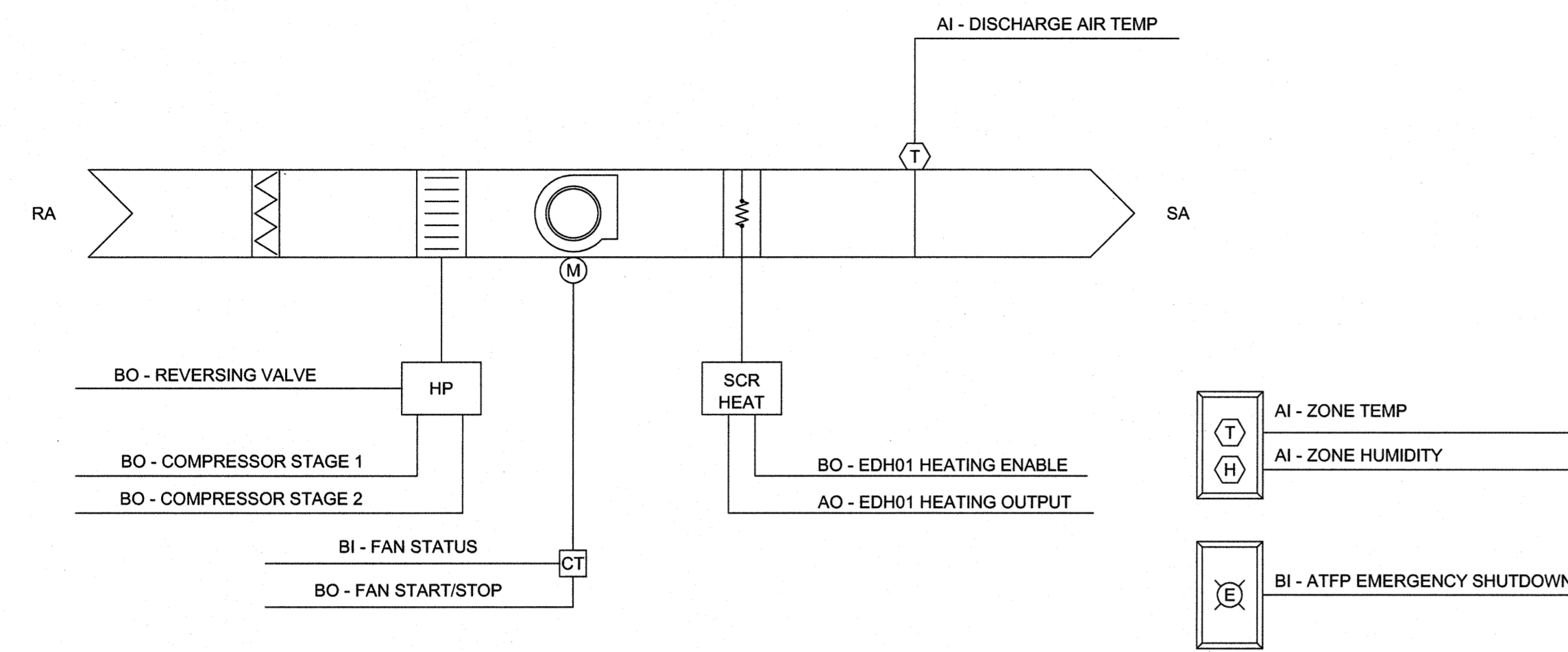


REVISIONS		
SIM.	DATE	APPROVED



### SEQUENCE OF OPERATIONS

**SYSTEM DESCRIPTION:** SPLIT SYSTEM HEAT PUMP WITH SCR ELECTRIC DUCT HEATER. SYSTEM CONSISTS OF SINGLE SPEED AIR VOLUME, TWO STAGES OF COOLING CAPACITY, TWO STAGES OF HEATING CAPACITY (DX AND SCR ELECTRIC), AND NO ECONOMIZER CYCLE, CONTROLLED BY BAS.

**BUILDING AUTOMATION SYSTEM INTERFACE:** THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE CONTROLLER OCCUPIED BYPASS, MORNING WARM-UP / PRE-COOL, OCCUPIED / UNOCCUPIED AND HEAT / COOL MODES. IF A BAS COMMUNICATION IS LOST, THE CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS.

**EMERGENCY SHUTDOWN:** THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL. EMERGENCY SHUTDOWN TO BE A HARDWIRE INTERLOCK.

**CONDENSATE SHUTDOWN:** THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN CONDENSATE OVERFLOW SIGNAL. CONDENSATE SHUTDOWN TO BE A HARDWIRE INTERLOCK.

**RUN CONDITIONS - SCHEDULED:** THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING:

**OCCUPIED MODE SETPOINT:**

- A 75°F (ADJ.) SETPOINT WHEN OUTSIDE AIR TEMPERATURE IS GREATER THAN 80°F
- A 70°F (ADJ.) SETPOINT WHEN OUTSIDE AIR TEMPERATURE IS LESS THAN 50°F
- SETPOINT SHALL RESET LINEARLY WHEN OUTSIDE AIR TEMPERATURE IS BETWEEN 50°F AND 80°F

**UNOCCUPIED MODE (NIGHT SETBACK) SETPOINT:**

- A 80°F (ADJ.) COOLING SETPOINT.
- A 60°F (ADJ.) HEATING SETPOINT.

**ALARMS SHALL BE PROVIDED AS FOLLOWS:**

- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

**ZONE SETPOINT ADJUST:** THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE SETPOINT +/-3°F AT THE ZONE SENSOR.

**ZONE UNOCCUPIED OVERRIDE:** A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

**OCCUPIED MODE:** DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL RUN CONTINUOUSLY. THE DX COOLING, DX HEATING AND SCR ELECTRIC HEAT SHALL STAGE TO MAINTAIN THE OCCUPIED SPACE TEMPERATURE SETPOINT.

**UNOCCUPIED MODE:** WHEN THE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT THE SUPPLY FAN SHALL START. THE DX HEATING SHALL BE ENABLED. IF DX HEATING IS UNABLE TO MAINTAIN SETPOINT, SCR ELECTRIC HEAT SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT PLUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP AND THE HEAT SHALL BE DISABLED.

**WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT THE SUPPLY FAN SHALL START. THE DX COOLING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP AND THE DX COOLING SHALL BE DISABLED.**

**OPTIMAL START:** THE BAS SHALL MONITOR THE SCHEDULED OCCUPIED TIME. OCCUPIED SPACE SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL START OCCURS.

**MORNING WARM-UP MODE:** DURING OPTIMAL START, IF THE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT A MORNING WARM-UP MODE SHALL BE ACTIVATED. WHEN MORNING WARM-UP IS INITIATED THE UNIT SHALL ENABLE THE HEATING AND SUPPLY FAN. WHEN THE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

**PRE-COOL MODE:** DURING OPTIMAL START, IF THE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT, PRE-COOL MODE SHALL BE ACTIVATED. WHEN PRE-COOL IS INITIATED THE UNIT SHALL ENABLE THE FAN WHEN THE SPACE TEMPERATURE REACHES OCCUPIED COOLING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

**OPTIMAL STOP:** THE BAS SHALL MONITOR THE SCHEDULED UNOCCUPIED TIME, OCCUPIED SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL STOP OCCURS. WHEN THE OPTIMAL STOP MODE IS ACTIVE THE UNIT CONTROLLER SHALL MAINTAIN THE SPACE TEMPERATURE TO THE SPACE TEMPERATURE OFFSET SETPOINT.

**COOLING MODE:** THE UNIT CONTROLLER SHALL USE SPACE TEMPERATURE AND SPACE TEMPERATURE SETPOINT TO DETERMINE WHEN TO INITIATE REQUESTS FOR COOLING. WHEN THE SPACE TEMPERATURE RISES ABOVE THE SETPOINT, THE UNIT CONTROLLER SHALL STAGE THE DX COOLING AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. THE COMPRESSOR SHALL ENERGIZE AFTER ITS MINIMUM OFF TIME HAS EXPIRED. ONCE THE SPACE TEMPERATURE FALLS BELOW THE SETPOINT THE COMPRESSOR SHALL BE DEACTIVATED.

**HEATING MODE:** THE UNIT CONTROLLER SHALL USE THE SPACE TEMPERATURE AND SPACE TEMPERATURE SETPOINT TO DETERMINE WHEN TO INITIATE REQUESTS FOR HEAT. WHEN THE SPACE TEMPERATURE DROPS BELOW THE SETPOINT, THE UNIT CONTROLLER SHALL ENABLE DX HEATING TO MAINTAIN TEMPERATURE SETPOINT. IF SETPOINT CANNOT BE MAINTAINED, ENABLE SCR ELECTRIC HEATING TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. ONCE THE SPACE TEMPERATURE RISES ABOVE THE SETPOINT THE HEATING SHALL BE DISABLED.

**DEHUMIDIFICATION MODE:** IF THE SPACE RELATIVE HUMIDITY IS GREATER THAN 65% (ADJ.), THE SUPPLY FAN SHALL BE ENABLED, THE COMPRESSORS SHALL BE ENABLED AND THE SCR ELECTRIC HEATER SHALL BE ENABLED AND SHALL MODULATE TO MAINTAIN A LEAVING AIR TEMPERATURE EQUAL TO THE OCCUPIED SPACE TEMPERATURE SETPOINT. THE MODE SHALL TERMINATE WHEN THE SPACE RELATIVE HUMIDITY FALLS BELOW THE RELATIVE HUMIDITY SETPOINT OF 55% (ADJ.) MINUS 3% (ADJ.). IF THE SPACE RELATIVE HUMIDITY SENSOR FAILS, THE DEHUMIDIFICATION SEQUENCE SHALL BE TERMINATED AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.

**SUPPLY FAN:** THE SUPPLY FAN SHALL BE ENABLED WHILE IN THE OCCUPIED MODE AND CYCLED ON DURING THE UNOCCUPIED MODE. IF THE SUPPLY FAN DOES NOT START WITHIN 40 SECONDS AFTER A REQUEST FOR FAN OPERATION A FAN FAILURE ALARM SHALL BE ANNUNCIATED AT THE BAS, THE UNIT SHALL STOP, REQUIRING A MANUAL RESET.

**FILTER STATUS:** MONITOR HOURS OF SUPPLY FAN OPERATION. ALARMS SHALL BE PROVIDED WHEN FILTER HAS BEEN IN USE FOR MORE THAN 2,200 HRS (ADJ.).

### SEQUENCE OF OPERATIONS

SEQUENCE OF OPERATION:

1. ELECTRIC METER

ELECTRIC METER:

THE CONTROLLER SHALL MONITOR THE ELECTRIC METER FOR ELECTRIC CONSUMPTION ON A CONTINUAL BASIS. THESE VALUES SHALL BE MADE AVAILABLE TO THE SYSTEM AT ALL TIMES.

ALARM SHALL BE GENERATED AS FOLLOWS:

- METER FAILURE: SENSOR READING INDICATES A LOSS OF PULSE OUTPUT FROM THE ELECTRIC METER.

PEAK DEMAND HISTORY:

THE CONTROLLER SHALL MONITOR AND RECORD THE PEAK (HIGH AND LOW) DEMAND READINGS FROM THE ELECTRIC METER. PEAK READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.

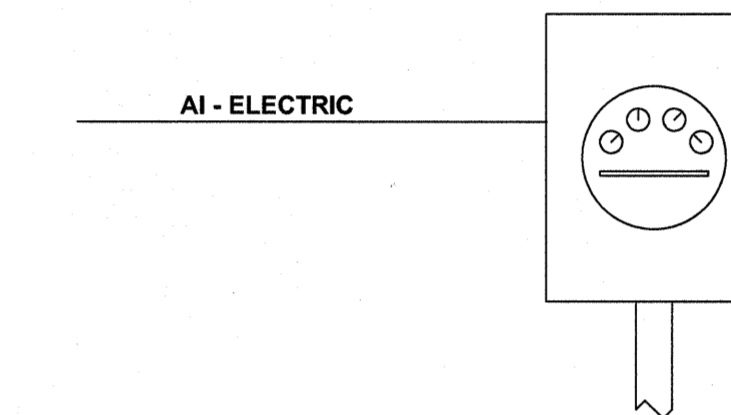
USAGE HISTORY:

THE CONTROLLER SHALL MONITOR AND RECORD ELECTRIC METER READINGS SO AS TO PROVIDE A POWER CONSUMPTION HISTORY. USAGE READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.

DEMAND LEVELS:

THE CONTROLLER SHALL SET THE SYSTEM DEMAND LEVEL (ADJ.) BASED ON THE CURRENT POWER CONSUMPTION READINGS FROM THE ELECTRIC METER. THERE SHALL BE SIX DAILY TIME PERIODS IN WHICH THE DEMAND SHALL BE ADJUSTED ON THREE LEVELS. THESE DEMAND LEVELS SHALL BE AVAILABLE FOR FACILITY EQUIPMENT TO UTILIZE FOR DEMAND LIMITING.

- DEMAND LEVEL 1: POWER CONSUMPTION HAS EXCEEDED THE FIRST DEMAND LEVEL THRESHOLD (ADJ.).
- DEMAND LEVEL 2: POWER CONSUMPTION HAS EXCEEDED THE SECOND DEMAND LEVEL THRESHOLD (ADJ.).
- DEMAND LEVEL 3: POWER CONSUMPTION HAS EXCEEDED THE THIRD DEMAND LEVEL THRESHOLD (ADJ.).



