

COUNTY OF	ITEM NO.	SHEET NO.
BOONE	6-158.00	T47

THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION, AND OTHER SPECIAL NOTES AND SPECIFICATIONS WILL APPLY ON THIS PROJECT. SEE SECTION 716 FOR MEASUREMENT AND OTHER DETAILS. SEE SECTION 602 FOR SPIRAL REINFORCEMENT SPLICING

THE CONTRACTOR SHALL MAKE AN INSPECTION OF THE PROJECT SITE PRIOR TO SUBMITTING A BID AND SHALL BE THOROUGHLY FAMILIARIZED WITH EXISTING CONDITIONS. SUBMISSIONS OF A BID WILL BE CONSIDERED AN AFFIRMATION OF THIS INSPECTION HAVING BEEN COMPLETED.

ROADWAY LIGHTING ESTIMATE OF QUANTITIES

TOTAL	UNITS	CODE	ITEM DESCRIPTION
62	EACH	4701	POLE 40' MTG HT
62	EACH	4722	BRACKET 8'
62	EACH	4740	POLE BASE
62	EACH	4750	TRANSFORMER BASE
1	EACH	4761	LIGHTING CONTROL EQUIPMENT
124	EACH	4780	FUSED CONNECTOR KIT
9200	LIN FT	4793	CONDUIT 1 1/4 INCH
2400	LIN FT	4795	CONDUIT 2 INCH
9800	LIN FT	4820	TRENCHING AND BACKFILLING
9300	LIN FT	4832	WIRE-NO. 12
31200	LIN FT	4833	WIRE-NO. 8
18	EACH	2039INS835	ELECTRICAL JUNCTION BOX TYPE A
2	EACH	20392NS835	ELECTRICAL JUNCTION BOX TYPE C
1200	LIN FT	21543EN	BORE AND JACK CONDUIT
5	EACH	24589ED	LED LUMINAIRE TYPE A (50 WATT)
49	EACH	24589ED	LED LUMINAIRE TYPE B (150 WATT)
8	EACH	24589ED	LED LUMINAIRE TYPE C (220 WATT)

MEASUREMENT NOTE THAT ARE CONTRARY TO SECTION 716:

SECTION: 716 ROADWAY LIGHTING SYSTEMS
SUBSECTION: 04.14 TRENCHING AND BACKFILLING.
REVISION: REPLACE THE SECOND SENTENCE WITH THE FOLLOWING:

THE DEPARTMENT WILL NOT MEASURE EXCAVATION, BACKFILLING, UNDERGROUND UTILITY WARNING TAPE (IF REQUIRED), THE RESTORATION OF DISTURBED AREAS TO ORIGINAL CONDITION, AND WILL CONSIDER THEM INCIDENTAL TO THIS ITEM OF WORK.

SUBSECTION: 04.20 BORE AN JACK CONDUIT
REVISION: REPLACE SENTENCE WITH THE FOLLOWING SENTENCE:

THE DEPARTMENT WILL MEASURE THE QUANTITY IN LINEAR FEET. THIS ITEM SHALL INCLUDE BORING A HOLE FOR INSTALLING CONDUIT UNDER EXISTING ROADWAY IN ACCORDANCE WITH THE CONSTRUCTION METHOD DESCRIBED IN SECTION 706.03.02, PARAGRAPHS 1, 2, AND 4.

FILE NAME: P:\2925\LIGHTING\T04700SU.DGN

USER: GKreutz1018
DATE PLOTTED: September 16, 2016

E-SHEET NAME: T04700SU

MicroStation v8.11.7.443

5-2-2013

DESIGNED BY: CRW Engineers	
DATE SUBMITTED: 09/09/2016	
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS COUNTY OF BOONE	
PROJECT KY 536 - MT. ZION RD. NUMBERS: STP 5225 (005) FD 52 008 0536 010-014	
ROADWAY LIGHTING ESTIMATES OF QUANTITIES	

COUNTY OF	ITEM NO.	SHEET NO.
BOONE	6-158.00	T48

LED Luminaire Specifications

The following are the required Specifications for the LED Fixture:

- The Luminaire shall be listed by a National Recognized Testing Laboratory (NRTL) as defined by the U.S. Department of Labor. The testing laboratory must be listed by OSHA in its scope of recognition for the applicable tests being conducted as required by this specification. A list of recognized testing labs for products sold in the United States may be found on the U.S. Department of Labor's web site: <http://www.osha.gov/>
- The Luminaire shall be listed and labeled by a NRTL or CSA as being in compliance with UL 1598 and suitable for use in wet locations.
- Key components including LED drivers, LED light sources, and surge protection devices shall be RoHS compliant.
- Shall have an International Electrotechnical Commission (IEC) 529 Ingress Protection (IP) rating of IP 65 or greater.
- Shall be in compliance with Electro Magnetic Interference (EMI) requirements as defined by FCC 47 Sub Part 15; CISPR15, CISPR22 Class A (120Vmin), EN61000-3-2, -3-3, -4-4, -4-5.
- Shall be tested according to the most current version of Illuminating Engineering Society of North America (IESNA) LM-79.
- Shall have lumen maintenance measured in accordance the most current version of Illuminating Engineering Society of North America (IESNA) LM-80.
- Shall have long term lumen maintenance documented according to the most current version of Illuminating Engineering Society of North America (IESNA) TM-21.
- The fixture shall have a diecast aluminum housing.
- The luminaire finish shall be corrosion resistant with a polyester powdercoat of 2.5 mil nominal thickness. Finish shall pass per ASTM D1654 after 3000 hours of testing per ASTM B117.
- All hardware on the exterior of the housing including cover and latch shall be stainless steel, zinc or steel with zinc alloy electroplate and chromate top coat.
- The luminaire shall be easy to open when properly mounted and shall have readily accessible internal parts. Access to all internal parts requiring replacement shall not require tools (i.e. "tool-less entry").
- The luminaire shall have a vibration rating of 3G per the American National Standard (ANSI) IEEE C136.31, Table 2 Roadway Lighting Equipment -Luminaire Vibration for both normal applications and bridge and overpass applications.
- The luminaire shall be designed to allow water shedding.
- The luminaire shall have a passive cooling method shall be employed to manage thermal output of LED light engine and power supply.
- The luminaire shall have a label per ANSI C136.22 that states operating voltage and current range. The label must be clearly visible on the inside of the housing.
- The luminaire shall fully operate in a temperature range of -40 degrees C up to 40 degrees C (-40 degrees F to 104 degrees F).
- In retrofit applications, the LED luminaire shall not be more wattage than the original HPS fixture if you are replacing one for one. For the optimized proposal, we will allow the wattage to be greater than the original proposed luminaire.
- The luminaire shall have an integral power supply (electronic driver). The power supply shall not have a manual, field-adjustable setting for current output.
- The luminaire shall have a power supply (electronic driver) that will operate on a 480 volt single phase at 60 hertz.
- The luminaire shall have a power supply (electronic driver) that has a power factor of .90 or greater at full load.
- The luminaire shall have a power supply (electronic driver) that has total harmonic distortion of 20% or less at full load.
- The luminaire shall have power supply (electronic driver) output ripple of less than 10%.
- The luminaire shall have power supply (electronic driver) with a rated life of 100,000 hours with a luminaire operated at an ambient temperature of 25°C (77°F).
- The luminaire shall have an isolated power supply (electronic driver) output.
- The luminaire shall have a power supply (electronic driver) that has thermal overload protection.
- The luminaire shall have a power supply (electronic driver) that is self-limited short circuit protected and over load protected.
- The luminaire shall not use any active thermal cutback, such as in order to achieve a higher thermal performance.
- The luminaire shall have a power supply (electronic driver) that is terminated with quick disconnect wire harnesses for easy maintenance. Wire nut termination is not acceptable.
- The luminaire shall have a terminal block for terminating wiring to the luminaire. The terminal block shall be a 3 station, tunnel lug terminal board that will accommodate #6 thru #18 AWG pole wire.
- Fixture shall have a surge protection that meets 10KV/5KA per ANSI/IEEE C62.41.
- The luminaire shall have life rating on all electrical components of 100,000 hours or greater when operated at full lumen output at 25 degrees C.
- All LED components shall be L70 rated when operated in a luminaire at 25 degrees C (77 degrees F) at 100,000 hours.
- Electrical components shall be protected per ANSI/IEEE standard C62.41, for Class C applications.
- The LED shall fully operate in a temperature range -40 degrees C to 40 degrees C (-40 degrees F to 104 degrees F).
- The LED shall lose no more than a 15% optical intensity of initial delivered lumens due to thermal loading when operated at 25°C (77°F).
- The LED shall deliver an average 80% of initial delivered lumens after 70,000 hours of operation when operated at 25°C (77°F).
- The LED shall have a rated life of 100,000 hours when operated at 25 °C (77°F).
- The LED shall have a minimum Luminaire efficacy of 80 lumens/watt.
- The Correlated Color Temperature (CCT) shall be 4000K with a variance of 250K, white, that conforms to LM-79. The Correlated Color Temperature (CCT) shall be 5000K with a variance of 250K, white, that conforms to LM-79 (HIGH MAST ONLY).
- The minimum color rendering index (CRI) shall not be less than 70.
- The optics shall have a completely sealed optical system.
- The optical system shall have a (IEC) (IP) rating of 66 or greater.

