LUMINAIRE AND LIGHT STANDARD NOTES:

1. Luminaires with light sources rated more than 3,000 lumens shall have no uplift load rating per IES TM-14-11 and mounted level and plumb.
2. All luminaires shall be equipped with an ANSI C136.41 7-pin receptacle and shorting cap for wireless control nodes.
3. All LED luminaires shall be 5000K nominal or less, per ANSI C78.377-2011 and shall be installed where contact surface.
4. Electrical splices may be made within the pole base or transformer base as each receiving disruption. The cost project manager shall confirm whether splices boxes shall be installed for the project or whether splices shall be made in the pole.
5. Pole assembly shall be supplied in sufficient length to accommodate luminaire mounting height.

LIGHT STANDARD FOUNDATION NOTES:

1. Dimensions for the transformer base, anchor base and anchor bolts are variable for the height of the light standard and the mast arm configuration. All components shall fit and accommodate the requirements of the light standard supplied.
2. Concrete shall be air entrained class B2 and shall conform to section 603 for concrete and section 602 for reinforcing steel.
3. Where light standard foundation occur in hard scape areas, where an exposed foundation could create a tripping hazard, the top of the foundation shall be flush to the finished surface similar to ADA requirements. Where exposed light standard foundation complies with ADA requirements, foundation shall be installed 2 inches above hard scape with cost approval.

A. Bond (1) #4 stranded/insulated copper to ground rod in pull box / splice box and grounding lug in pole base hand hole.

5. Foundation dimensions per foundation schedule below and as noted.

7. Foundation dimensions per foundation schedule below and as noted. Light standards higher than 50 feet or with banners, precast foundation, or on sills shall be designed by a structural engineer licensed in the state of Colorado. For design wind speeds greater than 80 MPH add an additional 1'-0" to the foundation depth shown on the foundation schedule below.

1/2" thick expansion joint shall be installed where foundation abuts concrete or other fixed structure.

Conduit for ground rod.

3/4" chamfer all exposed edges.

PARKING LOT AND DECORATIVE LIGHTING STANDARDS

Pole Schedule

<table>
<thead>
<tr>
<th>Foundation Height</th>
<th>Foundation Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20'</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>20' - 50'</td>
<td>9'-6&quot;</td>
</tr>
<tr>
<td>50' - 100'</td>
<td>12'-0&quot;</td>
</tr>
<tr>
<td>&gt; 100'</td>
<td>P.S.E.</td>
</tr>
</tbody>
</table>
**TEMPORARY LIGHTING NOTES**

1. **THE CONTRACTOR SHALL PROVIDE INSTALLATION, MAINTENANCE, AND REMOVAL OF ALL TEMPORARY LIGHTING EQUIPMENT, LUMINAIRES, CONDUIT, AND POWER SOURCES.**

2. **TEMPORARY LIGHT STANDARD SHALL BE PROTECTED. PROTECTION SHALL MEET THE RECOMMENDATIONS OF THE ASHHTO ROADWAY DESIGN GUIDE.**
   - **SPEED LIMIT LESS THAN 40 MPH:**
     - LOCATED 6 FEET (MINIMUM) FROM THE FRONT FACE OF CURB.
     - MOUNTED ON BARRIER.
     - LOCATED BEHIND BARRIER OR APPROPRIATE IMPACT ATTENUATOR.
   - **SPEED LIMITS OF 40 MPH OR GREATER:**
     - MOUNTED ON BARRIER.
     - LOCATED BEHIND BARRIER.

3. **TEMPORARY LIGHTING DESIGN SHALL PROVIDE LIGHTING LEVELS EQUAL TO OR EXCEEDING THE EXISTING LIGHTING LEVELS AND QUANTITY.**

4. **EXISTING LUMINAIRES WHICH ARE BEING REMOVED MAY BE USED FOR TEMPORARY LIGHTING.**

5. **THE TEMPORARY LIGHT STANDARDS AND LUMINAIRES SHOULD BE LOCATED ALONG TRAFFIC DETOUR ROUTES WITH THE LUMINAIRES POSITIONED OVER THE EDGE OF THE TRAVEL LANE.**

6. **OVERHEAD ELECTRICAL CONDUCTORS SUPPLYING POWER TO THE LUMINAIRES SHALL MAINTAIN 24 FEET (MINIMUM) CLEARANCE OVER THE ROADWAY TEMPLATE AND 20 FEET (MINIMUM) OUTSIDE THE ROADWAY TEMPLATE. OVERHEAD ELECTRICAL SHALL NOT BE MOUNTED ON BREAKAWAY POLES.**

7. **THE POWER FOR TEMPORARY LIGHTING SHALL BE METERED. ALL UTILITY BILLS FOR TEMPORARY LIGHTING SHALL BE PAID FOR BY THE CONTRACTOR.**

8. **TEMPORARY LIGHTING SYSTEM SHALL BE PAID FOR ON A LUMP SUM BASIS WHICH INCLUDES THE LUMINAIRE, ARM, LIGHT STANDARD AND ALL NECESSARY ELECTRICAL FOR A COMPLETE AND OPERATIONAL LIGHTING SYSTEM.**

**LIGHT STANDARD TIMBER (TEMPORARY)**

**LIGHT STANDARD METAL (30-FOOT) (2 ARM) (SPEC)**

**CHAIN STATION LIGHTING NOTES**

1. **LIGHT STANDARD SETBACK WILL VARY PER SITE CONDITIONS. TWO LUMINAIRES ON MAST ARM ARE INTENDED TO BE CENTERED OVER TRUCK PARKING LANE BELOW AND SPACED A MINIMUM OF 120 FEET APART. PARKING LANE SHALL BE DETERMINED BY STRIPING AND VERIFIED BY FIELD ENGINEER.**

2. **LIGHT STANDARD SHALL BE A MINIMUM OF 4'-0" BEHIND EDGE OF PAVEMENT WHEN INSTALLED ON A BREAKAWAY BASE AND NOT INSTALLED BEHIND GUARDRAIL.**

- LUMINAIRE OPTICS ORIENTED AWAY FROM MAINLINE
- PROVIDE LUMINAIRE WITH HORIZONTAL SLIP FITTER FOR USE WITH 2 INCHES OUTER DIAMETER PIPE TENON.
- LUMINAIRE OPTICS SHALL BE AIMED TOWARDS TRUCK.

**ALTERNATIVE ROADWAY LIGHTING**

**STANDARD PLAN NO. S-613-2**

Sheet No. 2 of 4

**Issue Date: July 31, 2019**

**Project Sheet Number:**
**COMPONENT LIST**

1. NEMA 4 SERVICE ENTRANCE KIT, SINGLE PHASE LOAD CENTERS (SEE PANEL SCHEDULE FOR QUANTITY AND SIZE OF MAIN AND BRANCH BREAKERS). MOUNTED INSIDE NEMA 4 ENCLOSURE.

2. A GFCI MAINTENANCE RECEPTACLE IN A 1-GANG BACK BOX WITH COVER.

3. A 200A, 1 PH., NEMA 3R, METER HOUSING MOUNTED ON BACK SIDE OF NEMA 4 ENCLOSURE WITH LEVER BYPASS TO UTILTY COMPANY SPECIFICATIONS. MAY BE OMITTED BY UTILITY COMPANY SPECIFICATIONS PER SEQUENCE REQUIREMENTS.

4. 4 POLE, 30A, 250V ELECTRICALLY HELD LIGHTING CONTACTORS WITH 120V COILS. TWO (2) REQUIRED.

5. 4 POLE, 30A, FUSE BLOCKS WITH 30A, FRNR FUSES TO THE LIGHTING CONTACTORS AS REQUIRED BY UL 508A (2001 STANDARD FOR INDUSTRIAL CONTROL PANELS). TWO (2) REQUIRED.

6. 3/4 INCH x 10 FEET LONG COPPER-CLAD DRIVEN GROUND ROD WITH GROUND CONDUCTOR EXOTHERMIC WELD UNDERGROUND RATED LUG CONNECT GROUND CONDUCTOR TO GROUND ROD.

7. H.O.A. SWITCH - HAND-OFF-AUTO WITH 15A 120V CONTACTS, BACK BOX, COVER, KNOB LEGEND AND THE PHOTOCELL CONTROL WIRED IN THE AUTO POSITION.

8. NEMA 3R 120V PHOTOELECTRIC CONTROL WITH 3-PRONG TWIST-LOCK RECEPTACLE BASE WIRED THROUGH THE H.O.A. SWITCH. THE PHOTOELECTRIC CONTROL SHALL BE MOUNTED ON THE NORTH SIDE ON ENCLOSURE LETTERING THE WINDOW FACING NORTH DOWN TO MINIMIZE THE SUN'S INTERFERENCE.

9. SURGE PROTECTION DEVICE (SPD) 10KA, 120/240VAC SINGLE PHASE, 3W+G 200KAIC, PROTECTION MODES L-G, N-G, L-N OR L-L. STANDARD OPTIONS (RED & GREEN LEDS, AUDIBLE ALARM WITH ENABLE/DISABLE FEATURE) LEA #B70-00-7000 INTERNATIONAL OR APPROVED EQUIVALENT.

10. OPTIONAL 18 INCH HIGH SKIRT PER ENGINEER REQUEST.

11. BRANCH RACEWAYS - PROVIDE BRANCH CIRCUIT RACEWAY TO ALL LIGHTING FEED FROM THIS LIGHTING CONTROL CENTER PAY ITEM. SEE PLAN AND FEEDER SCHEDULE FOR SIZE AND QUANTITY.

12. BRANCH STRIP - 600V RATED, LUGS TO ACCEPT 8-10 ANG COPPER WITH ALL MARKING STRIP END CAPS AND MOUNTING HARDWARE PROVIDE THE NUMBER OF TERMINAL POINTS AS REQUIRED, MINIMUM OF 36 POINTS.

**NOTE:** ALL COMPONENTS LISTED SHALL BE INCLUDED IN THE LIGHTING CONTROL CENTER PAY ITEM. ALL ELECTRICAL COMPONENTS SHALL BE UL LISTED PER THE APPROPRIATE UL REQUIREMENTS, INCLUDING BUT NOT LIMITED TO 508A INDUSTRIAL CONTROL PANELS.

**ONLY REQUIRED FOR LOADS NOT CONTROLLED BY LOCAL NODES.**

**LIGHTING CONTROL CENTER**
CABINET COMPONENT LIST

A. FULLY HINGED METER/TEST SECTION LOCKABLE COVER WITH HOLD OPEN ARM TO KEEP COVER FROM BLOWING SHUT PER UTILITY SPECIFICATION. COMBINATION ALL-IN-ONE COMMERCIAL METER POWER PEDISTAL IN A NEMA 3R STAINLESS STEEL ENCLOSURE. PAINT COLOR PER PROJECT.

B. UTILITY METER INSIDE NEMA 3R ENCLOSURE. METER SHALL HAVE LEVER BYPASS AND INTERNAL LOCKING TAB ON METER COVER PER LOCAL UTILITY COMPANY SPECIFICATIONS.

C. GFCI MAINTENANCE RECEPTACLE FLUSH MOUNTED IN PANEL DEAD FRONT INSIDE OF THE NEMA 3R ENCLOSURE.

D. HAND-OFF-AUTO SWITCH - 15A-2P-H.O.A. SWITCH WITH LEGEND FLUSH MOUNTED IN PANEL DEAD FRONT INSIDE OF THE NEMA 3R ENCLOSURE.

E. UTILITY TERMINATION LANDING LUGS.

F. LOAD CENTERS WITH SERVICE MAIN AND BRANCH BREAKERS. ENGINEER SHALL PROVIDE PANEL SCHEDULE FOR BREAKERS REQUIRED.

G. PROVIDE NEUTRAL TO GROUND BONDING JUMPER.

H. CABINET GROUND BOND #6 BARE COPPER CONDUCTOR.

I. NEMA 3R 120V PHOTOCELL CONTROL WITH 3-PRONG TWIST-LOCK RECEPTACLE BASE WIRIED THROUGH THE H.O.A. SWITCH. THE PHOTOCELL CONTROL SHALL BE MOUNTED ON THE NORTH SIDE ON ENCLOSURE OR WINDOW FACING NORTH OR DOWN TO MINIMIZE THE SUN’S INTERFERENCE.

J. REINFORCED CONCRETE (CLASS B) FOUNDATION PER STRUCTURAL ENGINEER LICENSED IN THE STATE OF COLORADO. 2 INCH (MINIMUM) ABOVE GRADE, 3/4 INCH CHAMFER ALL EXPOSED EDGES, 3 INCH (MINIMUM), 6 INCH (MAXIMUM) OVERLAP ON ALL SIDES.

K. 3/4 INCH X 10 FEET LONG, COPPER CLAD DRIVEN GROUND ROD. EXOTHERMIC WELD DR UNDERGROUND RATED LUG CONNECT CONDUCTOR TD GROUND ROD. (2) REQUIRED - 8 FEET APART (MINIMUM).

L. T-HANDLE, PULL-OUT FUSE HOLDER WITH FRN-R FUSES, METER DISCONNECT FOR METER PROTECTION PER UTILITY SPECIFICATION, COLD SEQUENCE METER AND WEATHERPROOF COVER WITH TAB LOCKABLE. THIS ITEM MAY BE OMITTED BY LOCAL UTILITY COMPANY SPECIFICATIONS HOT SEQUENCE REQUIREMENTS.

TYPICAL CABINET REQUIREMENTS:

200AMP MCB, 120/240V-1Ph-3W SERVICE ENTRANCE RATED STAINLESS STEEL, NEMA 3R, METER/ POWER PEDISTAL WITH SEPARATE SEALABLE AND LOCKABLE CUSTOMER SECTION WITH:

1. LOAD CENTER ENGINEER SHALL PROVIDE SCHEDULE FOR # OF CIRCUITS FOR “ALWAYS ON” LOADS THAT INCLUDE:
   (APPLIES TO STREETLIGHTS AND PEDESTRIAN LIGHTS)
   SERVICE ENTRANCE M.C.B. - ENGINEER TO PROVIDE SIZE ON THE PANEL SCHEDULE.
   CONTROL POWER CIRCUIT BREAKER - ENGINEER TO PROVIDE SIZE ON THE PANEL SCHEDULE.
   SWITCHED LOAD CENTER MAIN BREAKER - ENGINEER TO PROVIDE ON THE PANEL SCHEDULE.
   BRANCH BREAKERS AS SHOWN - ENGINEER TO PROVIDE SIZE AND QUANTITY ON THE PANEL SCHEDULE.
   BRANCH CIRCUIT CONDUIT TO LIGHTING LOADS, SEE PLAN FOR NUMBER & SIZE OF CIRCUITS AND CONDUCTORS REQUIRED.

2. CONTROL CIRCUIT INCLUDING:
   ONLY APPLIES TO PEDISTAL LIGHTS OR OTHER LIGHTS THAT DO NOT HAVE INDIVIDUAL ANSI 7-PIN RECEPTACLES.
   PHOTOCELL, RECEPTACLE, MOUNTED EXTERNALLY ON NEMA-3R ENCLOSURE.
   ONE HAND-OFF-AUTO (H.O.A.) SWITCH FLUSH MOUNTED IN DEAD FRONT.
   ONE LIGHTING CONTACTER CONTROLLING ONE LOAD CENTER IN THIS SECTION.
   ONE 12-CIRCUIT LOAD CENTER PHOTOCELL ENTITY CONTROLLED - A CIRCUIT DIRECTORY TO DOCUMENT CONFIGURATION IN POCKET ON HINGED DOOR.

NOTE:
ALL COMPONENTS LISTED SHALL BE INCLUDED IN THE LIGHTING CENTER PAY ITEM. ALL ELECTRICAL COMPONENTS SHALL BE UL LISTED FOR THE APPROPRIATE UL REQUIREMENTS. INCLUDING BUT NOT LIMITED TO GORA INDUSTRIAL CONTROL PANELS.

LIGHTING CONTROL CENTER (SPECIAL)