DESIGN BULLETIN No. 20-01

SUBJECT: Sign Structure Base Sheets and Standard Drawings Revisions

The following revisions to the Illinois Tollway Base Sheets 720 OHS and Standard Drawings Section F Sign Structures have been implemented facilitating construction, safety of structure and protection of driving public.

The 720 OHS Base Sheets and Standard Drawing Section F Sign Structure have been revised per the following (attached are examples of the changes shown in 729 OHS Sheets 1 and 3 and 730 OHS Sheets 1, 3 and 4 of Base Sheets):

**Handhole Openings:** During gantry construction, difficulties were identified with pulling cable around the splices because the LCS (Lane Control Signs) were pre-assembled on the beam prior to gantry installation. Base Sheets and Standard Drawings have been revised adding and modifying new handhole openings on each side of splices along the horizontal beam for ease of construction and feeding of cables.

**Splice Bolt Tightening:** Maintenance had identified loose bolts in the splice plates on multiple gantry warning structures over live traffic. Base Sheets and Standard Drawings have been revised adding procedure notes for proper bolt tightening after initial snug tight has been achieved at splices.

**Base Plate Anchors:** During inspection of base plate anchors, loose nuts were identified on multiple overhead sign structures. Base Sheets and Standard Drawings have been revised adding procedure notes for proper installation of double nuts to be used instead of one nut shown in the previous details.

The affected Base Sheets and Standards are as per below.

<table>
<thead>
<tr>
<th>Base Sheets:</th>
<th>Standard Drawings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-OHS-720</td>
<td>F1-09</td>
</tr>
<tr>
<td>M-OHS-721</td>
<td>F4-10</td>
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<tr>
<td>M-OHS-722</td>
<td>F13-04</td>
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<tr>
<td>M-OHS-723</td>
<td>F14-04</td>
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<td>F15-03</td>
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<td>M-OHS-727</td>
<td>F16-02</td>
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<td>M-OHS-729</td>
<td>F17-04</td>
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<tr>
<td>M-OHS-730</td>
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Design Section Engineers (DSE) are hereby directed to incorporate this design bulletin into all contracts currently under design, currently being advertised and all future contracts. DSEs shall use the revised drawings with new handhole details, bolt tightening procedure notes and anchor bolt installation of double nuts. These details will be included in the next release of Illinois Tollway Base Sheets and Standard Drawings. In the meantime, DSEs should request Microstation files for their use.

Paul D. Kovacs, P.E.
Chief Engineering Officer

Date: 02/14/2020
**NOTE TO DESIGNER**

This base sheet shows typical new construction but it is not standard drawing. It requires completion by the designer prior to insertion into a contract. Microstation files and the "CAD Standards Manual" are available on the Illinois Tollway website. The designer shall accept the responsibility of the design of this sheet upon its completion and insertion into a contract. All "Note to Designer" boxes shall be removed prior to insertion of the sheet into the plan set.

Site grounding electrode system to be provided as detailed. Reference Illinois Tollway structure design manual for minimum vertical clearance requirements.

**SITE PLAN**

- From the high point of the roadway beneath the sign structure to the centerline of truss, which includes an allowance for 9' from centerline of truss to bottom of an 18' tall sign panel.

**ELEVATION**

- Lowest part of structure, sign or luminaire.
- Median barrier type foundation & end support.
- Shoulder type foundation & end support.
- Edge of pavement.
- Bottom of base plate (typ.)

**SUMMARY**

<table>
<thead>
<tr>
<th>STRUCTURE NUMBER</th>
<th>STATION</th>
<th>DESIGN TRUSS TYPE</th>
<th>C. TO C. SUPPORTS</th>
<th>ELEV. A</th>
<th>PROPOSED MINIMAL VERTICAL CLEARENCE</th>
<th>MEDIAN BARRIER END SUPPORT</th>
<th>SHOULDER END SUPPORT</th>
<th>HEIGHT OF TALLEST SIGN</th>
<th>TOTAL SIGN AREA (IN FT²)</th>
<th>FOUNDATION FOR OVERHEAD SIGN STRUCTURE</th>
<th>REINFORCEMENT BARS, EPOXY COATED</th>
<th>PROTECTIVE COAT</th>
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**TOTAL BILL OF MATERIAL**

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<th>UNIT</th>
<th>TOTAL</th>
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**NOTE:** Work this sheet with standard F1

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<tr>
<td>2-13-2020</td>
<td>OVERHEAD SIGN STRUCTURE SPAN TYPE SUMMARY AND TOTAL BILL OF MATERIAL</td>
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</table>
NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS DETAILED. REFERENCE BASE SHEET M-ITS-110.

SEE ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL FOR MINIMUM VERTICAL CLEARANCE REQUIREMENTS.

OVERHEAD SIGN STRUCTURE ENTRANCE MONOTUBE TYPE (STEEL) MAINLINE SUMMARY AND TOTAL BILL OF MATERIAL

DATE 2-13-2020

M-OHS-722

OVERHEAD SIGN STRUCTURE, MAINLINE ENTRANCE MONOTUBE TYPE (STEEL)

CONCRETE STRUCTURES

FOOT

FOUNDATION FOR OVERHEAD SIGN STRUCTURE, MAINLINE MONOTUBE TYPE

POUND

REINFORCEMENT BARS, EPOXY COATED

POUND

PROTECTIVE COAT

POUND

TOTAL BILL OF MATERIAL

NOTE: WORK THIS SHEET WITH STANDARD F13
EXIT MONOTUBE PLAN

EXIT MONOTUBE ELEVATION

SUMMARY

TOTAL BILL OF MATERIAL

NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "FLAT STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

SEE ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL FOR MINIMUM VERTICAL CLEARANCE REQUIREMENTS.

SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS DETAILED. (REFERENCE BASE SHEET M-ITS-1101)

WORK THIS SHEET WITH STANDARD F13 SHEETS 6 AND 7 OF STANDARD F13

DATE 2-13-2020
NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

SEE ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL FOR MINIMUM VERTICAL CLEARANCE REQUIREMENTS.

SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS DETAILED. (REFERENCE BASE SHEET M-075-1995)

TOTAL BILL OF MATERIAL

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NOTE: WORK THIS SHEET WITH STANDARD F14

OVERHEAD SIGN STRUCTURE
BUTTERFLY TYPE (STEEL)
SUMMARY AND TOTAL BILL OF MATERIAL

DATE: 2-13-2020

M-OHS-724
NOTE TO DESIGNER

This base sheet shows typical new construction but it is not standard drawing. It requires completion by the designer prior to insertion into a contract. Microstation files and the "CAD Standards Manual" are available on the Illinois Tollway website. The designer shall accept the responsibility of the design of this sheet upon completion and insertion into a contract. All "Note to Designer" boxes shall be removed prior to insertion of the sheet into the plan set.

Replace this "Note to Designer" with site grounding electrode system detail.

See the Illinois Tollway Structure Design Manual for minimum vertical clearance.

Site grounding electrode system to be provided as detailed. Reference base sheet M-ITS-1101.

SUMMARY

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TOTAL BILL OF MATERIAL

NOTE:

Work this sheet with standard F15 M-OHS-725.

DATE: 2-13-2020
NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MANUSCRIPT FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

REPLACE THIS "NOTE TO DESIGNER" WITH SITE GROUNDING ELECTRODE SYSTEM DETAIL.

SEE THE ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL FOR MINIMUM VERTICAL CLEARANCE.

SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS DETAILED. (REFERENCE BASE SHEET M-ITS-1101.)

TOTAL BILL OF MATERIAL

<table>
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<th>PAY ITEM</th>
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<td>CONCRETE STRUCTURES</td>
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NOTE TO DESIGNER

NOTE TO WORK THIS SHEET WITH STANDARD FIS SHEET 6 OF STANDARD FIS MINIMUM ELEV. C1 ELEV. D1 ELEV. E1 ELEV. F VERTICAL CLEARANCE L1 L2 L3 L4 H H1 "C" TOTAL BILL OF MATERIAL OVERHEAD SIGN STRUCTURE, AET RAMP EXIT MONOTUBE TYPE OVERHEAD SIGN STRUCTURE EXIT MONOTUBE TYPE (STEEL) AET RAMP EXIT MONOTUBE SUMMARY AND TOTAL BILL OF MATERIAL DATE 2-13-2020
NOTE TO DESIGNER

This base sheet shows typical new construction but it is not standard drawing. It requires completion by the designer prior to insertion into a contract. Microstation files and the "CADD Standards Manual" are available on the Illinois Tollway Website. The designer shall accept the responsibility of the design of this sheet upon its completion and insertion into a contract. All "NOTE TO DESIGNER" boxes shall be removed prior to insertion of the sheet into the plan set.

Replace this "NOTE TO DESIGNER" with "SITE GROUNDING ELECTRODE SYSTEM DETAIL".

See the Illinois Tollway Structure Design Manual for minimum vertical clearance.

SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS DETAILED. Reference base sheet M-TT-100.

TOTAL BILL OF MATERIAL

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<td>D</td>
<td>REINFORCEMENT BARS, EPOXY COATED</td>
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NOTE:

Work this sheet with Standard Fig M-OHS-727.