- The optics shall have an Illuminating Engineering Society of North America (IESNA) Backlight, Uplight and Glare (BUG) rating as follows:
 - Backlight rating shall not exceed 3; (highest fixture backlight rating shall not exceed 5)
 - Uplight rating shall not exceed 0;
 - Glare rating shall not exceed 3/4
- The Light Loss Factor (LLF) shall be calculated for each fixture as follows:
 $LLF = LLD \times LDD$
Lamp Lumen Depreciation Factor (LLD) shall be the specified percentage of LED lumen maintenance at 70,000 hours at 25°C (77°F) from the TM-21 report. This LLD should be according to LM -80 and TM -21 reports. This report shall be submitted for verification.
Luminaire Dirt Depreciation (LDD) = .9
- The TM-21 Report must show the drive current used for the submitted luminaire. The report can show a larger drive current to represent a worst case scenario.
- The Lumen Maintenance Life L_{70} from the TM-21 Report must not be below 80% at 70,000 hours at 25°C (77°F).
- The manufacturer shall provide certified test laboratories IES photometrics which verify light levels. Product submittal shall be accompanied by IES TM-21 compliant test reports from a CALIPER qualified or NVLAP accredited testing laboratory for the specific model being submitted.
- WARRANTY: The Manufacturer shall ensure that the LED luminaires have a minimum standard warranty of 10 years for all parts, materials, paint finish, and shipping (both ways) required to repair or replace the luminaire. The warranty shall begin upon the date the luminaire is received. The warranty shall be transferable.
The warranty shall cover all failures including:
 - Failure in luminaire LED, housing, wiring, connections, and drivers.
 - More than 10 percent decrease in lumen output.
 - Significant change in light output color.Technical Support: During the warranty period, technical support shall be available from the manufacturer via telephone within 24 hours of the time the call is made from KYTC, and this support shall be made available from factory certified personnel or factory certified installers at no additional charge to the Department.
- MINIMUM REQUIRED SUBMITTALS:
Luminaire specification sheet.
LED driver specification sheet.
LM-79 Luminaire photometric report.
The vendor must submit LM-79 in-situ test data to confirm thermal operating temperatures of the luminaire.
LM-80 Lumen maintenance report.
TM-21 calculations as defined.
Backlight, Uplight, Glare (BUG) rating of the luminaire.
Written product warranty.
Certified test lab IES photometric reports.
Including IES electronic file.
Including intensity and chromaticity data.
Instructions for installation and maintenance.
- The luminaire shall be equipped with a shorting cap and a 7-pin photocontrol receptacle that meets ANSI 2013 standard C136.41

DESIGN CRITERIA FOR LED LUMINAIRES IN INTERCHANGES AND ROUNDABOUTS

ROUNDABOUT (LEFT) -
ILLUMINANCE:
AVERAGE (HORIZONTAL): NOT LESS THAN 1.50 FOOTCANDLES AND NOT MORE THAN 1.60 FOOTCANDLES
CROSSWALK AVERAGE (VERTICAL) @ MINOR ARTERIAL: 0.80 - 1.10 FOOTCANDLES
CROSSWALK AVERAGE (VERTICAL) @ COLLECTOR: 0.90 - 1.30 FOOTCANDLES
CROSSWALK AVERAGE (VERTICAL) @ LOCAL: 0.70 - 1.00 FOOTCANDLES
MINIMUM: NOT LESS THAN 1.00 FOOTCANDLES
MAXIMUM: NOT MORE THAN 2.20 FOOTCANDLES
AVERAGE/MINIMUM: NOT MORE THAN 1.60:1

US 42 AND KY536 INTERSECTION -
ILLUMINANCE:
AVERAGE: NOT LESS THAN 2.00 FOOTCANDLES AND NOT MORE THAN 2.20 FOOTCANDLES
MINIMUM: NOT LESS THAN 1.0 FOOTCANDLES
MAXIMUM: NOT MORE THAN 2.2 FOOTCANDLES
AVERAGE/MINIMUM: NOT MORE THAN 1.40:1

ROUNDABOUT (RIGHT) -
ILLUMINANCE:
AVERAGE: NOT LESS THAN 1.30 FOOTCANDLES AND NOT MORE THAN 1.50 FOOTCANDLES
CROSSWALK AVERAGE (VERTICAL) @ MINOR ARTERIAL: 0.80 - 1.10 FOOTCANDLES
CROSSWALK AVERAGE (VERTICAL) @ COLLECTOR: N/A
CROSSWALK AVERAGE (VERTICAL) @ LOCAL: 0.70 - 1.10 FOOTCANDLES
MINIMUM: NOT LESS THAN 0.50 FOOTCANDLES
MAXIMUM: NOT MORE THAN 2.70 FOOTCANDLES
AVERAGE/MINIMUM: NOT MORE THAN 2.50:1

ROADWAY (MINOR ARTERIAL) -
ILLUMINANCE:
AVERAGE: NOT LESS THAN 1.00 FOOTCANDLES AND NOT MORE THAN 1.60 FOOTCANDLES
MINIMUM: NOT LESS THAN 0.40 FOOTCANDLES
MAXIMUM: NOT MORE THAN 2.40 FOOTCANDLES
AVERAGE/MINIMUM: NOT MORE THAN 2.70:1

ROADWAY (COLLECTOR) -
ILLUMINANCE:
AVERAGE: NOT LESS THAN 0.80 FOOTCANDLES AND NOT MORE THAN 0.90 FOOTCANDLES
MINIMUM: NOT LESS THAN 0.30 FOOTCANDLES
MAXIMUM: NOT MORE THAN 2.3 FOOTCANDLES
AVERAGE/MINIMUM: NOT MORE THAN 2.20:1

ROADWAY (LOCAL) -
ILLUMINANCE:
AVERAGE: NOT LESS THAN 0.70 FOOTCANDLES AND NOT MORE THAN 0.80 FOOTCANDLES
MINIMUM: NOT LESS THAN 0.20 FOOTCANDLES
MAXIMUM: NOT MORE THAN 2.00 FOOTCANDLES
AVERAGE/MINIMUM: NOT MORE THAN 3.80:1

LED LUMINAIRE/FUSE
CONNECTOR DETAILS

FILE NAME: P:\2925\LIGHTING\T0480000.DGN

16, 2016

USER: GKreutzlantz
DATE PLOTTED: September

T0480000

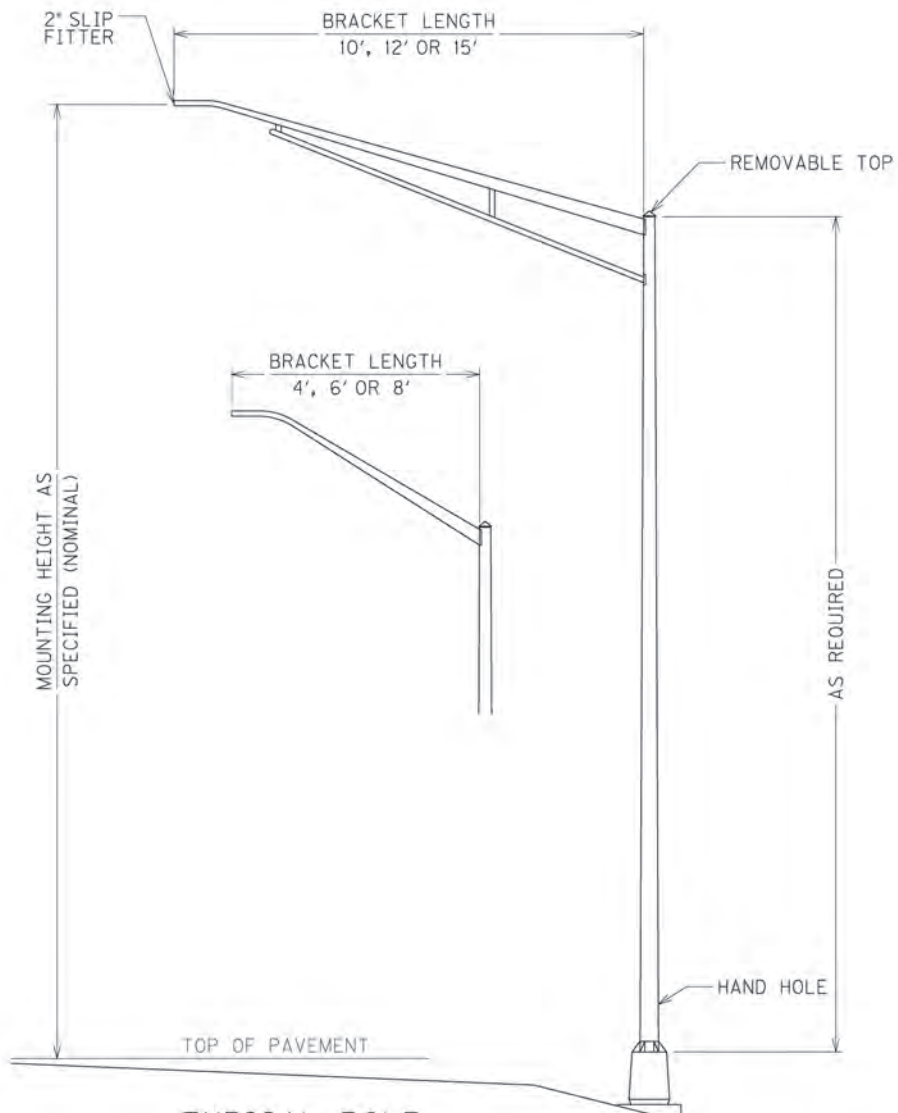
E-SHEET NAME: T0480000

7-443

MicroStation v8.11.7.443

10/15/2014

COUNTY OF	ITEM NO.	SHEET NO.
BOONE	6-158.00	T49



TYPICAL POLE
DESIGN FOR LED
LUMINAIRES

SPECIAL NOTE:
ALL LUMINAIRES SHALL HAVE THE NEMA LABEL
INSTALL ON THE BOTTOM OF THE FIXTURE TO
VERIFY THE WATTAGE.

LUMINAIRE DESIGNATION EXAMPLE

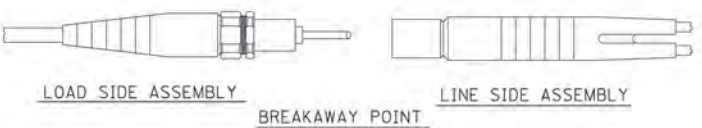
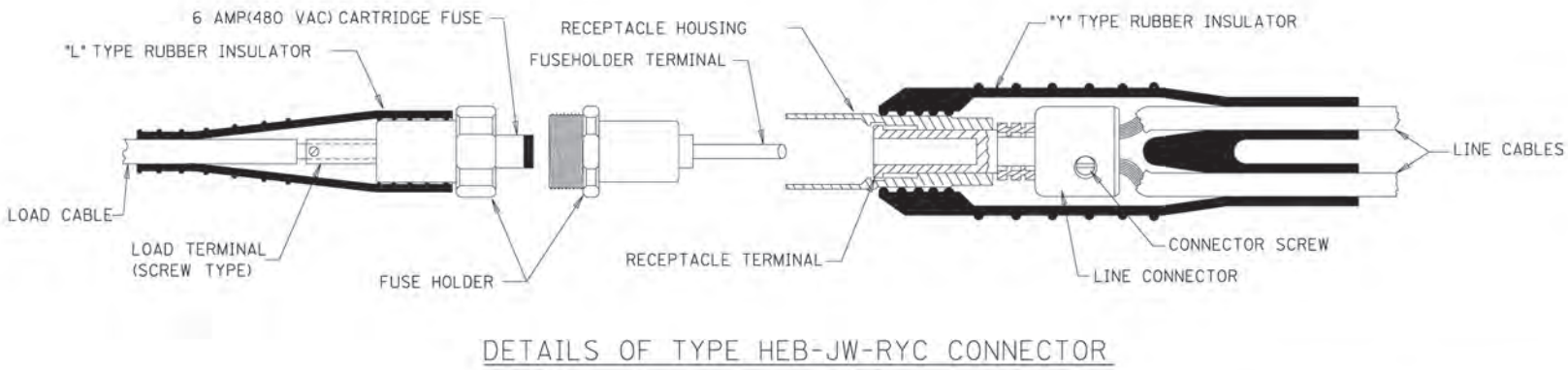
2 - 7 - A - 6 - *

- MAST ARM LENGTH
- LUMINAIRE WATTAGE
- LUMINAIRE NUMBER IN CIRCUIT
- CIRCUIT NUMBER

* REFER TO PLAN SHEET SCHEDULES FOR OFFSET DISTANCE AND ALIGNMENT.

NOTE: ALL TYPE A LUMINAIRES ARE MOUNTED AT 40' (NOMINAL) 50 WATTS.
ALL TYPE B LUMINAIRES ARE MOUNTED AT 40' (NOMINAL) 150 WATTS.
ALL TYPE C LUMINAIRES ARE MOUNTED AT 40' (NOMINAL) 220 WATTS.

BREAKAWAY FUSE CONNECTOR KIT

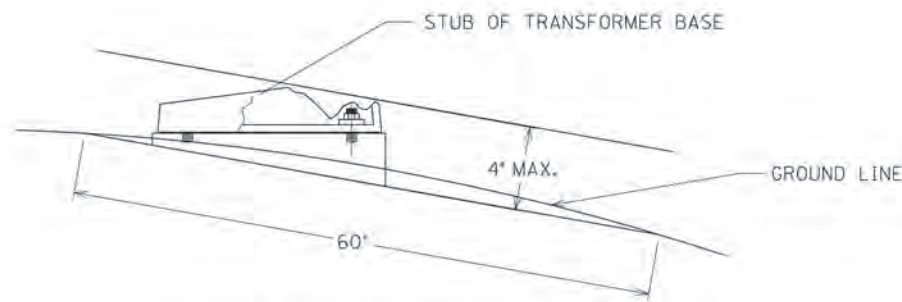


TYPE HEB-JW-RYC CONNECTOR SHOWN

LUMINAIRE TYPE	LUMINAIRE WATTAGE	LUMINAIRE VOLTAGE	LED CHIPS	LED DRIVER CURRENT	COLOR TEMP CCT	COLOR RENDERING INDEX, CRI	LUMINAIRE MTG HEIGHT	IES DIST	LUMINAIRE/POLE OPTIONS	LUMINAIRE/POLE MANUFACTURE	LUMINAIRE/POLE MODEL NUMBER
A	50	480	20B	700mA	4000K	70 MIN	40 FEET	TYPE III	DIE-CAST ALUMINUM HOUSING, IP66 RATED 4-BOLT MAST ARM ATTACHMENT FULL CUTOFF DESIGN TOOL-LESS ENTRY TERMINAL BLOCK WITH QUICK DISCONNECTS INTEGRAL SURGE PROTECTION BUILT-IN INTERNAL BUBBLE LEVEL 100K HOUR LIFE EXPECTANCY AT 25°C, LT0 DARK BRONZE POLYESTER POWDER COATED FINISH BREAK-AWAY TRANSFORMER BASE ROUND, TAPERED ALUMINUM POLE 8-FOOT EXTENSION ARM 10 YEAR LIMITED WARRANTY	LUMINAIRE AMERICAN ELECTRIC LIGHTING, OR APPROVED EQUIVALENT	ATB0-20BLEDE70-480-R3-B2-P7-SH
B	150	480	40B	1050mA	4000K	70 MIN	40 FEET	TYPE III	DIE-CAST ALUMINUM HOUSING, IP66 RATED 4-BOLT MAST ARM ATTACHMENT FULL CUTOFF DESIGN TOOL-LESS ENTRY TERMINAL BLOCK WITH QUICK DISCONNECTS INTEGRAL SURGE PROTECTION BUILT-IN INTERNAL BUBBLE LEVEL 100K HOUR LIFE EXPECTANCY AT 25°C, LT0 DARK BRONZE POLYESTER POWDER COATED FINISH BREAK-AWAY TRANSFORMER BASE ROUND, TAPERED ALUMINUM POLE 8-FOOT EXTENSION ARM 10 YEAR LIMITED WARRANTY	LUMINAIRE AMERICAN ELECTRIC LIGHTING, OR APPROVED EQUIVALENT	ATB2-40BLEDE10-480-R3-B2-P7-SH
C	220	480	60B	1050mA	4000K	70 MIN	40 FEET	TYPE III	DIE-CAST ALUMINUM HOUSING, IP66 RATED 4-BOLT MAST ARM ATTACHMENT FULL CUTOFF DESIGN TOOL-LESS ENTRY TERMINAL BLOCK WITH QUICK DISCONNECTS INTEGRAL SURGE PROTECTION BUILT-IN INTERNAL BUBBLE LEVEL 100K HOUR LIFE EXPECTANCY AT 25°C, LT0 DARK BRONZE POLYESTER POWDER COATED FINISH BREAK-AWAY TRANSFORMER BASE ROUND, TAPERED ALUMINUM POLE 8-FOOT EXTENSION ARM 10 YEAR LIMITED WARRANTY	LUMINAIRE AMERICAN ELECTRIC LIGHTING, OR APPROVED EQUIVALENT	ATB2-60BLEDE10-480-R3-B2-P7-SH

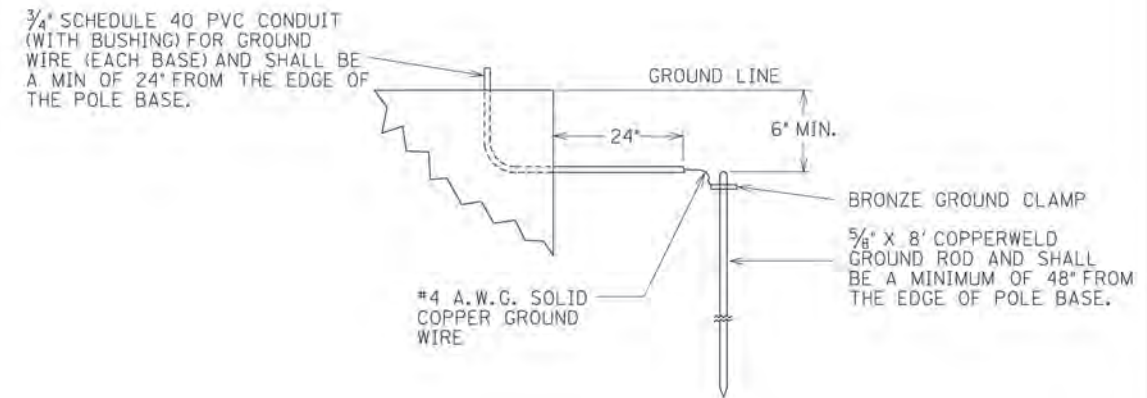
LED LUMINAIRE/FUSE
CONNECTOR DETAILS

COUNTY OF	ITEM NO.	SHEET NO.
BOONE	6-158.00	150

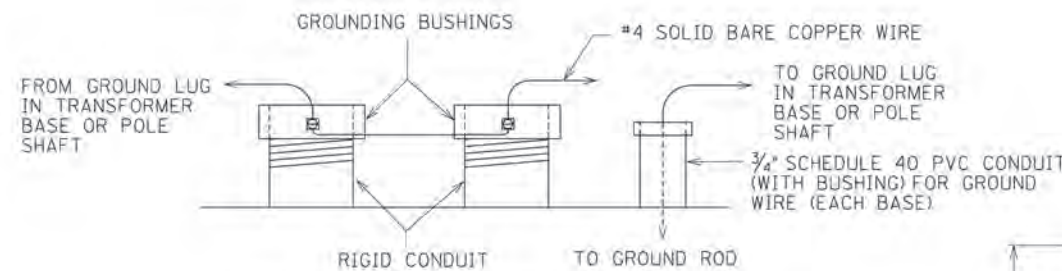


THE ANCHOR BOLTS AND CONDUITS SHALL NOT BE PROJECTED MORE 4 INCHES ABOVE A GROUND LINE BETWEEN THE STRADDLING WHEELS OF A VEHICLE.

BREAKAWAY SUPPORT STUB HEIGHT MEASUREMENT



GROUNDING DETAIL



TYPICAL GROUNDING DETAIL

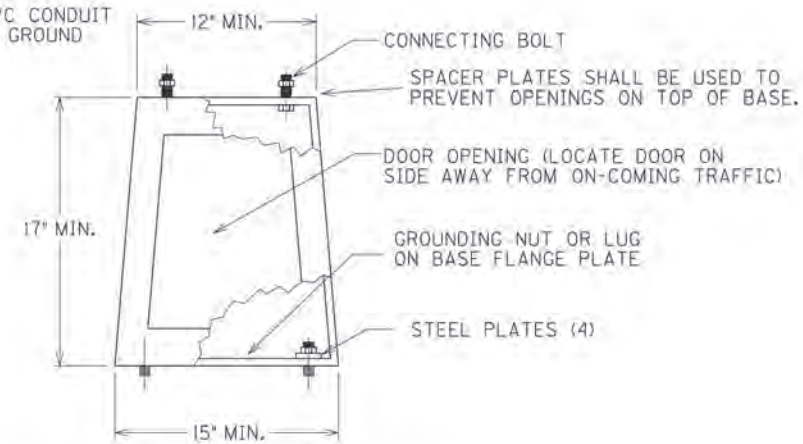
GROUNDING REQUIREMENTS:

CONTRACTOR SHALL PROVIDE A MINIMUM OF 6 INCHES OF GROUND WIRE FOR TESTING PRIOR TO CONNECTING THE WIRE TO TRANSFORMER BASE.

POLE/TRANSFORMER BASE GROUND - GROUND WIRE SHALL COME FROM THE GROUND ROD THROUGH THE PVC CONDUIT, CONNECTING TO THE TRANSFORMER BASE/POLE AND THEN TO EACH RIGID STEEL GROUNDING BUSHING.

NOTES:

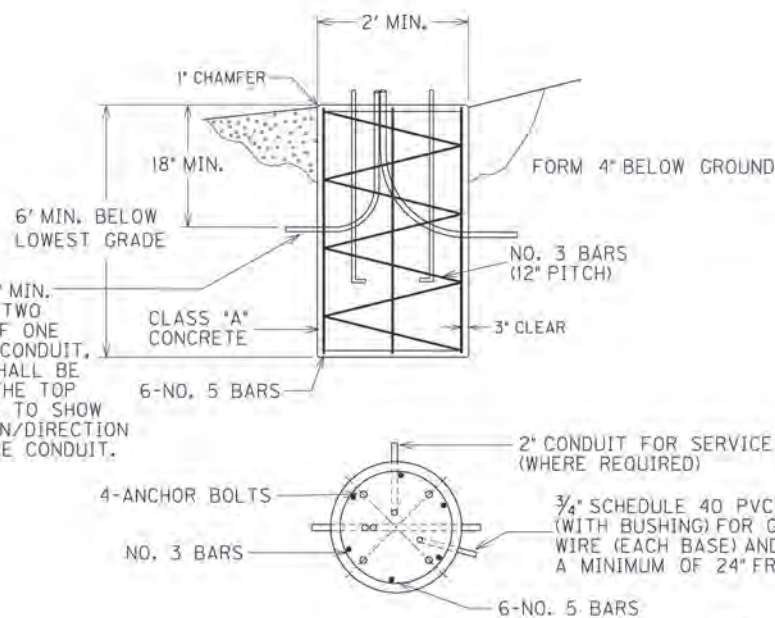
ALL CONDUITS USED FOR THE GROUNDING, SPARES AND CONDUCTORS THAT ARE INSTALLED IN THE POLE BASE ARE INCIDENTAL TO BID ITEM *4740*. THIS INCLUDES PROVIDING A MINIMUM OF 24 INCHES OF CONDUIT PAST THE EDGE OF THE POLE BASE.



CONCRETE BASES SHALL BE POURED LEVEL. NO MORE THAN A 3/8\"/>

TYPICAL CAST ALUMINUM TRANSFORMER BASE

NOTE: THE TRANSFORMER BASE DOOR SHALL HAVE A 4\"/>



NOTE: PRECAST CONCRETE BASES ARE NOT ACCEPTABLE

FOUNDATION DETAIL

TRANSFORMER BASE DETAIL

SCALE: 1\"/>

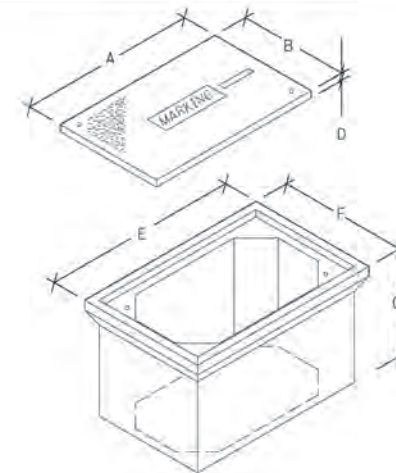
4/26/2016

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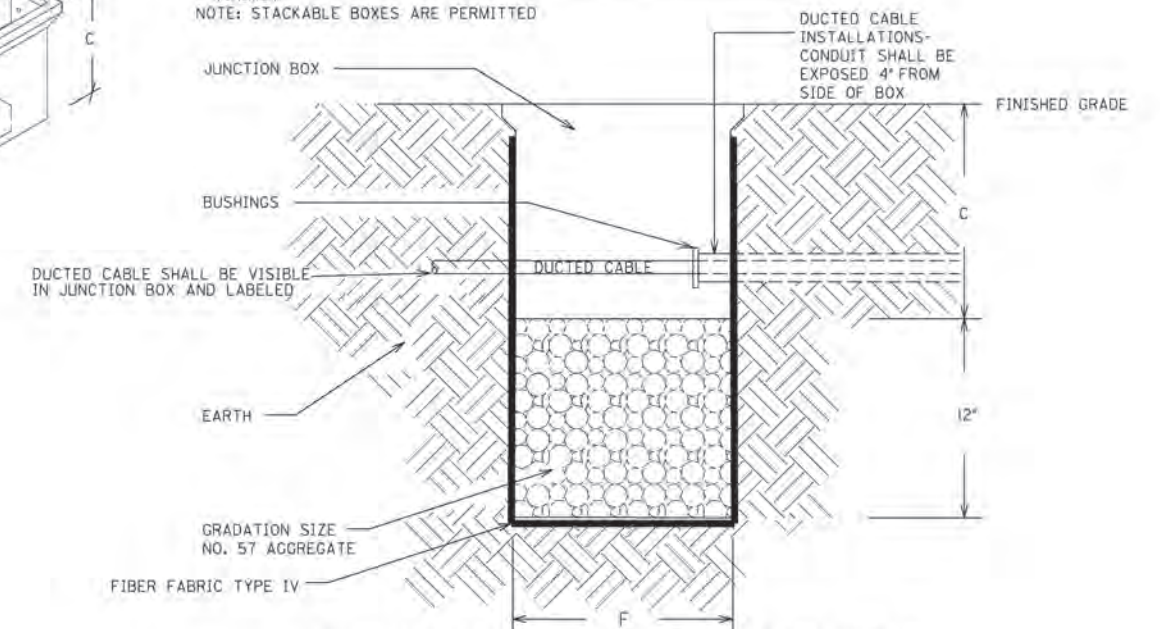
USER: Gernutz
DATE PLOTTED: September 9, 2016

SHEET NAME: TDS00001

MicroStation v8.0.1.7.403

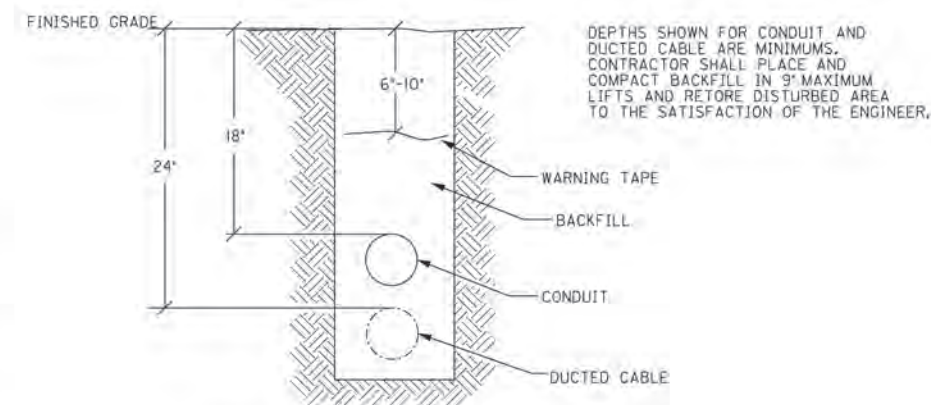


• MINIMUM
NOTE: STACKABLE BOXES ARE PERMITTED



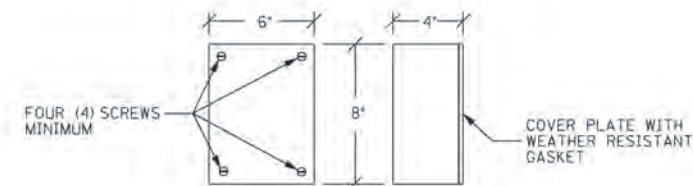
JUNCTION BOX INSTALLATION FOR DUCTED CABLES

BEFORE THE INSTALLATION OF THE #57 AGGREGATE AND JUNCTION BOX, THE CONTRACTOR SHALL INSTALL GEOTEXTILE FILTER FABRIC TYPE JV IN THE HOLE. THE FABRIC SHALL EXTEND TO JUST BELOW THE LIP OF THE JUNCTION BOX AND SHALL BE CONTINUOUSLY ADHERED TO THE EXTERIOR OF THE BOX WITH ADHESIVE. ANY LOCATIONS WHERE CONDUITS ENTER THE BOX, THE FABRIC SHALL BE "X CUT" ONLY AS MUCH AS NECESSARY TO ALLOW PASSAGE OF EACH INDIVIDUAL CONDUIT THROUGH THE FABRIC. THE FABRIC SHALL BE IDENTICAL TO BID ITEMS 4811, 20391N5835, OR 20392N5835.

