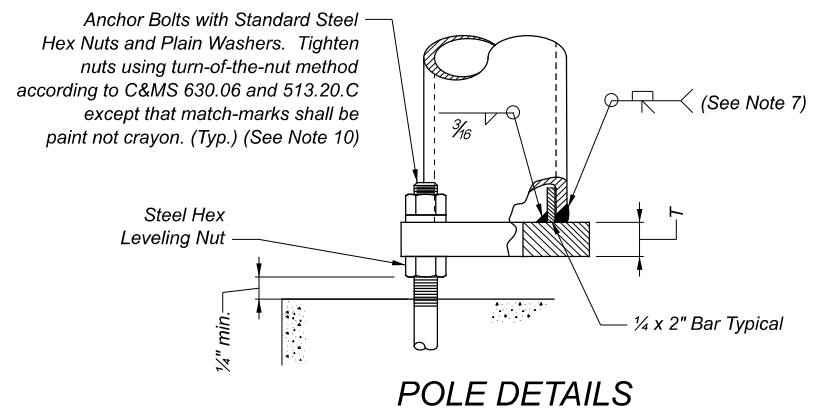
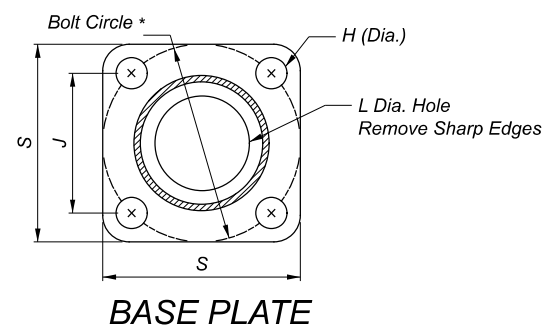


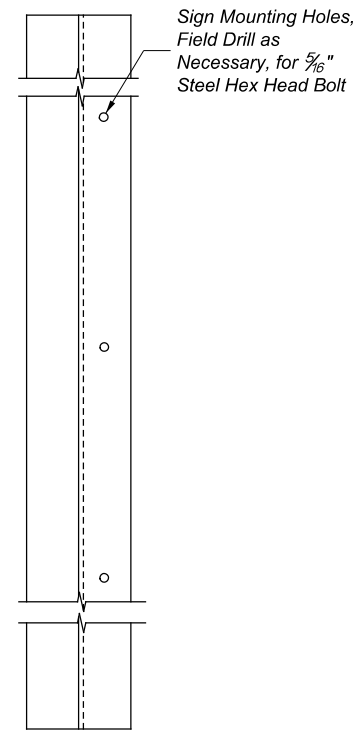
**ARM ATTACHMENT**



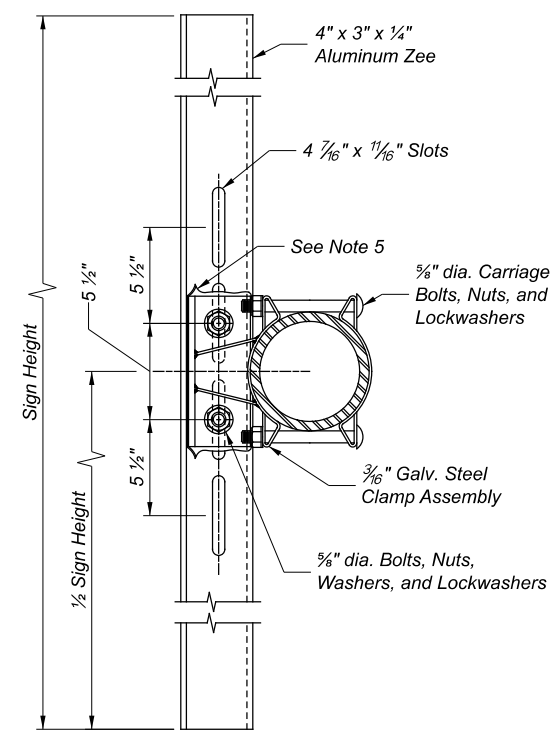
**POLE DETAILS**



**BASE PLATE**



**SIGN BRACKET**



**NOTES:**

- The design of the Single Arm Overhead Sign Support presented on this drawing meets the requirements of the AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, First Edition 2015 (LRFDLTS-1) and all interim releases prior to the bid date of the project.
- Dimensions noted as required shall be as indicated on the drawing and shall not be altered.
- ODOT permits modifications to accommodate minor variations in manufacturing processes and detailing between suppliers. Modifications shall not decrease the main tube section moduli as depicted in this drawing. Calculations are required for any modifications to the information shown on this drawing. Modifications shall meet the requirements of LRFDLTS-1 and the design criteria shown in Note 28. Calculations shall be stamped by a Professional Engineer registered in the State of Ohio and shall be submitted for review and acceptance with the shop drawings.
- Arm plate hole diameter to be bolt diameter plus 1/8". Pole plate tapped hole to have threads with 75% min. full profile height. Threads may be retapped after galvanizing.
- Prevent contact between aluminum and galvanized parts with a minimum 1/16" thick chloroprene gasket or approved equal.
- For foundation details, see Standard Construction Drawing (SCD) TC-21.21.
- The arm attachment plate and the pole attachment to the base plate shall be welded using a full penetration weld.
- For modification of pole to support roadway lighting, see SCD HL-10.12.
- For additional sign mounting details, see SCD TC-41.41.
- A minimum of one bolt thread shall remain above the anchor nut.
- For pole and base plate dimensions, see Sheet 2.
- For construction details and location of handholes, see SCD TC-22.10.
- The design was based on Fatigue Category II. See Note 28 for additional design criteria.
- Connection bolts shall be ASTM F3125 Grade A325. Washers shall be ASTM F959 compressible washer type Direct Tension Indicators (DTI). If necessary, I.D. of DTI washers shall be ground or reamed to properly fit over attachment bolts. Provide proper DTI feeler gage to Engineer. An ASTM F436 washer shall be used directly under the head of the bolt with all DTI washers. Assure that the flat washer does not spin during bolt tightening with DTI washer.
- Negative arm end slope is acceptable to achieve rise requirement.
- Ring-stiffened wrap-around horizontal plates are permitted as an alternative shown to the horizontal plates shown.

(cont'd - see Sheet 2)  
**LEGEND:**

\* = Required dimension see Note 2

**NOTES:** (cont' from Sheet 1)

17. A Mitigator TR1 Traffic Damper manufactured by Valmont Structures or a Stockbrige type damper shall be installed as close as possible to the end of the arm. Required on arms over 39' in length. Install on arms 39' or less if directed by the plans or engineer.
18. Actual pole height shall be calculated based off the critical pavement and foundation elevations, as outlined in Traffic Engineering Manual section 440.
19. Tapered steel tubes for the poles and arms shall meet the requirements of ASTM A 595 Grade A.
20. All material shall meet the requirements of C&MS 730 with the following limitations:  
  
Steel hardware - Galvanizing - ASTM A 153 (Hot-dipped) (Not ASTM B 695 Class 50)
21. Nuts shall meet the requirements of C&MS 730.08 and shall also meet the requirements of ASTM A 563 Grade DH or A 194 Grade 2H.
22. Flat washers shall meet the requirements of C&MS 730.08 and shall also meet the requirements of ASTM F 436.
23. Anchor bolts shall meet the requirements of C&MS 632, 711.02, 730.02 and 732.11 except that 730.02 shall be modified to require the galvanizing limits to be the full length of the anchor bolts not at least 2 inches beyond the threads.
24. Anchor bolt nuts shall meet the requirements of ASTM A 563 Grade DH or A 194 Grade 2H.
25. Anchor bolt washers shall meet the requirements of ASTM F 436 Type 1 (Hot-dip galvanized) according to ASTM A 153.
26. Holes for high-strength bolts and bearing bolts shall meet the requirements of C&MS 513.19. Modifications to the holes must be approved by the Engineer. Enlarging or slotting holes to match mis-aligned anchor bolts will not be permitted.

27. All welds shall be inspected according to the requirements of C&MS 630.06 and AWS D1.1 Structural Welding Code - Steel. A report of the welding inspection shall be submitted to the ODOT Office of Material Management Structural Welding and Materials Engineer.

28. Design Criteria:

Load Parameters:

Wind Load: 700-year MRI Basic Wind Speed Map, 115 mph Design Wind Speed

Service Life: Infinite per LRFDLTS-1 11.9.3

Service I Wind Velocity: 76 mph per LRFDLTS-1 Table 3.4.1 and Figure 3.8-4b

ADT: Greater than 10,000

Serviceability Parameters:

Deflection: maximum of L/150 under Service Load 1 (Dead Load + Wind) per ODOT

Permanent Camber: L/1000 per LRFDLTS-1 10.5

Rake (Pole Tilt): H/180 (H = pole height)

Horizontal Deflection at Top of Pole: maximum 1.5% of pole height

Slope at Top of Pole: maximum of 0.35 inch/foot (1.67 degrees) per LRFDLTS-1 10.4.2.1

Fatigue Parameters:

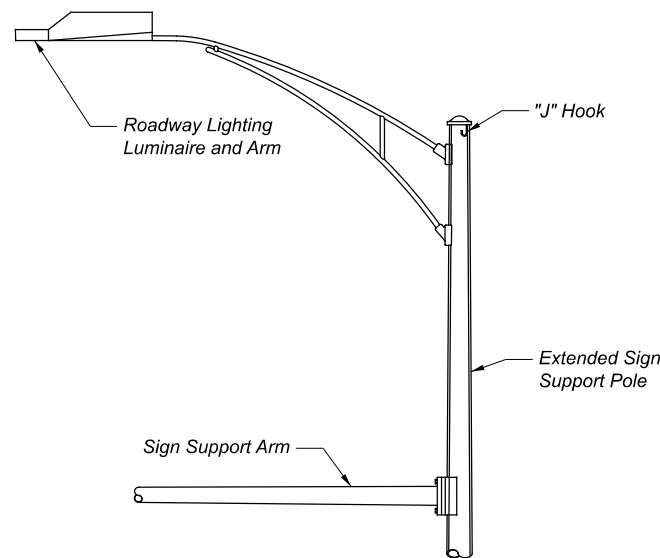
Fatigue Category: II

Natural Wind Gust: Include

Truck-Induced Gust: Include

Galloping: Do not include (since Mechanical Dampening device is required)

29. Multi-sided vertical main tube (12 sides, min.) may be provided.



**POLE EXTENSION FOR LIGHTING LUMINAIRE**

THESE DESIGNS USE FULL PENETRATION WELDS AT THE ARM AND BASE PLATE CONNECTIONS

ALL DIMENSIONS IN INCHES, UNLESS OTHERWISE NOTED

DESIGN NO.	POLE		ARM			TWO PIECE ARM		ARM ATTACHMENT									ANCHOR BASE						
	MIN. WALL THK.	SIZE	MIN. WALL THK.	SIZE	MAX. ARM LENGTH	MIN. WALL THK.	SIZE	OVERLAP	A	B	C	D	E	F	G	K	P	BOLT CIRCLE *	S	J	T	H	L
7	.239	11 x 8.06 x 21'	.179	8 x 3.80 x 30'	30'				14.5	12.0	10.5	8.0	2.0	2.0	1.25	6.00	0.375	15.0	15.63	10.63	2	2.00	9.50
9	.239	13 x 10.06 x 21'	.239	10 x 4.96 x 36'	36'				16.5	14.5	12.5	9.5	2.0	2.0	1.25	8.75	0.375	18.0	18.50	12.73	2	2.00	11.25
12	.250	14 x 11.06 x 21'	.239	12 x 5.7 x 45'	45'				16.5	14.5	12.5	9.5	2.0	2.0	1.5	9.50	0.375	20.0	20.50	14.13	2	2.38	10.50
13	.3125	16 x 13.06 x 21'			60'	.250 .179	14 x 9.32 x 33'-5 1/2" + 10 x 5.96 x 28'-10 3/8"	27.5	24.0	24.0	20.0	20.0	2.25	2.25	1.5	7.00	0.375	22.0	23.0	15.56	2	2.38	9.50
14	.3125	17 x 14.06 x 21'			72'	.3125 .239	14 x 9.20 x 34'-3 1/2" + 10 x 4.40 x 40'-0"	27.5	24.0	24.0	20.0	20.0	2.5	2.5	1.5	7.00	0.375	22.0	23.0	15.56	2	2.38	10.75