STANDARD PLANS
for
ROAD CONSTRUCTION

New Hampshire DOT
Department of Transportation

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
September 1, 2020
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## HIGHWAY STANDARD PLANS

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<thead>
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<tr>
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## TRAFFIC STANDARD PLANS

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![Diagram showing road layout and signage]

**Legend**
- Single delineator - white
- Double delineator - yellow
- Single delineator - yellow
- Single delineator double-faced - yellow

**General Notes**
1. At interchange ramps, delineators shall be located along the outside of the curves. The intersection precedes these on both sides where needed for clear indication of the alignment.
2. Continue normal delineator spacing on both sides of roads. If rates of curves are greater than 1000 ft or tangent side, see bow, see E-11.
3. Place the rear of white signs on ramps. The most effective is less than 1000 ft.
4. Delimitation is repeated on both sides of curves. The delineator is placed on the left side of the curves. The delineator is placed on the right side of the curves.
5. In a combination with double-faced signs, you can install the delineator on the right side of the curves.

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**Delineation Standard**
**Interchange Delineation**

[Signature Page]
### General Notes

1. **Design of the section shall comply with standard reinforced concrete pipe.**
2. **Cut off wall to be formed by field-segmenting as specified by the Engineer.**
3. **Flanges for the cut off wall shall be made from the specified concrete wall.**

### Plan

- **Plan View**
- **Elevated View**

### Details

- **Details**

### Section

- **Concrete End Section for Reinforced Concrete Pipe**

### Tables

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**Note:** All dimensions are in inches.
TYPICAL HALF-SECTION SHOWING MUCK TO BE REMOVED
PAR SECTION 391.
GENERAL NOTES
1. ALL END POSTS SHALL HAVE ONE BRACE. ALL CORNER AND INTERMEDIATE
   BRACE OR FULL POSTS SHALL HAVE TWO BRACES.
2. INTERMEDIATE OR LINE POSTS SHALL BE STEEL SHEAR FRIED THE POST.
3. THE POSTS, CORNER POSTS AND FULL POSTS SHALL BE AN ANGLE POST DETAIL
   IN PLATE 2. BRACES SHALL BE AN ANGLE POST DETAIL IN PLATE 3.
4. HORIZONTAL CROSSING REQUIREMENTS FROM THE DRAWING WILL NOT BE Fulfilled.
5. CONCRETE SHALL BE USED.

WOVEN WIRE FENCE (ITEM 607.1)

POST ASSEMBLIES FOR WOVEN WIRE FENCE (ITEM 607.4)

SECTION VIEW ON ROW LINE

SLOTTER HOLE SELF-FASTENING

TYPICAL FENCE POST ASSEMBLY
GENERAL NOTES
1. 20'-0" RAIL PANELS MAY BE USED IN PLACE OF 16'-0" PANELS EXCEPT ON CORRIDORS WITH A RAIL LENGTH OF LESS THAN 500 FT.
2. GUARDRAIL HEIGHT SHALL BE SET FROM THE GROUND AT THE EDGE OF RAIL.
4. See Sec. No. 11 for Beam Guardrail Sections.
5. BUS PANELS ARE ALTERNATE SIZE STEEL, AS SHOWN ON PLANS.
7. POSTS SIMILAR TO THE 1/8" DIAMETER OF THE DETAIL, BUT NOT LESS THAN 1/16" BUT NOT LESS THAN 1/16" BETWEEN THE GUARDRAIL AND THE POST.

THREE BEAM RAIL SECTION

W-THREE BEAM TRANSITION SECTION

BEAM GUARDRAIL (THREE BEAM SINGLE-FACED STEEL)
Typical Bed Plant Spacing

Groundcover Bed Planting

Seedlings (Evergreen) or Wetland Plug Placement

Liner Planting (Deciduous)

Trench Narrow Median Planting

Notes:
1. Remove circle markings on site of tree.
2. Make clean cuts on all stems of prepared trees prior to planting.
3. Remove entire supply of trees and roots on site.
4. Remove beds from entire root ball and add new root ball cut into the same area.
5. Stake tree by pouring 1/4”-1” diameter tree and 4”-6” diameter branches.
6. Remove excess branches and those developing into secondary leaders.

Staking and Guying

Tree Pruning

Planting Standard

Planting Details
DOUBLE LINES

TWO-LANE ROADWAY STRIPING LAYOUT

LEGEND

- \( \text{1/16" = 1" in Inches; Single Solid Line (Color: White, Yellow)} \)
- \( \text{1/8" = 1" in Inches; Double Solid Line (Color: White, Yellow)} \)
- \( \text{1/8" = 1" in Inches; Single Broken Line (Color: White, Yellow)} \)
- \( \text{1/16" = 1" in Inches; Double Broken Line (Color: White, Yellow)} \)

EXAMPLE: A 4" single solid line white = 4" SILW
TANGENT SECTION

CURVED SECTION

TYPICAL "CROSS-SWITCH" PASSING ZONE

TYPICAL BROKEN LINE

GENERAL NOTES
1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMITY WITH THESE STANDARDS AND THE CURRENT EDITION OF THE METOR.
2. WIDTH OF LINES SHALL VARY NO MORE THAN ± 1/4” FROM THOSE SPECIFIED.
3. THE NET FILM THICKNESS OF A PAINTED LINE SHALL BE A MINIMUM OF 0.1 INCH THROUGHOUT THE ENTIRE WIDTH AND LENGTH OF LINE SPECIFIED.
4. BROKEN LINES SHALL BEGIN AND END WITH THE NEAREST FULL CYCLE OF BROKEN LINE.
5. SOLID LONGITUDINAL LINES SHALL BE SQUARE AND ONE WITHIN 2” OF A LAYOUT SQUARE INDICATING THE END OF THE LINE OR WITH A FULL CYCLE OF BROKEN LINE (IF APPLICABLE).

4” DOUBLE LINES
6” DOUBLE LINES
GENERAL NOTES

1. ALL RAMPS WITH A MINIMUM ROADWAY WIDTH OF 20' SHALL RECEIVE BOTH WHITE EDGE LINE AND YELLOW MEDIAN LINE. WHETHER THE RAMP HAS RAISED CURBING OR NOT.

2. THE EDGE AND MEDIAN LINE MARKINGS FOR RAMPS WILL BE A MINIMUM OF 30' FROM THE CURB OR EDGE OF PAVEMENT.

3. THE MINIMUM DISTANCE BETWEEN THE LINES FOR RAMPS SHOULD BE 14'. THE MEDIAN LINE ON A RAMP SHALL CONNECT WITH THE CURB MARKING. THE EDGE LINE SHALL CONNECT WITH THE MEDIAN LINE THE THIRD CONTINUOUS LINE.

4. 17' = THERMOPLASTIC.

5. THE "STRIPING" IF ASSOCIATED WITH A PARTIAL INTERCHANGE, SHALL BE PAINT.

EXIT RAMP WITH PARALLEL DECELERATION LANE

TRANSITION TAPER-L

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MARKINGS SHOWN ON THIS SHEET INDICATE DIRECTION OF TRAFFIC ONLY.
ENTRANCE AND EXIT RAMP CLOVERLEAF MARKINGS

EXIT RAMPS WITH LANE DROP AT EXIT

Arrangements shown in this sheet indicate direction of traffic only.
(1) = Thermoplastic.
### Painted Island with Left Turn Lane

<table>
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- **W** = Width of Offset (feet)
- **S** = Posted speed limit (mph)

### General Notes

1. See Standard No. PM-5 for layout of marks and symbols within turn lanes.
2. See raised island blockouts on Standard No. 7

### Single Lane, Two-Way Left Turn with Left Turn Only

### Stripping at Ends of Raised Islands

- Arrows shown on this sheet indicate direction of traffic only.
GENERAL NOTES

1. Painted crossline required on curbed shoulders greater than 24'.

2. Stop lines are 18' wide S6W6(1/2).

3. Straight through arrow as required. See the pavement marking plans for the appropriate layout.

4. Transverse crosswalk lines shall be thermoplastic, not less than 6' wide and not less than 6' apart.

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<th>TYPICAL B LAYOUT</th>
<th>POSTED SPEED (MPH)</th>
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CENTERLINE AND EDGELINE "CUTS" AT SIDE ROAD

NOTE: FOR SHOULDER WIDTH > 5’
TAPER EDGELINE AS SHOWN OR
FOR SHOULDER WIDTH < 5’
STRAIGHT LINE

 EDGE OF PAVEMENT

NOTE: FOR SHOULDER WIDTH > 5’
TAPER EDGELINE AS SHOWN OR
FOR SHOULDER WIDTH < 5’
STRAIGHT LINE

EDGE OF PAVEMENT

MAINLINE

CENTERLINE AND EDGELINE "CUTS" AT SIDE ROAD W/ TURN LANES

GENERAL NOTES

1. EDGELINE DETAILS SHOWN ARE FOR MAINLINE RUNWAYS.
   TURN LANE LANES MAY REQUIRE DIFFERENT EDGELINE TREATMENTS.

2. EDGELINE IN TURN PADS, WHEN CALLED FOR, SHALL FOLLOW THE SAME MAINLINE TYPICAL EDGELINE.
   TURN LANE EDGELINE SHALL NOT BE CONTINUOUS ALONG THE MAINLINE.
   EDGELINE SHALL END AT STOP BARS.

3. CENTERLINE AND EDGELINE SHALL BE CONTINUOUS PAST RESIDENTIAL DRIVEWAYS.
   CENTERLINE AND EDGELINE SHOULDS BE FOR COMMERCIAL DRIVES;
   INTRUDER CONTROLS ALONG SIDE PAVES OR PRIVATE DRIVE INTERSECTIONS.

4. LOCATION OF THE STOP LINE MAY VARY DUE TO
   INTERSECTION SIGN DISTANCE AND VEHICLE
   TURNING MARGINS. AND MAY NOT ALWAYS COINCIDE
   WITH THE LOCATION OF THE STOP SIGN.

5. IF THERE IS NO EDGELINE, END STOP BAR 12" FROM
   EDGE OF PAVEMENT.

6. STOP BARS, LINES, LANE LANES, SYMBOLS AND ARROWS SHALL
   BE THERMOPLASTIC.

PAVEMENT MARKING STANDARD
PAVEMENT MARKINGS
AT MINOR INTERSECTIONS
PERPENDICULAR ACCESSIBLE PARKING

GENERAL NOTES
1. VAN ACCESS AISLE SHALL BE A MINIMUM 8' WIDE.
   VAN ACCESSIBLE PARKING SIGN #7-4.
2. ARROW ON THIS SHEET INDICATE DIRECTION OF TRAFFIC ONLY.
3. PTRA THERMOPLASTIC PARKING MARKING.

PARALLEL ACCESSIBLE PARKING
SCHOOL
PAY QUANTITY - 34.7 FT²

X-ING
PAY QUANTITY - 20.8 FT²

STOP
PAY QUANTITY - 22.2 FT²

AHEAD
PAY QUANTITY - 31.3 FT²

ONLY
PAY QUANTITY - 22.3 FT²

TURN ARROW
(RIGHT TURN OPPOSITE IN KIND)
PAY QUANTITY - 17.0 FT²

THROUGH (STRAIGHT ARROW)
PAY QUANTITY - 18.5 FT²

COMBINATION ARROW
PAY QUANTITY - 28.8 FT²

ONLY
PAY QUANTITY - 22.3 FT²

TURN ARROW
(RIGHT TURN OPPOSITE IN KIND)
PAY QUANTITY - 17.0 FT²

THROUGH (STRAIGHT ARROW)
PAY QUANTITY - 18.5 FT²

COMBINATION ARROW
PAY QUANTITY - 28.8 FT²

GENERAL NOTES
1. ALL MESSAGES SHALL BE RETROREFLECTIVE WHITE AND SHALL COMPLY WITH THE LATEST VERSION OF THE MANUAL.
2. MULTI-WORD MESSAGES SHALL BE READ "UP"; THAT IS, THE FIRST WORD SHALL BE NEAREST THE APPRAISAL DRIVER.
3. THE WORD "ONLY" SHALL NOT BE USED WITH TURNING OR COMBINATION ARROWS, AND SHALL NOT BE USED IN COMBINATION WITH A BRAKE LANE LINE. A MESSAGE SHALL PRECEDE THE WORD "ONLY".
5. PREVIOUS WORDS AND SYMBOLS SHALL BE PRE-CUT BY THE MANUFACTURER.
6. WRONG-WAY ARROWS SHALL NOT BE USED IN COMBINATION WITH ARROWS.
7. ALL STOP BARS, MESSAGES, SYMBOLS AND ARROWS SHALL BE RETROREFLECTIVE.

PAVEMENT MARKING STANDARD
WORDS AND SYMBOLS
**RAILROAD CROSSING SYMBOL**

- **Fat Quantity:** 53.6 ft (See Note 3)

**BICYCLE LANE SYMBOL**

- **Fat Quantity:** 3.1 ft

**BICYCLE LANE DIRECTIONAL ARROW**

- **Fat Quantity:** 6.0 ft

**Pavement Markings at Railroad-Highway Grade Crossings**

1. A portion of the pavement marking RRR symbol should be directly opposite the advance warning sign (see note 2). Not shown.

2. In multi-lane roads, the transverse lines should extend across all approach lanes, and individual RRR symbols should be used in each approach lane.

3. RRR symbol will be paid for by the square foot. Transverse lines and stop bars (24" wide) will be paid for by the linear foot.

**Pavement Marking Standard**

**Words and Symbols**
ATTACHMENT OF AUXILIARY PANELS AND SERVICE SYMBOL PANELS (BACK VIEW)

1. AUXILIARY PANELS SHALL BE MOUNTED TO THE RIGHT SIDE OF THE MAIN SIGN FOR RIGHT-HANDED EXIT PATHS; TO THE LEFT FOR LEFT-HANDED EXIT PATHS. SUPPORTS SHALL EXTEND TO THE TOP OF THE AUXILIARY PANEL AND SHALL OVERLAP THE MAIN SIGN BY A MINIMUM OF 3 FULL PLANKS AS SHOWN.

2. SERVICE SYMBOL PANEL SUPPORTS WHEN NOT ON A SEPARATE SIGN, SHALL BE MOUNTED IMMEDIATELY BELOW THE MAIN SIGN, AND CENTERED LATERALLY WITHIN THE WIDTH OF THE SIGN. SUPPORTS SHALL OVERLAP THE MAIN SIGN BY A MINIMUM OF 3 FULL PLANKS AS SHOWN.

3. PLANK ASSEMBLIES SHALL BE INSTALLED ON BOTH SIDES OF EACH AUXILIARY PANEL SUPPORT AND SERVICE SYMBOL SUPPORT AT EACH PLANK, AS WELL AS EACH SIDE OF BOTH SUPPORTS.

GENERAL NOTES

1. GAP BETWEEN ANY TWO ASSEMBLED PLANK SECTIONS SHALL NOT EXCEED 3/32".

2. ALLOWABLE LATERAL BOW SHALL NOT EXCEED 1/16".

3. ALL PLANK SECTIONS SHALL BE ONE PIECE FOR THE ENTIRE WIDTH OF SIGN \( \text{SPECIFIED} \), AND SHALL NOT EXCEED 8 3/4" FROM THE LENGTH \( \text{SPECIFIED} \).

4. ALL PLANK SECTIONS SHALL BE 12" Wide unless otherwise specified.

5. SIGNS 8'L AND GREATER IN WIDTH SHALL BE MOUNTED ON STEEL BEAM.

PLANK MOUNTED ON STEEL BEAM

1. FIRST CLIP ASSEMBLY SHALL BE INSTALLED ON BOTH SIDES OF EACH POST AT EACH PLANK AS WELL AS AT THE TOP AND BOTTOM OF THE SIGN.

2. STEEL BEAM SHALL BE PLUSH WITH TOP OF SIGN AND SHALL NOT EXTEND INTO AUXILIARY PANELS.

3. STEEL BEAMS SHALL NOT BE USED AS AUXILIARY PANEL SUPPORTS.

PLANK MOUNTED ON TUBING

1. FIRST CLIP ASSEMBLIES SHALL BE INSTALLED AT EACH PLANK, AS WELL AS AT THE TOP AND BOTTOM OF THE SIGN.

2. TUBING SHALL NOT BE USED AS AUXILIARY PANEL SUPPORTS.
EXTRUDED ALUMINUM SIGN PLANK

POST CLAMP 4" DIA. 11 GAUGE

POST CLAMP ASSEMBLIES
1. SEE SPECIFICATION 011-2.1.3 FOR ADDITIONAL INFORMATION REGARDING THE CHANNEL BRACKET AND POST CLAMP.
2. USE 5/16" CAP SCREW WITH 2-7/8" LONG WASHERS AND LOCKNUT FOR CLAMP CONNECTION.
3. ALL HARDWARE SHALL BE STAINLESS STEEL.
SIGN AND U-CHANNEL POST ASSEMBLY DETAIL

1. FOR GALVANIZED U-CHANNEL POST, SEE WYDOT STANDARD SPECIFICATION FOR ROADS AND BRIDGES CONSTRUCTION MANUAL, SECTION 615.
2. THE STAINLESS STEEL HEX HEAD BOLT LENGTH SHALL BE INCREASED TO ACCOMMODATE A THINNER SIGN MATERIAL.
3. THE POST SHALL BE SET A MINIMUM OF 3 INCHES TO A MAXIMUM OF 6 INCHES BELOW THE TOP OF SIGN.
4. U-CHANNEL POSTS SHALL NOT BE SPLICED AND DO NOT REQUIRE CHANNEL BRACKETS.
5. U-CHANNEL POSTS SHALL BE INSTALLED 36" OF GREATER BELOW EXISTING GRADE.

GENERAL NOTES
1. BRACKETS: ALL SIGNS TO BE FASTENED TO POSTS WITH POST CLAMP ASSEMBLIES AS SHOWN.
2. SIGN WIDTH 36" OR LESS MAY BE MOUNTED ON ONE (1) U-CHANNEL POST.
3. RECTANGULAR SIGNS 72" X 48" OR LESS MAY BE MOUNTED ON TWO (2) U-CHANNEL POSTS, DIAMOND SHAPE SIGNS GREATER THAN 36" SHALL BE MOUNTED ON ALUMINUM THICKNESS (INTERSTATE).
4. SIGN HEIGHT 60" OR LESS, CENTER CHANNEL BRACKET MAY BE OMITTED.
5. DIAMOND SHAPE SIGNS 60" OR LARGER REQUIRE TWO CHANNEL BRACKETS.
6. SIGNS 72" X 72" OR GREATER SHALL BE ALUMINUM PLANK.
### Procedure for Selecting Beam Sections

- **Determine values for H, W, L** as indicated in drawing.
  - L = maximum width of required sign.
  - H = maximum height of required sign including auxiliary signs and service symbols.
  - M = maximum distance between top of footing and bottom of required sign.
- See General Note No. 9.
- For sign sizes between these values in the table, use next highest foot value.
- Enter table with maximum value of L. Use required values of H and M for selection of appropriate beam section.

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### General Notes

1. **Signs shall be provided for locations specified on the plans or as directed by the engineer.** See sign test layout sheets and plans for sign sizes and approximate location.

2. Dimensions, elevations, slopes, and situations shown are for illustrative purposes only. Actual cases will depend on field conditions.

3. When two or more independent signs are mounted as a single installation, the post supports shall be calculated with the total area of the signs being considered as one unit. Include an allowance for a 6” vertical space between the signs.

4. Post length to be determined by sign size and location. Exact field location to be determined by the engineer.

5. The minimum horizontal clearance to the near edge of the sign of any multiple post non-breakaway mount sign shall be 17”-0” min from face of beam Girder. Other types of clearance or barrier may require a different offset.


### Footing Detail

<table>
<thead>
<tr>
<th>POST</th>
<th>FOOTING</th>
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<tbody>
<tr>
<td>SIZE</td>
<td>DEPTH</td>
</tr>
<tr>
<td>5x4x7</td>
<td>4’</td>
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<tr>
<td>6x6</td>
<td>4’</td>
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<td>6x10</td>
<td>6’</td>
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<td>6x15</td>
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<td>6x18</td>
<td>1”-6”</td>
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<td>7x10</td>
<td>8’-6”</td>
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<td>W10x22</td>
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<td>W12x25</td>
<td>8’-6”</td>
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<tr>
<td>W15x26</td>
<td>8’-6”</td>
</tr>
</tbody>
</table>

### Signing Standard

**Steel Beam Details**

**Non-Breakaway**
PROCEDURE FOR SELECTING BEAM SECTIONS

- Determine values for W, H, L as indicated in drawing.
- H = Maximum height of required sign.
- L = Maximum length of required sign including auxiliary signs and service symbols.
- D = Maximum distance between top of footing and bottom of required sign.
- (see General Note No. 41)

- For sign sizes between those values in the table, use next highest foot value.
- Enter table with maximum value of "W" and required values of "H" and "D" for selection of appropriate beam section.

### 3 POST SIGN

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<thead>
<tr>
<th>W</th>
<th>L</th>
<th>H</th>
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<tr>
<td>5.0</td>
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</table>

### POST SPACING DETAIL

#### GENERAL NOTES

1. Signs shall be provided for locations specified in the plans or as directed by the engineer. See sign test layout sheets and plans for sign sizes and approximate locations.

2. Dimensions, elevations, slopes, and locations shown are for illustrative purposes only. Actual sizes will depend on field conditions.

3. When two or more independent signs are mounted as a single installation, the post supports shall be calculated with the total area of the signs being considered as one unit, including an allowance for a 6" vertical space between the signs.

4. Post length to be determined by sign size and location. Exact field location to be determined by the engineer.

5. The minimum horizontal clearance to the near edge of the sign of any multiple post non-breakaway when sign shall be 7" to 9" and from face of beam shoulder. Other types of shearwall or barrier may require a different offset.

6. For additional information, see Standard No. F-9-4 and F-9-5.

### FOOTING DETAIL

<table>
<thead>
<tr>
<th>POST</th>
<th>FOOTING</th>
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<tbody>
<tr>
<td>SIZE</td>
<td>DEPTH</td>
</tr>
<tr>
<td>Sx17.7</td>
<td>6&quot;</td>
</tr>
<tr>
<td>Wx8</td>
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<td>Wx17</td>
<td>6&quot;</td>
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<td>8&quot;</td>
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<tr>
<td>Wx21</td>
<td>8&quot;</td>
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<tr>
<td>Wx26</td>
<td>8&quot;</td>
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</table>

### SIGNING STANDARD

STEEL BEAM DETAILS
NON-BREAKAWAY
PROCEDURE FOR SELECTING BEAM SECTIONS

- DETERMINE VALUES FOR W, H, A, L AS INDICATED ON DRAWING
  - W = maximum width of required sign
  - H = maximum height of required sign including auxiliary signs and service symbols
  - L = maximum distance between top or bottom of supporting beam and bottom of required sign.
  
  SEE GENERAL NOTE NO. 6.

- FOR SIGN SIZES BETWEEN THESE VALUES IN THE TABLE, USE NEXT HIGHEST FOR T.

- ENTER TABLE WITH MAXIMUM VALUE OF "L" AND REQUIRED VALUES OF "H" AND "W" FOR SELECTION OF APPROPRIATE BEAM SELECTION.

### 2 POST SIGN

<table>
<thead>
<tr>
<th>W</th>
<th>L</th>
<th>H</th>
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<tbody>
<tr>
<td></td>
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</table>

### SPACING DETAIL

**MAXIMUM BREAKAWAY STUB HEIGHT**

Breakaway supports placed on existing slopes shall not allow impacting vehicles to pass over the foundation or any substantial portion of the sign. Surrounding terrain shall be designed to permit vehicles to pass over any non-breakaway portion of the sign installation which remains in the ground or rigidly attached to the foundation.

### GENERAL NOTES

1. SIGNS SHALL BE PROVIDED FOR LOCATIONS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. SEE SIGN TEST LAYOUT SHEETS AND PLANS FOR SIGN SIZES AND APPROPRIATE LOCATIONS.

2. DIMENSIONS, ELEVATIONS, SLIP, AND SITUATIONS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL SIZES WILL DEPEND ON FIELD CONDITIONS.

3. WHEN TWO OR MORE INDEPENDENT SIGNS ARE MOUNTED AS A SINGLE INSTALLATION, THE POST SUPPORTS SHALL BE CALCULATED WITH THE TOTAL AREA OF THE SIGNS BEING CONSIDERED AS ONE UNIT, INCLUDING AN ALLOWANCE FOR A 6" VERTICAL SPACE BETWEEN THE SIGNS.

