<table>
<thead>
<tr>
<th>Standard</th>
<th>Modification Summary</th>
<th>Effective: 03-01-2021</th>
</tr>
</thead>
</table>
| F1       | **Overhead Sign Structure Span Type Structure Details**  
          | Sheet 1: Update Design Loading, Design Specifications and set P and L dimensions as maximums  
          | Sheet 4: Increased drilled shaft depth for longer span median foundations  
          | Sheet 5: Increased drilled shaft depth for longer span median foundations  |
| F4       | **Overhead Sign Structure Cantilever Type Structure Details**  
          | Sheet 1: Update Design Loading and Design Specifications  
          | Sheet 2: Change member size - vertical diagonal, 25' span to 3"XS  
          | Sheet 2: Change member size - horizontal diagonal, 50' span to 5"XXS  
          | Sheet 4: Update Detail 7 notation  
          | Sheet 10: Update Limit on DMS Overhang beyond Truss  |
| F8       | **Overhead Sign Structure Sign, Luminaire and Beacon Supports**  
          | Sheet 1: Update Design Loading and Design Specifications  |
| F9       | **Breakway Sign Support Details**  
          | Sheet 1: Update Design Loading and Design Specifications  
          | Sheet 2: Update Foundation and Fuse Plate Bolt Tables  
          | Sheet 5: New sheet with tables for sign spacing  |
| F13      | **Overhead Sign Structure Monotube Type (Steel) Mainline Structure Details**  
          | Sheet 4: Update Design Loading and Design Specifications  
          | Sheet 6: Increase v(E) and v1(E) bars to #11  
          | Sheet 7: Change v1(E) bar callout to #11  
          | Sheet 8: Increase d3(E) bar length length to 2'-5"  |
| F14      | **Overhead Sign Structure Butterfly Type Structure Details**  
          | Sheet 1: Update Design Loading and Design Specifications  |
| F15      | **Overhead Sign Structure Monotube Type (Steel) Structure Details for AET Ramp**  
          | Sheet 4: Update Design Loading and Design Specifications  
          | Sheet 7: Increase d3(E) bar length length to 2'-5"  |
| F16      | **Overhead Sign Structure Monotube Type (Steel) Structure Details for Cash-IPO Ramp**  
          | Sheet 3: Update Design Loading and Design Specifications  
          | Sheet 6: Increase d3(E) bar length length to 2'-5"  |
| F17      | **Overhead Sign Structure Span Type (Steel) Structure Details**  
          | Sheet 1: Update Design Loading and Design Specifications  
          | Sheet 13: New details for OSHA compliant tie off connections  |
| F19      | **Noise Abatement Wall Mounted Sign Support**  
          | Sheet 1: Add material note for partial threaded studs  |

- **New Sheet**
- **Retired Standard**
### Section B-B

**Non-Staining Gray One Component Non-Sag Epoxy Sun Grade Polyurethane Sealant with Backer Rod**

**END VIEW**

**SECTION B-B**

**SIDE VIEW**

**SECTION A-A**

**BAR LIST - EACH FOUNDATION**

<table>
<thead>
<tr>
<th>BAR NO.</th>
<th>SIZE</th>
<th>LENGTH</th>
<th>SHAPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5 s(E)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#5 t(E)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**REINFORCEMENT IN GRADE BEAM**

**SIDE ELEVATION**

**PLAN**

**NOTES:**

1. SEE SHEET 3 OF THIS SERIES FOR GENERAL NOTES AND DESIGN CRITERIA.
2. FOR SIGN STRUCTURE BASE PLATE DETAIL, SEE SHEET 2 OF THIS SERIES.
3. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING C5 FOR GUTTER SLOPE.
4. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS.
5. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER AND TOP FACE OF GUTTER.
### Table C: Truss and Post Details for 18'-0" (Max.) Sign Height

<table>
<thead>
<tr>
<th>Design Span Length (ft)</th>
<th>Truss Type</th>
<th>Actual Span Length</th>
<th>Maximum Span Length</th>
<th>Steel Support Post Column</th>
<th>Top &amp; Bottom Chord Diameter</th>
<th>Pipe (Wall)</th>
<th>Pipe (W)</th>
<th>Pipe (M)</th>
<th>Pipe (P)</th>
<th>Pipe (S)</th>
<th>Panel No.</th>
<th>Panel N</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>2*0</td>
<td>2'-6&quot;</td>
<td>2'-6&quot;</td>
<td>18&quot;</td>
<td>0.600&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1</td>
<td>D</td>
</tr>
<tr>
<td>25</td>
<td>3*0</td>
<td>3'-4&quot;</td>
<td>3'-4&quot;</td>
<td>18&quot;</td>
<td>0.600&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1</td>
<td>D</td>
</tr>
<tr>
<td>30</td>
<td>4*0</td>
<td>4'-2&quot;</td>
<td>4'-2&quot;</td>
<td>18&quot;</td>
<td>0.600&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1</td>
<td>D</td>
</tr>
<tr>
<td>40</td>
<td>4*0</td>
<td>4'-2&quot;</td>
<td>4'-2&quot;</td>
<td>18&quot;</td>
<td>0.600&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1</td>
<td>D</td>
</tr>
<tr>
<td>45</td>
<td>4*0</td>
<td>4'-2&quot;</td>
<td>4'-2&quot;</td>
<td>18&quot;</td>
<td>0.600&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1</td>
<td>D</td>
</tr>
</tbody>
</table>

**Notes:**

1. Truss members shall be spaced a minimum of 1/2 times the wall thickness of the largest connecting members to ensure proper nail spacing.
2. For sections B-B, C-C, D-D, E-E and F-F see Sheet 3 of this series.
3. For sign support details, see Illinois Tollway standard drawing F4-12, for cantilever type details, see the 9th sheet of this series.
4. Direction of interior diagonals shown in Section 1 and completely omitted. Diagonals may be omitted in a reversed direction than shown.
5. For any design span length not covered by two consecutive spans provided in Column 1 of Table C, the largest design span length shall be used. For a 3D design span length trusses and post details shall be used.

**Weight:**

<table>
<thead>
<tr>
<th>Length (ft)</th>
<th>Weight (#/ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>245.87</td>
</tr>
<tr>
<td>25</td>
<td>245.87</td>
</tr>
<tr>
<td>30</td>
<td>186.41</td>
</tr>
</tbody>
</table>

**Approvals:**

- Standard F4-12
- Illinois Tollway
- Sheet 2 of 12
PLATE THICKNESS

ASSEMBLY FACILITATE FIELD INSIDE OF COLLAR TO 9'' - 45° CHAMFER ON

SEE DETAIL 2

(SEE TABLE D)

NOTE 1

1. ORIGIN TOP IF REQUIRED TO FULLY SEAT PLATE (REPAIR DAMAGED GALVANIZING BEFORE ASSEMBLY).

2. AFTER TIGHTENING LOWER CONNECTION BOLTS, fill gap with non-hardening silicone caulk.

3. Optional full penetration weld in collar. (two locations maximum (180° apart) X-RAY

MAXIMUM GAP BETWEEN POST AND COLLAR AT ANY LOCATION SHALL BE 9'' BEFORE TIGHTENING BOLTS.

AFTER TIGHTENING LOWER CONNECTION BOLTS, fill gap with non-hardening silicone caulk.

4. GRIND TOP IF REQUIRED TO FULLY SEAT PLATE. REPAIR DAMAGED GALVANIZING BEFORE ASSEMBLY.

NOTE 2

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 3

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 4

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 5

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 6

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 7

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

TABLE D: BOLT SCHEDULE

<table>
<thead>
<tr>
<th>Sheet Length</th>
<th>Post Diameter</th>
<th>Lower Connection Bolt Spacing</th>
<th>Collar Connection Bolt Spacing</th>
<th>Line Tangent</th>
<th>Post Cut Diameter</th>
<th>Num. Cuttings</th>
<th>No. of Washers</th>
<th>Washers</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 20'</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>6</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>21' - 30'</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>6</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>31' - 40'</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>6</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>41' - 50'</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>6</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>

NOTE 8

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 9

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 10

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 11

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 12

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 13

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 14

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 15

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 16

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 17

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 18

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 19

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 20

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.

NOTE 21

1. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 9''.

2. OR UT 100% ALL BOLTS SHOWN ARE HIGH STRENGTH.

3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH

SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.
#5 bars in pairs at 8" max.

