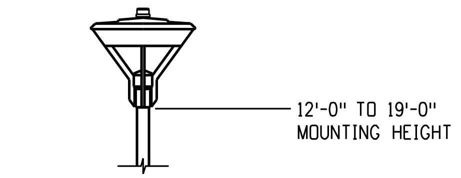
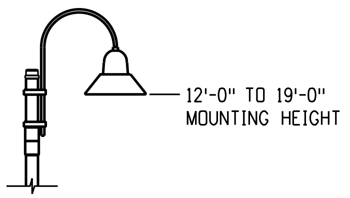


ALTERNATIVE MOUNTING ASSEMBLY



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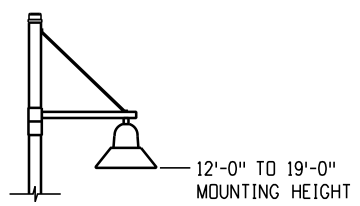

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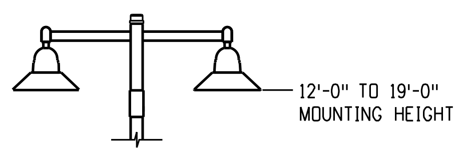

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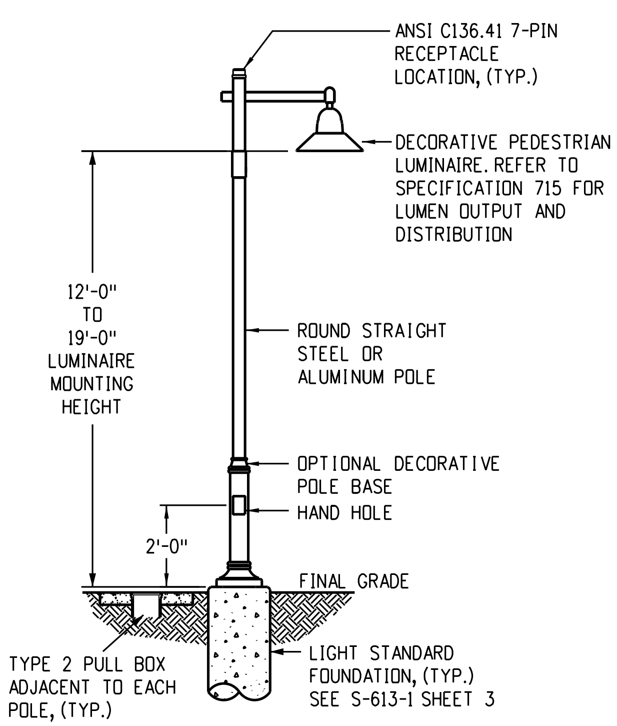


12 Feet to 19 Feet Standard

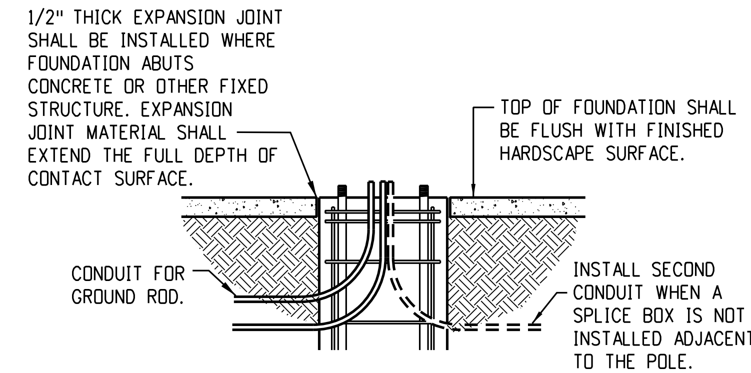
Luminaire and Light Standard Notes:

1. Luminaires with light sources rated more than 3200 lumens shall have no uplight (U0 rating) per IES TM-15-20 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 node.
3. All led luminaires shall be 3000K nominal or less, per ANSI C78.377-2011 standard and equipped with a surge suppression device with an immunity level of 10kV (minimum). All LED luminaires shall be equipped with a 0-10V or DALI dimming driver.
4. Light standards shall not be placed in ditches or other low areas unless an alternative location is not possible.
5. Backfill shall be compacted in accordance with Section 203.
6. Pole caps and base plate covers (or optional nut covers) are required.
7. All electrical components shall be UL listed per the appropriate UL requirements. Including but not limited to 508A industrial control panels.
8. Electrical splices may be made within the pole base or transformer base at each regions discretion. The CDOT Project Manager shall confirm whether splice boxes shall be installed for the project or whether splices shall be made in the pole.

