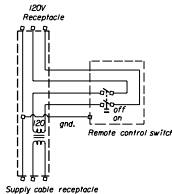
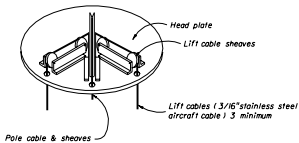
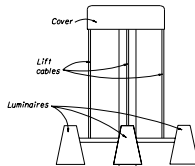


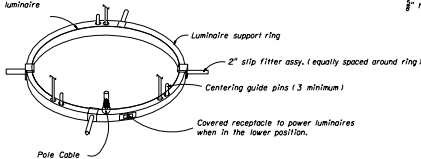
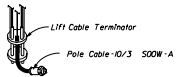
See legend for number of luminaires, lamp wattage and light distribution.



SCHEMATIC OF REMOTE AUXILIARY POWER UNIT



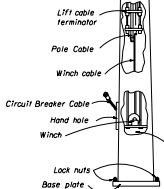
Spring supported centering arms provided to center the luminaire ring.



3/8" hex drive 3/8" round shaft

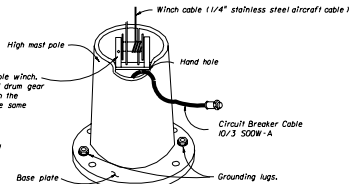


1.5 KVA dry type transformer mounted in N.E.M.A. 3R portable enclosure, provide 120V. grounded receptacle for electric drill & receptacle for supply cable. (see schematic)



Surge protector shall be located in pole with circuit breaker.

Positive drive reversible winch. The complete enclosed drum gear shall directly mesh with the worm gear train, in the same enclosure.



POLE DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
TRAFFIC DESIGN

HIGHMAST LIGHTING

Drawn By	Checked By	Scale	Revision No.
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### LUMINAIRE SPECIFICATIONS

The reflector with its aluminum cover shall be firmly attached to a cast ring. This ring shall have keyhole slots in its upper surface such that the reflector/refractor assembly may be readily attached to, or detached from, the luminaire bracket entry and lamp support assembly without completely removing the support bolts.

Each luminaire shall contain an integral auto-regulator type ballast connected for 480 volts input  $\pm 10\%$  and a power factor of more than 90%. The luminaire ballast shall be enclosed within an aluminum housing which integrally attaches to the luminaire bracket entry and lamp support assembly. It shall be readily removable without removing the luminaire from the bracket arm.

The luminaire shall be attached to the bracket arm by means of a bracket entry and lamp support assembly. The assembly shall include a side entry slip/fitter designed for 2" pipe with provision for 3" adjustment for leveling the luminaire. An enclosed terminal block shall be included such that all electrical connections shall be protected from exposure to weather.

All electrical connections shall be made waterproof or be made inside a weather resistant enclosure. All luminaires shall be ANSI/IES light distribution as indicated in plans. Each luminaire shall be labeled with a permanent label which states the type of lamp, voltage input, power input, power factor, ballast type, socket position, ANSI/IES light distribution, and such other catalog information that a complete replacement can be readily ordered.

The contractor's attention is directed to those plan sheets detailing the mounting of luminaires at the pole top. Particular attention is directed to alignment of luminaire light distributions. Special attention must be exercised in the physical alignment of these luminaires to ensure that the approved photometric layout is physically produced at each lighting standard in the field. A marking shall be placed on the external face of the reflector to allow visual inspection of alignment. The marking shall correspond to the  $G'$  axis of the reflector.

### FOOTING

The high mast foundations shall be constructed in accordance with the details shown in the plans.

Anchor bolts per manufacturer's Specifications. Submittals shall be supplied to the engineer of record prior to purchase.

One leveling nut, one hold-down nut, and one locking/jam nut shall be supplied per anchor bolt. All small metal parts, nuts, screws, washers, etc., shall be rustproofed either by galvanizing per ASTM A153 or by the nature of the material used in their fabrication.

### LOWERING SYSTEM SPECIFICATIONS

The lowering system shall consist of the following:

- Head frame and cover
- Luminaire ring
- Winch
- Drum
- Portable power unit (per project)

The head frame unit shall rigidly mate to the top of the pole to the head frame platform. The platform with its associated sheaves, etc. shall be covered and rained. The head frame structure shall be zinc coated steel attached to the pole by means of a steel slip/fitter. Head frame shall encompass six 5" nominal steel cable sheaves grooved to the exact cable diameter, for 180° cable bearing surface. The sheave shall be zinc electroplated to ASTM B64 and dipped in yellow chromate for corrosion resistance. Bearings and cable keepers shall have permanent lubrication. Three (3) stainless steel 7 x 19 aircraft cables of  $\frac{1}{2}$ " or greater diameter shall be provided.

The pole cable shall be attached to the luminaire ring with a waterproof connector capable of withstanding the pull of the weight of the pole cables. Where the wire ropes are required to be run over sheaves or over the winch drum, the maximum working stress in the outer fibers of wire rope shall not exceed 20 % of the wire rope manufacturer's rated ultimate stress.

Drum design shall cause level wind of wire rope. The power cord shall travel on sheave (s) or a combination of rollers providing a radius for the cord of 6" or larger. Each end of the sheave (s) or rollers shall have a groove to prevent the cable from jumping out of the roller track.

The head frame shall also include three (3) latching devices to support the luminaire ring assembly when the lowering device is not in operation. The latches shall be actuated by alternate raising and lowering of the lowering cables. Latching of luminaire ring shall be indicated by indicators visible from ground. All moving parts of the latch mechanism shall be serviceable from the ground. Each of the three latches shall be strong enough, by itself, to support twice the weight of the ring and all the luminaires. Latching mechanisms which depend primarily upon spring operation or contain dissimilar metals are not acceptable. The latching mechanism shall not require adjustment after the original installation.

The luminaire ring shall be constructed of 6" x 2" x 7 gauge steel channel galvanized in accordance with ASTM A153 Class "B" steel channel with the appropriate number of 2" steel pipe mounting arms. The luminaire ring shall be prewired with Type "W" or specially reinforced Type "SD" power cable with suitable conductor quantity and size for proper operation and Type "ST" distribution wiring with insulation suitable for at least 105 C. All power cables shall be attached to the aluminum weatheright wiring chamber with weatheright cable connectors. A 600 volt terminal block, completely prewired shall be included in the weatheright wiring chamber. A weather-right twistlock power inlet shall be provided on the luminaire ring to allow testing of the luminaire while in the lowered position. The power inlet shall face away from the pole for easy access.

The ultimate support of the luminaire ring shall not be dependent upon the lowering and raising cables.

The system shall be provided with circuit-breaker switches and twistlock disconnects in the pole base. Raising speed of luminaire ring shall be a minimum of 12" per minute.

The winch shall be a reversible worm gear self locking type with an integral friction drag brake to prevent freespooling. The winch shall be designated for hand operation or for operation by means of a 1/2" heavy duty reversing electric drill motor, remote controlled to enable the operator to stand 25' from the pole. Stainless Steel 7 x 19 aircraft cables of  $\frac{1}{2}$ " or greater diameter equal to MIL-W-5424 shall be supplied on the winch. The winch shall be provided with keepers above the drum to force the cable away from the ends of the drum for spooling. The drum shall have a wire guard to prevent the cable from coming off.

The winch shall be mounted in such a way that the cable terminator and the riser cable connector may be reached and worked on by a person with his arm through the handle.

Roller contact spring-loaded centering arms shall be provided to center the luminaire ring while ascending or descending the pole. The rollers for centering arm shall be made of a water resistant non-marking composition material. All shafts and washers shall be #304 stainless steel. The spring-loading mechanism shall consist of an oil-tempered steel compression spring over an aluminum rod. The rollers shall be in contact with the pole at all times.

### POLE SPECIFICATIONS

The pole shaft may be jointed or single piece, polygon or round, high strength steel having a minimum yield strength of 50 ksi. All material shall be single thickness steel plate with no laminations. Steel shall be as specified.

All poles shall be equipped with a reinforced handle approximately 1' above the base plate. The handle shall be 10" wide by 20" high minimum.

All poles and hardware will be adequately painted to assure protection to the finish during shipping and handling, poles shall not be shipped pre-assembled.

Drawings shall be provided with the equipment which show assembly sequence, lift point, and recommended erection procedure. A permanent decal or card shall be fixed on the inside of the handle cover which describes the sequence for lowering the luminaires and the cables.

The proportioning of weld details and the operation of welding shall be in accordance with the current edition of the AASHTO Standard Specifications for Welding of Structural Steel Highway Bridges, and The Referenced American Welding Society Structural Welding Code.

Shop drill two (2)  $\frac{3}{8}$ " diameter holes 180 degrees apart through total thickness of base plate. Tap top of hole for  $\frac{3}{8}$ " x  $\frac{1}{2}$ " UNC stainless steel hex head bolt.

Finished poles shall have a protective coating of hot galvanizing applied in accordance with ASTM A633.

Note: It is the responsibility of the contractor to coordinate the anchor bolt design with foundation design.


### ALTERNATE POLE

A spun high mast prestressed concrete pole listed on the Qualified Products List may be substituted for a steel pole with approved shop drawings and calculations. If the concrete pole is provided as a substitute for the steel pole, payment will be made under the items bid for steel poles and associated foundations and pole quantity of these items will be the basis for payment.

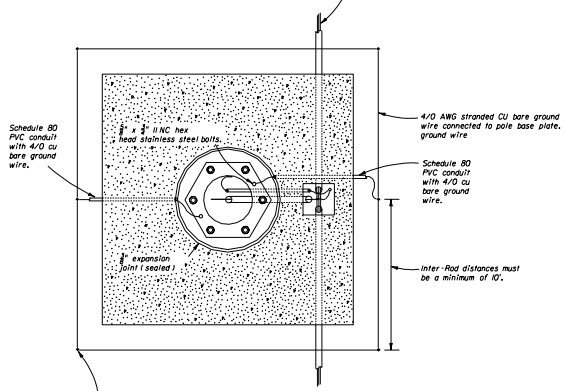
### NOTES

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
TRAFFIC DESIGN

### HIGHMAST LIGHTING

Revised	Date	Approved By	 <small>STATE TRAFFIC DESIGN</small>
Designed By	DIV		
Drawn By	SCALE		
Checked By	DATE		
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			17502

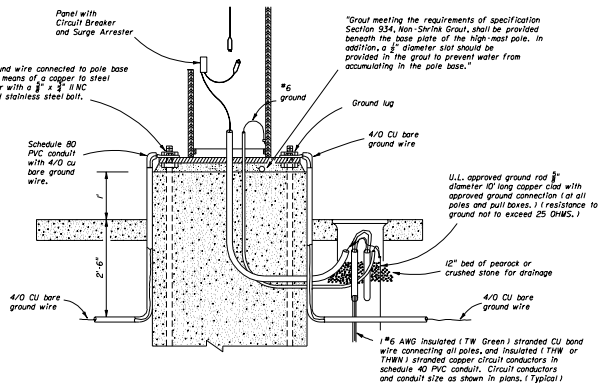
1 #6 AWG Insulated (TW Green) stranded CU bond wire connecting all poles, and insulated (THW or THWN) stranded copper circuit conductors in schedule 40 PVC conduit. Circuit conductors and conduit size as shown in plans. (Typical)



Minimum  $\frac{3}{8}$  x 20' approved ground rods (6).  
Maximum resistance to ground 25 ohms per rod and total system not to exceed 10 ohms.

Notes:

1. At all pull boxes and pole bases, ends of conduit shall be sealed in accordance with Section 630 of The Standard Specifications For Road And Bridge Construction.
2. 1 #6 AWG Insulated (TW Green) stranded CU bond wire connecting all poles, and insulated (THW or THWN) stranded copper circuit conductors in schedule 40 PVC conduit. Circuit conductors and conduit size as shown in plans. (Typical)
3. Stubs to be placed around all Poles and Pull Boxes.
4. For Pull Boxes between Poles refer to index 17500 sheet 2 of 3.



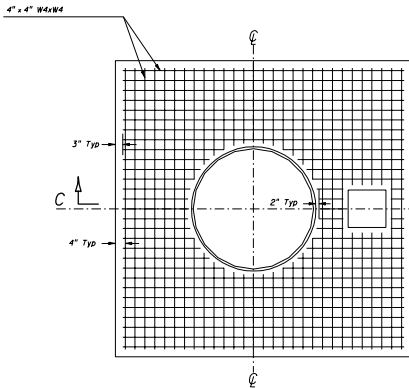
"Grout meeting the requirements of specification Section 934, Non-Shrink Grout, shall be provided beneath the base plate of the high-nest pole. In addition, a  $\frac{3}{8}$ " diameter slot should be provided in the grout to prevent water from accumulating in the pole base."

WIRING DETAILS

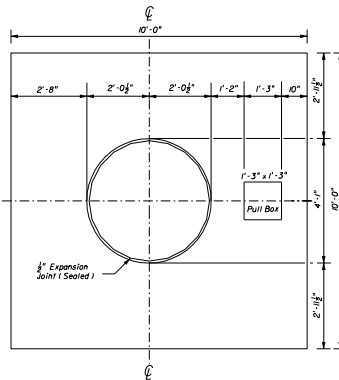
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
TRAFFIC DESIGN

HIGHMAST LIGHTING

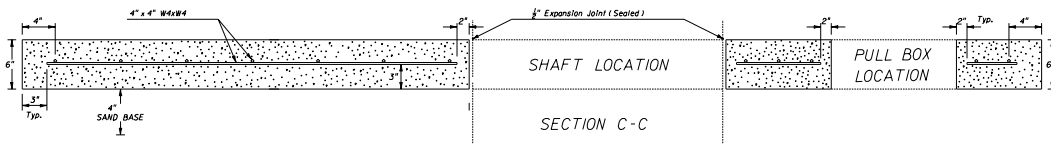
Designed By	Checked By	Approved By	DATE
		<i>Clark A. Scott</i>	
Drawn By	Checked By	DATE	SCALE
Checked By	DATE	OF	17502
		3 of 4	



REINFORCEMENT LAYOUT



SLAB DIMENSIONS



SHAFT LOCATION  
SECTION C-C

PULL BOX LOCATION

NOTES:

1. Use clean free draining sand < 5% passing No. 200 sieve for base (4").
2. Welded wire fabric shall meet the requirements of ASTM A185.
3. Concrete strength at 28 days shall be f'c-3 ksi.
4. Outside edges of slab shall be cast against formwork.
5. The 1/2" thick expansion joint between shaft and slab shall be sealed with a hot poured elastic joint sealer.
6. Concrete slabs around poles and pull boxes shall be paid for under the contract unit price for Class I Concrete (Miscellaneous); the cost for reinforcing steel fabric shall be included in the price for Class I Concrete (Miscellaneous).
7. The pull box shown is 1'-3" x 1'-3"; others approved under Section 635 of the Standard Specifications may be used.

SLAB DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
TRAFFIC DESIGN

HIGHMAST LIGHTING

DESIGNED BY	DATE	APPROVED BY
		<i>Clark A. Scott</i>
DRAWN BY		STATE TRAFFIC DESIGN GROUP
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