02/03/98

PROJECT REFERENCE NO.	SHEET NO.
I-5878/I-5883/I-5986B	E1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 022942 ENGINEER ROGER C KLUCKMAN

DocuSigned by: Roger Kluckman 4/30/2021 A47FB0E0B26E420...

PLANS AND DETAILS FOR PROPOSED LIGHTING /ELECTRICAL CONSTRUCTION

△ 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 INGROUND JUNCTION BOXES SHALL BE 18" HIGH, UNLESS OTHERWISE NOTED. AND ALL BARRIER RAIL JUNCTION BOXES SHALL BE 6" DEEP.
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. THE CIRCUIT IS EMBEDDED IN GROUND UNDER CONCRETE BARRIER RAIL.
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. SEE DELTA NOTES IN SHEET E6 FOR EXISTING LIGHTS REMOVAL AND CONTROL SYSTEM RELOCATION NOTES.
11. POLE NUMBERING CONVENTION: CONTROL SYSTEM-POLE #-CKT # (A-3-2).
12. INSTALL COBRAHEAD LUMINAIRES AND NODES REMOVED FROM THE SINGLE ARM POLES AT THE I-95/EAST MAIN STREET INTERCHANGE ON THIS POLE.
13. INSTALL CONDUIT AND JUNCTION BOXES FOR FUTURE ELECTRICAL OR IRRIGATION USE. INSTALL PLUGS ON ALL CONDUIT ENDS TO PREVENT DEBRIS AND VERMIN FROM ENTERING THE EMPTY CONDUITS.
14. CONDUIT AT THIS LOCATION TO BE INSTALLED FOR FUTURE DUKE ENERGY OR TOWN OF BENSON LIGHTING. CONTRACTOR TO INSTALL CONDUIT AS A CONTINUOUS RUN WITH 90 DEGREE TURN UP AT EACH TERMINATION POINT. INSTALL CONDUIT APPROXIMATELY 22 FEET FROM PROPOSED EDGE OF TRAVEL UNLESS INSUFFICIENT RIGHT OF WAY OR OTHER UTILITY CONFLICTS EXIST. SEE SPECIAL PROVISIONS TITLED "STREET LIGHTING CONDUIT" FOR ADDITIONAL REQUIREMENTS.
15. CONDUIT AT THIS LOCATION TO BE INSTALLED FOR EXISTING DECORATIVE POST TOP LIGHT STANDARDS. EXISTING POST TOP LIGHT STANDARDS SHALL BE LEFT IN PLACE DURING CONSTRUCTION. PLACE CONDUIT APPROXIMATELY TWO FEET BEHIND POST TOP STANDARDS UNLESS INSUFFICIENT RIGHT OF WAY OR OTHER UTILITY CONFLICTS EXIST. SEE SPECIAL PROVISIONS TITLED "STREET LIGHTING CONDUIT" FOR ADDITIONAL REQUIREMENTS.
16. CONTRACTOR TO PROVIDE AND INSTALL CONDUIT AT THIS LOCATION.
17. CONDUIT AT THIS LOCATION TO BE PROVIDED BY DUKE ENERGY OR TOWN OF BENSON. CONTRACTOR TO RETRIEVE FROM STORAGE AND INSTALL.

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 AT SEVERAL INTERCHANGES, INCLUDING REMOVING EXISTING LIGHT STANDARDS AND RELOCATING ELECTRICAL CONTROL SYSTEM IN ONE.

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

DESIGN HIGH MOUNT SUPPORT FOR BASIC WIND SPEED OF 110 MPH

DESIGN HIGH MOUNT STANDARD FOUNDATION FOR BASIC WIND SPEED OF 130 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
1402.01	HIGH MOUNT FOUNDATION
1404.01	LIGHT STANDARDS
1405.01	STANDARD FOUNDATION
1407.01	ELECTRIC SERVICE POLE AND LATERAL
1408.01	LIGHT CONTROL SYSTEM (USE ATTACHED DETAIL SHEET 1408D01 IN LIEU OF STANDARD DRAWING 1408.01, SHEETS 1 & 2)
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 2018.

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

LEGEND

- 120' — 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.
- 100' — 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.
- 100' HM1 — EXISTING 100' HIGH MAST STANDARD W/ HM FOUNDATION, TO BE REMOVED. LUMINAIRES WILL BE REUSED. SEE SHEET E6.
- PROPOSED LIGHT STANDARD TYPE MTLT 45' WITH 15' TWIN ARMS. INCLUDES STANDARD FOUNDATION IN MEDIAN BARRIER WITH 285W MAX LED ROADWAY LUMINAIRE. IES DISTRIBUTION: TYPE II OR III AS REQUIRED. MAXIMUM BUG RATING 3-0-3.
- #1 — EXISTING SINGLE ARM LIGHT STANDARD TO BE REMOVED. LUMINAIRES WILL BE REUSED. SEE SHEET E6.
- PROPOSED CONTROL SYSTEM WITH JUNCTION BOX. SIZE BREAKERS AS SHOWN IN LOAD SCHEDULE. SEE SHEETS E2-E5.
- C/S — EXISTING CONTROL SYSTEM (TO BE RELOCATED). SEE SHEET E6.
- REL — EXISTING CONTROL SYSTEM RELOCATED. SEE SHEET E6.
- PROPOSED ELECTRICAL JUNCTION BOX. SEE TABLE C, SHEETS E1A-E1D, FOR DETAILS AND TYPE.
- JB1 — EXISTING ELECTRICAL JUNCTION BOX. REMOVE UNLESS OTHERWISE NOTED ON THE PLANS. SEE SHEET E6.
- 1 — REFERENCE TO CORRESPONDING NOTE AS NUMBERED.
- A1 8 — PROPOSED FEEDER CIRCUIT. CONTROL SYSTEM (A), CIRCUIT NUMBER (1) PLAN SYMBOL (8). SEE TABLE A, THIS SHEET.
- SER LAT 3 #1/0 USE 2" C — PROPOSED 30' CLASS 4 SERVICE POLE AND LATERAL 3 #1/0 USE CONDUCTORS 2" CONDUIT
- 2", 3" OR 4" ELEC. DUCT JA & BD — PROPOSED ELECTRICAL DUCT SIZE 2", 3" OR 4" TYPE (JA) OR (BD) LOCATION: SEE TABLE B, SHEETS E1A-E1D.
- PROPOSED 2" ELECTRICAL DUCT, TYPE (BD) FOR FUTURE DUKE ENERGY, TOWN OF BENSON OR CITY OF DUNN LIGHTING. SEE SHEETS E9-E12 SEE PROJECT SPECIAL PROVISIONS TITLED "STREET LIGHTING CONDUIT" FOR INSTALLATION INFORMATION.

ABBREVIATIONS

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

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