PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	E1

NORTH CAROLINA PROFESSIONAL SEAL 022582 ENGINEER PAUL KI-BUN CHAN 12-13-13

PLANS AND DETAILS FOR PROPOSED LIGHTING /ELECTRICAL CONSTRUCTION

△ NOTES

1. AT THESE LOCATIONS, PROVIDE ELECTRICAL DUCT IN ACCORDANCE WITH NEC EQUIRMENTS 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 ELEC. CONDUIT 6 FEET BELOW GRADE AT THIS LOCATION.
6. TYPE PC18 JUNCTION BOXES ARE 18" L X 12" W X 18" H.
7. TYPE PC30 JUNCTION BOXES ARE 30" L X 17" W X 18" H.
8. TYPE PC36 JUNCTION BOXES ARE 36" L X 24" W X 18" H.
9. INSTALL 2" ELEC. CONDUIT UNDER BRIDGE SLOPE PROTECTION.

SCOPE OF WORK

PLACE ROADWAY LIGHTING SYSTEM INTO SERVICE BY PROVIDING AND INSTALLING 120' HIGH MOUNT STANDARDS WITH HIGH PRESSURE SODIUM LUMINAIRES, UNDERGROUND CIRCUITRY, CONTROL SYSTEM AND JUNCTION BOXES.

DESIGN CRITERIA

2005 AASHTO ROADWAY LIGHTING DESIGN GUIDE

2009 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 5TH EDITION AND LATEST INTERIM SPECIFICATIONS VALID AT THE TIME OF LETTING

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

2011 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 2012 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 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
1412.01	UNDERPASS LIGHTING

ALL WORK SHALL BE IN CONFORMANCE WITH DIVISION 14 OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, DATED JANUARY 2012.

LEGEND

- 120' — PROPOSED 120' HIGH MAST STANDARD W/ HM FOUNDATION & (8) HM LUMINAIRES 750W HPS, MEDIUM, CUTOFF, TYPE V
- PROPOSED CONTROL SYSTEM WITH PC36 JUNCTION BOX. BREAKER SIZE SHOWN IN LOAD SCHEDULE, SHEET Ex
- JB1 — PROPOSED ELECTRICAL JUNCTION BOX SEE DETAILS & TABLE B, THIS SHEET
- △1 — REFERENCE TO CORRESPONDING NOTE AS NUMBERED
- A1 / 6 — PROPOSED FEEDER CIRCUIT CONTROL SYSTEM(A), CIRCUIT(1) PLAN SYMBOL (6) SEE TABLE A, THIS SHEET
- 3#1/0 USE / 2" — PROPOSED SERVICE POLE AND LATERAL 30' CLASS 4 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 C, THIS SHEET

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
1	2 #1Ø 1 #2G 2" PVC	2 AWG SIZE 1 CONDUCTOR (BK & RD) 1 AWG SIZE 2 GROUNDING CONDUCTOR 2" PVC CONDUIT	2 - 1 W/G FEEDER CIRCUIT IN 2" CONDUIT
*1	2 #1Ø 1 #2G	2 AWG SIZE 1 CONDUCTOR (BK & RD) 1 AWG SIZE 2 GROUNDING CONDUCTOR	2 - 1 W/G FEEDER CIRCUIT