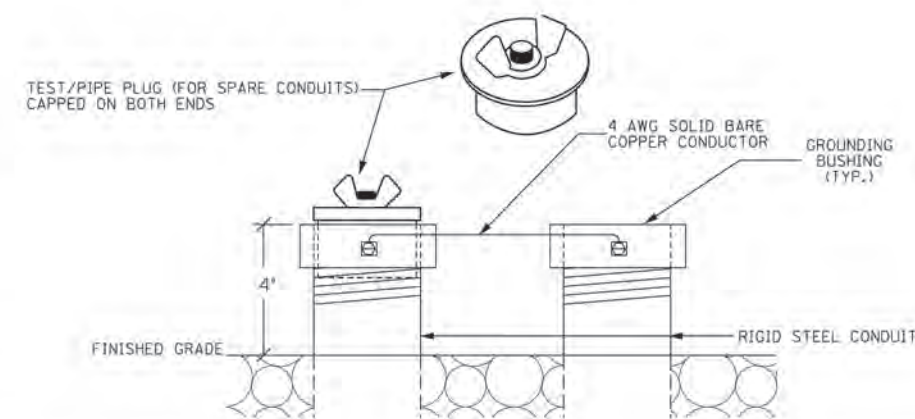


CONDUIT, DUCTED CABLE,
AND WARNING TAPE TRENCH

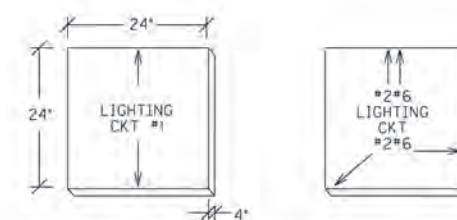
SPLICE BOX SHALL BE FABRICATED FROM MINIMUM 12 GAUGE STEEL AND GALVANIZED AFTER FABRICATION. BOXES SHALL HAVE NO KNOCKOUTS AND SHALL BE PROVIDED WITH A PLATE COVER WITH A WEATHER RESISTANT GASKET AND A MINIMUM OF FOUR SCREWS FOR ATTACHING THE PLATE COVER TO THE BOX. CABLE CLAMPS SHALL BE PROVIDED FOR CABLES ENTERING AND EXITING THE BOX.



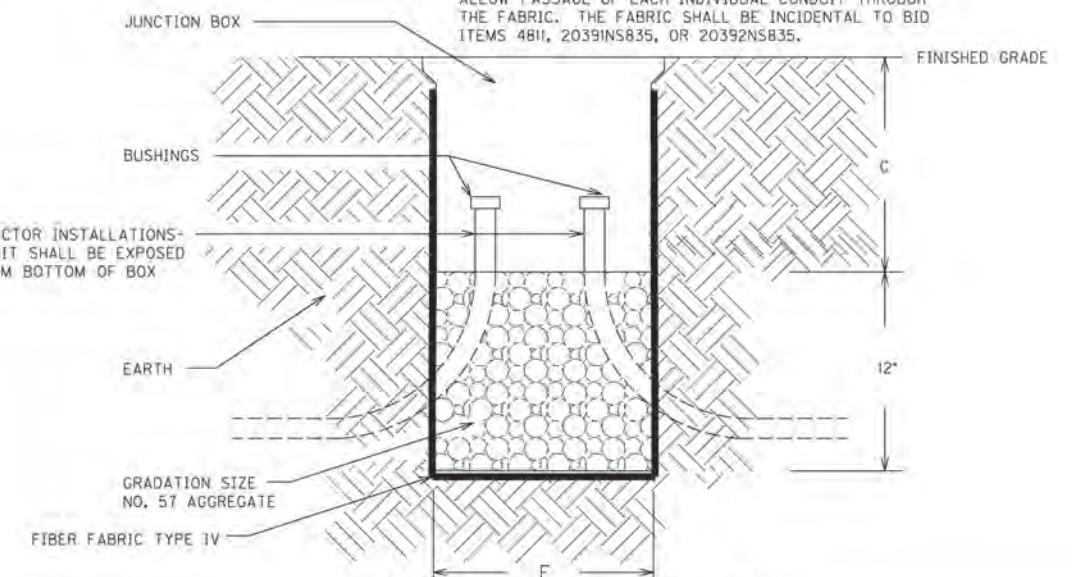
SPLICE BOX



TEST/PIPE PLUG(FOR SPARE CONDUITS) AND GROUNDING DETAIL



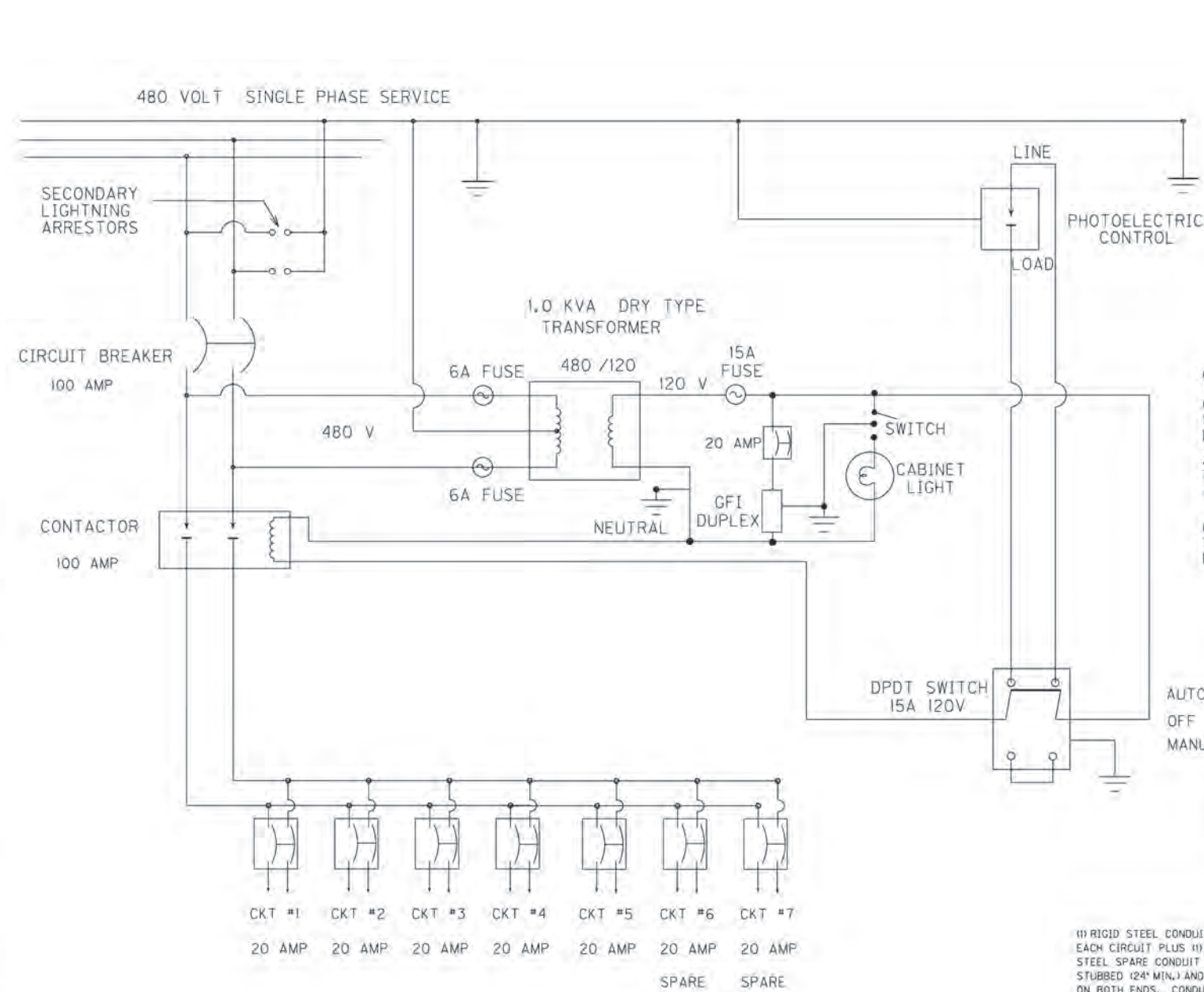
CONCRETE CABLE MARKERS



JUNCTION BOX INSTALLATION FOR CONVENTIONAL LIGHTING OR TRAFFIC SIGNALS

TRAFFIC SIGNAL AND
ROADWAY LIGHTING
JUNCTION BOX AND CONDUIT DETAILS

COUNTY OF	ITEM NO.	SHEET NO.
BOONE	6-158.00	T52



GROUNDING REQUIREMENTS:

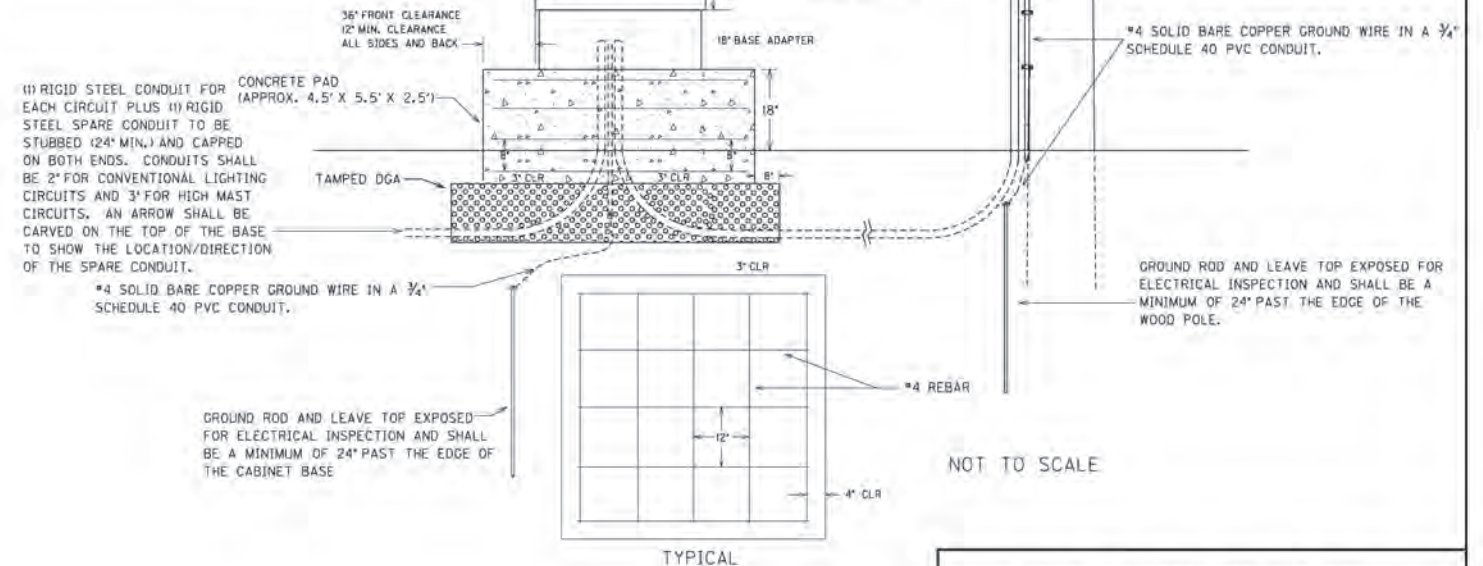
CONTRACTOR SHALL PROVIDE A MINIMUM OF 6 INCHES OF GROUND WIRE FOR TESTING PRIOR TO CONNECTING THE WIRE TO ANY DISCONNECT, CABINET OR POLE.

SERVICE GROUND - GROUND WIRE SHALL COME FROM THE GROUND ROD THROUGH THE PVC CONDUIT, CONNECTING TO THE DISCONNECT AND THEN TO EACH RIGID STEEL (R S) GROUNDING BUSHING.

CABINET GROUND - GROUND WIRE SHALL COME FROM THE GROUND ROD THROUGH THE PVC CONDUIT, CONNECTING TO THE CABINET GROUND BUS AND THEN TO EACH R S GROUNDING BUSHING.

AUTO
OFF
MANUAL

NOTE:
THE CABINET ENCLOSURE SHALL INCLUDE AN ALUMINUM BASE ADAPTOR THAT WILL ELEVATE THE CABINET 18 INCHES OFF THE CONCRETE BASE. THE ADAPTOR SHALL HAVE THE SAME BOTTOM OPENING AS THE ORIGINAL CABINET.



NOTES:

CONTRACTOR SHALL INSTALL ALL LIGHTING CONTROL EQUIPMENT AS INDICATED.

CONCRETE SHALL BE CLASS A. CONCRETE SHALL BE POURED ON 12" OF POWER TAMPED DENSE GRADE ROCK. PAD SHALL BE 30" THICK WITH 18" ABOVE GRADE.

PAD SHALL BE OF SUFFICIENT SIZE TO ALLOW A MINIMUM 36" IN FRONT OF THE CABINET AND 12" MINIMUM CLEARANCE AROUND THE SIDES AND BACK OF THE CABINET.

CONCRETE SHALL BE SLOPED 1/8" PER FOOT TO PREVENT STANDING WATER. OUTSIDE EDGE SHALL HAVE A ONE INCH CHAMFER.

#4 REBAR SHALL BE COMPRISED OF RUNS AS SHOWN AND TIED AT EACH JOINT.

ALL CONSTRUCTION (TO INCLUDE EXCAVATION WORK) AND MATERIALS (CONCRETE, STEEL REINFORCEMENT, ETC.) FOR THE CONCRETE PAD SHALL BE INCIDENTAL TO THE POLE FOR THE LIGHTING CONTROL EQUIPMENT BID ITEM.

ALL CONDUITS USED FOR GROUNDING, SPARE, AND SERVICE THAT ARE INSTALLED ON THE POLE AND/OR IN/TO THE CABINET ARE INCIDENTAL TO BID ITEM #4761. THIS INCLUDES PROVIDING A MINIMUM OF 24 INCHES OF CONDUIT PAST THE EDGE OF THE CABINET BASE FOR THE SPARE.

BASE MOUNTED SERVICE DETAIL

FILE NAME: P:\2925\LIGHTING\T052005E.DGN

USER: D:\N\121018
DATE PLOTTED: September 9, 2016

E-SHEET NAME: T052005E

MicroStation V8.11.7.403
4/26/2016

COUNTY OF	ITEM NO.	SHEET NO.
BOONE	6-158.00	T53

LEGEND



BASE MOUNTED CABINET



JUNCTION BOXES - TYPES A & C
(AS DESIGNATED)



1 1/4" RIGID STEEL CONDUIT
(UNLESS OTHERWISE NOTED)



2 INCH RIGID STEEL CONDUIT
(UNLESS OTHERWISE NOTED)



LUMINAIRE POLE



NEW 35 FT. WOOD SERVICE POLE

LUMINAIRES	STATIONS/ OFFSETS	ALIGNMENT
1-1-3-B-8	STA 33+30, 60.58' LT	KY 536
1-1-4-B-8	STA 31+63, 60.58' LT	KY 536
1-1-5-B-8	STA 30+01, 57.64' LT	KY 536
1-1-6-B-8	STA 28+09, 43.39' LT	KY 536
1-1-7-B-8	STA 26+51, 33.03' LT	KY 536
1-1-8-B-8	STA 52+37, 33.07' LT	KY 536
1-1-9-B-8	STA 49+35, 36.53' LT	OLD UNION RD
1-1-10-A-8	STA 48+05, 25.25' LT	OLD UNION RD
1-1-11-A-8	STA 46+70, 24.01' RT	OLD UNION RD
1-1-12-B-8	STA 48+78, 29.71' RT	OLD UNION RD
1-1-13-B-8	STA 23+42, 39.47' LT	KY 536
1-1-14-B-8	STA 22+38, 50.40' LT	KY 536

FROM	TO	WIRE SIZE	CONDUIT SIZE
1-1-2-C-8	1-1-3-B-8	3-#8 AWG	1 1/4" GRS
1-1-3-B-8	1-1-4-B-8	3-#8 AWG	1 1/4" GRS
1-1-4-B-8	1-1-5-B-8	3-#8 AWG	1 1/4" GRS
1-1-5-B-8	1-1-6-B-8	3-#8 AWG	1 1/4" GRS
1-1-6-B-8	1-1-7-B-8	3-#8 AWG	1 1/4" GRS
1-1-7-B-8	1-1-8-B-8	3-#8 AWG	1 1/4" GRS
1-1-8-B-8	1-1-9-B-8	3-#8 AWG	1 1/4" GRS
1-1-9-B-8	1-1-10-A-8	3-#8 AWG	1 1/4" GRS
1-1-10-A-8	JB A3	3-#8 AWG	1 1/4" GRS
JB A3	JB A4	3-#8 AWG	2" GRS
JB A4	1-1-11-A-8	3-#8 AWG	1 1/4" GRS
1-1-11-A-8	1-1-12-B-8	3-#8 AWG	1 1/4" GRS
1-1-12-B-8	1-1-13-B-8	3-#8 AWG	1 1/4" GRS
1-1-13-B-8	1-1-14-B-8	3-#8 AWG	1 1/4" GRS

LUMINAIRES	STATIONS/ OFFSETS	ALIGNMENT
1-2-3-B-8	STA 33+31, 60.58' RT	KY 536
1-2-4-B-8	STA 31+41, 62.99' RT	KY 536
1-2-5-B-8	STA 29+50, 45.68' RT	KY 536
1-2-6-B-8	STA 26+32, 31.76' RT	KY 536
1-2-7-B-8	STA 24+85, 36.65' RT	KY 536
1-2-8-B-8	STA 51+23, 36.51' LT	OLD UNION RD
1-2-9-A-8	STA 53+41, 23.28' LT	OLD UNION RD
1-2-10-A-8	STA 51+90, 25.51' RT	OLD UNION RD
1-2-11-B-8	STA 50+67, 36.88' RT	OLD UNION RD
1-2-12-B-8	STA 22+81, 36.77' RT	KY 536
1-2-13-B-8	STA 20+63, 34.50' RT	KY 536

FROM	TO	WIRE SIZE	CONDUIT SIZE
1-2-2-C-8	1-2-3-B-8	3-#8 AWG	1 1/4" GRS
1-2-3-B-8	1-2-4-B-8	3-#8 AWG	1 1/4" GRS
1-2-4-B-8	1-2-5-B-8	3-#8 AWG	1 1/4" GRS
1-2-5-B-8	1-2-6-B-8	3-#8 AWG	1 1/4" GRS
1-2-6-B-8	1-2-7-B-8	3-#8 AWG	1 1/4" GRS
1-2-7-B-8	1-2-8-B-8	3-#8 AWG	1 1/4" GRS
1-2-8-B-8	1-2-9-A-8	3-#8 AWG	1 1/4" GRS
1-2-9-A-8	JB A5	3-#8 AWG	1 1/4" GRS
JB A5	JB A6	3-#8 AWG	2" GRS
JB A6	1-2-10-A-8	3-#8 AWG	1 1/4" GRS
1-2-10-A-8	1-2-11-B-8	3-#8 AWG	1 1/4" GRS
1-2-11-B-8	1-2-12-B-8	3-#8 AWG	1 1/4" GRS
1-2-12-B-8	1-2-13-B-8	3-#8 AWG	1 1/4" GRS



KY 536 - MT. ZION ROAD
LIGHTING PLAN

SCALE: 1"= 50'

FILE NAME: P:\2925\LIGHTING\TOS500LT.DGN

USER: Gkroutz Jan
DATE PLOTTED: September 9, 2016

SHEET NAME: TOS500LT

MicroStation v8.01.7.403

INSTALL 2 RUNS OF 2"
RIGID STEEL CONDUIT.
ONE WILL BE A SPARE
AND CAPPED ON BOTH
ENDS.

CONVENTIONAL LIGHTING:

ALL POLES SHALL HAVE A #12 AWG GREEN GROUND WIRE RUN FROM BOTTOM OF POLE TO THE LUMINAIRE FOR GROUNDING. ALL POLES SHALL HAVE A GREEN WIRE THE SAME SIZE AS THE CIRCUIT WIRE RUN FROM POLE TO POLE FOR GROUNDING. GROUNDING WIRES SHALL BE CONNECTED TO GROUNDING LUGS ON CONDUITS OR ON THE POLE/TRANSFORMER BASE.

POLE HEIGHTS, ARM LENGTHS AND SETBACKS ARE DENOTED AS STATED ON LUMINAIRE DESIGNATION EXAMPLE ON LUMINAIRE/FUSE CONNECTOR DETAIL SHEET.

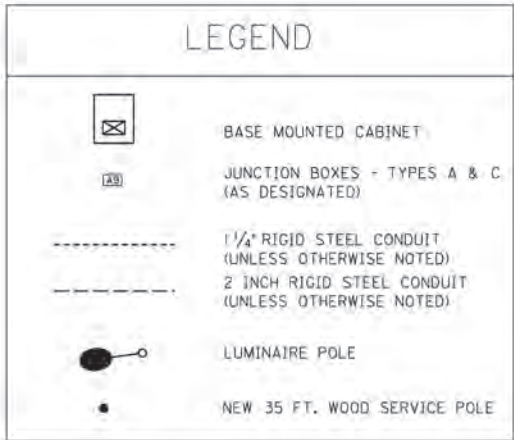
POLES SHALL BE PLACED AS CLOSE TO STATIONS AS STATED ON PLANS TO PROVIDE PROPER ILLUMINATION. IF ANY POLE NEEDS TO BE MOVED FROM THE STATION INDICATED, C.O. TRAFFIC SHALL BE CONTACTED AT 502-564-3020.

GENERAL CONVENTIONAL NOTES:

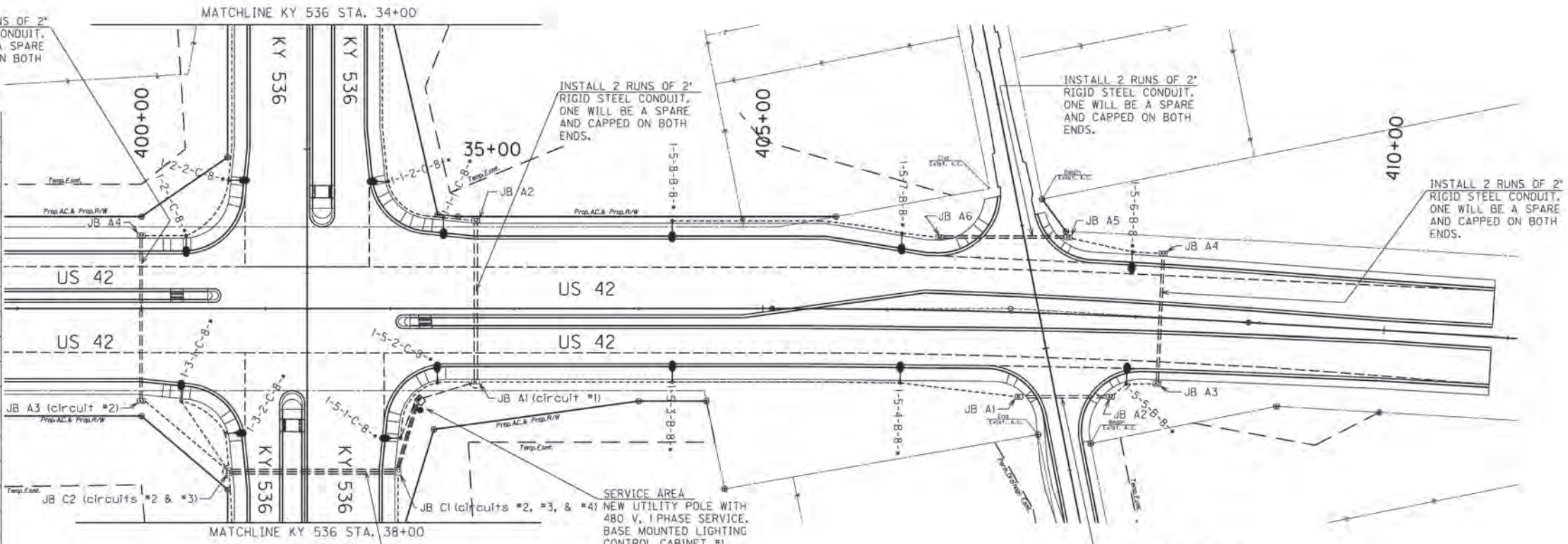
ALL SPLICES NOTED ON THIS PLAN SHALL BE APPROVED BY CENTRAL OFFICE TRAFFIC OPERATIONS. THESE SPLICES SHALL BE WATERPROOF AND SHALL BE OF THE CORRECT SIZE FOR THE WIRE USED AND SHALL BE RAYCHEM GTAP-2(B18), OR APPROVED EQUAL. ALL SPLICES SHALL BE INCIDENTAL TO THE WIRE AND CABLE BEING INSTALLED.

INSTALL 2 RUNS OF 2"
RIGID STEEL CONDUIT.
ONE WILL BE A SPARE
AND CAPPED ON BOTH
ENDS.

COUNTY OF	ITEM NO.	SHEET NO.
BOONE	6-158.00	T54



WIRING SCHEDULE				
FROM	TO	WIRE SIZE	CONDUIT SIZE	
CKT #1	CONTROLLER	JB A1	3-#8 AWG	2" GRS
	JB A1	JB A2	3-#8 AWG	2" GRS
	JB A2	1-1-1-C-8-*	3-#8 AWG	1 1/4" GRS
	1-1-1-C-8-*	1-1-2-C-8-*	3-#8 AWG	1 1/4" GRS
	1-1-2-C-8-*	1-1-3-B-8-*	3-#8 AWG	1 1/4" GRS
CKT #2	CONTROLLER	JB C1	3-#8 AWG	2" GRS
	JB C1	JB C2	3-#8 AWG	2" GRS
	JB C2	JB A3	3-#8 AWG	1 1/4" GRS
	JB A3	JB A4	3-#8 AWG	2" GRS
	JB A4	1-2-1-C-8-*	3-#8 AWG	1 1/4" GRS
CKT #3	CONTROLLER	JB C1	3-#8 AWG	2" GRS
	JB C1	JB C2	3-#8 AWG	2" GRS
	JB C2	1-3-1-C-8-*	3-#8 AWG	1 1/4" GRS
	1-3-1-C-8-*	1-3-2-C-8-*	3-#8 AWG	1 1/4" GRS
	1-3-2-C-8-*	1-3-3-B-8-*	3-#8 AWG	1 1/4" GRS
CKT #4	CONTROLLER	JB C1	3-#8 AWG	2" GRS
	JB C1	1-4-1-B-8-*	3-#8 AWG	1 1/4" GRS
CKT #5	CONTROLLER	1-5-1-C-8-*	3-#8 AWG	2" GRS
	1-5-1-C-8-*	1-5-2-C-8-*	3-#8 AWG	1 1/4" GRS
	1-5-2-C-8-*	1-5-3-B-8-*	3-#8 AWG	1 1/4" GRS
	1-5-3-B-8-*	1-5-4-B-8-*	3-#8 AWG	1 1/4" GRS
	1-5-4-B-8-*	JB A1	3-#8 AWG	1 1/4" GRS
	JB A1	JB A2	3-#8 AWG	2" GRS
	JB A2	1-5-5-B-8-*	3-#8 AWG	1 1/4" GRS
	1-5-5-B-8-*	JB A3	3-#8 AWG	1 1/4" GRS
	JB A3	JB A4	3-#8 AWG	2" GRS
	JB A4	1-5-6-B-8-*	3-#8 AWG	1 1/4" GRS
	1-5-6-B-8-*	JB A5	3-#8 AWG	1 1/4" GRS
	JB A5	JB A6	3-#8 AWG	2" GRS
	JB A6	1-5-7-B-8-*	3-#8 AWG	1 1/4" GRS
	1-5-7-B-8-*	1-5-8-B-8-*	3-#8 AWG	1 1/4" GRS



LUMINAIRES	STATIONS/OFFSETS	ALIGNMENT
1-1-1-C-8-*	STA 402+43, 81.20' LT	US 42
1-1-2-C-8-*	STA 35+26, 65.14' LT	KY 536
1-2-1-C-8-*	STA 400+36, 58.67' LT	US 42
1-2-2-C-8-*	STA 35+25, 63.23' RT	KY 536
1-3-1-C-8-*	STA 400+32, 74.00' RT	US 42
1-3-2-C-8-*	STA 37+28, 65.76' RT	KY 536
1-5-1-C-8-*	STA 37+32, 75.18' LT	KY 536
1-5-2-C-8-*	STA 402+38, 59.29' RT	US 42
1-5-3-B-8-*	STA 404+27, 58.58' RT	US 42
1-5-4-B-8-*	STA 406+11, 58.38' RT	US 42
1-5-5-B-8-*	STA 407+95, 53.74' RT	US 42
1-5-6-B-8-*	STA 407+95, 52.13' LT	US 42
1-5-7-B-8-*	STA 406+11, 61.68' LT	US 42
1-5-8-B-8-*	STA 404+27, 70.58' LT	US 42

CONVENTIONAL LIGHTING:

ALL POLES SHALL HAVE A #12 AWG GREEN GROUND WIRE RUN FROM BOTTOM OF POLE TO THE LUMINAIRE FOR GROUNDING. ALL POLES SHALL HAVE A GREEN WIRE THE SAME SIZE AS THE CIRCUIT WIRE RUN FROM POLE TO POLE FOR GROUNDING. GROUNDING WIRES SHALL BE CONNECTED TO GROUNDING LUGS ON CONDUITS OR ON THE POLE/TRANSFORMER BASE.

POLE HEIGHTS, ARM LENGTHS AND SETBACKS ARE DENOTED AS STATED ON LUMINAIRE DESIGNATION EXAMPLE ON LUMINAIRE/FUSE CONNECTOR DETAIL SHEET.