### POWER METER POINTS LIST

POINT NAME	HARDWARE POINTS						SOFTWARE POINTS				SHOW ON GRAPHIC
	AI	AO	BI	BO	AV	BV	LOOP	SCHED	TREND	ALARM	
KW PULSE	X										X
CURRENT DEMAND LEVEL					X				X		X
KW DEMAND									X		X
KW PEAK MONTH-TO-DATE									X		X
KW PEAK TODAY									X		X
KW PEAK YEAR-TO-DATE									X		X
KWH TODAY									X		X
MWH MONTH-TO-DATE									X		X
MWH YEAR-TO-DATE									X		X
DEMAND LEVEL 1									X		X
DEMAND LEVEL 2									X		X
DEMAND LEVEL 3									X		X
METER FAILURE									X		X

1 **AH/HP CONTROLS**  
NOT TO SCALE

2 **POWER METER**  
NOT TO SCALE

SEE DISCLOSURE OF INFORMATION STATEMENT ON SHEET T-1

<b>CBHF</b> Engineers, PLLC 2246 Yaupon Drive Wilmington, NC 28407 Phone: 910.791.6000 Fax: 910.791.5286 www.cbhfengineers.com	SHEET TITLE: <b>MECHANICAL CONTROLS</b>		<b>M-8</b>
	TALLEY & SMITH ARCHITECTURE INC. P.O. BOX 518 SHELBY, NC 28151-0518 409 EAST MARION ST. SHELBY, NC 28150		
	DES. WTB	RENOVATION BLDG. M-104 CAMP LEJEUNE, NORTH CAROLINA	
	DR. WTB	DESIGN DIR. T H BURTON, PE APPROVED: _____ DATE _____ Satisfactory To: _____ DATE _____	
SIZE: <b>F</b> CODE IDENT. NO.: <b>80091</b>	NAWFAC DRAWING NO.: 60025142 CONST. CONTR. NO.: N40085-19-B-0034	SCALE: NOTED SPEC: 05-19-0034	SHEET 44 OF 57

REVISIONS		
SYM.	DATE	APPROVED

### ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	2x4 LIGHT FIXTURE, RECESSED OR SURFACE MOUNTED LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	2x2 LIGHT FIXTURE, RECESSED OR SURFACE MOUNTED LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	4FT OR 8FT LIGHT FIXTURE, SUSPENDED OR SURFACE MOUNTED LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	4FT WALL MOUNTED VANITY LIGHT FIXTURE LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	RECESSED LIGHT FIXTURE LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	SURFACE LIGHT FIXTURE LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	WALL MOUNTED LIGHT FIXTURE LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	EXIT SIGN, SINGLE FACE, CEILING, ARROW INDICATES DIRECTION. LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	EXIT SIGN WITH EMERGENCY LIGHTING UNIT, CEILING MOUNTED, ARROW INDICATES DIRECTION. LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	EXIT SIGN, SINGLE FACE, WALL/END MOUNTED, ARROW INDICATES DIRECTION. LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	EMERGENCY LIGHTING UNIT, 2-HEAD WITH BATTERY BACK-UP, WALL MOUNTED, 'NOT SWITCHED' LETTER INDICATES FIXTURE TYPE (SEE FIXTURE SCHEDULE)
	POWER & SWITCH LEG
	UNSWITCHED LEG
	CONDUIT, HOME RUN TO PANEL BOARD
	SWITCH, SINGLE POLE, 120/277VAC, 20A, MOUNTED AT 48" AFF UNLESS OTHERWISE NOTED (SEE ELECTRICAL MOUNTING HEIGHT DETAIL).
	3-WAY SWITCH, SINGLE POLE 120/277 VAC, 20A, MOUNTED AT 48" AFF UNLESS OTHERWISE NOTED
	4-WAY SWITCH 120/277 VAC, 20A, MOUNTED AT 48" AFF UNLESS OTHERWISE NOTED
	HEAVY DUTY DIMMER, 20A, 1500W @ 120 VAC, 0-10V CAPABLE, WITH OCCUPANCY SENSOR, SINGLE BUTTON ON/OFF CONTROL, 180° COVERAGE, PIR, MOUNTED AT 48" AFF UNLESS OTHERWISE NOTED (SEE ELECTRICAL MOUNTING HEIGHT DETAIL).
	HEAVY DUTY DIMMER, 3 WAY/4 WAY CAPABLE, 20A, 1500W @ 120 VAC, 0-10V CAPABLE, MOUNTED AT 48" AFF UNLESS OTHERWISE NOTED (SEE ELECTRICAL MOUNTING HEIGHT DETAIL).
	WALL MOUNTED DIGITAL TIMED SWITCH (5 MINS TO 12 HRS), SINGLE BUTTON ON/OFF CONTROL, MOUNTED AT 48" AFF UNLESS OTHERWISE NOTED.
	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, 360° COVERAGE, PIR
	WALL MOUNTED OCCUPANCY SENSOR, SINGLE BUTTON ON/OFF CONTROL, 180° COVERAGE, PIR, MOUNTED AT 48" AFF UNLESS OTHERWISE NOTED.
	RECEPTACLE, DUPLEX, 120VAC, 20A, MOUNTED 18" AFF, UNLESS OTHERWISE NOTED. (SEE ELECTRICAL MOUNTING HEIGHT DETAIL) WP - LISTED WEATHER-RESISTANT TYPE DEVICE WITH WEATHERPROOF IN USE COVER GFI - GROUND FAULT CIRCUIT INTERRUPTER TYPE, 120VAC, 20A LOCATE GFI TEST SWITCH IN A READILY ACCESSIBLE LOCATION
	RECEPTACLE, DUPLEX, 120VAC, 20A, MOUNTED 6" ABOVE COUNTER TOP OR BACK SPLASH. GFI - GROUND FAULT CIRCUIT INTERRUPTER TYPE, 120VAC, 20A LOCATE GFI TEST SWITCH IN A READILY ACCESSIBLE LOCATION (SEE ELECTRICAL MOUNTING HEIGHT DETAIL).
	RECEPTACLE, QUADPLEX, 120VAC, 20A, MOUNTED 18" AFF UNLESS OTHERWISE NOTED (SEE ELECTRICAL MOUNTING HEIGHT DETAIL).
	JUNCTION BOX WITH BLANK COVER IN PLACE WITH CIRCUITRY LABELED ON COVER

### ELECTRICAL LEGEND

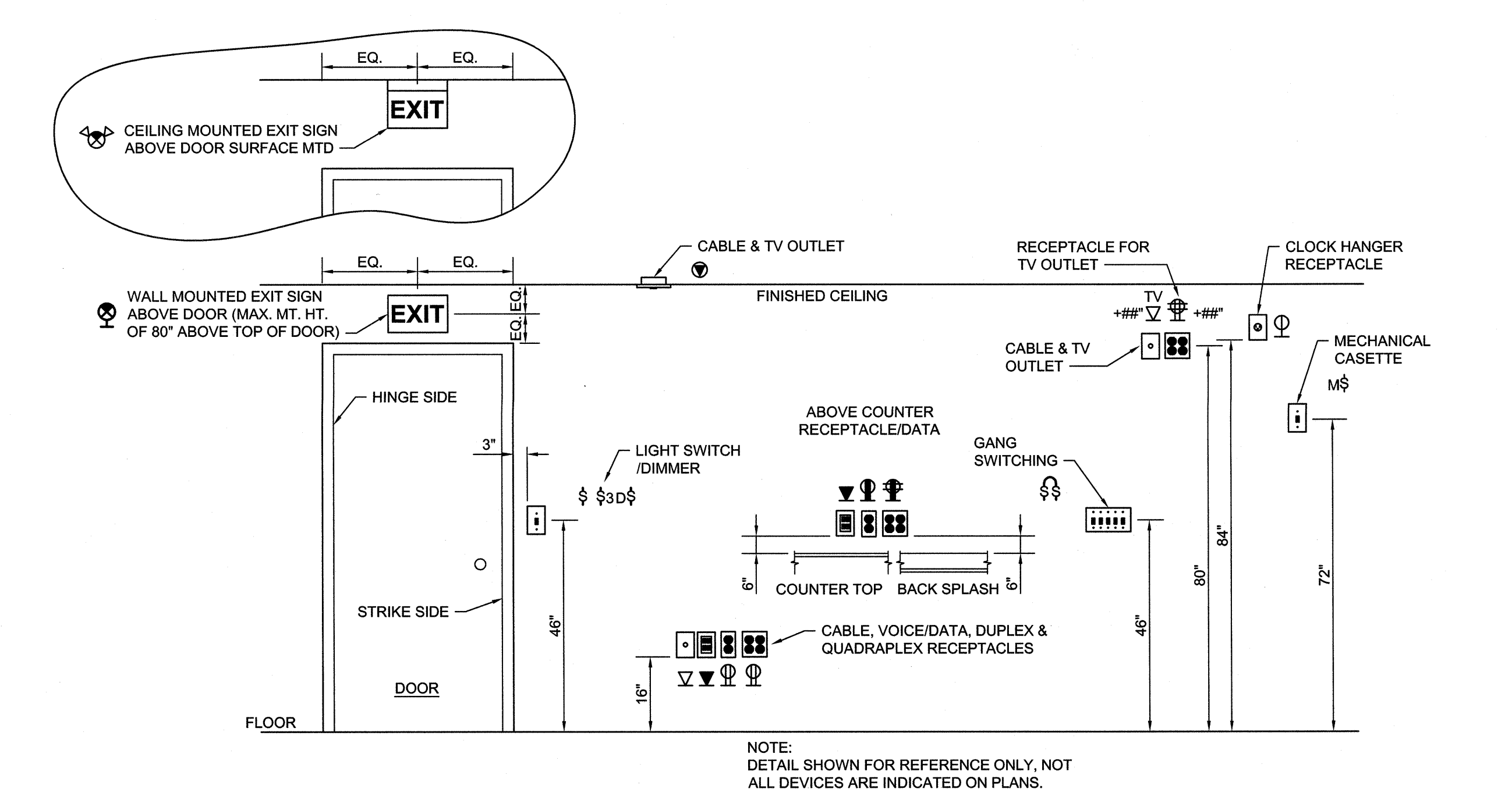
SYMBOL	DESCRIPTION
	FLUSH VALVE JUNCTION BOX, MOUNTED BEHIND FLUSH VALVE, COORDINATE WITH PLUMBING CONTRACTOR. PROVIDE 1" CONDUIT TO ABOVE GRID TO PLUMBING CONTRACTOR SUPPLIED, ELECTRICAL CONTRACTOR INSTALLED CONTROLLER
	RECEPTACLE, DUPLEX, 120VAC, 20A CEILING MOUNTED (LAY-IN / GYPBOARD / SUSPENDED)
	RECEPTACLE, DUPLEX, 120VAC, 20A, MOUNTED BELOW COUNTER FOR FAUCET CONTROL. GFI - GROUND FAULT CIRCUIT INTERRUPTER TYPE, 120VAC, 20A, LOCATE GFI TEST SWITCH IN A READILY ACCESSIBLE LOCATION
	RECEPTACLE, 125/250V, 20A, 1Ø, 4 WIRE TWIST LOCK, L14-20R
	DISCONNECT SWITCH, FUSED, HEAVY DUTY, SIZE AS INDICATED ON DRAWINGS ##A = DISCONNECT SIZE / # = NUMBER OF POLES / # = NEMA RATING, ##AF = FUSE SIZE
	MANUAL MOTOR STARTER, ELECTRICAL CONTRACTOR SHALL COORDINATE POLES AND SIZE WITH EQUIPMENT
	PANELBOARD, SURFACE OR RECESSED MOUNTED AS SHOWN. SIZE, RATINGS, AND MOUNTING AS INDICATED ON PANEL SCHEDULE. CONTRACTOR IS RESPONSIBLE FOR REQUIRED CLEARANCE IN FRONT OF ELECTRICAL PANEL. SEE NEC TABLE 110.26 WORKING SPACES FOR ADDITIONAL CLEARANCE CONDITIONS.
	UTILITY METER
	PHOTOCELL, REMOTE MOUNTED, 120V, 10 SECOND TIME DELAY, UL WET LOCATION, RATED FOR 1500 W @ 120 VAC (FOR USE WITH LAMP SOURCE(S) SHOWN)
	CABLE TRAY, LADDER TYPE
	CABLE TRAY, BASKET TYPE
	COMBINATION DATA/TELEPHONE OUTLET, IN A 5 SQUARE BOX WITH A SINGLE GANG PLASTER RING, MOUNTED 18" AFF UNLESS OTHERWISE NOTED, PROVIDE 1 1/4" CONDUIT TO DATA/COMM CLOSET W/PULL STRING.
	WIRELESS ACCESS POINT, 1 DATA IN A DUAL GANG 5 SQUARE BOX WITH A SINGLE GANG PLASTER RING. PROVIDE 1 1/4" CONDUIT TO DATA/COMM CLOSET WITH PULL STRING. OWNER SHALL PROVIDE SURGE PROTECTOR AND WAP DEVICE, THE ELECTRICAL CONTRACTOR SHALL INSTALL.
	COMBINATION DATA/TELEPHONE OUTLET, RECESSED CEILING MOUNTED (LAY-IN / GYPBOARD) PROVIDE 1 1/4" CONDUIT TO ABOVE GRID CEILING W/PULL STRING. OUTLETS LOCATED BELOW HARD/GYPBOARD) CEILINGS, ROUTE 1 1/4" CONDUIT BACK TO TELEPHONE/DATA ROOM.
	FLOOR MOUNTED DATA RACK
	PROJECTOR PAN, CEILING MOUNTED
	GROUND BUS, 'TG' INDICATES TELECOMMUNICATIONS GROUND BAR, 'EGB' INDICATES ELECTRICAL GROUND BAR
	3/4" FIRE RETARDANT PLYWOOD, 4'x8', MOUNT 12" AFF ALL WALLS IN DATA/COMM ROOM
	HATCHING INDICATES ITEMS TO BE DEMOLISHED, REMOVE DEVICE, EQUIPMENT, FIXTURE INDICATED, CIRCUIT, AND CONDUIT BACK TO SOURCE UNLESS OTHERWISE NOTED.
	1 HOUR RATED FIRE WALL
	ENLARGED PLAN DETAIL, SECTION OR PLAN NUMBER DRAWING SHEET PLAN, DETAIL OR SECTION APPEARS ON ELEVATION

### TYPICAL ABBREVIATIONS:

A, AMP	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BOF	BOTTOM OF FIXTURE
BRKR	BREAKER
C, CND	CONDUIT
CAB	CABINET
CAT	CATALOG
CL	CHLORINE
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLS	CEILING
CP	CONTROL PANEL
CR	CONTROL RELAY, CORROSION RESISTANT
CS	CONTROL SWITCH
CV	CONTROL VALVE
CT	CURRENT TRANSFORMER
CU	COPPER
EF	EXHAUST FAN
EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EW	ELECTRIC WATER HEATER
EPRF	EXPLOSION PROOF
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FLA	FULL LOAD AMPS
FLUOR	FLUORESCENT
FLR	FLOOR
FWE	FURNISHED WITH EQUIPMENT
GEN	GENERATOR
G, GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HP	HORSE POWER
HPPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
Hz	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT
INCAND	INCANDESCENT
JB	JUNCTION BOX
K	THOUSAND
KMIL	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERE
KW	KILOWATTS
KWH	KILOWATT-HOURS
LP	LIGHTING PANEL, LIGHT POLE
LTD	LIGHTING
MCS	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDR	MAIN DISTRIBUTION PANEL
MR	MANUFACTURER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
N	NEUTRAL
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NO	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX, PUSH-BUTTON
PF	POWER FACTOR
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLN	PANEL
PP	POTENTIAL TRANSFORMER
PWR	POWER
RCPT	RECEPTACLE
RGS	REQUIRED
REGD	RIGID GALVANIZED STEEL CONDUIT
RM	ROOM
RTU	REMOTE TELEMETRY UNIT
SCR	DC MOTOR DRIVE
SH	SHEET
SPEC	SPECIFICATION
SS	SELECTOR SWITCH
SST	STAINLESS STEEL
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCH GEAR
TEL	TELEPHONE
TPS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TVSS	TYPICAL
UGND	UNDERGROUND
UH	UNIT HEATER
UN	UNLESS OTHERWISE NOTED
UTL	UTILITY
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE, WATT
WH	WATT-HOUR
WP	WEATHERPROOF
XFMR	TRANSFORMER

### LOAD SUMMARY

VOLTAGE	PHASE
208	3
LARGEST MOTOR APPROX. AMPS	
	25 AMPS
LARGEST MOTOR APPROX. AMPS x 25	
	6 AMPS
<b>HVAC</b>	
EDH01	30,206 VA
EDH02	30,206 VA
ACCO1	12,278 VA
DOAS01	1,816 VA
ACCO2	35,134 VA
DOAS02	3,430 VA
HP04	9,511 VA
HP03	9,511 VA
AH03-01	2,018 VA
AH04-01	2,018 VA
DHP01	14,986 VA
DHP02	1,498 VA
DAH01-11	2,296 VA
DAH02-01	166 VA
BC01	261 VA
PV01-03	384 VA
SUB-TOTAL HVAC DEMAND	
	155,720 VA
SUB-TOTAL HVAC DEMAND	
	432 AMPS
<b>EQUIPMENT</b>	
EW1	18,000 VA
EW1	180 VA
CP1	100 VA
SUB-TOTAL EQUIPMENT DEMAND	
	18,280 VA
SUB-TOTAL EQUIPMENT DEMAND	
	51 AMPS
ADD FOR LARGEST MOTOR	
	6 AMPS
TOTAL EQUIPMENT DEMAND	
	57 AMPS
<b>LIGHTING</b>	
LIGHTS (INTERIOR, BASED ON NEC 220.12)	
	20,209 VA
HANDHOLE	
	360 VA
SIGN	
	1,200 VA
TOTAL LIGHTING LOAD	
	21,769 VA
LIGHTING LOAD x 1.25	
	27,211 VA
TOTAL DEMAND FOR LIGHTING	
	76 AMPS
<b>RECEPTACLES</b>	
RECEPTACLES	24,660 VA
FIRST 10000VA	10,000 VA
REMAINDER @ 50%	7,330 VA
TOTAL DEMAND FOR RECEPTACLE/POWER PANELS	
	17,330 VA
TOTAL DEMAND FOR RECEPTACLE/POWER PANELS	
	48 AMPS
TOTAL DEMAND BUILDING AMPS	
	613 AMPS
TOTAL DEMAND BUILDING AMPS	
	220,793 VA
TOTAL BUILDING CONNECTED LOAD	
	220,429 VA