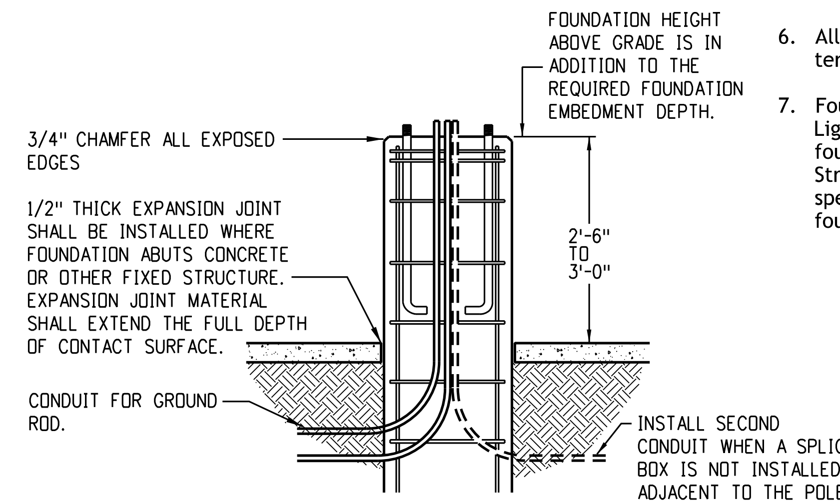
◒ Pole assembly shall be supplied in sufficient length to accommodate luminaire mounting height.

✳ Final location of the luminaires shall be approved by the Engineer.

♦ Where foundation is located in sidewalk, pavers or other hardscape, the top of foundation shall be flush with the top of the sidewalk conforming to ADA requirements.



*Light Standard Foundation in Hardscape



Light Standard Foundation in Parking Lot

Where light standard foundations occur in or around parking areas and are located less than 2 feet behind curb, or where unprotected by curbs, the foundation should be extended a minimum of 2 feet 6 inches vertically, in addition to foundation depth listed in the foundation schedule, to protect the light standard from damage and/or knock-down due to vehicle contact.

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 BZ and shall conform to Section 601 for concrete and Section 602 for reinforcing steel.
3. * Where light standard foundation occur in hardscape areas, where an exposed foundation could create a tripping hazard, the top of foundation shall be flush to the finished surface to meet A.D.A. requirements. Where exposed light standard foundation complies with A.D.A. requirements, foundation shall be installed 2 inches above hardscape with CDOT approval.
4. Bond (1) #4 stranded/insulated copper to ground rod in pull box / splice box and grounding lug in pole base hand hole.
5. Provide 4-terminal submersible underground rated lug connections to fit #12 AWG - #350 AWG copper wire.
6. All PVC conduit ends shall have end bells or male adaptor, threaded terminal ends with screw on bushing.
7. Foundation dimensions per foundation schedule below and as noted. Light standards higher than 50 feet or with banners, precast foundation, varying soil, or wind conditions shall be designed by a Structural Engineer licensed in the State of Colorado. For design wind speeds greater than v=155mph add an additional 1 foot to the foundation depth shown in the foundation schedule below.

Foundation Schedule

Pole Height	Foundation Depth	Foundation Diameter
< 20'	8'-0"	24"
20' - < 30'	9'-0"	24"
30' - 50'	12'-0"	24"
> 50'	P.S.E.	P.S.E.

P.S.E. (Per Structural Engineer)
Foundation design data:
Broms' method using AASHTO LFRD LTS 1st, 2015 with 2018 interims.

The design assumes following soil parameters:
Soil density = 110 lb/cf
Soil cohesion = 750 lb/sqft for medium stiff cohesive soil
Soil angle = 30° for medium dense cohesionless soil
Resistance factor = 0.4 for flexure.

Parking Lot and Decorative Lighting Standards

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Alternative Roadway Lighting

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Standard Plan No.
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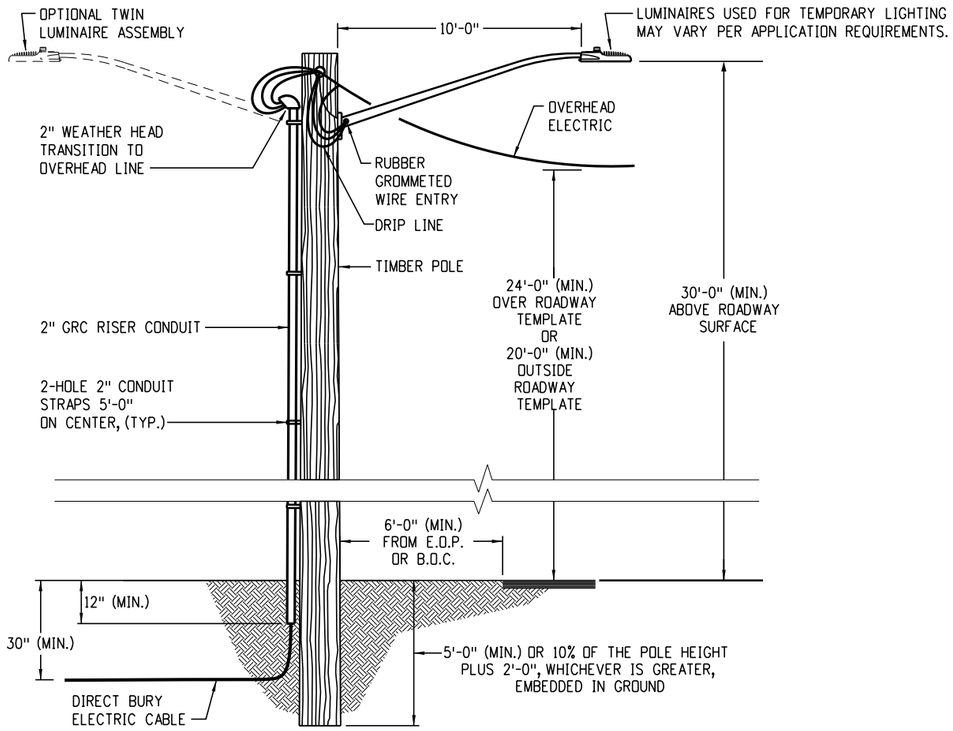
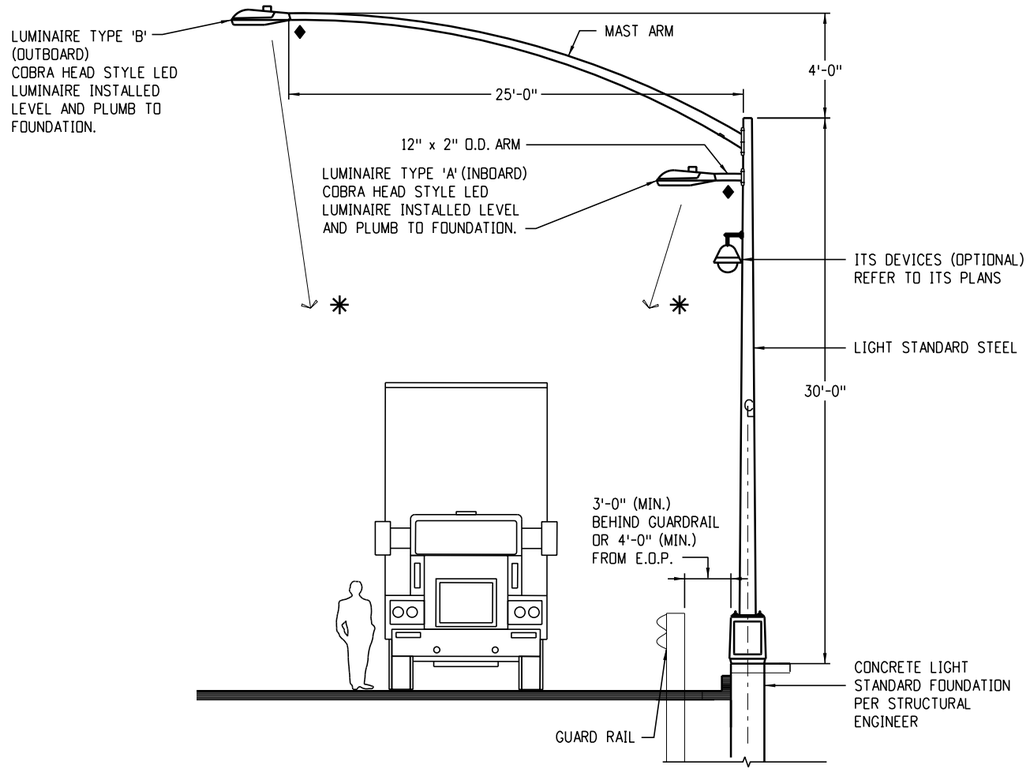
Project Sheet Number:





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 AASHTO Roadway Design Guide.
   Speed limit less then 40mph:
   - located 6 feet (minimum) from the front face of curb.
   - mounted on barrier.
   - located behind barrier or appropriate impact attenuator.

