

10-JAN-2025
TM615.dgn

GENERAL NOTES:

Standard Truss Type Sign Bridges are designed in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 4th edition, 2001 and 2002 interim revisions.

Basic wind speed (3 second gust) used for sign bridge design is 110 mph. G = 1.14, I_r = 1.0 (50 year recurrence interval) and Exposure C were used for design.

Material for square HSS members shall be ASTM A500 Grade B, or ASTM A500 Grade C. 18"x18"x5/8" square tubes shall be fabricated from 5/8" thick ASTM A572 Gr. 50 plate according to the detail shown on TM620.

The maximum design sign area for Standard Sign Bridge Trusses (based on 9'-0" primary sign height plus 2'-6" exit secondary sign heights, above and below primary sign for a maximum total sign height of 14'-0") is shown on Dwg.# TM614. The maximum design length extends over the full width of the possible travel lanes and shoulders.

The signs are to be positioned horizontally in coordination with Traffic Plans and vertically as shown on Dwg.# TM614.

Chord end connection plates and truss field splice plates shall conform to ASTM A709, Grade 50 or ASTM A572, Grade 50.

Notch toughness of all structural steel members and plates greater than 1/2" thick shall conform to Zone 2 non-fracture critical requirements of ASTM A709.

All other structural steel shall conform to ASTM A36, or A992.

High strength bolts shall conform to ASTM A325, Type 1.

Nuts for high strength bolts shall be heavy hex and conform to ASTM A563 Grade DH, with supplementary requirements "S1" and "S2".

Hardened steel washers shall conform to ASTM F436, Type 1. Use washers under turning element in tightening unless otherwise specified.

Final elevations shall be field verified prior to the fabrication of the end truss members and footing reinforcement.

All fasteners, except mechanically galvanized direct tension indicator (DTI) washers, shall be hot-dip galvanized (except stainless steel and non-ferrous fasteners).

All structural steel shall be hot-dip galvanized after fabrication, unless noted otherwise.

The silicon content of the base metal shall be in the ranges of 0.0% to 0.06% or 0.13% to 0.25% for all hot-dip galvanized steel, unless noted otherwise. The maximum carbon equivalent (CE) is 0.40% for the base metal. Use the AWS D1.1 CE formula. Preheat according to AWS D1.5 Annex F using the hydrogen control method and high degree of restraint when the carbon equivalent (CE) of the steel exceeds 0.40%.

All H.S. bolts shall be considered slip critical and tightened according to 00930.40(d)(2)a, unless noted otherwise. Design slip resistance for bolts shall conform to the Bolt Specifications for Class C slip coefficient = 0.33.

Selection of the End Truss Posts shall be based on the larger "HP" in the case of unequal post heights. All End Truss Posts shall be the same cross section. This Standard Truss Type Sign Bridge has been designed for both equal and unequal post heights.

This Standard Truss Type Sign Bridge has been designed for the stated loading only. No additional signs or additional loadings are permitted. Other uses and loadings shall be considered non-standard, and are outside the scope of this design.

Welded splices in posts or chords and welds connecting posts or chords to base connection plates shall be full penetration welds as shown on Dwgs.# TM616 and TM617.

Root gap for T-Y-K tubular connections welds shall not exceed 1/16".

Fabrication drawings shall show the weight of all parts.

Where ever possible truss member centerlines shall intersect at a common work point, unless shown otherwise on these Standards. Where it is not possible to line up member centerlines at a common work point, the maximum allowable centerline eccentricity is 2 inches.

Verify that tops of pedestals are level and at correct elevations, prior to vertical end truss installation.

A preconstruction meeting is recommended to make sure the contractor understands ODOT requirements and that ODOT understands the contractor's plan.