1 ELECTRICAL DEVICES - MOUNTING HEIGHT DETAIL  
NOT TO SCALE

SEE DISCLOSURE OF INFORMATION STATEMENT ON SHEET T-1

<b>CBHF</b> Engineers, PLLC 2246 Yaupon Drive Wilmington, NC 28401 Phone: 910.791.4000 Fax: 910.791.5266 www.cbhfindesign.com	SHEET TITLE: ELECTRICAL ABBREVIATIONS LEGEND, DETAIL, SUMMARIES		<b>E-1</b>
	TALLEY & SMITH ARCHITECTURE INC. P.O. BOX 518 SHELBY, NC 28151-0518 409 EAST MARION ST. SHELBY, NC 28150		
	DES. JLG DR. JLG CHK. JPF SUBMITTED BY: DESIGN DR. T.H. BURTON, PE		DEPARTMENT OF THE NAVY <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA
	APPROVED: [Signature] DATE: 06/28/2019		RENOVATION BLDG. M-104 CAMP LEJEUNE, NORTH CAROLINA
SATISFACTORY TO:		DATE: [ ] SIZE: F CODE IDENT. NO.: 80091	NAVFAC DRAWING NO.: 60025143 CONST. CONTR. NO.: N40085-19-B-0034
SCALE: NOTED		SPEC: 05-19-0034	SHEET 45 OF 57

REVISIONS			
SYM.	DATE	APPROVED	

### GENERAL NOTES


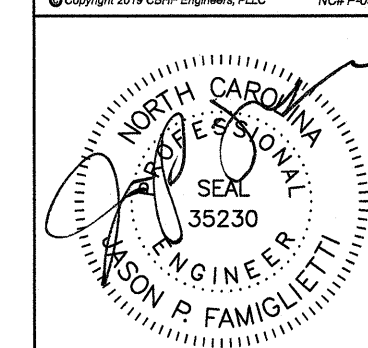
- ALL ELECTRICAL WORK SHALL BE IN FULL COMPLIANCE WITH NFPA 70 THE NORTH CAROLINA STATE BUILDING CODE, ALL LOCAL CODES AND ORDINANCES AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- ALL EQUIPMENT PROVIDED BY THE CONTRACTOR SHALL BE LISTED AND LABELED BY A NATIONALLY-RECOGNIZED TESTING AGENCY, ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION, FOR THE CONDITIONS OF INSTALLATION. ALL MATERIAL, EQUIPMENT AND DEVICES SHALL BE NEW CURRENT PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SUCH PRODUCTS. EQUIPMENT SHALL BE SUITABLE FOR ITS APPLICATION (E.G. WHEN INSTALLED OUTDOORS, IT SHALL BE WEATHERPROOF, ETC.)
- THE CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS FOR WORK REQUIREMENTS, THE AMOUNT OF SPACE AVAILABLE FOR ELECTRICAL EQUIPMENT, AND LAYOUT HIS WORK IN A COMPATIBLE AND COMPLEMENTARY MANNER.
- THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THOROUGHLY FAMILIARIZING HIMSELF WITH ANY CONTRACTUAL REQUIREMENTS AS MAY BE SET FORTH IN THE OTHER DIVISIONS OF THE PROJECT SPECIFICATIONS.
- UNLESS SPECIFICALLY NOTED OTHERWISE, SYSTEMS PROVIDED OR INSTALLED BY THE CONTRACTOR SHALL BE COMPLETE AND FULLY-FUNCTIONING AFTER INSTALLATION. INCIDENTAL COMPONENTS MAY NOT BE SHOWN, AND ALL WORK WHICH MAY BE REASONABLY IMPLIED AS BEING INCIDENTAL TO THIS WORK, BUT REQUIRED FOR THE PROPER OPERATION OF THE EQUIPMENT OR SYSTEM, SHALL BE PROVIDED BY THE CONTRACTOR AND INCLUDED IN THE BID. ADDITIONAL CIRCUITS SHALL BE INSTALLED WHEREVER NEEDED TO CONFORM TO THE SPECIFIC REQUIREMENTS OF EQUIPMENT.
- TEMPORARY POWER CONNECTIONS AS REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AND INCLUDED IN THE BID. ALL TEMPORARY EQUIPMENT WIRING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. THE CONTRACTOR SHALL PROVIDE DETAILS, METHODS, MATERIALS, ETC. FOR REVIEW PRIOR TO MAKING TEMPORARY CONNECTIONS. FURNISH AND INSTALL ALL EQUIPMENT AND MATERIALS INCLUDING CONTROL EQUIPMENT, MOTOR STARTERS, BRANCH AND FEEDER CIRCUIT BREAKERS, PANELBOARDS, TRANSFORMERS, ETC. FOR TEMPORARY POWER. COORDINATE WITH THE ELECTRICAL UTILITY COMPANY AS REQUIRED.
- THE WORK SHALL INCLUDE COMPLETE TESTING OF ALL EQUIPMENT AND WIRING AT THE COMPLETION OF WORK AND ANY MINOR CORRECTIONS, CHANGES OR ADJUSTMENTS NECESSARY FOR THE PROPER FUNCTIONING OF THE SYSTEM AND EQUIPMENT.
- ALL EQUIPMENT SHOWN DOTTED OR DASHED IS BY OTHERS OR IS EXISTING, AS NOTED.
- ALL ELECTRICAL EQUIPMENT SHALL, AT ALL TIMES DURING CONSTRUCTION, BE ADEQUATELY PROTECTED AGAINST MECHANICAL INJURY, OR DAMAGE BY WATER AND/OR THE ELEMENTS. ELECTRICAL EQUIPMENT SHALL NOT BE STORED OUT OF DOORS, BUT SHALL BE STORED IN DRY PERMANENT SHELTERS. IF AN APPARATUS HAS BEEN DAMAGED, OR HAS BEEN SUBJECT TO POSSIBLE INJURY BY WATER OR THE ELEMENTS, SUCH DAMAGE SHALL BE REPLACED AT NO ADDITIONAL COST.
- DO NOT SCALE ELECTRICAL DRAWINGS. REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONS.
- CIRCUIT LAYOUTS ARE NOT INTENDED TO SHOW THE NUMBER OF FITTINGS, OR OTHER INSTALLATION DETAILS. UNLESS NOTED OTHERWISE, THE EXACT ROUTING OF FEEDER AND BRANCH CIRCUIT RACEWAYS AND CABLES IS THE RESPONSIBILITY OF THE CONTRACTOR. RISER AND GENERAL CIRCUIT ARRANGEMENTS ARE SHOWN SCHEMATICALLY/DIAGRAMMATICALLY ONLY. THE CONTRACTOR SHALL ROUTE CONDUITS AS REQUIRED BY THE CONDITIONS OF THE INSTALLATION.
- UNLESS DIMENSIONED, DEVICE LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. ADJUST EXACT LOCATIONS AS REQUIRED TO SERVE THE INTENDED PURPOSE AND TO AVOID CONFLICTS AND INTERFERENCES WITH OTHER TRADES. EXACT DEVICE LOCATIONS SHALL BE AS INDICATED ON THE ARCHITECTURAL DRAWINGS OR AS DIMENSIONED. IF NOT SHOWN ON THE ARCHITECTURAL DRAWINGS OR DIMENSIONED ON THE ELECTRICAL DRAWINGS, VERIFY EXACT LOCATION WITH THE CONTRACTING OFFICER PRIOR TO ROUGH-IN.
- CONDUIT TERMINATING IN PRESSED STEEL BOXES SHALL HAVE DOUBLE LOCKNUTS AND INSULATED BUSHINGS. CONDUITS TERMINATING IN GASKETED ENCLOSURES SHALL BE TERMINATED WITH GROUNDING TYPE CONDUIT HUBS.
- BRANCH CIRCUIT HOMERUNS SHOWN ON DRAWINGS INDICATE PHASE CONDUCTORS, NEUTRAL, EQUIPMENT GROUND CONDUCTORS AS REQUIRED. ADDITIONAL CONDUCTORS REQUIRED FOR CONTROL SHALL BE INCLUDED EVEN IF NOT EXPLICITLY SHOWN.
- SEAL ALL CONDUIT OPENINGS THROUGH EXTERIOR BUILDING WALLS WATERTIGHT.
- IN WET LOCATIONS AND EXTERIOR, ALL WIRING DEVICES SHALL BE WEATHER-RESISTANT LISTED WITH WEATHERPROOF WHILE IN USE COVER. LIGHTING FIXTURES SHALL BE APPROPRIATELY RATED AND LISTED FOR THE ENVIRONMENT IT TO BE INSTALLED IN.
- RACEWAYS PENETRATING FLOORS, CEILINGS OR WALLS SHALL BE PROPERLY SEALED SMOKE/TIGHT.
- ALL RACEWAYS SHALL BE CONCEALED WHERE POSSIBLE IF APPLICABLE, MATCH EXISTING RACEWAY INSTALLATION METHODS AND ROUTINGS AT OR NEAR EXISTING FACILITIES.
- INSTALL EXPOSED RACEWAYS PARALLEL TO OR AT RIGHT ANGLES TO NEARBY SURFACES OR STRUCTURAL MEMBERS, AND FOLLOW THE SURFACE CONTOURS AS MUCH AS POSSIBLE. NO DIAGONAL RUNS WILL BE ALLOWED. ALL CONDUITS SHALL BE RUN STRAIGHT AND TRUE. RUN PARALLEL OR BANKED RACEWAYS TOGETHER ON COMMON SUPPORTS WHERE PRACTICAL. MAKE BENDS IN PARALLEL OR BANKED RUNS FROM SAME CENTERLINE TO MAKE BENDS PARALLEL.
- PATCHING OF WATERPROOFED SURFACES SHALL RENDER THE AREA OF THE PATCHING COMPLETELY WATERPROOF.
- ALL MOTORS - DRY TYPE TRANSFORMERS AND OTHER VIBRATING EQUIPMENT SHALL BE CONNECTED TO THE CONDUIT SYSTEM BY MEANS OF A SHORT SECTION (18 INCH MINIMUM) OF FLEXIBLE CONDUIT UNLESS OTHERWISE INDICATED. AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED INSIDE THE FLEXIBLE CONDUIT AND TERMINATE AT THE LOAD END WITH AN APPROVED GROUNDING CLAMP OR LUG.
- SURFACE MOUNTED PANELBOARDS, JUNCTION, OUTLET AND PULL BOXES, RACEWAYS, ETC., INSTALLED ON EXTERIOR SURFACES OR INSIDE ON EXTERIOR WALLS SHALL BE SUPPORTED BY SPACERS TO PROVIDE A 1" MINIMUM CLEARANCE BETWEEN THE WALL AND EQUIPMENT.
- CEILING MOUNTED DEVICES INSTALLED IN ACOUSTICAL TILE CEILING AREAS SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE WITH RODS OF SUFFICIENT SIZE TO PREVENT VERTICAL MOVEMENT OF THE OUTLET BOX. BRIDGES ALONE ARE NOT ADEQUATE UNLESS SPECIFICALLY APPROVED. CEILING MOUNTED EXT LIGHT FIXTURES SHALL BE INSTALLED LEVEL. DO NOT SUPPORT DEVICES FROM ACOUSTICAL CEILING TILE.
- PROVIDE ADHESIVE BACKED RECEPTACLE DEVICE PLATE LABELS IDENTIFYING THE CIRCUIT FEEDING THE DEVICE. LABELS SHALL INDICATE PANEL AND CIRCUIT NUMBER. ALSO PROVIDE IDENTIFICATION FOR MULTI-WIRE BRANCH CIRCUIT PHASE CONDUCTORS IN PANELBOARD.
- FINAL TYPED PANELBOARD DIRECTORIES INSTALLED IN THE PANELBOARD DOOR POCKET SHALL INCLUDE FINAL ACTUAL ROOM NAMES AND NUMBERS IN ADDITION TO THE GENERAL DESCRIPTION SHOWN ON THE PANEL SCHEDULES ON THE DRAWINGS.
- CONDUCTOR SIZING IS BASED ON 75 DEGREE C. COPPER NEC RATINGS, UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL VERIFY, PRIOR TO INSTALLATION OF CONDUCTORS OR CONDUIT FEEDING ANY EQUIPMENT, THE ELECTRICAL EQUIPMENT IS RATED FOR USE WITH 75 DEGREE C. WIRING. IF ANY EQUIPMENT IS RATED FOR USE WITH LESS THAN 75 DEGREE C. CONDUCTORS, THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER IMMEDIATELY FOR EVALUATION/CORRECTION.
- DO NOT PULL CONDUCTORS UNTIL THE CONDUIT SYSTEM IS COMPLETE IN EVERY DETAIL. IN THE CASE OF CONCEALED WORK, "COMPLETE" MEANS UNTIL ALL ROUGH PLASTERING OR MASONRY HAS BEEN COMPLETED.
- WHERE SIZE IS NOT SHOWN ON THE DRAWINGS, BRANCH CIRCUITS SHALL CONSIST OF #12 OR #10 AWG MINIMUM PHASE, NEUTRAL AND EQUIPMENT GROUND CONDUCTORS IN 3/4" MINIMUM RACEWAY.
- USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS WITH A TOTAL INSTALLED LENGTH GREATER THAN 75 FEET AND/OR BRANCH CIRCUIT HOMERUNS LONGER THAN 50 FEET, I.E., #12 AWG INCREASED TO #10 AWG FOR RECEPTACLE BRANCH CIRCUITS OVER 75 FEET TOTAL LENGTH (INCLUDING THE AWG HOMERUN SEGMENT) AND HOMERUNS OVER 50 FEET.
- COMMON NEUTRAL CONDUCTORS OF MULTI-WIRE RECEPTACLE BRANCH CIRCUIT HOMERUNS SHALL BE #10 AWG MINIMUM.
- KEEP CONDUCTOR SPLICES TO A MINIMUM. INSTALL SPLICES AND TAPES THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN CONDUCTORS BEING SPLICED. USE SPLICE AND TAP CONNECTORS COMPATIBLE WITH CONDUCTOR MATERIAL. INSTALL CONDUCTORS AT EACH OUTLET WITH AT LEAST 6 INCHES OF SLACK. CONNECT OUTLETS AND COMPONENTS TO WIRING AND TO GROUND AS INDICATED AND INSTRUCTED BY THE MANUFACTURER.
- DO NOT SPLICE BRANCH CIRCUIT HOMERUNS WITHOUT THE PERMISSION OF THE CONTRACTING OFFICER. HOMERUNS SHALL BE CONTINUOUS FROM THE LAST OUTLET BOX TO THE SERVING PANELBOARD.
- DO NOT COMBINE BRANCH CIRCUIT HOMERUNS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS.

