

10-FEB-2025 14:37 S:\Specialty Functions\Lighting & Electrical\Projects\Div 10 POC for George Liles Pkwy (Modif of I-3803B)\HL-00157_LE_GLP_DSN_LE-1.DGN msquedr1 AT RD-329439L

02/03/98

GENERAL NOTES

- CIRCUIT AND JUNCTION BOX LOCATIONS MAY BE FIELD ADJUSTED AS REQUIRED TO STAY WITHIN THE LIMITS OF CONSTRUCTION, WITHIN RIGHT-OF-WAY, OUT OF DITCH LINES, AWAY FROM FENCE POSTS, GUARDRAILS AND CABLE GUIDERAILS, AND TO CLEAR OBSTRUCTIONS. ADJUSTMENTS RESULTING IN AN OVERALL INCREASE OF 3% OR MORE TO ANY CIRCUIT LENGTH REQUIRES APPROVAL FROM THE ENGINEER.
- LOCATE ALL JUNCTION BOXES OUTSIDE CLEAR ZONE AND IN AN AREA UNLIKELY TO BE USED BY TRAFFIC.
- ALL IN GROUND JUNCTION BOXES DEPTHS SHALL BE 18" UNLESS OTHERWISE NOTED. SEE DETAIL SHEETS FOR FORMED OPENING DEPTHS.
- IF THE CONTRACTOR DOES NOT USE THE GPS COORDINATES PROVIDED IN TABLE "C", THEN ON THE AS-BUILT PLANS, CONTRACTOR SHALL MARK THROUGH THE GPS LOCATIONS SHOWN ON TABLE "C" AND PROVIDE THE ACCURATE GPS COORDINATES OF EACH JUNCTION BOX WITHIN 3' ACCURACY.
- 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.
- INSTALL ALL BORE PITS OUTSIDE THE CLEAR ZONE, AS DEFINED BY THE 2011 AASHTO ROADSIDE DESIGN GUIDE OR AS DIRECTED BY THE ENGINEER.
- 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.
- POLE NUMBERING CONVENTION: CONTROL SYSTEM-POLE #-CKT # (A-3-2).
- SERVICE POLE SHALL NOT BE INSTALLED PRIOR TO COORDINATION WITH THE LOCAL UTILITY. PROVIDE PROOF OF COORDINATION AND PROOF OF NEED TO THE ENGINEER AFTER CONSULTING WITH THE LOCAL UTILITY. THE SERVICE POLE MAY BE DELETED FROM THE CONTRACT IF NOT REQUIRED. REFER TO ARTICLE 1407-3 OF THE 2024 NCDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES.
- WHERE A CURRENT TRANSFORMER (CT) CABINET IS REQUIRED, THE CT CABINET AND ASSOCIATED HARDWARE ARE INCIDENTAL TO THE PAY ITEM FOR THE LIGHTING CONTROL PANEL.
- WHEN FIELD ADJUSTMENT TO CONTROL PANEL LOCATION IS REQUIRED, THE CONTRACTOR SHALL LOCATE THE PROPOSED CONTROL SYSTEM IN AN AREA ACCESSIBLE FOR MAINTENANCE VEHICLES AND OUTSIDE OF CLEAR ZONE AS DEFINED BY THE 2011 AASHTO ROADSIDE DESIGN GUIDE.

NOTES

- AT THESE LOCATIONS, PROVIDE A COMMON GROUND PER NEC REQUIREMENTS FOR ALL ELECTRICAL CIRCUITS WITHIN THE RACEWAY. RACEWAY SHALL BE INSTALLED WITHIN A PROTECTIVE SLEEVE UNDER THE ROADWAY. SEE TABLE "B" FOR ESTIMATED LENGTHS.
- INSTALL CONDUCTOR AS DEEP AS POSSIBLE IN THE VICINITY OF CULVERT, AND AVOID INTERFERING WITH OR DAMAGING CULVERT.
- INSTALL DUCTS FOR BEST ALIGNMENT OF CIRCUITRY. REFER TO ADJACENT JUNCTION BOXES TO DETERMINE APPROPRIATE LOCATION OF DUCTS.
- LATITUDES AND LONGITUDES ARE BASED ON CENTER OF CONTROL PANEL, JUNCTION BOXES, SINGLE ARM POLES AND HIGH MAST POLES.
- PLACE POLE SO THAT NO TRIMMING OR CLEARING IS REQUIRED.

PLANS AND DETAILS FOR PROPOSED LIGHTING /ELECTRICAL CONSTRUCTION

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.

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
2020 NATIONAL ELECTRICAL CODE
2011 AASHTO ROADSIDE 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 LIGHT STANDARD SUPPORT FOR BASIC WIND SPEED OF 70 MPH
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

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 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD NO.	TITLE
1401.01	HIGH MOUNT STANDARD
1402.01	HIGH MOUNT FOUNDATION
1403.01	HIGH MOUNT LED LUMINAIRES
1404.01	LIGHT STANDARDS
1405.01	STANDARD FOUNDATION
1406.01	LIGHT STANDARD LUMINAIRES
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

ALL WORK SHALL BE IN CONFORMANCE WITH DIVISION 14 OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, DATED JANUARY 2024.

LEGEND

- PROPOSED 120' HIGH MAST STANDARD W/ HM FOUNDATION, JUNCTION BOX & 8 HM LED LUMINAIRES. 560W MAX, 54,000 MIN. MAINTAINED DELIVERED LUMENS, TYPE V. MAXIMUM BUG RATING 5-0-5.
- PROPOSED 100' HIGH MAST STANDARD W/ HM FOUNDATION, JUNCTION BOX & 6 HM LED LUMINAIRES. 560W MAX, 54,000 MIN. MAINTAINED DELIVERED LUMENS, TYPE V. MAXIMUM BUG RATING 5-0-5.
- PROPOSED LIGHT STANDARD TYPE MTLT 45' WITH 15' SINGLE ARM. INCLUDES STANDARD FOUNDATION TYPE R1 OR R2, JUNCTION BOX & 285W MAX LED ROADWAY LUMINAIRE. IES DISTRIBUTION:TYPE II OR III AS REQUIRED. MAXIMUM BUG RATING 3-0-3.
- PROPOSED LIGHT STANDARD TYPE MTLT 45' WITH 15' SINGLE ARM. INCLUDES STANDARD FOUNDATION TYPE R1 OR R2, JUNCTION BOX & 285W MAX LED ROADWAY LUMINAIRE. IES DISTRIBUTION:TYPE 4. MAXIMUM BUG RATING 3-0-3.
- PROPOSED CONTROL SYSTEM WITH JUNCTION BOX. SEE PLANS FOR BREAKER SIZES.
- PROPOSED ELECTRICAL JUNCTION BOX. SEE TABLE C FOR DETAILS AND TYPE.
- REFERENCE TO CORRESPONDING DELTA 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 (TL) OR (BD) LOCATION: SEE TABLE B.
- 2", 3" OR 4" ELEC. DUCT TL & BD

TABLE "A" CIRCUITRY CONDUCTOR CONDUIT TYPE & SIZE			
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 #8G	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

ABBREVIATIONS

BD	BURIED	PVC	PVC SCHEDULE 40 CONDUIT
LT	LIGHT	RGC	RIGID GALVANIZED STEEL CONDUIT
TL	TRENCHLESS	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: 12-30-24
CHECKED BY: RGH DATE:

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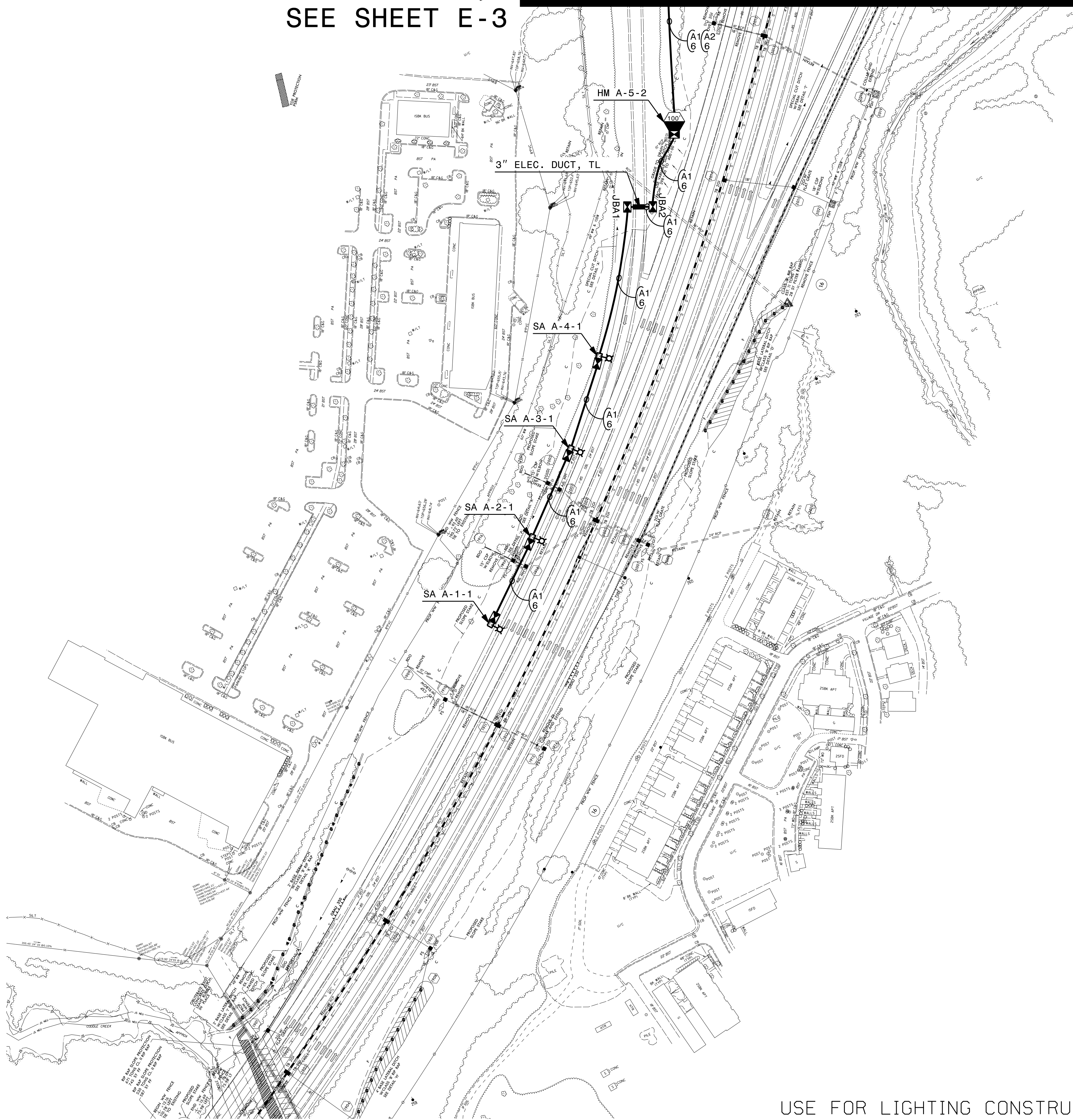


TABLE "D"		
CONTROL PANEL, SINGLE ARM POLE AND HIGH MAST POLE LOCATIONS SUMMARY		
SHEET	LABEL	GPS LOCATION (LAT/LONG)
E-3	CSA	35.419400, -80.673620
E-2	SAA-1-1	35.414567, -80.677266
E-2	SAA-2-1	35.414880, -80.676843
E-2	SAA-3-1	35.415204, -80.676439
E-2	SAA-4-1	35.415558, -80.676070
E-3	SAA-7-3	35.420347, -80.674444
E-4	SAA-11-6	35.421988, -80.670375
E-4	SAA-12-6	35.422641, -80.670111
E-4	SAA-13-6	35.423279, -80.669749
E-4	SAA-14-6	35.423530, -80.670341
E-4	SAA-15-6	35.422900, -80.670730
E-4	SAA-16-6	35.422272, -80.671175
E-2	HMA-5-2	35.416446, -80.675105
E-3	HMA-6-1	35.417591, -80.674388
E-3	HMA-8-3	35.419678, -80.673150
E-3	HMA-9-4	35.418712, -80.671559
E-3	HMA-10-5	35.420834, -80.671069

SEE SHEET "E-1" FOR
LEGEND & $\triangle$ NOTES

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msquod1 AT RD-329439L

MATCHLINE 1,
SEE SHEET E-3



USE FOR LIGHTING CONSTRUCTION ONLY

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 I-85/GEORGE LILES PKWY INTERCHANGE			
CABARRUS COUNTY			
Drawn By:	MSQ	Approved By:	RGH
		Dwg No.:	

PROJECT REFERENCE NO.
HL-0157

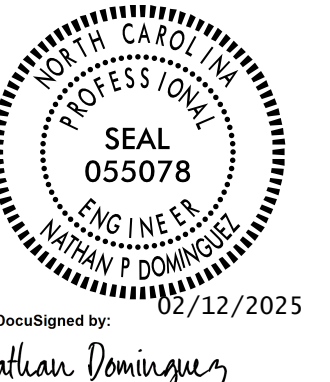
SHEET NO.
E-2

NORTH CAROLINA
PROFESSIONAL
SEAL
055078
ENGINEER
NATHAN P. DOMINGUEZ

DocuSigned by:
Nathan Dominguez
02/12/2025

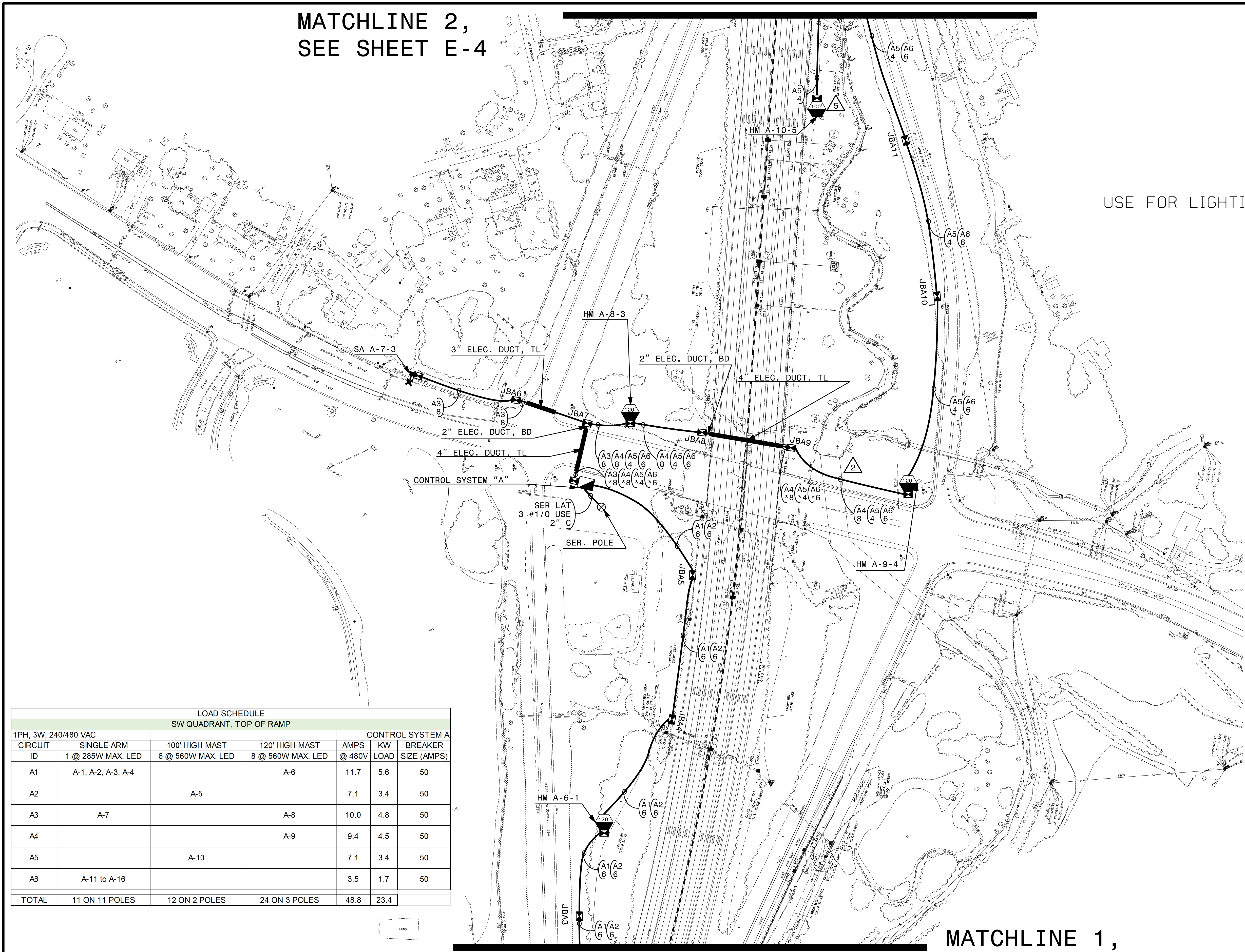
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LOAD SCHEDULE						
SW QUADRANT, TOP OF RAMP						
1PH, 3W, 240/480 VAC			CONTROL SYSTEM A			
CIRCUIT	SINGLE ARM	100' HIGH MAST	120' HIGH MAST	AMPS	KW	BREAKER
ID	1 @ 285W MAX. LED	6 @ 560W MAX. LED	8 @ 560W MAX. LED	@ 480V	LOAD	SIZE (AMPS)
A1	A-1, A-2, A-3, A-4		A-6	11.7	5.6	50
A2		A-5		7.1	3.4	50
A3	A-7		A-8	10.0	4.8	50
A4			A-9	9.4	4.5	50
A5		A-10		7.1	3.4	50
A6	A-11 to A-16			3.5	1.7	50
TOTAL	11 ON 11 POLES	12 ON 2 POLES	24 ON 3 POLES	48.8	23.4	

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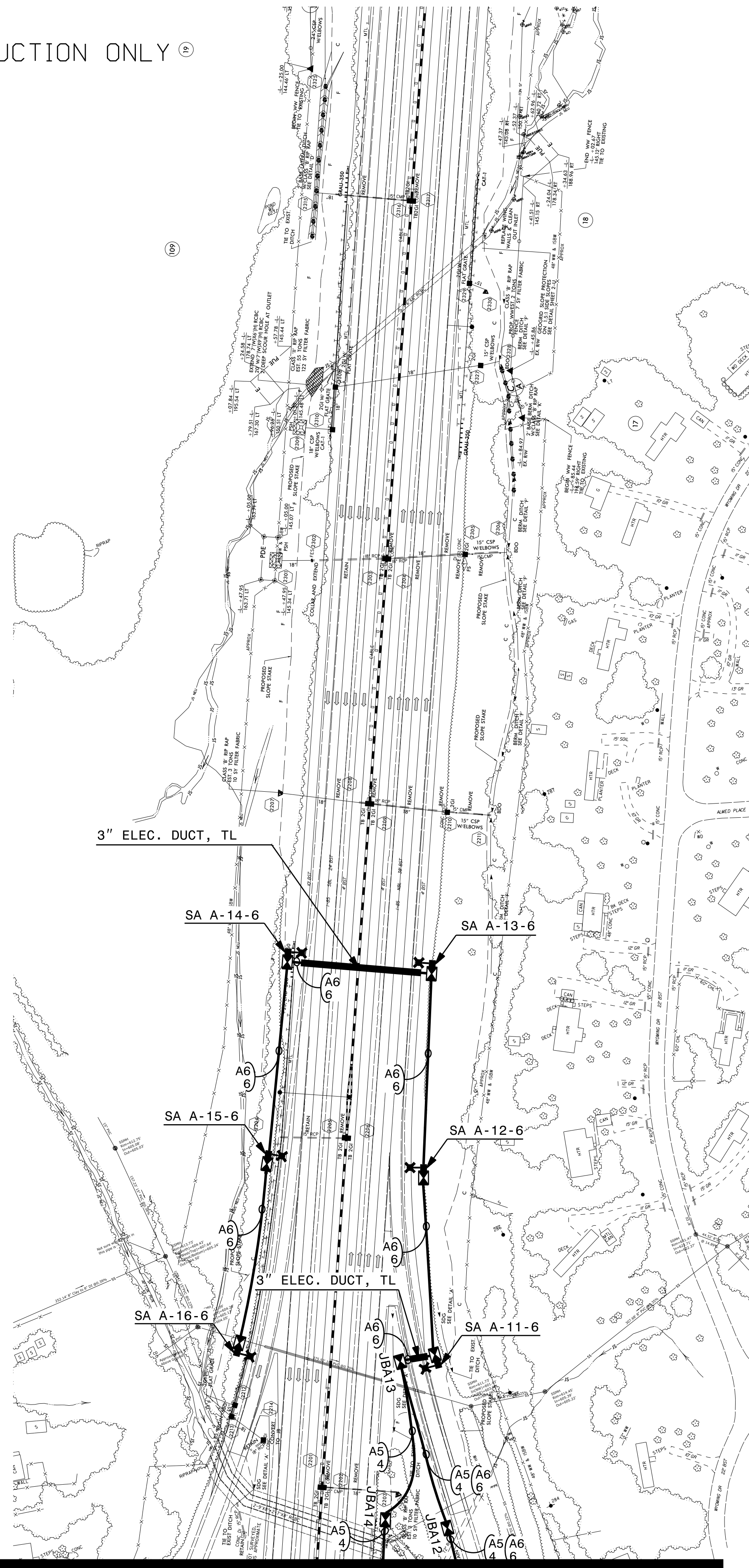
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Drawn By:	MSQ	Approved By:	RGH
		Dwg No.:	

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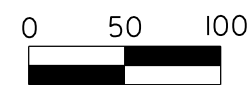
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION			
LIGHTING LAYOUT I-85/GEORGE LILES PKWY INTERCHANGE			
CABARRUS COUNTY			
Drawn By: MSQ	Approved By: RGH	Dwg No.:	

PROJECT REFERENCE NO.
HL-0157

SHEET NO.
E-4

NORTH CAROLINA
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12/12/2025

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