If a 20 minute rolling traffic stop is used to install the overhead sign support truss bridge, the rolling stop shall meet the following requirements:

- a) Verify (prior to span truss lift) adequate crane capacity and boom length to perform complete installation from side of road.
- b) Set crane(s) on side of road and do not re-set crane during lift.
- c) Verify (prior to span truss lift) that lifting equipment and lifting points meet requirements of plans.
- d) Verify (prior to span truss lift) that vertical end trusses are at the correct elevations, plumb, and that the (hole to hole) distance between the two end trusses matches the span truss (hole to hole) length.
- e) Pre-assemble span truss within reach of crane(s).
- f) Rig lift before beginning rolling stop.
- g) Make sure all required tools and hardware are on site.
- h) Do not resume traffic until span truss to saddle bolts are at least snug tight.
- i) Rolling stops shall be at night and shall conform to the Special Provisions.
- j) Follow all required safety procedures.

If required, installation of temporary guard rail or temporary barrier should preceed any other work involving the construction of the footing.

Use single self locking nuts or double nuts on non-high strength (H.S.) bolts, unless otherwise shown or specified.

See Dwg.# TM616 for typical high strength bolt connection.

At ends of square HSS, welding shall be carried continuously around corners, with corners fully built up and all weld starts and stops within flat faces. Perform magnetic particle testing of areas within 2 inches of welds prior to pickling, and report findings to ODOT. If cracks are found, do not galvanize until directed to do so. Perform a detailed 100% visual inspection of the entire structure after galvanizing.

Prior to galvanizing, the fabricator shall assemble the span truss and measure the camber and measure the horizontal span distance between the four centers of the outside slotted holes in the presence of the ODOT inspector. With the span truss resting on its side and the camber in the horizontal direction, a string line shall be used to check the camber. The allowable variation from required camber at shop assembly is -0% to +25%. The length between saddle holes shall be measured using a steel tape, or other approved measuring method, and shall have an allowable variation of -1/8" to +1/8".

FOUNDATION NOTES:

Provide shoring for each footing if required.

Top surface of concrete pedestal (including area under base plate and around anchor bolts) shall be floated and troweled to a flat and level surface. This surface shall not vary more than 1/8" from a horizontal plane. Provide a 3/4" chamfer on all exposed edges of the pedestal.

All concrete shall be Class 4000 - 3/4" structural concrete.

Place bars 2 inches clear of the nearest face of concrete, unless shown otherwise.

Concrete shall be placed using a tremie when free fall exceeds 4'-0". Cold joints shall be cause for rejection of the foundation, except between footing and pedestal. All reinforcing steel shall conform to ASTM A706 or A615 Gr. 60.

Anchor rod washers shall conform to ASTM F436.

Anchor rods shall conform to ASTM F1554, Gr. 55, with supplementary requirements "S2" that includes grade and manufacturer's identification and "S4".

Anchor rod nuts shall conform to ASTM A563 Grade DH with supplementary requirements "S1" and "S2".

Anchor rod template, temporary support members, and anchor plate shall conform to ASTM A36.

Anchor rods shall be hot-dip galvanized full length.

The elevation and location of anchor rods is critical. Use survey techniques to verify the elevation, location, and orientation of anchor bolt groups prior to placement of foundation concrete.

Provide 1 -2 inch dia. rigid electrical conduit at each end of bridge as shown on Dwg.# TM617 and as directed. Extend sign support end of conduit to the center of the lower hand hole. If luminaries are not required, extend the other end of the conduit into the nearest illumination circuit junction box and identify conduit by attaching a tag which says "future sign lighting". Install "pull string" in conduit for future use. Install conduit cap on each end. When luminaries are required, extend the other end of conduit per Project Plans.

Where the footing of a Std. Truss Type Sign Bridge interferes with guard rail posts the depth of footing may be increased to the maximum shown on Dwg.# TM619, or concrete barrier may be used instead of guard rail, or guard rail posts may be attached to footing in accordance with Dwg.# BR266. All buried steel shall be coated for immersion exposure with an approved product from the qualified products for structural coatings. Prepare and coat surfaces according to Section 00594 of Oregon Standard Specifications.

CONSTRUCTION PROCEDURE AND SEQUENCE:

- Construct foundation according to plans. Verify elevation, location and orientation of anchor bolts. Steel templates shall be used to accurately locate and hold the anchor rods plumb and in proper alignment. Hole diameter in template shall be the nominal bolt diameter plus 1/16". This template shall be in place during concrete placement and shall remain in place for a minimum of 24 hours after the concrete placement has been complete. Out of position anchor rods and anchor rods greater than 1:40 out of plumb are cause for rejection of the foundation. Bending of anchor rods to straighten or move them into position, or alterations of the base plate shall not be permitted and are cause for rejection of the foundation and/or post weldment. See Template Detail on Dwg.# TM620.
- After 7 days min. of spread footing concrete cure time (excluding days when the surrounding temperature is below 40° Fahrenheit for over 4 hours) and when tests indicate that the concrete has reached full design strength (100%), the pedestal pour may begin. The post erection may begin after 7 days of concrete cure time of the pedestal and when test indicate that the concrete pedestal has reached full design strength (100%).
- Use crane to lift end truss onto anchor rods. Maintain crane connection as a safety measure until post installation is 100% complete. No grout shall be used under the base plate. Install hardened flat washers above base plate.
- Install bearing nuts on anchor rods. Level the bearing nuts. Install hardened flat washers above bearing nuts.
- Generously apply approved bolting lubricant (Castrol Stick Wax or approved equal) to the top nut bearing surface and internal threads, and install nut on anchor rods to snug tight condition. Snug tight is defined as the condition when all plies are in firm contact and can usually be obtained by the full effort of a worker on a 12" long wrench or a few impacts of an impact wrench. Several passes may be required to obtain uniform tightness.
- Tighten bearing nuts upward against base plate in a similar manner, to assure a uniform snug tight condition. Assure that the hole to hole span distance between saddles at opposite ends of the sign bridge matches the hole to hole span distance between opposite ends of the span truss. The end trusses may be up to 1/2" out of plumb to help accommodate construction tolerances and temperature effects. Adjust bearing nut as required and repeat snug tightening.
- Mark position of each anchor rod and top nut with a felt tip pen so subsequent nut rotation can be verified. Rotate all top nuts an additional 1/6 turn in two passes (1/12 turn per pass).
- Assemble sign bridge span truss and fully tighten high strength connection bolts according to Section 00930.40(d)(2)(a) of the Standard Specifications and Special Provisions.
- Verify positions of end truss saddles relative to sign bridge chord end connections.
- Assemble vertical sign mounts, signs, and span together. Provide adequate time for engineer to inspect the bolt tightening on the assembly in accordance with 00930.40(e) and tighten or replace bolts as required prior to lifting assembly.
- Verify signs, sign mounts, and span truss total weight before lifting. Lift the signs and span truss using one or two cranes as required to meet the following conditions. A qualified person shall be in charge of the lifting operation. Signs and span truss shall be lifted at four equally loaded lift points, see TM606. Extreme care must be used when lifting the assembly the first time to make sure that it does not rotate from the eccentric sign loads.
- Lift the signs and span truss assembly into position on the saddles.
- Install H.S. saddle bolts and tighten according to Section 00930.40(d)(2)(a).

LUMINAIRE NOTES:

- Hubs, hand holes, grounding terminals, hook and foundation conduit shall always be installed for possible future use. Luminaires, luminaire support arms and luminaire support channels noted on Dwg.# TM618 should only be provided when luminaires are required (see Project Plans).
- Conduit diameters shown on plans are nominal or trade sizes.

Accompanied by dwgs. TM614, TM616, TM617, TM618, TM619, TM620

<i>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.</i>		All materials shall be in accordance with the current Oregon Standard Specifications.			
		OREGON STANDARD DRAWINGS			
		STANDARD TRUSS TYPE SIGN BRIDGE 50' TO 167' SPAN RANGE NOTES			
		2024			
		DATE	REVISION DESCRIPTION		
		01-2022	UPDATED SILICON CONTENT RANGES AND AWS D1.5 ANNEX G TO ANNEX F		
		01-2025	CONCRETE WAS CLASS 3600 - 3/4" CLASSIFIED AS A STRUCTURAL ITEM		
		CALC. BOOK NO. - - 5071/6134 - -	SDR DATE- 10-JAN-2025 -	TM615	

Effective Date: June 1, 2026 – November 30, 2026