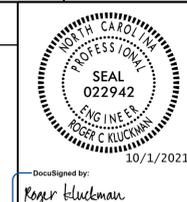


PLANS AND DETAILS FOR PROPOSED LIGHTING /ELECTRICAL CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES

- 1 AT THESE LOCATIONS, PROVIDE ELECTRICAL DUCT IN ACCORDANCE WITH NEC REQUIREMENTS FOR AN APPROVED RACEWAY FOR ELECTRICAL CIRCUITS. SEE TABLE "C"
- 2 INSTALL ALL BORE PITS OUTSIDE THE CLEAR ZONE, AS DEFINED BY THE 2011 AASHTO ROADSIDE DESIGN GUIDE OR AS DIRECTED BY THE ENGINEER.
- 3 LOCATE ALL JUNCTION BOXES OUTSIDE CLEAR ZONE AND IN AN AREA UNLIKELY TO BE USED BY TRAFFIC.
- 4 LOCATE PROPOSED CONTROL SYSTEM IN AN AREA ACCESSIBLE FOR MAINTENANCE VEHICLES AND OUTSIDE OF CLEAR ZONE AS DEFINED BY THE 2011 AASHTO ROADSIDE DESIGN GUIDE.
- 5 INSTALL RIGID GALVANIZED CONDUIT (RGC) ABOVE GROUND, AND POLYVINYL CHLORIDE (PVC) SCHEDULE 40 CONDUIT UNDERGROUND, EXCEPT AS MODIFIED ON THESE PLANSHEETS OR IN APPLICABLE SECTIONS OF THE ROADWAY STANDARD DRAWINGS FOR THIS PROJECT.
- 6 ALL JUNCTION BOXES SHALL BE 18" HIGH, UNLESS OTHERWISE NOTED.
- 7 CONTRACTOR SHALL RECORD THE GPS COORDINATES OF EACH JUNCTION BOX IN THE JUNCTION BOX SUMMARY, TABLE C. PROVIDE A COPY OF THE JUNCTION BOX SUMMARY WITH THESE COORDINATES TO THE LIGHTING ENGINEER DURING PROJECT INSPECTION.
- 8 POLE NUMBERING CONVENTION: CONTROL SYSTEM-POLE #-CKT # (A-3-2).
- 9 JUNCTION BOXES SHOWN NEAR LIGHT STANDARDS (LSJB & HMJB) ARE SHOWN FOR CLARITY. THESE JUNCTION BOXES ARE TO BE USED AS A TEE POINT FOR CIRCUITRY TO THE STANDARD, AND SHALL BE INSTALLED FOR BEST ALIGNMENT OF CIRCUITRY WHILE MAINTAINING THE OFFSETS SHOWN IN TABLE "C". SEE STANDARD DRAWINGS 1401.01 AND 1406.01 FOR INSTALLATION DETAILS.
- 10 REFER TO PLAN SHEETS E-6 & E7 FOR OR THE EXISTING LIGHTING DESIGN.
- 11 ALL LUMINAIRES REMOVED FROM THE 5 EXISTING HIGH MAST ARE TO BE REUSED ON NEW 120' HM10, HM11 AND HM12 ON CS"V".
- 12 RUN NEW CONDUCTORS FROM JUNCTION BOX TO THE UNDERPASS LIGHTS DISCONNECT SWITCH.
- 13 RUN NEW CONDUCTORS WITH CONDUIT FROM CONTROL SYSTEM "W" TO THE EXISTING JUNCTION BOX JB5. INSTALL NEW CONDUCTORS IN EXISTING CONDUIT BETWEEN JB5 AND EXISTING MEDIAN BARRIER RAIL JUNCTION BOX JB4, AND FROM MEDIAN BARRIER RAIL JB4 TO TWIN ARM LIGHT STANDARDS ON MEDIAN BARRIER RAIL.
- 14 RUN NEW CONDUCTORS WITH CONDUIT FROM CONTROL SYSTEM "W" TO THE EXISTING JUNCTION BOX JB7. INSTALL NEW CONDUCTORS IN EXISTING CONDUIT FROM JB7 TO JB9. CONNECT NEW CONDUCTOR TO EXISTING CONDUCTOR FOR IT CCTV CAMERA IN JB9.
- 15 EXISTING CONTROL SYSTEM "X" IS TO BE SALVAGED. EXISTING CONTROL SYSTEMS "V" & "W" ARE TO BE DISPOSED OF.
- 16 REFER TO DETAIL SHEET E-8 FOR CONTROL SYSTEM "V" CONFIGURATION.
- 17 REFER TO DETAIL SHEET E-9 FOR CONTROL SYSTEM "W" CONFIGURATION.
- 18 REFER TO DETAIL SHEET E-10 FOR CONTROL SYSTEM "X" CONFIGURATION.
- 19 CONTROL SYSTEMS "W" AND "X" WILL NOT REQUIRE A LIGHTGRID GATEWAY. ALL EXISTING LUMINAIRES TO BE REUSED FOR CONTROL SYSTEMS "V" "W" "X" WILL BE CONTROLLED FROM THE LIGHTGRID GATEWAY ON CONTROL SYSTEM "V". ALL NEW LUMINAIRES ARE TO BE EQUIPPED WITH A PHOTOCELL.
- 20 SERVICE POLE MAY NOT BE REQUIRED. INSTALL AT THE DIRECTION OF THE ENGINEER.
- 21 AT THESE LOCATIONS INSTALL CONDUIT FOR BEST ALIGNMENT OF CIRCUITRY.

SCOPE OF WORK

RENOVATE EXISTING ROADWAY LIGHTING SYSTEM BY REPLACING CONTROL SYSTEMS, LIGHT STANDARDS AND HIGH MAST LIGHT STANDARDS. REUSING AND ADDING LIGHT EMITTING DIODE LUMINAIRES. INSTALLING NEW JUNCTION BOXES, CONDUIT AND CIRCUITRY.

DESIGN CRITERIA

- 0.8 AVERAGE FOOTCANDLE ON TRAVEL LANES
- 4:1 AVERAGE TO MINIMUM UNIFORMITY RATIO ON TRAVEL LANES
- 2018 AASHTO ROADSIDE LIGHTING DESIGN GUIDE
- 2013 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 6TH EDITION AND LATEST INTERIM SPECIFICATIONS VALID AT THE TIME OF LETTING (HANDHOLE SHAFT DIAMETER REQUIREMENT AND HANDHOLE PLACEMENT REQUIREMENT WAIVED)
- FATIGUE CATEGORY II SHALL BE USED IN DESIGN
- DESIGN HIGH MOUNT SUPPORT FOR BASIC WIND SPEED OF 90 MPH
- DESIGN HIGH MOUNT STANDARD FOUNDATION FOR BASIC WIND SPEED OF 110 MPH. ANY CONTRACTOR-DESIGNED SITE SPECIFIC FOUNDATION DESIGN SHALL BE DESIGNED FOR THE SAME WIND SPEED
- 2017 NATIONAL ELECTRICAL CODE
- 2011 AASHTO ROADSIDE DESIGN GUIDE

ROADWAY STANDARDS

THE FOLLOWING ROADWAY ENGLISH STANDARDS AS APPEAR IN "NCDOT ROADWAY STANDARD DRAWINGS", ROADWAY DESIGN UNIT-N.C. DEPARTMENT OF TRANSPORTATION RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD NO.	TITLE
1401.01	HIGH MOUNT STANDARD
1404.01	LIGHT STANDARDS
1405.01	STANDARD FOUNDATION
1407.01	ELECTRIC SERVICE POLE AND LATERAL
1409.01	ELECTRICAL DUCT
1410.01	FEEDER CIRCUITS
1411.01	ELECTRICAL JUNCTION BOXES
1412.01	UNDERPASS LIGHTING

ALL WORK SHALL BE IN CONFORMANCE WITH DIVISION 14 OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, DATED JANUARY 2018.

PLAN SYMBOL	DESCRIPTION	CONTRACT ITEM	
8	2 #8 Ø 1 #10G 1.5" P	2 AWG SIZE 8 CONDUCTOR (BK & RD) 1 AWG SIZE 10 GROUNDING CONDUCTOR 1.5" PVC CONDUIT	2 - 8 W/G FEEDER CIRCUIT IN 1.5" CONDUIT
*8	2 #8 Ø 1 #10G	2 AWG SIZE 8 CONDUCTOR (BK & RD) 1 AWG SIZE 10 GROUNDING CONDUCTOR	2 - 8 W/G FEEDER CIRCUIT
6	2 #6 Ø 1 #8G 1.5" P	2 AWG SIZE 6 CONDUCTOR (BK & RD) 1 AWG SIZE 8 GROUNDING CONDUCTOR 1.5" PVC CONDUIT	2 - 6 W/G FEEDER CIRCUIT IN 1.5" CONDUIT
*6	2 #6 Ø 1 #10G	2 AWG SIZE 6 CONDUCTOR (BK & RD) 1 AWG SIZE 8 GROUNDING CONDUCTOR	2 - 6 W/G FEEDER CIRCUIT
4	2 #4 Ø 1 #6G 1.5" P	2 AWG SIZE 4 CONDUCTOR (BK & RD) 1 AWG SIZE 6 GROUNDING CONDUCTOR 1.5" PVC CONDUIT	2 - 4 W/G FEEDER CIRCUIT IN 1.5" CONDUIT
*4	2 #4 Ø 1 #6G	2 AWG SIZE 4 CONDUCTOR (BK & RD) 1 AWG SIZE 6 GROUNDING CONDUCTOR	2 - 4 W/G FEEDER CIRCUIT
2	2 #2 Ø 1 #4G 1.5" P	2 AWG SIZE 2 CONDUCTOR (BK & RD) 1 AWG SIZE 4 GROUNDING CONDUCTOR 1.5" PVC CONDUIT	2 - 2 W/G FEEDER CIRCUIT IN 1.5" CONDUIT
*2	2 #2 Ø 1 #4G	2 AWG SIZE 2 CONDUCTOR (BK & RD) 1 AWG SIZE 4 GROUNDING CONDUCTOR	2 - 2 W/G FEEDER CIRCUIT

