PROJECT REFERENCE NO.	SHEET NO.
U-4758	E-1

DOCUMENT NOT CONSIDERED FINAL
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NORTH CAROLINA PROFESSIONAL SEAL 055078 ENGINEER NATHAN P DOMINGUEZ
DocuSigned by: 03/05/2025
Nathan Dominguez
4C60B9594A58434...

PLANS AND DETAILS FOR PROPOSED LIGHTING /ELECTRICAL CONSTRUCTION

GENERAL NOTES

1. 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.
2. LOCATE ALL JUNCTION BOXES OUTSIDE CLEAR ZONE AND IN AN AREA UNLIKELY TO BE USED BY TRAFFIC.
3. ALL IN GROUND JUNCTION BOXES DEPTHS SHALL BE 18″ UNLESS OTHERWISE NOTED. SEE DETAIL SHEETS FOR FORMED OPENING DEPTHS.
4. 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. COORDINATES ARE NOT REQUIRED FOR FORMED OPENINGS.
5. 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.
6. INSTALL ALL BORE PITS OUTSIDE THE CLEAR ZONE, AS DEFINED BY THE 2011 AASHTO ROADSIDE DESIGN GUIDE OR AS DIRECTED BY THE ENGINEER.
7. 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.

SCOPE OF WORK

PLACE ROADWAY LIGHTING SYSTEM INTO SERVICE BY RELOCATING AND INSTALLING EXISTING LIGHT STANDARDS WITH LUMINAIRES, UNDERGROUND CIRCUITRY AND JUNCTION BOXES.

DESIGN CRITERIA

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)

ROADWAY STANDARDS

STD NO.	TITLE
1404.01	LIGHT STANDARDS
1405.01	STANDARD FOUNDATION
1406.01	LIGHT STANDARD LUMINAIRES
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.

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:

LEGEND

- HM1 — EXISTING 100′ HIGH MAST STANDARD (HM1) (FOR LOCATION REFERENCE ONLY)
- #1 — EXISTING SINGLE ARM LIGHT STANDARD (#1) TO BE REMOVED AND RELOCATED. ABANDON OR REMOVE FOUNDATION.
- #1 — RELOCATED LIGHT STANDARD (#1)TYPE MTLT 45′ WITH 15′ SINGLE ARM. INCLUDES STANDARD FOUNDATION TYPE R1 OR R2, JUNCTION BOX WITH ROADWAY LUMINAIRE.
- #10 — EXISTING SINGLE ARM LIGHT STANDARD (#10) TO BE CONNECTED TO A NEW CIRCUIT IN A JB AT THIS LOCTION. (1)
- EXISTING ELECTRICAL JUNCTION BOX, WHERE NEW FEEDER CIRCUIT WIRE DRAWN THROUGH EXISTING CONDUIT SHALL CONNECT.
- EXISTING ELECTRICAL JUNCTION BOX. REMOVE UNLESS OTHERWISE NOTED ON THE PLANS.
- JB25 — PROPOSED ELECTRICAL JUNCTION BOX (JB25). SEE TABLE C FOR DETAILS AND TYPE.
- A1 *6 — REPLACE FEEDER CIRCUIT IN EXISTING CONDUIT. CONTROL SYSTEM (A), CIRCUIT NUMBER (1) PLAN SYMBOL (6). SEE TABLE A, THIS SHEET.
- A1 — EXISTING FEEDER CIRCUIT IN EXISTING CONDUIT. CONTROL SYSTEM (A), CIRCUIT NUMBER (1).
- A1 6 — PROPOSED FEEDER CIRCUIT. CONTROL SYSTEM (A), CIRCUIT NUMBER (1) PLAN SYMBOL (6). SEE TABLE A, THIS SHEET.
- ABN. — ABANDON EXISTING FEEDER CIRCUIT.
- PROPOSED ELECTRICAL DUCT SIZE 2″, 3″ OR 4″ TYPE (TL) OR (BD) LOCATION: SEE TABLE B. — 2″, 3″ OR 4″ ELEC. DUCT TL & BD
- (1) — REFERENCE TO CORRESPONDING DELTA NOTE AS NUMBERED.