   Speed limits of 40mph 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.

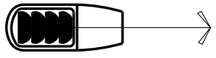
7. The power for temporary lighting shall be metered. All utility bills for temporary lighting shall be paid for by the contractor.

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.

Chain Station Lighting Notes

1. Light standard setback will vary per site conditions. Twin 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 feet behind edge of pavement when installed on a breakaway base and not installed behind guardrail.



✳ Luminaire optics oriented away from mainline

Type 'B' (Outboard)

✳ Luminaire optics oriented toward mainline

Type 'A' (Inboard)

◆ Provide luminaire with horizontal slip fitter for use with 2 inches outer diameter pipe tenon.

✳ Luminaire optics shall be aimed towards truck.

Light Standard Timber (Temporary)

Light Standard Metal (30 Feet) (2 Arm) (Spec)

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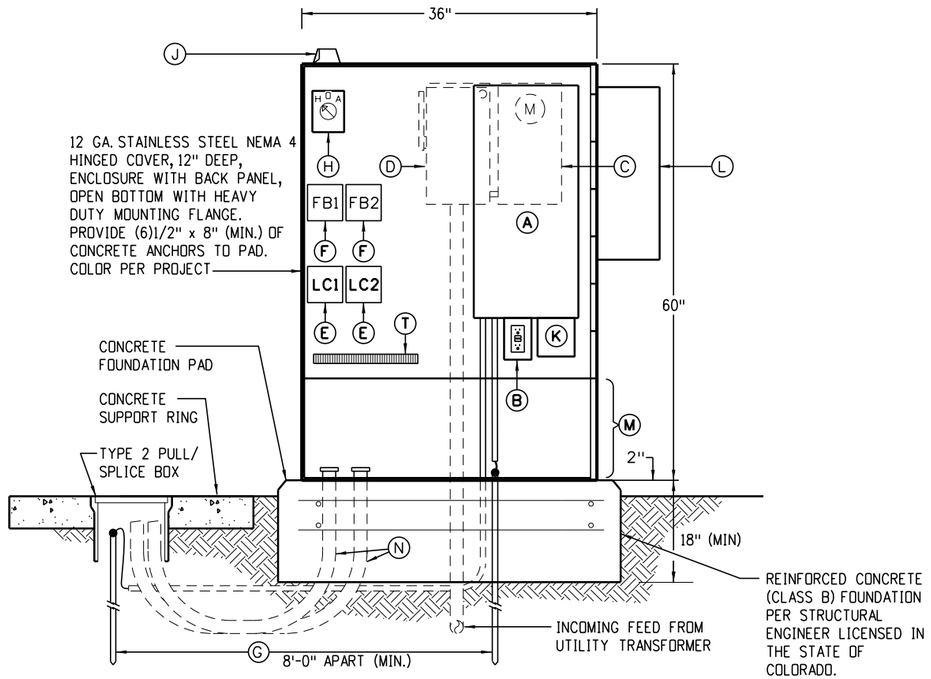

Component List

Ⓐ NEMA 1, service entrance rated, single phase load centers. (See panel schedule for quantity and size of main and branch breakers). Mounted inside NEMA 4 enclosure.

Ⓑ GFCI maintenance receptacle in a 1-gang back box with cover.

Ⓒ 200A, 1 ph., NEMA 3R, meter housing mounted on back side of NEMA 4 enclosure with lever bypass to utility company specifications. Paint to match NEMA 4 enclosure.

Ⓓ 100A (minimum amperage), 2 pole, 250V, heavy duty, NEMA 3R, fused meter disconnect, UL listed for service equipment and FRN-R fuses as shown on one-line diagram with neutral & ground bars. Mounted on back side of NEMA 4 enclosure. Paint to match NEMA 4 enclosure. May be omitted by utility company specifications hot sequence requirements.

✱ Ⓔ 4 pole, 30A, 250V electrically held lighting contactors with 120V coils. Two (2) required.

✱ Ⓕ 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.

Ⓖ 3/4 inch x 10 feet long, copper-clad driven ground rod with ground conductor exothermic weld or underground rated lug connect ground conductor to ground rod.

✱ Ⓗ 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.

✱ Ⓙ 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 or window facing north or down to minimize the sun's interference.

Ⓚ Surge protection device-10kA, 120/240VAC single phase, 3W+G 200kAIC, protection modes L-G, N-G, L-N or L-L. Standard options (red & green LED's, audible alarm with enable/disable feature) LEA #B70-00-7000 international or approved equal.

Ⓛ Optional cabinet HVAC per Engineering request. Paint to match NEMA 4 enclosure.

