LUMINAIRE AND LIGHT STANDARD NOTES:

1. Luminaires with light sources rated more than 1200 lumens shall have no splash (10' rating) per IES TM-15-11 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 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 DR DALI Dimming driver.

4. Light standards shall not be placed in ditches or other low areas unless an alternative location is not possible.

5. Base fill shall be compacted in accordance with Section 203.

6. Pole caps and base plate 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 region's 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.

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

10. Final location of the luminaires shall be approved by the engineer.

11. Where foundation is located in sidewalk, pavers or other hardscapes, the top of foundation shall be flush with the top of the sidewalk conforming to ADA requirements.
1. ALL BREAKAWAY TRANSFORMER BASES SHALL CONFORM TO AASHTO "LRFD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS".

2. ANCHOR BOLT SPACING, HARDWARE AND TORQUE CONFORMING TO MANUFACTURER RECOMMENDATIONS.

3. BREAKAWAY BASES OF ANY TYPE ARE FOR USE INSIDE CLEAR ZONES. BREAKAWAY BASES SHOULD NOT BE USED WHEN THE LIGHT STANDARD IS LOCATED AT AT LEAST ONE AND A HALF TIMES (1.5X) MOUNTING HEIGHT AWAY FROM PEDESTRIAN OCCUPIED AREAS. REFER TO CURRENT UTILITY ACCOMMODATION CODE SECTION 3.3.3 FOR CLEAR ZONE REQUIREMENTS.

4. BREAKAWAY TRANSFORMER BASES MAY BE OMITTED AND THE POLES MOUNTED DIRECTLY ON THE LIGHT STANDARD FOUNDATION AS APPROVED BY THE ENGINEER OR AS SHOWN ON THE PLAN. POLES WITHOUT BREAKAWAY TRANSFORMER BASES MUST HAVE HARD HOLE.

5. ALL CONDUCTORS SHALL BE SIZED IN CONFORMANCE WITH N.E.C REQUIREMENTS. #6 #12 STRANDED COPPER CONDUCTOR OR #2 ARS MINIMUM COLOR CODE BLACK, WHITE, GREEN.

6. LIGHT STANDARDS SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C. ARTICLE 250 “GROUNGING AND BONDING”.

**TYPICAL BREAKAWAY TYPE TRANSFORMER BASE DETAIL**

**TYPICAL NON-BREAKAWAY BASE DETAIL**
NOTES:


2. CONCRETE SHALL BE AN ARMS OPENING CLASS B AND SHALL CONFORM TO SECTION 605 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 WITH THE FINISHED SURFACE TO MEET AADA REQUIREMENTS. WHERE EXPOSED LIGHT STANDARD FOUNDATION COMPLIES WITH AADA REQUIREMENTS, FOUNDATION SHALL BE INSTALLED 2 INCHES ABOVE HARDSCAPE WITH COST APPROVAL.

4. BOND (1) #4 STRANDED/INSULATED COPPER CONNECTOR TO GROUND ROD IN SPLICE BOX / TYPICAL FOUNDATION SECTION

5. PROVIDE 4-TERMINAL SUBMERSIBLE UNDERGROUND RATED LUG CONNECTIONS TO FIT #2 ARMS — #300 COPPER MORE ELECTRICAL SPLICES MAY BE MADE WITHIN THE POLE BASE OR TRANSFORMER BASE AT EACH REGIONS DISCRETIONS UNDERGROUND RATED LUG CONNECTIONS ARE NOT REQUIRED WHEN SPLICES ARE MADE IN THE POLE.

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 STANDARD HEIGHTS GREATER THAN 50 FEET WITH BANNERS, PRECAST LIGHT STANDARDS, VARYING SOIL, AND WIND CONDITIONS SHALL BE DESIGNED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF COLORADO.
CONDUIT BURIAL NOTES

1. CONTRACTOR SHALL COORDINATE TRENCHING WITH OTHER UNDERGROUND UTILITIES, BUMP METERING AND IRRIGATION CONTRACTOR SHALL USE COMMON TRENCHES AT ALL ROAD CROSSINGS WHERE POSSIBLE.

2. ONE CONDUIT PER BUNDLE SHALL HAVE ONE #12 AWG LOCATE WIRE AND A NYLON DR POLYESTER PULL TAPE WITH 1,250 LBS TEST STRENGTH AND FASTEN MARKINGS IN ALL EMPTY CONDUITS. LOCATE WIRE SHAL NOT BE INSTALLED IN FIBER OPTIC CONDUITS.

3. ELECTRICAL CONDUIT (BORED) SHALL BE UL LISTED AND INSTALLED USING TRENCHLESS TECHNOLOGY OR EITHER JACKED CONDUIT OR DIRECTIONAL B tươiING IF TRENCHED CONDUIT IS SPECIFIED ON PLANS. BOROED CONDUIT OF EQUAL OR GREATER SIZE MAY BE SUBSTITUTED FOR TRENCHED CONDUIT IF PAID FOR UNDER THE ORIGINALLY DESIGNED TRENCHED CONDUIT PAY ITEM AND AT NO ADDITIONAL COST TO THE PROJECT. ELECTRICAL CONDUIT (BORED) SHALL CONFORM TO THE SAME MINIMUM DEPTH REQUIREMENTS.

4. INSTALLING CONDUIT IN ANY METHOD OTHER THAN TRENCHING OR DIRECTIONAL BUSHING, THAT MAY CAUSE DAMAGE TO THE EMBANKMENT OF HIGHWAY TRAFFIC WILL NOT BE PERMITTED.

5. FOR ALL TRENCHED CONDUIT, ELBOWS SHALL BE WIDE SWEEPS (36-INCHES MINIMUM) WITH PVC COATED GRP ON THE OUTSIDE AND THREADED COUPLINGS.

6. FOR ALL TRENCHED CONDUIT, ELBOWS SHALL BE WIDE SWEEPS (36-INCHES MINIMUM) WITH PVC COATED GRP ON THE OUTSIDE AND THREADED COUPLINGS.

TYPICAL CONDUIT BURIAL - SECTION

ALL PVC CONDUIT ENDS IN PULL BOXES SHALL HAVE END BELLS OR MALE ADAPTOR, THREADED TERMINAL ENDS WITH SCREW ON CONCRETE (CLASS B) SUPPORT RING (NOT REQUIRED WHEN EMBEDDED IN CONCRETE SIDEWALK OR OTHER SUITABLE HARDSCAPE SURFACE.

CONCRETE CLASS 10 SUPPORT RING NOT REQUIRED WHEN EMBEDDED IN CONCRETE SIDEWALK OR OTHER SUITABLE HARDSCAPE SURFACE.

POLYMER CONCRETE BOX COVER, INCIDENTAL TRAFFIC (MIN.) 2" PVC CONDUIT TO DEVICE TD DEVICE CONCRETE RING CONNECTION.

SCHEDULE 80 PVC CONDUIT 3/4" X 24" (MIN.) AWAY FROM CONCRETE BASE. EXOTHERMIC WELD TD UNDERGROUND RATED LUG CONNECT CONDUCTOR TO ROD. SMALLER THAT #2 AWG AND BURIED IN DIRECT CONTACT WITH THE EARTH AT A DEPTH OF NOT LESS THAT 2"-6" MAY BE SUBSTITUTED FOR GROUND ROD. REFER TO N.E.C. 250-52 (4) AND 250.53 (F)

BURIED SPLICE BOX WITH EMS MARKER BALL

BURIED SPLICE BOX NOTES

1. ALL PULL BOXES SHALL BE INCIDENTAL TRAFFIC RATED 22,500 PSI LOAD TEST (MINIMUM) WITH HEAVY DUTY TIER 22 RATED COVERS.

2. ALL PULL BOXES SHALL BE TYPE 2-13 INCHES X 24 INCHES X 12 INCHES DEEP (MINIMUM) UNLESS NOTED OTHERWISE ON PLANS REFER TO N.E.C. SECTION 314.8(A) FOR BOX SIZE REQUIREMENTS. REFER TO COST STANDARD PLAN NO. 5-613-3 FOR TYPICAL PULL BOX SIZES.