## Notes:
1. See Sheet 6 of this series for additional notes.
2. Grade beam and drilled shaft dimensions, details, quantities, and bar list are shown on Sheet 6 of this series.
3. Seal exposed surface of 1/2" preformed joint filler with bonded construction. Seal all 1/2" below surface of concrete.
4. As previously noted, bars will be epoxy grouted at 1/2" below bar, provide a minimum embedment. Install anchor bars according to standard specifications. For bent 3, locate grade beam after place to avoid damage to grade beam reinforcing installation.
5. Coordinate concrete size, location, and quantity with electrical plans. Conduits shall be placed to miss reinforcement bars. Do not cut reinforcement bars.
6. Protective coat shall be applied to traffic and top faces of crashwall.
NOTE:

DAMPER: ONE DAMPER PER TRUSS, IN LG. STOCKBRIDGE-TYPE
2" MINIMUM BETWEEN ENDS OF WEIGHTS.

SEE TABLE C ON SHEET 2 OF THIS SERIES
TABLE I: SIGN SUPPORT TABLE

<table>
<thead>
<tr>
<th>SIGN WIDTH</th>
<th>NUMBER OF SIGN SUPPORTS REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>LESS THAN</td>
<td>GREATER THAN</td>
</tr>
<tr>
<td>8'-0&quot;</td>
<td>14'-0&quot;</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

TABLE II: DMS TYPE 2W - WALK-IN TABLE

<table>
<thead>
<tr>
<th>MAXIMUM LENGTH</th>
<th>MAXIMUM DEPTH</th>
<th>MAXIMUM WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 FEET</td>
<td>8'-0&quot;</td>
<td>4200 LBS.</td>
</tr>
</tbody>
</table>

NOTES:

1. DMS TYPE 2W - WALK-IN SHALL BE ATTACHED TO TRUSS AS CLOSE TO PANEL JOINTS AS POSSIBLE.
2. VERIFY SIGN SUPPORT MEMBER LENGTH PRIOR TO FABRICATION.
3. DMS TYPE 2W - WALK-IN MANUFACTURER SHALL DESIGN, PROVIDE AND INSTALL HORIZONTAL MOUNTING MEMBERS. VERTICAL SPACING OF HORIZONTAL MEMBERS SHALL BE DESIGNED BY DMS TYPE 2W - WALK-IN MANUFACTURER. VERIFY VERTICAL SPACING WITH Holes FOR STAINLESS STEEL U-BOLT.

SHEET 9 OF 12

OVERHEAD SIGN STRUCTURE CANTILEVER TYPE STRUCTURE DETAILS

STANDARD F4-12

APPROVED: 3/11/2014

CHIEF ENGINEERING OFFICER
NOTES:

1. DRILLING HOLES IN GRATING MAY BE DONE IN SHOP OR FIELD, BASED ON CONTRACTOR'S PREFERENCE AND SUBJECT TO ACCURATE ALIGNMENT.
2. IF MINIMAL JOINT PRESENTS, WELD ANGLE TO POSTS AND 7/8" EXTENSION BARS. SEE SHEET 11 OF THIS SERIES.
3. " 3/8" x 1 1/2" x 2" GALVANIZED ANGLE BAR TO PROTECT LOCATIONS THAT CONTACT GRATING.
4. DMS TYPE 2W - WALK-IN MANUFACTURED SMALL DESIGN AND SUPPLY HARDWARE FOR CONNECTION TO POSTS. BOLTS SHALL BE STAINLESS STEEL OR HOT DIP GALVANIZED HIGH STRENGTH PER IDOT SPECIFICATIONS.

SHEET 11 OF 12
ALTERNATE SAFETY CHAIN ATTACHMENT

DETAIL E HANDRAIL HINGE

SAFETY CHAIN

NOTES:
1. INSTALL STANDARD FORCE-FIT END CAPS ON 3/4" END PLATED 3/4" C.C., AND EYE BOLTS, NAME END PLATE.
3. W/" TYPE SS STAINLESS STEEL CHAIN, APPROXIMATELY 12 LINKS PER FOOT.

4. DRILL AND REAM FOR 1/4" HOLE IN PIPE, PROVIDE "STAINLESS STEEL WASHERS FOR BOLT. (USE 5/8" STEEL WASHERS FOR BOLT.

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR ..." } HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"

HEAD BOLTS FOR "} HOLES FOR ..." } HOLE IN ANGLE L 2" x 2" x \"
### Foundation Table

<table>
<thead>
<tr>
<th>POST</th>
<th>FOUNDATION</th>
<th>REINFORCEMENT</th>
<th>STUD POST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIN. WHT.</td>
<td>CONC.</td>
<td>NO.</td>
</tr>
<tr>
<td>W14x30</td>
<td>6'-0&quot;</td>
<td>10&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>W16x45</td>
<td>8'-0&quot;</td>
<td>14&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>W12x26</td>
<td>6'-0&quot;</td>
<td>12&quot;</td>
<td>3&quot;</td>
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<td>14&quot;</td>
<td>3&quot;</td>
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<td>3&quot;</td>
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<td>W8x18</td>
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<td>3&quot;</td>
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<td>W10x26</td>
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<td>3&quot;</td>
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<td>10&quot;</td>
<td>3&quot;</td>
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<td>W14x30</td>
<td>1'-0&quot;</td>
<td>14&quot;</td>
<td>3&quot;</td>
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<tr>
<td>W16x45</td>
<td>1'-0&quot;</td>
<td>16&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>W16x45</td>
<td>1'-0&quot;</td>
<td>16&quot;</td>
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### Base Connection Data Table

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<tr>
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<tr>
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<tr>
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</table>

### Procedure for Assembly of Base Connection

1. **Assemble Post to Stud with Nuts, Bolts, and One of the Three Plate Washers on Each Bolt Refer to Plate as Shown.**
2. **Shims May Be Used Between Plates to Level Post.**
3. **Tighten Bolts in Base Plate in a Systematic Order to the Required Torque.**
4. **Loosen Each Bolt and Return to the Required Torque in Same Order As Initial Tightening.**
5. **Surf of Center Punch Depends at Juncture of Bolt and Nut To Prevent Nut from Loosening.**

### Procedure for Fuse Plate Bolt Tightening

**All Fission Fuse Bolts Shall Be Tighted in the Shop As Approved By The Engineer According to One of the Following Methods:**

1. **Turn-Off-Volt Tightening.**
2. **Turn Tightening By Use of a Direct Tension Indicator.**

The Above Methods of Installation and Tightening Shall Conform to the Latest Issue of the Specification for Structural Joints Using ASTM A125 or A495 Bolts. For Supercritical Connections As Issued By The Research Council On Riveted and Bolted Structural Joints of the Engineering Foundation, Tightening Shall Be to Such a Degree As to Obtain the Following Minimum Residual Tension in Each Bolt:

<table>
<thead>
<tr>
<th>SIZE</th>
<th>MIN. RESIDUAL</th>
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<tr>
<td>4&quot;</td>
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<td>11,800</td>
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<td>6&quot;</td>
<td>20,400</td>
<td>11,800</td>
<td>11,600</td>
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</table>
NOTES:

1. SEE SIGN INSTALLATION SCHEDULE IN CONTRACT PLANS FOR DIMENSIONS.
2. THE DIMENSIONS OF ALL POSTS FOR GROUND MOUNTED SIGNS ARE BASED ON DESIGN CROSS SECTIONS. THE CONTRACTOR SHALL VERIFY REQUIRED POST LENGTHS IN THE FIELD. POSTS TO SUBMIT SHOP DRAWINGS AND POST FABRICATION TO MAINTAIN THE CLEARANCES SHOWN.
3. SIGN FOUNDATION ELEVATIONS TO BE BASED ON FINISHED SLOPES.
4. ANY ADDITIONAL SIGN TO BE ADDED LATER MUST BE SUPPORTED BY THE EXISTING SIGN PANEL AND NOT THE SIGN POST. MINIMUM CLEARANCES SHALL BE MAINTAINED.
5. SIGNS THAT ARE PLACED WELL OUTSIDE THE CLEAR ZONE MAY BE INSTALLED WITH A MINIMUM HEIGHT OF 5 FEET, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE HORIZONTAL ELEVATION OF THE NEAR EDGE OF TRAVELED ROADWAY.
6. MINIMUM HEIGHT OF LOWEST POST SHALL BE 7'-0" MEASURED BETWEEN STUB PROJECTION AND HINGE JOINT.
7. FOR TWO POSTS SPACED LESS THAN 7 FEET APART, EACH POST SHALL HAVE A MASS LESS THAN 18 lb/ft².
8. WHEN THE TOTAL COMBINED WEIGHT OF THE TWO POSTS LOCATED WITHIN 7 FEET OF EACH OTHER EXCEEDS 600 lbs., THE SIGN SHALL BE PLACED WELL OUTSIDE THE CLEAR ZONE OR BE SHIELDED FROM VEHICULAR IMPACT.

