

Shop Drawings Checklist – Traffic Light Structures

3/8/19

General Guidelines

The following section provides general guidelines for Light structure shop drawing review items. **Make sure to review the lighting plans, lighting standards and Indiana specification book along with the following guidelines:**

- Need Standard 807-LTPD-01 (Pole data schedule) for the High Mast Tower shop drawings. High Mast poles shall meet the design requirements as shown on the pole data schedule.
- If an alternate design is chosen, submit the design calculations for review and approval. The base plate thickness, anchor bolt numbers and configuration, diameter and length shall be the same as shown on standard sheet 807-LTPD-01. Alternate design shop drawings should be checked as designed.
- Pole shaft material A595, Group C, yield strength 60 ksi, A588 yield strength 60 ksi. All hardware shall be stainless steel, ASTM A276, Type 304 or 305.
- Overlap joints should be 1.5 times the diameter of the bottom section.
- Diameter at the top of the pole should be 7.5” minimum.
- Handhole size should be 14” x 3’ minimum.
- Handhole door and hinges should be the same material as the High Mast Tower Pole shaft.
- Doors and hinges shall be the same material as the pole.
- Hinge pins shall be stainless steel.
- Provision for padlock.
- Circumferential welds, backed-up welds with 100% penetration. Base plate welds shall be 100% penetration welds.
- Longitudinal welds, 60 penetration welds.
- Longitudinal welds at slip fit, 100% penetration welds at slipfit (both sections) plus 6 inches beyond.
- Handhole gasket.

Head Frame Assembly

- Material shall be ASTM A666, Type 201 Or 304 stainless steel.
- Base plate and sheave support plates, stainless steel type 201 or 304.
- Support cable sheaves or pulleys, stainless steel or aluminum with stainless steel bolts.
- Power cable sheaves or pulleys, all from stainless steel, aluminum or nylon material with stainless steel bolts.
- Dome at the top shall be fiberglass or spun aluminum.
- Stainless steel keeper bar.

Lowering Device

- Luminaire ring shall be ASTM A666, Type 201 or 304 stainless steel with removable raceway cover.
- Tenon, same stainless steel material as ring, number of tenons shall be the same as the number of luminaries.
- Minimum 6 non-abrasive rollers.
- Terminal box, stainless steel or aluminum with stainless steel killum grip.
- Support cable 3 – 3/16 inch stainless steel aircraft cable, 7 strands, 19 wires, capacity 3900 lbs. and stainless steel hardware.
- Winch driven by self locking, worm rear reducer.
- Winch reducer, totally enclosed and permanently lubricated in a cast aluminum or cast iron housing.
- Wire, 3/C #10 THHN.
- Power cable, 4/C #10 AWG copper insulated electrical cable Type “OS”.

Anchor Bolt

- Deformed or plain ASTM A615, minimum yield 75,000 psi.
- Upper 12 inch and hardware hot dipped galvanized as per ASTM A153.
- Diameter 2 ¼ x 90”.

Luminaire

- Aluminum housing, reflector and glass refractor with gasket that completely seals out dust.
- Symmetric or asymmetric luminaire.

Conventional Lighting Supports

Material for pole (either of the following)

- Aluminum B241 alloy 6063 T4, heat treated to T6 temper.
- Galvanized steel pole and base plate, ASTM A572 or A595, minimum yield strength 50,000 psi.

Material for Arm

- Aluminum alloy 6063-T6
- Attaching plates or clamps for aluminum mast arm shall be ASTM B241, alloy 6063-T6.
- Galvanized steel, schedule 40 pipe, A53 Grade B; A500 Grade B or C; A501. Minimum yield 35 psi.

Arms

- Aluminum arm less than 8' may be single member.
- Aluminum arm equal to or greater than 8' shall be truss type.
- Aluminum arms – upper arm of truss type or single arm shall be tapered tube ovalized, longer dimension in horizontal plane galvanized arms – truss type, 2 inch diameter pipe.
- Arms on bridge must be truss type.

Arm Attachment

- Aluminum single arm – bolted to pole or clamped to the pole with four ½” bolts.
- Truss type arms – bolted to pole plate or clamped to the pole. Upper arm with four ½” bolts, lower arm with two 3/8” bolts.
- All hardware to be type 304 or 305 stainless steel in accordance with ATM A276.

Pole Diameter and Thickness

- Design in accordance with latest AASHTO specifications.
- Bolt circle shall be between 11.5” to 14.5”.
- Aluminum pole on breakaway couplings and steel slip bases. Minimum thickness of .219 “.
- Poles on transformer bases or shoe anchor bases installed without breakaway devices are exempted from the minimum thickness requirements.

Pole Accessories

- Pole cap, removable.
- 4" x 8" reinforced handhole, 18" above base with 2 stainless steel hex head screws.
- Internal wire support (S hook)
- Grounding nut accessible through handhole.
- All hardware stainless steel.
- 1" I.D. grommet where arm attached with pole.

Welds

- Aluminum pole – single longitudinal weld
- Galvanized steel pole – single longitudinal weld, 100% penetration.
Circumferential welds shall be backed-up welds with 100% penetration.

Maximum rise for the Arm

- Arm Length 9' or less = 4 ft.
- Arm Length 10' to 14' = 5 ft.
- Arm Length 15' to 19' = 5.5 ft.
- Arm Length 20' to 25' = 6 ft.
- Arm Length 26' to 30' = 8 ft.

Anchor Bolt

- ASTM A307 minimum yield strength 55 ksi.
- Minimum length of threads shall be 6 inch.
- Mean diameter 0.918" +/- 0.011"
- Top t10 inch shall be galvanized, ASTM A153.
- Minimum 36" length for 8" outside pole diameter or less.
- 48" length for 9" or 10" outside pole diameter.
- In addition to the length the bolt shall have 4" right angle hook on the anchor bolts.

Breakaway Device

- Breakaway couplings with metal skirt.
- Breakaway transformer.

Non- Breakaway Device

- Anchor base with metal skirt.
- Steel transformer (rest area urban area with pedestrian walk).

Service Point Type 1

- Conduits shall enter and exit from bottom of cabinet.

Service Point Type II

- 3 - #1/0 (19 strands, 0.74" diameter) copper conductors from weatherhead to cabinet.
- Neutral # 1/0 conductor shall be properly identified (white color tape)
- Neutral bar and ground bar connect with one # 8 conductor.
- 100 Amp. Main breaker, 4 circuits maximum.
- 240 / 480 voltage only.
- Cable duct marker in front of service point.
- Minimum cabinet size is 30" x 24" x 8". Conduits shall enter and exit from the sides of the cabinet and exit from the bottom to energize luminaries.