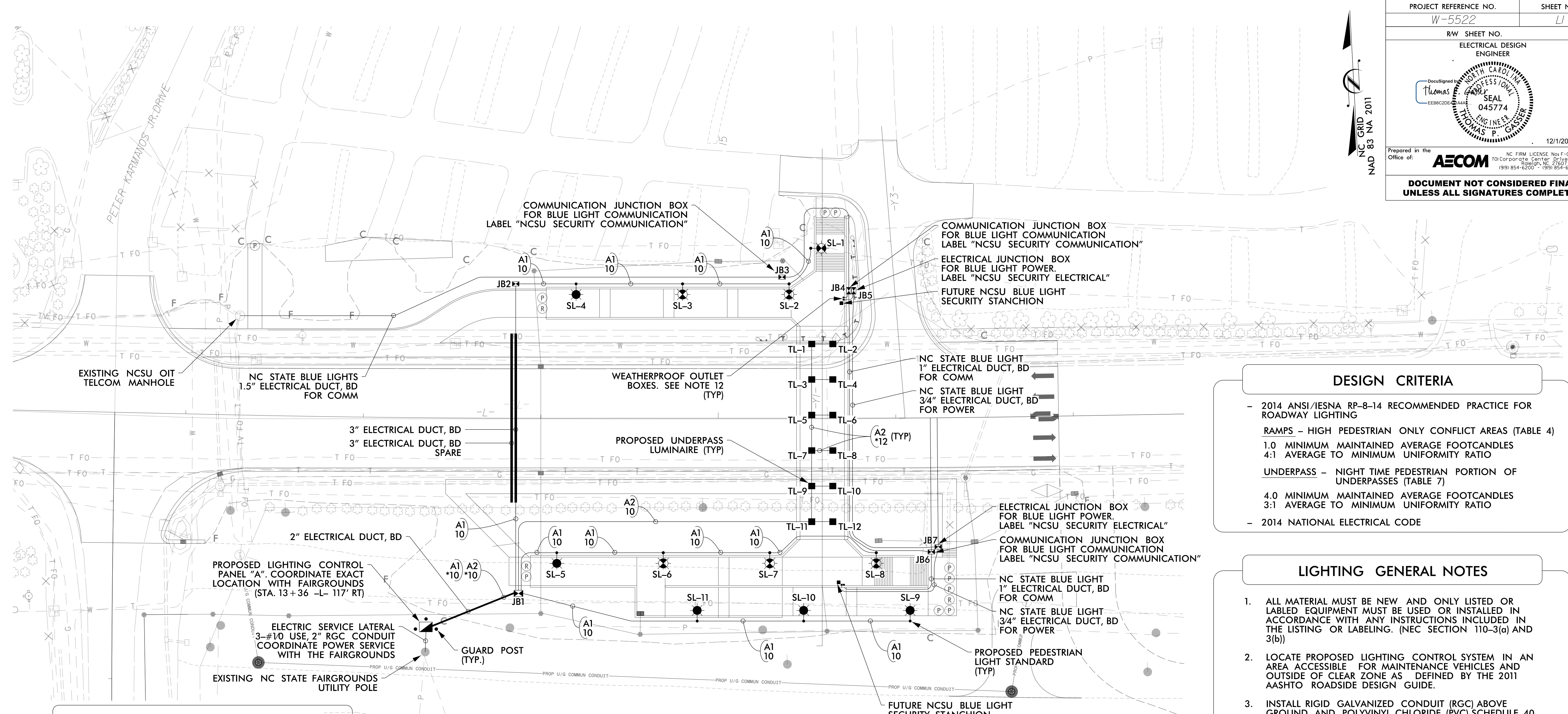


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PROJECT REFERENCE NO. W-5522	SHEET NO. LI
RW SHEET NO.	
ELECTRICAL DESIGN ENGINEER	
12/1/2017	
Prepared in the Office of:	
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**DESIGN CRITERIA**

- 2014 ANSI/IESNA RP-8-14 RECOMMENDED PRACTICE FOR ROADWAY LIGHTING
- RAMPS - HIGH PEDESTRIAN ONLY CONFLICT AREAS (TABLE 4)
- 1.0 MINIMUM MAINTAINED AVERAGE FOOTCANDLES
- 4:1 AVERAGE TO MINIMUM UNIFORMITY RATIO
- UNDERPASS - NIGHT TIME PEDESTRIAN PORTION OF UNDERPASSES (TABLE 7)
- 4.0 MINIMUM MAINTAINED AVERAGE FOOTCANDLES
- 3:1 AVERAGE TO MINIMUM UNIFORMITY RATIO
- 2014 NATIONAL ELECTRICAL CODE

**LIGHTING GENERAL NOTES**

1. ALL MATERIAL MUST BE NEW AND ONLY LISTED OR LABELED EQUIPMENT MUST BE USED OR INSTALLED IN ACCORDANCE WITH ANY INSTRUCTIONS INCLUDED IN THE LISTING OR LABELING. (NEC SECTION 110-3(a) AND 3(b))
2. LOCATE PROPOSED LIGHTING CONTROL SYSTEM IN AN AREA ACCESSIBLE FOR MAINTENANCE VEHICLES AND OUTSIDE OF CLEAR ZONE AS DEFINED BY THE 2011 AASHTO ROADSIDE DESIGN GUIDE.
3. INSTALL RIGID GALVANIZED CONDUIT (RGC) ABOVE GROUND AND POLYVINYL CHLORIDE (PVC) SCHEDULE 40 CONDUIT UNDERGROUND, EXCEPT AS MODIFIED ON THESE PLAN SHEETS OR IN APPLICABLE SECTIONS OF THE ROADWAY STANDARD DRAWINGS FOR THIS PROJECT.
4. TYPE IG11 JUNCTION BOXES ARE 12" X 12" W X 18"H.
5. TYPE IG18 JUNCTION BOXES ARE 18" X 12" W X 18"H.
6. LOCATE ALL JUNCTION BOXES OUTSIDE CLEAR ZONE AND IN AN AREA UNLIKELY TO BE USED BY TRAFFIC.
7. ONLY APPROVED SPLICE KITS SHALL BE ALLOWED AT SPLICE POINTS INDICATED ON THE PLANS.
8. ALL CABLES AND CONDUCTORS MUST BE INSTALLED IN A CONTINUOUS UNCUPT LENGTH BETWEEN HANDHOLES AND LIGHT STANDARDS.
9. COLOR CODE ALL CONDUCTORS AS REQUIRED IN DIV. 14 SPECIFICATION AND PER NEC.
10. FURNISH AND INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CIRCUIT FEEDER CONDUITS.
11. ALL LIGHT STANDARDS AND UNDERPASS LUMINAIRES FURNISHED ON THIS PROJECT MUST BE OF THE SAME STYLE AND MATERIAL AND FROM THE SAME MANUFACTURER.
12. PROVIDE 2-GANG, DIE-CAST ALUMINUM WEATHERPROOF BOXES WITH BLANK COVERS AND TAMPER-RESISTANT SCREWS FOR ELECTRICAL AND COMMUNICATION CONNECTIONS TO FUTURE BLUE LIGHT. PROVIDE BOXES WITH BACK AND END OUTLET HUBS, 1" FOR COMM. AND 3/4" FOR POWER. MOUNT BOXES TO RETAINING WALL 24" ABOVE FINISHED SIDEWALK AS SHOWN. INCLUDE COST OF BOXES WITH BLUE LIGHT RACEWAY. COORDINATE EXACT REQUIREMENTS WITH NCSU SECURITY APPLICATIONS AND TECHNOLOGIES (SAT).

**TABLE A**

PLAN SYMBOL	CIRCUITRY CONDUCTOR CONDUIT TYPE & SIZE	
10	2 #10 Ø 1 #10G 1.5" P	2 AWG SIZE 10 CONDUCTOR (BK & RD) 1 AWG SIZE 10 GROUNDING CONDUCTOR 1.5" PVC CONDUIT
*10	2 #10 Ø 1 #10G	2 AWG SIZE 10 CONDUCTOR (BK & RD) 1 AWG SIZE 10 GROUNDING CONDUCTOR
*12	2 #12 Ø 1 #12G	2 AWG SIZE 12 CONDUCTOR (BK & RD) 1 AWG SIZE 12 GROUNDING CONDUCTOR

**ROADWAY STANDARD DRAWINGS**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" PROJECT SERVICES 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
1406.01	LIGHT STANDARD LUMINAIRES (WIRING DIAGRAM)
1407.01	ELECTRIC SERVICE POLE AND LATERAL
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.

**ELECTRICAL EQUIPMENT SUMMARY**

JUNCTION BOX	STATION NUMBER	TYPE
JB1	STA. 13+87, -L- 99' RT	IG18
JB2	STA. 13+87, -L- 76' LT	IG11
JB3	STA. 15+36, -L- 79' LT	IG18
JB4	STA. 15+74, -L- 72' LT	IG18
JB5	STA. 15+76, -L- 72' LT	IG18
JB6	STA. 16+20, -L- 75' RT	IG18
JB7	STA. 16+23, -L- 73' RT	IG18

LIGHT STANDARD	STATION NUMBER	FOUNDATION
SL-1	STA. 15+52, -L- 95.75' LT	TYPE R1
SL-2	STA. 15+40, -L- 75.50' LT	TYPE R1
SL-3	STA. 14+80, -L- 75.50' LT	TYPE R1
SL-4	STA. 14+20, -L- 75.50' LT	TYPE R1
SL-5	STA. 14+09, -L- 75.75' RT	TYPE R1
SL-6	STA. 14+69, -L- 75.75' RT	TYPE R1
SL-7	STA. 15+29, -L- 75.75' RT	TYPE R1
SL-8	STA. 15+89, -L- 75.75' RT	TYPE R1
SL-9	STA. 16+08, -L- 114.25' RT	TYPE R1
SL-10	STA. 15+48, -L- 114.25' RT	TYPE R1
SL-11	STA. 14+88, -L- 114.25' RT	TYPE R1

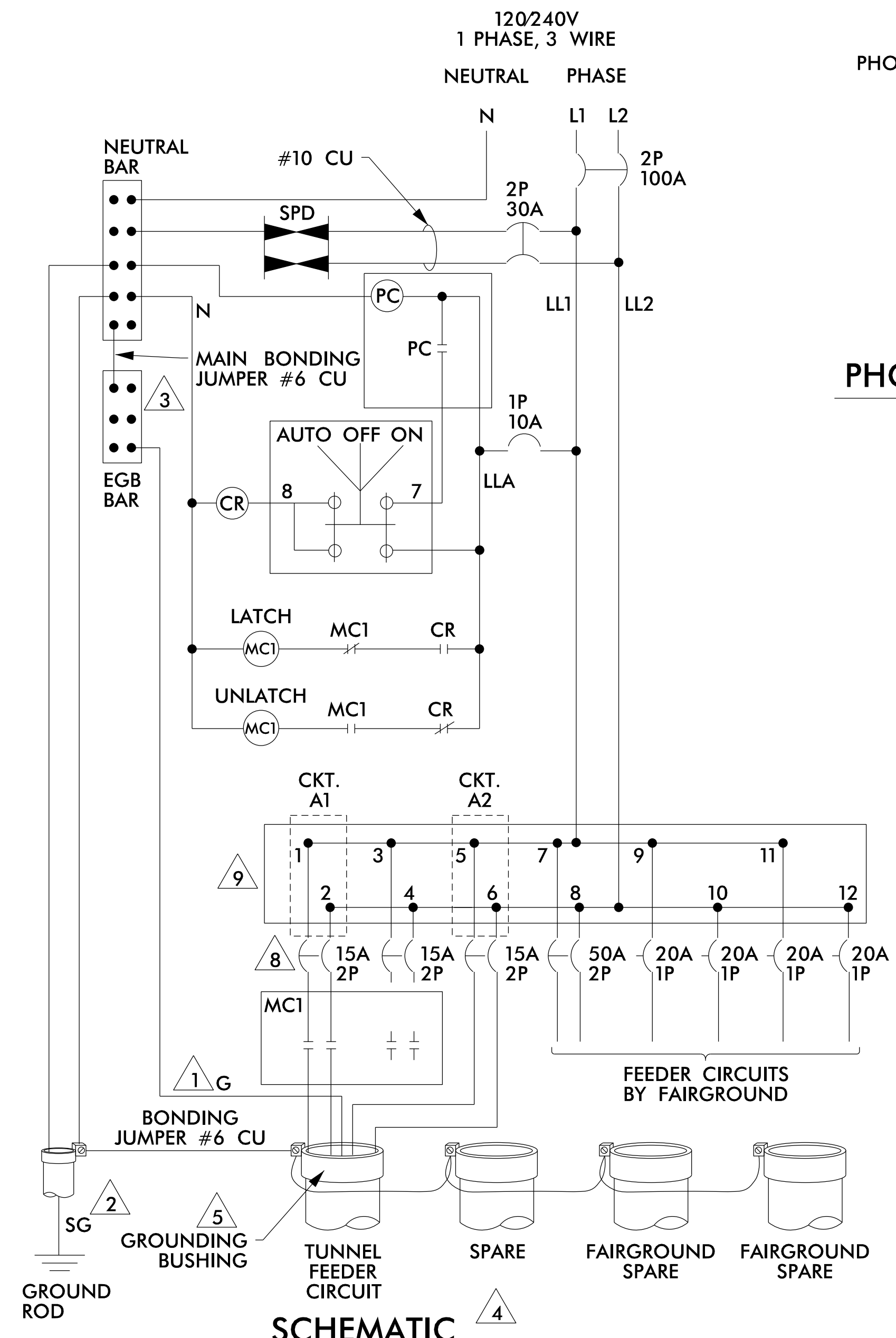
REFER TO LIGHTING DETAILS FOR LOCATION OF UNDERPASS LUMINAIRES.

ALL WORK SHALL BE IN CONFORMANCE WITH DIVISION 14 OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, DATED JANUARY 2018.

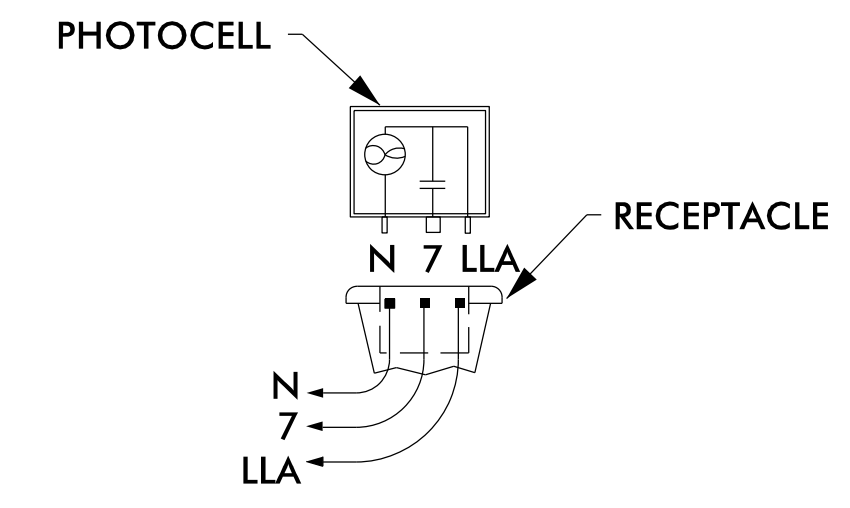
**LIGHTING LEGEND**

- PROPOSED LIGHTING CONTROL PANEL  
120/240V, 1P, 3W, 100A
- PROPOSED ELECTRICAL JUNCTION BOX
- PROPOSED ARCHITECTURAL LIGHT STANDARD WITH 60W MAX. LED LUMINAIRE, TYPE II DISTRIBUTION, 4000K, 4400 LUMEN MIN., 16" ROUND SHAFT, GRAY FINISH
- PROPOSED ARCHITECTURAL LIGHT STANDARD WITH 100W MAX. LED LUMINAIRE, TYPE II DISTRIBUTION, 4000K, 7800 LUMEN MIN., 16" ROUND SHAFT, GRAY FINISH
- PROPOSED VANDEL RESISTANT LED LUMINAIRE, 20W MAX., TYPE V DISTRIBUTION, 4000K, 1400 LUMEN MIN., BRONZE FINISH
- PROPOSED ELECTRICAL FEEDER CIRCUIT CONTROL SYSTEM (A), CIRCUIT (1), PLAN SYMBOL (10) SEE TABLE A THIS SHEET
- PROPOSED BURIED ELECTRICAL DUCT, RIGID PVC
- ELEC. DUCT

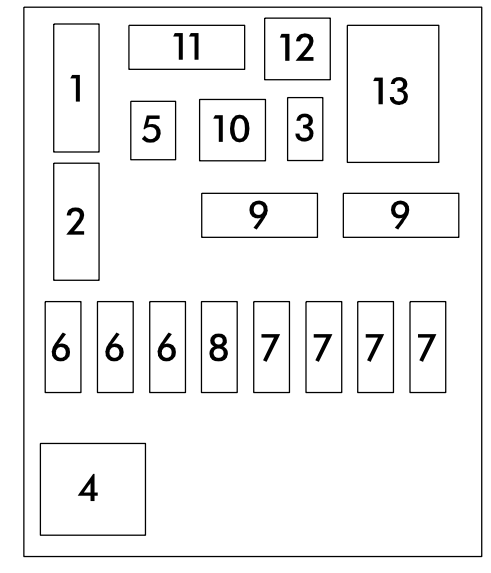
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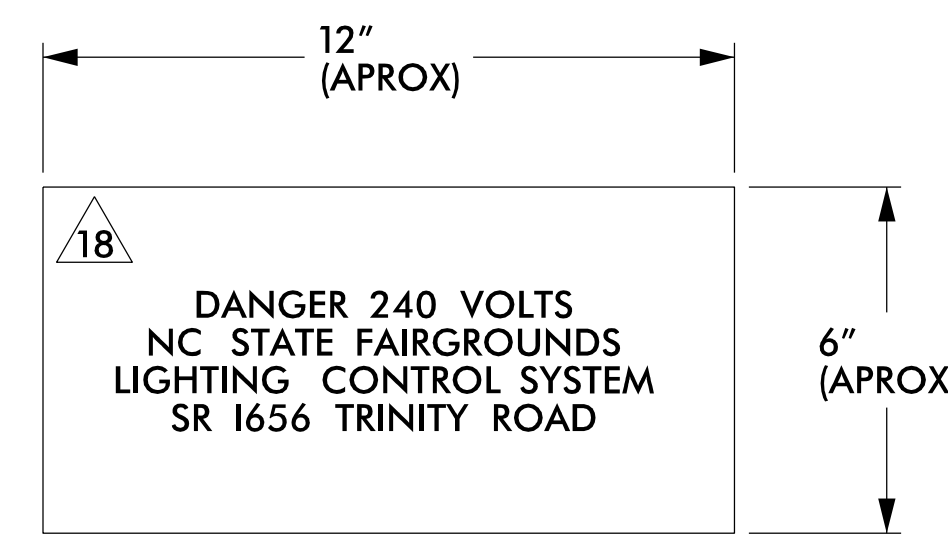
**SCHEMATIC**



**PHOTOCELL CONNECTIONS**

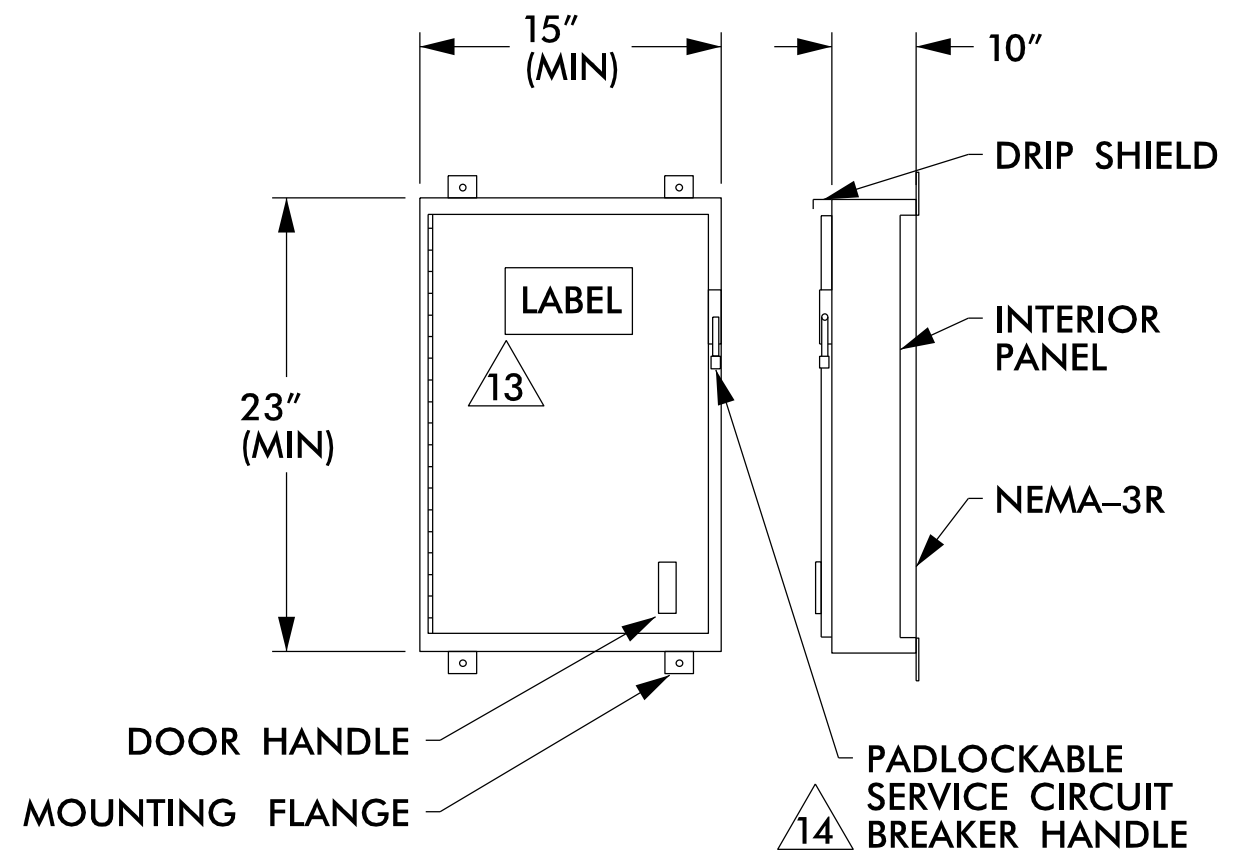


**INTERIOR PANEL COMPONENT LAYOUT**

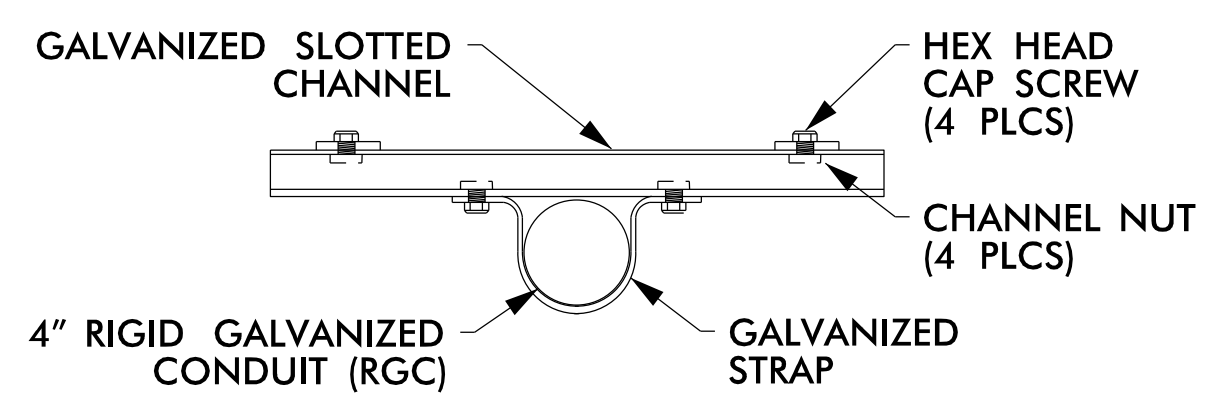


**CONTROL CENTER LABEL**

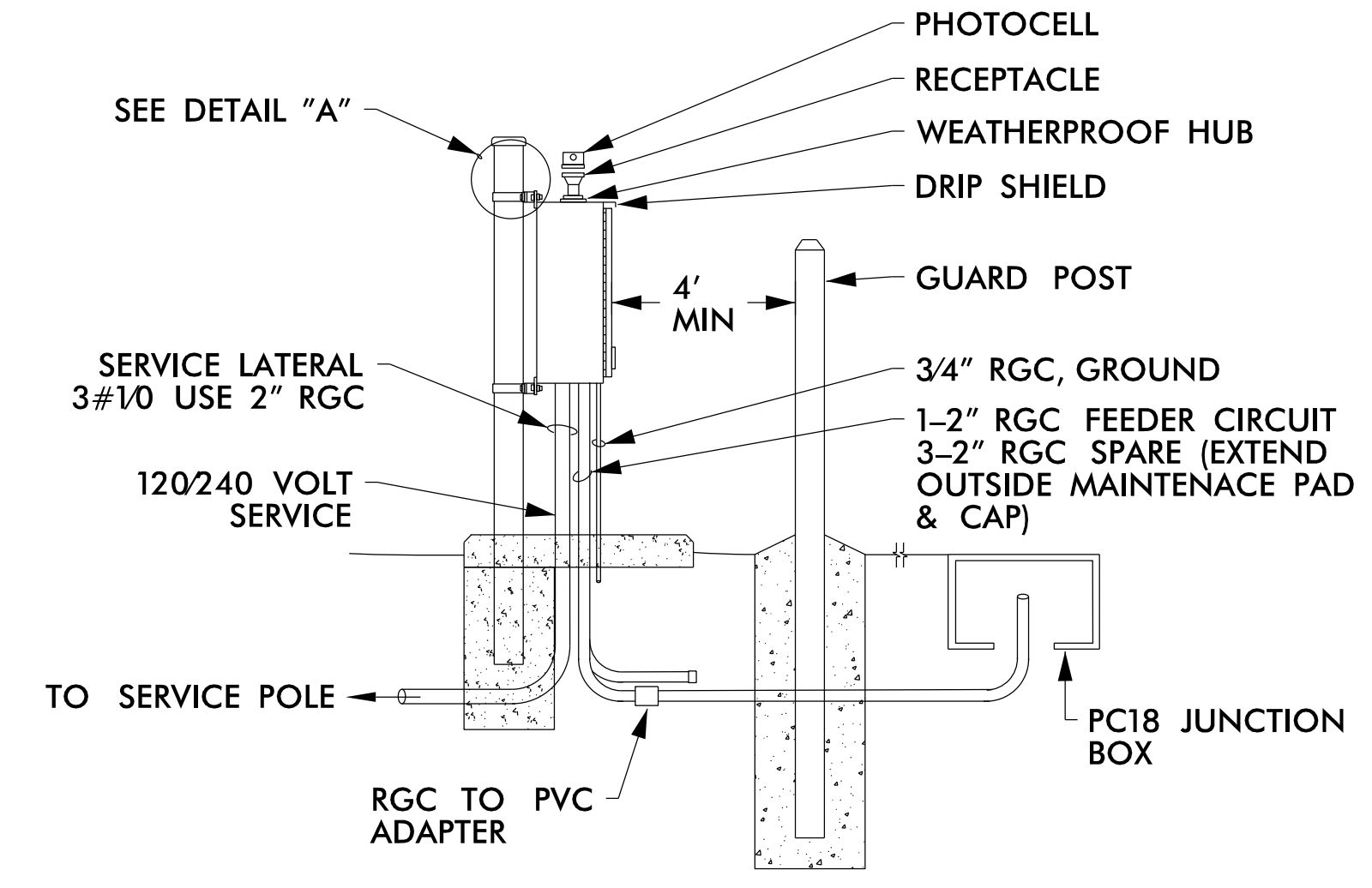
COMPONENT LIST			
#	QTY	DESCRIPTION	SPECIFICATIONS
1	1	NEUTRAL BAR	
2	1	EQUIPMENT GROUNDING BAR (EGB)	
3	1	CONTROL CIRCUIT BREAKER	1P, 120V, 10A
4	1	MECHANICALLY HELD CONTACTORS	4P, 240V, 30A W/120V COIL
5	1	CONTROL RELAY W/NC & NO CONTACT	120V, 10A, W/120V COIL
6	3	TUNNEL FEEDER CIRCUIT BREAKERS (INCLUDES 1 SPARE)	2P, 240V, 15A
7	4	FAIRGROUND FEEDER CIRCUIT BREAKERS	1P, 120V, 20A
8	1	FAIRGROUND FEEDER CIRCUIT BREAKER	2P, 240V, 50A
9	2	POWER DISTRIBUTION LUGS OR BLOCKS	
10	1	SELECTOR SWITCH (ON-OFF-AUTO)	120V, 10A
11	1	SURGE PROTECTION DEVICE (SPD)	SPD TYPE-1
12	1	SPD CIRCUIT BREAKER	2P, 240V, 30A
13	1	SERVICE CIRCUIT BREAKER	2P, 240V, 100A
		MOUNTING BRACKETS OR SCREW STUDS	



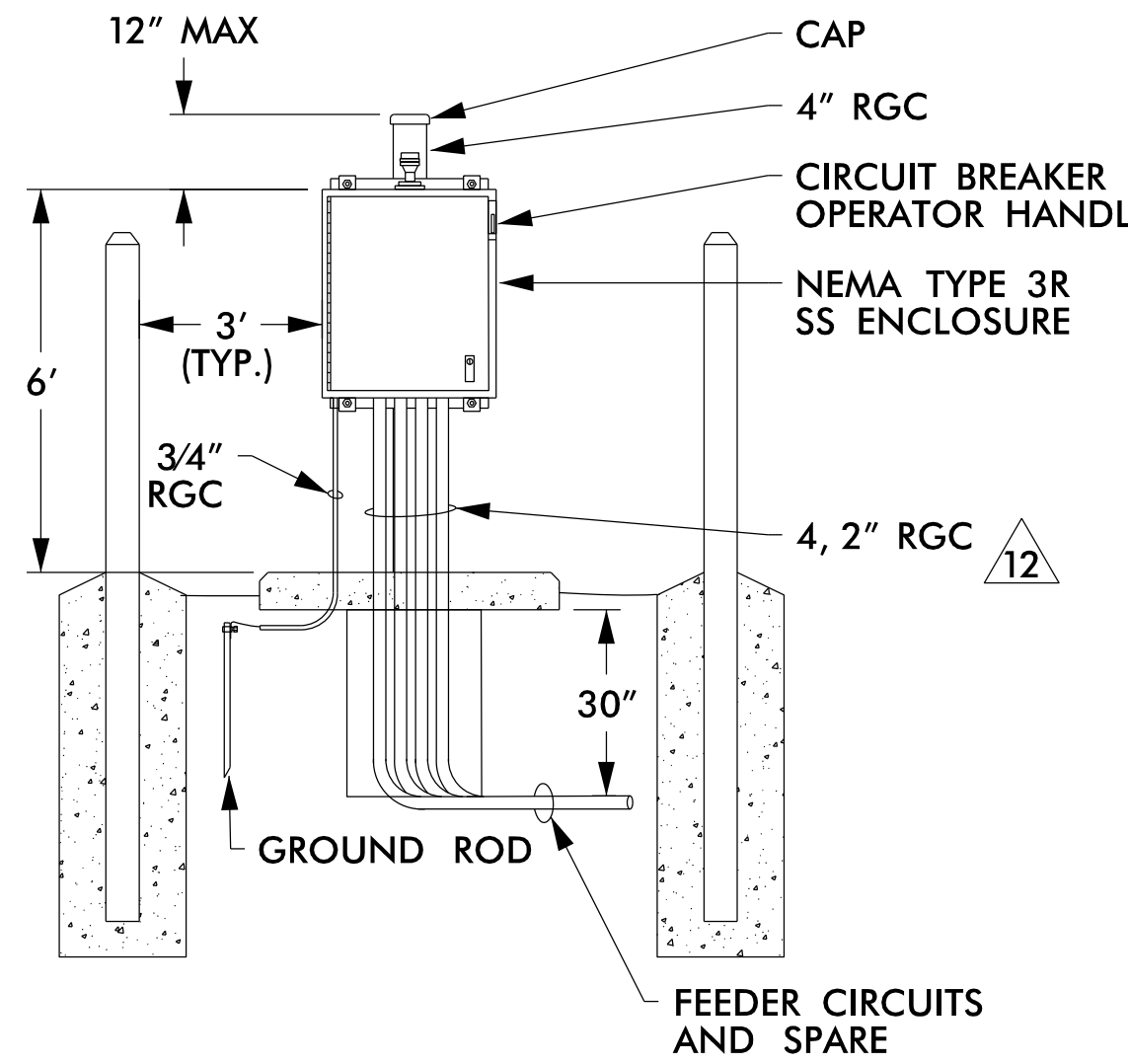
**NEMA TYPE 3R STAINLESS STEEL ENCLOSURE**



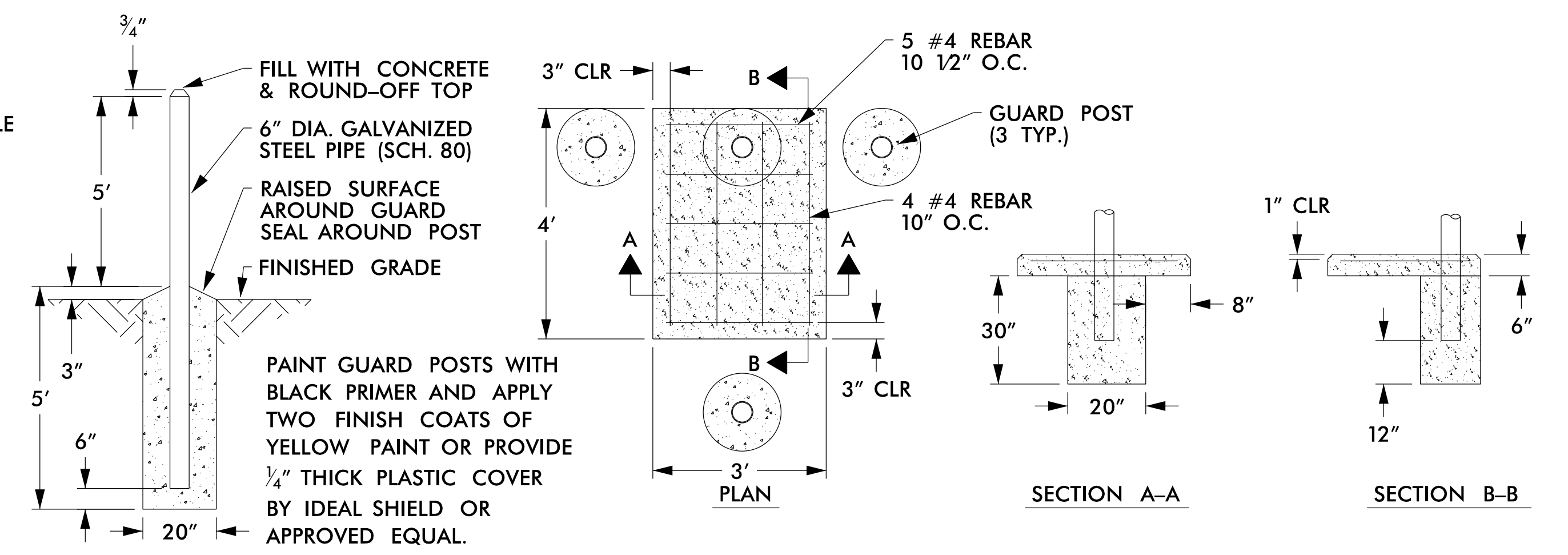
**DETAIL "A"**



**ASSEMBLY**



**GUARD POST**



**FOUNDATION**

- NOTES**
- EQUIPMENT GROUNDS (G) SHALL BE SIZED ACCORDING TO CIRCUIT DESCRIPTION. (SEE PLAN)
  - SYSTEM GROUND (SG) SHALL BE CONTINUOUS FROM THE NEUTRAL BAR TO THE GROUNDING ELECTRODE (GROUND ROD). SG CONDUCTOR SHALL BE #6 CU MIN. THE EQUIPMENT GROUNDING BAR (EGB) SHALL BE BONDED TO THE PANEL AND THE NEUTRAL BAR.
  - FEEDER CIRCUITS NOT SHOWN ON THE PLANS SHALL NOT BE INSTALLED, BUT CONDUIT SHALL BE INSTALLED AND CAPPED.
  - INSTALL A GROUNDING BUSHING ON EACH CONDUIT. CONNECT BONDING JUMPER AS REQUIRED BY NEC.
  - PROVIDE MANUFACTURER SUPPLIED MOUNTING BRACKETS OR SCREW STUDS PERMANENTLY ATTACHED TO THE BACK PANEL FOR MOUNTING COMPONENTS.
  - THE CONTROL SYSTEM MUST BE LABELED "SUITABLE FOR USE AS SERVICE EQUIPMENT." REFER TO NCDOT SPECIFICATION 1408-2 FOR OTHER REQUIREMENTS.
  - PROVIDE SPACE FOR (4) ADDITIONAL 1P BREAKERS (NOT SHOWN).
  - PROVIDE MULTI-TAP LOAD LUGS OR POWER DISTRIBUTION BLOCKS.
  - CURRENT TRANSFORMER (T) CABINET AND METER MAY BE MOUNTED ON SERVICE POLE OR BACK OF CONTROL ENCLOSURE IN A LOCATION APPROVED BY THE ELECTRICAL UTILITY.
  - INSTALL TYPE 1 SURGE PROTECTION DEVICE (SPD) ON THE LOAD SIDE OF THE SERVICE BREAKER.
  - SEE PLANS FOR SIZE OF CONDUITS AND/OR ELECTRICAL DUCT.
  - PERMANENTLY ATTACH A LABEL TO THE ENCLOSURE DOOR SHOWING THE WORK ORDER NUMBER, CONTROL SYSTEM LETTER DESIGNATION SHOWN IN THE LOAD SCHEDULE AT EACH CONTROL SYSTEM IN THE PLANS.
  - PROVIDE DOOR CLOSING MECHANISM INTERLOCKED WITH CIRCUIT BREAKER HANDLE.
  - STUB FEEDER CIRCUIT CONDUITS INTO JUNCTION BOX. CAP UNUSED CONDUITS. FEEDER CIRCUITS MUST BE MINIMUM 30" BELOW GRADE.
  - SEE NCDOT SPECIFICATION SECTION 1407 FOR SERVICE POLE AND SERVICE LATERAL.
  - SEE NCDOT SPECIFICATION SECTION 1411 FOR JUNCTION BOX INSTALLATION.
  - PROVIDE SAMPLE CONTROL CENTER LABELS TO CITY FOR APPROVAL PRIOR TO ORDERING.
  - PHOTO CELL SHALL BE FIELD LOCATED AND APPROVED PRIOR TO INSTALLATION.

PROJECT REFERENCE NO. W-5522 SHEET NO. L2

ELECTRICAL DESIGN ENGINEER

10/23/2017

Prepared in the Office of: **AECOM**

NC FIRM LICENSE No. F-0342  
101 Corporate Center, Suite 414  
Raleigh, NC 27607  
(919) 854-8200 • (919) 854-4259(FAX)

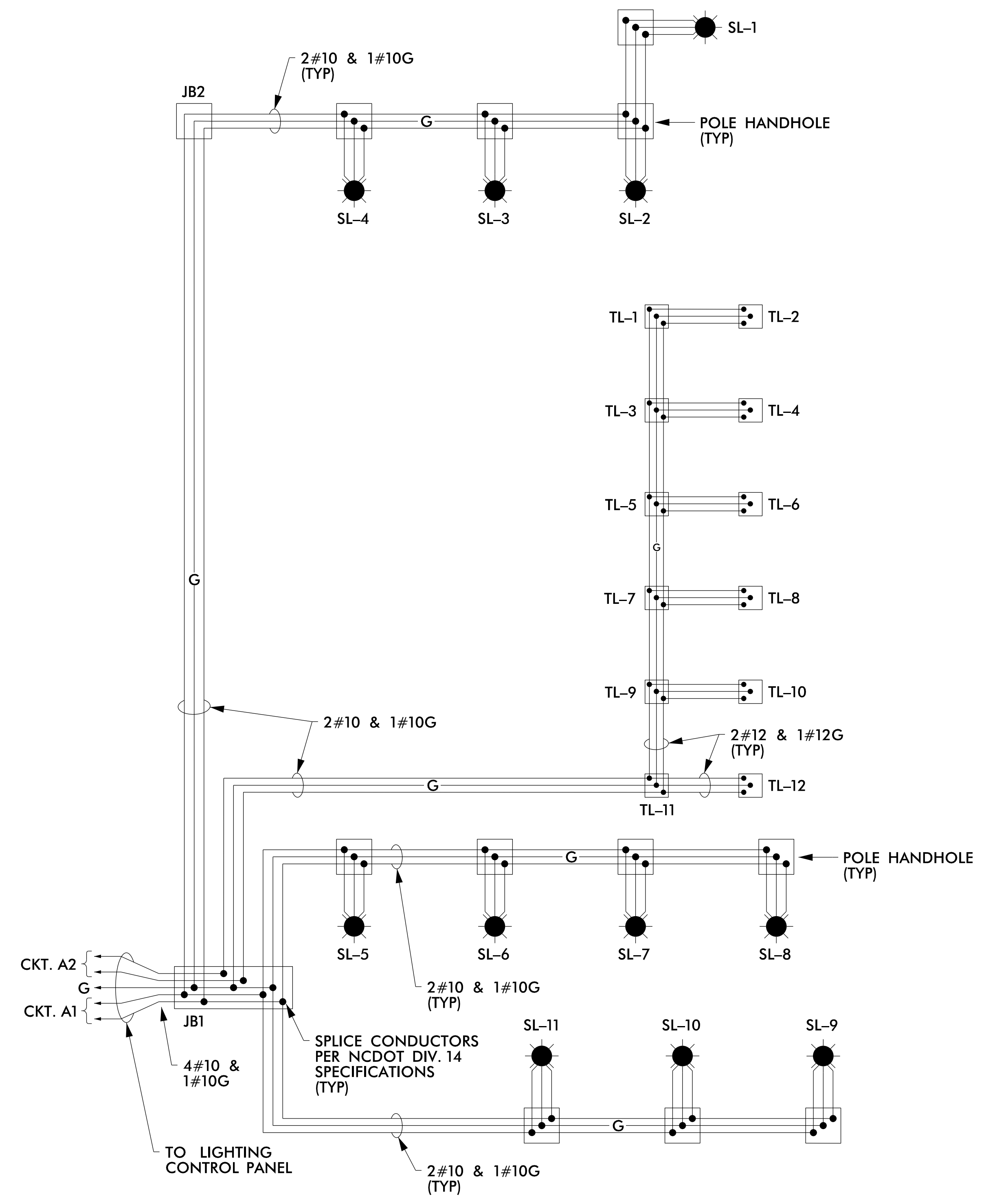
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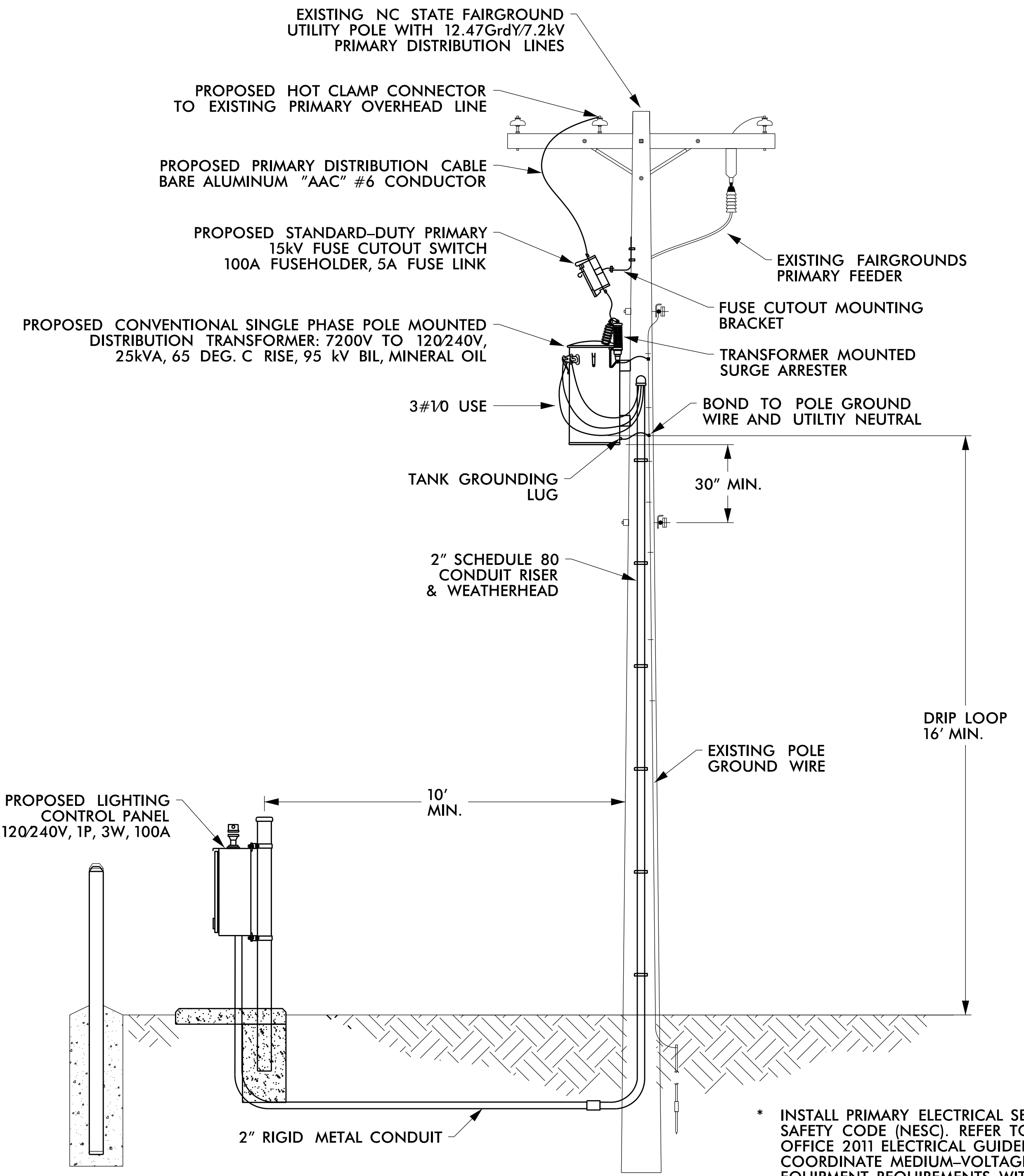
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PROJECT REFERENCE NO. W-5522	SHEET NO. L4
ELECTRICAL DESIGN ENGINEER	
10/23/2017	
Prepared in the Office of: <b>AECOM</b> <small>NC FIRM LICENSE No. F-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 / (919) 854-6259(FAX)</small>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

LIGHTING CONTROL PANEL LOAD SCHEDULE									
MAINTAINING AGENCY	CONTROL PANEL	LINE VOLTAGE (VOLTS)	CONNECTED LOAD (KVA)	SERVICE ENTRANCE CABLE (AWG)	ENCLOSURE RATING (AMPS)	CIRCUIT ID	CIRCUIT LOAD (AMPS)	CIRCUIT BREAKER SIZE (AMPS)	CIRCUIT CABLE SIZE (AWG)
NC STATE FAIRGROUNDS	A	240	1.5	#10	100	A1	3.8	15-2P	#10
						A2	2.1	15-2P	#10



**ELECTRICAL WIRING DIAGRAM**  
120240V, 1P, 3W



**PRIMARY ELECTRICAL SERVICE  
NC STATE FAIRGROUND**  
NOT TO SCALE

\* INSTALL PRIMARY ELECTRICAL SERVICE PER NATIONAL ELECTRICAL SAFETY CODE (NEC). REFER TO NC STATE CONSTRUCTION OFFICE 2011 ELECTRICAL GUIDELINES FOR ADDITIONAL REQUIREMENTS. COORDINATE MEDIUM-VOLTAGE DISTRIBUTION INSTALLATION AND EQUIPMENT REQUIREMENTS WITH NC STATE FAIRGROUNDS PRIOR EQUIPMENT PURCHASE. CONTACT BILL McCLURE (919) 274-6987.