DATE: 3-2-2020
NOTE TO DESIGNER

This base sheet shows typical new construction but it is not standard drawing. It requires completion by the designer prior to insertion into a contract. Microstation files and the "CAD Standards Manual" are available on the Illinois Tollway website. The designer shall accept the responsibility of the design of this sheet upon its completion and prior to insertion of the sheet into the plan set.

"Note to Designer" boxes shall be removed prior to insertion of the sheet into the plan set.

Pay Item used is based on the design length, not the constructed length. See the Illinois Tollway Structural Design Manual for minimum vertical clearance.

Site grounding electrode system to be provided as detailed. Reference Base Sheet M-ITS-1101.

TOTAL BILL OF MATERIAL

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<td>PC &amp; S</td>
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<td>SSW</td>
<td>SIGN STRUCTURE WALKWAY</td>
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NOTE:

WORK THIS SHEET WITH STANDARD FIT
NOTE:
1. See Sheet 1 of this series for dimensions "A", "B" and "C".
2. See Sheet 2 of this series for dimensions "D" and "E".
3. Installation and inspection of splice bolts and anchor bolts shall comply with Illinois Tollway Special Provision "Intelligent Transportation Systems Gantry Frame Steel".
4. Shoulder foundation shown; verify handhole and inspection holes placement on median frame column with the engineer.

SPICE PLATE TABLE

<table>
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HANDHOLE DETAIL

VIEW D-D

HANDHOLE DETAIL

VIEW D-D

BASE DRAWING M-OHS-729
SHEET 3 OF 8
DATE: 2-13-2020

OVERHEAD SIGN STRUCTURE
ITS GANTERY FRAME (STEEL)
STRUCTURE DETAILS

COLUMN BASE
REINFORCING NOT SHOWN

SECTION O-O
SPICE PLATE DETAIL

VIEW F-F
NOTES:
1. The foundation details shown are based on the presence of mostly cohesive soil conditions (silty or sandy clay) with an average undrained shear strength of 1,250 psi, which must be determined by previous soil investigations. The dimensions shown shall be the result of soil-specific designs if conditions encountered in the field are different than those indicated, the contractor shall notify the engineer to determine if the foundation dimensions need to be modified.
2. All material, fabrication, and construction requirements for the foundations shall be in accordance with Section 754 of the Illinois Tollway Supplemental Specifications.
3. Concrete shall be placed monolithically, without construction joints unless noted otherwise.
4. Backfill shall be placed per Section 752 of the IDOT standard specification and prior to erection of gantry frame.
5. Provide normal surface finish, followed by protective coating application on all concrete surfaces above ELEV. D. Cost included in the cost of “foundation for its gantry frame.”
6. All reinforcement bar designated CE) shall be epoxy coated. Reinforcement bar shall be positioned so that there will be no interference between vertical reinforcement and anchor bolts.
7. Furnishing and installing all conduit, fittings and grounding system are included in the cost of “foundation for its gantry frame.”
8. No conduits or decomposable forms shall be used 1'-0" below the finished ground line. Permanent metal forms or other shelding may not be left in place without the engineer’s written permission. Excavations shall be backfilled before concrete placement at no additional cost.

REINFORCEMENT BAR SCHEDULE

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SHOULDER FOUNDATION TYPE I TABLE

SHOULDER FOUNDATION TYPE I SCHEDULE

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OVERHEAD SIGN STRUCTURE ITS GANTRY FRAME (STEEL) SINGLE SPAN STRUCTURE DETAILS
1. SEE SHEET 5 OF THIS SERIES FOR FOUNDATION NOTES, DESIGN CRITERIA, ANCHOR BOLT DETAIL AND ANCHOR PLATE DETAILS.

2. PROVIDE NORMAL SURFACE FINISH, FOLLOWED BY PROTECTIVE COAT APPLICATION ON ALL CONCRETE SURFACES ABOVE TOP OF GANTRY BEAM. COST INCLUDED IN THE COST OF "FOUNDATION FOR ITS GANTRY FRAME".

3. SEE SHEET 8 OF THIS SERIES FOR CONCRETE MEDIAN BARRIER TRANSITION, COST OF BARRIER TRANSITION INCLUDED IN COST OF "CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-Y".

4. COORDINATE STAINLESS STEEL RIGID CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.

5. PROTECTIVE COAT SHALL BE APPLIED TO TRAFFIC AND TOP FACES OF CONCRETE MEDIAN WALL.

NOTE TO DESIGNER:
DESIGNER TO COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. MODIFY DRAWING AS NECESSARY. REMOVE THIS "NOTE TO DESIGNER" PRIOR TO INSERTION INTO THE PLAN SET.

BASE DRAWING M-0HS-729 SHEET 7 OF 8
OVERHEAD SIGN STRUCTURE ITS GANTRY FRAME (STEEL) SINGLE SPAN STRUCTURE DETAILS

MEDIAN FOUNDATION TABLE

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</tbody>
</table>

REINFORCEMENT BAR SCHEDULE

FOR ONE FOUNDATION

<table>
<thead>
<tr>
<th>BAR</th>
<th>NO.</th>
<th>SIZE</th>
<th>LENGTH</th>
<th>SHAPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE1</td>
<td>16</td>
<td>1/4&quot;</td>
<td>17'-11&quot;</td>
<td></td>
</tr>
</tbody>
</table>
GENERAL NOTES:
1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ½" x ½" CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. CHAMFER ON VERTICAL EDGES SHALL BE A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL.

REINFORCEMENT BARS:
1. REINFORCEMENT BARS, INCLUDING REINFORCEMENT BARS, EPOXY-COATED SHALL COMPLY TO THE REQUIREMENTS OF DOT STANDARD SPECIFICATIONS SECTION 509 AND ARTICLE 500.6.
2. REINFORCEMENT BARS DESIGNATED "CE1" SHALL BE EPOXY-COATED.

2. REINFORCEMENT BARS DESIGNATED "CE1" SHALL BE EPOXY-COATED.
3. REINFORCEMENT BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AcI 315, "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".

5. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL.

I. REINFORCEMENT BARS, INCLUDING REINFORCEMENT BARS, EPOXY-COATED SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.

CONSTRUCTION SPECIFICATIONS:
1. ILLINOIS DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL SPECIFICATIONS ISSUED MARCH, 2019 TO THE ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
2. ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION ADOPTED JANUARY 1, 2012.
3. ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL ISSUED MARCH, 2019.
4. AASHTO STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS, SIXTH EDITION.
5. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION WITH CURRENT INTERIMS.

NOTE TO DESIGNER:
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT IS INTENDED TO SHOW THE EXACT DESIGN OF THE PROJECT. THE DESIGNER MUST CONSIDER THE SPECIFIC SITE CONDITIONS AND ADAPT THE DETAILS TO MEET THE REQUIREMENTS OF THE SITE AND THE SPECIFICATIONS.

SECTION B-B

BASE PLATE TABLE - TYPE N

<table>
<thead>
<tr>
<th>MAX. SPAN 5&quot; OR 6&quot;</th>
<th>&quot;D&quot;</th>
<th>&quot;E&quot;</th>
<th>&quot;N&quot;</th>
<th>x1</th>
<th>x2</th>
<th>ANCHOR BOLT DIAMETER</th>
<th>NO. ANCHOR BOLTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-0&quot;</td>
<td>2&quot;</td>
<td>5&quot;</td>
<td>6&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1/2&quot; BASE PLATE</td>
<td>18</td>
</tr>
<tr>
<td>2'-0&quot;</td>
<td>2&quot;</td>
<td>5&quot;</td>
<td>6&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1/2&quot; BASE PLATE</td>
<td>22</td>
</tr>
<tr>
<td>3'-0&quot;</td>
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<td>1&quot;</td>
<td>1&quot;</td>
<td>1/2&quot; BASE PLATE</td>
<td>22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAX. SPAN 7&quot; OR 8&quot;</th>
<th>&quot;D&quot;</th>
<th>&quot;E&quot;</th>
<th>&quot;N&quot;</th>
<th>x1</th>
<th>x2</th>
<th>ANCHOR BOLT DIAMETER</th>
<th>NO. ANCHOR BOLTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-0&quot;</td>
<td>3&quot;</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1/2&quot; BASE PLATE</td>
<td>18</td>
</tr>
<tr>
<td>2'-0&quot;</td>
<td>3&quot;</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1/2&quot; BASE PLATE</td>
<td>22</td>
</tr>
<tr>
<td>3'-0&quot;</td>
<td>3&quot;</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1/2&quot; BASE PLATE</td>
<td>22</td>
</tr>
</tbody>
</table>

DESIGN STRESSES FOR REINFORCED CONCRETE:
1. ILinois Tollway structure design manual issued March, 2019.
2. Aashto standard specification for structural supports for highway signs, luminaries and traffic signals, sixth edition.
3. Aashto LRFD bridge design specifications, sixth edition with current interims.

OVERHEAD SIGN STRUCTURE ITS GANTRY FRAME (STEEL)

OVERHEAD SIGN STRUCTURE ITS GANTRY FRAME (STEEL)

STRUC TURE DETAILS
NOTE:
1. HANDHOLE FOR INSPECTION ACCESS ALLOWED ON ONE SIDE OF WEB ONLY. PLACE HANDHOLE ON SAME SIDE AS OTHER HANDHOLES.
2. SEE SHEET 1 OF THIS SERIES FOR DIMENSIONS "A", "B" AND "C".
3. SEE SHEET 3 OF THIS SERIES FOR SECTION F-F.

NOTE TO DESIGNER:
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS BASE DRAWING UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

SECTION H-H

NOTE:
1. HANDHOLE FOR INSPECTION ACCESS ALLOWED ON ONE SIDE OF WEB ONLY. PLACE HANDHOLE ON SAME SIDE AS OTHER HANDHOLES.
2. SEE SHEET 1 OF THIS SERIES FOR DIMENSIONS "A", "B" AND "C".
3. SEE SHEET 3 OF THIS SERIES FOR SECTION F-F.

NOTE TO DESIGNER:
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS BASE DRAWING UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.
1. The foundation details shown are based on the presence of mostly cohesive soil conditions. If sand or gravel is present, with an average undrained compressive strength of not less than 120 ft-lb/ft², which must be determined by previous soil investigation, the foundation details stated will be included in the plans and the foundation dimensions shall be the result of site specific design, if conditions encountered in the field differ from those indicated. The contractor shall notify the engineer to determine if the foundation dimensions need to be modified.

2. All materials, fabrication, and construction requirements for the foundations shall be in accordance with Section 154 of the Illinois Tollway Supplemental Specifications.

3. Concrete shall be placed monolithically, without construction joints unless noted otherwise.

4. Backfill shall be placed per Section 502 of the DOT standard specification and prior to direction of gantry frame.

5. Provide normal surface finish followed by protective coat application on all concrete surfaces above elev. 0 or elev. FL. Cost included in the cost of “foundation for its gantry frame”.

6. All reinforcement bar designated (El shall be epoxy coated. Reinforcement bar shall be positioned so that there will be no interference between vertical reinforcement and anchor bolts.

7. Furnishing and installing all conduit, fittings and grounding system are included in the cost of “foundation for its gantry frame”.

8. No sonotubes or decomposable forms shall be used 1'-0" below the finished ground line. Permanent metal forms or other shielding may not be used in place without the engineer’s written permission. Excavations shall be tied off before concrete placement at no additional cost.

9. Coordinate stainless steel rigid conduit size, location and quantity with electrical and its plans. Conduits shall be placed to miss reinforcement bars. Do not cut reinforcement bars.

**NOTE TO DESIGNER:**

Designer to coordinate conduit sizes, location and quantity with electrical and its plans. Modify drawing as necessary. Remove this “note to designer” prior to insertion into the plan set.

**Anchor Bolt Detail**

Anchor bolts shall conform to either AASHTO M 270 or ASTM F 1554 Grade 55 and meet Charpy V-notch (CVN) energy of 15 lb-ft. at 40°F. Galvanize upper 18" per AASHTO M 232. No welding shall be permitted on anchor bolts.

Anchor bolts shall be minimum to be galvanized, entire bolt may be galvanized at contractor’s option.

**Foundation Type I Table**

<table>
<thead>
<tr>
<th>Span</th>
<th>1'-5&quot;</th>
<th>1'-9&quot;</th>
<th>2'-0&quot;</th>
<th>2'-3&quot;</th>
<th>2'-6&quot;</th>
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</thead>
<tbody>
<tr>
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<td>3&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
</tr>
</tbody>
</table>

**Anchor Bolt Details**

Utilize 3/4" positioning plate and temporary base plate to secure anchor bolts in place. A minimum bolt size shall be permitted on anchor bolts.

**Anchor Bolt Lock to Secure.**

Heavy hex nut and washer type (IEC) to prevent rotation. Provide 1 nut per bolt. Extremity thread or use chemical threads to lock to secure.

**SHOULDER FOUNDATION TYPE I**

**SHOULDER FOUNDATION TYPE 1 ELEVATION**

**SHOULDER FOUNDATION TYPE 1 SCHEDULE**

<table>
<thead>
<tr>
<th>Span</th>
<th>1'-5&quot;</th>
<th>1'-9&quot;</th>
<th>2'-0&quot;</th>
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**SHOULDER FOUNDATION TYPE 1 TABLE**

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<td>Dia.</td>
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<td>3&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
</tr>
</tbody>
</table>

**REINFORCEMENT BAR SCHEDULE**

**NOTE TO DESIGNER:**

This base sheet shows typical new construction but it is not a standard drawing. It requires completion by the designer prior to insertion into the plan set. All notes to designer boxes shall be eliminated. The designer shall accept the responsibility of the design of this base drawing upon its completion and insertion into a contract. All notes to designer boxes shall be eliminated. The designer shall accept the responsibility of the design of this base drawing upon its completion and insertion into a contract. All notes to designer boxes shall be eliminated.

**SHOULDER FOUNDATION FOR ITS GANTRY FRAME (STEEL) TWO-SPAN**

**OVERHEAD SIGN STRUCTURE ITS GANTRY FRAME (STEEL) DETAIL STRUCTURES**

**DATE 2-13-2020**
THE LENGTH OF SPIRAL SHOWN IS THE HEIGHT OF SPIRAL.

### MEDIAN FOUNDATION

**REINFORCEMENT BAR SCHEDULE**

<table>
<thead>
<tr>
<th>BAR NO.</th>
<th>SIZE</th>
<th>LENGTH</th>
<th>SHAPE</th>
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<tbody>
<tr>
<td>1-4</td>
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<tr>
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<td>#6</td>
<td>5'-0&quot;</td>
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</tr>
<tr>
<td>11-15</td>
<td>#6</td>
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<tr>
<td>16-20</td>
<td>#6</td>
<td>5'-0&quot;</td>
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</tr>
<tr>
<td>21-25</td>
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</tr>
<tr>
<td>26-30</td>
<td>#6</td>
<td>5'-0&quot;</td>
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<td>#6</td>
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</tr>
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<td>36-40</td>
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<tr>
<td>41-45</td>
<td>#6</td>
<td>5'-0&quot;</td>
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</table>

**NOTES:**

1. SEE SHEET 6 OF THIS SERIES FOR FOUNDATION NOTES, DESIGN CRITERIA, ANCHOR BOLT DETAILS, AND ANCHOR PLATE DETAILS.

2. PROVIDE NORMAL SURFACE FINISH FOLLOWED BY PROTECTIVE COAT APPLICATION ON ALL CONCRETE SURFACES ABOVE TOP OF GANTRY BEAM. COST INCLUDED IN THE COST OF FOUNDATION FOR ITS GANTRY FRAME.

3. SEE SHEET 9 OF THIS SERIES FOR CONCRETE MEDIAN BARRIER TRANSITION, COST OF BARRIER TRANSITION INCLUDED IN COST OF CONCRETE MEDIAN BARRIER TRANSITION, TYPE "S".

4. COORDINATE STAINLESS STEEL RIGID CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. MODIFY DRAWINGS AS NECESSARY. REMOVE THIS NOTE TO DESIGNER PRIOR TO INSERTION INTO THE PLAN SET.

5. PROTECTIVE COAT SHALL BE APPLIED TO TRAFFIC AND TOP FACES OF CONCRETE MEDIAN BARRIER TRANSITION, COST OF "CONCRETE MEDIAN BARRIER TRANSITION, TYPE "S".

**NOTE TO DESIGNER:**

DESIGNER TO COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. MODIFY DRAWINGS AS NECESSARY. REMOVE THIS NOTE TO DESIGNER PRIOR TO INSERTION INTO THE PLAN SET.

**NOTE TO DESIGNER:**

DESIGNER TO COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL AND ITS PLANS. MODIFY DRAWINGS AS NECESSARY. REMOVE THIS NOTE TO DESIGNER PRIOR TO INSERTION INTO THE PLAN SET.

**PROTECTIVE COAT:**

APPLY TO TRAFFIC AND TOP FACES OF CONCRETE MEDIAN BARRIER TRANSITION, COST OF "CONCRETE MEDIAN BARRIER TRANSITION, TYPE "S".

**REINFORCEMENT BARS:**

- #6 at 6" pitch
- #10 at 6" pitch

**ANCHOR BOLTS:**

- #10 x 22" in pairs
- #5 x 22" in pairs

**CONCRETE MEDIAN FOUNDATION TABLE**

<table>
<thead>
<tr>
<th>NO.</th>
<th>BAR</th>
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<th>LENGTH</th>
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</tr>
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<tr>
<td>19</td>
<td>#6</td>
<td>5'-0&quot;</td>
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</tr>
</tbody>
</table>

**CONCRETE MEDIAN FOUNDATION DRAWING**

BASE DRAWING M-OHS-730

SHEET 8 OF 9

DATE: 3-15-2023

OVERHEAD SIGN STRUCTURE

ITS GANTRY FRAME (STEEL)

TWO-SPAN STRUCTURE DETAILS
CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT ITS GANTRY

SECTION A-A

1. WITHIN SECTION B-B, THE GUTTER PORTION OF THE BARRIER BASE REMAINS 2'-0"; THEREFORE, STANDARD TYPE 20A F&C SHALL BE USED.
2. WITHIN SECTION C-C & D-D, THE GUTTER PORTION OF THE BARRIER BASE IS LESS THAN 2'-0"; THEREFORE, NON-ILLINOIS TOLLWAY STD. F&C SHALL BE USED.
3. WITHIN SECTION B-B & C-C, THE BARRIER HEIGHT REMAINS 24", THIS ALLOWS THE PLACEMENT OF LIGHT POLE FOUNDATIONS WITHIN THIS AREA.
4. PROVIDE NON-STAINING GRAY ONE COMPONENT NON-SAG ELASTOMETRIC GUN GRADE POLYURETHANE SEALANT WITH BACKER ROD.

SECTION B-B

NOTE TO DESIGNER:
1. 2" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL AND IN THE CONCRETE BARRIER BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM JOINT SPACING SHALL BE 30'.
2. THE FORMING OF CONTRACTION JOINTS SHALL BE DONE BY SAWING.
3. GUTTER PROFILE IN THE VICINITY OF SAG VERTICAL CURVES, ALONG FLAT GRADES AND AT THE MEETING OF PROPOSED AND EXISTING GUTTER, SHALL BE CAREFULLY CONTROLLED AND FIELD ADJUSTED IF NECESSARY TO ENSURE POSITIVE DRAINAGE AND AVOID PONDING.
4. PROVIDE NON-STAINING GRAY ONE COMPONENT NON-SAG ELASTOMETRIC GUN GRADE POLYURETHANE SEALANT WITH BACKER ROD.

SECTION C-C

NOTE TO DESIGNER:
1. THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT, MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS BASE DRAWING UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION INTO THE SHEET INTO THE PLAN SET.

SECTION D-D

CONCRETE GUTTER, SPECIAL, (PER PLAN DETAIL)

SECTION E-E

DATE: 2-13-2020

OVERHEAD SIGN STRUCTURE ITS GANTRY FRAME (STEEL) TWO-SPAN STRUCTURE DETAILS
**GENERAL NOTES:**

1. Work this sheet with overhead sign structures span type summary and total bill of material.
2. Design loads for these trusses and frames are obtained from the project’s design team.
3. Truss support designs may be subject to dynamic loadings, and any special pretensioning of high yield wires may be required. Design loads shall be obtained from the project’s design team.
4. Truss segments shall be shipped individually with adequate provisions to prevent or minimize motion during transport. The contractor is responsible for maintaining the configuration and protection of the trusses during shipment.

**DESIGN SPECIFICATIONS:**

1. Use AASHTO standard specifications for structural supports for highway signs, luminaires, and traffic signals 5th edition.

**CONSTRUCTION SPECIFICATIONS:**

1. All waterways except as shown, fabrication, erection, and construction requirements shall be in accordance with Section 122 of the latest Illinois tollway supplemental specifications.

**LOADING:**

1. Both end supports are designed for 60% of total load.

2. Wind loading shall be a minimum of 35 psi on sign panels and 10 psi on gross areas defined by the perimeter of sign members not covered by sign area panels.

3. The arrow group II and III allowance stresses shall be equal to wind stress design.

**FABRICATION NOTES:**

1. No splices shall be located within 10 ft of the centerline of the span.

2. Materials: Aluminum shall conform to ASTM B221, type 6061-T6. All structural steel pipe shall be ASTM A500 grade B or A500 grade C. All structural steel plates and shapes shall conform to ASTM A36 or A572 grade 50.

3. Structural members shall have a minimum tensile strength of 50 ksi and minimum yield strength of 36 ksi. All fabricated welds shall be of the joint type specified and shall conform to the minimum requirements of the appropriate ASME code.

4. For any design span length that falls between two consecutive span lengths, provided in column 2 of Table A, the larger design span shall be used. If the 35' design span length falling between 30' and 40' design span lengths in Table, the 30' design span shall be used.

5. U-Bolts: U-Bolts shall be produced from ASTM A479 type 304L, 316L, or equivalent, hardened and tempered.

6. Structural members shall be designed to resist the forces resulting from any applicable loading, including the effects of wind, snow, and ice loads.

7. The base plate for the column shall have a minimum longitudinal charpy V-notch (CVN) impact test at 0°F. See Figure 1-2 before galvanizing.

8. Full details of all connections shall be maintained on file and be readily available for inspection.

9. The designer shall incorporate the recommendations of the Illinois Tollway Engineering Department in the design of the structure.

10. The engineer shall provide a detailed construction plan and a sufficient number of shop drawings to ensure the safe and efficient installation of the structure.

**LOADING NOTES:**

1. No splices shall be located within 10 ft of the centerline of the span.

2. Materials: Aluminum shall conform to ASTM B221, type 6061-T6. All structural steel pipe shall be ASTM A500 grade B or A500 grade C. All structural steel plates and shapes shall conform to ASTM A36 or A572 grade 50.

3. Structural members shall have a minimum tensile strength of 50 ksi and minimum yield strength of 36 ksi. All fabricated welds shall be of the joint type specified and shall conform to the minimum requirements of the appropriate ASME code.

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6. Structural members shall be designed to resist the forces resulting from any applicable loading, including the effects of wind, snow, and ice loads.

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8. Full details of all connections shall be maintained on file and be readily available for inspection.

9. The designer shall incorporate the recommendations of the Illinois Tollway Engineering Department in the design of the structure.

10. The engineer shall provide a detailed construction plan and a sufficient number of shop drawings to ensure the safe and efficient installation of the structure.
NOTES:
1. THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS. TYPICAL GRADE BEAM DETAILS WILL REQUIRE TYPICAL REINFORCEMENT. CONCRETE CUBIC YIELD STRENGTH OF THE CONCRETE USED SHOULD NOT BE LESS THAN 3500 PSI. ALL OTHER FOUNDATION DETAILS SHALL BE DETERMINED IN THE PLANS AND THE FOUNDATION DETAILS SHOWN ARE BASED ON A 14'-6" DEPTH OF GRADE BEAM. ALL OTHER FOUNDATION DETAILS SHOWN ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF CHANGES TO THE DRILLED SHAFT DESIGN. GRADE BEAM REINFORCEMENT, CONCRETE VOLUME AND LENGTH OF MEMBER SCHEDULE ON SHEET 1 OF THIS SERIES, GRADE BEAM DEPTH SHALL BE INCREASED UP TO 6'-0" WITHOUT IF NECESSARY TO INCREASE STEEL END SUPPORT HEIGHT ABOVE THE LIMITATIONS SHOWN IN SIGN STRUCTURE ENGINEER'S WRITTEN PERMISSION. EXCAVATIONS SHALL BE DEWATERED BEFORE CONCRETE PLACEMENT IF NO SONOTUBES OR DECOMPOSABLE FORMS SHALL BE USED 6" BELOW THE FINISHED GROUND LINE. PERMANENT SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS INDICATED ON THE PLANS.  
2. SHALL BE NO INTERFERENCE BETWEEN VERTICAL REINFORCEMENT AND ANCHOR BOLTS.  
3. ALL REBAR DESIGNATED (E) SHALL BE EPOXY COATED. REBAR SHALL BE POSITIONED SO THAT THERE WILL BE A NORMAL SURFACE FINISH FOLLOWED BY A CONCRETE SEALER APPLICATION WILL BE REQUIRED ON CONCRETE SURFACES ABOVE THE LOWEST ELEVATION 6" BELOW FINISHED GROUND LINE.  
4. NOW CONDUCT BLOWOUTS AS TYPICAL.  
5. TYPICAL/FINAL REBAR DETAILS TO BE PROVIDED AS INDICATED ON THE PLANS.  
6. REBAR AND ALL OTHER MATERIAL, FABRICATION, AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 734 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.  
7. MINIMUM TENSILE STRENGTH OF 75,000 PSI. ALL OTHER MATERIAL, FABRICATION, AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 734 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
DEAD LOAD DEFLECTION

SHOP CAMBER TABLE

<table>
<thead>
<tr>
<th>ELEMENT OF STRUCTURAL STEEL</th>
<th>MATERIAL SPECIFICATION</th>
<th>MINIMUM YIELD STRENGTH</th>
<th>MINIMUM TENSILE STRENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOLTS OR ALL STEEL WASHERS</td>
<td>ASTM A325, TYPE E OR S, GRADE B</td>
<td>50</td>
<td>65</td>
</tr>
<tr>
<td>STEEL PLATES</td>
<td>ASTM A572, GRADE 50</td>
<td>50</td>
<td>65</td>
</tr>
<tr>
<td>PIPE</td>
<td>ASTM A53, TYPE E OR S, GRADE B</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>STEEL POSTS AND PIPE</td>
<td>ASTM A572, TYPE B OR C, GR. B</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>STEEL TRUSS</td>
<td>ASTM A572, TYPE B OR C, GR. B</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>STAINLESS STEEL BANDING</td>
<td>ASTM A240, TYPE 302 OR 304</td>
<td>40</td>
<td>58</td>
</tr>
</tbody>
</table>

FABRICATION NOTES:
1. MATERIALS FOR MATERIAL SPECIFICATIONS FOR CANTILEVER SIGN STRUCTURES, SEE TABLE A. ALL STRUCTURAL STEEL PLATES AND SHAPES SHALL COMFORM TO ASTM A572 OR 50, STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304 OR ANOTHER ALLOY STEEL AS PER REQUIREMENTS OF THE CONTRACTOR. PIPE SHALL BE ASTM A53, TYPE 203 OR 204. THE STEEL PIPE AND STEELING RIBS AT THE BASE PLATE FOR THE STEEL POST SHALL HAVE A MINIMUM LONGITUDINAL CHIRPY HITCH (IVY ENERGY OF IS 10 KF, AT 40°F.) PER BOLT BEFORE GALVANIZING.
2. WELDING ALL MATERIALS, WELDING PROCEDURES AND INSPECTION USED FOR THE CANTILEVER OVERHEAD SIGN STRUCTURE SHALL CONFORM TO AWS D1.1-10 FOR TUBULAR CYCLICALLY LOADED STRUCTURES. ADDITIONALLY, ALL WELDED MATERIALS USED SHALL BE PREQUALIFIED FOR USE WITH MPS AS PER AWS D1.1-10, TABLE D2.
3. FASTENERS FOR STEEL TRUSSES HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF ASTM (A563, TYPE 203 OR 204, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. THREADED STUDS FOR SPACES IF MEMBERS INTERFERE WITH EACH OTHER WITH MATCHING LOCKNUTS. BOLTS AND LOCKNUTS NOT REQUIRED TO BE HOT DIP GALVANIZED FOR SPRING LOOPS ON centrally BEAMS. (A563) ANY TYPE LOCKNUT WILL BE SATISFIED AND SATISFY REQUIREMENTS OF ASTM A325, ALL BOLTS AND LOCKNUTS SHALL BE HOT DIP GALVANIZED PER ASTM A325, EXCEPT STAINLESS STEEL FASTENERS. NUTS AND WASHERS. THE LOCKNUTS SHALL HAVE NYLON OR STEEL INSERTS, A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A572, TYPE 203 OR 204, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLTS INSTALLATION CONFORM TO ARTICLE 600(31) OF THE DOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
4. THE RANDALL CT I-00 PERMISSIBLE TESTING OF BOLTS WILL NOT BE REQUIRED.
5. U-BOLTS U-BOLTS SHALL BE PRODUCED FROM ASTM A276 TYPE 304, 304L, 316 OR A325 OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. ALL U-BOLTS SHALL BE CUT TO LENGTH, BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING. THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.FT. STAINLESS STEEL BANDING IS REQUIRED UNDER EACH U-BOLT LOCKNUT.
6. GALVANIZING ALL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A653. PAINTING IS NOT PERMITTED. ALL FASTENERS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A653 OR M233 AS APPROPRIATE FOR THE PRODUCT EXCEPT STAINLESS STEEL FASTENERS.

CONSTRUCTION SPECIFICATIONS:
1. ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 733 OF THE LATEST ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
2. ALL CANTILEVER TRUSSES ARE DESIGNED FOR 35 PSF WIND PRESSURE ON TRUSS MEMBERS AND SIGN PANEL.
3. THE AASHTO LOAD-BEARING STRESS SHALL BE 1331.4.

DESIGN SPECIFICATIONS:
TRUSS MEMBERS AND SIGN PANEL.
THE AASHTO GROUP II AND III ALLOWABLE STRESS SHALL BE 1331.4.
THE AASHTO GROUP II AND III ALLOWABLE STRESS SHALL BE 1331.4.

CONCRETE COLUMN, GRADE BEAM AND DRILLED SHAFT ARE DESIGNED IN ACCORDANCE WITH THE 2012 EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS INCLUDING THE 2013 INTERIM REVISIONS.

CONCRETE COLUMN, GRADE BEAM AND DRILLED SHAFT ARE DESIGNED IN ACCORDANCE WITH THE 2012 EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS INCLUDING THE 2013 INTERIM REVISIONS.
NOTES:
1. SEE PLANS FOR SIGN SIZE AND LOCATION.
2. MAXIMUM PLAZA SIGN AREA IS 108.00 SQ. FT.
3. MAXIMUM PLAZA SIGN LENGTH IS 36 FT.
ENTRANCE MONOTUBE PLAN

ENTRANCE MONOTUBE ELEVATION

MONOTUBE FRAME TABLE

NOTES:
1. FOUNDATIONS FOR PLAZA FRAMES ARE SHOWN ON SHEETS 6 AND 7 OF THIS SERIES.
2. FOR SECTIONS A-A, H-H, K-K, BASE PLATE SKIRT AND HAND HOLE DETAILS, SEE SHEET 5 OF THIS SERIES.
3. FOR SECTION P-P SEE SHEET 4 OF THIS SERIES.
4. PROVIDE CAMES AT MIDSPAN OF STRUCTURE.
5. DISCONTINUE 3/8" SQUARE BAR TO ALLOW 3/8" SQUARE BAR INSTALLATION.
6. WORK THIS SHEET INTO YOUR OVERHEAD SIGN STRUCTURES ENTRANCE MONOTUBE TYPE (STEEL) MAINLINE SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

<table>
<thead>
<tr>
<th>MONOTUBE FRAME TYPE</th>
<th>SPAN &quot;S&quot; (ft)</th>
<th>FRAME COLUMN</th>
<th>FRAME BEAM</th>
<th>CAMES</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>40&quot;</td>
<td>16x0.50&quot;</td>
<td>18x0.50&quot;</td>
<td>2&quot;*2&quot;</td>
<td>1-1/4</td>
<td>2-2&quot;</td>
</tr>
<tr>
<td>II</td>
<td>50&quot;</td>
<td>16x0.50&quot;</td>
<td>18x0.50&quot;</td>
<td>2&quot;*2&quot;</td>
<td>1-1/4</td>
<td>2-2&quot;</td>
</tr>
<tr>
<td>III</td>
<td>60&quot;</td>
<td>18x0.50&quot;</td>
<td>18x0.50&quot;</td>
<td>2&quot;*2&quot;</td>
<td>1-1/4</td>
<td>2-2&quot;</td>
</tr>
</tbody>
</table>
```markdown
**ANALYZE**

**FRAME COLUMN**

- **Bar List—One Foundation**
  - **Foundation Type**
    - **Class DS Concrete**
    - **Epoxy Coated Reinforcement Bars**
    - **Protective Coating**

**Estimated Quantity**

<table>
<thead>
<tr>
<th>Item</th>
<th>Units</th>
<th>Single Face</th>
<th>Medium Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class DS Concrete</td>
<td>Cyl Vol</td>
<td>4.7</td>
<td>4.9</td>
</tr>
<tr>
<td>Reinforcement Bars</td>
<td>Epoxy Coated</td>
<td>3.540</td>
<td>3.540</td>
</tr>
<tr>
<td>Protective Coating</td>
<td>Sq Ft</td>
<td>5.6</td>
<td>5.6</td>
</tr>
</tbody>
</table>

**Notes**

1. Quantities for single face barrier foundation are furnished using "C = 10". If dimension "C" is greater than 10", adjust quantities accordingly.
2. Site grounding electrode system to be provided as indicated on the plans.
3. Protective coating shall be applied to the traffic and top faces of the barrier and top of gutter.

**SIDE ELEVATION**

- **Single Face Barrier Foundation for Plaza Frames**
  - **View C-C**
  - **Section A-A**

**OVERHEAD SIGN STRUCTURE DETAILS**

- **Mainline Structure Details**
  - **HSS 16x0.500**
  - **3,540 Cu. Yd.**
  - **7.4 Cu. Yd.**
  - **35'-7" I.D. (Open)**

**OVERHEAD SIGN STRUCTURE DETAILS**

- **35'-7" I.D. (Open)**
  - **3,540 Cu. Yd.**
  - **7.4 Cu. Yd.**
  - **35'-7" I.D. (Open)**

**PLAN COLUMN**

- **ANCHOR R / SETTING**
  - **Anchor Bolt Assembly**
  - **Bolt Setting Template**

**BAR LIST—ONE FOUNDATION**

<table>
<thead>
<tr>
<th>Item</th>
<th>Units</th>
<th>Single Face</th>
<th>Medium Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class DS Concrete</td>
<td>Cyl Vol</td>
<td>4.7</td>
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<td>3.540</td>
</tr>
<tr>
<td>Protective Coating</td>
<td>Sq Ft</td>
<td>5.6</td>
<td>5.6</td>
</tr>
</tbody>
</table>

**NOTE A**

COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT. CUTTING OF REINFORCEMENT SHALL NOT BE ALLOWED.

**FOUNTAIN DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON SOIL CONDITIONS. FOUNDED ON SANDY CLAY WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH OF 100 FP SQ. FT. WHICH MAY BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE SITE. WHEN OTHER CONDITIONS ARE ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENT SOIL CONDITIONS.

**DESCRIPTION**

- **Top and Bottom MIN.**
- **Column of Plaza Frames**
- **~ 3'-0" DRILLED SHAFT**
- **1'-6" DIAMETER**
- **MIN. 3" BAR LENGTH**
- **1'-9" VIEW C-C**
- **3'-0" MIN. BELOW GRADE**
- **3" MIN. BETWEEN FACES OF THE BARRIER AND TOP OF GUTTER.**
- **PROTECTIVE COAT**
- **EPOXY COATED REINFORCEMENT BARS**
- **1'-3" OVERHEAD SIGN STRUCTURE**
- **3'-0" MIN. BETWEEN FACES OF THE BARRIER AND TOP OF GUTTER.**
- **PROTECTIVE COAT**
- **EPOXY COATED REINFORCEMENT BARS**
- **1'-3" OVERHEAD SIGN STRUCTURE**
```
MEDIAN FOUNDATION FOR PLAZA FRAMES