### GENERAL DEMOLITION NOTES

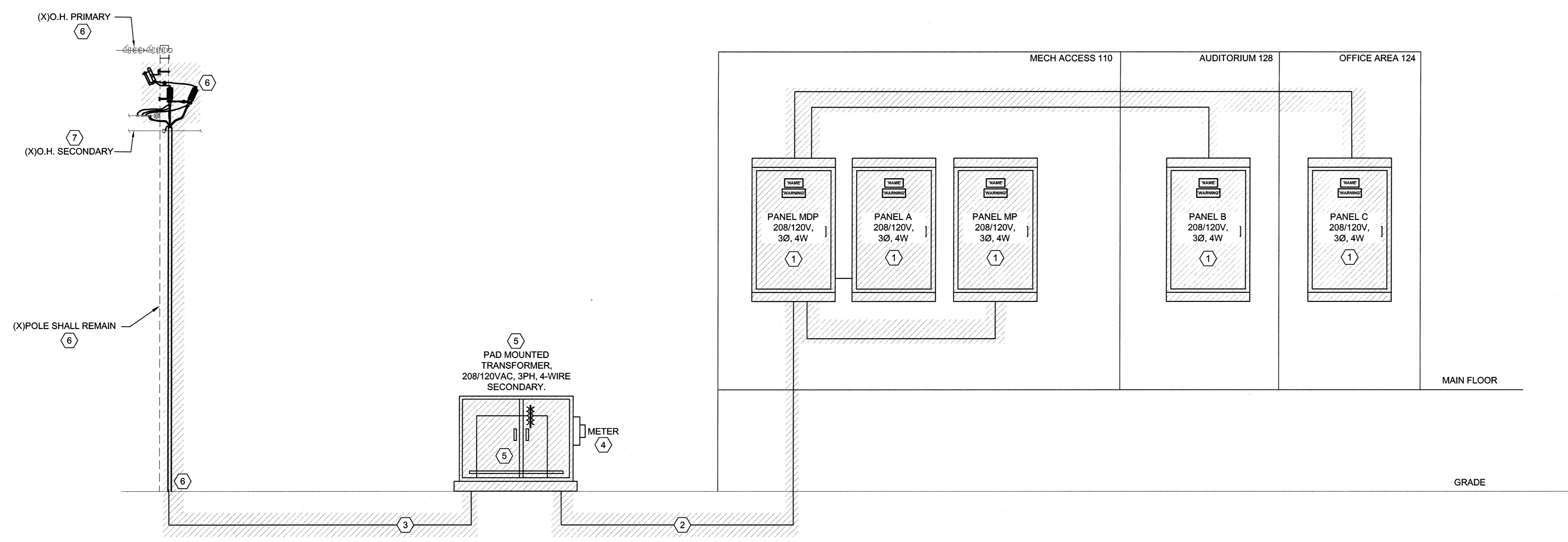
- DO NOT CHANGE CIRCUITING SHOWN WITHOUT PERMISSION OF THE CONTRACTING OFFICER.
- TROUGH TAPS SHALL BE AT SWITCH AMPACITY, UNLESS NOTED OTHERWISE.
- INSTALL WIRING DEVICES AT HEIGHTS AS SHOWN ON THE DRAWINGS. ALSO COORDINATE MOUNTING HEIGHTS WITH THE ARCHITECTURAL DRAWINGS AND CASEWORK DETAILS. IF CONFLICTING, ARCHITECTURAL DRAWINGS AND DETAILS SHALL GOVERN.
- PROVIDE GROUND FAULT CIRCUIT-INTERRUPTER PROTECTION FOR PERSONNEL IN ACCORDANCE WITH THE NEC INCLUDING ALL ELECTRIC WATER COOLERS, EXTERIOR RECEPTACLES AND RECEPTACLES IN AREAS SUBJECT TO POSSIBLE WET CONDITIONS. ALL RECEPTACLES INSTALLED WITHIN 6 FEET OF A SINK SHALL BE GFI PROTECTED. ALL RECEPTACLES IN NON-RESIDENTIAL KITCHENS SHALL BE GFI PROTECTED.
- IN AREAS IN WHICH DUAL LEVEL SWITCHING IS INDICATED (TYPICALLY BY 2 OR MORE ADJACENT, GANGED SWITCHES), PROVIDE THE APPROPRIATE NUMBER OF CONDUCTORS TO FACILITATE THIS FUNCTION (AS TYPICALLY SHOWN).
- CONNECT BATTERY PACK TYPE EMERGENCY AND EXIT LIGHTING FIXTURES TO UN-SWITCHED LIGHTING CIRCUIT SERVING THE SPACE LIGHTED BY THE EMERGENCY AND EXIT FIXTURES. THESE CONNECTIONS ARE INTENTIONALLY NOT SHOWN TO MAINTAIN DRAWING FOR CLARITY.
- COORDINATE LIGHTING FIXTURE LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLAN. IF CONFLICTS ARE NOTED, REQUEST CLARIFICATION FROM THE CONTRACTING OFFICER BEFORE PROCEEDING.
- ADJACENT SWITCHES SHALL BE GANGED. INSTALL BARRIERS BETWEEN UNLIKE VOLTAGE SECTIONS.
- SEPARATE NEUTRALS ARE REQUIRED FOR ALL DIMMED LIGHTING CIRCUITS.
- WHERE THE DRAWINGS INDICATE A LIGHTING FIXTURE IS TO BE PROVIDED WITH SPECIAL FEATURES/SWITCHING (DIMMING, EMERGENCY BATTERY BALLAST, MULTI-LEVEL, ETC), THE CONTRACTOR SHALL PROVIDE THESE FIXTURES WITH THE APPROPRIATE BALLASTING TO ACCOMMODATE THE SPECIAL FEATURE. THE CONTRACTOR SHALL PROVIDE THE FIXTURES AS INDICATED IN THE LIGHTING FIXTURE SCHEDULE WITH MODIFICATIONS AS REQUIRED BY DRAWING NOTES.
- COORDINATE LOCATIONS OF PLUMBING, MECHANICAL, DATA AND TELEPHONE AND AUDIO/VISUAL EQUIPMENT. GOVERNMENT-PROVIDED TELECOMMUNICATIONS AND DATA CABLES WILL BE PROVIDED AND INSTALLED BY THIS CONTRACTOR. LEAVE PULL WIRES OR ROPES OF ADEQUATE TENSILE STRENGTH IN ALL EMPTY CONDUITS.
- PROVIDE TELEPHONE, FIBER AND DATA SERVICE ENTRANCE CONDUIT IN SIZES AND LOCATIONS AS SHOWN ON THE DRAWINGS AND AS REQUIRED BY THE GOVERNMENT AND THE SERVICE UTILITIES. UTILITY SERVICE ENTRANCE CABLES WILL BE PROVIDED AND INSTALLED BY THIS CONTRACTOR. LEAVE PULL WIRES OR ROPES OF ADEQUATE TENSILE STRENGTH IN ALL EMPTY CONDUITS.
- INSTALLATION INFORMATION PACKED WITH LIGHTING FIXTURES, DEVICES AND EQUIPMENT SHALL BE RETAINED FOR INCLUSION IN THE OPERATIONS AND MAINTENANCE MANUALS.
- THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING NECESSARY TO INSTALL ALL EQUIPMENT AS REQUIRED AND SHALL RE-ESTABLISH ALL FINISHES TO THEIR ORIGINAL CONDITION WHERE CUTTING AND PATCHING OCCUR. ALL CUTTING AND PATCHING SHALL BE DONE IN A THOROUGHLY WORKMANSHIP MANNER. SAW CUT CONCRETE AND MASONRY PRIOR TO BREAKING OUT SECTIONS. ALL PATCHING MATERIALS AND WORKMANSHIP SHALL BE PERFORMED BY TRADESMEN EXPERIENCED IN THAT WORK. ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE RESPECTIVE SUPPLIERS AND VENDORS AND THE GOVERNMENT BEFORE ROUGH-IN. ADJUST LIGHTING FIXTURES, RECEPTACLES AND ELECTRICAL EQUIPMENT TO ACCOMMODATE THIS EQUIPMENT. ADVISE THE GOVERNMENT OF CONFLICTS BEFORE ROUGH-IN.
- BEFORE COMMENCING WORK OR ORDERING MATERIALS, THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND VERIFY THE NAMEPLATE RATINGS OF ALL EQUIPMENT (MOTORS, HEATERS, COMPRESSORS, ETC.) AND ADJUST THE RATINGS OF THE ELECTRICAL EQUIPMENT (SWITCHES, FUSES, CIRCUIT BREAKERS, FEEDERS, ETC.) AS APPROPRIATE TO SERVE THIS EQUIPMENT.
- ENERGIZE EQUIPMENT ONLY AFTER OBTAINING PERMISSION FROM THE CONTRACTOR PROVIDING THE EQUIPMENT.
- UNLESS SPECIFICALLY NOTED OTHERWISE, THE CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL UTILIZATION EQUIPMENT SHOWN ON THE DRAWINGS. VERIFY THE TYPE OF FINAL CONNECTION AND PROVIDE APPROPRIATE WIRING METHOD. THE CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL AND PLUMBING EQUIPMENT, PRIOR TO ORDERING OR INSTALLATION OF ANY EQUIPMENT, TO VERIFY MECHANICAL AND PLUMBING EQUIPMENT REQUIREMENTS ARE PROVIDED IN THE ELECTRICAL DESIGN. THE CONTRACTOR WILL NOT BE COMPENSATED FOR COSTS ASSOCIATED WITH CHANGING THE ELECTRICAL SYSTEMS TO MATCH UTILIZATION EQUIPMENT, EVEN IF THE ELECTRICAL WORK IS INSTALLED PER THE ELECTRICAL DRAWINGS.
- THE CONTRACTOR SHALL FURNISH ALL STARTERS AND CONTROLS FOR THEIR EQUIPMENT. THE CONTRACTOR SHALL PROVIDE ALL SAFETY SWITCHES, SHALL MOUNT STARTERS AND PROVIDE WIRING AND CONNECTIONS TO LINE SIDE OF STARTERS. THE CONTRACTOR SHALL PROVIDE LOAD SIDE WIRING AND CONNECTIONS TO MECHANICAL AND PLUMBING EQUIPMENT. FOR RESISTANCE TYPE LOADS WHERE STARTERS OR CONTACTORS ARE NOT REQUIRED, THE CONTRACTOR SHALL PROVIDE ALL POWER WIRING AND CONNECTIONS COMPLETE TO EQUIPMENT. THE MECHANICAL AND PLUMBING CONTRACTORS SHALL PROVIDE ALL CONTROL WIRING AND CONNECTIONS AND DEVICES FOR THEIR EQUIPMENT.
- TELECOMMUNICATIONS AND DATA CABLES WILL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. OSP CABLING SHALL BE INSTALLED BY THE GOVERNMENT. LEAVE PULL WIRES OR ROPES OF ADEQUATE TENSILE STRENGTH IN ALL EMPTY CONDUITS.
- THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING NECESSARY TO INSTALL ALL EQUIPMENT AS REQUIRED AND SHALL REESTABLISH ALL FINISHES TO THEIR ORIGINAL CONDITION WHERE CUTTING AND PATCHING OCCUR. ALL CUTTING AND PATCHING SHALL BE DONE IN A THOROUGHLY WORKMANSHIP MANNER. SAW CUT CONCRETE AND MASONRY PRIOR TO BREAKING OUT SECTIONS. ALL PATCHING MATERIALS AND WORKMANSHIP SHALL BE PERFORMED BY TRADESMEN EXPERIENCED IN THAT WORK. ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE CONTRACTING OFFICER.
- CORE DRILL HOLES IN EXISTING CONCRETE WALLS AS REQUIRED.
- INSTALL WORK AT SUCH TIME AS TO REQUIRE THE MINIMUM AMOUNT TO CUTTING AND PATCHING.
- CUT OPENINGS ONLY LARGE ENOUGH TO ALLOW EASY INSTALLATION OF THE CONDUIT.
- ABANDONED POWER WIRING, RACEWAYS AND CONDUCTORS, SHALL BE REMOVED BACK TO THEIR SOURCE. THE ACCESSIBLE PORTIONS OF ABANDONED CABLES (VOICE, DATA, VIDEO, ALARM, ETC.) SHALL BE REMOVED.
- THE EXISTING ELECTRICAL SYSTEMS DEPICTED ON THESE DRAWINGS HAVE BEEN COMPILED BY THE ENGINEER FROM THE GOVERNMENTS RECORD DRAWINGS AND LIMITED FIELD VERIFICATION OF THE EXISTING CONDITIONS FOR THE PURPOSE OF INDICATING THE WORK REQUIRED AND ARE BELIEVED TO BE CORRECT. NOTWITHSTANDING, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, POINTS OF ACCESS AND FIELD CONDITIONS AFFECTING HIS WORK.
- THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING ELECTRICAL SYSTEMS AND THE EXISTING BUILDING. THE SUBMISSION OF THE PROPOSAL BY THE CONTRACTOR SHALL BE CONSIDERED EVIDENCE THAT HE OR HIS REPRESENTATIVE HAS VISITED THE SITE AND BUILDINGS AND NOTED THE LOCATION AND CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED AND THAT HE TAKES FULL RESPONSIBILITY OF ALL FACTORS GOVERNING HIS WORK. NO EXTRAS WILL BE CONSIDERED BECAUSE OF ADDITIONAL WORK NECESSITATED BY EXISTING JOB CONDITIONS THAT ARE NOT INDICATED ON THE DRAWINGS.
- ALL UNUSED OUTLET BOXES SHALL BE REMOVED OR, WITH SPECIFIC APPROVAL OF THE CONTRACTING OFFICER, SHALL BE BLANKED WITH STAINLESS STEEL PLATES. ALL OPENINGS IN EXISTING WALLS AND CEILINGS MADE BY THIS CONTRACTOR SHALL BE REPAIRED TO AN EQUAL FINISH AS ADJACENT SURFACES.
- PROVIDE ALL ELECTRICAL RELOCATION WORK ASSOCIATED WITH THE RELOCATING OF EQUIPMENT FOR THE EXISTING FACILITIES, INCLUDING DISCONNECTING ALL EXISTING WIRING AND CONDUITS AND PROVIDING NEW WIRING AND CONDUITS TO THE RELOCATED EQUIPMENT.
- SEE "KEYED/GENERAL DEMOLITION NOTES" FOR ADDITIONAL REQUIREMENTS.
- SAFETY
  - COMPLY WITH OSHA AND NEC ARC FLASH PROTECTION REQUIREMENTS.
  - FOR EQUIPMENT BEING REMOVED AND REPLACED, THE CONTRACTOR SHALL DE-ENERGIZE THE EQUIPMENT AND MAKE IT SAFE PRIOR TO REMOVAL AND COMPLY WITH OSHA REQUIREMENTS FOR LOCKING-OUT AND TAGGING EQUIPMENT TO PREVENT INADVERTENT RE-ENERGIZING.
  - WHERE EQUIPMENT IS BEING REMOVED, BUT NOT REPLACED, REMOVE THE CONDUCTORS FEEDING THE EQUIPMENT BACK TO THE POINT WHERE THEY RECEIVE POWER. REMOVE ACCESSIBLE CONDUITS. ABANDON IN PLACE INACCESSIBLE CONDUITS. AFTER REMOVAL OF EQUIPMENT, REPAIR ANY OPENING LEFT TO MATCH SURROUNDING WALLS, CEILINGS, OR FLOORS TO THE CONTRACTING OFFICER SATISFACTION.
  - COORDINATE WITH THE OTHER TRADES, PRIOR TO BID, AND INCLUDE IN THE BASE BID THE ELECTRICAL DISCONNECTION OF ANY EQUIPMENT BEING DEMOLISHED, EVEN IF NOT EXPLICITLY SHOWN. UNLESS NOTED OTHERWISE, REMOVE ALL DEMOLISHED EQUIPMENT FROM THE PROPERTY.