TRADE SIZE	METRIC	ENGLISH
1/2	16mm	1/2"
3/4	21mm	3/4"
1	27mm	1"
1.5	41mm	1 1/2"
2	53mm	2"
3	78mm	3"

BD	BURIED	PVC	PVC SCHEDULE 40 CONDUIT
LT	LIGHT	RGC	RIGID GALVANIZED STEEL CONDUIT
JA	JACKED	C	CONDUIT
MH	MOUNTING HEIGHT	CKT	CIRCUIT
Ø	PHASE	N	NEUTRAL
SER LAT	SERVICE LATERAL	G	GROUND
IGJB	IN GROUND JUNCTION BOX	HM	HIGH MAST
LED	LIGHT EMITTING DIODE	LSJB	LIGHT STANDARD JUNCTION BOX
HMJB	HIGH MAST JUNCTION BOX	CSJB	CONTROL SYSTEM JUNCTION BOX
ABN	ABANDON OR REUSE	EX	EXISTING

LEGEND

- PROPOSED 120' HIGH MAST STANDARD W/ HM FOUNDATION, JUNCTION BOX & 8 HM LED LUMINAIRES. REUSE LUMINAIRES FROM REPLACED HM10-HM14. SEE SHEET E-4.
- PROPOSED 100' HIGH MAST STANDARD W/ HM FOUNDATION, JUNCTION BOX & 6 HM LED LUMINAIRES WITH PHOTOCELLS. 560W MAX, 54,000 MIN. MAINTAINED DELIVERED LUMENS, TYPE V. MAXIMUM BUG RATING 5-0-5. SEE SHEETS E-5 & E-6.
- PROPOSED LIGHT STANDARD TYPE MTLT 45' WITH 15' SINGLE ARM. INCLUDES STANDARD FOUNDATION TYPE R1 OR R2, JUNCTION BOX & REUSE (R) OF EXISTING LED ROADWAY LUMINAIRE. SEE SHEET E-6.
- PROPOSED LIGHT STANDARD TYPE MTLT 45' WITH 15' SINGLE ARM. INCLUDES STANDARD FOUNDATION TYPE R1 OR R2, JUNCTION BOX & 285W MAX LED ROADWAY LUMINAIRE WITH PHOTOCELL("N" NEW). IES DISTRIBUTION: TYPE II OR III AS REQUIRED. MAXIMUM BUG RATING 3-0-3.
- PROPOSED LIGHT STANDARD TYPE MTLT 45' WITH 15' TWIN ARMS. TO BE INSTALLED ON EXISTING STANDARD FOUNDATION IN MEDIAN BARRIER. REUSE LUMINAIRES FROM REMOVED LIGHT STANDARD. SEE SHEET E-6.
- PROPOSED CONTROL SYSTEM WITH JUNCTION BOX. SIZE BREAKERS AS SHOWN IN LOAD SCHEDULE. SEE SHEETS E-4-E-6.
- PROPOSED ELECTRICAL JUNCTION BOX. SEE TABLE C, SHEET E-1A, FOR DETAILS AND TYPE.
- STATION WITH PANEL P1 MAIN CB AND CCTV SERVICE DISCONNECT AT CONTROL SYSTEM "W". SEE SHEET E-9 FOR DETAILS.
- EXISTING 120' HIGH MAST STANDARD TO BE REMOVED. REMOVE OR ABANDON FOUNDATION. SEE SHEET E-2 FOR EXISTING LIGHTING.
- EXISTING 100' HIGH MAST STANDARD TO BE REMOVED. REMOVE OR ABANDON FOUNDATION. SEE SHEET E-3 FOR EXISTING LIGHTING.
- EXISTING SINGLE ARM LIGHT STANDARD TO BE REMOVED. ABANDON OR REMOVE FOUNDATION. SEE SHEET E-3.
- LOCATION OF EXISTING SINGLE ARM LIGHT STANDARD THAT HAS BEEN HIT OR REMOVED AND HAS NOT BEEN REPLACED. REMOVE FOUNDATION. SEE SHEET E-3.
- EXISTING TWIN ARM LIGHT STANDARD TO BE REMOVED. SEE SHEET E-3.
- EXISTING CONTROL SYSTEMS "V" AND "W" ARE TO BE REMOVED. REMOVE LIGHTGRID COMPONENTS AND MOVE TO STORAGE TO BE RE-USED. SEE SHEETS E-5 - E-7.
- EXISTING ELECTRICAL JUNCTION BOX. REMOVE UNLESS OTHERWISE NOTED ON THE PLANS.
- REFERENCE TO CORRESPONDING NOTE AS NUMBERED.
- PROPOSED FEEDER CIRCUIT. CONTROL SYSTEM (A), CIRCUIT NUMBER (1) PLAN SYMBOL (6). SEE TABLE A, THIS SHEET.
- PROPOSED 30' CLASS 4 SERVICE POLE AND LATERAL 3 #1/0 USE CONDUCTORS 2" CONDUIT
- PROPOSED ELECTRICAL DUCT SIZE 2", 3" OR 4" TYPE (JA) OR (BD) LOCATION: SEE TABLE B, SHEET E-1A.
- EXISTING CIRCUITRY. SEE SHEET E-2 & E-3.
- EXISTING CONDUIT TO BE REUSED. SEE SHEET E-5.
- EXISTING PROTECTIVE SLEEVE AND CONDUIT TO BE REUSED. SEE SHEET E-5.
- ITS CCTV CAMERA. SEE SHEET E-5.

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CHECKED BY: _____ DATE: _____

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET "E-1" FOR LEGEND & Δ NOTES

TABLE "C" JUNCTION BOX SUMMARY

Table with columns: SHEET, LABEL, LOCATION AND OFFSET, TYPE, PAY ITEM & SIZE (IN GROUND, LIGHT STANDARD, HIGH MAST, CONTROL SYSTEM, BARRIER RAIL, SIDE WALK), GPS LOCATION (LAT/LONG). Rows include CSVJB, HM10JB, HM11JB, HM12JB, JBV1-7, and CSV TOTALS.

TABLE "B" ELECTRICAL DUCT SUMMARY (ESTIMATED LENGTH IN FEET)

Table with columns: CONTROL SYSTEM "V", TYPE (JACKED (JA) FEET, BURIED (BD) FEET), LOCATION, RACEWAY, SHEET, SIZE 2", SIZE 3", SIZE 4", SIZE 6". Rows include JBV1-7 and CSV TOTALS.

TABLE "C" JUNCTION BOX SUMMARY

Table with columns: SHEET, LABEL, LOCATION AND OFFSET, TYPE, PAY ITEM & SIZE (IN GROUND, LIGHT STANDARD, HIGH MAST, CONTROL SYSTEM, BARRIER RAIL, SIDE WALK), GPS LOCATION (LAT/LONG). Rows include CSWJB, HM13JB, and CSW TOTALS.

TABLE "B" ELECTRICAL DUCT SUMMARY (ESTIMATED LENGTH IN FEET)

Table with columns: CONTROL SYSTEM "W", TYPE (JACKED (JA) FEET, BURIED (BD) FEET), LOCATION, RACEWAY, SHEET, SIZE 2", SIZE 3", SIZE 4", SIZE 6". Rows include HM13JB & CSWJB and CSW TOTALS.

TABLE "C" JUNCTION BOX SUMMARY

Table with columns: SHEET, LABEL, LOCATION AND OFFSET, TYPE, PAY ITEM & SIZE (IN GROUND, LIGHT STANDARD, HIGH MAST, CONTROL SYSTEM, BARRIER RAIL, SIDE WALK), GPS LOCATION (LAT/LONG). Rows include CSXJB, HM14JB, SA56JB-1A, JBX1-3, and CSX TOTALS.

TABLE "B" (CONTINUED) ELECTRICAL DUCT SUMMARY (ESTIMATED LENGTH IN FEET)

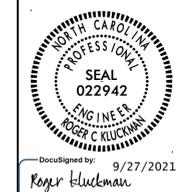
Table with columns: CONTROL SYSTEM "X", TYPE (JACKED (JA) FEET, BURIED (BD) FEET), LOCATION, RACEWAY, SHEET, SIZE 2", SIZE 3", SIZE 4", SIZE 6". Rows include SA56JB-1A, JBX1-3, and PROJECT GRAND TOTALS.