1-1-2010

Shields slopes
<table>
<thead>
<tr>
<th>POST SIZE W6x9</th>
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<tr>
<td>-----------------</td>
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<td>10'-0&quot;</td>
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<tr>
<td>12'-0&quot;</td>
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<td>14'-0&quot;</td>
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<td>16'-0&quot;</td>
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<table>
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<tr>
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<td>-</td>
</tr>
<tr>
<td>16'-0&quot;</td>
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</table>

**NOTES:**
1. CLEAR HEIGHT SHALL BE TAKEN AS THE DISTANCE BETWEEN THE STUB PROJECTION AND THE BOTTOM OF THE SIGN PANEL.
**MILEPOST MARKER MOUNT DETAIL**

**NOT TO SCALE**

**GENERAL NOTES:**

1. ALL ANCHOR BOLTS FOR MEDIAN BARRIER MOUNT DETAIL SHALL BE 3/8" DIA. RED HEAD "TRUBOLT" OR APPROVED EQUAL.

2. ALL DIMENSIONS ARE IN INCHES UNLESS SHOWN OTHERWISE.

3. FOLLOWING ARE THE STEPS FOR FASTENING THE MILEPOST MARKER SIGN PANEL. ALL MOUNTING DETAILS SHOWN ON THIS SHEET APPLY:
   - CENTER ALL FASTENERS ON THE SIGN PANEL.
   - CENTER THE 3/8" DIA. BOLT IN THE MIDDLE OF THE SIGN.
   - THE DISTANCE BETWEEN SUCCESSIVE FASTENERS SHALL NOT EXCEED 2'-0".
   - CENTER THE 3/8" DIA. BOLT IN THE MIDDLE OF THE SIGN.
   - THE DISTANCE FROM THE EDGE OF SHOULDER TO THE BOTTOM OF THE MILEPOST MARKER SIGN SHALL BE A MINIMUM OF 4'-0" REGARDLESS OF BARRIER TYPE.
   - THE TOP SECTION SHALL BE TELESCOPED INTO THE BASE SECTION 12 INCHES AND FASTENED TOGETHER.
   - THE DISTANCE FROM THE EDGE OF SHOULDER TO THE BOTTOM OF THE MILEPOST MARKER SIGN SHALL BE A MINIMUM OF 4'-0" REGARDLESS OF BARRIER TYPE.
   - THE TOP SECTION SHALL BE TELESCOPED INTO THE BASE SECTION 12 INCHES AND FASTENED TOGETHER.
   - ALL ANCHOR BOLTS FOR MEDIAN BARRIER MOUNT DETAIL SHALL BE 3/8" DIA. RED HEAD "TRUBOLT" OR APPROVED EQUAL.
   - DISTANCE FROM THE EDGE OF SHOULDER TO THE BOTTOM OF THE MILEPOST MARKER SIGN SHALL BE A MINIMUM OF 4'-0" REGARDLESS OF BARRIER TYPE.

4. FOR ATTACHMENT TO BRIDGE PARAPET USE BARRIER WALL MOUNT DETAIL. ONLY ONE PANEL REQUIRED WHEN ATTACHED TO PARAPET ALONG OUTSIDE SHOULDER.

5. THE DISTANCE BETWEEN SUCCESSIVE FASTENERS SHALL NOT EXCEED 2'-0".

6. START AND FINISH THE FASTENER SPACING USING A MINIMUM OF 3" TO A MAXIMUM OF 6" FROM THE TOP AND BOTTOM EDGE OF THE SIGN PANEL.

7. CENTER ONE AND FINISH THE FASTENER SPACING USING A MINIMUM OF 3" TO A MAXIMUM OF 6" FROM THE TOP AND BOTTOM EDGE OF THE SIGN PANEL.

8. CENTER THE 3/8" DIA. BOLT IN THE MIDDLE OF THE SIGN.

9. USE THE SAME ATTACHMENT FOR BACK TO BACK MILEPOST MARKER SIGN.

10. CENTER ONE AND FINISH THE FASTENER SPACING USING A MINIMUM OF 3" TO A MAXIMUM OF 6" FROM THE TOP AND BOTTOM EDGE OF THE SIGN PANEL.

All dimensions are in inches unless shown otherwise.

---

**TELESCOPING STEEL POSTS**

**NOT TO SCALE**

**GROUND MOUNT DETAIL**

**NOT TO SCALE**

**ONE POST INSTALLATION**

**NOT TO SCALE**

**SHEET 2 OF 2**

**STATE SDOT**

**DATE 4-6-2009**

**ILLINOIS RAILWAY**

**MILEPOST MARKER**

**STANDARD F11-06**
NOTES:
1. SEE PLANS FOR SIGN SIZE AND LOCATION.
2. MAXIMUM PLAZA SIGN AREA IS 108 SQ. FT.
MAXIMUM PLAZA SIGN LENGTH IS 36 FT.
3-31-2014
ADDED GROUNDING DETAILS.

3-11-2015
MAINLINE STRUCTURE DETAILS
MONOTUBE TYPE (STEEL)

3-31-2016
ADDED MEDIAN AND NOTES.
REVISED FOUNDATION NOTE.

3-01-2018
REVISED SIGN STRUCTURE

3-01-2019
DETAILS AND QUANTITIES

3-01-2020
UPDATED CONSTANT SLOPE BARRIER REINFORCING INSTALLATION & INSPECTION NOTES OF ANCHOR BOLT AND SPLICES
UPDATE DESIGN LOADING AND DESIGN CRITERIA,
UPDATE SHOULDER BARRIER DETAILS AND QUANTITIES FOR 3'-8''. ADD HANDHOLE INC. v(E) AND v1(E) BARS TO #11 AND INC. d3(E) BAR LENGTH.
NOTES:
1. FOUNDATIONS FOR PLAZA FRAMES ARE SHOWN ON SHEETS 6 AND 7 OF THIS SERIES.
3. FOR SECTION P-P SEE SHEET 4 OF THIS SERIES.
4. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
5. DISCONTINUE 1/2" SQUARE BAR TO ALLOW 3/8" HOLE INSTALLATION.
6. WORK WITH THIS SHEET AND OVERHEAD SIGN STRUCTURES ENTRANCE MONOTUBE DETAILS, SEE SHEET 5 OF THIS SERIES.
7. FOUNDATIONS FOR PLAZA FRAMES ARE SHOWN ON SHEETS 6 AND 7 OF THIS SERIES.

ENTRANCE MONOTUBE PLAN

ENTRANCE MONOTUBE ELEVATION

MONOTUBE FRAME TABLE

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<tr>
<th>TYPE</th>
<th>SPAN &quot;S&quot;</th>
<th>FRAME COLUMN &quot;A&quot;</th>
<th>FRAME BEAM &quot;B&quot;</th>
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<tr>
<td>I</td>
<td>210</td>
<td>MSS 6x0.250</td>
<td>2x2</td>
</tr>
<tr>
<td>II</td>
<td>240</td>
<td>MSS 6x0.250</td>
<td>2x2</td>
</tr>
<tr>
<td>III</td>
<td>210-240</td>
<td>MSS 6x0.250</td>
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BASE PLATE FRAMES

TOPOGRAPHY OF THIS SERIES AND SECTION G-G ON SHEET 5
GENERAL NOTES:
1. SEE THE ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL FOR MINIMUM VERTICAL CLEARANCE.
2. AFTER ADJUSTMENTS TO LEVEL FRAME BEAM AND ENSURE ADEQUATE VERTICAL CLEARANCE, TIGHTEN ALL TOP AND LEVELING NUTS AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. THEN PLACE STAINLESS STEEL NUTS AROUND THE PERIMETER OF THE BASE PLATE.
4. COLUMNS SHALL BE 1.25 TON/SQ.FT. AT PLAZA FRAMES.
5. MINIMUM UNCONFINED COMPRESSIVE STRENGTH, Qu, FOR ALL LAYERS OF COHESIVE SOILS (CLAYS) SHALL BE 1.14.
6. PIPE 5 XX-STONG, GALV.
7. PIPE 4 XX-STONG, GALV.
8. PIPE 3 XX-STONG, GALV.
9. PIPE 2 XX-STONG, GALV.
10. PIPE 1 XX-STONG, GALV.