3. ALL PULL BOXES SHALL BE BURIED 6 INCHES BELOW FINISHED GRADE AND COVERED WITH EMBANKMENT AND TOPSOIL. BURIED PULL BOXES SHALL NOT BE COVERED WITH CONCRETE, ASPHALT, ROCK OR ANY OTHER HARDSCAPING. CONCRETE SUPPORT RING IS NOT REQUIRED FOR THESE SPECIAL BURIED ANTI-THEFT PULL BOXES.

4. CONNECT COPPER GROUND WIRE TO HELICAL FOUNDATION.

5. BURIED SPLICE BOXES SHALL ONLY BE USED WHERE APPROVED BY CONTRACT ENGINEER.

6. THE WIRE TERMINATIONS IN PULL BOXES SHALL BE MADE USING URG, SUBMERSIBLE INSULATED PEDESTAL LUG CONNECTIONS. PROVIDE ONE MULTI-LUG CONNECTOR FOR EACH PHASE, NEUTRAL AND GROUND CONDUCTOR TO BE SPLICED IN THE IN-GRADE PULL BOX.

SPlice BOX NOTES

1. BOX COVERS MUST BE POLYMER CONCRETE WITH FIBERGLASS REINFORCEMENT, INCIDENTAL TRAFFIC RATED TO TIER 22 AND BOLTED WITH AN HS LOAD RATING OF 22,500 PSI (MINIMUM)

2. BOX COVERS SHALL BE LABELED AS FOLLOWS:
   a. "ELECTRIC" OR "STREET LIGHTING" ON ALL PULL BOXES CONTAINING CDOT OWNED ELECTRICAL SERVICE.
   b. "UTILITY ELECTRIC" ON ALL PULL BOXES CONTAINING UTILITY OWNED ELECTRICAL SERVICE.

3. INSTALLING CONDUIT IN ANY METHOD OTHER THAN TRENCHING OR DIRECTIONAL BUSHING, THAT MAY CAUSE DAMAGE TO THE EMBANKMENT OF HIGHWAY TRAFFIC WILL NOT BE PERMITTED.

4. REFER TO N.E.C. ARTICLE 314 FOR BOX SIZE REQUIREMENTS. REFER TO COST SPECIFICATION 613 FOR CAST-IN-PLACE CONCRETE SPECIFICATION.

5. THE WIRE TERMINATIONS IN PULL BOXES SHALL BE MADE USING URG, SUBMERSIBLE INSULATED PEDESTAL LUG CONNECTIONS PROVIDE ONE MULTI-LUG CONNECTOR FOR EACH PHASE, NEUTRAL AND GROUND CONDUCTOR TO BE SPLICED IN THE IN-GRADE PULL BOX.
**LIGHTING CONTROL CENTER PLACEMENT**

**DETAIL NOTES**

1. Observe 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.

2. PROVIDE (6) 1/2" x 8" (MIN.) OF 3" (MIN.) (MAX.) CONCRETE ANCHORS TD PAD.

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**SERVICE MAIN CIRCUIT BREAKER**

- Flush to grade schedule, 60 PVC ground well.
- Ground conductor exothermic weld.
- Ground conductor to ground rod.
- PROVIDE SERVICE MB SIZE AS INDICATED ON ONE-LINE DIAGRAM.

**COMPONENT LIST**

- **Main Circuit Breaker**: 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.

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

- **Branch Raceways**: PROVIDE BRANCH CIRCUIT RACEWAY TD ALL LIGHTING FED FROM THIS LCC. SEE PLAN AND FEEDER SCHEDULE FOR SIZE AND QUANTITY.

- **Terminal Strip**: 600V RATED, LUGS TD ACCEPT #1-10 AWG COPPER WITH ALL MARKING STRIP, END CAPS AND MOUNTING HARDWARE. PROVIDE THE NUMBER OF TERMINAL POINTS AS REQUIRED.

**RECOMMENDED CABINET TYPE LIGHTING CONTROL CENTER DETAIL**

- **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.

- **Lighting Control Center Cabinet**: 1 INCH CHAMFER ON ALL EXPOSED EDGES. EDGE OF CONCRETE TO EXTEND 3 INCHES (MINIMUM) TO 6 INCHES (MAXIMUM) BEYOND EDGE OF CABINET.

- **Lighting Control Center Cabinet**: REFER TO LIGHTING CONTROL CENTER DETAIL FOR MORE INFORMATION.

- **Lighting Control Center Cabinet**: 1 INCH CHAMFER ON ALL EXPOSED EDGES. EDGE OF CONCRETE TO EXTEND 3 INCHES (MINIMUM) TO 6 INCHES (MAXIMUM) BEYOND EDGE OF CABINET.

- **Lighting Control Center Cabinet**: 1 INCH CHAMFER ON ALL EXPOSED EDGES. EDGE OF CONCRETE TO EXTEND 3 INCHES (MINIMUM) TO 6 INCHES (MAXIMUM) BEYOND EDGE OF CABINET.

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LIGHTING CONTROL CENTER (PEDESTAL ONLY) DETAIL

COMPONENT LIST

1. Stainless steel, 200A, 120/240V, NEMA 3R combination, service entrance rated, cold sequence, meter/power pedestal, with lever bypass, load center, WSC and fused tee-handle pull out disconnect ahead of meter to local utility specifications. See panel schedule for size of main and number and size of branch breakers required. Set enclosure on concrete pad plum and level.

2. T-handle, pull-out fuse type meter, disconnect flush mounted into the back side of the enclosure for meter protection per utility specification cold sequence meter with weatherproof cover and tab for seal. This item may be omitted by utility company specifications not sequence requirements.

3. Service entrance panel, breaker section, for customer loads. See panel schedules for size of breakers and number of poles required.

4. Optional built-in SFE NEMA 5-20R, Duplex, GFCI maintenance receptacle flush mounted in panel dead-front.

5. Provide recessed concrete pad mounting plate with L-bolts to match the enclosure base bolt pattern.

6. Option A: Polymer concrete pedestal foundation with fiberglass reinforcement. The pad shall be continuous cloth reinforcement on the inside and outside perimeter weight of the foundation shall be stenciled on the stickwall of the foundation.

7. Option B: Provide 4500 PSI, re-bar reinforced concrete with a direct earth bury depth of 18 inches minimum, 2 inches overlap of the enclosure on all sides front and back, and 2 inches exposure above grade. Provide 3/4 inch chamfered edges. Provide structural engineering stamped drawing for pad.

8. Optional Photocell - NEMA 3R 120V Photocell - Controlled by Optional Photocell Item 4 above when more than one circuit is to be controlled by the photocell.

9. Optional two (2) 3/4 inch x 10 feet long, copper clad driven ground rods. Exothermic weld or underground lug connect conductor to RCD. Two (2) ground rods required. Ground rod to be located in Schedule 80 PVC ground well access with bolt down cover and "ground" cast into lid.

10. Optional lighting contactor - Controlled by optional Photocell Item 4 above when more than one circuit is to be controlled by the photocell.

11. Optional hand-off-auto switch when items 9, 10, and 12 above are used. Provide this HSA switch with the photocell control, wired in the auto position.

Note: All components listed shall be included in the lighting control center. Center pay item. All electrical components shall be UL listed per the appropriate UL requirements, including but not limited to 508A industrial control center.