COMPUTED BY: AB DATE: CHECKED BY: DATE:

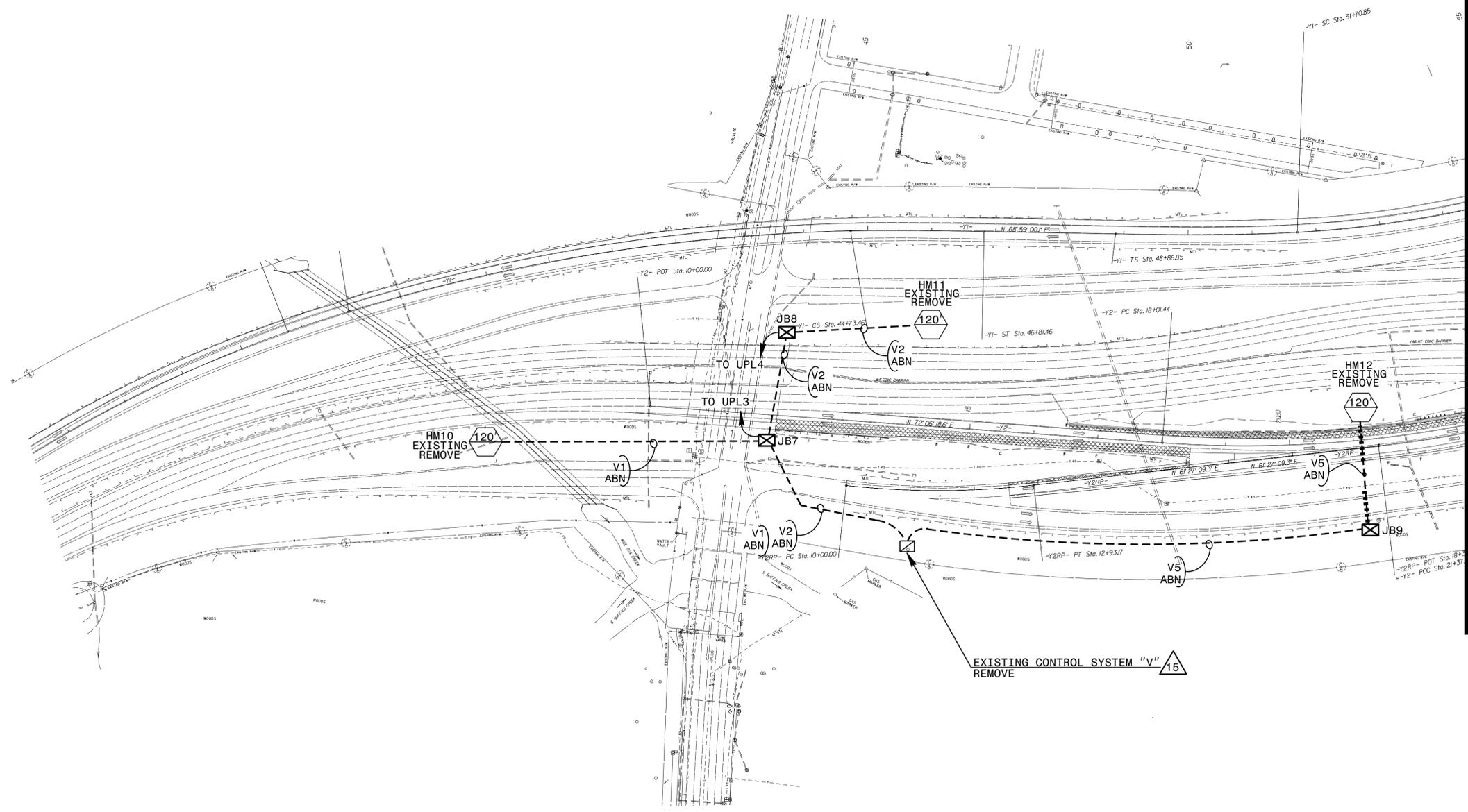
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USE FOR LIGHTING CONSTRUCTION ONLY

PROJECT REFERENCE NO. U-5754 SHEET NO. E-2



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTE: ALL EQUIPMENT SHOWN AS EXISTING ON THIS SHEET IS TO BE REMOVED OR ABANDONED.

SEE SHEET "E-1" FOR LEGEND & △ NOTES

2			
1			
Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION			
LIGHTING LAYOUT EXISTING I-40/MLK JR DR. INTERCHANGE GUILFORD COUNTY			
Drawn By:	AB	Approved By:	Dwg No.:

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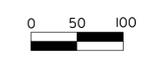
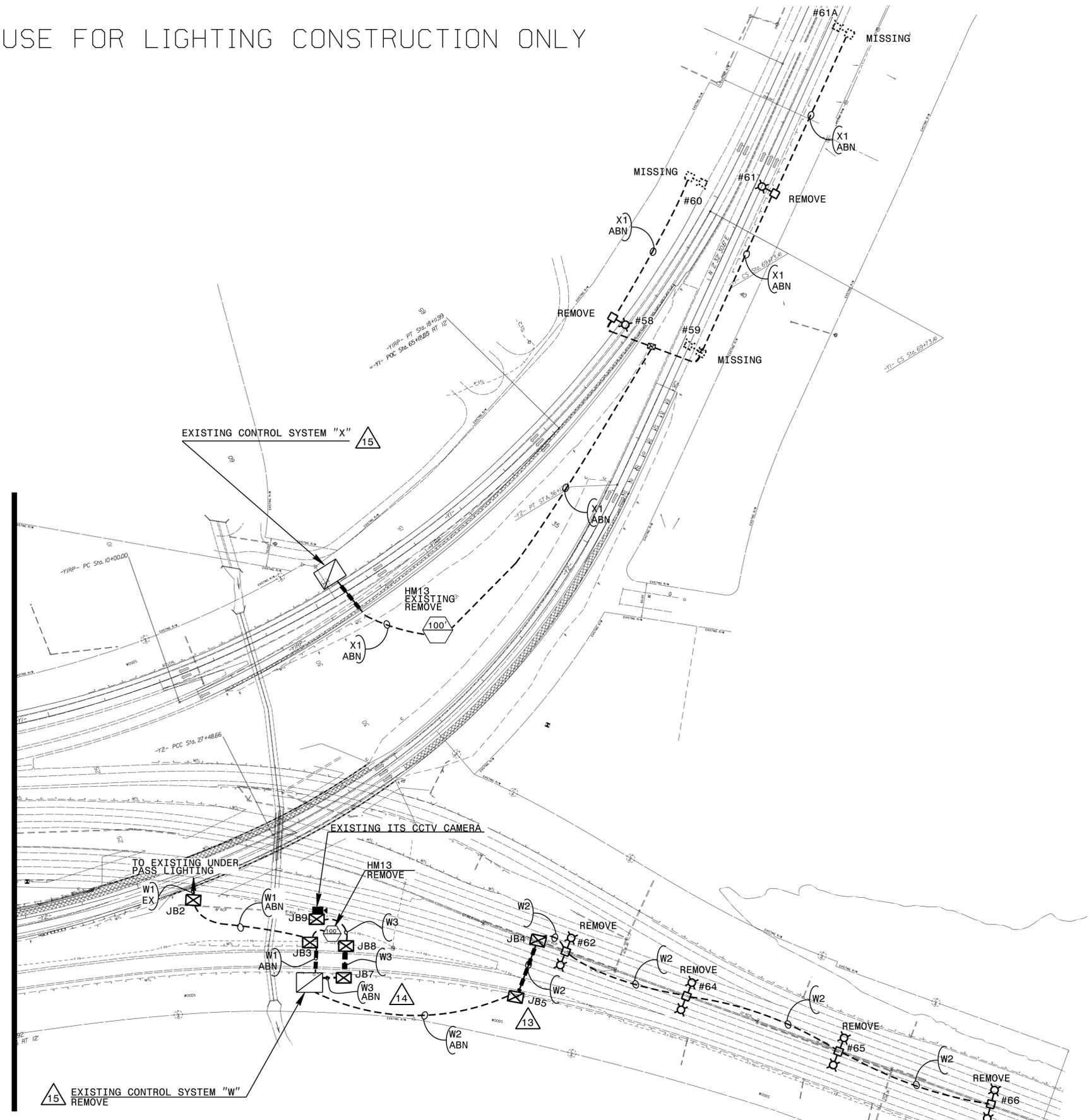


DocuSigned by:
Roger Kluckman
9/27/2021

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

USE FOR LIGHTING CONSTRUCTION ONLY

MATCHLINE WITH SHEET E2



SEE SHEET "E-1" FOR
LEGEND & △ NOTES

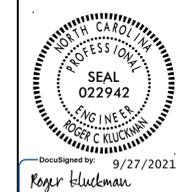
△ EXISTING CONTROL SYSTEM "W"
REMOVE

NOTE: EXISTING JUNCTION BOXES JB2, JB4, JB5, JB7-9 AND THE CCTV CAMERA ARE TO BE REUSED.
ALL OTHER EXISTING EQUIPMENT IS TO BE REMOVED OR ABANDONED.

2			
1			
Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION LIGHTING LAYOUT EXISTING I-40/US 220 INTERCHANGE GUILFORD COUNTY			
Drawn By:	AB	Approved By:	Dwg No.:

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USE FOR LIGHTING CONSTRUCTION ONLY