STRUCTURAL STEEL:
1. WELDS FOR THE MONOTUBE FRAME SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B, OTHER STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 UNLESS NOTED OTHERWISE.
2. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325 (AASHTO M164). HOT DIPPED GALVANIZED BOLTS AND NUTS SHALL BE USED.
3. CONNECTIONS BETWEEN MONOTUBE FRAME, COLUMNS, BASE PLATE AND SLAB MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, UNLESS NOTED OTHERWISE.
4. GLUE-UPS SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM A516, CLASS 1, GRADE A.
5. BOLTS EXCLUDING ANCHOR BOLTS AND U-BOLTS SHALL BE 1.14.
6. NUTS FOR U-BOLTS SHALL CONFORM TO ASTM A563 GRADE DH.
9. ANCHORS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153, GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 75,000 PSI. INSTALLATION AND INSPECTION OF ANCHOR BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROJECT "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME "STEEL".
10. MATERIAL FOR THE MONOTUBE FRAME SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B.

DESIGN LOADING:
1. WIND LOAD CONDITIONS:
   - BASIC WIND SPEED = 120 M.P.H.
   - C = 1.00
   - K = 1.00
   - I = 1.00
   - G = 1.14
2. WIND LOAD CRITERIA:
   - 24 LB.
   - 40 LB.
   - 24 LB.
   - 40 LB.
   - SIGN DEAD LOAD = 3 P.S.F.
   - COLUMN/BEAM = 35 P.S.F.
   - SIGN PANEL = 50 P.S.F.
   - Column dead load = 3 P.S.F.
   - Ice = 3 P.S.F., APPLIED WITH A FACTOR OF 1.0 FOR STRENGTH I ONLY

EQUIPMENT LOADS:
1. Camera assembly mounting hardware = 30 LB.
2. Antenna mounting hardware = 24 LB.

DESIGN STRESSES FOR REINFORCED CONCRETE:
1. Fy = YIELD STRENGTH OF REINFORCEMENT BARS (GRADE 60)
2. f'c = COMPRESSIVE STRENGTH OF CONCRETE AT 14 DAYS (CLASS DS)
3. f'c = COMPRESSIVE STRENGTH OF CONCRETE AT 14 DAYS (CLASS SI)

FOUNDATION:
1. MINIMUM UNCONFINED COMPRESSIVE STRENGTH, Qu, FOR ALL LAYERS OF COHESIVE SOILS (CLAYS) SHALL BE 1.14.

DESIGN SPECIFICATIONS:
1. ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL, LATEST EDITION.
2. ASHRAE LIFE SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 1ST EDITION.
3. ASHRAE LIFE SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 2ND EDITION.
4. ILLINOIS DEPARTMENT OF TRANSPORTATION STRUCTURE DESIGN MANUAL, LATEST EDITION.

CONSTRUCTION SPECIFICATIONS:
3. ILLINOIS DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL, JANUARY 2012.
4. ILLINOIS DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL, LATEST EDITION.

NOTE:
1. VERIFY DIMENSION "V" WITH CAMERA MANUFACTURER.

ILLINOIS TOLLWAY
OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL)
MAINLINE STRUCTURE DETAILS
STANDARD F13-06
MEDIAN FOUNDATION FOR PLAZA FRAMES

SECTION A-A

SECTION D-D

VIEW B-B

VIEW C-C

NOTES:
1. Anchor bolt assembly detail, anchor plate detail, and bar bending drawings and quantities are shown on Sheet 6 of this series.
2. See Sheet 6 of this series for additional notes.
3. Site grounding electrode system to be provided as indicated on the plans.

LEGEND:
1/2" - 1/8" - EACH FACE 5" SQ. - GANGE 1/2" ANCHOR BOLTS
3'-6" DIAMETER DRILLED SHAFT
3'-6" DRILLED SHAFT
3'-6" TYP.
3'-6" DIAMETER DRILLED SHAFT
3'-6" DIAMETER DRILLED SHAFT
3'-6" TYP.
**NOTES:**

1. **PROTECTIVE COAT** SHALL BE APPLIED TO THE **FACE OF THE GUTTER AND TO THE ENTRANCE SIDE FACE** (AS THE BEGINNING OF THE PLAZA) **FOR THE FULL HEIGHT OF THE BARRIER.**

2. **LOCATION OF ELECTRICAL JUNCTION BOXES** **SIDE FACE (AT THE BEGINNING OF THE PLAZA)** **FOR THE FULL HEIGHT OF THE BARRIER.**

3. **PLAZA FRAMES** SEE **SHEET 6 OF THIS SERIES.**

4. **QUANTITIES FOR SINGLE FACE BARRIER FOUNDATION DETAILS** **BLACK FRAMES SEE SHEET 6 OF THIS SERIES.**

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### ESTIMATED QUANTITY

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<td>REINFORCEMENT BARS, EPOXY</td>
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<tr>
<td>PROTECTIVE COAT</td>
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</table>

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**SHEET 8 OF 8**

**OVERHEAD SIGN STRUCTURE**

**MONOTUBE TYPE (STEEL)**

**MAINLINE STRUCTURE DETAILS**

**STANDARD F13-06**
**Anchoring Details**

1. **Anchor Bolt Detail**
   - Anchor bolts shall conform to AASHTO M314 or ASTM A475, Grade 55.
   - Galvanzied the upper 1'-8'' (minimum) and associated AASHTO M314 bolts shall be galvanized or stainless steel machine screws.
   - All anchor bolts shall be ultrasonically tested by a Level II or III inspector, qualified in accordance with ANSI M291, Grade A, C, or DH heavy hex nuts and hardened washers per AASHTO M232. No welding shall be permitted on bolts. Provide a nut at bottom, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate. Before or after threading, but before galvanizing, each anchor bolt shall be ultrasonically tested with a level II or III inspector, qualified in accordance with ANSI M291, Grade A, C, or DH heavy hex nuts and hardened washers. No welding shall be permitted on bolts. Provide a nut at bottom, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate. Before or after threading, but before galvanizing, each anchor bolt shall be ultrasonically tested with a level II or III inspector, qualified in accordance with ANSI M291, Grade A, C, or DH heavy hex nuts and hardened washers. No welding shall be permitted on bolts. Provide a nut at bottom, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate.

2. **Positioning Plate/Anchor R**
   - Utilize positioning plate and temporary nuts with leveling washers or other approved devices to maintain anchor bolt alignment during concrete placement, plate extrusion, and other post-construction activities. Property, contractor's option, may be Galvanzied at another site. Contractor's option.

3. **Joint Filler, Typ.**
   - Joint filler, typ. 1'' preformed.

4. **Handhole Cover**
   - Provide a nut for bolt, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate. Before or after threading, but before galvanizing, each anchor bolt shall be ultrasonically tested with a level II or III inspector, qualified in accordance with ANSI M291, Grade A, C, or DH heavy hex nuts and hardened washers. No welding shall be permitted on bolts. Provide a nut at bottom, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate.

5. **Handhole Cover**
   - Provide a nut for bolt, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate. Before or after threading, but before galvanizing, each anchor bolt shall be ultrasonically tested with a level II or III inspector, qualified in accordance with ANSI M291, Grade A, C, or DH heavy hex nuts and hardened washers. No welding shall be permitted on bolts. Provide a nut at bottom, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate.

6. **Handhole Cover**
   - Provide a nut for bolt, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate. Before or after threading, but before galvanizing, each anchor bolt shall be ultrasonically tested with a level II or III inspector, qualified in accordance with ANSI M291, Grade A, C, or DH heavy hex nuts and hardened washers. No welding shall be permitted on bolts. Provide a nut at bottom, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate.
NOTES:
1. SIDE ELEVATION AND PLAN VIEW ARE SHOWN FOR FOUNDATION LOCATED IN PAVED ROADWAY MEDIAN.
2. SEE SHEET 5 OF THIS SERIES FOR REINFORCEMENT DETAILS.
3. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS

SEE NOTE 3

REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS. ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS

COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS

SEE SHEET 5 OF THIS SERIES FOR REINFORCEMENT DETAILS.

LOCATED IN PAVED MEDIAN. SIDE ELEVATION AND PLAN VIEW ARE SHOWN FOR FOUNDATION LOCATED IN PAVED ROADWAY MEDIAN.

SIDE ELEVATION

PLAN

SECTION D-D

FOUNDATION LOCATED IN PAVED ROADWAY MEDIAN

SECTION D-D

FOUNDATION LOCATED IN PAVED ROADWAY MEDIAN

OVERHEAD SIGN STRUCTURE
BUTTERFLY TYPE
STRUCTURE DETAILS

STANDARD F14-06
DEVICE~ DAMPING

HOLE~ 

"} HOLES IN MOUNTING TUBE AND STAINLESS STEEL WASHERS, TYP. WITH HOT DIP GALVANIZED LOCKNUTS "} STAINLESS STEEL U-BOLT

2'', TYP.

DEVICE~ DAMPING

PLAN DETAIL

A

7"

TOP CHORD

7"

MOUNTING TUBE

DEVICE~ DAMPING

(TYPICAL)

DAMPING DEVICE MOUNTING U-BOLT DETAIL

TOP CHORD TO CROSS TUBE U-BOLT DETAIL

NOTE:

DAMPER: ONE DAMPER PER TRUSS, (31 LBS. STOCKBRIDGE-TYPE)

29'' MINIMUM BETWEEN ENDS OF WEIGHTS).

ONE DAMPER PER TRUSS. (31 LBS. STOCKBRIDGE-TYPE)

29'' MINIMUM BETWEEN ENDS OF WEIGHTS).

CHIEF ENGINEERING OFFICER

OVERHEAD SIGN STRUCTURE

BUTTERFLY TYPE

STRUCTURE DETAILS

STANDARD F14-06
NOTES:
1. DMS TYPE 2 STRUCTURE DETAILS
2. BUTTERFLY TYPE OVERHEAD SIGN STRUCTURE
3. BUTTERFLY MAY BE LOCATED IN SHOULDER AREA.
   (ROAD PLAN BENEATH TRUSS VARIES)
4. PLACE ALL SIGN BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.
5. BRACKET DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DS TYPE 2 DIMENSIONS PLUS MANUFACTURER'S MOUNTING DEVICES.

SECTION A-A
PLACE ALL SIGN BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.

SECTION B-B

BRACKET TABLE

<table>
<thead>
<tr>
<th>SIGN WIDTH</th>
<th>REQUIRED NUMBER OF BRACKETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>W6X9</td>
<td>2</td>
</tr>
<tr>
<td>W6X9</td>
<td>2</td>
</tr>
<tr>
<td>W6X9</td>
<td>2</td>
</tr>
<tr>
<td>W6X9</td>
<td>2</td>
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<tr>
<td>W6X9</td>
<td>2</td>
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<tr>
<td>W6X9</td>
<td>2</td>
</tr>
</tbody>
</table>

STANDARD F14-06
**SIGN TABLE**

<table>
<thead>
<tr>
<th>Sign</th>
<th>Maximum Area</th>
<th>Maximum Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAZA SIGN</td>
<td>24 SF.</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>I-PASS OR PAY ONLINE SIGN</td>
<td>60 SF.</td>
<td>20'-0&quot;</td>
</tr>
</tbody>
</table>

**NOTE:**
1. See contract plans for sign size and location.
2. Provide entrance and exit monotube frame stations in contract plans.
AET RAMP ENTRANCE MONOTUBE PLAN

AET RAMP ENTRANCE MONOTUBE ELEVATION

NOTES:
1. FOUNDATIONS FOR MONOTUBE FRAMES ARE SHOWN ON SHEET 6 OF THIS SERIES.
3. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
4. LOCATE OPTIONAL BOLTED FIELD SPLICE NEAR MIDSPAN.
5. USE THIS SHEET WITH OVERHEAD SIGN STRUCTURE ENTRANCE MONOTUBE TYPE ISTEEL ENTRANCE SUMMARIES AND TOTAL BILL OF MATERIAL SHEET.

ENTRANCE MONOTUBE FRAME TABLE

<table>
<thead>
<tr>
<th>Span</th>
<th>Frame Column</th>
<th>Frame Beam</th>
<th>Camera</th>
</tr>
</thead>
<tbody>
<tr>
<td>50' max.</td>
<td>MS 12x1x0.2600</td>
<td>MS 12x1x0.2600</td>
<td>1X5</td>
</tr>
</tbody>
</table>

*SEE REINFORCED CONCRETE STANDARD DETAILS FIT FOR SPANS GREATER THAN 50'.

ENTRANCE MONOTUBE SUMMARY AND TOTAL BILL OF MATERIAL SHEET.
GENERAL NOTES:
1. After adjustments to level frame beam and ensure adequate vertical clearance through all top and overhead signs against the base plate, with a minimum throat of 200 feet, then place stainless steel beam around the perimeter of the base plate, secure to base plate with stainless steel banding.
2. Reinforcement bars designated "E" shall be epoxy coated.

STRUCTURAL STEEL:
1. Material for the monotube frame shall conform to the requirements of ASTM A500 Grade B. Structural steel shapes and plates shall conform to the requirements of ASTM A500, except those otherwise specified.
2. Beams shall be made in accordance with ASTM A500 Grade B.
3. Anchor bolts shall conform to the requirements of ASTM F1554 (AASHTO M314) with a minimum yield strength of 60,000 psi. Installation and protection of anchor bolts shall comply with Illinois Tollway Special Provision 4.4.5.1 for Intelligent Transportation Systems. Anchor bolts shall be galvanized in accordance with ASTM A335 (AASHTO M313). See Section 6 of this series for galvanized requirements.
4. Washers shall be stainless steel, provide stainless steel anchors and nuts for bolts.
5. Studs excluding anchor bolts shall be of non-strength steel bolts.
6. Steel for monotube frame, structural steel shapes and plates shall be galvanized in accordance with ASTM A525 after fabrication.
7. The monotube frame beam, column, base plate material, and bolts are considered tension members and shall conform to the impact testing requirements.

DESIGN LOADING:
1. Wind Load Criteria
   - Basic Wind Speed 120 mph
   - Z = 1.0
   - K = 1.0
   - I = 1.00
   - G = 1.14
   - Basic Wind Speed = 120 M.P.H.
   - K = 1.00
   - I = 1.00
   - G = 1.14
   - Wind Load Criteria
   - Ice = 3 P.S.F. (applied with a factor of 1.0 for strength I only)

EQUIPMENT LOADS:
1. Antenna Assembly - 8 lb.
2. Antenna Mounting Hardware - 20 lb.

DESIGN STRESSES FOR REINFORCED CONCRETE:
1. Compressive Strength of Concrete Class SI - 6,000 psi
2. Compressive Strength of Concrete Class DS - 4,000 psi
3. Yield Strength of Reinforcement Bars Class 60 - 60,000 psi
4. Minimum Unconfined Compressive Strength, f'c for all layers of cohesive soils shall be 2,800 psi, and non-cohesive soils.

DESIGN SPECIFICATIONS:

CONSTRUCTION SPECIFICATIONS:
1. Illinois Tollway Supplemental Specifications for the Illinois Department of Transportation Standards Specifications for Road and Bridge Construction, Latest Edition
2. Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition

NOTE: Against corrosion "E" with STAINLESS STEEL WASHERS, STAINLESS STEEL MESH AROUND THE PERIMETER OF THE BASE PLATE, SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
**SIGN TABLE**

<table>
<thead>
<tr>
<th>SIGN</th>
<th>MAXIMUM AREA</th>
<th>MAXIMUM LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAZA SIGN</td>
<td>24 S.F.</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>I-PASS ONLY SIGN</td>
<td>20 S.F.</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>CASH ONLY SIGN</td>
<td>20 S.F.</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>

**NOTE:**
1. SEE CONTRACT PLANS FOR SIGN SIZE AND LOCATION.
2. PROVIDE MONOTUBE FRAME ERECTION IN CONTRACT PLANS.
3. CASH ONLY SIGN OR I-PASS ONLY SIGN. SEE CONTRACT PLANS FOR SIGN PLACEMENT.

**CASH-IPO RAMP TOLL PLAZA PLAN**

**CASH-IPO RAMP TOLL PLAZA ELEVATION**
MONOTUBE FRAME TABLE

<table>
<thead>
<tr>
<th>SPAN</th>
<th>FRAME COLUMN</th>
<th>FRAME BEAM</th>
<th>CAMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>60' MAX</td>
<td>HSS 12.75x0.500</td>
<td>HSS 12.75x0.500</td>
<td>2&quot;</td>
</tr>
</tbody>
</table>

SEE STANDARD F13 FOR SPANS GREATER THAN 60'.