4. POST LENGTH TO BE DETERMINED BY SIGN SIZE AND LOCATION. EXISTING FIELD LOCATION TO BE DETERMINED BY THE ENGINEER.

5. THE MINIMUM HORIZONTAL CLEARANCE TO THE NEAR EDGE OF THE SIGN OR ANY MULTIPLE POST NON-BREAKAWAY STUB SIGN SHALL BE 2'-0" MIN. FROM FACE OF BEAM CHAMFER. OTHER TYPES OF CORNER CHAMFERS OR BOTTOMS MAY REQUIRE A DIFFERENT OFFSET.

6. SEE STANDARD NO. PS-1 & PS-2 FOR ADDITIONAL INFORMATION.

### FOOTING DETAIL

<table>
<thead>
<tr>
<th>SIZE</th>
<th>DEPTH</th>
<th>DIAMETER</th>
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</thead>
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<tr>
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<tr>
<td>Wx12</td>
<td>6'</td>
<td>24&quot;</td>
</tr>
<tr>
<td>Wx16</td>
<td>6'-6&quot;</td>
<td>30&quot;</td>
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<tr>
<td>Wx21</td>
<td>6'-6&quot;</td>
<td>30&quot;</td>
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<td>Wx22</td>
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<td>Wx26</td>
<td>6'-6&quot;</td>
<td>36&quot;</td>
</tr>
<tr>
<td>Wx30</td>
<td>6'</td>
<td>36&quot;</td>
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### SIGNING STANDARD

**STANDARD NO. PB-7**

**STEEL BEAM DETAILS**

**BREAKAWAY**

- **FOOTING DETAILS**
  - **Diameter Units**: Feet"
PROCEDURE FOR SELECTING BEAM SECTIONS

- Dertermine values for W, H, & L as indicated in drawing
  - W = maximum width of required sign
  - H = maximum height of required sign
  - L = maximum distance between top of footing and bottom of required sign

- For sign sizes between these values in the table, use next highest

- Enter table with maximum value of "L" and required values of "W" and "H" for selection of appropriate beam section.

GENERAL NOTES

1. Signs shall be provided for locations specified on the plans or as directed by the engineer. See sign test layout sheets and plans for sign sizes and approximate locations.
2. Dimensions, elevations, slopes, and situations shown are for illustrative purposes only. Actual cases will depend on field conditions.
3. When two or more independent signs are mounted as a single installation, the post width shall be calculated with the total area of the signs being considered as one unit. Including an allowance for a 6" vertical space between the signs.
4. Post length to be determined by sign size and location. Exact field location to be determined by the engineer.
5. The minimum horizontal clearance to the near edge of the sign of any multiple post non-breakaway mount sign shall be 7'-0" min. from face of beam dimension. Other types ofahmein or barrier may require a different offset.

3 POST SIGN

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POST SPACING DETAIL

FOOTING DETAIL

STANDARD PLANS, 2020
**GENERAL NOTES**

1. Assemble according to manufacturer's instructions.
2. See P5-7 or P5-8 for steel beam sizes.
3. See P5-10 for bracket selection tables for type B-605-LP & B-650-LP.

* TRANSPRO TYPE AP-6 (OR EQUAL) *

Use for 6" diameter aluminum tube

* TRANSPRO TYPE AS-1P (OR EQUAL) *

Use for mini steel beam

* TRANSPRO TYPE R-B50-LP (OR EQUAL) *

Use for mini, super, mini, or mini steel beams

* TRANSPRO TYPE R-850-LP (OR EQUAL) *

Use for mini, super, mini, or mini steel beams

---

**STIFFENER DETAILS**

**SPACER DETAIL**

**BRACKET**

**ANCHOR**

**COUPLING**

**SHIM**

---

**DISTANCE FROM TOP OF HINGED PLATE TO BOTTOM OF SIGN SHALL BE PER MANUFACTURERS SPECIFICATIONS**

---

**BOLT HEAD SHALL FACE TRAFFIC**
GENERAL NOTES

1. BACKGROUND FOR ALL SHIELDS FOR C-40 SIGNS SHALL BE WHITE TYPE III. BACKGROUND FOR ALL
   SHIELDS ON OVERHEAD STRUCTURES SHALL BE TYPE VII, VIII, IX OR X.

2. SHEET ALUMINUM USED FOR REVERSIBLE ROUTE MARKERS SHALL CONTAIN THE TRIM LINE OF THE SHIELD.

3. NEW HAMPSHIRE STATE ROUTE MARKERS SHALL UTILIZE "THE OLD MAN" IMAGE OR OUTLINE AS FOLLOW:
   - INDEPENDENT ROUTE MARKERS SHALL HAVE BLACK TEXT INSIDE A BLACK "OLD MAN" IMAGE AS SHOWN ABOVE.
   - GUIDE SIGN ROUTE MARKERS SHALL HAVE BLACK TEXT ON A CUT OUT WHITE "OLD MAN" OUTLINE AS SHOWN LEFT.

4. NEW HAMPSHIRE TURNPIKE ROUTE MARKERS SHALL UTILIZE THE FOLLOWING DESIGN:
   - TURNPIKE GUIDE SIGN ROUTE MARKERS SHALL HAVE BLUE TEXT, BORDER, AND BACKGROUND.
   - EVERETT TURNPIKE GUIDE SIGN ROUTE MARKERS SHALL HAVE GREEN TEXT, BORDER, AND BACKGROUND.

5. INTERSTATE AND U.S. ROUTE MARKERS SHALL CONFORM TO THE HARRIS AND STANDARD HIGHWAY SIGNS MANUAL.

6. DIMENSIONS OF ROUTE MARKERS NOT SHOWN ON THIS SHEET SHALL BE EXACTLY PROPORTIONAL TO THOSE SHOWN.

**NH STATE ROUTE MARKER PATTERN**

**FOR GUIDE SIGN USE**

**NOTES:**

1. OFFICIALLY PLACE MINERALS WITHIN SHIELD.

2. ANY 2 DIGIT ROUTE WITH ONE OR MORE OF M 1-6 IN THE SIGN WILL BE A "C" SERIES.

3. ANY 3 DIGIT ROUTE WITH TWO OR MORE OF M 1-6 IN THE SIGN WILL BE A "C" SERIES.

4. ANY 3 DIGIT ROUTE WITH THREE OR MORE OF M 1-6 IN THE SIGN WILL BE A "C" SERIES.
CONCRETE PULL BOX 14" x 14"
ITEM 614.111

CONCRETE PULL BOX 18" x 18"
ITEM 614.112

GENERAL NOTES
1. DIMENSIONS SHOWN ARE NOMINAL. WELDED PULL BOXES MAY VARY BY 1/4".
2. ADJUST FRAMES & COVERS SO THAT DRAINAGE WILL BE AWAY FROM PULL BOX.
3. LOGO = SIGNAL, I/E!, MAIN OR POWER AS REQUIRED, OR CENTER OF COVER.