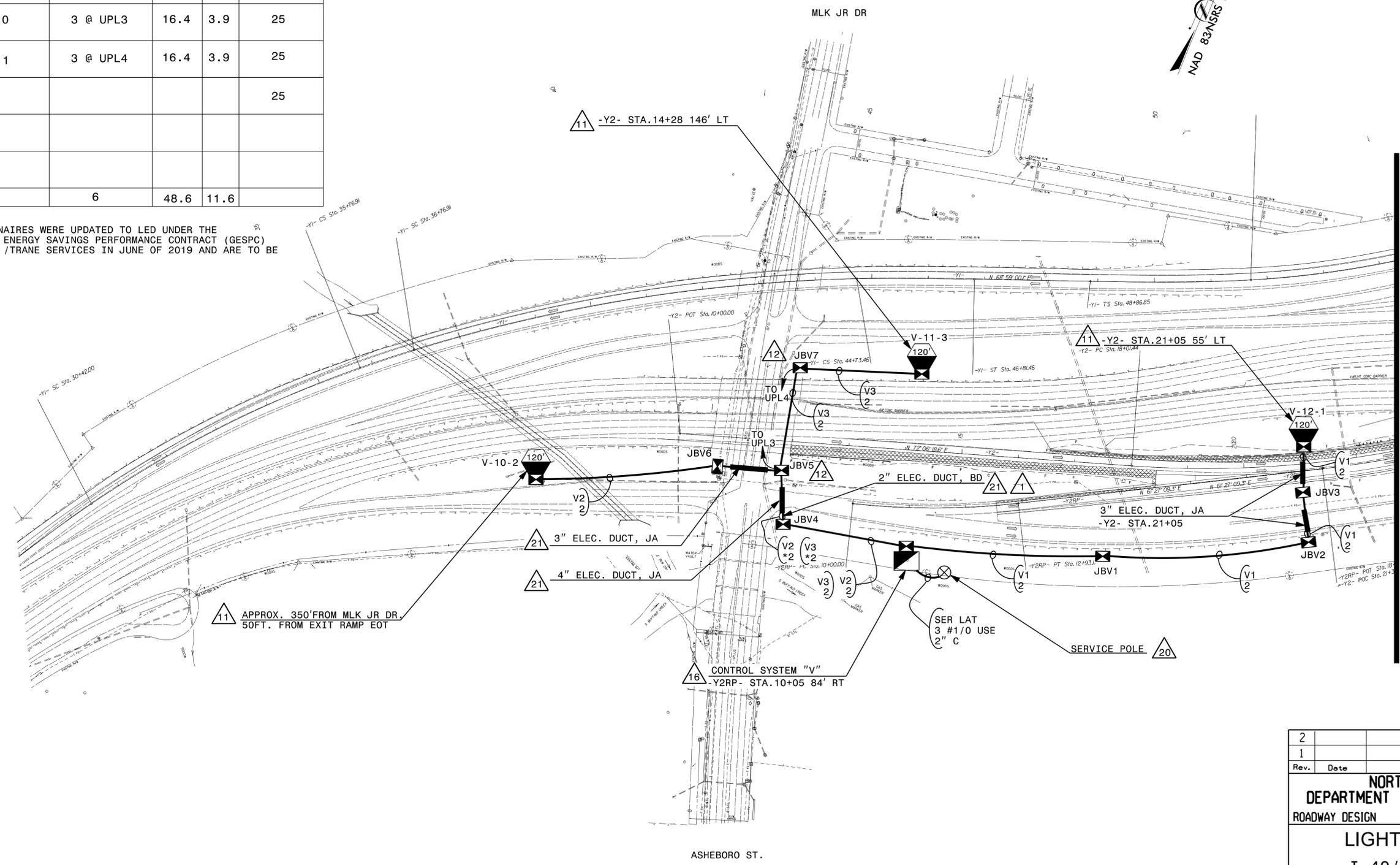
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

SEE SHEET "E-1" FOR
LEGEND & △ NOTES



LOAD SCHEDULE -Y2RP- STA.10+05 84' RT					
1Ø, 3W, 120/240 VAC			CONTROL SYSTEM "V"		
CIRCUIT ID	120' HIGH MAST 8 @ 475W* LED	UNDERPASS LUMINAIRE 1 @ 46W*	AMPS @ 240V	KW LOAD	BREAKER SIZE (AMPS)
V1	V-12		15.8	3.8	20
V2	V-10	3 @ UPL3	16.4	3.9	25
V3	V-11	3 @ UPL4	16.4	3.9	25
SPARE					25
TOTAL	3	6	48.6	11.6	

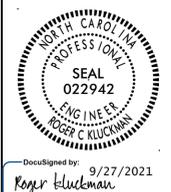
* NOTE: THESE LUMINAIRES WERE UPDATED TO LED UNDER THE GUARANTEED ENERGY SAVINGS PERFORMANCE CONTRACT (GESPC) WITH BRADY /TRANE SERVICES IN JUNE OF 2019 AND ARE TO BE REUSED.



MATCHLINE WITH SHEET E-5

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2			
1			
Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION LIGHTING LAYOUT I-40/MLK JR DR. INTERCHANGE GUILFORD COUNTY			
Drawn By:	AB	Approved By:	Dwg No.:

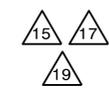
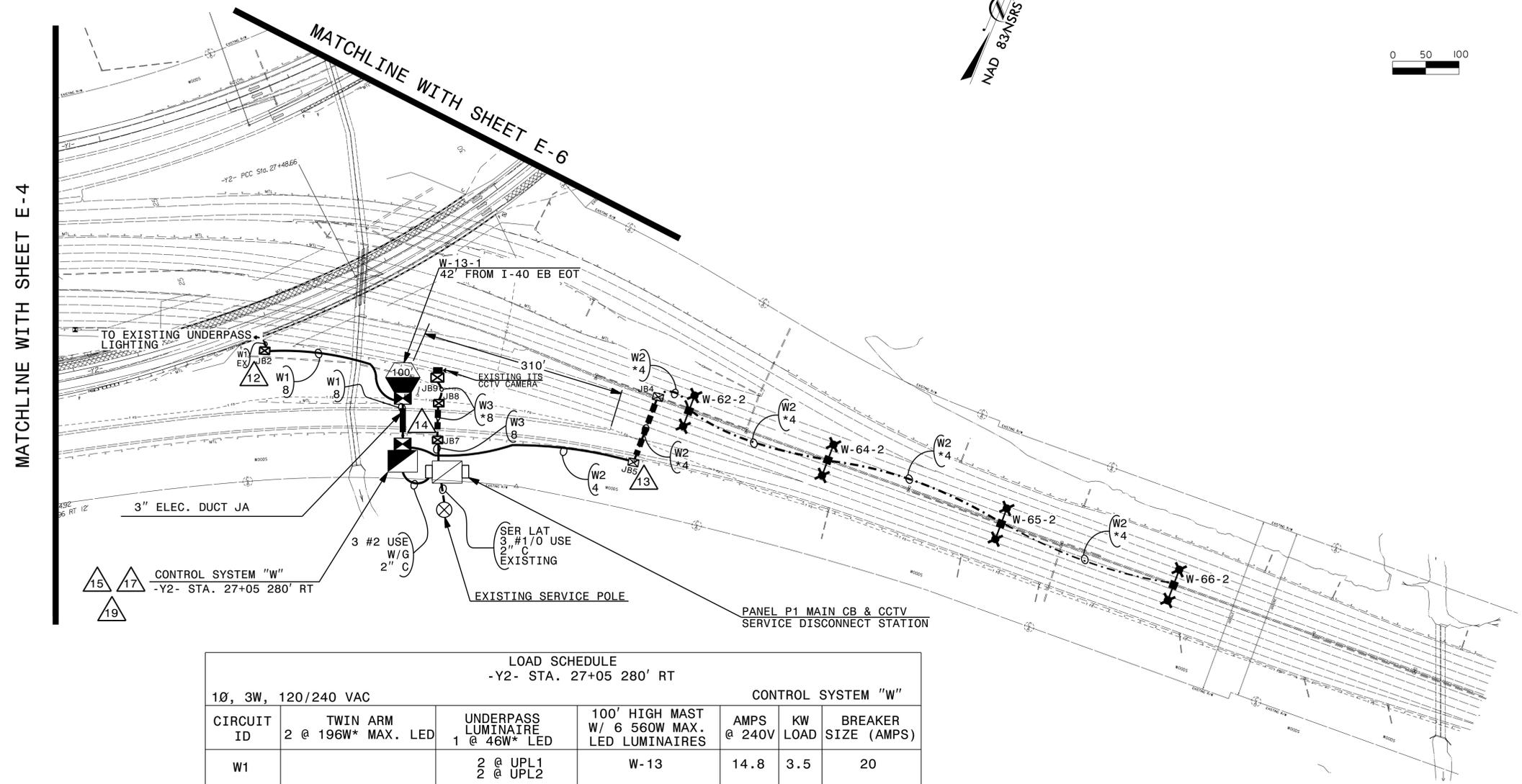


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SEE SHEET "E-1" FOR
LEGEND & △ NOTES



USE FOR LIGHTING CONSTRUCTION ONLY



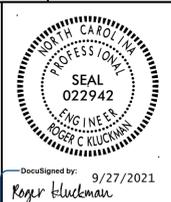
LOAD SCHEDULE
-Y2- STA. 27+05 280' RT

1Ø, 3W, 120/240 VAC			CONTROL SYSTEM "W"			
CIRCUIT ID	TWIN ARM 2 @ 196W* MAX. LED	UNDERPASS LUMINAIRE 1 @ 46W* LED	100' HIGH MAST W/ 6 560W MAX. LED LUMINAIRES	AMPS @ 240V	KW LOAD	BREAKER SIZE (AMPS)
W1		2 @ UPL1 2 @ UPL2	W-13	14.8	3.5	20
W2	W-62, W-64 W-65, W-66			6.5	1.6	15
SPARE						20
TOTAL	8	4	6	21.3	5.1	

* NOTE: THESE LUMINAIRES WERE UPDATED TO LED UNDER THE GUARANTEED ENERGY SAVINGS PERFORMANCE CONTRACT (GESPC) WITH BRADY /TRANE SERVICES IN JUNE OF 2019 AND ARE TO BE REUSED.