- DEMOLITION SHALL BE AS DESCRIBED HEREIN AND AS SHOWN ON THE CONTRACT DRAWINGS. IDENTIFY ACTIVE UTILITIES, AND AT THE APPROPRIATE TIME, DISCONNECT AND CAP OFF SUCH UTILITIES AND PROVIDE EXPERIENCED PERSONNEL ON SITE DURING GENERAL CONTRACTOR DEMOLITION OPERATIONS TO PERFORM SUCH OPERATIONS AND RESOLVE ISSUES. REMOVE MATERIALS NOTED FOR SALVAGE AND REUSE. IDENTIFY AND MARK WIRING AND DEVICES TO REMAIN FOR THE GENERAL CONTRACTOR.
- THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR DEMOLITION REQUIREMENTS AND CARRY OUT HIS WORK IN A COMPATIBLE AND COMPLEMENTARY MANNER. REMOVE ALL WIRING DEVICES, BOXES, FIXTURES, EXPOSED ABANDONED RACEWAYS, HANGARS, ETC., AND THOSE MADE OBSOLETE BY THESE ALTERATIONS AND AS SHOWN ON THE ELECTRICAL DRAWINGS. ALL ITEMS TO BE REMOVED OR MODIFIED MAY NOT BE SHOWN, HOWEVER, THIS CONTRACTOR SHALL REMOVE ANY ELECTRICAL WORK AS REQUIRED BY THE CONSTRUCTION OR AS DIRECTED BY THE GOVERNMENT OR CONTRACTING OFFICER. SURVEY THE AFFECTED AREAS BEFORE SUBMITTING A BID AS ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DEPICTED ON THE DRAWINGS AND SOME UNUSUAL CONDITIONS MAY EXIST.
- REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION.
- VERIFY FIELD MEASUREMENTS AND CIRCUITING ARRANGEMENTS ARE AS SHOWN ON DRAWINGS.
- VERIFY THAT ABANDONED WIRING AND EQUIPMENT SERVE ONLY ABANDONED FACILITIES.
- DISCONNECT AND/OR DE-ENERGIZE ELECTRICAL SYSTEMS IN WALLS, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.
- PROVIDE TEMPORARY AND/OR PERMANENT WIRING AND CONNECTIONS AS SHOWN AND/OR AS REQUIRED BY CONDITIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS, AND WHEN SUCH WORK IS SPECIFICALLY APPROVED BY THE GOVERNMENT AND PERMITTED BY REGULATORY AUTHORITIES, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.
- EXISTING ELECTRICAL SERVICE: COORDINATE POWER OUTAGES WITH THE GOVERNMENT AND UTILITY COMPANY. MAINTAIN EXISTING SYSTEMS IN SERVICE. DISABLE SYSTEMS ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM THE GOVERNMENT AT LEAST 24 HOURS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA.
- CONTINUOUS SERVICE IS REQUIRED ON ALL CIRCUITS AND OUTLETS AFFECTED BY THESE CHANGES, EXCEPT WHERE THE GOVERNMENT WILL PERMIT AN OUTAGE FOR A SPECIFIC TIME. OBTAIN GOVERNMENT CONSENT BEFORE REMOVING ANY CIRCUIT FROM CONTINUOUS SERVICE.
- ENDS OF ALL CONDUITS TO REMAIN SHALL BE TIGHTLY PLUGGED TO EXCLUDE DUST AND MOISTURE WHILE THE BUILDING IS UNDER RENOVATION.
- SECURE ALL CIRCUITS, RACEWAYS, CABLE AND CONDUCTORS THAT, AS A RESULT FROM THIS CONSTRUCTION, ARE ABANDONED OR ACCESSIBLE. REMOVE UNUSED EXPOSED CONDUIT AND WIRING BACK TO POINT OF CONCEALMENT INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILINGS. REMOVE UNUSED WIRING IN CONCEALED CONDUITS BACK TO SOURCE OR NEAREST POINT OF USAGE. BLANK ABANDONED KNOCKOUTS IN REMAINING BOXES. INSTALL BLANK PLATES FOR ALL UNUSED OUTLETS THAT WILL REMAIN AS A RESULT OF THIS CONSTRUCTION. ALL SUCH WORK SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES AND ORDINANCES.
- TRACE OUT EXISTING WIRING THAT IS TO BE RELOCATED OR REMOVED AND PERFORM THE RELOCATION OR REMOVAL WORK AS REQUIRED FOR A COMPLETE OPERATING AND SAFE SYSTEM.
- RECONNECT EXISTING CIRCUITS SEPARATED AS A RESULT OF THIS CONSTRUCTION.
- DELIVER ALL REMOVED AND SALVAGED LIGHTING FIXTURES, WIRING DEVICES, FIRE ALARM DEVICES, SPEAKERS, ETC., TO THE GOVERNMENT, OR AT THE GOVERNMENTS OPTION, DISPOSE OF PROPERLY OFF SITE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL ENVIRONMENTAL REGULATIONS. FEES ASSOCIATED WITH DISPOSAL SHALL BE INCLUDED IN THE CONTRACTORS BASE BID.
- COORDINATE WITH THE OTHER TRADES, PRIOR TO BID, AND INCLUDE IN THE BASE BID THE ELECTRICAL DISCONNECTION OF ANY EQUIPMENT BEING DEMOLISHED, EVEN IF NOT EXPLICITLY SHOWN. UNLESS NOTED OTHERWISE, REMOVE ALL DEMOLISHED EQUIPMENT FROM THE PROPERTY AND IDENTIFIED IN THE ELECTRICAL DRAWINGS.
- THESE DRAWINGS ARE COMPILED BY THE ARCHITECT/ENGINEER FROM THE GOVERNMENTS RECORD DRAWINGS AND LIMITED FIELD VERIFICATION OF EXISTING CONDITIONS FOR THE PURPOSE OF INDICATING THE WORK REQUIRED AND ARE BELIEVED TO BE CORRECT. NOTWITHSTANDING, THE CONTRACTOR SHALL VERIFY ALL CIRCUITS, WIRING, CONDUIT, DIMENSIONS, POINTS OF ACCESS AND ALL FIELD CONDITIONS AFFECTING HIS WORK. BEGINNING OF DEMOLITION MEANS THE CONTRACTOR ACCEPTS EXISTING CONDITIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL LAMPS CONTAINING MERCURY IN A LINED LANDFILL IN ACCORDANCE WITH NC GEN STATUTE 309.10M.
- SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.

SEE DISCLOSURE OF INFORMATION STATEMENT ON SHEET T-1

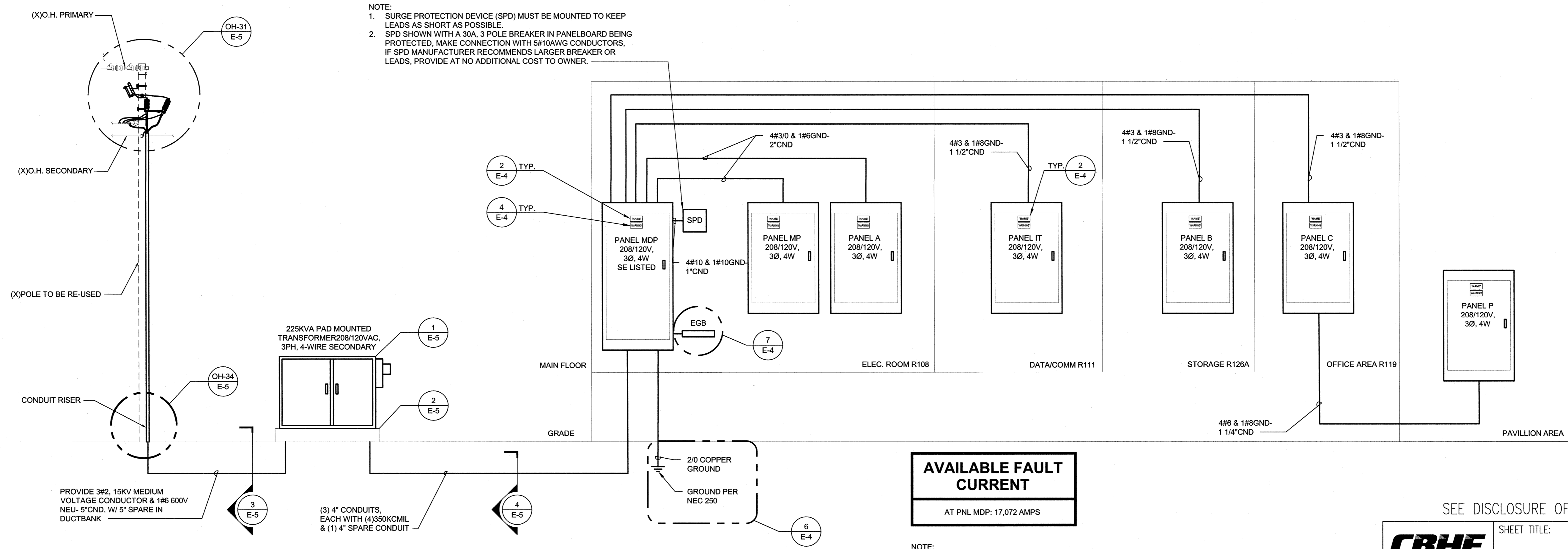
 <p>2246 Yaupon Drive Wilmington, NC 28401 Phone: 910.791.4000 Fax: 910.791.5208 www.cbhfindesign.com</p>	SHEET TITLE: <b>ELECTRICAL</b> <b>GENERAL NOTES, DEMOLITION NOTES</b>		<b>E-2</b>
	<b>TALLEY &amp; SMITH ARCHITECTURE INC.</b> P.O. BOX 518 SHELBY, NC 28151-0518 409 EAST MARION ST. SHELBY, NC 28150		
	<b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA		<b>RENOVATION</b> <b>BLDG. M-104</b> CAMP LEJEUNE, NORTH CAROLINA
	DES. JLG DR. JLG CHK. JPF SUBMITTED BY: DESIGN DIR. T.H. BURTON, PE		
APPROVED:	DATE:	SIZE: <b>F</b> CODE IDENT. NO.: <b>80091</b>	NAVFAC DRAWING NO.: <b>60025144</b> CONST. CONTR. NO.: <b>N40085-19-8-0034</b>
SATISFACTORY TO:	DATE:	SCALE: <b>NOTED</b>	SPEC. <b>05-19-0034</b> SHEET <b>46</b> OF <b>57</b>

REVISIONS		
SYM.	DATE	APPROVED



- RISER DIAGRAM DEMOLITION KEYED NOTES**
- 1 PANELBOARD: CONTRACTOR MUST REMOVE PANELBOARD, FEED CONDUIT AND CONDUCTORS IN ENTIRETY TO SOURCE. REMOVE DISTRIBUTION CONDUIT AND CONDUCTORS IN ENTIRETY.
  - 2 TRANSFORMER SECONDARY: CONTRACTOR MUST REMOVE CONDUIT AND CONDUCTORS IN ENTIRETY FROM TRANSFORMER TO PANEL MDP.
  - 3 TRANSFORMER PRIMARY CONDUIT AND CONDUCTORS: CONTRACTOR MUST REMOVE CONDUIT AND CONDUCTORS IN ENTIRETY FROM TRANSFORMER TO POLE.
  - 4 UTILITY METER AND CURRENT TRANSFORMERS: CONTRACTOR MUST REMOVE, PROTECT AND STORE DURING DEMOLITION AND CONSTRUCTION FOR RE-USE.
  - 5 TRANSFORMER: TRANSFORMER AND CONCRETE PAD SHALL BE REMOVED IN ENTIRETY.
  - 6 (X)UTILITY POLE: CONTRACTOR MUST PROTECT POLE FOR RE-USE. REMOVE PRIMARY RISER CONDUIT AND PRIMARY CONDUCTORS IN CONDUIT, CUTOUTS, STRAPS, INSULATORS, ECT. IN ENTIRETY. PROTECT OVERHEAD PRIMARY CONDUCTORS FOR REUSE.
  - 7 (X)SECONDARY OVERHEAD CONDUCTORS: PROTECT CONDUCTORS DURING DEMOLITION AND CONSTRUCTION.

**1 RISER DIAGRAM - DEMOLITION**  
 NOT TO SCALE



**AVAILABLE FAULT CURRENT**

AT PNL MDP: 17,072 AMPS

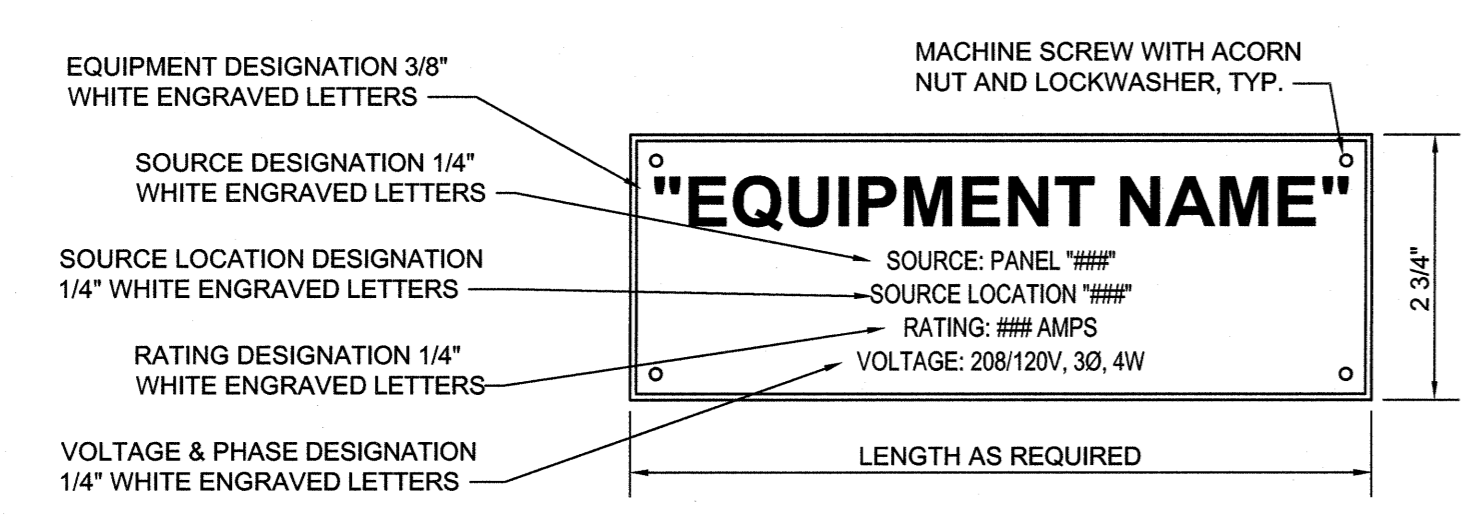
**2 RISER DIAGRAM**  
 NOT TO SCALE

- NOTE:  
 1. SHORT CIRCUIT CALCULATION COMPLETED ON 10/27/2019, BASED ON A 225KVA PAD MOUNTED TRANSFORMER @ 3.0% IMPEDANCE, AND 2.6 X/R. VERIFY ACTUAL PARAMETERS WITH UTILITY COMPANY AND EQUIPMENT CHARACTERISTICS PRIOR TO INSTALLATION.  
 2. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED WITH MAX. AVAILABLE FAULT CURRENT, INCLUDING THE DATE THE FAULT CURRENT CALCULATIONS WERE PERFORMED, PER NEC 110.24

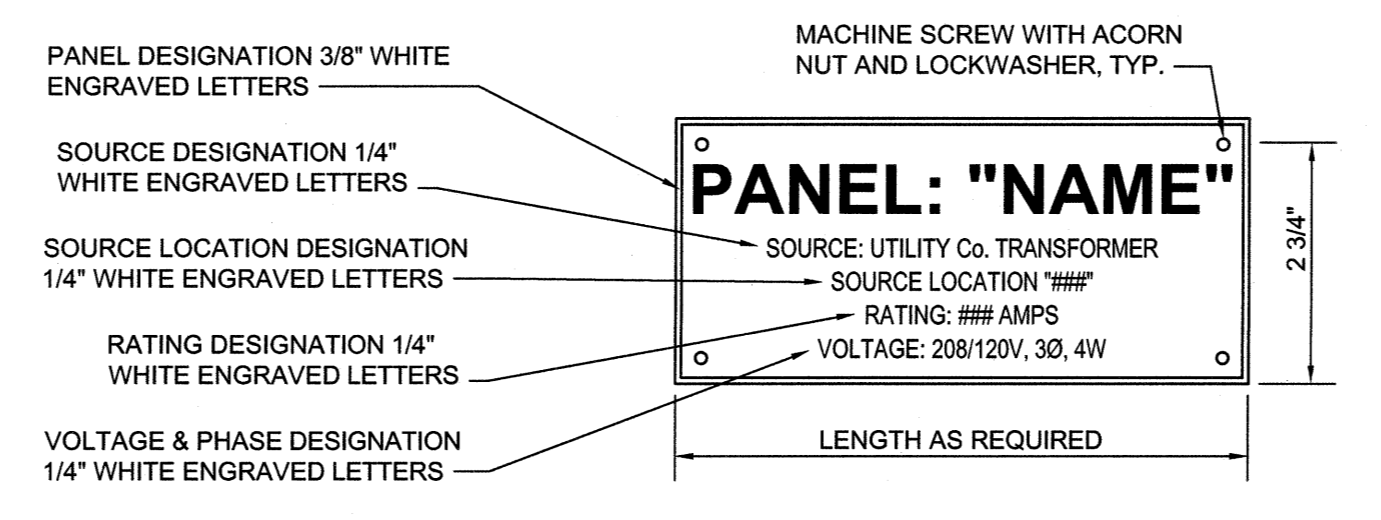
SEE DISCLOSURE OF INFORMATION STATEMENT ON SHEET T-1

<b>CBHF</b> Engineers, PLLC 2246 Yaupon Drive Wilmington, NC 28401 Phone: 910.791.4000 Fax: 910.791.5286 www.cbhfengineers.com	SHEET TITLE: <b>ELECTRICAL RISER DIAGRAMS</b>		<b>E-3</b>
	TALLEY & SMITH ARCHITECTURE INC. P.O. BOX 518 SHELBY, NC 28151-0518 409 EAST MARION ST. SHELBY, NC 28150		
DEPARTMENT OF THE NAVY <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA		RENOVATION BLDG. M-104 CAMP LEJEUNE, NORTH CAROLINA	
DES. JLG DR. JLG CHK. JPF SUBMITTED BY: DESIGN DIR. T. H. BURTON, PE		DATE: 06/28/2019 SIZE: F CODE IDENT. NO.: 80091 NAVFAC DRAWING NO.: 60025145 CONST. CONTR. NO.: N40085-19-B-0034	
APPROVED:		DATE:	
SATISFACTORY TO:		SCALE: NOTED    SPEC: 05-19-0034    SHEET 47 OF 57	

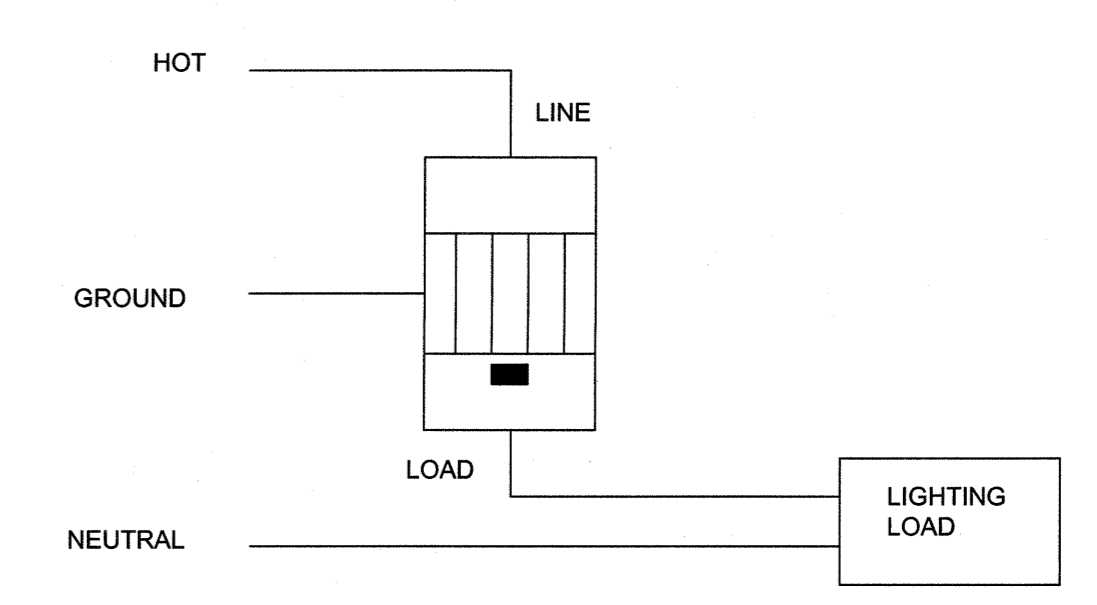
REVISIONS		
SYM.	DATE	APPROVED



**1 TYPICAL EQUIPMENT NAMEPLATE DETAIL**  
NOT TO SCALE



**2 TYPICAL PANELBOARD NAMEPLATE DETAIL**  
NOT TO SCALE



**3 OCCUPANCY SENSOR WALL SWITCH DIAGRAM**  
NOT TO SCALE

**WARNING**

**Shock, Arc Flash, and Arc Blast Hazard**  
Appropriate PPE Required  
Failure to Comply Can Result  
in Injury or Death  
Refer to UFC 3-560-01

**NOTES:**

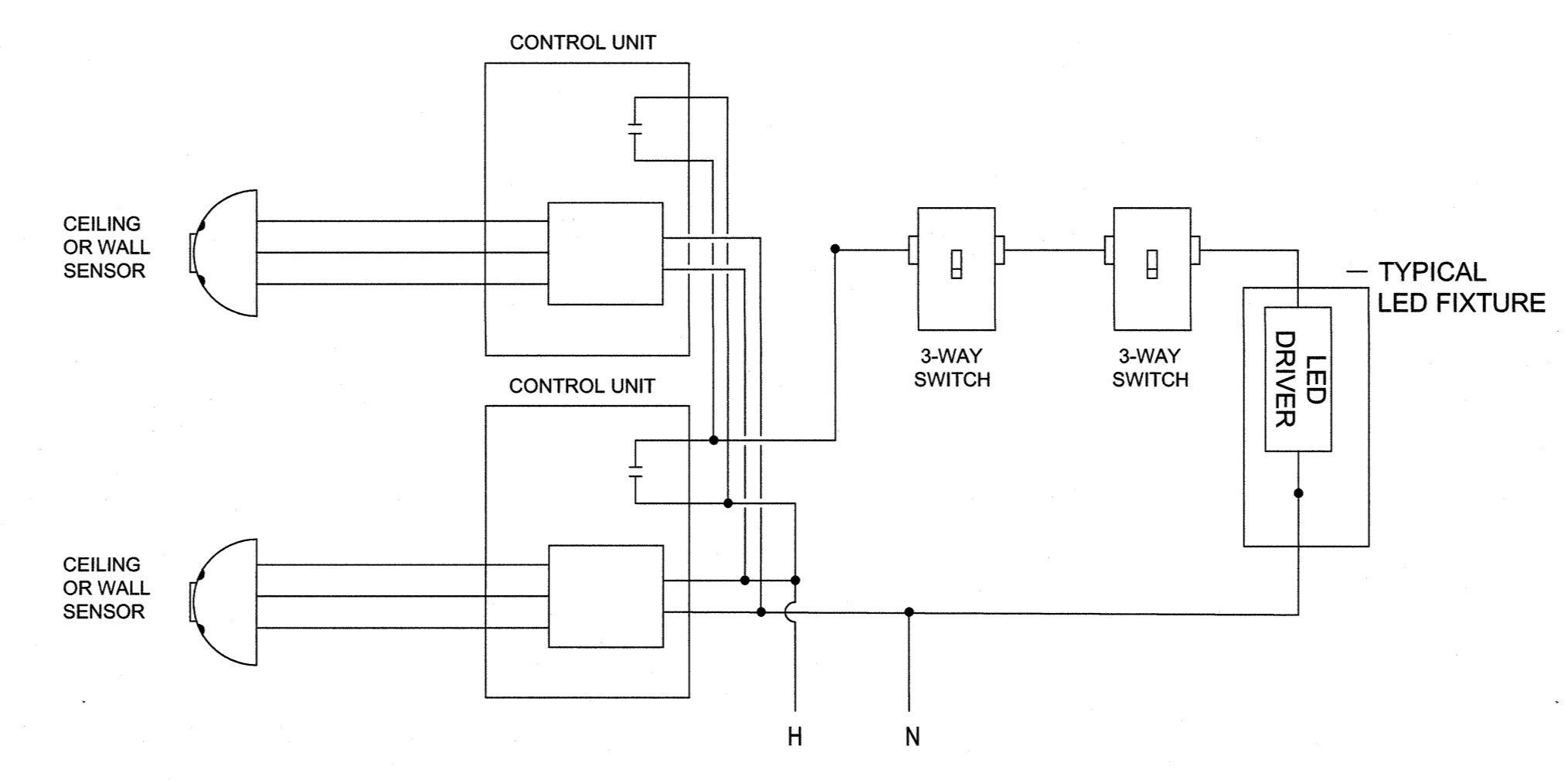
- PROVIDE SELF-ADHESIVE VINYL LABEL TO AFFIX TO ELECTRICAL EQUIPMENT TO WARN OF ARC FLASH HAZARDS.
- THE LABEL FORMAT AND TEXT SHALL BE IN ACCORDANCE WITH THE FIGURE.
- THE LABEL SHALL BE LOCATED ON THE EQUIPMENT TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT.
- THE SIZE OF THE LABEL SHALL BE MINIMUM:

EQUIPMENT TYPE	HEIGHT	WIDTH
INDOOR	2"	3"
OUTDOOR	3"	4.5"

- A DOWNLOADABLE WINDOWS METAFILE IS AVAILABLE ON THE WHOLE BUILDING DESIGN GUIDE WEBSITE ([WWW.WBDG.ORG](http://www.wbdg.org)) FOR USE IN A LABEL MAKING MACHINE.
  - THE FILE IS LOCATED ON THE 'NAVFAC CADD DETAILS' PAGE. TO NAVIGATE TO THIS LOCATION, FOLLOW: HOME > DOCUMENTS & REFERENCES > CCB > CADD LIBRARY > NAVFAC CADD RESOURCES > NAVFAC CADD DETAILS.
  - ALTERNATIVELY, TYPE IN THE FOLLOWING ADDRESS IN INTERNET EXPLORER: [HTTP://WWW.WBDG.ORG/CCB/BROWSE\\_CAT.PHP?C=232](http://www.wbdg.org/ccb/Browse_Cat.PHP?C=232)