POLES SHALL BE PLACED AS CLOSE TO STATIONS AS STATED ON PLANS TO PROVIDE PROPER ILLUMINATION. IF ANY POLE NEEDS TO BE MOVED FROM THE STATION INDICATED, C.D. TRAFFIC SHALL BE CONTACTED AT 502-564-3020.

GENERAL CONVENTIONAL NOTES:

ALL SPLICES NOTED ON THIS PLAN SHALL BE APPROVED BY CENTRAL OFFICE TRAFFIC OPERATIONS. THESE SPLICES SHALL BE WATERPROOF AND SHALL BE OF THE CORRECT SIZE FOR THE WIRE USED AND SHALL BE RAYCHEM GTAP-2(BIB), OR APPROVED EQUAL. ALL SPLICES SHALL BE INCIDENTAL TO THE WIRE AND CABLE BEING INSTALLED.



US 42 LIGHTING PLANS
SCALE: 1"= 50'

FILE NAME: P:\2925\LIGHTING\T054001.DGN
USER: GRCUTZ
DATE PLOTTED: September 9, 2016
E-SHEET NAME: T054001
MicroStation v8.11.7.443

LEGEND

BASE MOUNTED CABINET

JUNCTION BOXES - TYPES A & C (AS DESIGNATED)

1 1/4" RIGID STEEL CONDUIT (UNLESS OTHERWISE NOTED)

2 INCH RIGID STEEL CONDUIT (UNLESS OTHERWISE NOTED)

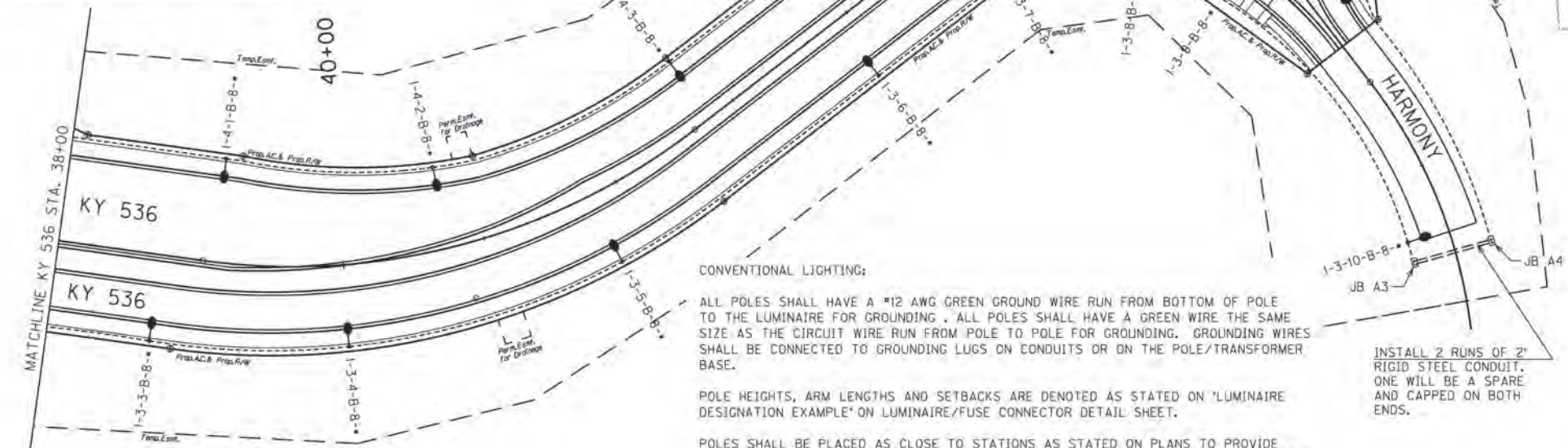
LUMINAIRE POLE

NEW 35 FT. WOOD SERVICE POLE

LUMINAIRES	STATIONS/ OFFSETS	ALIGNMENT
1-3-3-B-8-*	STA 38+72, 60.58' RT	KY 536
1-3-4-B-8-*	STA 39+99, 57.19' RT	KY 536
1-3-5-B-8-*	STA 41+79, 51.18' RT	KY 536
1-3-6-B-8-*	STA 43+91, 48.58' RT	KY 536
1-3-7-B-8-*	STA 45+05, 49.27' RT	KY 536
1-3-8-B-8-*	STA 50+69, 78.41' RT	HARMONY
1-3-9-B-8-*	STA 51+20, 46.95' RT	HARMONY
1-3-10-B-8-*	STA 53+48, 29.90' RT	HARMONY
1-3-11-B-8-*	STA 51+78, 34.93' LT	HARMONY
1-3-12-B-8-*	STA 47+66, 76.86' RT	KY 536
1-3-13-B-8-*	STA 48+20, 58.26' RT	KY 536
1-3-14-B-8-*	STA 49+46, 47.71' RT	KY 536
1-3-15-B-8-*	STA 51+74, 45.50' RT	KY 536
1-4-1-B-8-*	STA 39+09, 72.51' LT	KY 536
1-4-2-B-8-*	STA 40+76, 57.24' LT	KY 536
1-4-3-B-8-*	STA 42+81, 48.58' LT	KY 536
1-4-4-B-8-*	STA 45+71, 59.90' LT	KY 536
1-4-5-B-8-*	STA 46+56, 89.86' LT	KY 536
1-4-6-B-8-*	STA 48+30, 32.47' RT	HARMONY
1-4-7-A-8-*	STA 47+20, 49.70' RT	HARMONY
1-4-8-B-8-*	STA 48+98, 38.47' LT	HARMONY
1-4-9-B-8-*	STA 49+30, 47.80' LT	HARMONY
1-4-10-B-8-*	STA 48+35, 48.98' LT	KY 536
1-4-11-B-8-*	STA 50+59, 45.50' LT	KY 536
1-4-12-B-8-*	STA 52+86, 45.51' LT	KY 536

FROM	TO	WIRE SIZE	CONDUIT SIZE
1-4-1-B-8-*	1-4-1-B-8-*	3-#8 AWG	1 1/4" GRS
1-4-2-B-8-*	1-4-2-B-8-*	3-#8 AWG	1 1/4" GRS
1-4-3-B-8-*	1-4-3-B-8-*	3-#8 AWG	1 1/4" GRS
1-4-4-B-8-*	1-4-4-B-8-*	3-#8 AWG	1 1/4" GRS
1-4-5-B-8-*	1-4-5-B-8-*	3-#8 AWG	1 1/4" GRS
1-4-6-B-8-*	1-4-6-B-8-*	3-#8 AWG	1 1/4" GRS
1-4-7-A-8-*	JB A2	3-#8 AWG	1 1/4" GRS
JB A2	JB A3	3-#8 AWG	2" GRS
1-4-8-B-8-*	1-4-8-B-8-*	3-#8 AWG	1 1/4" GRS
1-4-9-B-8-*	1-4-9-B-8-*	3-#8 AWG	1 1/4" GRS
1-4-10-B-8-*	1-4-10-B-8-*	3-#8 AWG	1 1/4" GRS
1-4-11-B-8-*	1-4-11-B-8-*	3-#8 AWG	1 1/4" GRS
1-4-12-B-8-*	1-4-12-B-8-*	3-#8 AWG	1 1/4" GRS

FROM	TO	WIRE SIZE	CONDUIT SIZE
1-3-2-C-8-*	1-3-3-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-3-B-8-*	1-3-4-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-4-B-8-*	1-3-5-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-5-B-8-*	1-3-6-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-6-B-8-*	1-3-7-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-7-B-8-*	1-3-8-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-8-B-8-*	1-3-9-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-9-B-8-*	1-3-10-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-10-B-8-*	JB A3	3-#8 AWG	1 1/4" GRS
JB A3	JB A4	3-#8 AWG	2" GRS
1-3-11-B-8-*	1-3-12-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-12-B-8-*	1-3-13-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-13-B-8-*	1-3-14-B-8-*	3-#8 AWG	1 1/4" GRS
1-3-14-B-8-*	1-3-15-B-8-*	3-#8 AWG	1 1/4" GRS



CONVENTIONAL LIGHTING:

ALL POLES SHALL HAVE A #12 AWG GREEN GROUND WIRE RUN FROM BOTTOM OF POLE TO THE LUMINAIRE FOR GROUNDING. ALL POLES SHALL HAVE A GREEN WIRE THE SAME SIZE AS THE CIRCUIT WIRE RUN FROM POLE TO POLE FOR GROUNDING. GROUNDING WIRES SHALL BE CONNECTED TO GROUNDING LUGS ON CONDUITS OR ON THE POLE/TRANSFORMER BASE.

POLE HEIGHTS, ARM LENGTHS AND SETBACKS ARE DENOTED AS STATED ON 'LUMINAIRE DESIGNATION EXAMPLE' ON LUMINAIRE/FUSE CONNECTOR DETAIL SHEET.

POLES SHALL BE PLACED AS CLOSE TO STATIONS AS STATED ON PLANS TO PROVIDE PROPER ILLUMINATION. IF ANY POLE NEEDS TO BE MOVED FROM THE STATION INDICATED, C.O. TRAFFIC SHALL BE CONTACTED AT 502-564-3020.

GENERAL CONVENTIONAL NOTES:

ALL SPLICES NOTED ON THIS PLAN SHALL BE APPROVED BY CENTRAL OFFICE TRAFFIC OPERATIONS. THESE SPLICES SHALL BE WATERPROOF AND SHALL BE OF THE CORRECT SIZE FOR THE WIRE USED AND SHALL BE RAYCHEM GTAP-2(BIB), OR APPROVED EQUAL. ALL SPLICES SHALL BE INCIDENTAL TO THE WIRE AND CABLE BEING INSTALLED.



KY 536 - MT. ZION ROAD
LIGHTING PLAN

SCALE: 1"= 50'

FILE NAME: P:\2925\LIGHTING\T0550001.DGN

USER: rwt\truberg DATE PLOTTED: September 9, 2016

SHEET NAME: T0550001

MicroStation v8.0.1.443