

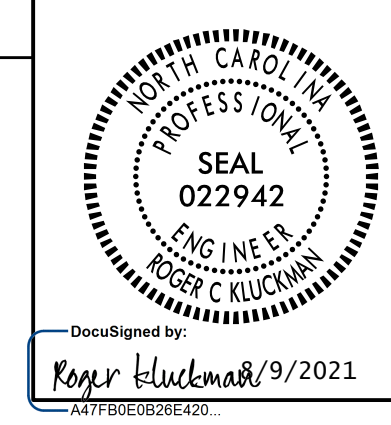
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PLANS AND DETAILS FOR PROPOSED LIGHTING /ELECTRICAL CONSTRUCTION

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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 WITHIN 3' ACCURACY 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 INSTALL JUNCTION BOX SO THAT THERE IS A 1" PER 1' FALL OFF, TO PREVENT WATER POOLING AROUND THE JUNCTION BOX LID.
- 11 INSTALL SEPERATE CONDUIT FOR FUTURE ELECTRICAL USE BY DAVIDSON CC WITHIN 5' OF ROADWAY LIGHTING CONDUIT. TURN UP CONDUITS AND LEAVE 12-18" ABOVE GRADE. INSTALL PLUGS OR CAPS ON ALL CONDUIT ENDS TO PREVENT DEBRIS AND VERMIN FROM ENTERING EMPTY CONDUITS.
- 12 INSTALL CONDUIT FOR FUTURE ELECTRICAL OR IRRIGATION USE BY DAVIDSON CC. INSTALL PLUGS OR CAPS ON ALL CONDUIT ENDS TO PREVENT DEBRIS AND VERMIN FROM ENTERING EMPTY CONDUITS.
- 13 SERVICE POLE MAY NOT BE REQUIRED. INSTALL SERVICE POLE AT THE DIRECTION OF THE ENGINEER.

SCOPE OF WORK

PLACE ROADWAY LIGHTING SYSTEM INTO SERVICE BY PROVIDING AND INSTALLING LIGHT STANDARDS WITH LIGHT EMITTING DIODE LUMINAIRES, UNDERGROUND CIRCUITRY, CONTROL SYSTEM AND JUNCTION BOXES.

ALSO PROVIDE SPARE CONDUITS AND JUNCTION BOXES FOR FUTURE USE BY THE DAVIDSON COMMUNITY COLLEGE AND THE LOCAL UTILITY.

DESIGN CRITERIA

- 0.8 AVERAGE FOOTCANDLE ON TRAVEL LANES
- 4:1 AVERAGE TO MINIMUM UNIFORMITY RATIO ON TRAVEL LANES
- 2018 AASHTO ROADWAY 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
- 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
1404.01	LIGHT STANDARDS
1405.01	STANDARD FOUNDATION
1407.01	ELECTRIC SERVICE POLE AND LATERAL
1408.01	LIGHT CONTROL SYSTEM
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.

LEGEND

- PROPOSED LIGHT STANDARD TYPE MTLT 45' WITH 15' SINGLE ARM. INCLUDES STANDARD FOUNDATION TYPE R1 OR R2, JUNCTION BOX & 185W MAX LED ROADWAY LUMINAIRE. IES DISTRIBUTION: TYPE II OR III AS REQUIRED. MAXIMUM BUG RATING 3-0-3. POLE, ARM AND LUMINAIRE ARE ALL TO BE PAINTED BLACK.
- PROPOSED UNDERPASS LUMINAIRE, TYPE WM, 70W LED
- PROPOSED UNDERPASS DISCONNECT
- PROPOSED CONTROL SYSTEM WITH JUNCTION BOX. SIZE BREAKERS AS SHOWN IN LOAD SCHEDULE. SEE SHEET E2.
- PROPOSED ELECTRICAL JUNCTION BOX. SEE TABLE C, SHEET E1A, FOR DETAILS AND TYPE.
- 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
- PROPOSED ELECTRICAL DUCT SIZE 2", 3" OR 4" TYPE (JA) OR (BD) LOCATION: SEE TABLE B, SHEET E1A.