2			
1			
Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION LIGHTING LAYOUT I-40/US 220 INTERCHANGE GUILFORD COUNTY			
Drawn By:	AB	Approved By:	Dwg No.:

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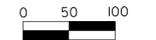
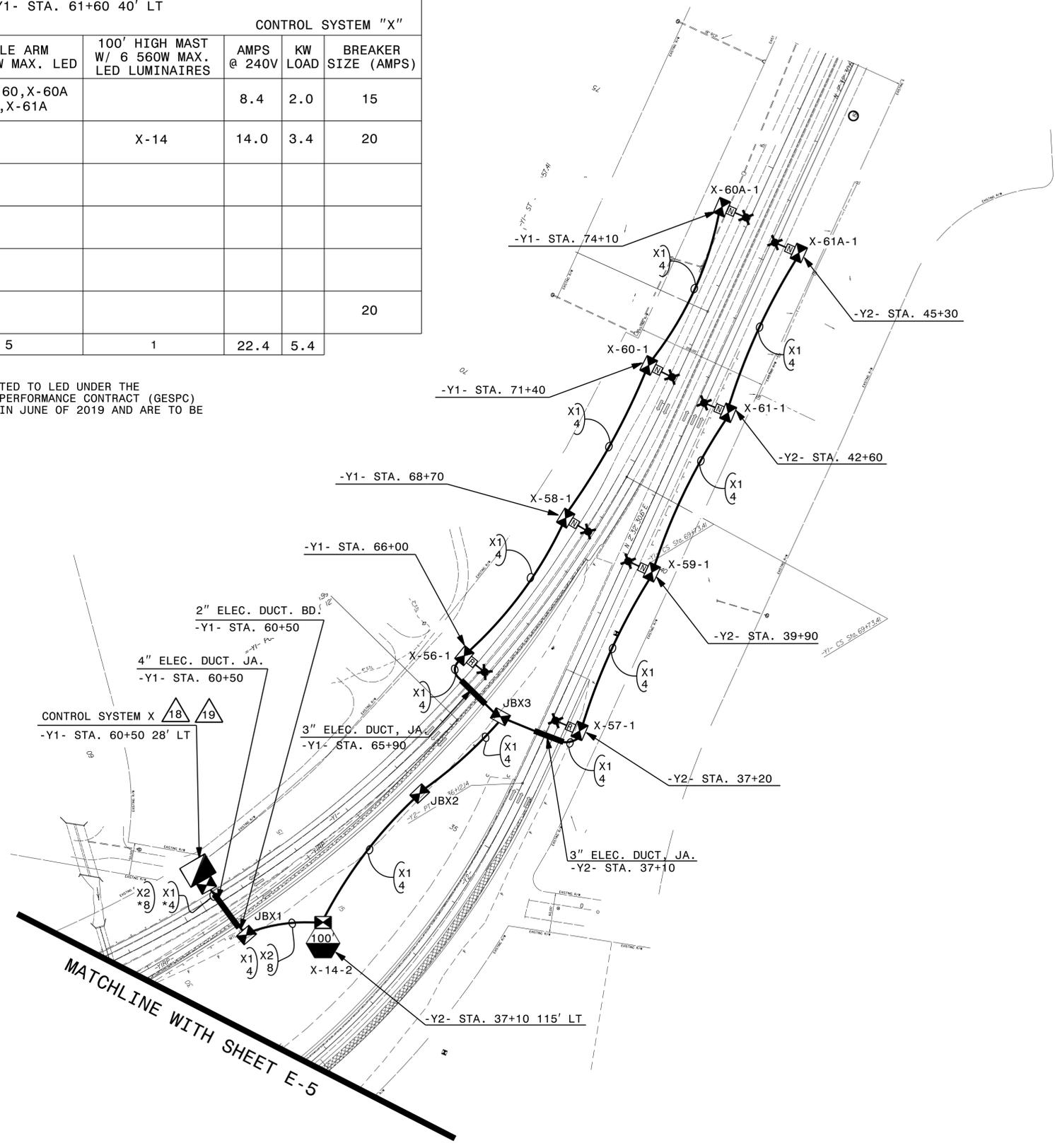


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USE FOR LIGHTING CONSTRUCTION ONLY

LOAD SCHEDULE -Y1- STA. 61+60 40' LT						
1Ø, 3W, 120/240 VAC			CONTROL SYSTEM "X"			
CIRCUIT ID	SINGLE ARM 1 @ 196W* MAX. LED	SINGLE ARM 1 @ 285W MAX. LED	100' HIGH MAST W/ 6 560W MAX. LED LUMINAIRES	AMPS @ 240V	KW LOAD	BREAKER SIZE (AMPS)
X1	X-56, X-57 X-58	X-59, X-60, X-60A X-61, X-61A		8.4	2.0	15
X2			X-14	14.0	3.4	20
SPARE						20
TOTAL	3	5	1	22.4	5.4	

* NOTE: THESE LUMINAIRES WERE UPDATED TO LED UNDER THE GUARANTEED ENERGY SAVINGS PERFORMANCE CONTRACT (GESPC) WITH BRADY/TRANE SERVICES IN JUNE OF 2019 AND ARE TO BE REUSED.

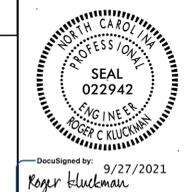


SEE SHEET "E-1" FOR
LEGEND & △ NOTES

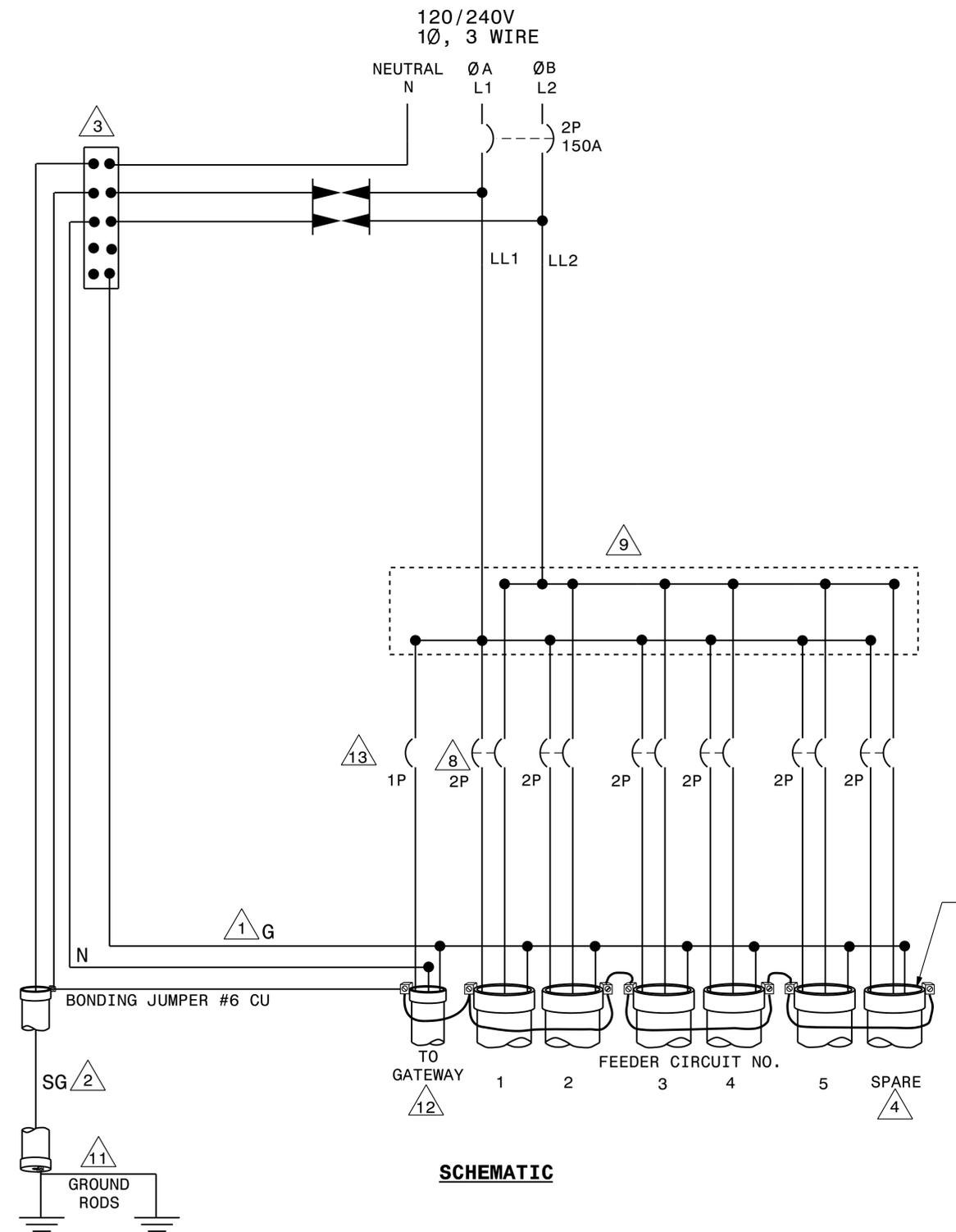
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Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION LIGHTING LAYOUT US 220 NORTH OF INTERCHANGE WITH I-40 GUILFORD COUNTY			
Drawn By:	AB	Approved By:	Dwg No.:

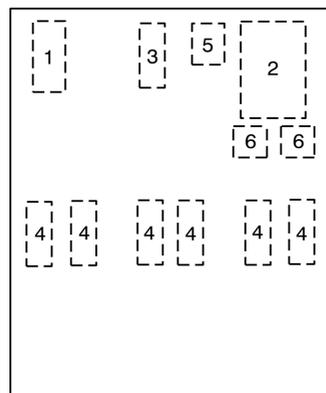
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