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

			TYPE					
			JACKED (JA) FEET				BURIED (BD) FEET	
LOCATION	RACEWAY △1	SHEET	SIZE 2"	SIZE 3"	SIZE 4"	SIZE 6"	SIZE 2"	SIZE 3"
-RPD2- STA.15+67		E2				45		
-RPD2- STA.15+67	CS-A - JB1	E2						170
-L- STA.944+47		E2						
-L- STA.944+47	JB2 - JB6	E2					195	
UNDER SLOPE PROTECTION	JB2 - JB3	E2	285					
UNDER SLOPE PROTECTION	JB6 - JB10	E2	296					
-Y1- STA.51+72		E3				182		
-Y1- STA.51+72	CS-B - JB5	E3						245
LOOP B: -Y1- STA.58+88, 262' RT		E3			37			
LOOP B: -Y1- STA.58+88, 262' RT	JB41 - JB13	E3					67	
INSIDE LOOP "B" UNDER TANK TRAIL		E3		36				
LOOP B: -COL2- STA.88+00, 168' LT	JB3 - JB43	E3		40				
-Y1- STA. 55+20, 250' LT		E3		26				
-RP1DB- STA.39+86		E4				41		
-RP1DB- STA.39+86	CS-C - JB29	E4						120
-COL1- STA.105+12, 263' RT'		E4		41				
-COL1- STA.105+05, 181' RT'		E4		43				
-COL1- STA.113+91		E4		53				
-LP1D- STA.43+21		E4				33		
-LP1D- STA.43+21	JB33 - JB34	E4						85
-Y1- STA.70+18		E4			161			
-Y1- STA.70+18	JB36 - JB37	E4					215	
TOTALS			581	239	351	301	477	620

EQUIVALENTS

TRADE SIZE	METRIC	ENGLISH
½	16mm	½"
¾	21mm	¾"
1	27mm	1"
1.5	41mm	1½"
2	53mm	2"
3	78mm	3"

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
		HM	HIGH MAST

COMPUTED BY:	SKS	DATE:	12-13-13
CHECKED BY:	PKC	DATE:	12-13-13

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	E1A

NORTH CAROLINA PROFESSIONAL SEAL 022582 ENGINEER PAUL KI-BUN CHAN 12-13-13

TABLE "B"
JUNCTION BOX SUMMARY FOR CS-A

NUMBER	LOCATION	TYPE		SHEET
JB1	-RPD2- STA.15+74, 49' RT		PC30	E2
JB2	-L- STA.944+48, 94' RT		PC30	E2
JB3	10' FROM HM1	PC18		E2
JB4	10' FROM HM2	PC18		E2
JB5	10' FROM HM3	PC18		E2
JB6	-L- STA.944+51, 101' LT		PC30	E2
JB7	10' FROM HM4	PC18		E2
JB8	-L- STA.936+26, 91' LT	PC18		E2
JB9	-L- STA.939+00, 90' LT	PC18		E2
JB10	-L- STA.941+76, 93' LT	PC18		E2
JB11	-L- STA.947+25,82' LT	PC18		E2
JB12	-L- STA.949+86, 73' LT	PC18		E2
TOTALS		9	3	

TABLE "B"
JUNCTION BOX SUMMARY FOR CS-B & C

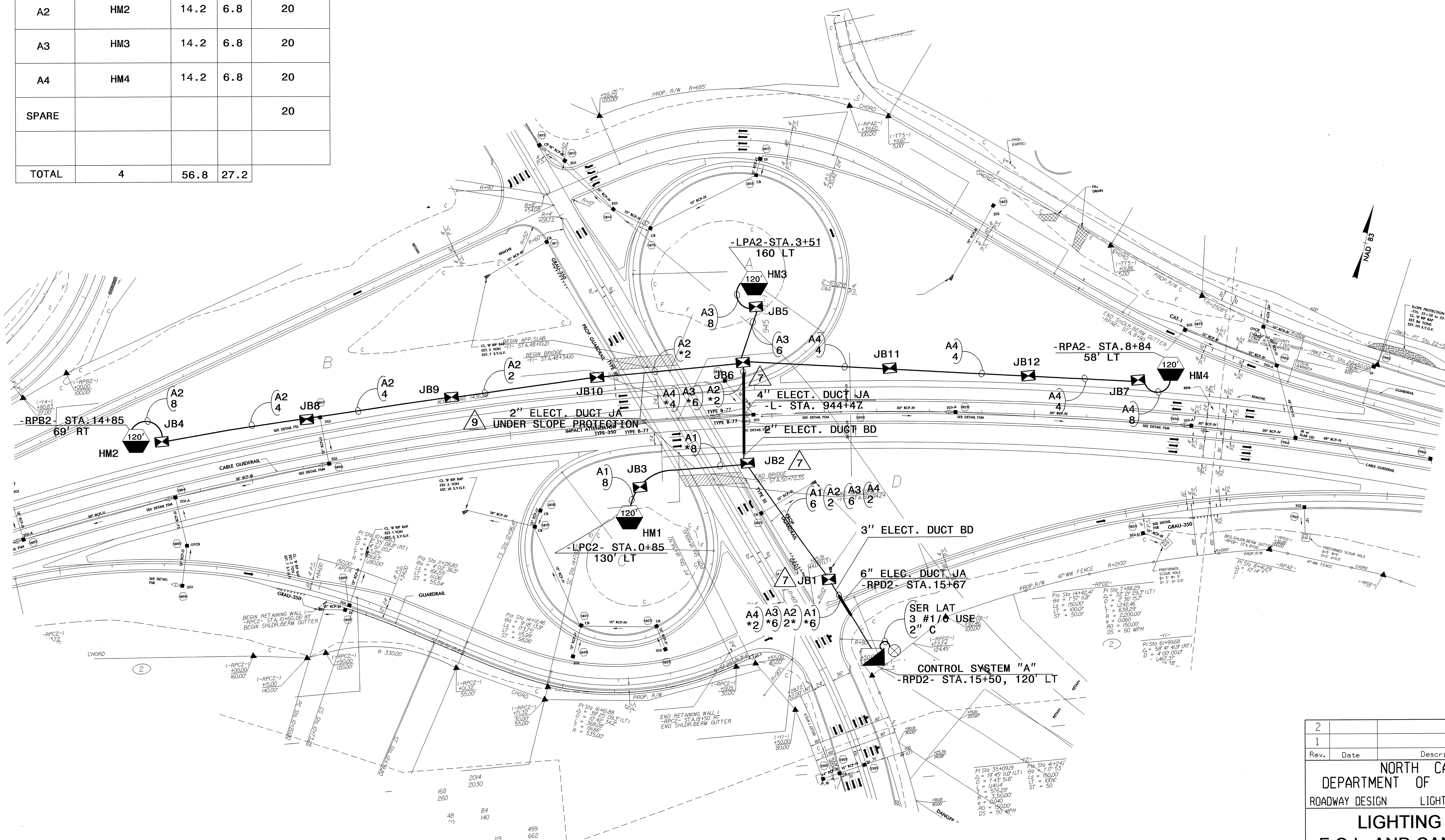
NUMBER	LOCATION	TYPE			SHEET
JB1	10' FROM HM1	PC18			E3
JB2	-COL2- STA.85+57, 105' LT	PC18			E3
JB3	10' FROM HM2	PC18			E3
JB4	10' FROM HM3		PC30		E3
JB5	-Y1- STA.51+72, 101' RT		PC30		E3
JB6	10' FROM HM4	PC18			E3
JB7	-Y1- STA.55+18, 224' LT	PC18			E3
JB8	-Y1- STA.55+30, 275 LT	PC18			E3
JB9	10' FROM HM5	PC18			E3
JB10	-COL2- STA.81+6, 72' LT	PC18			E3
JB11	-COL2- STA.83+28, 90' LT	PC18			E3
JB12	-COL2- STA.87+66, 121' LT	PC18			E3
JB13	-Y1- STA.59+23, 270' RT	PC18			E3
JB14	-Y1- STA.56+51, 192' RT	PC18			E3
JB15	-Y1- STA.49+17, 105' RT	PC18			E3
JB16	-Y1- STA.46+71, 109' RT	PC18			E3
JB17	-Y1- STA.58+00, 176' LT	PC18			E3
JB18	-Y1- STA.60+37, 247' LT	PC18			E3
JB19	-Y1- STA.53+53, 194' LT	PC18			E3
JB20	10' FROM HM6	PC18			E4
JB21	-COL1- STA.113+91, 47' RT	PC18			E4
JB22	-COL1- STA.111+11, 93' RT	PC18			E4
JB23	-COL1- STA.108+26, 173' RT	PC18			E4
JB24	-COL1- STA.104+61, 290' RT	PC18			E4
JB25	-LP1D- STA.39+80, 241' LT	PC18			E4
JB26	-LP1D- STA.41+13, 199' LT	PC18			E4
JB27	-LP1DB- STA.45+19, 121' RT	PC18			E4
JB28	-LP1DB- STA.42+67, 60' RT	PC18			E4
JB29	-RP1DB- STA.39+86, 40' LT		PC30		E4
JB30	-RP1DB- STA.41+59, 55' LT			PC36	E4
JB31	-RP1DB- STA.43+66, 77' LT			PC36	E4
JB32	10' FROM HM9			PC36	E4
JB33	-LP1D- STA.43+21, 31' LT		PC30		E4
JB34	-LP1D- STA.43+21, 40' RT		PC30		E4
JB35	10' FROM HM10		PC30		E4
JB36	-Y1- STA.70+18, 109' LT	PC18			E4
JB37	-Y1- STA.70+18, 100' RT	PC18			E4
JB38	10' FROM HM11	PC18			E4
JB39	-COL1- STA.89+12, 155' RT	PC18			E4
JB40	10' FROM HM12	PC18			E4
JB41	-Y1- STA.58+61, 252' RT	PC18			E3
JB42	-Y1- STA.61+38, 467' RT	PC18			E3
TOTALS		33	6	3	

COMPUTED BY:	SKS	DATE:	12-13-13
CHECKED BY:	PKC	DATE:	12-13-13

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	E2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022582 PAUL KI-BUN CHAN 12-13-13

LOAD SCHEDULE **SE QUADRANT OF CONOPY LANE AND F.O.L I/C** 1Ø, 3W, 240/480 VAC CONTROL SYSTEM "A"				
CIRCUIT ID	120' HIGH MAST 8 @ 750W HPS	AMPS @ 480V	KW LOAD	BREAKER SIZE (AMPS)
A1	HM1	14.2	6.8	20
A2	HM2	14.2	6.8	20
A3	HM3	14.2	6.8	20
A4	HM4	14.2	6.8	20
SPARE				20
TOTAL	4	56.8	27.2	



Rev.	Date	Description	Approved
2			
1			

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROADWAY DESIGN — LIGHTING/ELECTRICAL SECTION

LIGHTING LAYOUT
F.O.L. AND CANOPY LANE INTERCHANGE

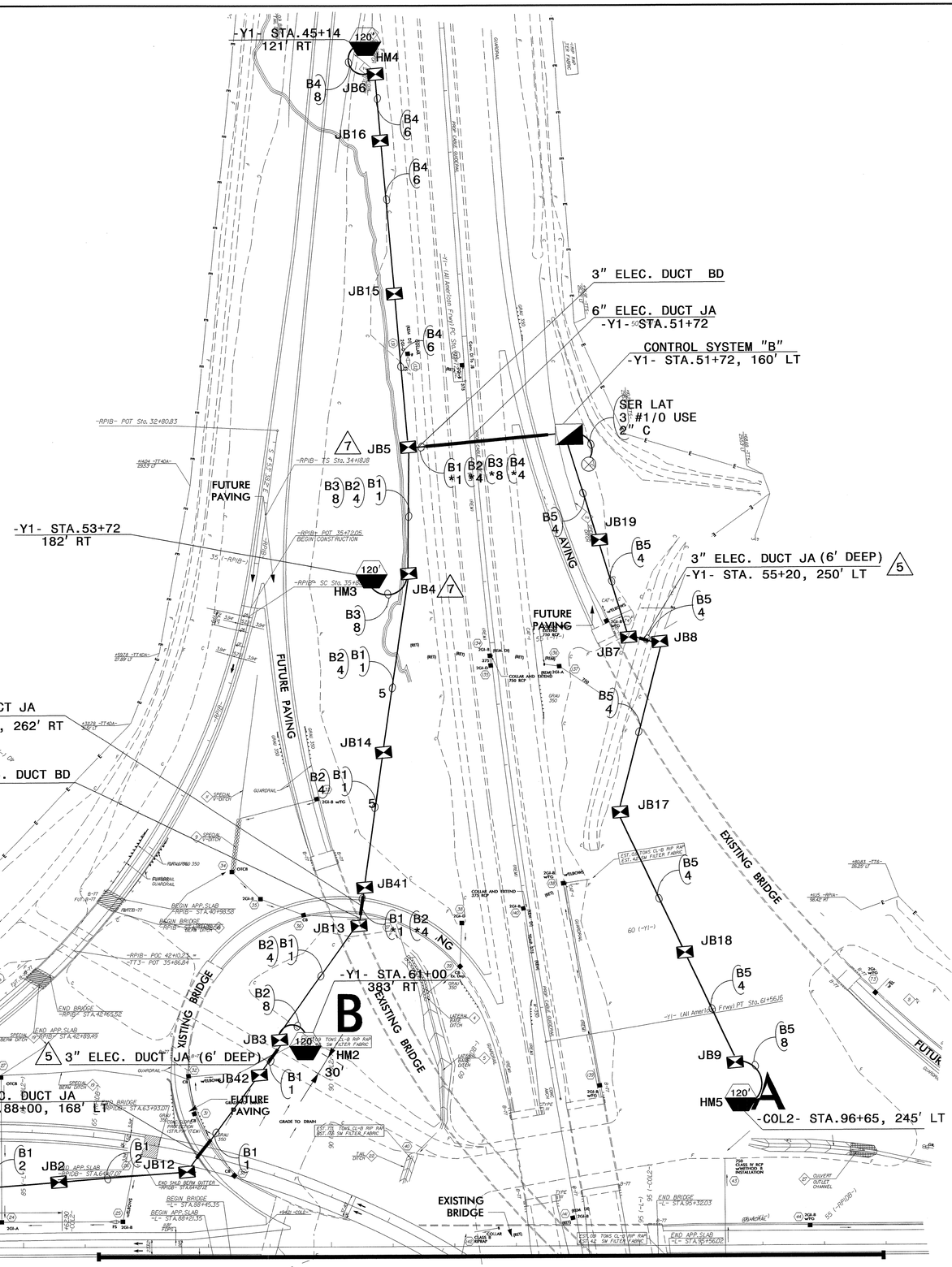
CUMBERLAND COUNTY

Drawn By:	Approved By:	Dwg No.:
SKS	PKC	

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	E3

NORTH CAROLINA PROFESSIONAL SEAL 022582 ENGINEER PAUL KI-BUN CHIN
12-13-13

LOAD SCHEDULE **NE QUADRANT OF A.A.FRWY AND F.O.L I/C**				
10, 3W, 240/480 VAC			CONTROL SYSTEM "B"	
CIRCUIT ID	120' HIGH MAST 8 @ 750W HPS	AMPS @ 480V	KW LOAD	BREAKER SIZE (AMPS)
B1	HM1	14.2	6.8	20
B2	HM2	14.2	6.8	20
B3	HM3	14.2	6.8	20
B4	HM4	14.2	6.8	20
B5	HM5	14.2	6.8	20
SPARE				20
TOTAL	5	71.0	34.0	



Rev.	Date	Description	Approved
2			
1			

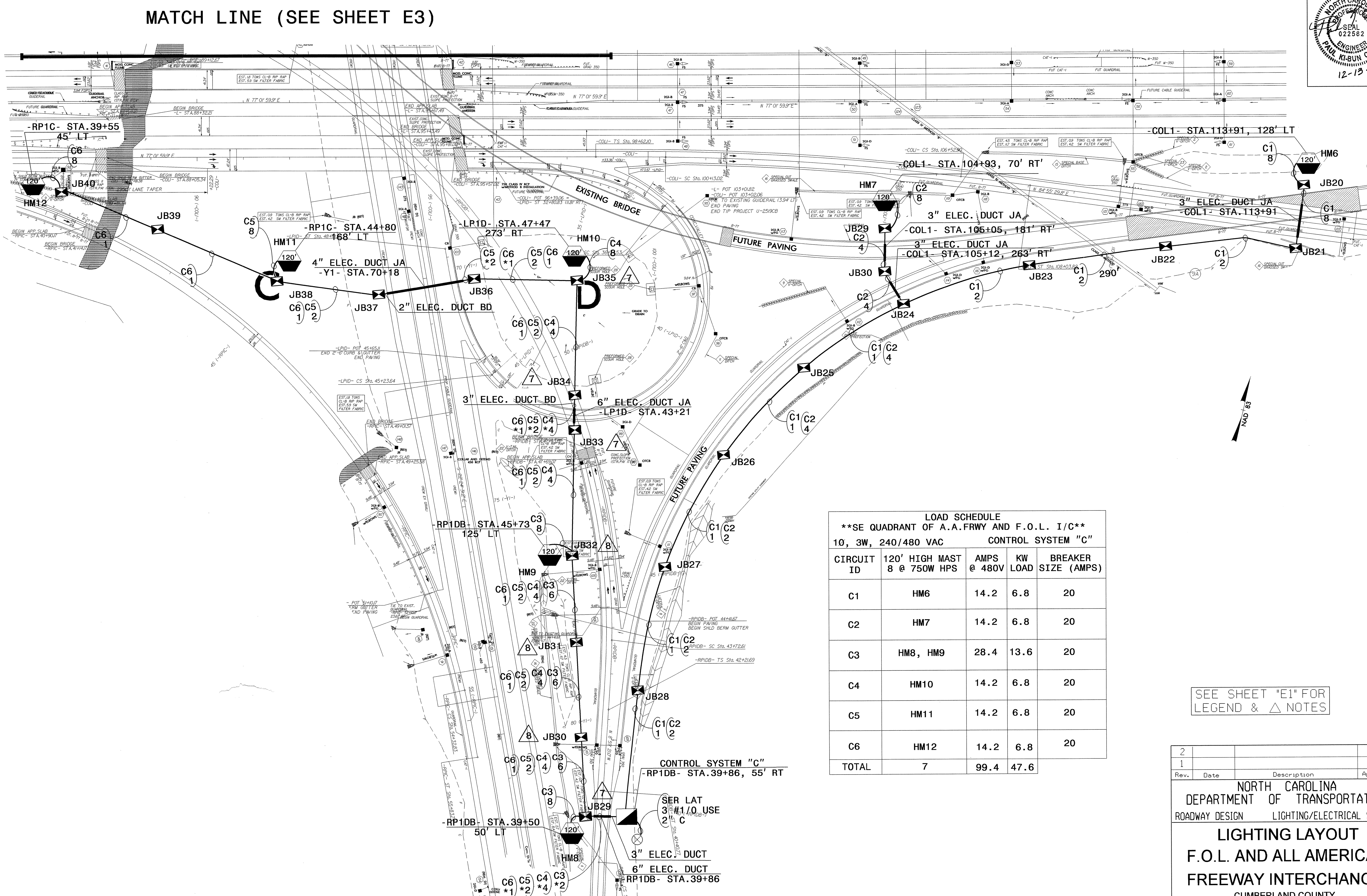
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN — LIGHTING/ELECTRICAL SECTION

LIGHTING LAYOUT
F.O.L. AND ALL AMERICAN FREEWAY INTERCHANGE

CUMBERLAND COUNTY

Drawn By:	Approved By:	Dwg No.:
SKS	PKC	

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	E4



LOAD SCHEDULE **SE QUADRANT OF A.A.FRWY AND F.O.L. I/C** 1Ø, 3W, 240/480 VAC CONTROL SYSTEM "C"				
CIRCUIT ID	120' HIGH MAST 8 @ 750W HPS	AMPS @ 480V	KW LOAD	BREAKER SIZE (AMPS)
C1	HM6	14.2	6.8	20
C2	HM7	14.2	6.8	20
C3	HM8, HM9	28.4	13.6	20
C4	HM10	14.2	6.8	20
C5	HM11	14.2	6.8	20
C6	HM12	14.2	6.8	20
TOTAL	7	99.4	47.6	

Rev.	Date	Description	Approved
2			
1			

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION

LIGHTING LAYOUT
F.O.L. AND ALL AMERICAN FREEWAY INTERCHANGE

CUMBERLAND COUNTY

Drawn By:	Approved By:	Dwg No.:
SKS	PKC	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022582 PAUL KI-BUN CHAN 12-13-13

13-DEC-2013 09:41