAN

MEDIAN IN WORKERS
2 LANE ROAD
MOBILE OPERATION

FLOW OF TRAFFIC
FLOW OF TRAFFIC

SHOULDER
SHOULDER

DO NOT PASS

SEE GENERAL NOTE #12
SEE NOTE #8 FOR OPTIONAL FLAGGER

UP TO 2 MILES
ROAD WORK AHEAD

SEE GENERAL NOTE #11
2 LANE ROAD
WORK AREA PARTIALLY IN LANE
2 LANE ROAD
WORK AREA IN CENTER OF ROAD
MULTI-LANE ROAD-DIVIDED (LESS THAN 65 MPH)

WORK AREA IN LEFT LANE

SEE GENERAL NOTE #14

FLOW OF TRAFFIC

FLOW OF TRAFFIC

500'- 700'

1000'- 1500'

2500'- 3000'

5000'- 5500'

LEFT LANE CLOSED 1/2 MILE

LEFT LANE CLOSED 1/2 MILE

ROAD WORK 1 MILE

400 FT OF DOWNSTREAM TAPER
WHERE SPACE IS AVAILABLE

15
MOBILE OPERATION ON MULTI-LANE ROAD

RIGHT LANE CLOSED

FLOW OF TRAFFIC

SHOULDER

SHOULDER

SEE GENERAL NOTE #12 FOR SPACING OF VEHICLES

SEE GENERAL NOTE #20 FOR USE OF VMS

UP TO 2 MILES

SEE GENERAL NOTE #11

ROAD WORK AHEAD
MOBILE OPERATION ON MULTI-LANE ROAD

RIGHT TWO LANES CLOSED

FLOW OF TRAFFIC

SHOULDER

RIGHT TWO LANES CLOSED

RIGHT TWO LANES CLOSED

SEE GENERAL NOTE #12 FOR SPACING OF VEHICLES

SEE GENERAL NOTE #18 FOR USE OF VMS

UP TO 2 MILES

SEE GENERAL NOTE #11

ROAD WORK AHEAD
MULTI-LANE ROAD-UNDIVIDED

WORK AREA IN LEFT LANE AT INTERSECTION FAR SIDE

FLOW OF TRAFFIC

500', 1000'

ROAD WORK AHEAD

FLOW OF TRAFFIC

500', 1000'

ROAD WORK AHEAD

FLOW OF TRAFFIC

(USE TMA WITH PROTECTION VEHICLE FOR SPEED LIMIT OF 45 MPH OR OVER)

FLOW OF TRAFFIC

LEFT LANE CLOSED 1/2 MILE

LEFT LANE CLOSED 1/2 MILE

ROAD WORK AHEAD

ROAD WORK 1 MILE

23
MULTI-LANE ROAD-UNDIVIDED

WORK AREA IN RIGHT LANE AT INTERSECTION FAR SIDE

SEE GENERAL NOTE #9
FOR OPTIONAL LEFT LANE CLOSURE

ROAD WORK AHEAD

FLOW OF TRAFFIC

FLOW OF TRAFFIC

ROAD WORK AHEAD

FLOW OF TRAFFIC

FLOW OF TRAFFIC

(USE TMA WITH PROTECTION VEHICLE FOR SPEED LIMIT OF 45 MPH OR OVER)

RIGHT LANE CLOSED 1/4 MILE

RIGHT LANE CLOSED 1/4 MILE

RIGHT LANE CLOSED 1 MILE

ROAD WORK 1 MILE

SEE GENERAL NOTE #9
FOR ADDITIONAL OPTIONS
MULTI-LANE ROAD-UNDIVIDED

WORK AREA IN RIGHT LANE AT INTERSECTION NEAR SIDE

FLOW OF TRAFFIC

ROAD WORK AHEAD

FLOW OF TRAFFIC

ROAD WORK AHEAD

FLOW OF TRAFFIC

ROAD WORK AHEAD

RIGHT LANE CLOSED ¼ MILE

RIGHT LANE CLOSED ¼ MILE

ROAD WORK 1 MILE

(USE TMA WITH PROTECTION VEHICLE FOR SPEED LIMIT OF 45 MPH OR OVER)
WORKING ON STATE ROADWAYS

Contact the Regional Services Permits Group …


Central (732-625-4330): Hunterdon, Mercer, Middlesex, Monmouth, Ocean, Somerset

South (856-486-6688): Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Salem

Before you dig, contact:

NJ ONE CALL
1-800-272-1000
and

Regional Services Permits when working within NJDOT Right-of-Ways

NJDOT EMPLOYEE SAFETY
609-530-5472

NJDOT GENERAL INFORMATION
www.state.nj.us/transportation
609-530-2000