NOTES:

1. WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) CONSTRUCTION PLAN. SUMMARY AND TOTAL BILL OF MATERIAL SHEET.
2. FOUNDATION FOR MONOTUBE FRAME IS SHOWN ON SHEET 5 OF THIS SERIES.
4. SEE SHEET 3 OF THIS SERIES FOR SECTION P-P AND BASE PLATE DETAILS.
5. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
6. LOCATE OPTIONAL SPLITTED FIELD SPLICE NEAR MIDSPAN.
7. ENTH ANTLON AND ANTENNA MOUNTING ASSEMBLY ABOVE CASH ONLY LANE.
**GENERAL NOTES:**
1. After adjustments to level frame beam and ensure adequate vertical clearance, tighten all top and leveling nuts against the base plate with a minimum torque of 200 lb-ft. Then place stainless steel washers and nuts shall conform to the requirements of ASTM A193, unless noted otherwise.
2. BOLTS (EXCLUDING ANCHOR BOLTS AND U-BOLTS) SHALL BE HIGH STRENGTH NUTS FOR U-BOLTS. PROVIDE STAINLESS STEEL WASHERS AND U-BOLTS SHALL BE STAINLESS STEEL. PROVIDE STAINLESS STEEL WASHERS AND NUTS FOR HOLE SPACING.
3. DETAILS ARE NOT SHOWN.
4. SS. MOUNTING PLATE FLAT AND LOCK WASHERS BOLTS (EXCLUDING ANCHOR BOLTS AND U-BOLTS) SHALL BE HIGH STRENGTH NUTS FOR U-BOLTS. PROVIDE STAINLESS STEEL WASHERS AND U-BOLTS SHALL BE STAINLESS STEEL. PROVIDE STAINLESS STEEL WASHERS AND NUTS FOR HOLE SPACING.

**STRUCTURAL STEEL:**
1. MATERIAL FOR THE MONOTUBE FRAME AND RECTANGULAR HSS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B. BASE PLATE AND STIFFENER PLATE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, UNLESS NOTED OTHERWISE.
2. BOLTS CONFORMING TO THE REQUIREMENTS OF ASTM A193, GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 60,000 PSI. INSPECTION AND PROOF TESTING OF HOLE SPACING SHOWN ON ALUMINUM DAYS "LOGICAL TRANSPORTATION SYSTEM" DETAIL FRAME, STAR ADAPTED IN ACCORDANCE WITH ASTM A193, GRADE B, THEN MEASURED ALONG OUTSIDE FACE OF BASE PLATE.
3. BOLTS CONFORMING TO THE REQUIREMENTS OF ASTM A36, UNLESS NOTED OTHERWISE.
4. BOLTS CONFORMING TO THE REQUIREMENTS OF ASTM A193, GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 60,000 PSI. INSPECTION AND PROOF TESTING OF HOLE SPACING SHOWN ON ALUMINUM DAYS "LOGICAL TRANSPORTATION SYSTEM" DETAIL FRAME, STAR ADAPTED IN ACCORDANCE WITH ASTM A193, GRADE B, THEN MEASURED ALONG OUTSIDE FACE OF BASE PLATE.

**DESIGN LOADING:**
- WIND LOAD CRITERIA: BASIC WIND SPEED = 120 M.P.H.
- ICE = 3 P.S.F. (APPLIED WITH A FACTOR OF 1.0 FOR STRENGTH ONLY)

**EQUIPMENT LOADS:**
- LED LANE CONTROL SIGNAL = 50 LB.
- ANTIQUE MOUNTING DETAIL = 28 LB.

**DESIGN STRESSES FOR REINFORCED CONCRETE:**
- Fy = COMpressive STRENGTH OF CONCRETE (CLASS 55) = 5,000 PSI
- Fu = STRESS LIMIT OF CONCRETE CLASS 55 = 3,500 PSI
- fy = STRESS LIMIT OF REINFORCEMENT BAR CLASS 601 = 60,000 PSI

**FOUNDATION:**
- MINIMUM UNCONFINED COMpressive stRENGTH (IU) FOR ALL LAYERS OF CONCRETE SLabs SHALL BE 4,000 PSI. 28,000 PSI.

**IMPLEMENT SPECIFICATIONS:**
1. ILLINOIS DEPARTMENT OF TRANSPORTATION STRUCTURE DESIGN MANUAL, LATEST EDITION.
2. ILLINOIS DEPARTMENT OF TRANSPORTATIONbridge MANUAL, JANUARY 2012

**CONSTRUCTION SPECIFICATIONS:**
1. ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
2. ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
- **Foundations**: The foundation details shown are based on the presence of heavy concrete soil conditions, a soil type of sandy soil with an average unconfined compressive strength of 4 ksi, which shall be determined by laboratory and field soil investigations at the site. The soil conditions are assumed to be uniform throughout the area, and the foundation depths shown are the result of site specific soil conditions. If conditions encountered at the site are different from those indicated, the contractor shall notify the engineer to determine if the foundation dimensions need to be modified.

- **Legend**: 
  - FF - Front Face
  - BF - Back Face
  - CYL - Cylinder
  - EQ. SPA. - Equal Spaces
  - MIN. - Minimum
  - MAX. - Maximum

- **Reinforcement Bar Schedule**

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Single Face Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS 30 CONCRETE</td>
<td>Cu, Yd.</td>
<td>2.4</td>
</tr>
<tr>
<td>CLASS 35 CONCRETE</td>
<td>Cu, Yd.</td>
<td>3.8</td>
</tr>
<tr>
<td>REINFORCEMENT BARS, EVERY COATED</td>
<td>Round, Cu, Yd.</td>
<td>2.26</td>
</tr>
<tr>
<td>PROTECTIVE COAT</td>
<td>Cu, Yd.</td>
<td>4.4</td>
</tr>
</tbody>
</table>

**Note**: Quantities for single face barrier foundations are determined using "C" = 10", if "C" is greater than 10", adjust quantities accordingly.

- **Anchor Bolt Assembly**: See sheet 2 of this series of this style anchor bolts for 1" bolts circle of anchor bolts.

- **SIDE ELEVATION**: Foundation for plaza frames, column for plaza frames, and side wall concrete frame for plaza frames.

- **SECTION A-A**: 
  - Note: Consult use Note A.
  - 1. Drilled shaft column shown at 3'-0".
  - 2. Drilled shaft column shown at 3'-8".
  - 3. Extra turns minimum top and bottom.
  - 4. Drilled shaft column shown at 3'-0".

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **PLAN VIEW C-C**: 
  - Elevation of single face barrier foundation.

- **PLAN VIEW B-B**: 
  - Elevation of single face barrier foundation.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **SECTION A-A**: 
  - Note: Consult use Note A.
  - 1. Drilled shaft column shown at 3'-0".
  - 2. Drilled shaft column shown at 3'-8".
  - 3. Extra turns minimum top and bottom.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **PLAN VIEW C-C**: 
  - Elevation of single face barrier foundation.

- **PLAN VIEW B-B**: 
  - Elevation of single face barrier foundation.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **SECTION A-A**: 
  - Note: Consult use Note A.
  - 1. Drilled shaft column shown at 3'-0".
  - 2. Drilled shaft column shown at 3'-8".
  - 3. Extra turns minimum top and bottom.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **PLAN VIEW C-C**: 
  - Elevation of single face barrier foundation.

- **PLAN VIEW B-B**: 
  - Elevation of single face barrier foundation.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **SECTION A-A**: 
  - Note: Consult use Note A.
  - 1. Drilled shaft column shown at 3'-0".
  - 2. Drilled shaft column shown at 3'-8".
  - 3. Extra turns minimum top and bottom.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **PLAN VIEW C-C**: 
  - Elevation of single face barrier foundation.

- **PLAN VIEW B-B**: 
  - Elevation of single face barrier foundation.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **SECTION A-A**: 
  - Note: Consult use Note A.
  - 1. Drilled shaft column shown at 3'-0".
  - 2. Drilled shaft column shown at 3'-8".
  - 3. Extra turns minimum top and bottom.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **PLAN VIEW C-C**: 
  - Elevation of single face barrier foundation.

- **PLAN VIEW B-B**: 
  - Elevation of single face barrier foundation.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **SECTION A-A**: 
  - Note: Consult use Note A.
  - 1. Drilled shaft column shown at 3'-0".
  - 2. Drilled shaft column shown at 3'-8".
  - 3. Extra turns minimum top and bottom.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **PLAN VIEW C-C**: 
  - Elevation of single face barrier foundation.

