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<tr>
<th>CELL / MODEL NAME</th>
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<tr>
<td>OSC-S-1</td>
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<tr>
<td>OSC-S-2</td>
<td>Truss details</td>
<td>2/17/2017</td>
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<tr>
<td>OSC-S-3</td>
<td>Juncture details</td>
<td>2/17/2017</td>
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<tr>
<td>OSC-S-5</td>
<td>Type II-C-S &amp; III-C-S truss support post</td>
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<tr>
<td>OSC-S-6</td>
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<td>OSC-S-6S</td>
<td>Alternate steel walkway details</td>
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<td>OSC-S-7S</td>
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<td>OSC-S-8</td>
<td>Handrail details</td>
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<td>Drilled shaft</td>
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<tr>
<td>OSC-S-D</td>
<td>Damping device</td>
<td>2/17/2017</td>
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</tbody>
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GENERAL NOTES


CONSTRUCTION: Current at time of letting Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, Supplemental Specifications and Special Provisions. (Standard Specifications)

LOADING: 90 M.P.H. WIND VELOCITY

WALKWAY LOADING: Dead load plus 500 lbs. concentrated live load

ALLOWABLE UNIT STRESSES:

Structural Steel - 20,000 p.s.i.
Nonferrous Steel - 20,000 p.s.i.
Class 52 Concrete - 1,400 p.s.i.

MINIMUM CLEARANCE: Vertical Roadway Clearance = 17'-3" (All Obstructions)

WELDING: All welds to be continuous unless otherwise shown. All welding to be done in accordance with current AWS D1.1 Structural Welding Code and the Standard Specifications.

MATERIALS: All Structural Steel Pipe shall be ASTM A53 Grade B or A500 Grade B or C. If ASTM pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53. All Structural Steel Plates and Shapes shall conform to A572 Gr. 36, Gr. 50 or Gr. 70. All plates shall be ASTM A588, A362 steel or A522. Stainless steel for handhole covers shall be ASTM A240, Type 304 or 302, or another alloy suitable 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 (KCU) energy of 15 lbf.-ft. at 0°F (zone 2) before galvanizing.

FASTENERS FOR STEEL TRUSSES: All bolts noted as high strength (HS) must satisfy the requirements of AASHTO M164 (ASTM A325), ASTM A490 or an Engineer approved alternate, and must have matching lock nuts and washers. All bolts, u-bolts, eye bolts, lock nuts and washers not specified to be high strength must satisfy the requirements of ASTM A325 or ASTM A490. All lock nuts must have nylstop or stainless steel inserts. High strength bolt installation shall conform to Article 565.04 (8) of the Standard Specifications. Rotational capacity of high strength bolts must be required. All bolts, nuts and washers must be hot dip galvanized per AASHTO M222.

GALVANIZING: All Steel Grating, Plates, and Pipes shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111.

ANCHOR RODS: Shall conform to ASTM F1554 Gr. 105.

CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final grade line at each foundation shall be cleaned and coated with Concrete Sealer in accordance with the Standard Specifications.

REINFORCEMENT BARS: Reinforcement Bars designated (E) shall be epoxy coated in accordance with the Standard Specifications.

FOUNDATIONS: The contract unit price for "Concrete Foundations" or "Drilled Shaft Concrete Foundations" shall include: All necessary excavation or drilling (except in rock); backfilling with excavated material; disposal of unsuitable or surplus material; formwork and furnishing and placing the concrete, rebar, anchor bolts, nuts, washers and ground rods complete in place.

Note: Drilled Shaft Concrete Foundations shall be completed with steel reinforcement and concrete cap according to the Specifications for Road and Bridge Construction, Supplemental Specifications and Special Provisions. "Standard Specifications"

REFERENCE: For "Concrete Foundations" or "Drilled Shaft Concrete Foundations", the design values shown shall be approved by the Engineer as suitable for the application and material used.

MATERIALS: All Structural Steel Pipe shall be ASTM A53 Grade B or A500 Grade B or C. If ASTM pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53. Stainless steel for handhole covers shall be ASTM A240, Type 304 or 302, or another alloy suitable 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 (KCU) energy of 15 lbf.-ft. at 0°F (zone 2) before galvanizing.

FASTENERS FOR STEEL TRUSSES: All bolts noted as high strength (HS) must satisfy the requirements of AASHTO M164 (ASTM A325), ASTM A490 or an Engineer approved alternate, and must have matching lock nuts and washers. All bolts, u-bolts, eye bolts, lock nuts and washers not specified to be high strength must satisfy the requirements of ASTM A325 or ASTM A490. All lock nuts must have nylstop or stainless steel inserts. High strength bolt installation shall conform to Article 565.04 (8) of the Standard Specifications. Rotational capacity of high strength bolts must be required. All bolts, nuts and washers must be hot dip galvanized per AASHTO M222.

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The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-notch (KCU) energy of 15 lbf.-ft. at 0°F (zone 2) before galvanizing.

FASTENERS FOR STEEL TRUSSES: All bolts noted as high strength (HS) must satisfy the requirements of AASHTO M164 (ASTM A325), ASTM A490 or an Engineer approved alternate, and must have matching lock nuts and washers. All bolts, u-bolts, eye bolts, lock nuts and washers not specified to be high strength must satisfy the requirements of ASTM A325 or ASTM A490. All lock nuts must have nylstop or stainless steel inserts. High strength bolt installation shall conform to Article 565.04 (8) of the Standard Specifications. Rotational capacity of high strength bolts must be required. All bolts, nuts and washers must be hot dip galvanized per AASHTO M222.

GALVANIZING: All Steel Grating, Plates, and Pipes shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111.

ANCHOR RODS: Shall conform to ASTM F1554 Gr. 105.

CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final grade line at each foundation shall be cleaned and coated with Concrete Sealer in accordance with the Standard Specifications.

REINFORCEMENT BARS: Reinforcement Bars designated (E) shall be epoxy coated in accordance with the Standard Specifications.

FOUNDATIONS: The contract unit price for "Concrete Foundations" or "Drilled Shaft Concrete Foundations" shall include: All necessary excavation or drilling (except in rock); backfilling with excavated material; disposal of unsuitable or surplus material; formwork and furnishing and placing the concrete, rebar, anchor bolts, nuts, washers and ground rods complete in place.

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The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-notch (KCU) energy of 15 lbf.-ft. at 0°F (zone 2) before galvanizing.

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REFERENCE: For "Concrete Foundations" or "Drilled Shaft Concrete Foundations", the design values shown shall be approved by the Engineer as suitable for the application and material used.
After galvanizing, Collar I.D. shall equal O.D. of galvanized post plus 3/8" (±0.55)
Maximum gap between post and collar at any location shall be 3/8" before tightening bolts.

---

**PLAN VIEW - TOP OF COLUMN**

- (Two locations maximum...180° apart...A-ray or UT 100%)
- All bolts shown are high strength
- Hole in post = O.D. pipe + 1/8" (For details not shown, see Detail C)

---

**DETAIL A**

- Width = O.D. chord + 3/8"
- Width = O.D. post + 10"
- Hole in plate to be O.D. post + 1/8"
- Hole in plate = O.D. post + 1/8"

---

**DETAIL B**

- Bolt size per side: 3/8" thick long, threaded one end
- Bolt size per side: 3/8" thick long, threaded one end
- Bolt size per side: 3/8" thick long, threaded one end
- Bolt size per side: 3/8" thick long, threaded one end

---

**DETAIL C**

- Bolt size per side: 3/8" thick long, threaded one end
- Bolt size per side: 3/8" thick long, threaded one end
- Bolt size per side: 3/8" thick long, threaded one end
- Bolt size per side: 3/8" thick long, threaded one end

---

**DETAIL D**

- Hole in plate = O.D. post + 1/8"
- Hole in plate = O.D. post + 1/8"
- Hole in plate = O.D. post + 1/8"
- Hole in plate = O.D. post + 1/8"

---

**CONTORED WASHERS**

- Bolt size per side: 3/8" thick long, threaded one end
- Bolt size per side: 3/8" thick long, threaded one end
- Bolt size per side: 3/8" thick long, threaded one end
- Bolt size per side: 3/8" thick long, threaded one end

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**STATE OF ILLINOIS**

**DEPARTMENT OF TRANSPORTATION**

**CANTILEVER SIGN STRUCTURES - JUNCTURE DETAILS**

**STEEL TRUSS & STEEL POST**
**ANCHOR ROD DETAIL**

Anchor rods shall conform to ASTM F1554 Grade 105. Galvanize the upper 18" (minimum) and associated AASHTO M291, Grade A, C or DH heavy hex nuts and hardened washers per AASHTO M232. No welding shall be permitted on rods. Provide a nut at bottom, hexagon lock nut 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 during concrete placement. Plate, extra nuts and other positioning aids become Contractor's property. Cost included in "Drilled Shaft Concrete Foundations".

**DETAIL A**

- Bent bars may be field welded top and bottom or bottom only. In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground before galvanizing.
- Bent welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT at 1 ft. (tension criteria) at Contractor's expense.
- Provide 4 x 1/4" holes in cover for 1/2 - 20 round head hot dip galvanized or stainless steel machine screws. (See cover details.)
- Top of Foundation = 2 1/2" radius. Provide 4 x 1/4" stainless steel bolt lock to secure.

**SIDE ELEVATION**

For UB, grind top of sign before galvanizing.

**CONTRACT NO.** OSC-S-9

**TOTAL SHEETS** 1

**STATE OF ILLINOIS**

**DEPARTMENT OF TRANSPORTATION**

**CANTILEVER SIGN STRUCTURES - TYPE I-C-S TRUSS**

**SUPPORT POST - STEEL TRUSS & STEEL POST**

**CANTILEVER SIGN STRUCTURES - TYPE I-C-S TRUSS**

**SUGGESTED POSITIONING PLATE**

Utilize positioning plate and temporary nuts for UT, grind top of sign before galvanizing.

**NOTE**

*H* based on 15'-0" or actual sign height, whichever is greater.
**Plan: Walkway and Handrail Sketch**

**Section A-A**

- Truss grating lengths (TGL) are based on available standard widths.
- **Truss grating length (TGL):**
  \[ TGL = L - (WGL + ED) \]
- **Walkway grating length (WGL):**
- **Design Length (L):**
- **Handrail Joint (f):**
  - 12" maximum, 4" minimum (End of walkway to \( g \) of nearest bracket)
- **Safety Chain (h):**
  - 6'-0" maximum (\( g \) to \( g \) sign and/or walkway support brackets, W6x9)
- **Alternate angle for safety chain attachment**
- **Grating attachment for safety chain**
- **Alternate angle**
- **Lighting fixtures support length**
- **Sign and Walkway Brackets**
- **Alternate angle for safety chain attachment**
- **Truss and Walkway Gratings**
- **Grating Splices (TGL)**
- **Handrail Joints (f)**
- **Walkway Grating Splices (WGL)**
- **Design Length (L)**
- **Walkway Grating Splice**
- **Handrail Joint**
- **Truss Grating Length (TGL)**
- **Walkway Grating Splice**
- **Sign Panel**
- **W6x9**

**Bracket Table**

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<td>10'-4&quot;</td>
<td>1</td>
</tr>
<tr>
<td>11'-4&quot;</td>
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<tr>
<td>12'-4&quot;</td>
<td>3</td>
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<tr>
<td>13'-4&quot;</td>
<td>4</td>
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<tr>
<td>14'-4&quot;</td>
<td>5</td>
</tr>
<tr>
<td>15'-4&quot;</td>
<td>6</td>
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</table>

Notes:
- Space walkway brackets and sign brackets W6x9 for efficiency and within limits shown.
- **f** = 12" maximum, 4" minimum (End of sign to \( g \) of nearest bracket)
- **g** = 12" maximum, 4" minimum (End of walkway to \( g \) of nearest bracket)
- **h** = 6'-0" maximum (\( g \) to \( g \) sign and/or walkway support brackets, W6x9)

For details of handrail, handrail joint, safety chain and Details F and G, see Base Sheet OSC-S-8. For details of sign placement, signal/walkway brackets, truss and walkway gratings, grating splices and Section B-B, see Base Sheet OSC-S-7. For details of handrail, handrail joint, safety chain and Details F and G, see Base Sheet OSC-S-8.
Walkway and truss grating dimensions are nominal and may vary (width ± 4", depth ± 1") based on available standard widths.

**Structure Number**: Station, WGL, ED, TGL

**Notes:**
- Space walkway brackets and sign brackets Wx9 for efficiency and within limits shown.
- f = 12" maximum, 4" minimum (End of sign to 6" of nearest bracket)
- g = 12" maximum, 4" minimum (End of walkway to 6" of nearest bracket)
- h = 6"-8" maximum (6" to 6" sign and/or walkway support brackets, Wx9)

If walkway bracket is safety chain location is behind sign, add angle to bracket. See alternate safety chain attachment on base sheet OSC-S-8.

For details of sign placement, sign/walkway brackets, truss and walkway gratings, grating splices and Section B-B, see Base Sheet OSC-S-7.

For details of handrail, handrail joint, safety chain and Details F and G, see Base Sheet OSC-S-8.

**SECTION A-A**

Truss grating to facilitate inspection shall run full length of cantilevers. Cost of truss grating is included in "Overhead Sign Structure Cantilever".

Handrail and walkway grating shall span a minimum of three brackets between splices. Use and location of handrail joints or grating splices are optional, based on lengths needed and material availability.

- **TGL = L - (3f + 6")**

**BRACKET TABLE**

<table>
<thead>
<tr>
<th>Bracket Width</th>
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<td>12'-0&quot;</td>
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<td>6</td>
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<td>12'-0&quot;</td>
<td>14'-0&quot;</td>
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<tr>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

**OSC-S-6S**

2-17-2017
Steel plank, 1'-2" wide

Truss Grating: T

Sign Panel
Placed symmetrical about 6" truss

Walkway Grating: Galvanized steel, 2'-0" wide
See Detail W. (6)

Detail W
Galvanized steel walkway grating

See Detail E on Handrail Hinge

Steel 2" x 2" x 16" long with continuous grating 7" long at grating splice.

Details shown are considered equal alternatives to Standard Steel Walkway Details and may be substituted by Contractor at no charge in contract cost.

Drilled holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.

When truss grating must be fabricated, use suggested details or other methods in accord with grating manufacturer's recommendation and subject to the Engineer's review and approval.

Galvanized steel ≤ 2" x 2" x 1/2" 3/16" long with continuous grating. 7" long at grating splice.

Details shown are considered equal alternatives to Standard Steel Walkway Details and may be substituted by Contractor at no charge in contract cost.

Perforated or expanded metal grating providing a skid resistant (non-serrated) surface and capable of supporting a 500 pound concentrated load with a 6'-0" clear span. Walkway and truss grating dimensions are nominal and may vary (width ± 3/16", depth ±1/16") based on available standard sizes. Cut ends of grating shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.

Based on actual sign height, D3, given on OSC-S-1.
**NOTES:**

The foundation details shown are based on common cohesive soil conditions (silty or clayey) with an average Gs of 1.25 (tons/ft³) for all strata within the 0'-0" portion of the foundation. "Gs," the soil’s unconfined compressive strength, shall be determined by the Engineer from either hand penetrometer readings during construction or previous soil investigations at the site. For lower soil strengths or different soil types, the Engineer shall review pertinent data and determine any required revisions to the diameter, depth, reinforcement or configuration of the foundation. If changes are required by the Engineer, the Contractor shall respond in writing to the Engineer’s request for change.

Concrete shall be placed monolithically, without construction joints or expansion joints. Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support columns.

<table>
<thead>
<tr>
<th>Structure Number</th>
<th>Station</th>
<th>Truss Type</th>
<th>Shaft Diameter</th>
<th>Elevation Tip</th>
<th>Elevation Bottom</th>
<th>D</th>
<th>A</th>
<th>B</th>
<th>C</th>
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- Masonry fill shall be placed per Article 502 of Standard Specification and prior to erection of support columns.

A normal surface finish followed by a Concrete Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished grade line. Cost included in Drilled Shaft Concrete Foundation.

**FOOTING DATA**

<table>
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<tr>
<th>Truss Type</th>
<th>Sheet</th>
<th>Maximum Cantilever Length (ft)</th>
<th>Maximum Total Sign Area (sq ft)</th>
<th>Shaft Diameter (in)</th>
<th>Anchor Rod Diameter (in)</th>
<th>Anchor Rods</th>
<th>Anchor Rod Circle Diameter (in)</th>
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</tbody>
</table>

**SECTION A-A**

- Drilled Shaft Concrete Foundations.

Cost of rod, cable and clamps shall be included in cost of Drilled Shaft Concrete Foundations.

- PLOT SCALE: 2'-0" minimum, 2'-6" maximum.

- Number of bars: 3 hoops minimum top and bottom.

- #4 bar spiral (E) at 6" pitch.

- 3'-0" Ø shaft

- 3'-6" Ø shaft

- 3'-6" Ø shaft

- D = A + B

- Anchor Rod Circle Diameter

- Anchor Rod Diameter (in)

- Anchor Rods

- Anchor Rod Circle Diameter (in)

- Permanent metal forms or other shielding may not be left in place below that elevation. Excavations shall be dewatered before concrete placement if directed by the Engineer at no additional cost.

- Concrete shall be placed per Article 502 of Standard Specification and prior to erection of support column. For details of anchor rods and positioning templates see Truss Support Post Base Sheets OSC-S-4 and OSC-S-5.

- No sonotubes or decomposable forms shall be used below the lower conduit entrance. Concrete shall be placed monolithically, without construction joints.

- Permanent metal forms or other shielding may not be left in place below that elevation. Excavations shall be dewatered before concrete placement if directed by the Engineer at no additional cost.

- Concrete shall be placed per Article 502 of Standard Specification and prior to erection of support column. For details of anchor rods and positioning templates see Truss Support Post Base Sheets OSC-S-4 and OSC-S-5.

- For Type I-C-S Truss

- #4 bar spiral (E)

- Anchor Rod Circle Diameter

- Anchor Rod Diameter (in)

- Anchor Rods

- Anchor Rod Circle Diameter (in)

- Permanent metal forms or other shielding may not be left in place below that elevation. Excavations shall be dewatered before concrete placement if directed by the Engineer at no additional cost.

- Concrete shall be placed per Article 502 of Standard Specification and prior to erection of support column. For details of anchor rods and positioning templates see Truss Support Post Base Sheets OSC-S-4 and OSC-S-5.

- No sonotubes or decomposable forms shall be used below the lower conduit entrance. Concrete shall be placed monolithically, without construction joints.

- Permanent metal forms or other shielding may not be left in place below that elevation. Excavations shall be dewatered before concrete placement if directed by the Engineer at no additional cost.

- Concrete shall be placed per Article 502 of Standard Specification and prior to erection of support column. For details of anchor rods and positioning templates see Truss Support Post Base Sheets OSC-S-4 and OSC-S-5.

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DAMPING DEVICE
CANTILEVER SIGN STRUCTURES

Diagonal
Horizontal
Diagonal
Interior
Tube
Cross

2" Ø Std. pipe
1½" Ø Std. Steel Pipe

8 3

2", typ.

2'-0" (±6")

29" minimum between ends of weights)

One damper per truss. (31 Lbs. Stockbridge-Type - 29" minimum between ends of weights)

GENERAL NOTES
Damper: One damper per truss. (31 Lbs. Stockbridge-Type - 29" minimum between ends of weights)

PLAN DETAIL

SECTION A-A

TUBE U-BOLT DETAIL
(Typical)

TOP CHORD TO CROSS TUBE
U-BOLT DETAIL
(Typical)