SECTION A-A

VIEW B-B

SECTION D-D

NOTES:
1. Anchor bolt assembly detail, anchor plate detail, and bar bending details and quantities are shown on Sheet 5 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" - EACH FACE
3/8" - GAGES

SHEET 7 OF 8

OVERHEAD SIGN STRUCTURE
MONOTUBE TYPE (STEEL)
MAINLINE STRUCTURE DETAILS

STANDARD F13-06

PROPRIETARY MATERIAL. © 2013 Illinois Tollway
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**General Notes:**
2. After adjustments to level, truss and ensure adequate vertical clearance, all top and bottom leveling nuts shall be tightened against the base plate. A minimum vertical gap of 6" is required. Stainless steel mesh shall be placed around the perimeter of the base plate, secure to base plate with stainless steel banding.
3. Centerline DMS type 2 shall be located at centerline of column.
4. Sign support structures may be subject to damaging vibrations and oscillations when dimensions are not in place during erection or maintenance of the structure. To avoid these vibrations and oscillations, consideration should be given to attaching temporary blank sign panels to the structure.
5. Sign support structures are to be shipped individually with adequate provision to prevent detrimental motion during transport. This may require the use of horizontal and diagonal struts or energy dissipating elements tied to the vehicle. The contractor is responsible for maintaining the configuration and protection of the structures.
6. Provide rubber surface finish followed by concrete sealant application on entire surface of concrete column and all surfaces of crashwall, except bottom surface.
7. Reinforcement bars reinforcement bars designated I3 shall be epoxy coated in accordance with the standard specifications.
8. Parameters shown are basis for this standard. Installation not within dimensional units shown require special analysis for all components.
9. It is permissible to mount two DMS type 2 on the butterfly truss, one on each face of the truss. The total combined depth of DMS type 2 shall not exceed 8'-4" and the total combined width shall not exceed 6000 lb. Center the DMS type 2 on \( \frac{\pi}{2} \) steel post. Do not install sign panel in conjunction with DMS type 2 sign cabinets on one face of the truss. A sign panel on one face and DMS type 2 on the other is permitted.

**Construction Specifications:**
1. All materials, except as shown, fabrication, erection and construction requirements shall be in accordance with the Illinois Tollway Specifications. See General Notes. Section 733 and 734 of the latest Illinois Tollway Supplemental Specifications.
2. The AASHTO Group II and III allowable stress shall be 1331/16.
3. Trusses shall be shipped individually with adequate provision to prevent detrimental motion during transport. This may require the use of horizontal and diagonal struts or energy dissipating elements tied to the vehicle. The contractor is responsible for maintaining the configuration and protection of the structures.

**Fabrication Notes:**
1. Materials: All structural steel pipe shall be ASTM A53 Grade B or ASTM A521 Grade B. All structural steel shall conform to ASTM A36 Grade B. All structural steel shall be cold formed and hot rolled as applicable. Stainless steel for show, sleeves and handle covers shall be ASTM A240 Type 302 or 304, or another alloy acceptable for exterior exposure and acceptable to the Engineer. The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal charpy V-notch (CVN) energy of 15 lb-ft. at 4°F (-20°C) before galvanizing.
2. Welding: All welds to be continuous unless otherwise shown. All welding to be done in accordance with current ANSI structural welding code and the standard specifications.

**NOTES:**
- Location varies
- Use when structure is mounted on right side of the shoulder.
- Material variations
- Not used when butterfly structure is mounted on right side of the shoulder.

**Wind Loading Diagram:**
- ETPA = Effective Truss Projected Area
- \( \text{ETPA} \) is calculated as the product of the effective wind pressure and the effective wind projection area.

**Loading:**
1. No NPS, wind velocity, wind loading 40 P.S.F. normal to DMS type 2 cabinet area and 35 P.S.F. normal to truss elements not behind sign loading diagram.
2. The AASHTO Group II and III allowable stress shall be 1331/16 allowable stress design.

**Design Specifications:**
These structures are designed to satisfy the 2013 AASHTO Standard Specifications for structural support for highway signals, luminaires and traffic signals, sixth edition.

**Concrete Column, Crashwall and Drilled Shaft:**
Concrete column, crashwall and drilled shaft are designed in accordance with the 2012 edition of the AASHTO LRFD Bridge Design Specifications including the 2013 interim revisions.

**Design Unit Stresses for Reinforced Concrete:**
- Class I concrete: \( \frac{P}{x} = 4.0 \text{ ksi} \)
- Class III concrete: \( \frac{P}{x} = 3.5 \text{ ksi} \)
- Class IV concrete: \( \frac{P}{x} = 3.0 \text{ ksi} \)
- Reinforcing steel: \( \frac{P}{x} = 60,000 \text{ psi} \)

**Overview:**
- Overhead sign structure butterfly type Asteel.
- Sheet 1 of 8
- Date: 3-31-2014
- Standard: F14-05
- Revisions: 3-01-2019 revised note to apply 3-11-2015 revised notes
ANCHOR BOLT DETAIL

ANCHOR BOLTS SHALL CONFORM TO AASHTO M314 OR ASTM F1554 GRADE 55. GALVANIZE THE TOP 18" (MINIMUM) AND ASSOCIATED ANCHOR BOLT THREAD. NO GALLING, NO WELDING, NO RIBS, NO PUNCHING OR OTHER MEANS, NO HOOVES, NO WELDING, NO CHASE THREAD. PROVIDE A NUT AT TOP, A HEXAGON LOCKNUT AND WASHER ABOVE BASE PLATE, AND A LEVELING NUT AND WASHER BELOW BASE PLATE. 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 (UT) BY A LEVEL II OR III INSPECTOR, QUALIFIED IN ACCORD WITH ANSI STANDARD F14-05 (TENSION CRITERIA).

NOTE:
1. SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS INDICATED ON PLAN.
2. SEE PLAN SHEETS FOR TYPE, SIZE AND NUMBER OF CONDUITS.
3. PROVIDE 1 NUT PER BOLT.
4. PROVIDE A NUT AT BOTTOM, A HEXAGON LOCKNUT AND WASHER ABOVE BASE PLATE, AND A LEVELING NUT AND WASHER BELOW BASE PLATE.
5. 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 (UT) BY A LEVEL II OR III INSPECTOR, QUALIFIED IN ACCORD WITH ANSI STANDARD F14-05 (TENSION CRITERIA).

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NOTE:
1. SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS INDICATED ON PLAN.
2. SEE PLAN SHEETS FOR TYPE, SIZE AND NUMBER OF CONDUITS.
3. PROVIDE 1 NUT PER BOLT.
4. PROVIDE A NUT AT BOTTOM, A HEXAGON LOCKNUT AND WASHER ABOVE BASE PLATE, AND A LEVELING NUT AND WASHER BELOW BASE PLATE.
5. 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 (UT) BY A LEVEL II OR III INSPECTOR, QUALIFIED IN ACCORD WITH ANSI STANDARD F14-05 (TENSION CRITERIA).
OVERHEAD SIGN STRUCTURE - BUTTERFLY TYPE
STRUCTURE DETAILS

FOUNDATIONS:

THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF WESTERLY COMMON COHESIVE SOIL CONDITIONS (CLAY OR SANDY CLAY) WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) BETWEEN 50 AND 150 PSF. WHEN AT THE TIME THESE CONDITIONS ARE ENCOUNTERED, THE FOUNDATION SHOULD BE DETERMINED IN THE FIELD. ANY CONDITIONS ENCOUNTERED AT THE SITE WILL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS OR AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE FOUNDATION DETAILS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DETAILS SHOWN NEED TO BE MODIFIED.
AET RAMP TOLL PLAZA PLAN

AET RAMP TOLL PLAZA ELEVATION

SIGN TABLE

<table>
<thead>
<tr>
<th>SIGN TYPE</th>
<th>MAXIMUM AREA</th>
<th>MAXIMUM LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAZA SIGN</td>
<td>24 sq. ft.</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>1-PASS OR PAY ONLINE SIGN</td>
<td>60 sq. ft.</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.

DATE REVISIONS
3-31-2016 REVISED FOUNDATION NOTE
3-31-2017 REVISED 1-PASS ONLY SIGN
3-01-2019 UPDATED CONSTANT SLOPE BARRIER, REINFORCING DETAILS AND QUANTITIES
5-24-2019 UPDATED SHOULDER BARRIER DETAILS AND QUANTITIES FOR 3'-8"
2-13-2020 ADDED HANDHOLE INSTALLATION & INSPECTION OF SPLICE & ANCHORS

STANDARD F15-05
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>1-PASS ONLY SIGN</td>
<td>22 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 STATION IN CONTRACT PLANS.
3. CASH ONLY SIGN OR 1-PASS ONLY SIGN. SEE CONTRACT PLANS FOR SIGN PLACEMENT.

CASH-IPO RAMP TOLL PLAZA PLAN

CASH-IPO RAMP TOLL PLAZA ELEVATION
**NOTES:**

1. **PROTECTIVE COAT** SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER, GUTTER AND TO THE EXTERIOR FACE OF THE BEGINNING OF THE RAMP PLAZA PAVEMENT FOR THE FULL HEIGHT OF THE BARRIER.

2. **ELECTRICAL JUNCTION BOXES** SHALL BE EXTERIOR MOUNTED ON THE BACK FACE OF BARRIER.

3. FOR SINGLE FACE BARRIER FOUNDATION DETAILS FOR MONOTUBE FRAMES, SEE SHEET 3 OF THIS SERIES.

4. **QUANTITIES FOR SINGLE FACE BARRIER** ARE DETERMINED USING "C" = 10" IF DIMENSIONS "C" IS GREATER THAN 10", ADJUST QUANTITIES ACCORDINGLY.

5. **BASE ON DIMENSION "C" = 10"**

---

**PAY LIMIT FOR FOUNDATION FOR OVERHEAD SIGN STRUCTURE**

FOR CASH-IPO RAMP (FOR ONE SINGLE FACE BARRIER)

---

**PAY LIMIT FOR SINGLE FACE BARRIER**

---

**BAR LIST - ONE BARRIER**

<table>
<thead>
<tr>
<th>BAR</th>
<th>NO</th>
<th>SIZE</th>
<th>LENGTH</th>
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<td>B</td>
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<td>d4(E)</td>
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<td>C</td>
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<td>H</td>
<td>8</td>
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<tr>
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<td>9</td>
<td>9</td>
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<td>10</td>
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**ESTIMATED QUANTITY**

FOR ONE SINGLE FACE BARRIER

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UOM</th>
<th>UNIT</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>CONCRETE STRUCTURES</td>
<td>CUB. YD.</td>
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<tr>
<td>REINFORCEMENT BARS</td>
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<tr>
<td>PROTECTIVE COAT</td>
<td>GAL.</td>
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**SHEET 6 OF 6**

**OVERHEAD SIGN STRUCTURE MONOTUBE TYPE STEEL**

**STRUCTURE DETAILS**

**FOR CASH-IPO RAMP**

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**Illinois Tollway**

**APPROVED**

**DATE**

**CHIEF ENGINEER**

**STANDARD FIG-04**
GENERAL NOTES:
1. WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURE SPAN TYPE ISTEEL SUMMARY AND BILL OF MATERIAL SHEET.
2. AFTER ADJUSTMENTS TO LEVEL TRUSSES AND ENSURE ADHERE VERTICAL CLEARANCE, ALL TOP AND LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL WASHES ATTACHED TO TRUSS TO AVOID THESE, ATTACH TEMPORARY BLANK SIGN PANELS OR OTHER BRACING TO THE STRUCTURE UNTIL OMS IS INSTALLED.
3. SIGNAL SUPPORTS MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN OMS IS NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE TRUSS STRUCTURE, TO AVOID THESE, ATTACH TEMPORARY BLANK SIGN PANELS OR OTHER BRACING TO THE STRUCTURE UNTIL OMS IS INSTALLED.
4. TRUSS UNITS SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOVEMENT DURING TRANSPORT, THE CONTRACTOR IS RESPONSIBLE FOR THE FABRICATION, ERECTION AND MAINTENANCE.
5. ALL WELDS SHALL BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING SHEET WITH CURRENT ANSI D1.1 STRUCTURAL WELDING CODE, TABLE 3.1.
6. INSTALLATIONS NOT WITHIN DIMENSIONAL LIMITS SHOWN REQUIRE SPECIAL ANALYSIS FOR ALL COMPONENTS.
7. ONE OMS TYPE I IS PERMITTED TO BE MOUNTED ON A SPAN TRUSS. DO NOT MOUNT SIGN PANELS ON THIS TRUSS.

FABRICATION NOTES:
1. MATERIALS: SEE MATERIAL SPECIFICATIONS TABLE FOR MATERIAL SPECIFICATIONS FOR OVERHEAD SIGN STRUCTURE SPAN TYPE ISTEEL. STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHELD COVERS SHALL BE ASTM A240, TYPE 302 OR 304 OR OTHER APPROVED ALLOY PER AWS D1.1-10. ALL STEEL FABRICATION SHALL OCCUR AT THE ENGINEER'S SITE. THE STEEL PIPE AND STIFFENING RIBS AT THE BASE PLATE FOR THE STEEL POST SHALL HAVE A MINIMUM CONDITIONED CHIRPY's NOTCH ISO ENERGY OF 15 LB.-FT. AT 40° CE 7 IN BEFORE GALVANIZING.
2. WELDING: ALL MATERIALS, WELDING PROCEDURES AND INSPECTION USED FOR THE SPAN TYPE OVERHEAD SIGN STRUCTURE SHALL CONFORM TO AWS D1.1-10 FOR TUBULAR CYCLICALLY LOADED STRUCTURES. ADDITIONALLY, ALL MELTED MATERIALS USED SHALL BE PREQUALIFIED FOR USE WITH MPS PER ANSI D1.1, TABLE 3.1.
3. FASTENERS FOR STEEL TRUSSES: HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF ASTM A325, TYPE 50, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS, THREADS STUBS FOR SPOLIES OF MEMBERS INTERSECT. SATISFY THE REQUIREMENTS OF ASTM A325, TYPE 50, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS, BOLTS AND LOCKNUTS NOT REQUIRED TO BE THE HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF ASTM A325, TYPE 50, BOLTS AND LOCKNUTS SHALL BE HOT DIP GALVANIZED PER AASHTO M11, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCKNUTS SHALL HAVE NUT ON STEEL INSERTS. A STEEL FLAT WASHER CONFORMING TO ASTM A567, TYPE 50 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADS STUBS ARE USED, HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04(d) OF THE AASHTO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, ROTATIONAL CAPACITY ('ROCAP') TESTING OF BOLTS WILL NOT BE REQUIRED.
4.1. BOLTS U-BOLTS SHALL BE PRODUCED FROM ASTM A516 GRADE BB OR BRM, OR AN EQUIVALENT MATERIAL ACCEPTABLE TO THE ENGINEER. ALL NUTS FOR U-BOLTS SHALL BE LOCKNUTS EQUIVALENT TO ASTM A567 WITH NUTS OR STEEL INSERTS AND HOT DIP GALVANIZED PER AASHTO M22, A STEEL FLAT WASHER CONFORMING TO ASTM A567, TYPE 50 OR 304, IS REQUIRED UNDER EACH U-BOLT LOCKNUT.
5. STEEL GRATING STEEL BARS FOR GRATING ELEMENTS SHALL CONFORM TO ASTM A36 OR AN EQUIVALENT MATERIAL ACCEPTABLE TO THE ENGINEER.
6. GALVANIZING: ALL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH A325 W20 OR M22 AS APPROPRIATE FOR THE PRODUCT EXCEPT STAINLESS STEEL FASTENERS.

CONSTRUCTION SPECIFICATIONS:
1. ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE LATEST STANDARD SPECIFICATIONS.

LOADING:
1. SPAN TYPE ISTEEL TRUSSES ARE DESIGNED FOR A 10'-0" DEEP OMS, WITH A MAXIMUM LENGTH OF 30'-0" AND A MAXIMUM THICKNESS OF 4'-0".
2. SPAN TYPE ISTEEL TRUSSES ARE DESIGNED FOR 40 PSF WIND PRESSURE ON TRUSS MEMBERS AND 56 PSF ON OMS.
3. WALKWAY LOADING SHALL INCLUDE DEAD LOAD PLUS 300 LBS. CONCENTRATED LIVE LOAD.

DESIGN SPECIFICATIONS:
1. THESE STRUCTURES ARE DESIGNED TO SATISFY THE 2025 AASHTO LII SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, SIGNS AND TRAFFIC SIGNALS, FIRST EDITION WITH INTERIM.
NOTES:
1. IN LIES OF FABRICATED HANDHOLE FRAME AS SHOWN, MAY CUT NO MORE THAN 5/32" HOLES IN POSITION VENT HOLES. ALL CUT HOLES TO BE GROUNDED TO A MAXIMUM ROUNDED DURENESS OF 0.5 MM OR LESS.
2. GALVANIZING VENT HOLES OF APPROPRIATE SIZE SHALL BE PROVIDED ON COMPONENTS AT ENDS OF RETURNING PIPE. ALTERNATIVELY, HOLES MAY BE PROVIDED IN WALL OF PIPE COLUMN, ALL VENT HOLES SHALL BE DRILLED AND ASSEMBLED. TYP.
3. STEEL PIPE, PLATE, CARBON STEEL HANDHOLE COVERS AND ROLLED SECTIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. PAINTING IS NOT PERMITTED. SEE SHEET 1 OF THIS SERIES.
4. SEE GENERAL NOTES FOR FASTENERS.
5. NONSTANDARD APPLICATIONS SHALL HAVE DIMENSIONS VERIFIED OR APPROVED AS APPROPRIATE.
6. SEE SHEET 1 OF THIS SERIES FOR MEDIUM BARRIER FRAME DETAILS.
7. SEE SHEET 2 OF THIS SERIES FOR MEDIUM BARRIER FRAME DETAILS WHEN EXISTING UTILITY IS PRESENT.
8. SEE SHEET 1 OF THIS SERIES FOR FOUNDATION DETAILS.
ANCHOR BOLT DETAIL

ANCHOR BOLT SHALL CONFORM TO AASHTO M314 GRADE 105 AND MEET CHMAY OF MINIMUM ENERGY OF 15 LB-FT AT 20°F. GALVANIZE AFTER PER ATTACHMENT, NO RECESS SHALL BE WELDED ON BOLTS.

ANCHOR BOLT DETAIL

ANCHOR BOLT SHALL CONFORM TO AASHTO M314 GRADE 105 AND MEET CHMY OF MINIMUM ENERGY OF 15 LB-FT AT 20°F. GALVANIZE AFTER PER ATTACHMENT, NO RECESS SHALL BE WELDED ON BOLTS.

BASE PLATE SCHEDULE

<table>
<thead>
<tr>
<th>DESIGN TYPE</th>
<th>END SUPPORT POST DIAMETER</th>
<th>BASE PLATE DIAMETER</th>
<th>HOLE SIZE</th>
<th>BOLT CIRCLE</th>
<th>ANCHOR BOLT</th>
<th>MAXIMUM TORQUE</th>
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<tbody>
<tr>
<td>TRUSS 120-S</td>
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<td>2'-0&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
<td>200 LB-FT MIN</td>
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<tr>
<td>TRUSS 130-S</td>
<td>6'-0&quot;</td>
<td>2'-0&quot;</td>
<td>3&quot;</td>
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<td>3&quot;</td>
<td>200 LB-FT MIN</td>
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<tr>
<td>TRUSS 140-S</td>
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<td>2'-0&quot;</td>
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<tr>
<td>TRUSS 150-S</td>
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<td>200 LB-FT MIN</td>
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<td>TRUSS 160-S</td>
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<td>3&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
<td>200 LB-FT MIN</td>
</tr>
</tbody>
</table>

SHALL BE PERMITTED ON BOLTS.

GALVANIZED AT CONTRACTOR'S OPTION.

40° F. GALVANIZE UPPER 18" PER AASHTO M232. NO WELDING AND MEET CHARPY V-NOTCH (CVN) ENERGY OF 15 LB-FT AT 20°F.

ANCHOR BOLTS SHALL CONFORM TO AASHTO M314 GRADE 105.

40° F. GALVANIZE UPPER 18" PER AASHTO M232. NO WELDING AND MEET CHARPY V-NOTCH (CVN) ENERGY OF 15 LB-FT AT 20°F.
INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL)
(Illinois Tollway)

Effective:  March 11, 2015
Revised: February 13, 2020

Description. This work shall consist of fabricating, furnishing and erecting beams, columns, and hardware including supports, on previously prepared foundations for Intelligent Transportation Systems (ITS) Gantry Frames (Steel) according to the details and locations shown in the Plans. This work shall conform to Sections 505 of the Standard Specifications and Section 733 of the Illinois Tollway Supplemental Specifications except as modified herein.

Materials.
(a) Structural Steel Tube (HSS)
   Structural steel tubing for frame members of ITS Gantry Frames (Steel) shall conform to the requirements of ASTM A618 Grade III, and Charpy V-Notch impact testing requirements, Zone 2, unless noted otherwise. Structural steel tubing for mounting beams shall meet the requirements of ASTM A500 Grade B.

(b) Structural Steel Shapes
   Structural steel shapes shall conform to the requirements of ASTM A709 Grade 50 (AASHTO M 270 Grade 50), unless noted otherwise.

(c) Splice Plate and Base Plate
   Splice plate and base plate shall conform to the requirements of ASTM A709 Grade 50 (AASHTO M 270 Grade 50) or ASTM A572 Grade 50.

(d) Charpy V-Notch Impact Testing
   Notch toughness of all structural steel members and plates greater than 0.5 inch thick shall conform to Zone 2 requirements of AASHTO M 270 Supplementary Requirement S5 (ASTM A709 Supplementary Requirement S83).

(e) Bolts, Lock Nuts and Washers
   All bolts, except anchor bolts, shall conform to the requirements of ASTM A325, Type 1 (AASHTO M164). Heavy hex nuts for high strength steel bolts and high strength anchor bolts shall conform to ASTM A563 (AASHTO M291), Grade DH with Supplementary Requirements “S1” and “S2”. Washers shall conform to ASTM F436 (AASHTO M293).

CONSTRUCTION REQUIREMENTS

Drawings. Shop Drawings for each ITS Gantry shall be prepared and submitted for review and approval in accordance with Article 505.03 of the Standard Specifications after the Contractor has documented the location and orientation of the anchor bolts at all proposed supports.

Fabrication. The requirements of Article 505.04 of the Standard Specifications shall apply, except as modified below.

(a) Welding
   (1) Welding shall conform to Article 505.04(q) of the Standard Specifications.
(2) All welding shall be done to minimize distortion. Permissible Structural Steel Tube (HSS) dimension variations for outside dimensions, wall thickness, length, straightness, squareness of sides and twist shall be in accordance with Section 8 of ASTM A618 for frame members and Section 11 of ASTM A500 for mounting beams.

(3) Longitudinal seam welds on Structural Steel Tube (HSS) shall be complete joint penetration welds.

(4) Backing plates of complete penetration welds shall have a minimum thickness of ¼”.

(b) Galvanizing

(1) Hot dip galvanized structural steel tubing, splice plates, base plates, misc. structural steel and plates in accordance with AASHTO M 111 and ASTM A385. Galvanize after welding, fabrication and drilling all holes.

(2) All bolts, nuts, lock nuts and washers shall be galvanized in accordance with the hot-dipped process conforming to AASHTO M 232, Class C.

(3) The fabricator shall provide relief holes for galvanizing as required by the galvanizer. The location of the holes shall have the approval of the Engineer.

(4) Zinc-coated nuts shall be tapped oversize according to the requirements of AASHTO M 291 and shall meet the supplementary requirements of S1.1 through S1.2.1 of the same specifications for lubricant and testing. The lubricant shall be tinted to produce a distinct contrast with the nut.

(5) Do not galvanize stainless steel parts.

(6) Damage to the galvanized surfaces shall be sufficient cause for rejection.

**Erection.** Erection of structural steel for the ITS Gantry Frame (Steel) shall conform to the applicable provisions of Articles 733.05(a) and 733.05(b) of the Illinois Tollway Supplemental Specifications except as modified below.

(h) ITS Gantry Frames. The erection and maintenance of traffic procedure for ITS gantry frames shall be in accordance with the maintenance of traffic plans, and Special Provisions and applicable provisions of Section 701 of the Illinois Tollway Supplemental Specifications, unless otherwise authorized by the Illinois Tollway.

1. The end supports with their welded base plates shall be mounted over the anchor bolts on the concrete foundation, partially plumbed, and temporary secured. After the erection of the beams and while beams are supported by the crane, the uprights shall be fully plumbed and brought to final alignments by means of leveling nuts on the anchor bolts. Install washer and first nut and tightened per IDOT Standard Specification for Road and Bridge Construction Article 505.04(f)(2)d Turn-of-the-Nut method however only 1/8 turn past snug tight is required. Tightening shall be performed in a star pattern. Installation and Inspection shall comply with this specification.
All nuts shall be paint marked for inspection. After inspection is performed and passed, a second heavy hex lock nut shall be tightened down onto the first nut to snug tight only.

2. Splice flange bolts shall be tightened per IDOT Standard Specification Article 505.04(f)(2)d Turn-of-the-Nut Method. Installation and inspection shall comply with this specification. Tightening shall be performed in a star pattern. The inspection verification data shall be provided to the Engineer. All turned nuts or heads shall be paint marked for visual inspection.

3. The installation of bolts and other attachment devices shall be as required in the Plan details for each design and type of frame to be erected.

4. Enclose the void between the base plate and the foundation with wire cloth according to Article 733.08 of the Supplemental Specifications.

The requirements of Article 505.08 of the Standard Specifications shall apply, except that Article 505.08(a) shall be replaced with the following:

a) The Contractor shall verify that the substructure is within allowable tolerances for lines and elevations, properly finished, and anchor rods are set in the correct pattern and orientation, are the correct size, and are plumb with the specified extension and thread length above the top of concrete.

Gantries and support structures shall not be placed on the foundation until concrete foundation including the pile caps has reached 100 percent of the characteristic 28-day strength and at least 14 days old.

**Method of Measurement.** For single span ITS Gantry Frame (Steel), this work will be measured for payment in feet of horizontal span length measured from centerline column to centerline column of the frames installed in place.

For two span ITS Gantry Frame (Steel), this work will be measured for payment in feet of horizontal span length measured from centerline of outside column to centerline of outside column of the frames installed in place.

**Basis of Payment.** This work will be paid at the contract unit price per foot, for ITS GANTRY FRAME (STEEL), of the specified span range, complete and accepted, and measured as specified.

Foundations for will be paid for separately.

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<tr>
<td>JT740130</td>
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<tr>
<td>JT740150</td>
<td>ITS GANTRY FRAME (STEEL), SPANS GREATER THAN 130' AND LESS THAN OR EQUAL TO 150'</td>
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