USE FOR LIGHTING CONSTRUCTION ONLY



SCHMATIC



INTERIOR PANEL COMPONENT LAYOUT

- △ 6
- △ 7
- △ 10

- NOTES**
- △ 1 EQUIPMENT GROUNDS (G) SHALL BE SIZED ACCORDING TO CIRCUIT DESCRIPTION. SEE PLANS.
 - △ 2 SYSTEM GROUND (SG) SHALL BE CONTINUOUS FROM THE NEUTRAL BAR TO THE GROUNDING ELECTRODE (GROUND ROD).
 - △ 3 THE NEUTRAL BAR SHALL BE BONDED TO THE PANEL.
 - △ 4 INSTALL 6 FEEDER CIRCUIT CONDUITS AS SHOWN. UNUSED CONDUIT SHALL BE CAPPED IN THE CONTROL SYSTEM JUNCTION BOX.
 - △ 5 INSTALL A GROUNDING BUSHING ON EACH METAL CONDUIT. CONNECT BONDING JUMPER AS REQUIRED BY NEC.
 - △ 6 REFER TO PLAN SHEET E-12 FOR ENCLOSURES. (DETAIL SHEET 6 OF 6).
 - △ 7 THE CONTROL SYSTEM MUST BE LABELED "SUITABLE FOR USE AS SERVICE EQUIPMENT." REFER TO THE SPECIAL PROVISIONS FOR OTHER REQUIREMENTS.
 - △ 8 SEE PLANS FOR LIGHTING CIRCUIT BREAKER SIZES.
 - △ 9 PROVIDE MULTI-TAP LOAD LUGS OR POWER DISTRIBUTION BLOCKS.
 - △ 10 PROVIDE MANUFACTURER SUPPLIED MOUNTING BRACKETS OR SCREW STUDS PERMANENTLY ATTACHED TO THE BACK PANEL, FOR MOUNTING COMPONENTS.
 - △ 11 PROVIDE AND INSTALL A CONDUIT CHOKE ON THE UNDERGROUND END OF THE 3/4" RGS SYSTEM GROUND CONDUIT.
 - △ 12 INSTALL #12 THWN CONDUCTOR FROM CONTROL SYSTEM "V" ENCLOSURE TO GATEWAY.
 - △ 13 NOT REQUIRED FOR CONTROL SYSTEM "X". ALL LIGHTGRID NODES FOR CONTROL SYSTEMS "V", "W" & "X" USE THE GATEWAY AT CONTROL SYSTEM "V".

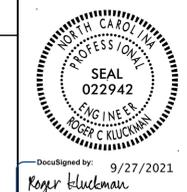
COMPONENT LIST			
#	QTY	DESCRIPTION	SPECIFICATIONS
1	1	NEUTRAL BAR	
2	1	SERVICE CIRCUIT BREAKER	2P, 240V, 150A
3	1	GATEWAY CIRCUIT BREAKER	1P, 120V, 15A
4	**	FEEDER CIRCUIT BREAKERS	2P, 240V, 50A MAX
5	1	TYPE 1 SURGE PROTECTION DEVICE	20,000A RATED
6	2	POWER DISTRIBUTION LUGS OR BLOCKS	
		MOUNTING BRACKETS OR SCREW STUDS	

**PROVIDE THE NUMBER OF BREAKERS SHOWN IN THE LOAD SCHEDULE ON THE PLANS. INCLUDE SPARE BREAKER AS WELL.

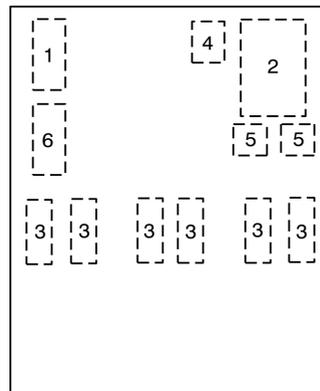
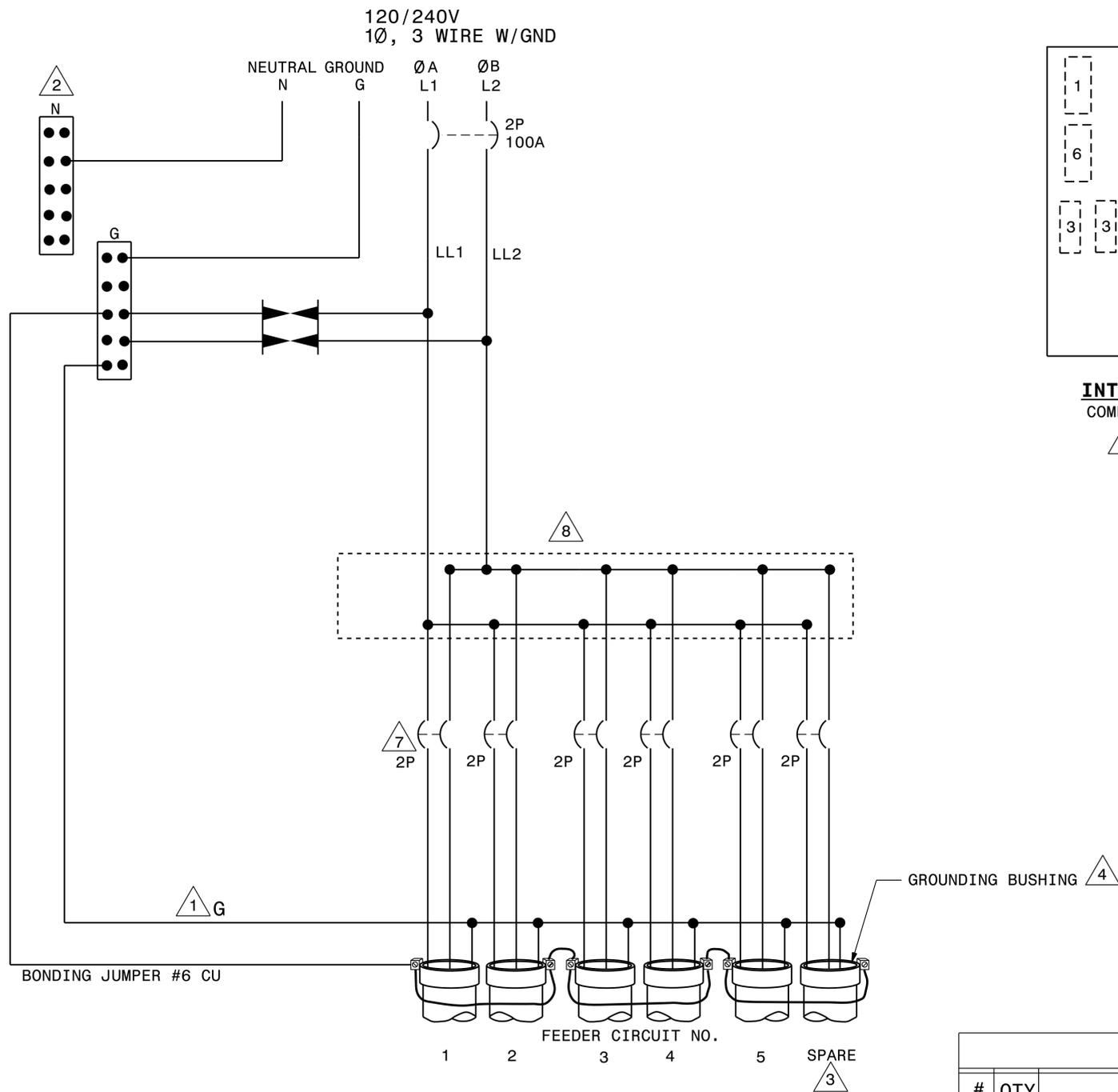
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Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION 120/240V CONTROL SYSTEMS "V" & "X" SCHEMATIC SHEET 1 OF 6 GUILFORD COUNTY			
Drawn By:	AB	Approved By:	Dwg No.:

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INTERIOR PANEL COMPONENT LAYOUT



- NOTES**
- 1 EQUIPMENT GROUNDS (G) SHALL BE SIZED ACCORDING TO CIRCUIT DESCRIPTION. SEE PLANS.
 - 2 THE NEUTRAL BAR SHALL BE ISOLATED.
 - 3 INSTALL 6 FEEDER CIRCUIT CONDUITS AS SHOWN. UNUSED CONDUIT SHALL BE CAPPED IN THE CONTROL SYSTEM JUNCTION BOX.
 - 4 INSTALL A GROUNDING BUSHING ON EACH METAL CONDUIT. CONNECT BONDING JUMPER AS REQUIRED BY NEC.
 - 5 REFER TO PLAN SHEET E-12 FOR ENCLOSURES. (DETAIL SHEET 6 OF 6).
 - 6 THE CONTROL SYSTEM MUST BE LABELED "SUITABLE FOR USE AS SERVICE EQUIPMENT." REFER TO THE SPECIAL PROVISIONS FOR OTHER REQUIREMENTS.
 - 7 SEE PLANS FOR LIGHTING CIRCUIT BREAKER SIZES.
 - 8 PROVIDE MULTI-TAP LOAD LUGS OR POWER DISTRIBUTION BLOCKS.
 - 9 PROVIDE MANUFACTURER SUPPLIED MOUNTING BRACKETS OR SCREW STUDS PERMANENTLY ATTACHED TO THE BACK PANEL, FOR MOUNTING COMPONENTS.

COMPONENT LIST			
#	QTY	DESCRIPTION	SPECIFICATIONS
1	1	NEUTRAL BAR	
2	1	SERVICE CIRCUIT BREAKER	2P, 240V, 100A
3	**	FEEDER CIRCUIT BREAKERS	2P, 240V, 50A MAX
4	1	TYPE 1 SURGE PROTECTION DEVICE	20,000A RATED
5	2	POWER DISTRIBUTION LUGS OR BLOCKS	
		MOUNTING BRACKETS OR SCREW STUDS	
6		GROUND BAR	

**PROVIDE THE NUMBER OF BREAKERS SHOWN IN THE LOAD SCHEDULE ON THE PLANS. INCLUDE SPARE BREAKER AS WELL.

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Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION 120/240V CONTROL SYSTEM "W" SCHEMATIC SHEET 2 OF 6 GUILFORD COUNTY			
Drawn By:	AB	Approved By:	Dwg No.:

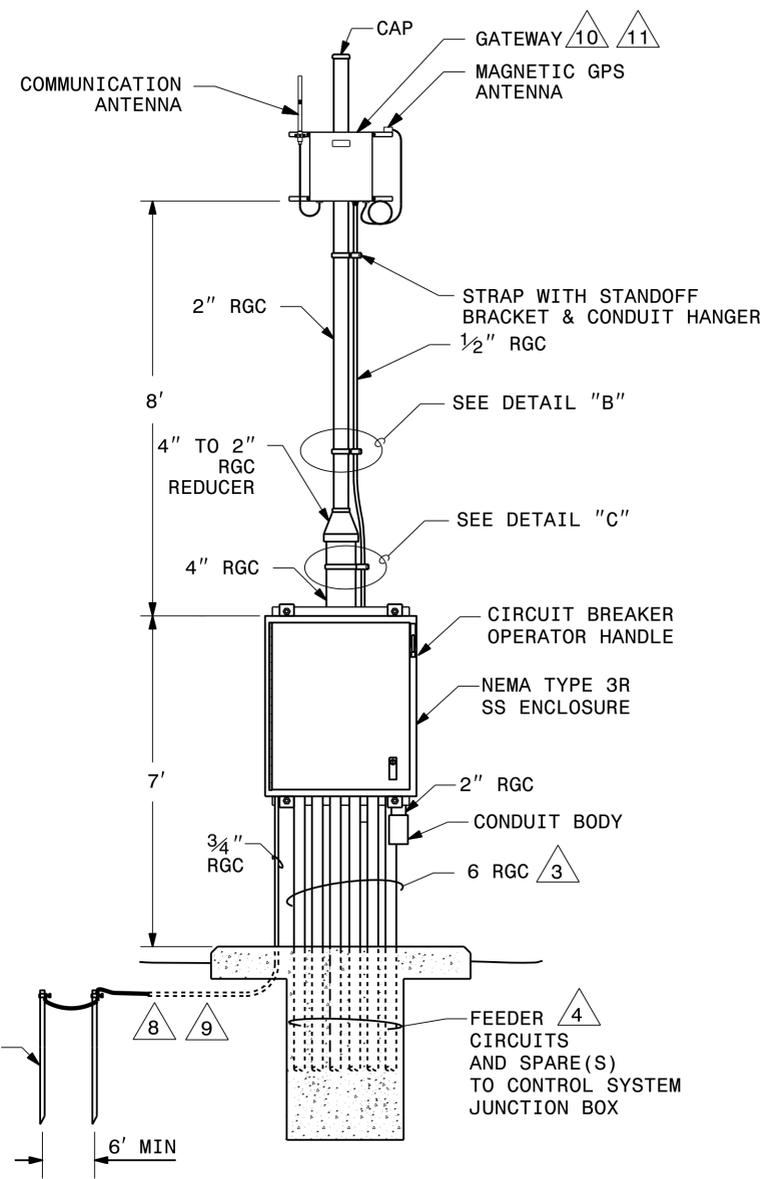
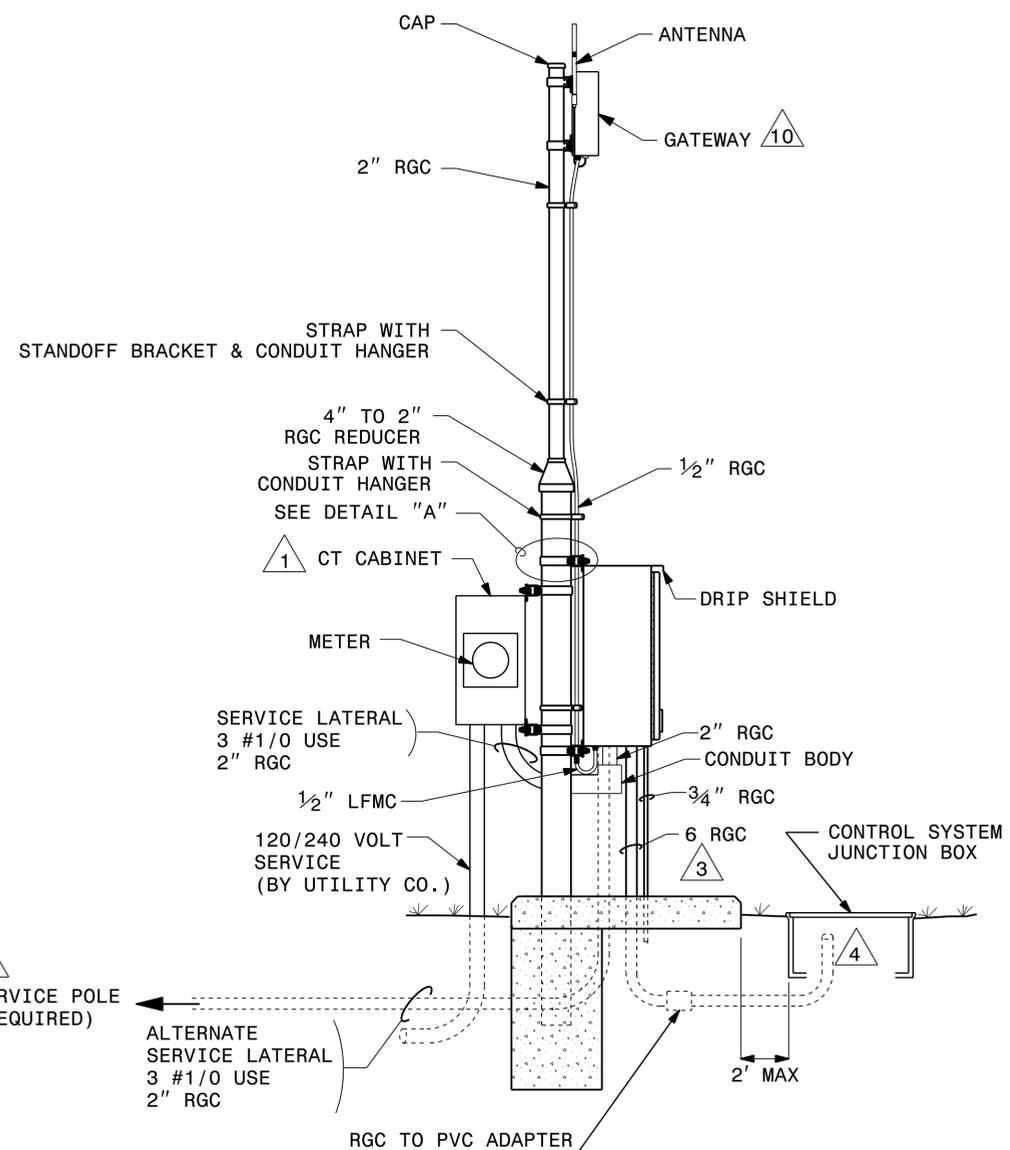
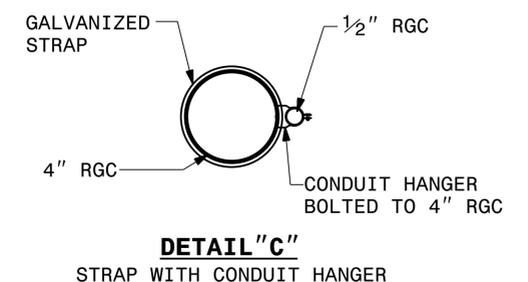
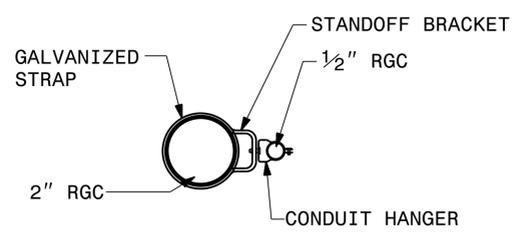
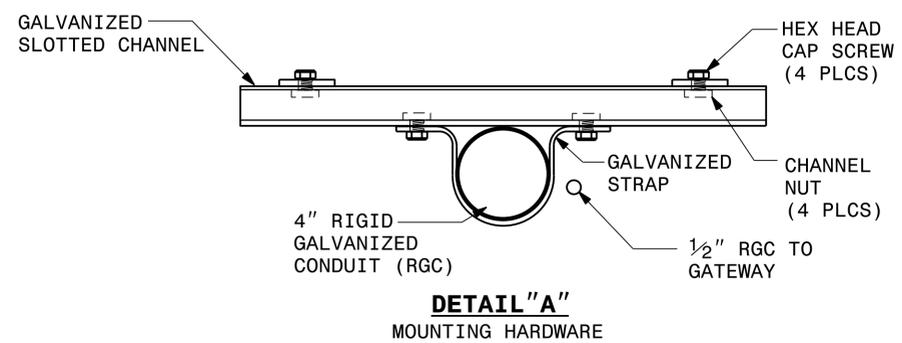
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NOTES

- 1 CURRENT TRANSFORMER (CT) CABINET AND METER MAY BE MOUNTED ON SERVICE POLE OR BACK OF CONTROL ENCLOSURE.
- 2 SEE SECTION 1407 OF THE STANDARD SPECIFICATIONS FOR SERVICE POLE AND SERVICE LATERAL.
- 3 SEE PLANS FOR SIZE OF CONDUITS AND/OR ELECTRICAL DUCT.
- 4 STUB FEEDER CIRCUIT CONDUITS INTO JUNCTION BOX. CAP UNUSED CONDUITS. FEEDER CIRCUITS MUST BE MINIMUM 30" BELOW GRADE
- 5 SEE SECTION 1411 OF THE STANDARD SPECIFICATIONS FOR JUNCTION BOX INSTALLATION.
- 6 ALL ABOVE GROUND CIRCUITRY TO BE INSTALLED IN RIGID GALVANIZED CONDUIT. UNDERGROUND FEEDER CIRCUITS TO BE INSTALLED IN SCH 40 PVC CONDUIT.
- 7 TOP OF GROUND ROD(S) SHALL BE NO MORE THAN FOUR INCHES BELOW GRADE TO ALLOW FOR EASE OF INSPECTION BY DEPARTMENT OF INSURANCE, OFFICE OF STATE FIRE MARSHAL PERSONNEL.
- 8 INSTALL A CONDUIT GROUND CHOKE AND BOND THE EQUIPMENT GROUNDING CONDUCTOR TO THE END OF THE 3/4" CONDUIT UNDERGROUND PER NEC ARTICLE 250.64E.
- 9 GROUNDING ELECTRODE CONDUCTOR 3/4" CONDUIT SHALL NOT TERMINATE BELOW THE CONCRETE FOUNDATION PAD.
- 10 STRAP GATEWAY TO 2" RGC USING STEEL BANDS PREINSTALLED ON GATEWAY ENCLOSURE.
- 11 REUSE GATEWAY ON NEW CONTROL SYSTEM "V".



