

GENERAL:

I. SCOPE

Details herein apply to roadway lighting installations bid under the following Specification Items: Roadway Illumination Assemblies, Relocate Roadway Illumination Assemblies, Foundations for Signs, Traffic Signals and Roadway Illumination Assemblies, and Special Specifications relating to roadway lighting. All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Material and installation shall comply with the applicable provisions of the National Electrical Code, National Electrical Manufacturers Association and, when required, Underwriters Laboratories standards. Where manufacturer's provide warranties or guarantees as a customary trade practice, Contractor shall furnish to the State such warranties or guarantees.

The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Erection and/or removal of poles and luminaires located near overhead electrical lines shall be accomplished using established industry and utility safety practices and in accordance with laws governing such work. The Contractor shall consult with the appropriate utility company prior to beginning such work.

II. ROADWAY ILLUMINATION ASSEMBLIES

A. General

- Structural Support Design for Luminaires. Lighting standards shall be designed in accordance with the latest issue of the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals." All poles shall be designed for 80 mph wind loads. An additional 1.3 gust factor shall be applied to the wind loads. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. Manufacturer's shop drawings shall include the ASTM designations for all material to be used. See paragraph II. B. for additional requirements for the transformer base.
- Slip Joint Poles. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint. The longitudinal seam weld on the outer shaft at the slip joint end shall be a full penetration weld for a minimum of the slip joint length plus 6 inches.
- Most Arm Attachments. All poles and attachments shall be structurally designed to support two 12-foot most arms and luminaires. Poles shall be supplied with most arm combinations as shown in the plans. All most arms shall be designed for a 55-pound luminaire having an effective projected area of 1.4 square feet.
- Minor Damage Repair. The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, or damaged areas on galvanized poles and most arms shall be thoroughly cleaned by wire brushing. The cleaned area shall be painted with two coats of zinc rich paint containing a minimum of 84% metallic zinc.
- Pole Bonding Means. All shoe base poles, including poles on concrete traffic barriers, shall have a grounding lug with 1/2-13 NC female threads inside the pole near the hand hole, minimum of 3 full threads.
- Hand Holes. All shoe base poles shall have hand holes with reinforcing frames and covers. The openings on all poles shall be approximately 4 inches x 10 inches located approximately 10 inches from the bottom of the pole and, except for poles mounted on concrete traffic barrier, shall be placed 90 degrees to most arm unless otherwise noted on the plans. For poles mounted on concrete median barrier, all hand holes shall be on the same side of the median.
- CTB Poles. Poles installed on concrete traffic barrier shall also meet the requirements of CTB details.
- J-Hooks. All poles shall be equipped with a J-hook inside the pole, near the top for supporting vertical conductors.
- Base Plate Bolt Circle. Bolt circles for poles mounted on CTB, see CTBI (4) or SSCB (4). Poles placed on existing bridge brackets or existing foundations, bolt circle shall be coordinated with anchor bolts in place. For other bolt circles, See RID (3).
- Steel Poles.
 - Steel poles shall be fabricated in accordance with the Item "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration, except that weld shall be full penetration within 6 inches of circumferential base plate welds. All welding shall be in accordance with the ANSI/AWS Structural Code D1.1. Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Unless otherwise shown on the plans, poles and hardware shall be galvanized in accordance with Item 445, "Galvanizing".
 - Pole components shall be constructed using the following materials:

Shaft: ASTM A-572 Grade 50 or ASTM A-595 Grade A (50 KSI min. yield) or ASTM A36M50.

Base Plate: ASTM A-27 Grade 65-35 or ASTM A-36.

Most Arm Connector: ASTM A-27 Grade 65-35.

Mast Arms: Steel pipe ASTM A-53 Grade A or B or ASTM A-501 with 20% elongation in 2 inches or A-513 TY I with minimum 30 KSI yield and 15% elongation in 2 inches.

Pole Cap: Pole cap shall be zinc die-cast, aluminum, or galvanized metal, secured by three stainless steel or galvanized screws.

Pole Hardware: All bolts except most arm connection bolts shall be stainless steel or standard steel galvanized ASTM A-153 Class C or D, or B-625 Class 50. Most arm connection bolts shall be ASTM A-325, ASTM A-321 or ASTM A-193 Grade B-7, galvanized as above. Nuts and washers shall be compatible with the bolts and shall be stainless steel or steel, galvanized as above. Lock washers shall be provided on all bolted connections.
- Aluminum Poles.
 - Aluminum poles shall be fabricated in accordance with "Structural Welding, Aluminum" ANSI/AWS D1.2.
 - Pole components shall be constructed using the following material:

Shaft: ASTM B-221 or B-241 Alloy 6063-T6, ASTM B-209 Alloy 5086-H34, ASTM B-221 Alloy 6005-T5.

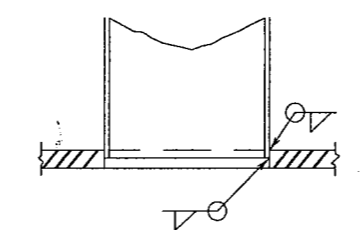
Base Flange: ASTM B-26 Alloy 356.0-T6 or ASTM B-108 Alloy A356.0-T6 (Structural strength test required).

Mast Arm Fitting: ASTM B-209 Alloy 6061-T6 or ASTM B-221 Alloy 6005-T5.

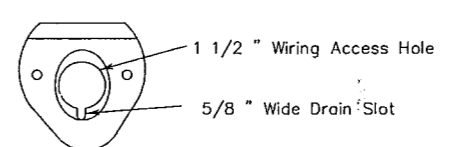
Mast Arms: ASTM B-241 Alloy 6061-T6 or Alloy 6063-T6.

Pole Cap: ASTM B-209 Alloy 5086-H32 or ASTM B-108 or B-26 Alloy 356.0-T6.

Bolts: Stainless Steel AISI 300. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seez Compound, Permatex 133K or equal.
- Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
- Installation of high strength bolts. The tightening of nuts on high strength bolts shall be in accordance with the Item "Structural Bolting."
- Roadway Illumination Assembly poles shall be erected plumb and true. Top of foundation shall be struck level so the pole will be plumb. Shoe base poles may use leveling nuts to plumb pole. Shims and leveling nuts shall not be used under transformer bases. Grout shall not be placed between base plate or flange and the foundation.
- In each pole, continuous color-coded stranded No. 12 AWG copper Type XHHW or other approved XLP conductors shall be connected to the line side of each ballast.
- Acorn nuts will not be allowed for attaching pole to transformer base or foundation. Nut covers will not be allowed.
- Fabrication tolerances shall be as shown on Fabrication Tolerances Table.

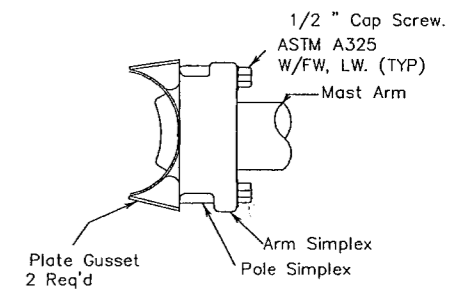


SECTION POLE SHAFT TO BASE PLATE



MAST ARM CONNECTOR

Steel Poles Only
Aluminum Pole Connector
Shall Be Clamp-on Type



MAST ARM TO POLE SHAFT CONNECTION

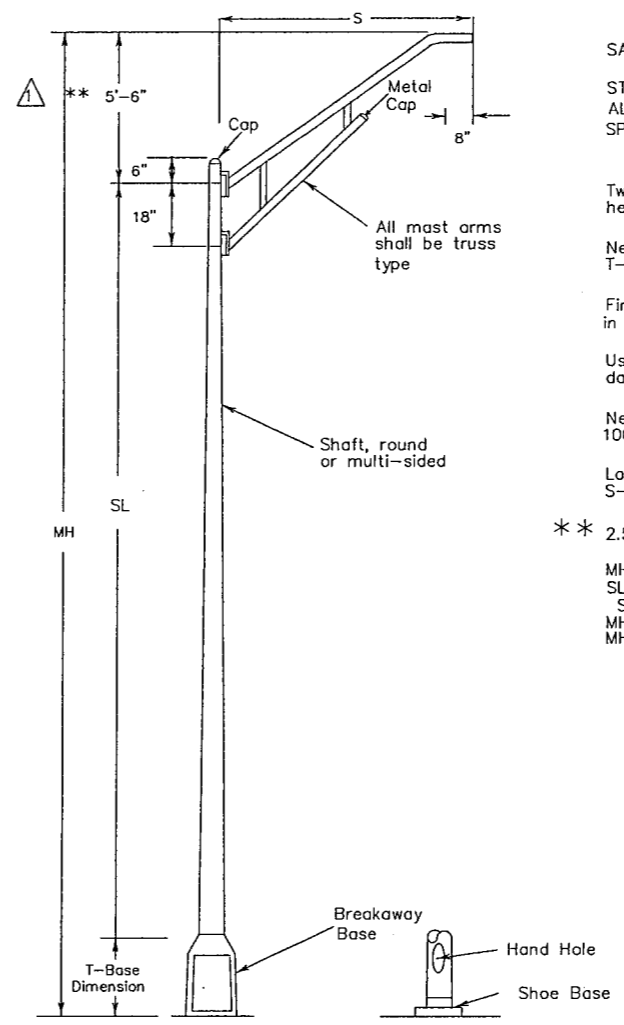
EXPLANATION OF ROADWAY ILLUMINATION ASSEMBLY DESIGNATIONS

(TYPE SA 50 T - 8 - 8) (.4KW) S

SA: Pole and most arm may be steel or aluminum.
ST: Pole and most arm must be steel.
AL: Pole and most arm must be aluminum.
SP: Special (ovalized) steel pole for installing on CTB. See standard sheet CTBI (4).
Two numerical digits denote mounting height in feet.
Next letter denotes type of base, (S-Shoe Base, T-Transformer Base or X-Base, B-Shoe Base Bridge Mount)
First number denotes length of most arm in feet.
Use of second most arm is indicated by second dashed number which denotes length in feet.
Next three figures indicate luminaire rating (1 KW= 1000 watts, .4 KW= 400 watts, etc.)
Last letter indicates the type of lamp (M- Mercury, S- High Pressure Sodium, L- Low Pressure Sodium).

* * 2.5' for poles with 4' mast arms.

MH = Mounting Height
SL = Shaft Length
S = Spread (Most arm length)
MH = SL + 5' + (T-Base dimension)
MH = SL + 5' (Shoe Base)



ROADWAY ILLUMINATION ASSEMBLY

DISCLAIMER
 The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DN:LR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CK: CW	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
DW: DN	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
CK: MT	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64

TE: ACC: FILE:

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

ROADWAY ILLUMINATION DETAILS

RID(1)-98

© TxDOT January 1992	DR-RS	CK-KB	DW-FDN	CK-RS	REG NO:
5-93	DALLAS	6	CM 97 (449)	86	
10-93	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
10-98	DALLAS	8050	18	034	BELT LINE

10-98: change mast arm rise, rearrange notes; shims not allowed under T-base