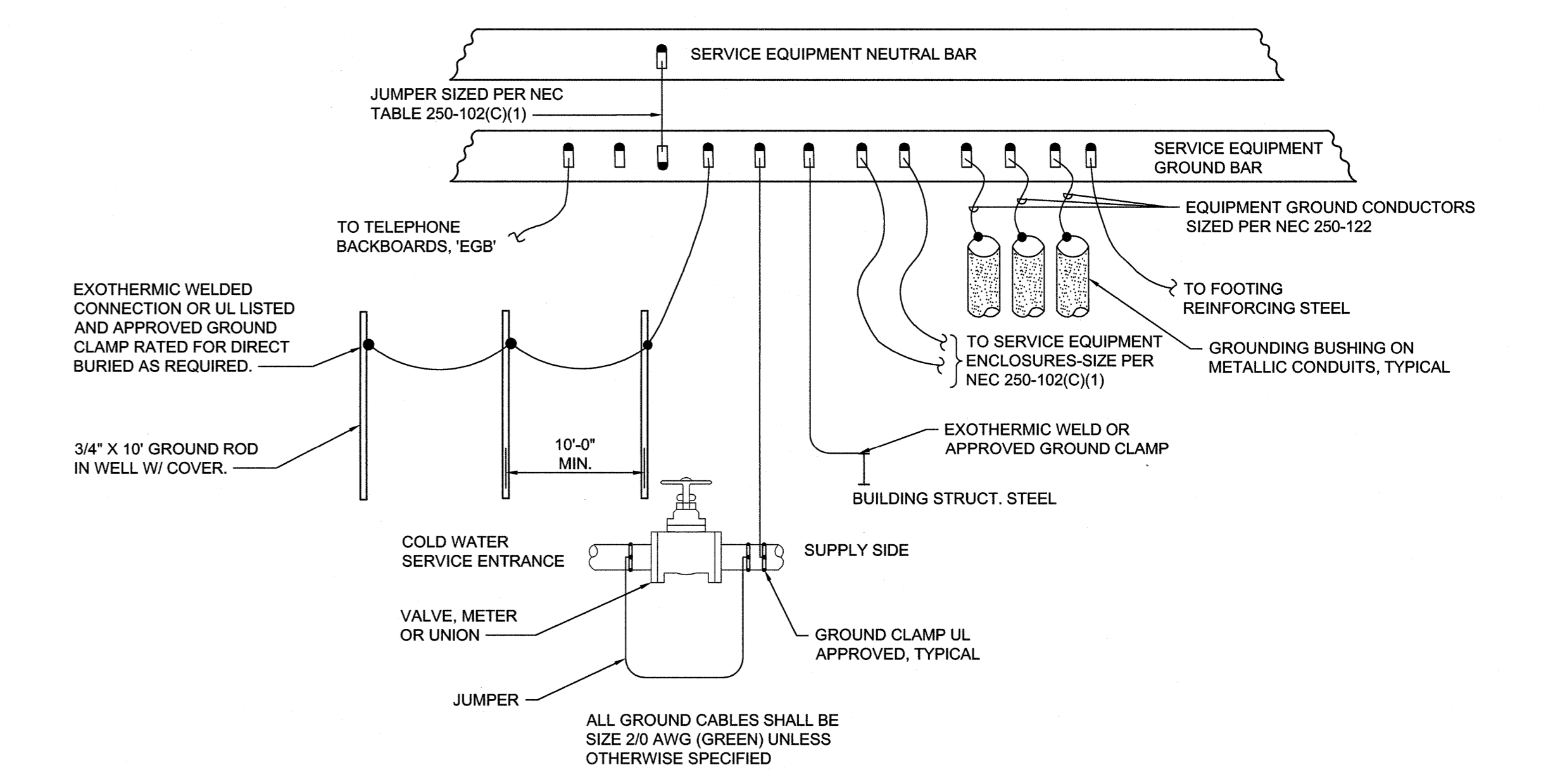
**GENERAL ARC FLASH WARNING LABEL**

**4 ELECTRICAL EQUIPMENT WARNING LABEL DETAIL**  
NOT TO SCALE

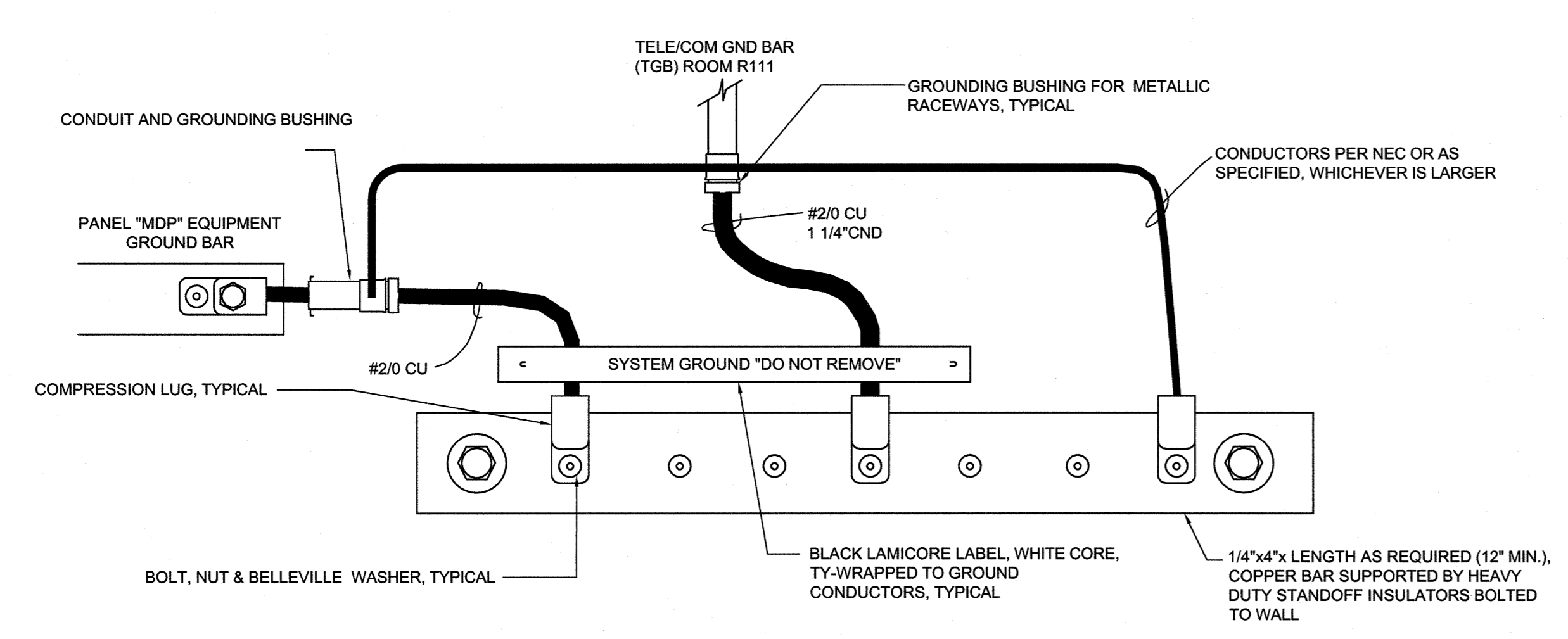


**5 OCCUPANCY SENSOR 3 WAY SWITCH WITH MULTIPLE CEILING SENSOR WIRING DIAGRAM**  
NOT TO SCALE

**NOTE:** OCCUPANCY SENSOR WIRING SCHEMATICS ARE PROVIDED TO INDICATE SWITCHING FUNCTION(S) REQUIRED. COMPONENTS AND CONNECTIONS BETWEEN COMPONENTS ARE REPRESENTATIVE ONLY AND MAY NOT BE APPLICABLE FOR ALL MANUFACTURER'S DEVICES. CONSULT ACTUAL APPROVED DEVICE MANUFACTURER APPLICATION INFORMATION AND INSTALLATION INSTRUCTIONS FOR COMPONENTS AND WIRING REQUIRED BEFORE ROUGHING IN AND INSTALLING SYSTEMS.



**6 SERVICE GROUNDING DETAIL**  
NOT TO SCALE



**7 'EGB' GROUND BAR DETAIL**  
NOT TO SCALE

SEE DISCLOSURE OF INFORMATION STATEMENT ON SHEET T-1

<p>2246 Yaupon Drive Wilmington, NC 28401 Phone: 910.791.4000 Fax: 910.791.5266 www.cbhfengineers.com</p>	<b>SHEET TITLE:</b> ELECTRICAL DETAILS		<b>E-4</b>
	<b>TALLEY &amp; SMITH ARCHITECTURE INC.</b> P.O. BOX 518 SHELBY, NC 28151-0518 409 EAST MARION ST. SHELBY, NC 28150		
	<b>DEPARTMENT OF THE NAVY</b> NAVAL FACILITIES ENGINEERING COMMAND <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA		<b>RENOVATION</b> BLDG. M-104 CAMP LEJEUNE, NORTH CAROLINA
<b>DESIGNER:</b> JLG <b>DR:</b> JLG <b>CHK:</b> JPF <b>SUBMITTED BY:</b> <b>DESIGN DIR.:</b> T.H. BURTON, PE	<b>APPROVED:</b> <b>SATISFACTORY TO:</b>	<b>DATE:</b> <b>DATE:</b>	<b>SIZE:</b> F <b>CODE IDENT. NO.:</b> 80091 <b>NAVFAC DRAWING NO.:</b> 60025146 <b>CONST. CONTR. NO.:</b> N40085-19-B-0034
<b>DATE:</b> 06/28/2019	<b>SCALE:</b> NOTED	<b>SPEC:</b> 05-19-0034	<b>SHEET</b> 48 OF 57

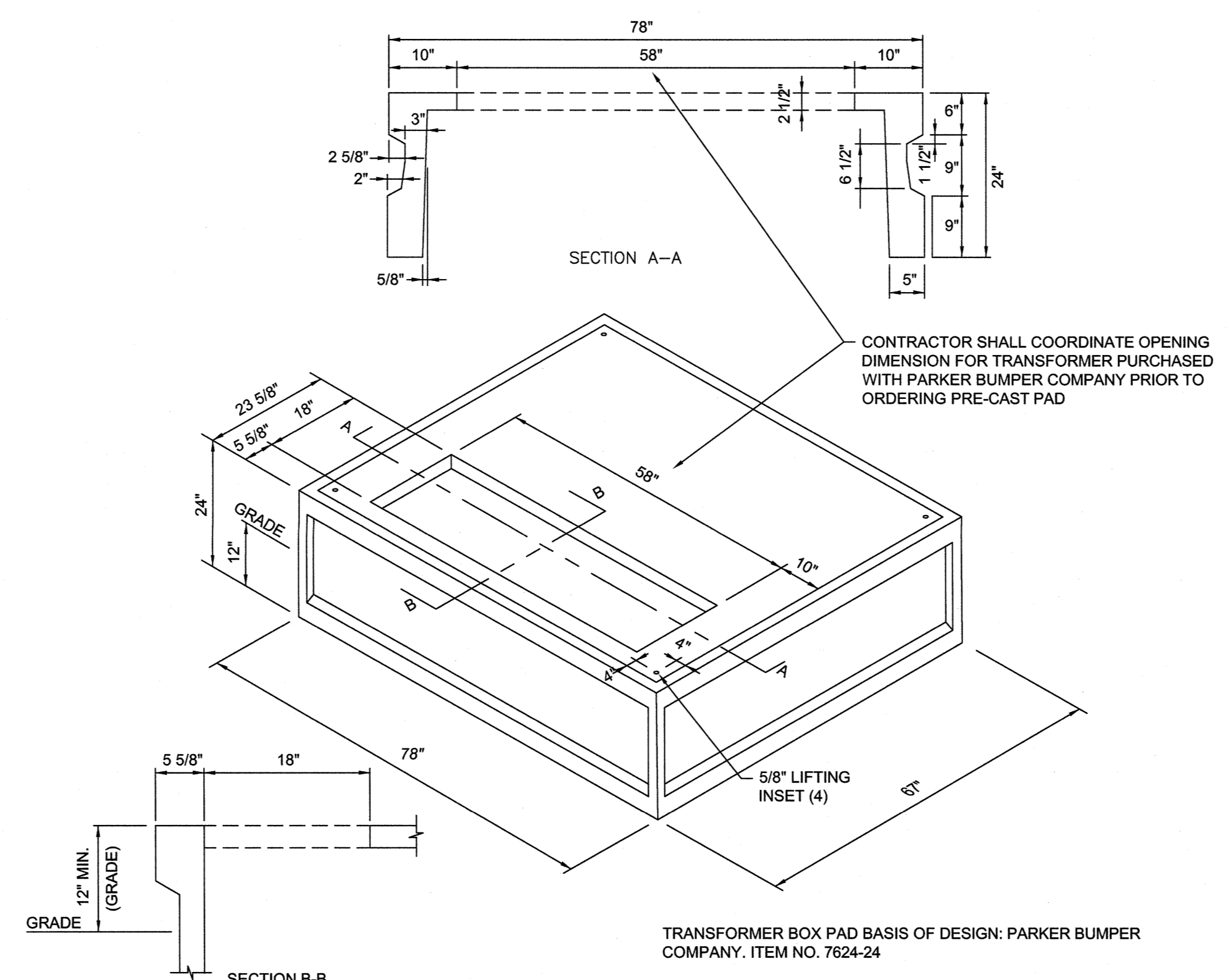
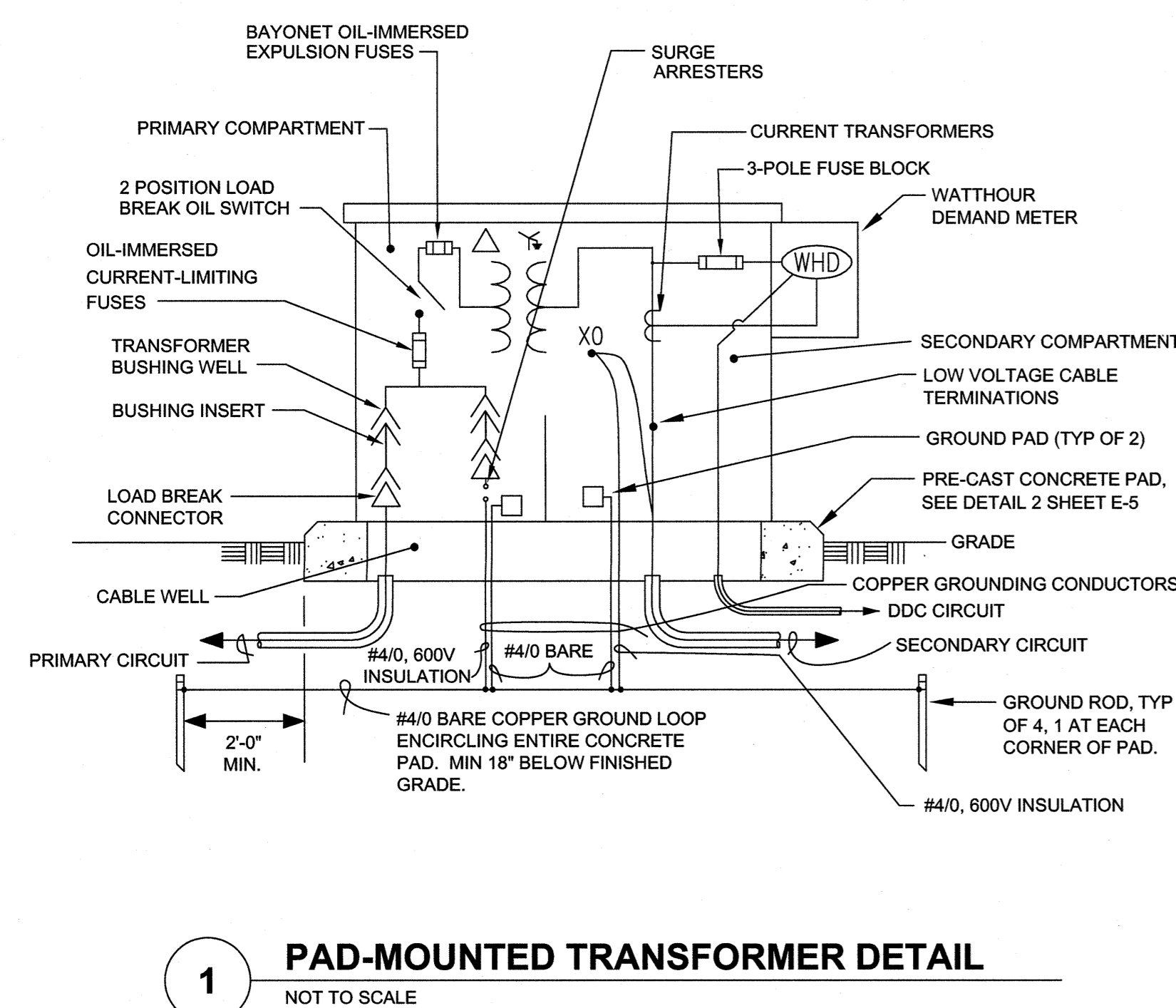
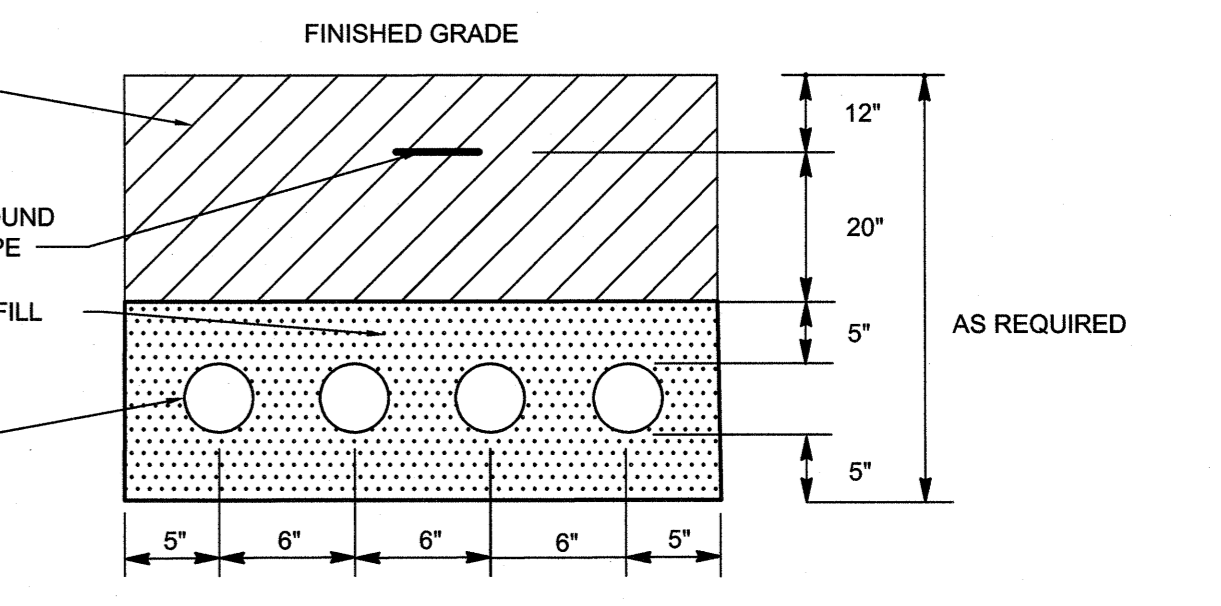
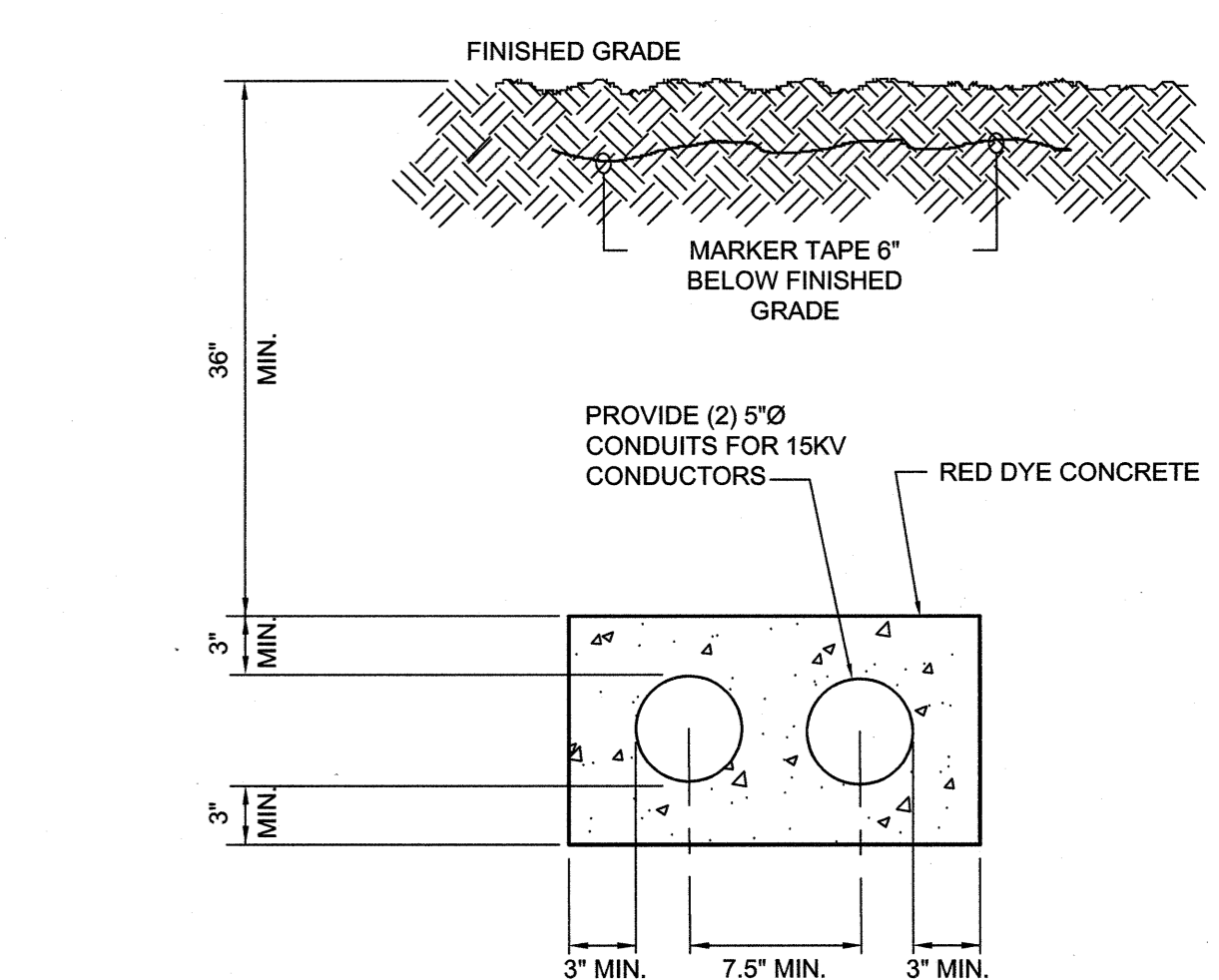
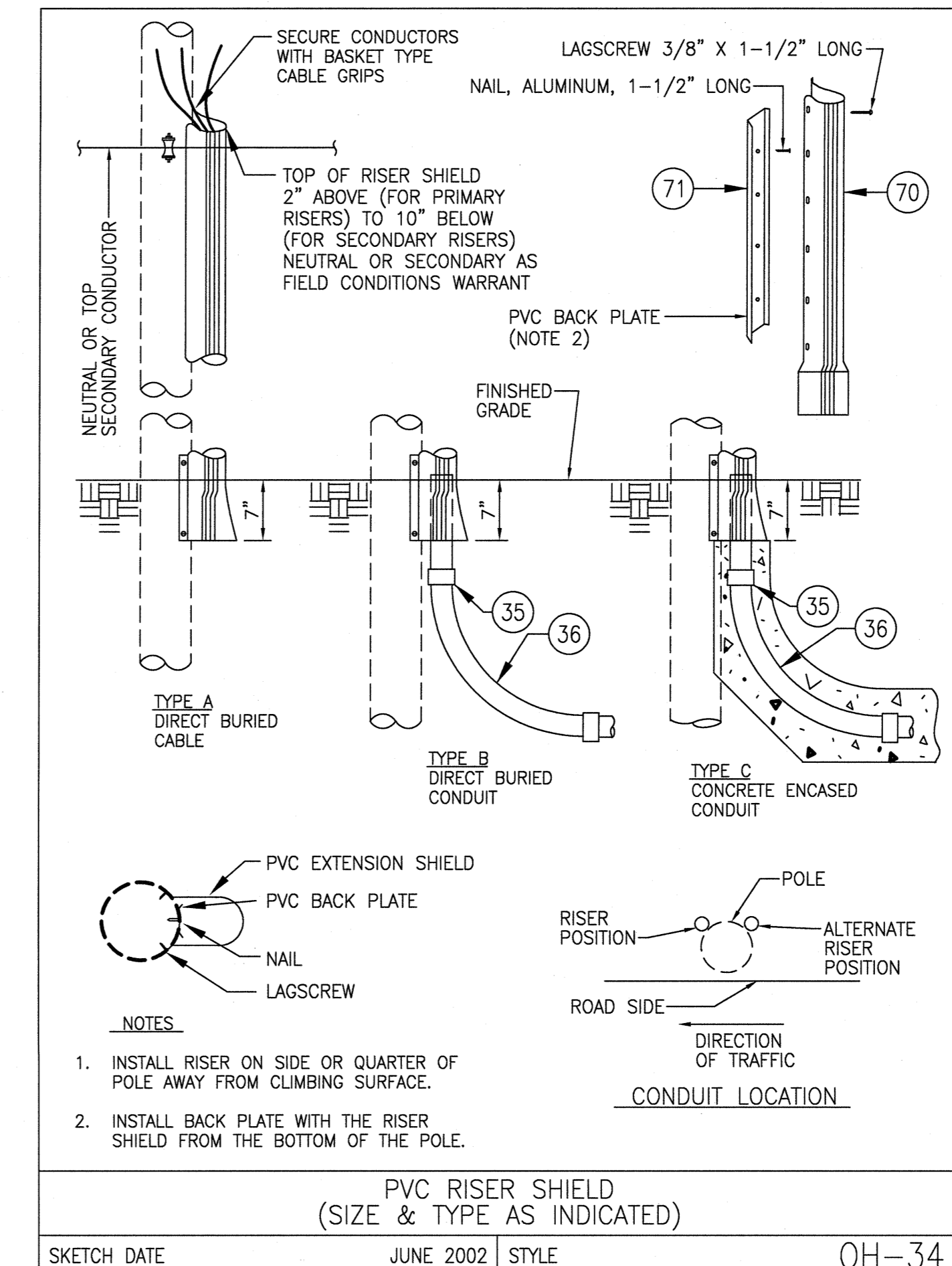
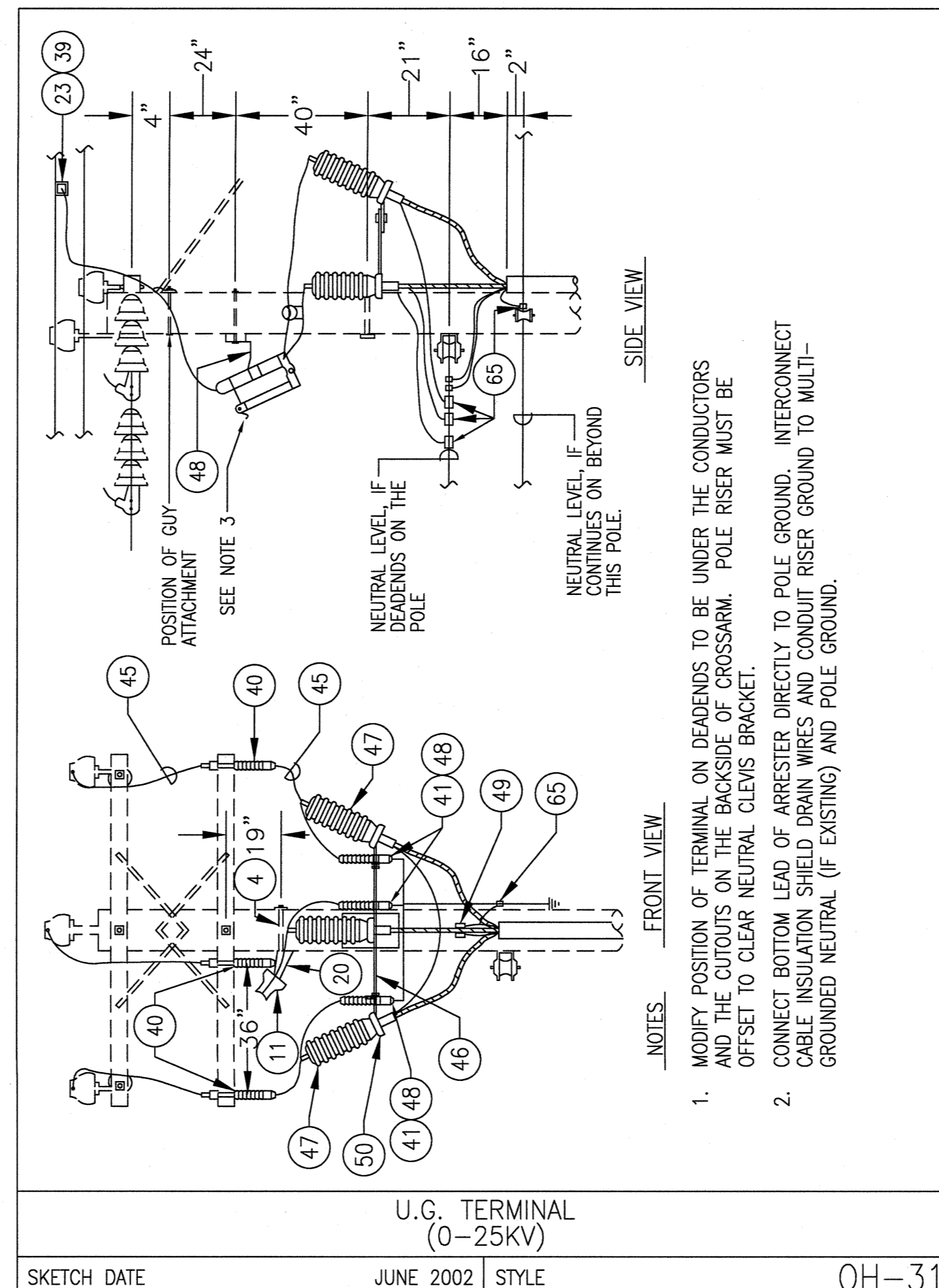
REVISIONS		
SYM.	DATE	APPROVED

POLE LINE MATERIAL LIST	
1	FLAT STEEL BRACE (TWO PIECES)
2	MACHINE BOLT, 3/8" X LENGTH NEEDED WITH WASHER, NUT AND LOCKWASHER
3	8" WOOD CROSSARM WITH CROSS SECTION DIMENSIONS OF 3 1/2" X 4 1/2"
4	MACHINE BOLT, 5/8" X LENGTH NEEDED WITH WASHER, NUT AND LOCKWASHER
5	TIMBER CONNECTOR
6	LAGSCREW, 1/2" X 4"
7	ANGLE STEEL BRACE (TWO PIECES)
8	MACHINE BOLT, 1/2" X LENGTH NEEDED, WITH WASHER, NUT & LOCKWASHER
9	DEADEND BOX
10	STEEL PIN
11	PIN INSULATOR
12	GRID GAIN, USED ONLY WHEN THERE IS NO POLE GAIN
13	ANGLE STEEL BRACE (ONE PIECE)
14	10" WOOD CROSSARM WITH CROSS SECTION DIMENSIONS OF 3 1/2" X 4 1/2"
15	5/8" EYE NUT
16	5/8" EYE BOLT, LENGTH AS NEEDED, WITH WASHER, NUT & LOCKWASHER
17	EXTENSION LINK
18	BELL TYPE SUSPENSION INSULATOR WITH CONNECTING HARDWARE
19	STRAIN CLAMP
20	STEEL ANGLE PIN
21	CLUSTER MOUNTING BRACKET, STEEL
22	TRANSFORMER GROUNDING CONNECTION
23	STIRRUP
24	SECONDARY LEAD SUPPORT BRACKET
25	ADAPTER PLATE FOR CLUSTER MOUNTING
26	CLEVIS BRACKET FOR SPOOL INSULATOR
27	SPOOL INSULATOR
28	U BOLT CLAMP
29	PREFORMED GUY GRIP
30	GUY HOOK
31	GUY STRAIN INSULATOR
32	GUY WIRE, SIZE AS SPECIFIED
33	#4 WP CU. SOFT DRAWN GROUND WIRE
34	GROUND CLAMP
35	CONDUIT COUPLING
36	CONDUIT BEND
37	INSULATED BUSHING
38	PERFORATED STRAPPING, 1-1/2" WIDE
39	HOT LINE CLAMP
40	FUSED CUTOFF, AS SPECIFIED
41	SURGE ARRESTER, AS SPECIFIED
42	POLE TOP PIN (HIDGE PIN) - 24 INCHES LONG
43	CROSSARM ANGLE PIN
44	ANGLE POLE TOP PIN
45	WEATHERPROOF SOFT DRAWN WIRE-SIZE (a) TO MATCH OR EXCEED AMPACITY OF CONNECTING CABLE, OR (b) AT 125% OF TRANSFORMER FULL LOAD CURRENT, BUT NOT LESS THAN NO. 4 AWG

SKETCH DATE: JUNE 2002 STYLE: OH-1.5

POLE LINE MATERIAL LIST	
46	TRI-MOUNT BRACKET
47	TERMINATOR
48	MOUNTING BRACKET
49	CABLE GRIP HANGER
50	HOSE CLAMP
51	STUD, 3/4" X 1-3/4"
52	LINE POST INSULATOR
53	TRIPLE INSULATOR BRACKET
54	ANGLE CLAMP
55	INSULATOR LINE POST CLAMP
56	4" CROSSARM
57	CROSSARM GAIN BRACKET
58	PULLEY BRACKET
59	WEDGE CLAMP
60	MIDSPAN SERVICE CLAMP
61	STUD, 7"
62	SADDLE, ANGLE
63	SADDLE CROSSARM
64	FITTING, POLE TOP
65	CONNECTOR
66	SUSPENSION CLAMP
67	TIE SERVICE CABLE
68	54" FIBERGLASS STRAIN INSULATOR
69	PVC RISER SHIELD
70	PVC EXTENSION SHIELD
71	PVC BACK PLATE
72	8" WOOD CROSSARM WITH CROSS SECTION DIMENSIONS OF 4 3/4" X 5 3/4"
73	10" WOOD CROSSARM WITH CROSS SECTION DIMENSIONS OF 4 3/4" X 5 3/4"
74	BACK-UP CURRENT LIMITING FUSE

SKETCH DATE: JUNE 2002 STYLE: OH-1.5A



SEE DISCLOSURE OF INFORMATION STATEMENT ON SHEET T-1

<b>CBHF</b> Engineers, PLLC 2246 Yaupon Drive Wilmington, NC 28401 Phone: 910.791.4000 Fax: 910.791.5266 www.cbhfengineers.com	SHEET TITLE: <b>ELECTRICAL DETAILS</b>		<b>E-5</b>
	TALLEY & SMITH ARCHITECTURE INC. P.O. BOX 518 SHELBY, NC 28151-0518 409 EAST MARION ST. SHELBY, NC 28150		
	DEPARTMENT OF THE NAVY <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA		RENOVATION BLDG. M-104 CAMP LEJEUNE, NORTH CAROLINA
	DES. JLG DR. JLG CHK. JPF SUBMITTED BY: DESIGN DR. T.H. BURTON, PE		
APPROVED:	DATE:	SIZE: <b>F</b> CODE IDENT. NO.: <b>80091</b>	NAVFAC DRAWING NO.: 60025147
SATISFACTORY TO:	DATE:	SCALE: NOTED	CONST. CONTR. NO. N40085-19-B-0034 SHEET 49 OF 57

06/28/2019