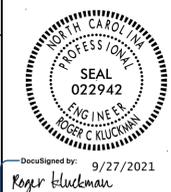
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Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION 120/240V CONTROL SYSTEM "V" DETAILS SHEET 3 OF 6 GUILFORD COUNTY			
Drawn By:	AB	Approved By:	Dwg No.:

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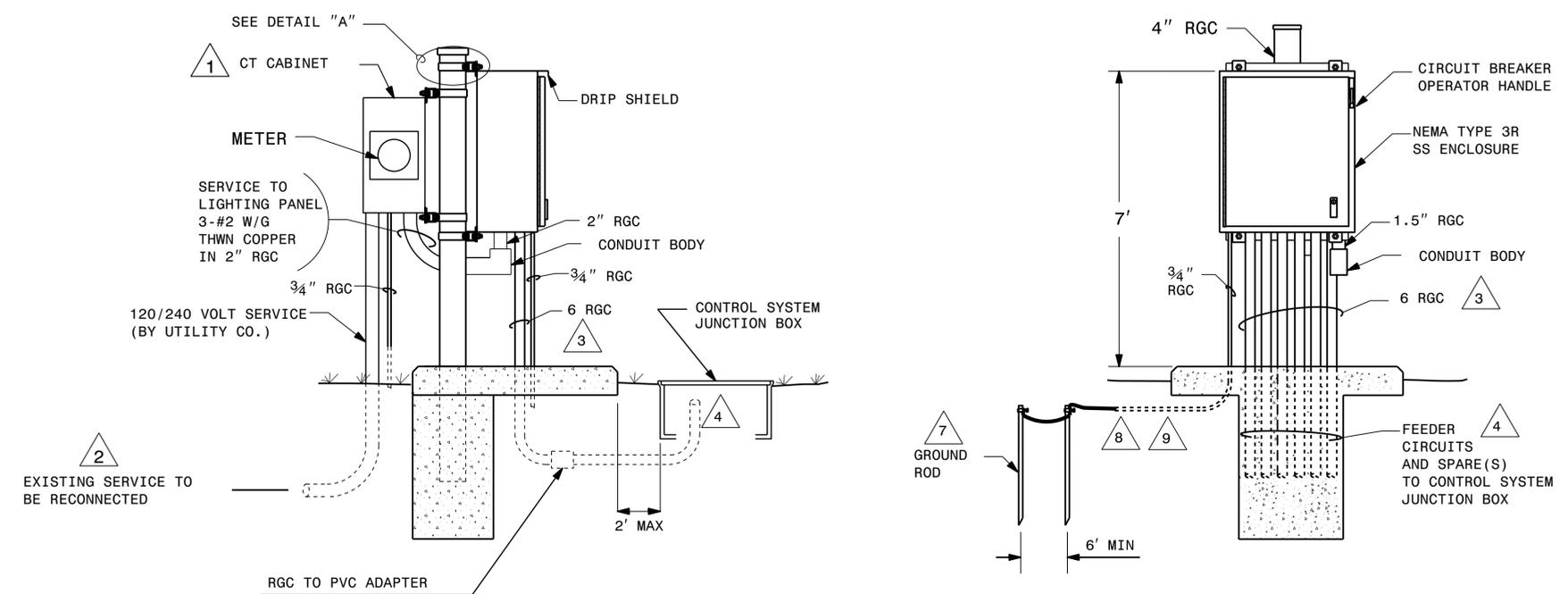
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NOTES

- 1 CURRENT TRANSFORMER (CT) CABINET AND METER MAY BE MOUNTED ON SERVICE POLE OR BACK OF CONTROL ENCLOSURE.
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- 10 STRAP GATEWAY TO 2" RGC USING STEEL BANDS PREINSTALLED ON GATEWAY ENCLOSURE.



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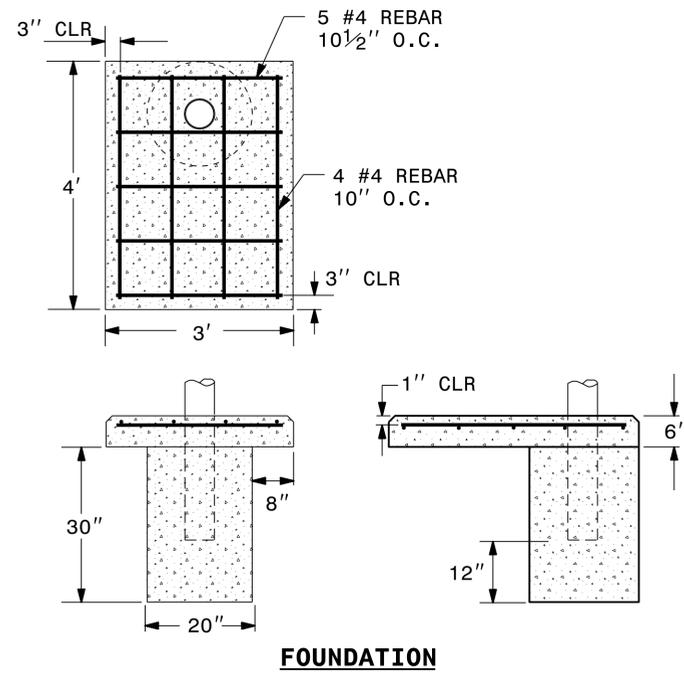
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Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION 120/240V CONTROL SYSTEMS "X" & "V" DETAILS SHEET 5 OF 6 GUILFORD COUNTY			
Drawn By:	AB	Approved By:	Dwg No.:

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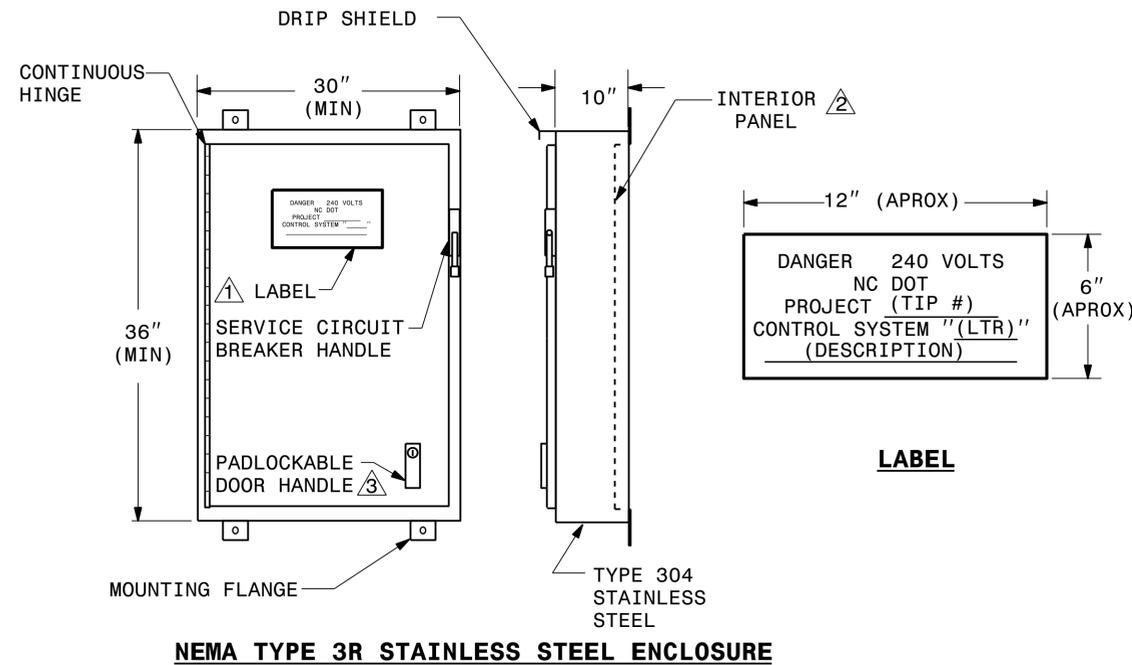
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FOUNDATION



NEMA TYPE 3R STAINLESS STEEL ENCLOSURE

- NOTES**
- 1 PERMANENTLY ATTACH A LABEL TO THE ENCLOSURE DOOR SHOWING THE WORK ORDER NUMBER, CONTROL SYSTEM LETTER DESIGNATION AND LOCATION DESCRIPTION SHOWN IN THE LOAD SCHEDULE AT EACH CONTROL SYSTEM IN THE PLANS.
 - 2 SEE SHEET 1 OF 5 FOR INTERIOR PANEL AND COMPONENT LAYOUT.
 - 3 PROVIDE DOOR CLOSING MECHANISM INTERLOCKED WITH SERVICE CIRCUIT BREAKER HANDLE. SEE STANDARD SPECIFICATIONS FOR DETAILS.

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Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION 120/240V LIGHT CONTROL SYSTEM FOUNDATION & ENCLOSURE DETAIL SHEET 6 OF 6 GUILFORD COUNTY			
Drawn By:	AB	Approved By:	Dwg No.: