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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 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 EXISTING CIRCUITRY IS ANTICIPATED TO BE FAR ENOUGH BELOW FINISHED GRADE THAT PROPOSED ROADWAY WORK SHOULD NOT CAUSE DAMAGE TO THE EXISTING DUCT OR CONDUCTOR. HOWEVER, IF EXISTING DUCT OR CONDUCTOR IS DAMAGED DURING ROADWAY CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL REPLACE IN KIND.
- 9 REMOVE AND DISPOSE OF EXISTING JUNCTION BOX. REPLACE WITH NEW.
- 10 REMOVE AND DISPOSE OF EXISTING CONDUCTORS. EXTEND EXISTING ELECTRICAL DUCT TO NEW JUNCTION BOX. INSTALL NEW CONDUCTORS SIZED AS SHOWN.
- 11 AT THESE LOCATIONS THE ELECTRICAL SUBCONTRACTOR SHALL COORDINATE FOUNDATION AND CONDUIT INSTALLATION WITH THE RETAINING WALL CONTRACTOR. CARE MUST BE TAKEN TO ENSURE PROVISIONS FOR THE FOUNDATIONS AND CONDUIT FOR THE RELOCATED SINGLE ARM POLES DO NOT INTERFERE WITH ANY TIE BACK METHODS USED FOR THE RETAINING WALL.

## SCOPE OF WORK

RELOCATE EXISTING ROADWAY LIGHTING SYSTEM COMPONENTS IN CONFLICT WITH ROADWAY CONSTRUCTION. PROVIDE AND INSTALL NEW JUNCTION BOXES AND UNDERGROUND DUCT AND CIRCUITRY AS SHOWN IN THE PLANS.

## DESIGN CRITERIA

- 2018 AASHTO ROADWAY LIGHTING DESIGN GUIDE
- 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
1405.01	STANDARD FOUNDATION
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.

## LEGEND

- EXISTING 120' HIGH MAST STANDARD. NO CHANGES REQUIRED.
- EXISTING 60' HIGH MAST STANDARD. NO CHANGES REQUIRED.
- EXISTING UNDERPASS LUMINAIRE, TYPE PM.
- EXISTING 35' SINGLE ARM LIGHT STANDARD.
- RELOCATED 35' SINGLE ARM LIGHT STANDARD. INCLUDES STANDARD FOUNDATION, TYPE R1 OR R2. REUSE EXISTING LUMINAIRE. PROVIDE NEW FUSE HOLDERS. ABANDON OR REMOVE EXISTING FOUNDATION.
- EXISTING UNDERPASS BREAKER PANEL
- EXISTING CONTROL SYSTEM. NO CHANGES REQUIRED.
- PROPOSED ELECTRICAL JUNCTION BOX SEE DETAILS & TABLE C, SHEET E1A.
- EXISTING ELECTRICAL JUNCTION BOX. RETAIN UNLESS IN CONFLICT WITH CONSTRUCTION.
- REFERENCE TO CORRESPONDING NOTE AS NUMBERED.
- PROPOSED FEEDER CIRCUIT CONTROL SYSTEM(A), CIRCUIT(1) PLAN SYMBOL (6) SEE TABLE A, THIS SHEET.
- EXISTING FEEDER CIRCUIT CONTROL SYSTEM(A), CIRCUIT(1). NO CHANGES REQUIRED.
- EXISTING FEEDER CIRCUIT CONTROL SYSTEM(A), CIRCUIT(1). REMOVE AND DISPOSE OF CONDUCTOR. ABANDON OR REMOVE CONDUIT.
- PROPOSED ELECTRICAL DUCT SIZE 2", 3" OR 4" TYPE (JA) OR (BD) LOCATION: SEE TABLE B, THIS SHEET
- EXISTING ELECTRICAL DUCT SIZE 2", 3" OR 4".

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
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: RGH OS DATE: 02/11/19  
 CHECKED BY: PC DATE: 2/11/2019

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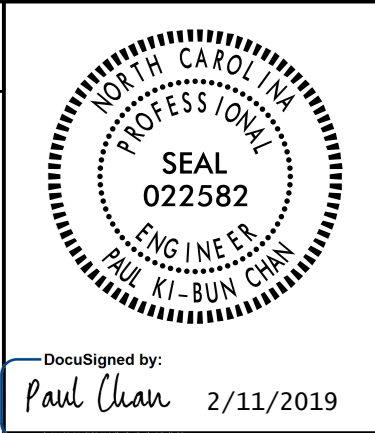


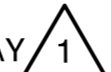


TABLE "B" ELECTRICAL DUCT SUMMARY (ESTIMATED LENGTH IN FEET)										
LOCATION	RACEWAY 	SHEET	TYPE							
			JACKED (JA) FEET				BURIED (BD) FEET			
			SIZE 2"	SIZE 3"	SIZE 4"	SIZE 6"	SIZE 1.5"	SIZE 3"	SIZE 4"	SIZE 6"
-L- STA. 844+73		E2						75		
-L- STA. 852+12		E2						75		
-Y13RPC- STA. 16+85								30		
	CSA TOTALS							180		

TABLE "C" JUNCTION BOX SUMMARY															
SHEET	LABEL	LOCATION AND OFFSET	CONTROL SYSTEM "A"									GPS LOCATION 			
			IGJB			LSJB			HMJB				CSJB	BRJB	SWJB
			SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE		SIZE		
			18"X12"	30"X17"	36"X24"	18"X12"	30"X17"	36"X24"	18"X12"	30"X17"	36"X24"	36"X24"	18"X12"	18"X12"	LAT/LONG
E2	JB3	-L- STA. 844+73, 90' LT	X												
E2	JB4	-L- STA. 844+73, 90' RT	X												
E2	JB11	-L- STA. 852+12, 100' LT	X												
E2	JB12	-L- STA. 852+12, 90' RT	X												
E2	JB6	-Y13RPC- STA. 16+85, 55' RT	X												
		CSA TOTALS	5												

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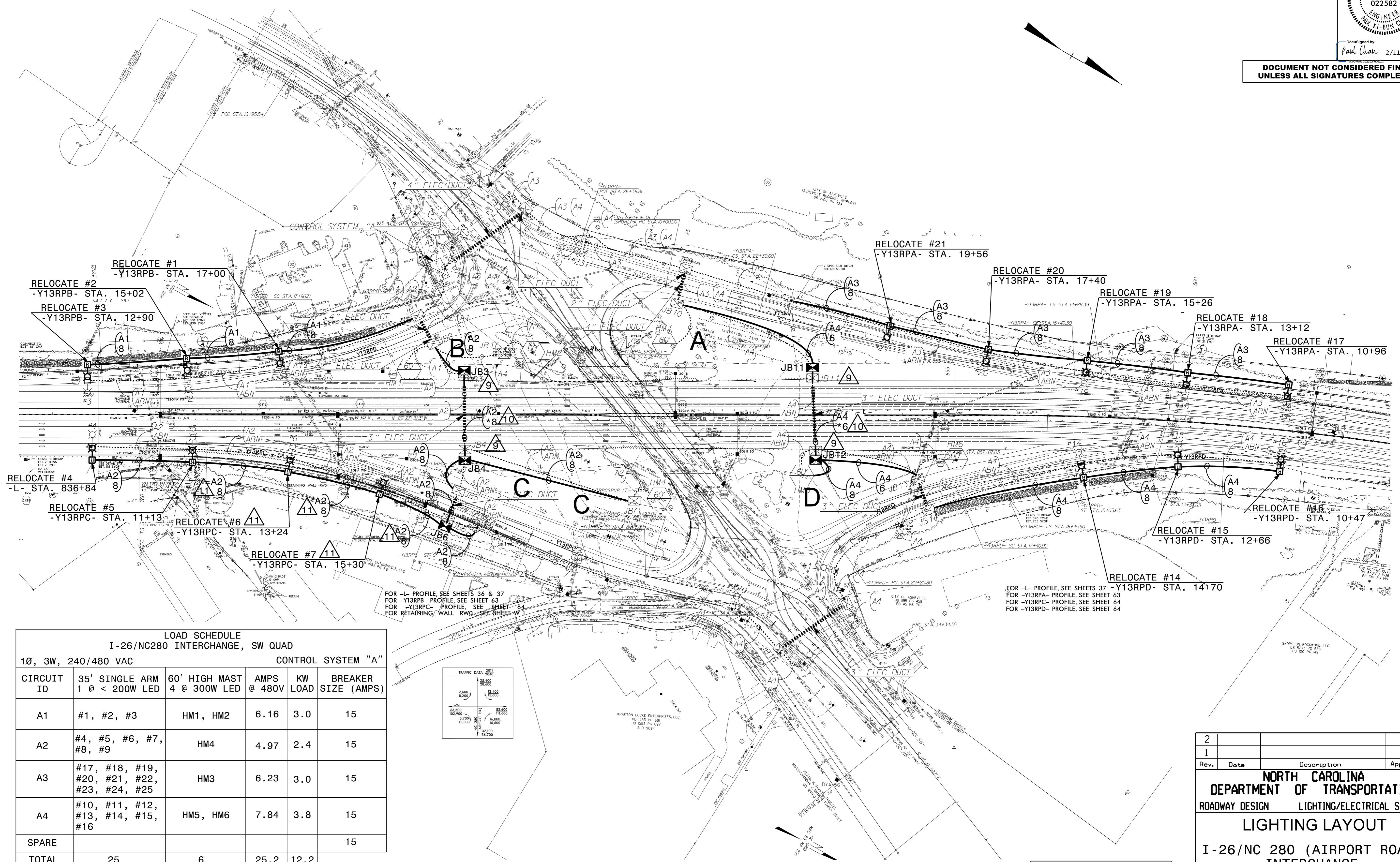
SEE SHEET "E1" FOR  
LEGEND &  NOTES



Designed by: Paul Chan 2/11/2019

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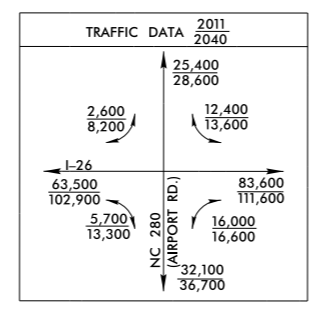
# USE FOR LIGHTING CONSTRUCTION ONLY



**LOAD SCHEDULE**  
I-26/NC280 INTERCHANGE, SW QUAD  
CONTROL SYSTEM "A"

CIRCUIT ID	35' SINGLE ARM 1 @ < 200W LED	60' HIGH MAST 4 @ 300W LED	AMPS @ 480V	KW LOAD	BREAKER SIZE (AMPS)
A1	#1, #2, #3	HM1, HM2	6.16	3.0	15
A2	#4, #5, #6, #7, #8, #9	HM4	4.97	2.4	15
A3	#17, #18, #19, #20, #21, #22, #23, #24, #25	HM3	6.23	3.0	15
A4	#10, #11, #12, #13, #14, #15, #16	HM5, HM6	7.84	3.8	15
SPARE					15
TOTAL	25	6	25.2	12.2	

LIGHTING AT THIS INTERCHANGE ORIGINALLY INSTALLED UNDER TIP PROJECT I-5501, LET MARCH 2014. EXISTING AND PROPOSED LOAD SCHEDULE CONFIGURATION IS THE SAME. NO CHANGES REQUIRED.



FOR -L- PROFILE, SEE SHEETS 36 & 37  
FOR -Y13RPA- PROFILE, SEE SHEET 63  
FOR -Y13RPC- PROFILE, SEE SHEET 64  
FOR -Y13RPD- PROFILE, SEE SHEET 64

SEE SHEET "E1" FOR LEGEND & △ NOTES

2			
1			
Rev.	Date	Description	Approved
<b>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION</b> ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION <b>LIGHTING LAYOUT</b> I-26/NC 280 (AIRPORT ROAD) INTERCHANGE BUNCOMBE/HENDERSON COUNTIES			
Drawn By:	RGH	Approved By:	PC
Dwg No.:			

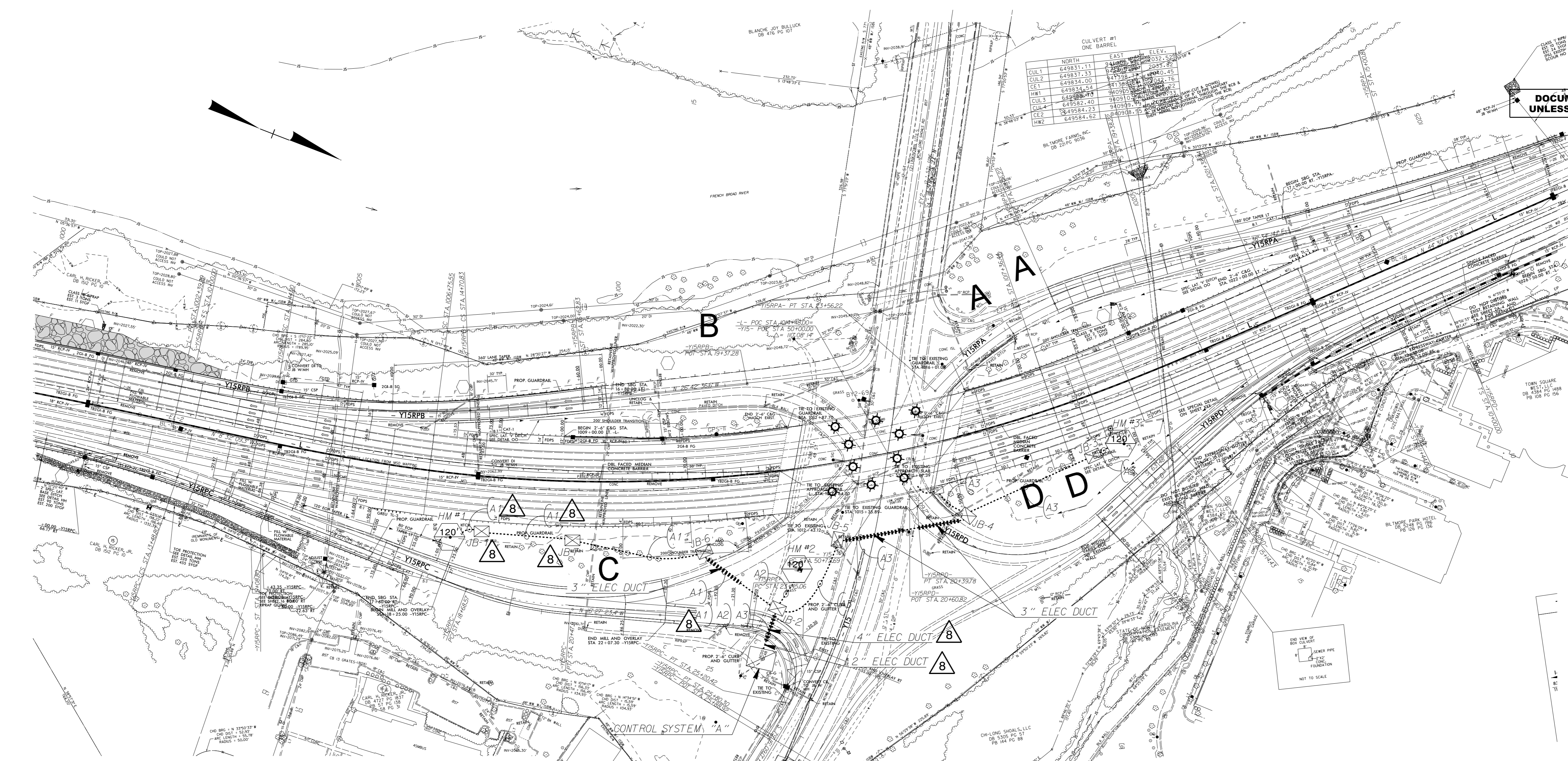
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USE FOR LIGHTING CONSTRUCTION ONLY



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**LOAD SCHEDULE**  
I-26/NC 146 (LONG SHOALS ROAD)

1Ø, 3W, 240/480 VAC		CONTROL SYSTEM "A"			
CIRCUIT ID	120' HIGH MAST W/ 8 485W LED LUMINAIRES	UNDERPASS 1 @ 80W LED	AMPS @ 480V	KW LOAD	BREAKER SIZE (AMPS)
A1	HM#1		8.1	3.9	20
A2	HM#2		8.1	3.9	20
A3	HM#3	10	9.8	4.7	25
SPARE					20
TOTAL			26.0	12.5	

LIGHTING AT THIS INTERCHANGE ORIGINALLY INSTALLED AS HIGH PRESSURE SODIUM UNDER TIP PROJECT R-2813B, LET DECEMBER 2016, AND CONVERTED TO LED VIA A STATEWIDE LED UPGRADE PROJECT BY BRADY/TRANE SERVICES IN 2017/2018. EXISTING AND PROPOSED LOAD SCHEDULE CONFIGURATION IS THE SAME AND SHOWS LOADS FOR LED LUMINAIRES. NO CHANGES REQUIRED.

SEE SHEET "E1" FOR LEGEND & △ NOTES

2			
1			
Rev.	Date	Description	Approved
<b>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION</b> ROADWAY DESIGN LIGHTING/ELECTRICAL SECTION <b>LIGHTING LAYOUT</b> I-26/LONG SHOALS ROAD INTERCHANGE BUNCOMBE COUNTY			
Drawn By:	RGH	Approved By:	pc
Dwg No.:			

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