Ⓜ Optional 18 inch high skirt per Engineer request.

Ⓝ Branch raceways - provide branch circuit raceway to all lighting fed from this LCC. See plan and feeder schedule for size and quantity.

Ⓣ Terminal strip - 600V rated, lugs to accept #1 - 10 AWG 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

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Alternative Roadway Lighting

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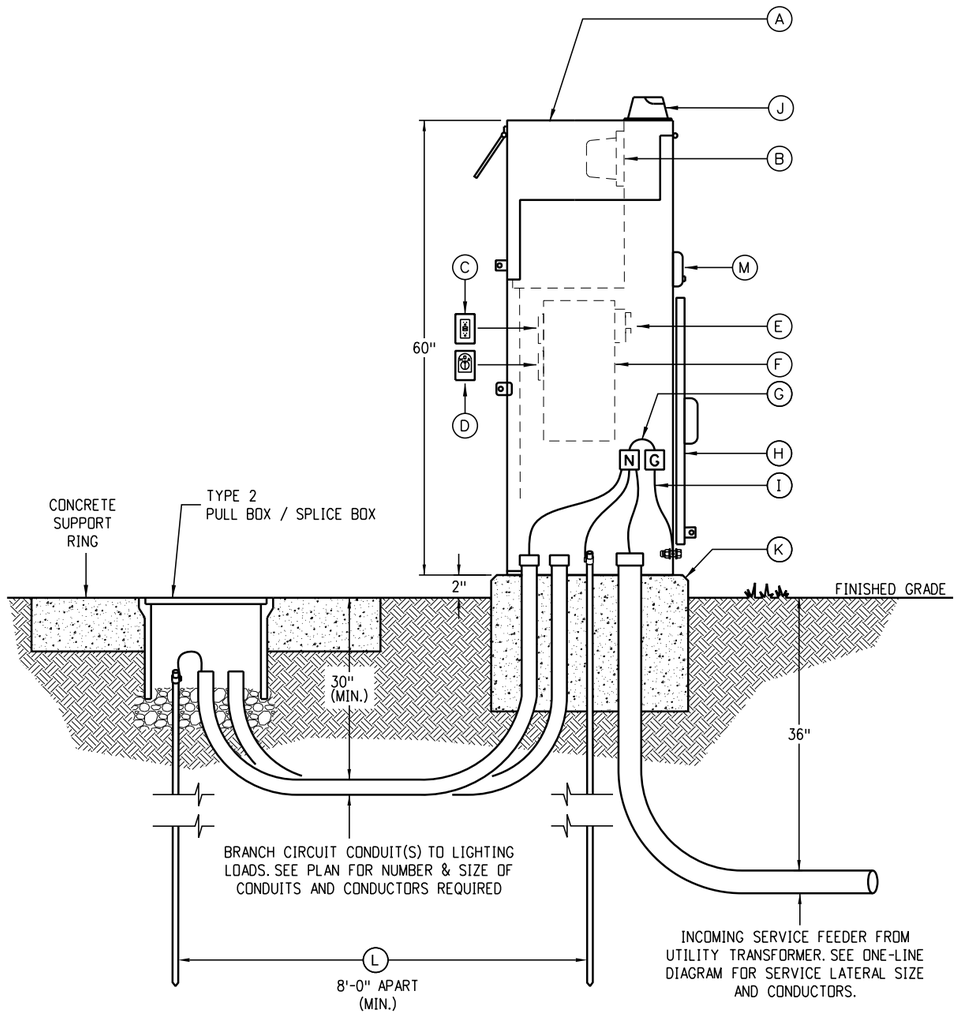

Cabinet Component List

(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 pedestal 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) Lift off service cover with pad lock hasp.

(I) Cabinet ground bond #6 bare copper conductor.

(J) 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 or window facing north or down to minimize the sun's interference.

(K) 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.

(L) 3/4 inch x 10 feet long, copper clad driven ground rod. exothermic weld or underground rated lug connect conductor to ground rod. (2) required - 8 feet apart (minimum).

(M) 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:

200A MCB, 120/240V-1ph-3W service entrance rated stainless steel, NEMA 3R, meter/power pedestal 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.
   Circuit directory to document confirguration in pocket on hinged door.
   Maintenance receptacle flush mounted in dead front inside enclosure.

2. Control circuit including:
   (only applies to pedestrian 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 contactor controlling one load center in this section.
   One 12-circuit load center photocell on/off controlled.
   A circuit directory to document configuration in pocket on hinged door.

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.

Lighting Control Center (Special)

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