- **PLAN VIEW B-B**: 
  - Elevation of single face barrier foundation.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **SECTION A-A**: 
  - Note: Consult use Note A.
  - 1. Drilled shaft column shown at 3'-0".
  - 2. Drilled shaft column shown at 3'-8".
  - 3. Extra turns minimum top and bottom.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **PLAN VIEW C-C**: 
  - Elevation of single face barrier foundation.

- **PLAN VIEW B-B**: 
  - Elevation of single face barrier foundation.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **SECTION A-A**: 
  - Note: Consult use Note A.
  - 1. Drilled shaft column shown at 3'-0".
  - 2. Drilled shaft column shown at 3'-8".
  - 3. Extra turns minimum top and bottom.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **PLAN VIEW C-C**: 
  - Elevation of single face barrier foundation.

- **PLAN VIEW B-B**: 
  - Elevation of single face barrier foundation.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **SECTION A-A**: 
  - Note: Consult use Note A.
  - 1. Drilled shaft column shown at 3'-0".
  - 2. Drilled shaft column shown at 3'-8".
  - 3. Extra turns minimum top and bottom.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.

- **PLAN VIEW C-C**: 
  - Elevation of single face barrier foundation.

- **PLAN VIEW B-B**: 
  - Elevation of single face barrier foundation.

- **SIDE ELEVATION**: 
  - Single face barrier foundation for plaza frames.
PAY LIMIT FOR SINGLE FACE BARRIER

PAY LIMIT FOR

6' - 2"

2' - 0"

R 2' - 0"

2' - 0"

R 2' - 0"

R 2' - 0"

R 2' - 0"

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NOTE:
1. SPACER FLANGES SHALL BE ATTACHED TO CHORDS BOLTED TO TRUSS SHOP drawing.
2. SPACER FLANGES SHALL BE IN PROPER ALIGNMENT BEFORE WELDING.
3. EXPERIMENTAL WELDS OR TACKS SHALL BE MADE TO SECURE FLANGES UNTIL REMAINING WELDS ARE MADE AFTER STRUCTURE DETAILS.
4. SPACER FLANGES SHALL BE ATTACHED TO STRUCTURE DETAILS.
5. SPACER FLANGES SHALL BE "MATCH MARKED" TO AVOID REASSEMBLY.

TRUSS MEMBER SCHEDULE

<table>
<thead>
<tr>
<th>DESIGN TYPE</th>
<th>SPAN</th>
<th>CHORDS</th>
<th>VERTICAL DIAGONALS</th>
<th>HORIZONTALS</th>
<th>SPACING FLANGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>120-S</td>
<td>120' OR LESS 2&quot;</td>
<td>HSS 8.625x0.375</td>
<td>TYPE 3 X-STRENGTH</td>
<td>TYPE 3 X-STRENGTH</td>
<td>8&quot; 7/8&quot;</td>
</tr>
<tr>
<td>130-S</td>
<td>120' &lt; L &lt; 130' 2&quot;</td>
<td>HSS 8.625x0.375</td>
<td>TYPE 3 X-STRENGTH</td>
<td>TYPE 3 X-STRENGTH</td>
<td>8&quot; 7/8&quot;</td>
</tr>
<tr>
<td>140-S</td>
<td>130' &lt; L &lt; 140' 2&quot;</td>
<td>HSS 8.625x0.500</td>
<td>TYPE 3 X-STRENGTH</td>
<td>TYPE 3 X-STRENGTH</td>
<td>8&quot; 7/8&quot;</td>
</tr>
<tr>
<td>150-S</td>
<td>140' &lt; L &lt; 150' 2&quot;</td>
<td>HSS 8.625x0.500</td>
<td>TYPE 3 X-STRENGTH</td>
<td>TYPE 3 X-STRENGTH</td>
<td>8&quot; 7/8&quot;</td>
</tr>
<tr>
<td>160-S</td>
<td>150' &lt; L &lt; 160' 2&quot;</td>
<td>HSS 8.625x0.375</td>
<td>TYPE 3 X-STRENGTH</td>
<td>TYPE 3 X-STRENGTH</td>
<td>8&quot; 7/8&quot;</td>
</tr>
</tbody>
</table>

OVERHEAD SIGN STRUCTURE

SPANNER TYPE (STEEL)

SECTION S-S

SEE NOTE 1

NOTE:
1. SPACER FLANGES SHALL BE ATTACHED TO CHORDS BOLTED TO TRUSS SHOP drawing.
2. SPACER FLANGES SHALL BE IN PROPER ALIGNMENT BEFORE WELDING.
3. EXPERIMENTAL WELDS OR TACKS SHALL BE MADE TO SECURE FLANGES UNTIL REMAINING WELDS ARE MADE AFTER STRUCTURE DETAILS.
4. SPACER FLANGES SHALL BE "MATCH MARKED" TO AVOID REASSEMBLY.

TRUSS MEMBER SCHEDULE

<table>
<thead>
<tr>
<th>DESIGN TYPE</th>
<th>SPAN</th>
<th>CHORDS</th>
<th>VERTICAL DIAGONALS</th>
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<th>SPACING FLANGES</th>
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OVERHEAD SIGN STRUCTURE

SPANNER TYPE (STEEL)

SECTION S-S

SEE NOTE 1

NOTE:
1. SPACER FLANGES SHALL BE ATTACHED TO CHORDS BOLTED TO TRUSS SHOP drawing.
2. SPACER FLANGES SHALL BE IN PROPER ALIGNMENT BEFORE WELDING.
3. EXPERIMENTAL WELDS OR TACKS SHALL BE MADE TO SECURE FLANGES UNTIL REMAINING WELDS ARE MADE AFTER STRUCTURE DETAILS.
4. SPACER FLANGES SHALL BE "MATCH MARKED" TO AVOID REASSEMBLY.

TRUSS MEMBER SCHEDULE

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**OVERHEAD SIGN STRUCTURE**

**SPAN TYPE (STEEL)**

- **ELEVATION**
  - Steel Overhead Sign Truss

**DATE APPROVED**

- 5-20-2014

**DAMPER NOTE:**
- One damper per truss, see plan detail for Stockbridge-type - 29" minimum between ends of weights.

**SECTION V-V**

- Top chord to cross tube U-bolt detail (typical)

**TRUSS DAMPING DEVICE CONNECTION DETAIL**

- Cross tubes
  - 3/8" U-bolt detail (typical)
  - 3/8" holes in mounting pipe

**PLAN DETAIL**

- Sign at panel points

- Damper note:
  - One damper per truss, see plan detail for Stockbridge-type - 29" minimum between ends of weights.

**STANDARD F17-06**

**CHIEF ENGINEERING OFFICER**
NOTES:
1. JOS AT FOUNDATION AS SHOWN, MAY CUT HOLES TO AVOID MOUNTING DEFECTS INSTALL ALL OUL HACES TO BE GROUND TO ANSI ROUGHNESS OF 500 M UNLESS.
2. GALVANIZING VENT HOLES OF ADIULATE SIZE SHALL BE PROVIDED ON UNDERSIDE AT EACH END OF BRACING PIPES. ALTERNATIVELY, HOLE MAY BE PROVIDED IN ALL OF PIPE COLUMN, ALL JOS T WITH BE DRILLED AND 0-RINED, VIT.
3. STEEL PIPE PLATE CARBON STEEL HANDHOLE COVERS AND HOLES TO BE GROUND TO ANSI ROUGHNESS PRAGHANIZING FRAME.
4. SEE GENERAL NOTES FOR FASTENERS.
5. NONSTANDARD APPLICATIONS SHALL HAVE DIMENSIONS VERIFIED OR APPROVED AS APPROPRIATE.
6. SEE SHEET 7 OF THIS SERIES FOR SHOULDER TYPE FOUNDATION DETAILS.
7. SEE SHEET 8 OF THIS SERIES FOR MEDIAN BARRIER TYPE FOUNDATION DETAILS.
8. SEE SHEET 9 OF THIS SERIES FOR MEDIAN BARRIER TYPE FOUNDATION DETAILS WHEN EXISTING UTILITY IS PRESENT.

STEEL POST O.D.

SECTION A-A
AS AN ALTERNATIVE TO HOLES, MANDARON CAPS INSTALLED AFTER GALVANIZING FRAME.

