

DRAFT LIGHTING SPECIFICATIONS

REV. DATE: 10-30-17

LIGHTING GENERAL NOTES ARE SUPPLEMENTAL TO ITEMS 603, 625, AND 725 OF THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT) CONSTRUCTION AND MATERIAL SPECIFICATIONS, (CMS) DATED JANUARY 1, 2016, WHICH SHALL GOVERN ALL WORK OF THIS PROJECT, EXCEPT AS HEREINAFTER MODIFIED.

REFERENCE SHALL BE MADE TO STANDARD CONSTRUCTION DRAWINGS LISTED ON THE TITLE SHEET OF THE PLANS

MATERIAL INFORMATION SUBMITTAL AND TESTING CERTIFICATION

THE CONTRACTOR SHALL SUBMIT, FOR COUNTY APPROVAL; DIAGRAMS, BROCHURES OR OTHER DESCRIPTIVE MATERIAL FOR THE ITEMS THE CONTRACTOR INTENDS TO FURNISH THAT HAVE NOT BEEN SPECIFICALLY NAMED BY PRODUCT NUMBER. WHEN REQUESTED, THE MANUFACTURER SHALL PROVIDE A CERTIFIED LETTER STATING THAT THE CONTROLLER, MALFUNCTION MANAGEMENT UNIT (MMU), LOAD SWITCH UNITS AND AC LINE FILTERS HAVE BEEN SUCCESSFULLY TESTED IN EXACT ACCORDANCE WITH THE NEMA ENVIRONMENTAL STANDARDS AND TEST PROCEDURES. SUCH TESTING SHALL HAVE OCCURRED NO MORE THAN SIX-MONTHS PRIOR TO THE DATE OF THIS CONTRACT. THIS SIX-MONTH REQUIREMENT MAY BE WAIVED BY THE DELAWARE COUNTY TRAFFIC ENGINEER IF THE MANUFACTURER CAN SATISFACTORILY DEMONSTRATE TO THE TRAFFIC ENGINEER THAT THE SUPPLIED EQUIPMENT IS IDENTICAL TO THE EQUIPMENT THAT WAS PREVIOUSLY TESTED AND THAT THE MANUFACTURER REQUEST THIS TESTING REQUIREMENT BE WAIVED. ANY REDESIGN OR CHANGES OF ANY TYPE INCLUDING ANY COMPONENT CHANGES WHICH WOULD MAKE THE BID CONTROL EQUIPMENT NOT IDENTICAL TO TESTED CONTROL EQUIPMENT WILL REQUIRE THE ABOVE EQUIPMENT TO BE RE-CERTIFIED.

TESTING

THE CONTRACTOR SHALL SUBMIT CERTIFIED DOCUMENTATION, IN ACCORDANCE WITH 625.19, FOR THE FOLLOWING TESTS:

1. EQUIPMENT CALIBRATION TEST
2. GROUNDING ELECTRODES AND GROUNDING SYSTEMS TEST
3. CIRCUIT CONTINUITY TEST
4. CABLE INSULATION TEST
5. LOWERING DEVICE OPERATION TEST
6. SYSTEM PERFORMANCE TEST

AS AN ALTERNATIVE, THE CONTRACTOR MAY REQUEST THAT A PERSON FROM THE COUNTY'S TRAFFIC DEPARTMENT BE PRESENT. TO MAKE ARRANGEMENTS, CALL (740) 833-2429. **ANY TEST CONDUCTED AND NOT CERTIFIED (OR IF THE TEST IS CONDUCTED WITHOUT THE COUNTY'S TRAFFIC REPRESENTATIVE) SHALL BE RE-DONE.**

ITEM 625 LIGHT POLE FOUNDATION, AS PER PLAN

THE POLE BASE FOUNDATION SIDES SHALL BE ORIENTATED PARALLEL TO THE SIDEWALK OR BACK-OF-CURB OR EDGE-OF-PAVEMENT AS SHOWN ON THE

LIGHTING PLAN. THE TOP OF THE FOUNDATION SHALL BE FLUSH WITH ANY ADJACENT SIDEWALK OR CONCRETE AREA EXCEPT WHERE THE GROUND RISES STEEPLY BEHIND THE SIDEWALK OR CONCRETE AREA. THEN THE BACK SIDE OF THE FOUNDATION SHALL MATCH THE GROUND SLOPE AND THE STREET SIDE OF THE FOUNDATION SHALL BE ABOVE THE SIDEWALK OR CONCRETE AREA AND COMPLETELY OUT OF THE SIDEWALK OR CONCRETE AREA. ALL ANCHOR BOLTS INSTALLED IN THE FOUNDATION SHALL BE ASTM F-1554 GRADE 105 (GRADE 55 PER 725.21 ~~726.04~~) WITH ROLLED THREAD. THE CONDUIT ELLS ARE INCIDENTAL TO THIS ITEM.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS ITEM 625, "LIGHT POLE FOUNDATION, AS PER PLAN" WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625, POWER SERVICE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF THE SPECIFICATIONS, THE FOLLOWING IS ADDED:

THE POWER SUPPLYING AGENCY FOR THIS PROJECT IS:

POWER COMPANY – (POWER COMPANY)

ADDRESS – (STREET)

(CITY)

(PHONE)

CONTACT NAME – (NAME)

THE CONTRACTOR WILL BE RESPONSIBLE FOR REQUESTING AND SCHEDULING ANY INSPECTIONS THE POWER COMPANY MAY REQUIRE FOR THE POWER SERVICE HOOK-UP. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT THE POWER COMPANY FOR THE ELECTRICAL SERVICE CONNECTION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR SPLICE POWER CABLE INTO THE POWER COMPANY'S CIRCUITS. THE VOLTAGE SUPPLIED SHALL BE 120 VOLTS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS AND THE PAYING OF ALL FEES WITH THE EXCEPTION OF NORMAL MONTHLY ENERGY CHARGES.

WHERE THERE IS AN EXISTING LIGHTING CONTROL CENTER THAT IS BEING REPLACED, THE CONTRACTOR SHALL COORDINATE WITH THE POWER COMPANY TO CONTINUE BILLING ON THE EXISTING DELAWARE COUNTY ACCOUNT. WHERE A NEW LIGHTING CONTROL CENTER IS BEING INSTALLED, THE CONTRACTOR SHALL ESTABLISH THE ACCOUNT IN THE COUNTY'S NAME FROM THE ONSET.

THE LIGHTING CONTROL CENTER SHALL BE PER DCEO STANDARD LIGHTING CONTROL CENTER DETAIL. CONTRACTOR SHALL OBTAIN AN APROPRIATE METER SOCKET FROM AEP AND MOUNT SAME ON THE SIDE OF THE LIGHTING CONTROL CENTER IN A MANNER ACCEPTABLE TO AEP. REFER TO AEP DRAWING DS2007-B, DS2007-C AND FIGURE 6.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS ITEM 625, "POWER SERVICE, AS PER PLAN" WHICH SHALL BE FULL COMPENSATION FOR

ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

PADLOCKS AND KEYS

FURNISHED SHALL BE EITHER BRASS OR BRONZE, EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNAN 660A, AND SHALL BE KEYED IN ACCORDANCE WITH CMS 631.06. PAYMENT SHALL BE INCLUDED IN THE BID FOR THE ITEM(S) BEING LOCKED.

ITEM 625, LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), ~~59~~ 407 WATTS, 120 VOLTS, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT'S CONSTRUCTION AND MATERIAL SPECIFICATIONS, LUMINAIRES FOR CONVENTIONAL LIGHTING UNITS SHALL BE AS FOLLOWS

THIS ITEM CONSISTS OF INSTALLING A LUMINAIRE ON A LIGHT AT THE POSITION INDICATED ON THE PLANS. FURNISH NEW MATERIALS AND EQUIPMENT OF FINEST QUALITY, OF CURRENT DESIGN, AND FREE FROM DEFECTS. ENSURE THE LUMINAIRE IS LEVEL AND ALIGNED VERTICALLY AND HORIZONTALLY TO THE ROADWAY AS SPECIFIED. THE LUMINAIRE SUPPLIED SHALL BE NAVION MODEL ~~NVN-AE-02-D-U-T3-10K-4N7-LCF-BK~~ NVN-AF-01-D-U-T3-10K-4N7-LCF-BK. THE LIGHTING SYSTEM SHALL HAVE PHOTOCELL MODEL OA-RA1014. THE PHOTOCELL SHALL BE MOUNTED ON THE LUMINAIRE CLOSEST TO THE LIGHTING CONTROL CENTER

LUMINAIRES SHALL BE POWDER-COAT PAINTED **BLACK** BY THE MANUFACTURER USING SIMILAR AND EQUAL METHODS AND TO THE SAME STANDARDS AS SPECIFIED IN CMS ITEM 625 "LIGHT POLE, MISC.:30' ROUND TAPERED ALUMINUM WITH 8' DAVIT ARM OR WITH CMS ITEM 625 "LIGHT POLE, MISC.:30' ROUND TAPERED ALUMINUM WITH 10' DAVIT ARM.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS ITEM 625, "LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), ~~59~~ 407 WATTS, 120 VOLTS, AS PER PLAN" FOR EACH LUMINAIRE WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 LIGHT POLE, MISC.: ~~23'6"~~ 30' ROUND TAPERED ALUMINUM WITH 8' DAVIT ARM, AS PER PLAN OR ITEM 625 LIGHT POLE, MISC.: ~~23'6"~~ 30' ROUND TAPERED ALUMINUM WITH 10' DAVIT ARM, AS PER PLAN
LIGHT POLES SHALL BE PER THE DCEO STANDARD LIGHT POLE DETAIL.

LIGHT POLES SHALL BE FABRICATED FROM 6063 ALLOY EXTRUDED ALUMINUM TUBE WITH .250" WALL THICKNESS. BASE DIAMETER SHALL BE 8" WITH CIRCUMFERENTIALLY WELDED ANCHOR BASE OF CAST A356 ALUMINUM ALLOY. DAVIT ARM SHALL BE 6'-6" RISE, WITH EITHER 8' OR 10' RUN AS NOTED ON THE PLANS,

DAVIT ARMS SHALL BE FABRICATED FROM 6063 ALLOY EXTRUDED ALUMINUM, WITH 2" TENON ON THE LUMINAIRE END FOR A HORIZONTALLY MOUNTED, CONVENTIONAL-TYPE LUMINAIRE. THE DAVIT ARM SHALL SLIP-FIT ONTO A SPECIALLY FORMED TENON ON THE POLE AND BE SECURED IN PLACE WITH TWO STAINLESS STEEL BOLTS TO ACHIEVE A LUMINAIRE MOUNTING HEIGHT OF 30'.

ALUMINUM LIGHT POLES **AND DAVIT ARMS** SHALL BE FACTORY-PAINTED **BLACK** BY THE MANUFACTURER AND SHIPPED TO THE JOB SITE PROPERLY WRAPPED AND PROTECTED TO AVOID DAMAGE TO THE FINISH IN TRANSIT. POLES SHALL BE CLEANED WITH A SUITABLE WATER-BASED CLEANER OR SOLVENT AND THEN ELECTROSTATICALLY PAINTED WITH THE POLE MANUFACTURER'S STANDARD BLACK URETHANE/POLYESTER POWDER COAT PAINT TO A MINIMUM THICKNESS OF 2 MILS. AFTER SUITABLE CURING UNDER HEAT, THE POWDER COATING SHALL PASS THE FOLLOWING TESTS:

- PENCIL HARDNESS: H TO 2H
- IMPACT: 160-LB DIRECT IMPACT BY GARDNER MOD. 1G-1120
- PER ASTM D-2794 ADHESION: LEVEL 4 OR BETTER PER ASTM 3359-B
- ABRASION: LESS THAN 60 mg OF FINISH AFTER 1,000 CYCLES ON TABER ABRASER EQUIPPED WITH CS-10 WHEELS UNDER 1 kg LOAD
- HUMIDITY RESISTANCE: NO EFFECT ON FINISH AFTER 1,000 HOURS EXPOSURE TO 100% RELATIVE HUMIDITY AT 100° FAHRENHEIT
- WEATHERABILITY: MEET OR EXCEED ASTM 336

PAYMENT WILL BE MADE AT THE UNIT PRICE BID FOR EACH CMS ITEM 625 "LIGHT POLE, MISC.: **23'6"** ~~30'~~ ROUND TAPERED ALUMINUM POLE WITH 8' DAVIT ARM" AND EACH CMS ITEM 625 "LIGHT POLE, MISC.: **23'6"** ~~30'~~ ROUND TAPERED ALUMINUM POLE WITH 10' DAVIT ARM", WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THESE ITEMS IN A SATISFACTORY AND WORKMANLIKE MANNER.

(Designer Note: this is the same pole DCEO has also used. Height changed is for clarification)

ITEM 625 TRANSFORMER BASE, AT-A, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 725.21 AND HL-10.13, ALUMINUM TRANSFORMER BASES SHALL BE PER DCEO STANDARD T-BASE DETAIL. ALUMINUM TRANSFORMER BASES SHALL BE FACTORY-PAINTED TO MATCH THE SAME SPECIFICATIONS AS SPECIFIED IN "ITEM 625 LIGHT POLE, MISC: 30' ROUND TAPERED ALUMINUM POLE WITH 8' OR 10' DAVIT ARM".

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS ITEM 625 "TRANSFORMER BASE, TYPE AT-A, AS PER PLAN" FOR EACH TRANSFORMER BASE WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER. THE BOLT COVERS AND ALL BOLTS, WASHERS AND NUTS TO SECURE ITEM 625 LIGHT POLE, MISC: 30' ROUND TAPERED ALUMINUM POLE WITH 8' OR 10' DAVIT ARM SHALL BE INCIDENTAL TO THIS ITEM.

ITEM 625 PULL BOX, 725.06, (13"X24", 17"X30", 24"X36") AS PER PLAN

PULL BOXES SHALL BE POLYMER CONCRETE AND SHALL BE MANUFACTURED BY STRONGWELL (QUAZITE) OR APPROVED EQUAL. ALL PULL BOXES SHALL BE PG STYLE WITH HA COVER. COVERS SHALL BE STAMPED "LIGHTNING" "ELECTRIC" AND SHALL HAVE SKID RESISTANCE SURFACE. THE COVER SHALL BE SECURED TO THE BOX WITH TWO STAINLESS STEEL HEX-HEAD BOLTS, WASHERS, AND INSERTS. ALL PULL BOXES SHALL BE SET TO FINAL GRADE OR FLUSH WITH PAVEMENT OR SIDEWALK.

UNDERDRAINS FOR PULL BOXES REFERENCE IS MADE TO THE STANDARD DRAWINGS FOR DETAILS OF DRAINING PULL BOXES. UNDERDRAINS FOR PULL BOXES SHALL BE USED AS DIRECTED BY THE ENGINEER. AN ANIMAL GUARD SHALL BE INCLUDED AT THE OUTLET END OF THE DRAIN. PROVIDED AND PAID FOR WITH PULL BOXES PER HL-30.11 AND **625.11** 625.20.

ITEM 625 CONDUIT, CONCRETE ENCASED, 3", 725.04, AS PER PLAN

ENCASE ALL UNDERGROUND CONDUITS THAT CARRY 480 VOLTS IN CONCRETE. USE CLASS QC MISC OR QC 1 CONCRETE AND FURNISH A MINIMUM OF 3 INCHES OF CONCRETE ON ALL SIDES USING SPACERS.

AFTER INSTALLATION OF THE CONDUIT AND PRIOR TO INSTALLING THE CABLES, RUN A MANDREL WHOSE DIAMETER IS AT LEAST 90% OF THE INTERIOR DIAMETER OF THE CONDUIT THROUGH THE CONDUIT

PROVIDE 6" PROJECTION OF CONDUITS BEYOND CONCRETE ENCASUREMENT AND CAP EACH CONDUIT ON EACH END.

PROVIDE A STEEL 3/4" CONDUIT STAKE AT EACH END OF EACH DUCT BANK DRIVEN TO 6" BELOW GRADE FOR FUTURE LOCATION BY DIP COMPASS.

LEAVE EACH CONDUIT WITH PULL TAPE INSIDE, ACCESSIBLE ON EACH END.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS 625 "CONDUIT, CONCRETE ENCASED, 3", 725.04, AS PER PLAN" FOR EACH LINEAL FOOT OF CONDUIT INCLUDING ITS TRENCH AND BACKFILL, SUPPORTS, WARNING TAPE, CAPS, PULL TAPE, CONCRETE, MARKER STAKES, AND ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER

ITEM 625 SPECIAL, PLASTIC CAUTION TAPE

~~THE LOCATION OF UNDERGROUND CONDUIT AND BURIED ELECTRICAL CABLES SHALL BE MARKED BY THE USE OF A CONTINUOUS IDENTIFYING TAPE BURIED IN THE TRENCH ABOVE THE LINE. THE IDENTIFYING TAPE SHALL BE AN INERT MATERIAL, APPROXIMATELY 6" WIDE, COMPOSED OF POLYETHYLENE PLASTIC, HIGHLY RESISTANT TO ALKALIS, ACID OR OTHER CHEMICAL COMPONENTS LIKELY TO BE ENCOUNTERED IN SOILS.~~

~~THE TAPE SHALL BE BRIGHT RED WITH IDENTIFYING PRINTING "ELECTRIC" IN BLACK LETTERS, ON ONE SIDE ONLY. TAPES SHALL BE SUPPLIED IN CONTINUOUS ROLLS WITH THE IDENTIFYING LETTERING REPEATED CONTINUOUSLY THE FULL LENGTH OF THE TAPE. TAPE SHALL BE PROVIDED WITH A DETECTABLE ALUMINUM FOIL LAMINATE FOR LOCATING CONDUIT RUNS WITHOUT DIGGING.~~

~~IDENTIFYING TAPE SHALL BE BURIED IN THE ELECTRIC LINE TRENCH WITH ONE STRIP APPROXIMATELY 6" TO 10" BELOW THE FINAL FINISHED GRADE. THE TAPE SHALL BE PLACED IN THE TRENCH WITH THE PRINTED SIDE UP AND SHALL BE ESSENTIALLY PARALLEL WITH THE FINISHED SURFACE. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO ENSURE THAT THE TAPE IS NOT PULLED, DISTORTED, OR OTHERWISE MISPLACED IN COMPLETING THE TRENCH BACKFILL.~~

~~PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625, "SPECIAL PLASTIC CAUTION TAPE." FOR EACH FOOT OF PLASTIC CAUTION TAPE INSTALLED, WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED FOR COMPLETION OF THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.~~