TRENCH DETAIL FOR CONDUIT INSTALLATION

MOLDED PULL BOXES
(FOR USE IN OTHER THAN PAVED AREAS)
GENERAL NOTES (TYPE I FOUNDATION)

1. There shall be a minimum of two (2) bolts per anchor bolt, in the longitudinal foundation location, to ensure the desired frictional resistance of the shear resistance foundation system. The friction shall be resisted either by welds or concrete anchors.

2. All reinforcing steel shall be Grade 60, or equivalent, in accordance with the requirements of the applicable codes. The concrete shall be a mixture of 1 part cement, 2 parts sand, and 3 parts coarse aggregate, by volume, and shall be compacted by vibration or tampering.

3. The foundation shall be designed to resist the maximum environmental loads, including wind, snow, and earthquake forces, without exceeding the capacity of the soil and foundation system.

4. The reinforced concrete foundation shall be designed to resist the maximum environmental loads, including wind, snow, and earthquake forces, without exceeding the capacity of the soil and foundation system.

5. The foundation shall be designed to resist the maximum environmental loads, including wind, snow, and earthquake forces, without exceeding the capacity of the soil and foundation system.

6. The foundation shall be designed to resist the maximum environmental loads, including wind, snow, and earthquake forces, without exceeding the capacity of the soil and foundation system.
AMENDMENTS TO PART VI OF THE MUTCD (2009 EDITION)

NOTE: Revised Standards TC-1 through TC-8 amend Part VI of the 2009 edition of the MUTCD by superseding or supplementing certain Sections. They shall be used in conjunction with the MUTCD and the Specifications for work zone traffic control on all projects.

1. Section 6C.64, Table 6C.1 and Section HH.01, Table HH.3, "Urban (low speed)" shall be defined as those roadways with regulatory speed limits of 30 mph or less; "Urban (high speed)" shall be defined as those roadways with regulatory speed limits of 35 mph or greater.

2. Section 6F.03, Sign Placement. Add the following paragraph as a "Standard" heading:
   a. Actuate placement of temporary control signs shall be carefully controlled to avoid obstructing existing signs or allowing existing signs, vegetation or other physical features to obstruct or limit visibility to temporary traffic control signs. Temporary traffic control signs shall also be placed at locations that avoid overwhelming motorists with information when combined with existing signs.

3. Section 6F.17 Positioning of Advanced Warning Signs. Add the following sentence as "Guidance" and "Option", respectively, after sentence 04:
   05. Where multiple operations are occurring in the same area, duplication of the advance warning signs, e.g. ROAD WORK AHEAD, ROAD WORK 3 MILE, etc., should be avoided.

Option:
   05. In cases where room for advance warning signage is severely limited, some of the general advance warning signs (e.g. ROAD WORK AHEAD) may be eliminated in order to provide adequate space for driver to see and comprehend the warning signs requiring driver action, e.g., LANE ENDS, MOWER LEFT, FLASHER AHEAD, etc.

4. Section 6F.64, Cones. Add the following to the "Standard":
   01a. Cones shall be used at night as the primary channelization device, except during work hours.

5. Section 6F.65, Tubular Markers. Replace paragraphs 01 and 02 of the "Standard" section with the following:
   01. Tubular markers shall be predominately orange and shall not be less than 42 inches high and 4 inches wide when facing road users. They shall be made of material that can be struck without causing damage to the impacting vehicle. Refer to MUTCD 6F.65 Paragraph 3 for delineation color and type.

6. Section 6F.67, Drums. Add the following sentences after Sentence number 01:
   Standard:
   01. Drums shall be the primary delineation device on divided highway for all tapers and tangents.

   Option:
   01b. Cones or tabular markers may be used, only in the tangent sections of the lane closure, when adequate width, geometric constraints or the duration of the operation (short-duration or mobile, see 6G.02 for Work Duration definitions) necessitates the use of a narrower or more easily moved channelizing device.

7. Section 6F.78 - Temporary Markings. Add the following sentences:
   05a. All temporary markings on divided highways shall be 1-inch removable tape or paint conforming to MUTCD Chapter 3, Section 3A.
   05b. All temporary markings shall be offset 1-foot from the final striping location.
   05c. All temporary white broken-line pavement markings for traffic moving in the same direction shall be retroreflective painted or paint, "temporary paint or tactile markings shall have a cycle length of 40 feet long with minimum 4-foot long span and 36-foot long gap. Temporary tape shall be removed prior to any overlapping and after permanent pavement markings have been applied.
   05d.Stop lines shall be installed during temporary conditions and shall be retroreflective painted or paint. Replace "Guidance" paragraph 03 with:
   03. Edge lines, channelizing lines, lane reduction transitions, gore markings, and non-longitudinal lines (e.g. railroad crossings, crosswalks, medians, symbols, etc.) are usually not required for temporary situations. Their use should be evaluated on a project by project basis on local conditions, traffic speeds and volumes, and the use of other traffic control devices. When used, temporary markings for these types of longitudinal and non-longitudinal lines shall be retroreflective painted or paint and conform to MUTCD Part 3 Sections 3A and 3B.

8. Section 6F.85 - Temporary Traffic Barriers. Add the following to the "Standard" paragraph 06:
   06. Temporary traffic barriers in the form of sand barrels and water filled barrels shall not be used from November 1st through March 15th unless the weather is extremely severe for temporary situations. Their use shall be evaluated on a project by project basis on local conditions, traffic speeds and volumes, and the use of other traffic control devices. When used, temporary traffic barriers shall be treated in accordance with the manufacturer's recommendations for preventing freezing.

9. Section 6F.86 - Crash Curnicles. Add the following to the "Standard" paragraph 05:
   05a. Truck Mounted Attenuators (TMAs) shall be used as positive protection when short-term, short duration, or mobile work operations require a lane or shoulder closure.

10. Section 6G.05 - Work Affecting Pedestrian and Bicycle Facilities. Add the following to the "Support" paragraph 03:
    03. Signs (N-11 (Bike Use Full Lane)) sign should be used when the width of a single lane and shoulder is less than 14', except when the existing lane and shoulder in the geometrical vicinity of the work provides less than 14' clear. This sign is optional where operational controls are used, and during mobile, short duration, and short term stationary work durations as defined by Section 6G.02. This sign shall not be used when the speed limit is over 40 mph.

11. Section 6H.01, Typical Applications. Add the following paragraph to the Option heading:
    08. Many data signs ROAD WORK (W-20-3) ROAD WORK NEXT MILE (W-30-11) and END ROAD WORK (W-30-1a) signs are used for specific activities. These signs may be omitted if the activity is being performed within the limits of a larger project and the Advance Warning and/or Termination Signs for the larger project provide reasonable warning for the motorists for the activity.

12. Section 6H.01, Figure 6H-4: The diagram for the unsignalized crossing of a Haul Road shows intermix use a NO PASSING ZONE (W-14-3) sign to deter passing maneuvers. In lieu of intermix, cones may be placed along the centerline, using a maximum spacing of 40-feet. In both diagrams, an ADJACENT CROSSING (W-6-5) sign at a distance "B" in advance of the NO PASSING ZONE (W-14-3) sign. Show the ROAD WORK AHEAD (W-20-3a) sign at distance "C" in advance of the TRUCK CROSSING sign. (See Table 68-3 for distance between signs)

13. Section 6H.01, Figure 6H-16: Make the following revisions:
    a. Use REVERSE CURVE (M-14) signs which show side-by-side arrows, one arrow for each open lane, at each location that the sign is shown.
UNIFORMED OFFICER AND FLAGGER USE GUIDELINES

Flaggers shall be used to the greatest extent possible for "dynamic" traffic control operations. Uniformed Officers may be utilized for their specific authority above and beyond that of a flagger, such as assistance in speed control and traffic law enforcement. The use of Uniformed Officers may be necessary in some instances. However, officer use is not a requirement. Their use must be preapproved by NH DOT.

Examples of traffic control operations where Uniformed Officers and flaggers are typically not needed:
1. Shoulder work.
2. Work behind barrier.

Examples of traffic control operations where flaggers should be used include:
3. Alternating 1-way traffic (stop/slow paddles must be used).
4. Directing traffic through low volume intersections.
5. Assisting traffic and equipment in and out of work areas.
6. Providing coverage at side roads and driveways during mobile operations (e.g. paving, striping, etc).
7. Directing pedestrians and bicyclists through the work zone.

Examples of traffic control operations where Uniformed Officers may be used include:
8. Directing traffic through complex intersections, especially where signals are being overridden.
9. Assisting construction vehicles and equipment in and out of work areas on high-speed (e.g. 45 mph), high volume facilities (e.g. 15000 vpd). Note: if an access area is anticipated to be in place for an extended period of time and it is determined that assistance is required for the safe exit and entry of construction vehicles, then a cost analysis should be completed to determine if stationary measures (e.g. signals) would be more cost effective than officers or flaggers.
11. If a uniformed officer is already on site for other needs (enforcement or presence), then the officer may be asked to supplement these duties by providing limited duration traffic control that would otherwise be covered by a flagger. However, the officer must be adequately trained for the flagger operation to be performed and must use appropriate equipment and techniques (which may include the use of stop/slow paddles).
12. If approved, officers may be hired as a speed deterrent and/or to increase driver awareness through a work zone under the following conditions:
   a. The work zone has a posted speed of 45 mph or higher and an average daily traffic (ADT) volume of 15,000 vpd or greater; and
   b. The work zone presents a unique safety issue, such as a high rate of crashes, vehicles traveling at excessive speeds, poor highway geometry, excessive speed/weight glare, workers exposed to traffic, and/or construction equipment frequently entering and exiting the work zone.
13. In rare cases, a presence officer may be approved for use on low speed (< 45 mph) or low volume (< 15,000 vpd) roads if a unique safety issue exists and other speed deterrent or driver awareness measures are proven ineffective.
14. The use of law enforcement may be considered for nighttime operations. When used at night the use of blue lights and positioning should be carefully considered. Excessive use of police vehicles with lights at night, or inappropriate positioning of these vehicles may actually detract from the positive guidance the work zone traffic control devices provide. When used for nighttime work, blue lights should be dimmed and all headlights should be off.

See complete Flagger and Uniformed Officer guidelines at this link:

UNIFORMED OFFICER PLACEMENT IN THE WORK ZONE

If Uniformed Officer with Vehicle use has been approved for presence, cruiser placement is recommended as follows:

1. Park in the shoulder or median, not in the travel lane.
2. Do not park behind the Truck Mounted Attenuator (TMA).
3. Do not park in the buffer zone. If buffer zone presence is needed, then consensual extra should be given to installing a truck TMA instead.
4. Do not park in the taper.
5. Locate the police cruiser between the 1st and 2nd signs (from the taper).
   a. Urban (Low = 30 mph) 130' from the taper.
   b. Urban (High = 45 mph) 130' from the taper.
   c. Rural = 150' from the taper.
   d. Freeway = 175' from the taper.
6. Consider having the cruiser face traffic for stationary operations.
   a. Recommended cruiser positioning for moving operations:
      i. Less than 5 mph face traffic (e.g. crack seal).
      ii. Greater than 5 mph fix dow (e.g. striping, rumble strips).
7. Stay 3/4 mile in front of queue.
8. If a second Officer is used for enforcement, and there is no queue, the enforcement officer should be immediately after the work zone, and if there is a traffic queue then enforcement officer should be several miles before the backup queue and presence officer.
9. Hands free and cell phone use should be limited for work zone activity.
10. Headlights off, dim blue lights at night if possible.
**TYPICAL APPLICATION**

**TWO WAY TRAFFIC LANE SHIFT**

<table>
<thead>
<tr>
<th>ROAD TYPE</th>
<th>DISTANCE BETWEEN SIGNS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Urban (45 mph)</td>
<td>100'</td>
</tr>
<tr>
<td>Rural (45 mph)</td>
<td>500'</td>
</tr>
<tr>
<td>Rural (55 mph)</td>
<td>500'</td>
</tr>
<tr>
<td>Expressway / Freeway</td>
<td>1500'</td>
</tr>
</tbody>
</table>

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**GENERAL NOTES**

1. For operations where two-way traffic lane shift can be maintained on the 10' min. clear width lane.
2. For long-term stationary or intermittent stationary work, patient warnings indicating no passing shall be used. No passing signs (10'-1) may be required.
3. For taper length (1), see work plans 6C-3 and 6C-4.
4. For speeds > 50 mph, length = L. For speeds ≤ 50 mph, length = 3L/2.
5. For outer space criteria, see stopping sight distance, work plans 6C-2.
6. Install on all approaches if the criteria in Amendment No. 10 on 10'-1 applies.

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**LEGEND**

- Channelizing Devices
  - Two (See 10'-1, Note 5)
TYPICAL APPLICATION
LANE CLOSURE: TWO-LANE ROAD WITH LOW TRAFFIC VOLUMES

GENERAL NOTES

1. This typical application should be used as an alternate to other figure figures when construction activities are not a primary task and are not considered work.
2. Sign placement should be reviewed and temporary warning signs installed as needed.
3. Regulatory sign placement shall be approved by Bureau of Traffic.
4. Traffic sign identification or type a flashing warning lights may be warranted in hazardous areas.
5. The use of barriers is anticipated for most situations requiring the use of temporary barriers. Barriers shall be determined and installed in the most current edition of the Maryland Code or as adopted by the Department.
6. Chain barriers shall be installed with type 3 object markers. See joint figure 12.
7. Install in all approaches if the criteria in Amendment No. 10 or No. 9 applies.

NOT TO SCALE
TYPICAL APPLICATION
LANE SHIFTS - DIVIDED HIGHWAYS

SINGLE LANE SHIFT (DIVIDED HIGHWAY)

LANE CLOSURE WITH LANE SHIFT FOR SPEED REDUCTION (DIVIDED HIGHWAY)

GENERAL NOTES
★ SEE AMENDMENT NO. 10 ON TC-1
1. FOR LANE LENGTH (L) CRITERIA, SEE HITE TABLES L6-5 AND L6-6.
2. FOR ENTER SPACE CRITERIA SEE STOPPING SPACE DISTANCE, HITE TABLE L6-7.

NOT TO SCALE

LEGEND
★ CHANNELIZING DEVICES
*** URBAN PANEL
■ N1L (SEE N1-1, NOTE 2)
■ N1C (SEE N1-2)
TYPICAL APPLICATION

LANE CLOSURE: SIGNALIZED CONTROL WITH BARRIER

GENERAL NOTES

** SEE ATTACHMENT No. 11 on Tc-1

1. POSTED BRIDGE WIDTH SHALL BE 1 FOOT LESS THAN ACTUAL WIDTH.

2. TEMPORARY TRAFFIC SIGNALS AND PREPAREDNESS FOR PLACERS FOR LONG-TERM PROJECTS AND OTHER ACTIVITIES THAT WILL REQUIRE PLACERS AT NIGHT.

3. THE MAXIMUM LENGTH OF THE ACTIVITY AREA FOR DIFFERENT TRAFFIC SIGNAL CONTROL IS DETERMINED BY THE CAPABILITY REQUIRED TO MANAGE THE FREE-WAY WORK.

4. SIGNALS SHALL BE INSTALLED AND OPERATED IN ACCORDANCE WITH THE REQUIREMENTS OF FED OF THE MTO.

5. TEMPORARY TRAFFIC CONTROL SHALL MEET THE PHYSICAL DISPLAYS AND OPERATIONAL REQUIREMENTS OF CONVENTIONAL TRAFFIC SIGNALS.

6. ACCURATE AREA IDENTIFICATION SHALL BE PROVIDED TO CLEARLY IDENTIFY THE TRANSITION AREAS AT NIGHT FOR LONG-TERM OPERATIONS.

7. STOP LINES ON FENCES WILL BE INSTALLED AS REQUIRED. INVALIDATION LINES WILL BE PLACED AS THEY WILL BE REMOVED. MINIMUM VERTICAL CLEARANCE BETWEEN THE ACTIVITY AREA AND THE STOP LINES SHALL BE REMOVED.

8. TEMPORARY TRAFFIC CONTROL SIGNALS ARE MOUNTED WITH FLASHING WARNING LIGHTS IF REQUIRED.

9. TEMPORARY TRAFFIC CONTROL SIGNALS ARE MOUNTED AT THE HEIGHT OF THE SIGNAL HEAD.

10. WHEN THE SIGNAL IS CHANGED TO A FLASHING CONDITION EITHER MANUALLY OR AUTOMATICALLY, ALL APPROACHES SHALL FLASH RED.


12. INSTALLATION OF THE CARRIERS IN THE CARRIER NO. 10 ON Tc-1 APPLIES.

NOTE TO SCALE

WORK ZONE TRAFFIC CONTROL

LANE CLOSURE: SIGNALIZED CONTROL WITH BARRIER

LEGEND

- Portable Barrier
- Signal Head
- Impact Attenuator
- Channelizing Devices
CONSTRUCTION SIGNING FOR COLD-PLANED SURFACES

GENERAL NOTES

1. THE ABOVE DIAGRAM ILLUSTRATES COLD-PLANED SURFACES FOR PAINTED MARKERS. THIS SIGN PACKAGE SHALL BE USED FOR ANY COLD-PLANED SURFACE WITHIN THE LIMITS OF THE WORKED AREA. SEE PAINTED MARKER TYPICAL INSERTED IN THE PLAN FOR LENGTH OF PAINTED MARKER, MALLET DETAILS, ETC.

2. THE GROOVED PAVEMENT AHEAD WARNING SIGN MAY BE ELIMINATED FOR RELATIVELY SHORT PAINTED MARKERS AT THE DISCRETION OF THE ENGINEER. IF NO PAINTED MARKER IS USED, WS-15 & WS-19 FT MUST BE PLACED.

NOT TO SCALE