SECTION B-B
8" PIPE - 14 GA.
END SUPPORT SCHEDULE

<table>
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END SUPPORT DETAILS
END ELEVATION
SIDE ELEVATION
DETAIL D, SEE SHEET 6 OF THIS SERIES

DETAILED VENT HOLES FOR FOUNDATION DETAILS.
SEE SHEET 7 OF THIS SERIES FOR SHOULDER TYPE FOUNDATION DETAILS.

STEEL POST O.D.
8-19-2014

OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) STRUCTURE DETAILS
STANDARD F17-06
WALKWAY AND TRUSS GRATING WIDTH DIMENSIONS ARE NOMINAL AND MAY VARY ±5% BASED ON AVAILABLE STANDARD WIDTHS.

PLACE ALL SIGN AND WALKWAY BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.

SECTION F-F

WALKWAY AND WALKWAY SMALL SPAN A MINIMUM OF THREE BRACKETS BETWEEN SPLICES AND/OR GAP JOINTS. PLACE ALL SIGN AND WALKWAY BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.

GRATING AND HANDRAIL SPLICES PLACED AS NEEDED.

DATE: 5-20-2014

APPROVED: 5-20-2014

CHIEF ENGINEERING OFFICER

ILLINOIS TOLLWAY

OVERHEAD SIGN STRUCTURE

SPANNING TYPE (STEEL)

STRUCTURE DETAILS

STANDARD F17-06

SHEET 10 OF 13

TYPICAL FRONT ELEVATION

WITHIN LIMITS SHOWN:

WALKWAY AND TRUSS GRATING WIDTH DIMENSIONS ARE NOMINAL AND MAY VARY ±5% BASED ON AVAILABLE STANDARD WIDTHS.

PLACE ALL SIGN AND WALKWAY BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.

GRATING AND HANDRAIL SPLICES PLACED AS NEEDED.

BRACKET AND GRATING DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DIMENSIONS PLUS MANUFACTURER'S MOUNTING DETAIL.

WITH HANDRAIL OMITTED FOR CLARITY.

~ TRUSS GRATING SPLICE

W6X9 SUPPORT AND SIGN BRACKET

TOP OF W6X9 WALKWAY AND SIGN BRACKET

TOP OF W6X9 WALKWAY SUPPORT FRAME ONLY

TOP OF W6X9 WALKWAY SUPPORT FRAME ONLY

PLAN WALKWAY AND HANDRAIL SKETCH

TYPICAL FRONT ELEVATION

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WITH HANDRAIL OMITTED FOR CLARITY.
DATE APPROVED: 3-01-2021

STANDARD F17-06

TRUSS TYPICAL
INTERIOR ELEVATION

EVEN OR ODD NUMBER OF PANELS/EXTERIOR UNITS ALLOWED.

HOLE FOR 1/4" SHACKLE

1/4" x 1/4" BOLT TYPE

5/8" GALV. WIRE ROPE, BACK 12" AND SECURE THIMBLE, TURN ROPE WITH MIN (3) WIRE ROPE CLIPS. PROVIDE 1 BOLT TYPE ANCHOR SHACKLE PER SIDE.

5/8" GALV. WIRE ROPE, BACK 12" AND SECURE THIMBLE, TURN ROPE WITH MIN (3) WIRE ROPE CLIPS. PROVIDE 1 BOLT TYPE ANCHOR SHACKLE PER SIDE.

1/4" x 1/4" BOLT TYPE

5/8" GALV. WIRE ROPE, BACK 12" AND SECURE THIMBLE, TURN ROPE WITH MIN (3) WIRE ROPE CLIPS. PROVIDE 1 BOLT TYPE ANCHOR SHACKLE PER SIDE.

1/4" x 1/4" BOLT TYPE

5/8" GALV. WIRE ROPE, BACK 12" AND SECURE THIMBLE, TURN ROPE WITH MIN (3) WIRE ROPE CLIPS. PROVIDE 1 BOLT TYPE ANCHOR SHACKLE PER SIDE.
NOTES:

1. FOR MATERIAL, FABRICATION, ERECTION, AND OTHER REQUIREMENTS, REFER TO ILLINOIS TOLLWAY "STRUCTURAL SUPPORT" FOR SIGN PANELS" SPECIAL PROVISION.
2. THESE DETAILS ARE NOT INTENDED FOR PORTABLE AND/OR PRECAST BARRIER.
3. DESIGN CONFORMS TO THE 2015 EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS WITH 2017 INTERIM SPECIFICATIONS THERETO. DESIGN WIND SPEEDS OF 3-S GUST WITH SPEED OF 120 MPH PLUS 14% GUST FACTOR, AND A WIND IMPORTANCE FACTOR OF 1.0 (50 YEAR MEAN RECURRENCE INTERVAL) FOR THE SUPPORTING STRUCTURES.
4. THE PARAPET WALL SHALL BE DESIGNED TO SAFELY SUPPORT THE PROPOSED SIGN PANELS IN ACCORDANCE WITH NOTE 3.
5. VERTICAL POSTS MAY BE USED IN PLACE OF THE BENT PLATE OF MOUNTING PLATE SHOWN. ALL STEEL ELEMENTS SHALL BE GALVANIZED AFTER FABRICATION.
6. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURES MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS. THE CONTRACTOR SHALL LOCATE THE POSITION OF THE REMAINING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS. DRILLED HOLES FOR ANCHOR BOLTS SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH EXISTING REINFORCEMENT.
7. AN ANCHOR BOLT SHALL BE PLACED CLOSER THAN 1" FROM PARAPET WALL EXPANSION JOINT.
8. TWO STIFFENER PLATES (ONE ON EACH SIDE OF POST) SHALL BE WELDED AS SHOWN ON PLANS IN DIRECTION PERPENDICULAR TO SIGN.
9. INSTALLATION SHALL BE DONE IN ACCORDANCE WITH ILLINOIS TOLLWAY SPECIAL PROVISION "SIGN INSTALLATION".
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12. STEEL ANCHOR BOLTS, BASE PLATE, POST AND TOP OF PARAPET.
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37. AN ANCHOR BOLT SHALL BE PLACED CLOSER THAN 1" FROM PARAPET WALL EXPANSION JOINT.
NOTES:

1. All sign connections to the noise abatement wall shall be at least 12" to center line of open joint in wall.

2. Support channel system model number

3. Full connections shall be provided between the sign face and any other washers required on signs constructed of ASTM Type III or IV.

4. Full connections shall be provided between the sign face and any other washers required on signs constructed of ASTM Type III or IV.

5. Partial connections shall be provided between the sign face and any other washers required on signs constructed of ASTM Type III or IV.

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NOTES:
1. All anchor bolts for median barrier mounted sign support assembly shall be 3/8 in. expansion anchors.
2. The top section shall be telescoped into the base section 12 inches and fastened together.
3. Design wind loads to the AASHTO LRFD section of the AASHTO Standard Specifications for Highway Signs, Luminaires, and Traffic Signals with 2017 interim specifications plus 0.16 gust factor. Use wind importance factor of 0.0 (50 year mean recurrence interval) for the supporting structures.
4. No anchor bolt shall be placed closer than 1/8 in. from center line of median barrier joint.
5. Sign fabrication and installation shall be done in accordance with Illinois Tollway Special Provision "Pole Installation".
6. Base and post assembly shall be hot dip galvanized after fabrication in accordance with ASTM A762 or as specified in the special provision "Telescoping Steel Sign Support, Barrier Assembly".
7. All materials for the sign support assembly shall be included in the cost of "Telescoping Steel Sign Support, Barrier Assembly".

**Figures**
- **One Post Installation**
- **Two Posts Installation**
- **Plan View**
- **Side Elevation - Barrier Mount Detail**

**Tables**
- **Supporting Channel Details**

**Sign Area**
- One Post: 12 SF max.
- Two Posts: 20 SF max.

**Mounting Bracket Details**
- Options available.

**Material Specifications**
- Steel: 36" wide or less
- Aluminum: 20" wide or less

**Anchor Bolt Specifications**
- 3/8" diameter
- 6" from top of post base
- 18" from top of sign panel

**Expansion Anchors**
- Optional: 3/8" diameter, 2-1/4" long

**Notes:**
- Use a minimum of 2 anchors spaced 48" apart for installation with maximum spacing of 72".
- Sign panel over 36" wide: see detail B.
- Sign panel 36" wide or less: see detail A.

**Design Considerations**
- Maximum sign size: 36" wide or less
- Wind speeds: 3-s gust with speed of 120 MPH plus 14% gust factor, and a wind importance factor of 0.0 (50 year mean recurrence interval) for the supporting structures.