

II. ROADWAY ILLUMINATION ASSEMBLIES (cont.)

B. Transformer Base

- Transformer base shall be cast from aluminum, ASTM B-108 or B-26 Alloy 356.0-T6, or other material approved by the Engineer, and shall be furnished with eight 1/2 inch flat washers as recommended by the manufacturer. Transformer base bolt circles (Top and Bottom) shall match bolt circles for poles and foundations shown on RID (3).
- Transformer base shall be approximately 15-20 inches high and shall have a door approximately 13 inches x 8 inches x 9 1/4 inches or as otherwise approved by the Engineer. Screw or bolts for attachment of door to base shall be stainless steel. Four machine bolts with four nuts, eight 1/2 inch flat washers and four lock washer, galvanized ASTM A-153 Class C or D, or B-695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A-563 grade DH galvanized. A 1/2-13 NC female threaded grounding lug shall be provided inside the transformer base near the bottom.
- The X-base shall be made from extruded aluminum channel and aluminum plate. The base breakaway features shall rely on bolt shear and not on bolt torque. Bolt shall have torque controlled break-off hex-head. Bolt shall be Aluminum Association type 2024-T4 aluminum. X-base channel shall be connected with aluminum bolts. Bolt shall be left hand thread and shall not be interchangeable with any other bolt not designed specifically for use with the X-base.
- All breakaway bases shall meet the breakaway requirements, of the AASTHO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," latest edition, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to meet or exceed the full designed plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with shop drawings. Shop drawings shall show breakaway base model number and manufacturer's name or logo.
- Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
- Doors for transformer bases shall be made of plastic, fiberglass or other non-aluminum material approved by the Engineer. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

C. All Luminaires.

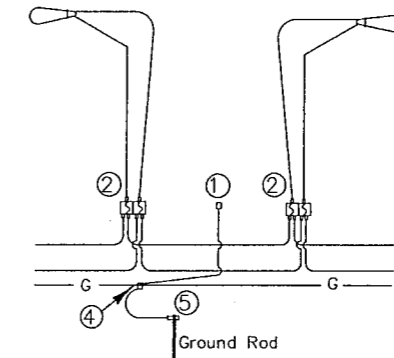
- The luminaire housing shall be cast or drawn from a non-ferrous alloy and shall be free of cracks and excessive porosity. All nuts, screws, clips, washers and attaching hardware shall be made of stainless steel; steel electro-zinc-plated, minimum thickness 0.0002 inches with olive green drab or yellow chromate conversion coating; steel coated with an acidic chromate-phosphate-binder system primer, top coated with a polytetrafluoroethylene modified silicon primer, bright metallic in color, meeting the requirements of General Motors automotive specification GM 164M; or other approved conversion coatings except that brackets may be made from pre-galvanized steel. All threaded surfaces used in the housing shall be lubricated with a silicone grease.
- The slipfitter shall securely clamp the luminaire to the mast arm. A positive means of vertical adjustments shall be provided. The refractor or lens shall be clear glass. The optic assembly shall be provided with resilient gaskets and so constructed that a positive seal against weather and other contaminants will be maintained. The latch shall provide a positive means of maintaining closure of the luminaire. The socket shell shall be nickel plated and shall be rigidly attached to a high grade porcelain mogul base which shall extend and enclose the metal shell. A locking means shall be incorporated in the shell of the socket to positively resist the removal of the lamp. Reflectors shall be polished aluminum with Alzak or equal coating and shall not be painted.
- Mast-arm mounted luminaires shall be provided with a leveling indicator which is clearly visible from the ground. Leveling indicator shall be sensitive to one (1) degree (maximum) changes in position at any point within five (5) degrees (minimum) level position. Unless otherwise directed by the Engineer, mast-arm mounted luminaires will be installed in the level position.
- Underpass luminaires shall be fused internally. Fuses shall be 10 amp time-delay type.
- The Contractor may be responsible for fixture testing costs. See Materials and Tests Section test method TEX-1110-T.
- The Contractor shall furnish six (6) sets of submittals of the luminaire fixture to the Engineer at the project address. These submittals shall be approved by the Engineer before the Contractor begins work.

D. High Pressure Sodium Vapor Luminaires

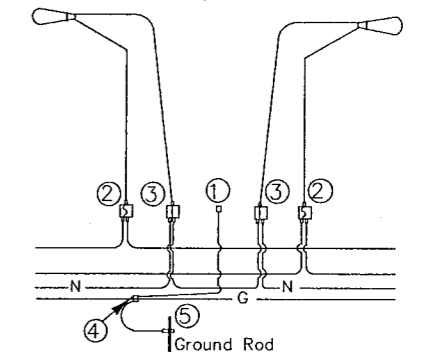
1. Photometrics

- The U/P (SPL-CO) (.15KW)S (TY 1) and (TY 2) underpass luminaires shall be 150 watt high pressure sodium, IES TYPE M-C with flat tempered glass lens. The fixtures shall provide a minimum measured intensity of 0.2 footcandle in a rectangular area measuring 120 feet x 30 feet, when mounted 20 feet above the midpoint of either long side of the surface area.  
  
The maximum to minimum horizontal illuminance uniformity ratio shall not exceed 25:1 within the above mentioned rectangular area.
- The 250-watt mast arm mounted luminaire shall be IES Type full cutoff and, when mounted 40 feet above the midpoint of either long side of a rectangular area 190 feet by 45 feet, shall provide a measured minimum intensity of 0.2 footcandle at any point on the surface of this area. Light intensities measured in footcandles along a line parallel to and 20 feet in from the long side of the previously defined rectangular area above which the luminaire is mounted shall decrease at a rate not to exceed 0.5 footcandle in any 10 foot interval along the aforementioned line from 10 to 90 feet on both sides of the luminaire and shall not be less than 0.3 footcandle at any point along such line.  
  
The maximum to minimum horizontal illuminance uniformity ratio shall not exceed 15:1 within the above mentioned rectangular area.
- The 400-watt mast arm mounted luminaire shall be IES Type full cutoff and, when mounted 50 foot above the midpoint of either long side of a rectangular area 220 feet by 60 feet, shall provide a measured minimum intensity of 0.2 footcandle at any point on the surface of this area. Light intensities measured in footcandles along a line parallel to and 30 feet in from the long side of the previously defined rectangular area above which the luminaire is mounted shall decrease at a rate not to exceed 0.5 footcandle in any 10 foot interval along the aforementioned line from 10 to 90 feet on both sides of the luminaire and shall not be less than 0.3 footcandle at any point along such line.  
  
The maximum to minimum horizontal illuminance uniformity ratio shall not exceed 15:1 within the above mentioned rectangular area.
- The luminaires shall meet the photometric requirements shown above, when energized at 100 percent of rated line voltage. Test will be run with the fixture in the level position as indicated on leveling indicator.

Fabrication Tolerances Table		
Part	Dimension	Tolerance
Pole Assembly	Shaft length	± 1"
	I.D. of outside piece of slip fitting pieces	+ 1/8" - 1/16"
	O.D. of inside piece of slip fitting pieces	+ 1/32" - 1/8"
	Shaft diameter: other	+ 3/16"
	Out of "round"	1/4"
	Straightness of shaft	± 1/4" in 10 ft
	Twist in shaft	4° in 50 ft
	Perpendicular to baseplate	1/8" in 24"
	Pole centered on baseplate	± 1/4"
	Location of Attachments	± 1/4"
Arm Assembly	Arm Length	± 3"
	Arm Rise	± 1 3/4" in 10 ft
	Arm Diameter	± 3/16"
	Overall length or width	± 1/4"
	Thickness	+ 1/4" - 1/16"
	Deviation from flat	1/8" in 12"
	Spacing between holes	± 3/32"
Anchor Bolt	Anchor bolt hole size	± 1/16"
	Length	+ 1" - 1/4"
	Threaded length	+ 1 1/2" - 1/8"
Miscellaneous	Galvanized length (if required)	+ 8" - 1/4"
	Bolt hole spacing	± 1/16"
	Strut location in truss arms	± 1 1/2"



FOR THREE-WIRE CIRCUIT-CENTER GROUNDED LUMINAIRES SERVED AT 480V ON 240 480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120 240 VOLT SERVICE.



FOUR-WIRE CIRCUIT-CENTER GROUNDED LUMINAIRES SERVED AT 240V (240/480 VOLT SERVICE)

NOTES:

- Pole Bonding Connector Blackburn TTC3 or Weaver TGC3 or equal.
- Fused Connector-All electrical connectors for breakaway poles shall be watertight and shall be designed as break-away (Buchannon 65U, Bussmann HEBW, Littelfuse LEB or equal). All fuses shall be time-delay types. 10 Amp (Littelfuse FLQ, Bussman FNQ or equal).
- Un-fused Connector-All electrical connections for neutrals shall be watertight. For breakaway poles, connections shall be designed as breakaway, shall have a white color marking, and shall have a permanently installed solid neutral (Buchannon 20U, Bussmann HET, Littelfuse LET or equal). Dummy/Neutral fuse shall be Bussman NTS-R-3 or equal.
- Split Bolt or other connector.
- Ground Rod Clamp - Blackburn GG58H, Burndy GKP635, or equal.

\*For Transformer Base Poles. On Shoe Base Poles omit un-fused connector for neutral conductor.

10-98: clarified T-base washers; mod. fixture requirements; removed two wire diagram; revised breakaway connectors requirements

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DN:LR  
CK: CW  
DW: DN  
CK: MT

LEVELS DISPLAYED  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16  
DATE: 7/18/99 20:31:22 2/24/2000 10:31:52  
ACC: d58hp1c/ur/0580504  
FILE: 9300128283455956786990616283

STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION  
Traffic Operations Division

ROADWAY ILLUMINATION DETAILS

RID(2)-98

©TxDOT January 1992	ONE - RS	ONE - KB	ONE - FDN	ONE - RS	NEG. NO.:
5-93	DALLAS	6	CM 97 (449)	87	
10-93					
10-98					
	COUNTY	CENTRAL	SECTION	JOB	HIGHWAY
	DALLAS	8050	18	034	BELT LINE