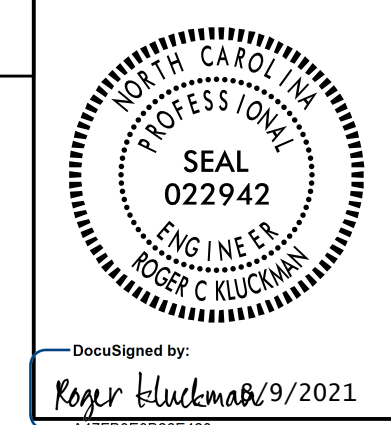
PLAN SYMBOL	DESCRIPTION	CONTRACT ITEM
8	2 #8 Ø 1 #10G 1.5" P	2 AWG SIZE 8 CONDUCTOR (BK & RD) 1 AWG SIZE 10 GROUNDING CONDUCTOR 1.5" PVC CONDUIT
*8	2 #8 Ø 1 #10G	2 AWG SIZE 8 CONDUCTOR (BK & RD) 1 AWG SIZE 10 GROUNDING CONDUCTOR
6	2 #6 Ø 1 #8G 1.5" P	2 AWG SIZE 6 CONDUCTOR (BK & RD) 1 AWG SIZE 8 GROUNDING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

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

COMPUTED BY: MSQ DATE: _____
 CHECKED BY: RGH DATE: _____

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**TABLE "C"
JUNCTION BOX SUMMARY**

SHEET	LABEL	LOCATION AND OFFSET	CONTROL SYSTEM "A"											GPS LOCATION		
			TYPE, PAY ITEM & SIZE											LAT/LONG		
			IN GROUND			LIGHT STANDARD			HIGH MAST			CONTROL SYSTEM	BARRIER RAIL		SIDE WALK	
IG18 18"X12"	IG30 30"X17"	IG36 36"X24"	LS18 18"X12"	LS30 30"X17"	LS36 36"X24"	HM18 18"X12"	HM30 30"X17"	HM36 36"X24"	CS36 36"X24"	BR18 18"X12"	SW18 18"X12"					
E2	CSAJB	2' FROM CSA											X			
E2	JBA1	-Y1- STA. 14+82, 39' LT'	X													
E2	JBA2	-L- STA. 61+90, 61' RT'	X													
E2	JBA3	-L- STA. 62+10, 57' LT'	X													
E2	JBA4	-L- STA. 60+03, 58' RT'	X													
E2	JBA5	-Y4SP- STA. 13+59, 35' RT'	X													
E2	A-1-1JB	5' FROM LIGHT STANDARD A-1-1				X										
E2	A-2-1JB	5' FROM LIGHT STANDARD A-2-1				X										
E2	A-4-1JB	5' FROM LIGHT STANDARD A-4-1				X										
E2	A-5-1JB	5' FROM LIGHT STANDARD A-5-1				X										
E2	A-6-1JB	5' FROM LIGHT STANDARD A-6-1				X										
E2	A-7-1JB	5' FROM LIGHT STANDARD A-7-1				X										
E2	A-8-2JB	5' FROM LIGHT STANDARD A-8-2				X										
E2	A-9-2JB	5' FROM LIGHT STANDARD A-9-2				X										
E2	A-10-2JB	5' FROM LIGHT STANDARD A-10-2				X										
E2	A-11-2JB	5' FROM LIGHT STANDARD A-11-2				X										
E2	A-12-2JB	5' FROM LIGHT STANDARD A-12-2				X										
E2	A-13-2JB	5' FROM LIGHT STANDARD A-13-2				X										
E2	A-14-2JB	5' FROM LIGHT STANDARD A-14-2				X										
E2	A-15-2JB	5' FROM LIGHT STANDARD A-15-2				X										
E2	A-16-2JB	5' FROM LIGHT STANDARD A-16-2				X										
E2	A-17-2JB	5' FROM LIGHT STANDARD A-17-2				X										
E2	A-18-2JB	5' FROM LIGHT STANDARD A-18-2				X										
E4	JBA18	-L- STA. 62+15	X													
E5	JBA19	-L- STA. 59+99	X													
E2	JBA6	-Y4SP- 13+76, 73' LT	X													
E2	JBA7	-Y1- 10+08, 6' LT	X													
E2	JBA8	-Y1- 10+00, 9' RT	X													
E2	JBA9	-Y1- 10+54, 51' RT	X													
E3	JBA10	-Y1- 17+93, 91' LT	X													
E3	JBA11	-Y1- 17+16, 11' LT	X													
E3	JBA12	-Y1- 16+93, 11' RT	X													
E3	JBA13	-Y1- 15+75, 53' RT	X													
E2	JBA14	-Y3- 32+98, 50' LT	X													
E2	JBA15	-Y1- 22+21, 8' LT	X													
E2	JBA16	-Y1- 22+17, 9' RT	X													
E2	JBA17	-Y1- 22+87, 46' RT	X													
CSA TOTALS			19			17							1			

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

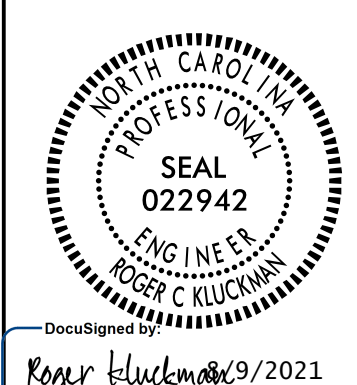
CONTROL SYSTEM "A"			TYPE													
LOCATION	RACEWAY	SHEET	JACKED (JA) FEET				BURIED (BD) FEET									
			SIZE 2"	SIZE 3"	SIZE 4"	SIZE 6"	SIZE 2"	SIZE 3"	SIZE 4"	SIZE 6"						
-Y4SP- 13+59, 5' LT'		E2		70												
-Y1- 14+82, 1' LT'	A-7-1-JBA1	E2			65			70								
-RPC- 26+60, 6 RT'		E2		50												
-RPD- 22+91, 12' LT'		E2		45												
-RPA- 23+05, 10' RT'		E2		50												
-Y1- 18+45, 1.7' LT'		E2		100												
-Y1- 21+35, 2' RT'		E2		75												
-Y2- 10+73, 1' RT'		E2		75												
-Y4SP- 13+66, 10' LT'		E2		70												
-Y1- 10+35, 23' LT'		E2			55			60								
-Y1- 10+36, 30' RT'		E2			55			60								
-Y1- 14+89		E2		65												
-RPD- 22+97, 11' LT		E2		45												
-RPA, 23+11, 11' RT'		E2		45												
-Y1- 21+45, 4' RT'		E2		80												
-Y2- 10+69		E2		75												
-L- 60+62, 60' LT		E2			95			100								
-L- STA. 61+16, 77' RT		E2			115			120								
-Y3-STA. 33+25, 20' LT		E2			55			60								
-Y2-STA. 10+27, 39' LT		E2			65			70								
CSA TOTALS				845	505			540								

**TABLE "D"
LIGHT STANDARD LOCATIONS SUMMARY**

SHEET	LABEL	LOCATION AND OFFSET
E2	A-1-1	-Y4SP- 11+89, 54' LT
E2	A-2-1	-Y4SP- 13+69, 56' LT
E2	A-4-1	-Y4SP- 14+18, 39' RT
E2	A-5-1	-Y1- 10+36, 66' RT
E2	A-6-1	-Y1- 12+60, 33' RT
E2	A-7-1	-Y1- 14+69, 34' RT
E2	A-8-2	-Y1- 15+60, 55' LT
E2	A-9-2	-Y1- 15+95, 73' RT
E2	A-10-2	-Y1- 18+47, 77' RT
E2	A-11-2	-Y1- 18+10, 76' LT
E2	A-12-2	-Y1- 20+01, 34' RT
E2	A-13-2	-Y1- 21+57, 55' RT
E2	A-14-2	-Y2- 12+60, 26' RT
E2	A-15-2	-Y1- 21+56, 48' LT
E2	A-16-2	-Y3- 31+89, 29' RT
E2	A-17-2	-Y1- 22+63, 58' RT
E2	A-18-2	-Y1- 24+24, 37' RT

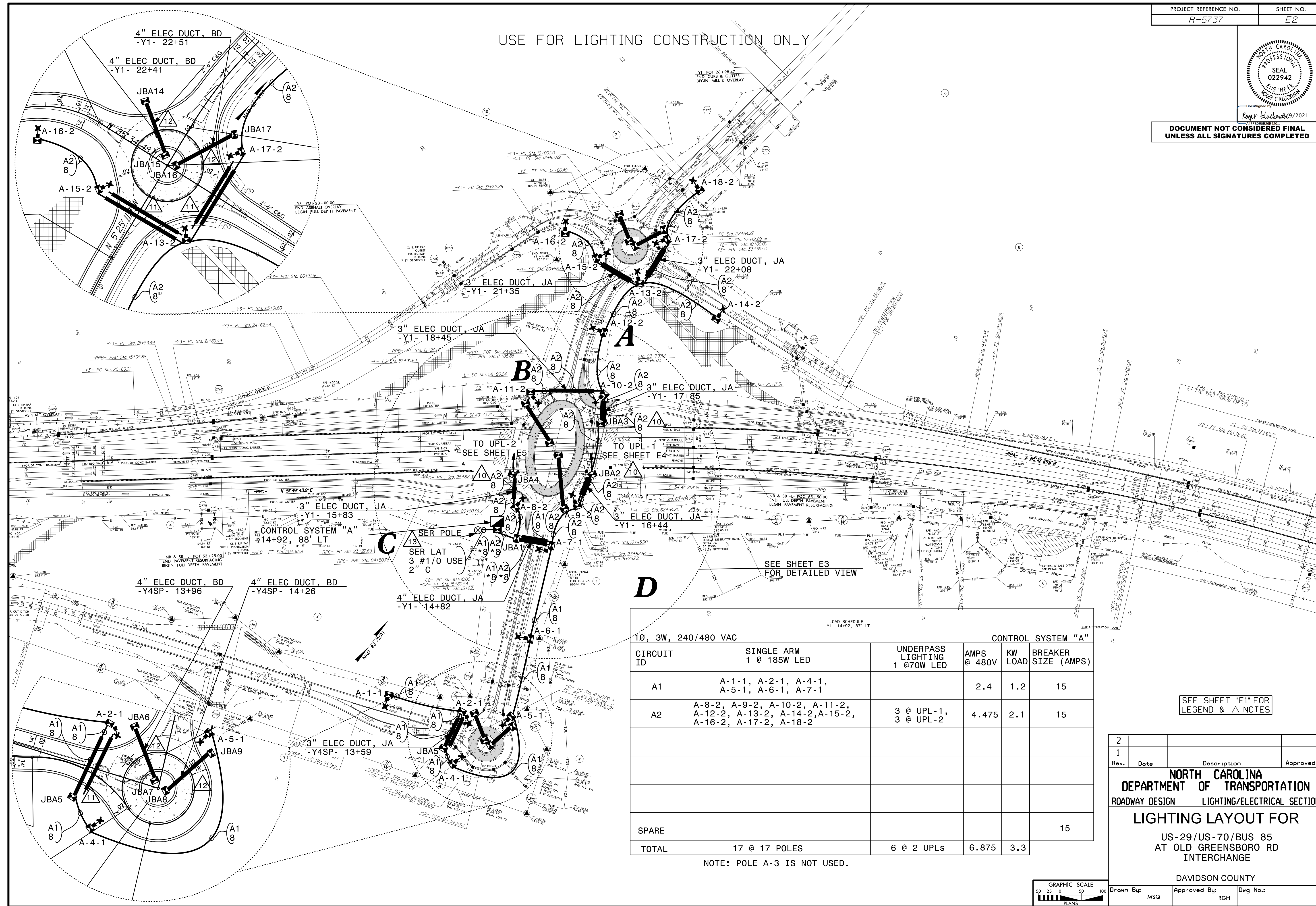
SEE SHEET "E1" FOR
LEGEND & △ NOTES

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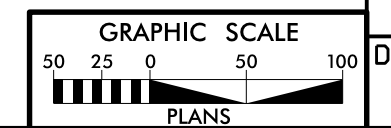
LOAD SCHEDULE
-Y1- 14+92, 87' LT

		CONTROL SYSTEM "A"			
CIRCUIT ID	SINGLE ARM 1 @ 185W LED	UNDERPASS LIGHTING 1 @ 70W LED	AMPS @ 480V	KW LOAD	BREAKER SIZE (AMPS)
A1	A-1-1, A-2-1, A-4-1, A-5-1, A-6-1, A-7-1		2.4	1.2	15
A2	A-8-2, A-9-2, A-10-2, A-11-2, A-12-2, A-13-2, A-14-2, A-15-2, A-16-2, A-17-2, A-18-2	3 @ UPL-1, 3 @ UPL-2	4.475	2.1	15
SPARE					15
TOTAL	17 @ 17 POLES	6 @ 2 UPLs	6.875	3.3	

NOTE: POLE A-3 IS NOT USED.

SEE SHEET "E1" FOR
LEGEND & Δ NOTES

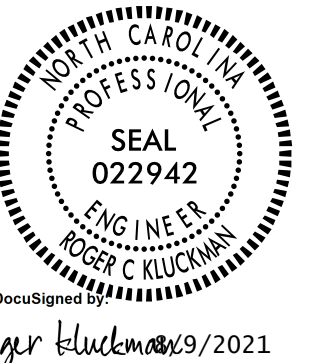
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Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION LIGHTING LAYOUT FOR US-29/US-70/BUS 85 AT OLD GREENSBORO RD INTERCHANGE DAVIDSON COUNTY			
Drawn By:	MSQ	Approved By:	RGH
Dwg No.:			



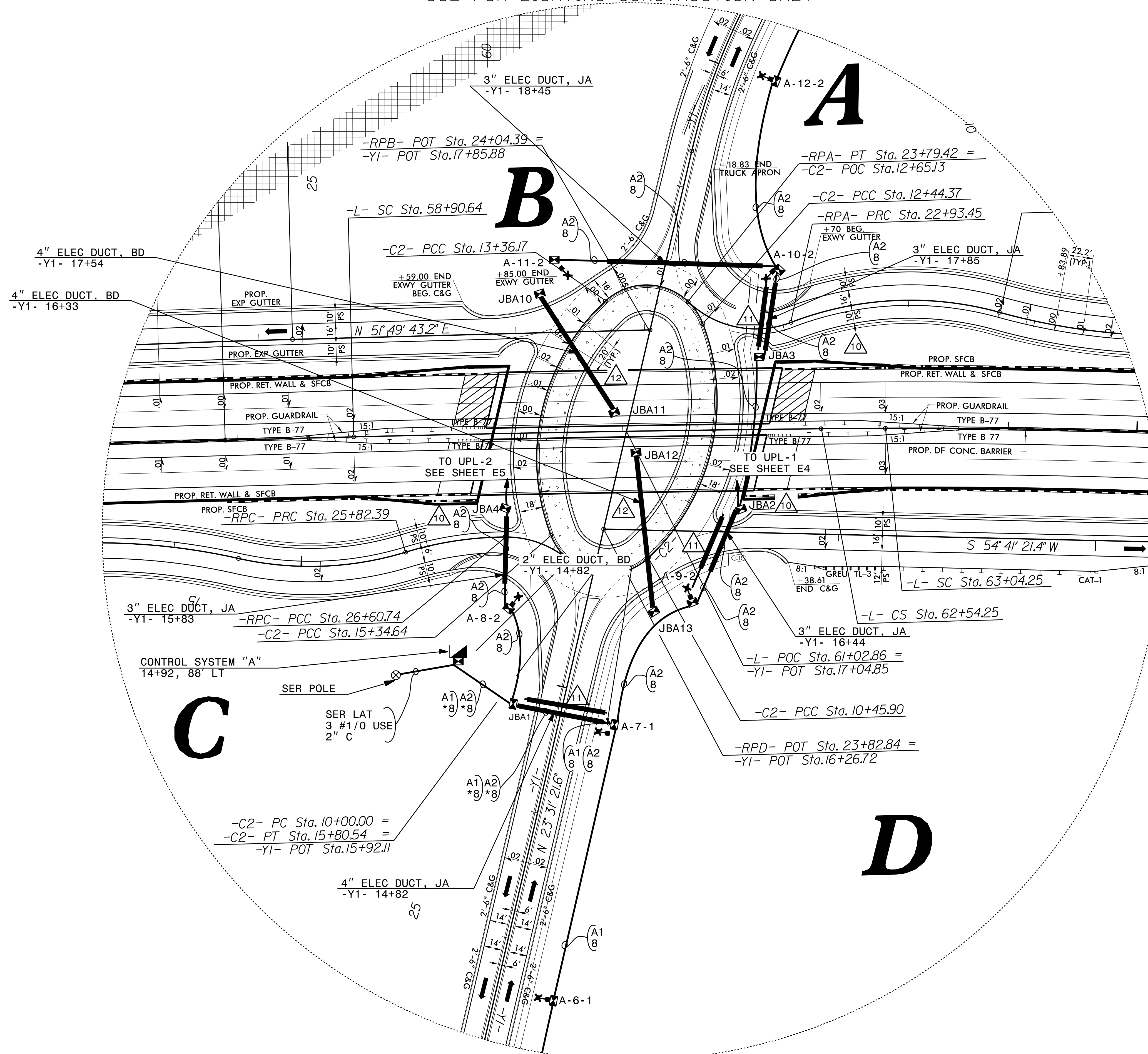
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PROJECT REFERENCE NO. R-5737 SHEET NO. E3



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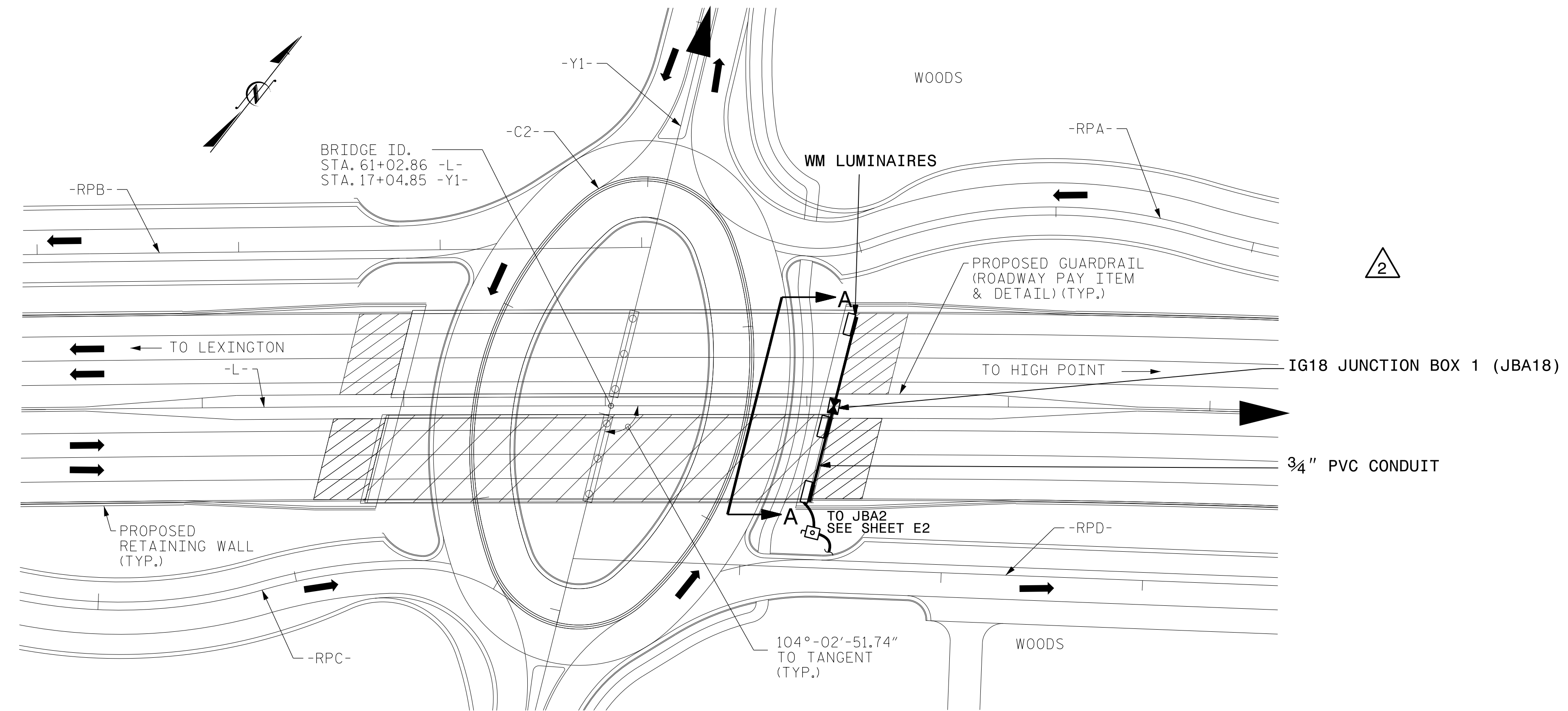


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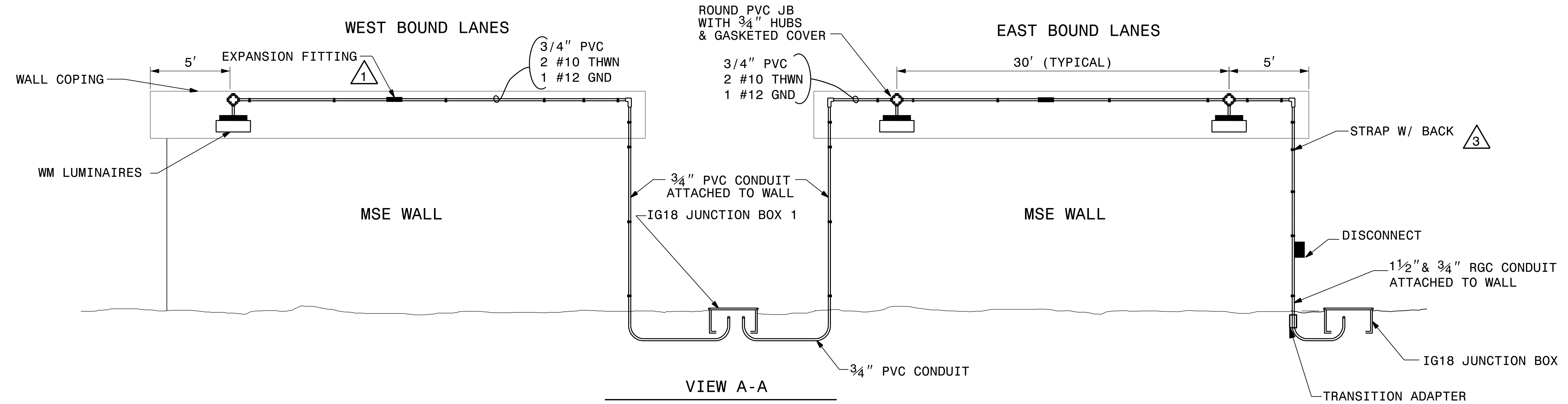
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Rev.	Date	Description	Approved
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Drawn By:	MSQ	Approved By:	RGH
Dwg No.:			

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UNDERPASS LIGHTING LAYOUT (UPL-1)



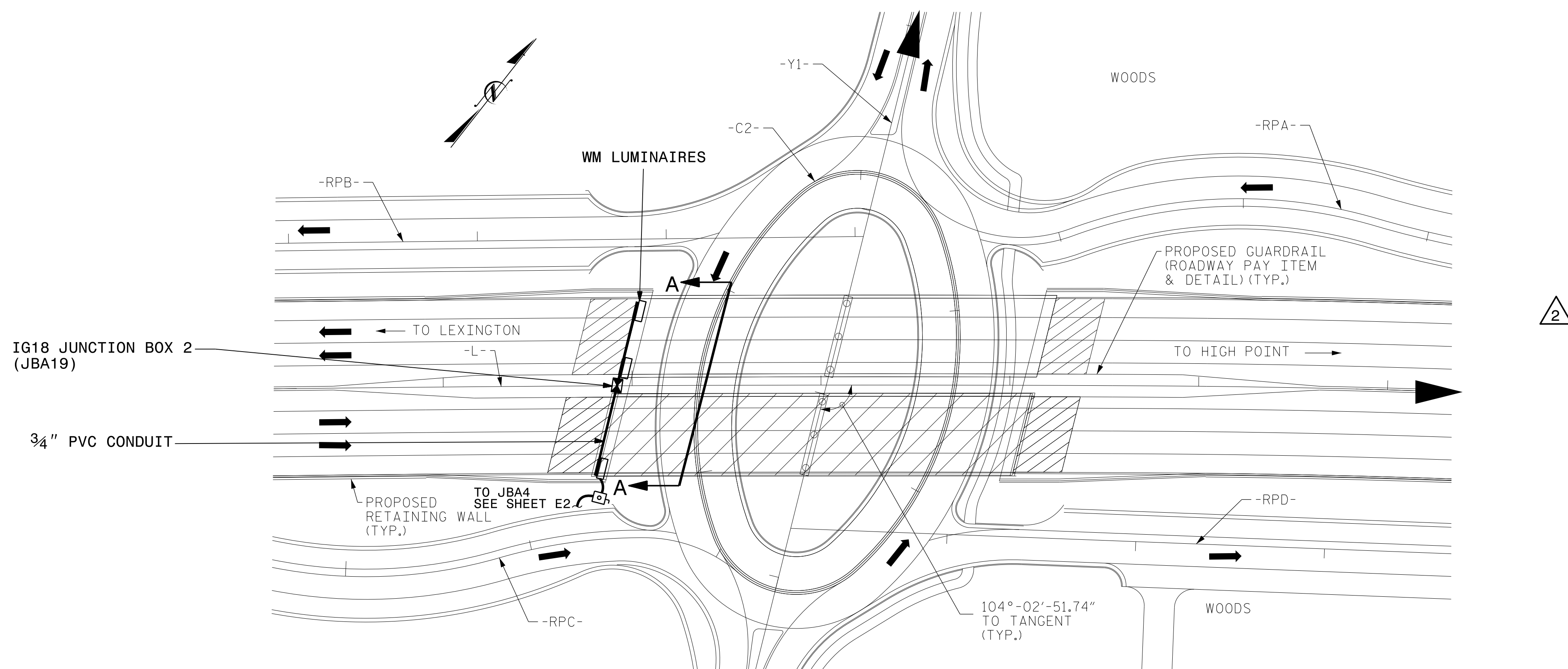
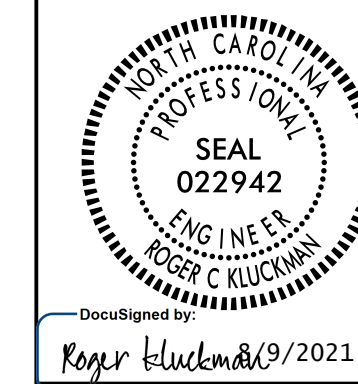
- 1 PROVIDE EXPANSION FITTINGS IN EACH SECTION OF CONDUIT THAT IS GREATER THAN 20' LONG BETWEEN TERMINALS AT JUNCTION BOXES ON PIER CAP.
- 2 SEE SHEET E6, FOR FURTHER INSTALLATION DETAILS.
- 3 PROVIDE CONDUIT CLAMPS, SPACERS AND ANCHORS PER NEC RECOMMENDATIONS.

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Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION ELECTRICAL CONDUIT SYSTEM US-29/US-70/BUS 85 AT OLD GREENSBORO RD INTERCHANGE DAVIDSON COUNTY			
Drawn By:	MSQ	Approved By:	RGH
Dwg No.:			

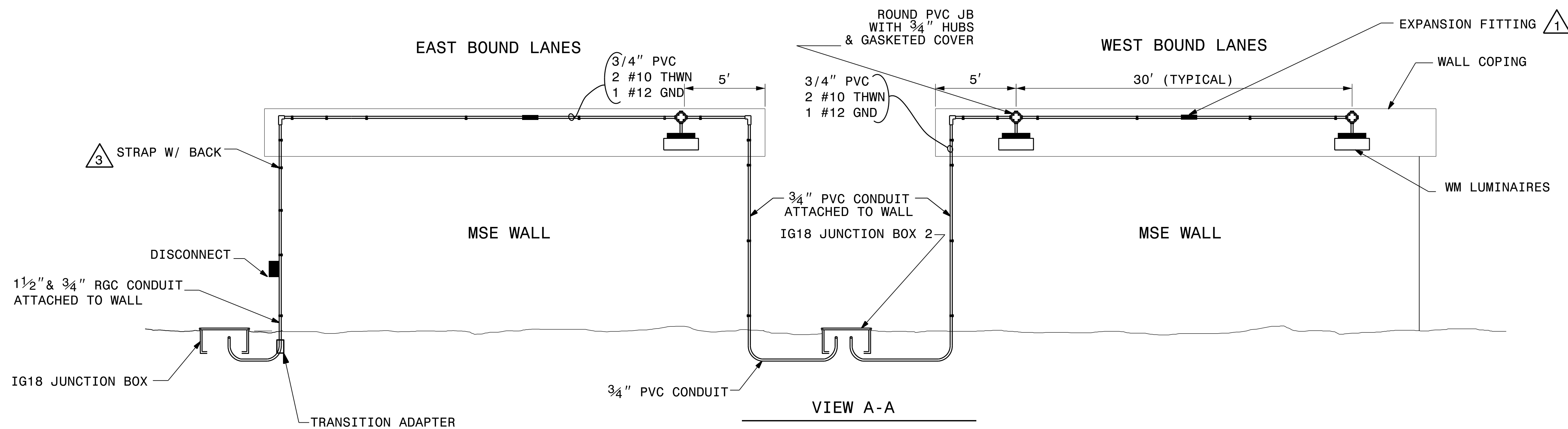
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UNDERPASS LIGHTING LAYOUT (UPL-2)



- 1 PROVIDE EXPANSION FITTINGS IN EACH SECTION OF CONDUIT THAT IS GREATER THAN 20' LONG BETWEEN TERMINALS AT JUNCTION BOXES ON PIER CAP.
- 2 SEE SHEET E6, FOR FURTHER INSTALLATION DETAILS.
- 3 PROVIDE CONDUIT CLAMPS, SPACERS AND ANCHORS PER NEC RECOMMENDATIONS.

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Rev.	Date	Description	Approved
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION ELECTRICAL CONDUIT SYSTEM US-29/US-70/BUS 85 AT OLD GREENSBORO RD INTERCHANGE DAVIDSON COUNTY			
Drawn By:	MSQ	Approved By:	RGH
Dwg No.:			

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