△ NOTES

1. TIE IN EXISTING LIGHTING FEEDER CIRCUIT AT THIS LSJB.
2. TIE IN NEW FEEDER CIRCUIT WIRE DRAWN THROUGH EXISTING CONDUIT IN THIS EXISTING JB.
3. CUT EXISTING CONDUIT AND CIRCUIT HERE, INSTALL A JB, REPLACE THE OLD CIRCUIT WITH A NEW ONE IN THE EXISTING CONDUIT,

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 #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

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
ABN.	ABANDON	CSJB	CONTROL SYSTEM JUNCTION BOX

COMPUTED BY: SKS DATE: 02-12-2025
CHECKED BY: RGH DATE:

PROJECT REFERENCE NO.	SHEET NO.
U-4758	E-1A

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NORTH CAROLINA PROFESSIONAL SEAL 055078 ENGINEER NATHAN P DOMINGUEZ
DocuSigned by: Nathan Dominguez 4C60B8594A58434 03/05/2025

TABLE "C"
JUNCTION BOX AND FORMED OPENING SUMMARY (SEE GENERAL NOTE 5)
CONTROL SYSTEM "B"

SHEET	LABEL	LOCATION AND OFFSET	TYPE, PAY ITEM & SIZE									GPS LOCATION (SEE GENERAL NOTE 6)
			JUNCTION BOXES							FORMED OPENINGS		
			IN GROUND		LIGHT STANDARD		HIGH MAST		CONTROL SYSTEM	BRIDGE RAIL	MEDIAN BARRIER	LAT/LONG (TO BE COMPLETED BY CONTRACTOR)
			IG18 18"X12"	IG36 36"X24"	LS18 18"X12"	LS36 36"X24"	HM18 18"X12"	HM36 36"X24"	CS36 36"X24"	FO10 10"X12"	FO18 18"X12"	
E-2	EXT. JB1	APP.100' FROM BRIDGE, 20' FROM I-40 EOT										
E-2	EXT. JB2	NEAR HM1										
E2	EXT. JB3	NEAR LIGHT #10										
E-2	JB25	STA. -RPB- 27+26, LT	X									
E-2	JB26	STA. -RPC- 20+70, RT	X									
E-2	JB27	STA. -RPC- 20+70, LT	X									
E-2	LSJB9	5' FROM LIGHT STANDARD #20			X							
E-2	LSJB10	5' FROM LIGHT STANDARD #9			X							
E-2	LSJB20	5' FROM LIGHT STANDARD #10			X							
		CSB TOTALS	3		3							

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

LOCATION	RACEWAY △	SHEET	TYPE					
			TRENCHLESS (TL) FEET			BURIED (BD) FEET		
			SIZE 2"	SIZE 3"	SIZE 4"	SIZE 2"	SIZE 3"	SIZE 4"
-RPB- STA. 27+15				85				
-RPC- STA. 20+70				65				
CSB TOTALS				150				

SEE SHEET "E-1" FOR LEGEND & △ NOTES

COMPUTED BY: SKS DATE: 02-12-2025
CHECKED BY: RGH DATE:

PROJECT REFERENCE NO.	SHEET NO.
U-4758	E-2

NORTH CAROLINA PROFESSIONAL SEAL 055078 ENGINEER NATHAN P DOMINGUEZ

DocuSigned by: 03/05/2025 Nathan Dominguez

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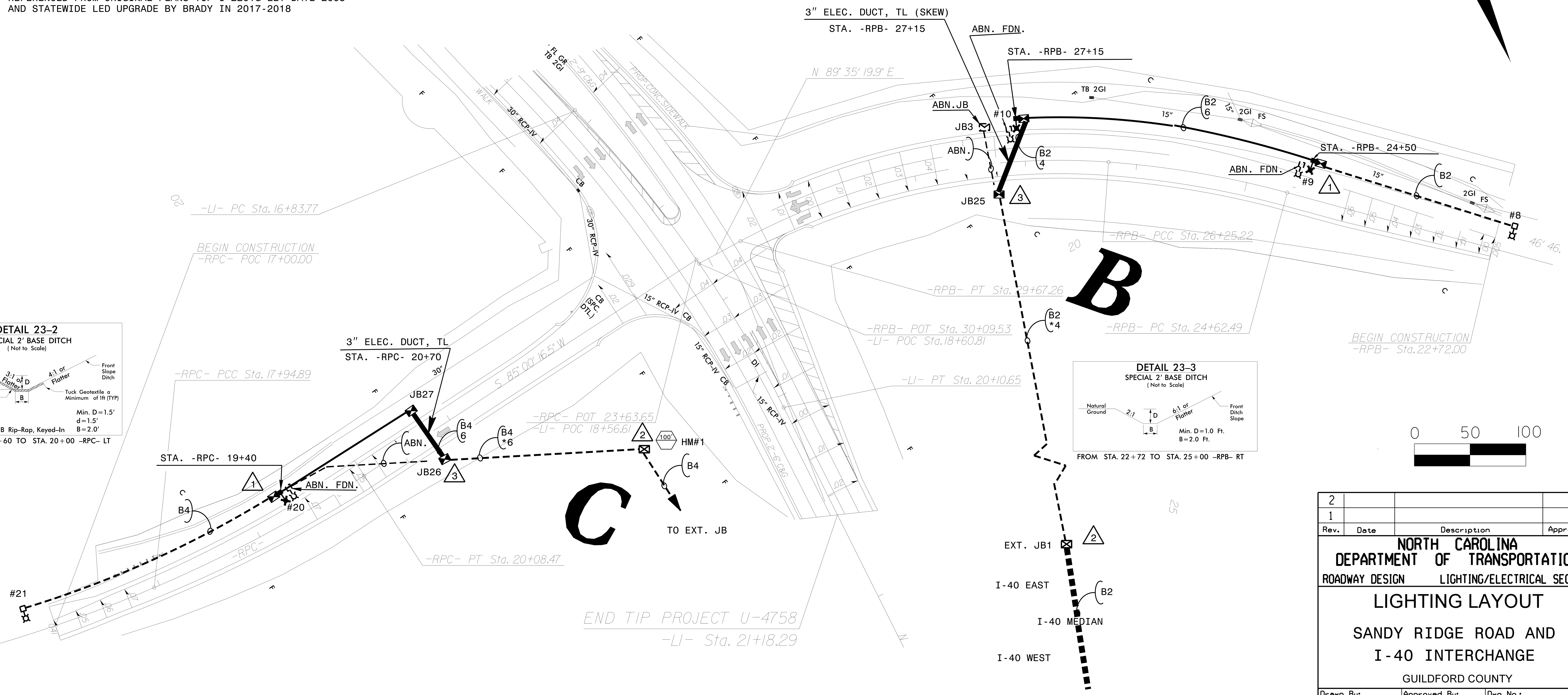
USE FOR LIGHTING CONSTRUCTION ONLY

SEE SHEET "E-1" FOR LEGEND & △ NOTES

LOAD SCHEDULE
I-40/SANDY RIDGE ROAD (NE INSIDE RAMP)
1Ø, 3W, 240/480 VAC — CONTROL SYSTEM "B"

CIRCUIT ID	SINGLE ARM 1 @ 194W MAX. LED	TWIN ARM 2 @ 194W MAX. LED	HIGH MAST W/4 475W MAX. LED LUMINAIRES	AMPS @ 480V	KW LOAD
B1	1,2	3,4,5	HM2	7.2	3.5
B2	6,7,8,9,10			2.0	1.0
B3	11,12,13,14,15	16,17,18,19		5.3	2.5
B4	20,21		HM1	4.8	2.3
SPARE					
TOTAL	14	7	2	19.3	9.3

REFERENCED FROM ORIGINAL PLANS TIP I-2201G LET DATE 2003
AND STATEWIDE LED UPGRADE BY BRADY IN 2017-2018



DETAIL 23-2
SPECIAL 2' BASE DITCH
(Not to Scale)
Natural Ground; 3:1 or Flatter; 4:1 or Flatter; Front Slope Ditch; Geotextile; Tuck Geotextile a Minimum of 1ft (TYP)
Min. D=1.5'
d=1.5'
B=2.0'
Type of Liner=Class B Rip-Rap, Keyed-In
FROM STA. 17+60 TO STA. 20+00 -RPC- LT

DETAIL 23-3
SPECIAL 2' BASE DITCH
(Not to Scale)
Natural Ground; 2:1; 6:1 or Flatter; Front Ditch Slope
Min. D=1.0 Ft.
B=2.0 Ft.
FROM STA. 22+72 TO STA. 25+00 -RPB- RT

Rev.	Date	Description	Approved
2			
1			

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN — LIGHTING/ELECTRICAL SECTION

LIGHTING LAYOUT

SANDY RIDGE ROAD AND I-40 INTERCHANGE
GUILDFORD COUNTY

Drawn By: SKS 02-12-25 | Approved By: RGH | Dwg No.: