ELECTRICAL ABBREVIATIONS

#	
1P	SINGLE POLE
1PH	SINGLE PHASE
2/C	TWO-CONDUCTOR
3/C	THREE-CONDUCTOR
3PH	THREE PHASE
4/C	FOUR-CONDUCTOR
4W	FOUR WIRE
A	
A/C UNIT	AIR CONDITIONING UNIT
A/E	ARCHITECT / ENGINEER
AAP	ALARM ANNUNCIATOR PANEL
AC	ALTERNATING CURRENT OR ARMORED CABLE
ACC	ACCESSIBLE
ADDL	ADDITIONAL
ADJ	ADJACENT OR ADJOINING
ADO	AUTOMATIC DOOR OPENER
AF	AMPERE FRAME OR AMP FUSE
AFC	ABOVE FINISHED COUNTER, AUTOMATIC FREQUENCY CONTROL, OR AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AH	AMPERE-HOUR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
ALT	ALTERNATE
AMB OR A	AMBIENT
AMP	AMPERE
ARCH	ARCHITECT
ASC	AMPS SHORT CIRCUIT
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AV	AUDIO VISUAL
B	
BAT	BATTERY
BC	BARE COPPER
BD	BOARD
BFF	BELOW FINISHED FLOOR
BIL	BASIC INSULATION LEVEL
BLDG	BUILDING
BPIP	BOILER PLANT INSTRUMENTATION PANEL
BRKR	BREAKER
BYP	BYPASS
C	
C	CONDUIT
CAB	CABINET
CALC	CALCULATE
CAP	CAPACITY
CAT	CATALOG
CATV	COMMUNITY ANTENNA TELEVISION
CCR	CONTROL CONTACTOR
CCTV	CLOSED CIRCUIT TELEVISION
CD	CANDELA OR CONSTRUCTION DOCUMENTS
CF	CONTRACTOR FURNISHED
CF/CI	CONTRACTOR FURNISHED / CONTRACTOR INSTALLED
CF/OI	CONTRACTOR FURNISHED / OWNER INSTALLED
CFE	CONTRACTOR FURNISHED EQUIPMENT
CHW	CHILLED WATER
CHWP	CHILLED WATER PUMP
CKT	CIRCUIT
CKT BRKR	CIRCUIT BREAKER
CLF	CURRENT LIMITING FUSE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CO	CONTRACTING OFFICER
COAX	COAX CABLE
COMM	COMMUNICATION
COMPT	COMPARTMENT
CONC	CONCRETE
CONT	CONTINUE
CONTR	CONTRACTOR
COORD	COORDINATE
COR	CONTRACTING OFFICER'S REPRESENTATIVE
CPT	CONTROL POWER TRANSFORMER
CRI	COLOR RENDERING INDEX
CT	CURRENT TRANSFORMER
CTV	CABLE TELEVISION
CU	COPPER
CU FT	CUBIC FEET
CUR	CURRENT
D	
DB	DECIBEL
DC	DIRECT CURRENT
DCP	DIMMER CONTROL PANEL
DEG C	DEGREES CELSIUS
DEG F	DEGREES FAHRENHEIT
DEMO	DEMOLITION
DIAG	DIAGRAM
DISC	DISCONNECT
DISTR	DISTRIBUTION
DISTR PNL	DISTRIBUTION PANEL
DMR SW	DIMMER SWITCH
DN	DOWN
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DRSW	DOOR SWITCH
DS	DISCONNECT SWITCH
DWG	DRAWING
E	
EL	ELEVATION
ELEC	ELECTRIC OR ELECTRICAL
ELEV	ELEVATOR
EMCP	EMERGENCY MONITORING CONTROL PANEL
EMER	EMERGENCY
EMI	ELECTROMAGNETIC INTERFERENCE
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EPO	EMERGENCY POWER OFF
EPRF	EXPLOSION PROOF
ESMT	EASEMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXST	EXISTING
EC	ELECTRICAL CONTRACTOR
F	
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FABL	FIRE ALARM BELL
FABX	FIRE ALARM BOX
FACP	FIRE ALARM CONTROL PANEL
FC	FOOTCANDLE
FIXT	FIXTURE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE METALLIC CONDUIT
FLT	FLOODLIGHT
FLUOR	FLUORESCENT
FLUOR FIXT	FLUORESCENT FIXTURE
FOUTT	TELEPHONE FLOOR OUTLET
FP	FIRE PROTECTION
FT	FEET OR FOOT
FU SW	FUSED SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
G	
G OR GND	ELECTRICAL GROUND
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GTB	GROUND TERMINAL BOX
H	
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HT	HEIGHT
HZ	HERTZ
I	
IESNA	ILLUMINATION ENGINEERING SOCIETY OF NORTH AMERICA
IMC	INTERMEDIATE METAL CONDUIT
INCAND	INCANDESCENT
IR	INFRARED
IWH	INSTANTANEOUS WATER HEATER
J	
J-BOX	JUNCTION BOX
K	
KV	KILOVOLT
KVA	KILOVOLT-AMPERE
KVAH	KILOVOLT-AMPERE PER HOUR
KVAR	KILOVOLT-AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
KWHM	KILOWATT HOUR METER
L	
LED	LIGHT EMITTING DIODE
LF	LINEAR FEET (FOOT)
LM	LUMEN
LP	LIGHT POLE
LPS	LOW PRESSURE SODIUM
LRA	LOCKED ROTOR AMPS
LT	LIGHT
LTG	LIGHTING
LTG PNL	LIGHTING PANEL
LTNG	LIGHTNING
LV	LOW VOLTAGE
M	
MATV	MASTER ANTENNA TELEVISION SYSTEM
MAX	MAXIMUM
MC	METAL-CLAD
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MG	MOTOR GENERATOR
MH	MANHOLE
	MINIMUM
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MT	MOUNT
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
MVA	MEGAVOLT-AMPERE
MW	MEGAWATT
N	
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEUT OR N	NEUTRAL
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NS	NO SCALE
NTS	NOT TO SCALE
O	
OC	ON CENTER
OD	OUTSIDE DIAMETER
OL	OVERLOAD
P	
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX OR PANEL BOARD
PBPU	PREFABRICATED BEDSIDE PATIENT UNIT
PCB	POLYCHLORINATED BIPHENYL
PEC	PHOTOELECTRIC CELL
PED	PEDESTAL
PEND	PENDANT
PF	POWER FACTOR
PH	PHASE
PNL	PANEL
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE (PLASTIC)
PWR	POWER
R	
RCP	REFLECTED CEILING PLAN
REC	RECESSED
RECPT	RECEPTACLE
REQ	REQUIRED
RGS	RIGID GALVANIZED STEEL
RM	ROOM
RMS	ROOT MEAN SQUARE
S	
SCC	SHORT CIRCUIT CAPACITY
SD	SMOKE DETECTOR
SES	SERVICE ENTRANCE SECTION
SF	SQUARE FOOT (FEET)
SHT	SHEET
SI	INTERNATIONAL SYSTEM OF UNITS
SPEC	SPECIFICATION
SPST	SINGLE POLE, SINGLE THROW
SURF	SURFACE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SC	SECURITY CONTRACTOR
T	
TEL	TELEPHONE
TP	TWISTED PAIR
TPS	TWISTED PAIR SHIELDED
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TYP	TYPICAL
U	
UFD	UNDERFLOOR DUCT
UGND	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTIL	UTILITY
V	
V	VOLT
VA	VOLT-AMPERE
VAR	VOLT-AMPERE REACTIVE
VFD	VARIABLE FREQUENCY DRIVE
VOLT	VOLTAGE
W	
W	WATT
WH	WATER HEATER
WP	WEATHERPROOF
X	
XFER	TRANSFER
XFMR	TRANSFORMER

PIPING AND DUCTWORK 2015 IBC AND ASCE 7-10 NONSTRUCTURAL SEISMIC RESTRAINT, BRACING AND ANCHORAGE NOTES:

REFERENCE SPECIFICATION: SECTION 13 05 41
SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS

SEISMIC DESIGN DATA FOR ANALYSIS AND DESIGN:

H-18-8 SEISMICITY = MODERATE-HIGH
SEISMIC RISK CATEGORY BASED UPON OCCUPANCY = III
COMPONENT IMPORTANCE FACTORS:
IP=1.0 FOR NON-ESSENTIAL COMPONENTS
IP=1.5 FOR LIFE SAFETY AND DESIGNATED SEISMIC SYSTEMS (DSS) AND PERMANENT EQUIPMENT AND COMPONENTS REQUIRING SPECIAL SEISMIC CERTIFICATION PER H-18-8

MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS:
SS=0.533G S1=0.154G

SITE CLASS C (PER GEOTECHNICAL REPORT)

DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS:
SDS=0.421G SD1=0.169G
SEISMIC DESIGN CATEGORY (SDC) = C

NOTE: NONSTRUCTURAL SEISMIC EXCEPTIONS AND EXEMPTIONS SHALL BE DETERMINED IN ACCORDANCE WITH H-18-8 AND CHAPTER 13 OF ASCE 7 FOR SDC = D. REFERENCE SPECIFICATION SECTION 13 05 14.

H-18-8 SPECIAL SEISMIC CERTIFICATION (SSC) REQUIREMENT:

IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY C, D, E, OR F, PERMANENT EQUIPMENT AND COMPONENTS ARE TO HAVE SPECIAL SEISMIC CERTIFICATION IN ACCORDANCE WITH REQUIREMENTS OF SECTION 13.2.2 OF ASCE 7 EXCEPT FOR EQUIPMENT AND COMPONENTS THAT ARE CONSIDERED RUGGED AS LISTED IN SECTION 2.2 OF OSHPD CODE APPLICATION NOTICE CAN NO. 2-1708A.5, AND SHALL COMPLY WITH SECTION 13.2.6 OF ASCE 7.

CLARIFICATION OF ASCE 7 "12 INCH RULE" SUSPENDED SEISMIC BRACING CODE EXCEPTION FOR PIPING AND HVAC DUCTWORK:

ALL PIPING OR DUCTWORK SUSPENDED BY INDIVIDUAL HANGER RODS 12" OR LESS AS MEASURED FROM THE TOP OF THE PIPING OR DUCTWORK TO THE BOTTOM OF THE SUPPORT WHERE THE HANGER IS ATTACHED. IF THE 12" LIMIT IS EXCEEDED BY ANY HANGER IN THE RUN, SEISMIC BRACING IS REQUIRED FOR THE RUN. NOTE: A SINGLE SUPPORT LOCATION THAT MEETS THE REQUIREMENT OF THIS EXCEPTION DOES NOT CONSTITUTE A SEISMIC SWAY BRACE LOCATION. IN ADDITION, TO MEET THE CODE REQUIREMENTS, ALL OF THE FOLLOWING CONDITIONS MUST ALSO BE SATISFIED:

1. LATERAL MOTION OF PIPING OR DUCTWORK WILL NOT CAUSE DAMAGING IMPACT WITH SURROUNDING SYSTEMS (E.G. OTHER CONDUIT, TRAY, PIPE, DUCT, EQUIPMENT, SPRINKLER HEADS ETC.) OR CAUSE LOSS OF SYSTEM VERTICAL SUPPORT.
2. PIPING OR DUCTWORK MUST BE MADE OF DUCTILE MATERIAL WITH DUCTILE CONNECTIONS.

ELETRICAL SEISMIC GENERAL NOTES

1. GC MUST HAVE SEISMIC-FORCE-RESTRAINT SHOP DRAWINGS AND, CALCULATIONS PREPARED BY PROFESSIONAL STRUCTURAL ENGINEER EXPERIENCED IN THE AREA OF SEISMIC FORCE RESTRAINTS.THE PROFESSIONAL STRUCTURAL ENGINEER SHALL BE REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED.
2. SUBMIT DESIGN TABLES AND INFORMATION USED FOR THE DESIGN-FORCE LEVELS, STAMPED AND SIGNED BY A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED.
3. "DO NOT INSTALL" SEISMIC RESTRAINT SUBMITTALS ARE APPROVED BY THE COR. COORDINATE AND INSTALL TRAPEZE OR OTHER MULTI-PIPE HANGER SYSTEMS PRIOR TO PIPE INSTALLATION.
4. IN STRUCTURES ASSIGNED TO IBC SEISMIC DESIGN CATEGORY C, D, E, OR F, PERMANENT EQUIPMENTS AND COMPONENTS ARE TO HAVE SPECIAL SEISMIC CERTIFICATION IN ACCORDANCE WITH REQUIREMENTS OF SECTION 13.2.2 OF THE ASCE 7 EXCEPT FOR EQUIPMENT THAT ARE CONSIDERED RUGGED AS LISTED IN SECTION 2.2 OSHPD CODE APPLICATION NOTICE CAN NO. 2-1708A.5 AND SHALL COMPLY WITH SECTION 13.2.6 OF ASCE 7.
5. GC AND MC MUST REVIEW AND COMPLETE ALL SEISMIC RESTRAINT REQUIREMENTS PER SPECIFICATION SECTION 13 05 41.

ELECTRICAL GENERAL NOTES

1. SPECIFICATIONS TAKE PRECEDENT OVER DRAWINGS.
2. MULTI-GANG BACKBOXES FOR DIFFERENT VOLTAGES AND TYPES OF EMERGENCY AND NORMAL BRANCH WIRING DEVICES SHALL HAVE DIVIDERS BETWEEN DEVICES.
3. CORE DRILL AND SAW CUT, AS REQUIRED, FOR FLOOR AND WALL PENETRATIONS. SEAL REMAINING ANNULUS WITH FIRE CAULK. REFER TO SPECIFICATION "FIRE STOPPING" 07-84-00.
4. FURNISH ACCESS DOORS OR PANELS FOR INSTALLATION BY GENERAL CONTRACTOR IN WALLS AND CEILINGS WHERE ACCESS IS REQUIRED TO CONCEALED ELECTRICAL BOXES AND DEVICES.
5. ARMORED CABLE (AC) MAY BE USED FOR LAY-IN FIXTURE PIGTAILS. ARMORED CABLE (AC) SHALL NOT BE USED FOR BRANCH CIRCUIT HOMERUNS. ARMORED CABLE (AC) SHALL NOT BE USED WHERE MORE THAN THREE CONDUCTORS (PHASE/NEUTRAL/GROUND) ARE REQUIRED, WHERE EXPOSED; OR IN LENGTHS EXCEEDING 20 FEET EXCEPT FOR TEMPORARY WIRING.
6. PROVIDE ALL ELECTRICAL WORK IN ACCORDANCE WITH THE CURRENT NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF THE VHA.
7. COORDINATE ALL OUTAGES WITH VHA COR PER SPECS PRIOR TO WORK BEING DONE.

LIGHTING GENERAL NOTES

A. ALL RECESSED LIGHTING FIXTURE IN LAY-IN CEILINGS SHALL BE INSTALLED WITH 6' LONG FLEXIBLE METAL CONDUIT.

B. ALL MOUNTING HEIGHTS FOR LIGHTING FIXTURES ARE TO THE BOTTOM OF THE FIXTURES UNLESS INDICATED OTHERWISE.

C. SEE ARCHITECTURAL EXTERIOR ELEVATIONS FOR MOUNTING HEIGHTS OF EXTERIOR LIGHTING FIXTURES.

D. CIRCUIT WIRING IS NOT SHOWN. SWITCH AND CIRCUITING INTENT SHALL BE AS DESIGNATED AT EACH LIGHT FIXTURE.

E. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUITING AND SWITCHING SHOWN.

F. CIRCUIT NUMBERS AT DEVICES CORRESPOND TO PANELBOARD BREAKERS (SEE PANELBOARD SCHEDULES). BRANCH CIRCUITS SHALL BE SIZED ACCORDING TO THE CIRCUIT BREAKER RATING, UNLESS INDICATED OTHERWISE ON THE ELECTRICAL EQUIPMENT SCHEDULE.

COMMUNICATION GENERAL NOTES

1. SECURITY CONTRACTOR (SC) TO PROVIDE SHOP DRAWINGS AND SUBMIT TO VHA FOR APPROVAL BEFORE PROJECT START.
2. EXISTING SYSTEMS AND SERVICES ALREADY IN USE MAY DETERMINE A BROADER REQUIREMENT FOR A COMPLETE WORKING AND UNIFIED SYSTEM.
3. FIELD COORDINATE CAMERA TYPES AND MOUNTING HARDWARE IN CONJUNCTION TO THE MOUNTING APPLICATIONS AND LOCATION - VERIFY CORRECT INTRA-CONNECT CABLING WITH DEVICE TYPES AND LOCATION FIBER OPTIC CABLING WILL BE REQUIRED BASED ON ANY DISTANCE OVER 90 METERS.

ELECTRICAL GENERAL NOTES - DEMOLITION

1. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR PHASES OF DEMOLITION AND CONSTRUCTION. COORDINATE WITH GENERAL CONSTRUCTION.
2. DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES AND LIGHTING FIXTURES IN DEMOLITION AREAS UNLESS NOTED OTHERWISE. DISCONNECT AND REMOVE ASSOCIATED CONDUIT AND WIRE BACK TO OVERCURRENT PROTECTIVE DEVICE. COMPLETELY CUT/CAP CONDUITS IN CONCRETE SLAB AND IN THE AREA OF WORK PERIMETER. DISCONNECT AND REMOVE ALL ABANDONED CIRCUITS AND CONDUITS. PROVIDE CONDUIT AND WIRE AS REQUIRED FOR CONTINUITY OF CIRCUITS TO ANY EXISTING DEVICES TO REMAIN. COORDINATE AND VERIFY REQUIREMENTS WITHIN NEW AREA OF WORK. REMAIN. COORDINATE AND VERIFY REQUIREMENTS WITHIN NEW AREA OF WORK.

KEYNOTES

00 KEYNOTE

NEW - EXISTING AND DEMO LINE TYPES

NEW LINE TYPE

EXISTING LINE TYPE

DEMO LINE TYPE

DEMO HATCH

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8/5/2020

U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
ELECTRICAL ABBREVIATIONS	100% CONSTRUCTION DOCUMENTS	OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION	436-114
			Building Number: 173 & 154
Approved: Project Director		Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636	Drawing Number: E001
		Issue Date: 08/05/2020 / Checked: TL / Drawn: BWW	

File Path
VA FORM 08 - 6231

ELECTRICAL SYMBOLS - DIAGRAM

- DELTA CONNECTION.
- MOTOR, SINGLE-PHASE.
- MOTOR, THREE-PHASE.
- TRANSFORMER.
- WYE CONNECTION.
- PULL BOX.
- MANHOLE.
- PRESSURE SWITCH-CLOSE ON INCREASE.
- PRESSURE SWITCH-OPEN ON INCREASE.
- SWITCH, MULTIPOSITION.
- SWITCH, NORMALLY CLOSED FLOAT.
- SWITCH, NORMALLY CLOSED FOOT OPERATED.
- SWITCH, NORMALLY CLOSED LIMIT.
- SWITCH, NORMALLY CLOSED TEMPERATURE ACTIVATED.
- SWITCH, NORMALLY CLOSED TIME DELAY.
- SWITCH, NORMALLY OPEN FLOAT.
- SWITCH, NORMALLY OPEN LIMIT.
- SWITCH, NORMALLY OPEN TEMPERATURE ACTIVATED.
- SWITCH, NORMALLY OPEN TIME DELAY.
- SWITCH, SINGLE BREAK.
- NORMALLY CLOSED RELAY CONTACT.
- NORMALLY OPEN RELAY CONTACT.
- FUSE WITH RATING.
- MOLDED CASE CIRCUIT BREAKER.
- LOW-VOLTAGE DRAWOUT AIR CIRCUIT BREAKER.
- MEDIUM-VOLTAGE OIL CIRCUIT BREAKER.
- MEDIUM-VOLTAG DRAWOUT AIR CIRCUIT BREAKER.
- SWITCH AND FUSE UNIT.
- FUSED DRAWOUT POTENTIAL TRANSFORMER.
- RELAY; LETTER INDICATES RELAY TYPE.
  50 = INSTANTENOUS OVERCURRENT OR RATE-OF-RISE.
  51 = AC-TIME OVERCURRENT.
  67 = AC-DIRECTIONAL OVERCURRENT.
  86 = LOCK OUT.
- DISCONNECT SWITCH, FUSED.
- DISCONNECT SWITCH, UNFUSED, VAV.
- FUSIBLE LINK.
- STARTER, COMBINATION W/ DISCONNECT SWITCH.
- STARTER OR MOTOR CONTROLLER.
- VARIABLE FREQUENCY DRIVE.
- GENERATOR, POWER.
- BATTERY.
- CAPACITOR.
- POTHEAD.
- STRESS CONE.
- LIGHTNING ARRESTOR.
- RECTIFIER, CATHODIC PROTECTION.
- AMMETER.
- VOLTMETER.
- WATTMETER.
- WATT-HOUR METER.
- TRANSFORMER, PLAN.
- WYE CONNECTION.
- DUCT, CELL FLOOR HEADER.
- DUCT, TROLLEY.
- DUCT, UNDERFLOOR JUNCTION BOX.
- EARTH GROUND.
- JUNCTION BOX.
- LADDER CABLE TRAY.

ELECTRICAL SYMBOLS - POWER PLAN

- BRANCH CIRCUIT HOMERUN. LINES INDICATE NUMBER OF CIRCUITS,NEUTRAL, AND SWITCH LEG CONDUCTORS. ONE SEPARATE GREEN GROUNDING CONDUCTOR SHALL BE PROVIDED FOR EACH HOMERUN; NOT SHOWN.
- CABLE TRAY
- RIGID CONDUIT LINE = RC.
- DIRECT BURIAL CABLE = DB.
- POWER DUCT = P.
- UNDERGROUND ELECTRICAL SERVICE = UGE
- UNDER GROUND CIRCUITRY WIRE AND CONDUIT = UGP
- SUBSTATION.
- HI VOLTAGE SWITCH ON CONCRETE PAD.
- LOW VOLTAGE SWITCH ON CONCRETE PAD.
- DUAL POWER AND TELECOMMUNICATIONS MANHOLE.
- FLOOR OUTLET, RECEPTACLE.
- BUSWAY.
- FLOOR OUTLET, DATA COMMUNICATION.
- OUTLET, DATA COMMUNICATION.
- PUSH BUTTON.
- DISTRIBUTION PANEL.
- LIGHTING PANEL.
- PANELBOARD CABINET, FLUSH MOUNTED.
- PANELBOARD CABINET, SURFACE MOUNTED.
- GROUNDING BAR.
- RECEPTACLE, CLOCK HANGER.
- RECEPTACLE, DUPLEX (MOUNT 18" AFF. UNLESS NOTED OTHERWISE).
- RECEPTACLE, DUPLEX ON EMERGENCY POWER (MOUNT 18" AFF. UNLESS NOTED OTHERWISE).
- RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER (MOUNT 18" AFF. UNLESS NOTED OTHERWISE), COUNTER HEIGHT.
- RECEPTACLE, DUPLEX COUNTER HEIGHT.
- RECEPTACLE, DUPLEX (MOUNT 18" AFF. UNLESS NOTED OTHERWISE).
- RECEPTACLE, QUADRAPLEX.
- RECEPTACLE, SINGLE.
- RECEPTACLE, SINGLE WITH SWITCH.
- RECEPTACLE, QUADRAPLEX ON EMERGENCY POWER (MOUNT 18" AFF. UNLESS NOTED OTHERWISE).
- RECEPTACLE, SPECIAL PURPOSE
  A = 120V, 20A, 1 PHASE, 2-POLE, 3W, NEMA 5-20R.
  B = 120V, 20A, 1 PHASE, 2-POLE, 3W, NEMA 6-20R.
  C = 120V, 30A, 1 PHASE, 2-POLE, 3W, NEMA 5-30R.
  D = 208V, 30A, 1 PHASE, 2-POLE, 3W, NEMA 6-30R.
  E = 208V, 60A, 1 PHASE, 3-POLE, 4W, NEMA 14-60R.
  F = 208V, 30A, 3 PHASE, 3-POLE, 4W, NEMA 15-30R.
  G = 208V, 50A, 3 PHASE, 3-POLE, 4W, NEMA 15-30R.
  H = 208V, 60A, 3 PHASE, 3-POLE, 4W, NEMA 15-30R.
- RECEPTACLE, CEILING MOUNTED
- RECEPTACLE, SWITCHED DUPLEX.
- DROP CORD, SINGLE CONVENIENCE OUTLET, 3-WIRE, GROUNDING TYPE, 20A, W/#12 CONDUCTORS IN FLEXIBLE CORD (CENTER LINE OF OUTLET: 6'-6" AFF. MIN).
- ELECTRICAL STRIPLE MOLD (OUTLETS ON 2'-0" CENTERS OR AS DESIGNATED ON DRAWINGS), MTD 3'-6" AFF. OR AS INDICATED.
- 3-GANG COMPARTMENT BOX IN FLOOR FOR TELEPHONE, DATA & RECEPTACLE.
- TIME CLOCK.
- VENTILATOR OR FAN COIL UNIT OUTLET.
- CONDUIT TERMINATED 6" AFF. IN STANDARD BOX FOR EXTENSION TO EQUIPMENT AS DIRECTED.
- CONDUIT TERMINATED W/ COUPLING (FLUSH W/ FINISHED FLOOR) FOR EXTENSION TO EQUIPMENT AS DIRECTION.
- SWITCH
  F = FUSED SWITCH.
  K = KEY OPERATED.
  L = LOCK.
  LM = LOW VOLTAGE MASTER.
  M = MANUAL MOTOR STARTING.
  MC = MOMENTARY CONTACT.
  MP = MOTOR SNAP WITH PILOT LIGHT.
  P = WITH PILOT LIGHT (THERMAL TYPE).
  X = EXPLOSION PROOF.
- BLANK OUTLET BOX.
- HEADWALL.

COMMUNICATION SYMBOLS:

- CARD READER
- ELECTRIC DOOR STRIKE
- MAGNETIC DOOR POSITION SWITCH
- VANDAL RESISTANT 1080P DOME IP CAMERA
- FOUR SQUARE JUNCTION BOX
- MAGNETIC LOCK
- USP HUB2SA REMOTE DOOR RELEASE BUTTON
- REQUEST TO EXIT MOTION DETECTOR
- CCTV SYSTEM WORKSTATION
- DURESS BUTTON
- CODE BLUE BUTTON INTEGRATED NURSE CALL SYSTEM
- NURSE CALL MASTER CONSOLE
- ETHERNET NETWORK SWITCH
- WIRELESS ACCESS POINT
- DATA BOX
- OUTLET, COMBINATION TELEPHONE/DATA COMMUNICATION
- CABLE TELEVISION LINE = CATV
- CLOSED CIRCUIT TELEVISION LINE = CCTV. MINIMUM 1" CONDUIT
- FIBER OPTICS LINE = FO
- TELEPHONE LINE = T
- INTERCOM & PUBLIC ADDRESS LINE = I. MIN. 3/4" CONDUIT.
- SOUND LINE = S
- NURSE CALL LINE = NC. MINIMUM 3/4" CONDUIT.
- RADIO CONDUIT RUN, MINIMUM 3/4" CONDUIT.
- TELECOMMUNICATIONS MANHOLE
- FLOOR RECEPTACLE, TELEPHONE
- OUTLET TELEPHONE; LETTER INDICATES AS FOLLOWS:
  J = JACK TYPE W = WALL TYPE
- OUTLET DATA ONLY ; NUMBER OF OUTLETS REPRESENTED
- OUTLET DATA ONLY ; NUMBER OF OUTLETS REPRESENTED
- OUTLET DATA AND TELECOM
- OUTLET; LETTER INDICATES AS FOLLOWS:
  A = AUDIO V = VIDEO I = INTERCOM
- SPEAKER, CEILING MOUNTED, "X" INDICATES THE TYPE, PROVIDE SCHEDULE ON LEGEND
- SPEAKER, WALL MOUNTED, "X" INDICATES THE TYPE, PROVIDE SCHEDULE ON LEGEND. MTD. 7'-6" AFF UNLESS OTHERWISE NOTED.
- RADIO CHANNEL SELECTOR FACILITIES, MTD. 4'-6" AFF UNLESS OTHERWISE NOTED.
- SPEAKER PROGRAM SELECTOR SWITCH & VOLUME CONTROL MTD. 4'-6" AFF UNLESS OTHERWISE NOTED.
- OUTLET, TELEVISION
  BLANK= 4 11/16" MASTER ANTENNA OUTLET BOX W/BLANK COVER, MTD. 18" AFF UNLESS OTHERWISE NOTED.
  C = CAMERA (CCTV SYSTEM), MTD 18" AFF
  M = MONITOR (CCTV SYSTEM).
- NURSE'S CALL MASTER STATION MTD ON NURSE'S COUNTER TOP UNLESS OTHERWISE NOTED.
- NURSE CALL TERMINAL CABINET.
- NURSE CALL STATION.
  2 = DUPLICATE FACILITIES FOR TWO BEDS (SEPARATE INDICATORS AT MASTER STATION) MTD 5'-0" AFF UNLESS NOTED OTHERWISE.
  D = DUTY STATION. MTD 5'-0" AFF UNLESS NOTED OTHERWISE.
  E = MTD 6'-0" AFF FOR SHOWER LOCATION, MTD 4'-6" AFF FOR TUBLOCATION, & MTD 3'-0" AFF FOR TOILET LOCATION.
  P = PSYCHIATRIC CORRIDOR STATION WITH KEY SWITCH
  S = AUDIO VISUAL WALL STATION (STAFF) MTD 5'-0" AFF UNLESS OTHERWISE NOTED.
  U = UTILITY CALL STATION, MTD 5'-0" AFF UNLESS OTHERWISE NOTED.
- NURSE CALL STATION.
  2 = NURSE'S CALL DOME LIGHT (SUFFIX INDICATES No OF LAMP) MTD 6" ABOVE DOOR.
  D = CORRIDOR DOME LIGHT.
  I = AUXILIARY INTERSECTIONAL DOME LIGHT.
- TELEPHONE TERMINAL CABINET
- TELEPHONE BACKBOARD (WALL MOUNTED)
- 3-POLE TWIST-LOCK RECEPTACLE FOR MICROPHONE, MTD. 4'-6" AFF.
- REMOTE DICTATING OUTLET MTD 1'-6" AFF. UNLESS OTHERWISE NOTED.
- INTERCOM STATION (REFER TO SPECS. FOR FUNCTIONAL OPERATION OF INSTRUMENT & TYPE REQUIRED).

ELECTRICAL SYMBOLS - LIGHTING PLAN

- SWITCH (# SUBSCRIPT AS INDICATED BELOW):
  BLANK = SINGLE POLE
  LVD = LOW VOLTAGE DIMMER
  LV= LOW VOLTAGE SWITCH
  GS= GRAPHIC SCREEN CONTROL STATION
  PB= PUSH BUTTON STATION
  WP= WEATHER PROOF
  T = TIMER OPERATED
  LOS= OCCUPANCY SENSOR
- RECESSED DOWNLIGHT FIXTURE. NOMENCLATURE EXAMPLE : ('A' DESIGNATES LIGHT FIXTURE TYPE, 'b' DESIGNATES SWITCHLEG, x DESIGNATES CIRCUIT NUMBER) REFER TO DRAWINGS AND LIGHT FIXTURE SCHEDULE FOR MORE INFORMATION.
- RECESSED TROFFER LIGHT FIXTURE. NOMENCLATURE EXAMPLE : ('A' DESIGNATES LIGHT FIXTURE TYPE, 'b' DESIGNATES SWITCHLEG, x DESIGNATES CIRCUIT NUMBER) REFER TO DRAWINGS AND LIGHT FIXTURE SCHEDULES FOR MORE INFORMATION.
- CEILING SURFACE MOUNTED LIGHT FIXTURE. NOMENCLATURE EXAMPLE : ('A' DESIGNATES LIGHT FIXTURE TYPE, 'b' DESIGNATES SWITCHLEG, x DESIGNATES CIRCUIT NUMBER) REFER TO DRAWINGS AND LIGHT FIXTURE SCHEDULE FOR MORE INFORMATION.
- WALL SURFACE MOUNTED LIGHT FIXTURE. NOMENCLATURE EXAMPLE : ('A' DESIGNATES LIGHT FIXTURE TYPE, 'b' DESIGNATES SWITCHLEG, x DESIGNATES CIRCUIT NUMBER) REFER TO DRAWINGS AND LIGHT FIXTURE SCHEDULE FOR MORE INFORMATION.
- LIGHT FIXTURE POWER CONNECTION DESIGNATIONS:
- OPEN - NORMAL POWER CIRCUIT
- SHADED - LIFE SAFETY EMERGENCY POWER CIRCUIT
- HATCHED - CRITICAL POWER CIRCUIT
- DUAL PASSIVE INFRARED / MICROPHONIC TECHNOLOGY (ULTRASONIC NOT ALLOWED)
- EXIT SIGN, WALL MOUNTED WITH DIRECTIONAL ARROWS AND FACES AS SHOWN
- EXIT SIGN, CEILING MOUNTED WITH DIRECTIONAL ARROWS AND FACES AS SHOWN
- LIGHTING, ONE HEAD EMERGENCY BATTERY POWER
- LIGHTING, TWO HEAD EMERGENCY BATTERY POWER
- LIGHTING, THREE HEAD EMERGENCY BATTERY POWER
- STREET LIGHT WITH BRACKET
- LIGHT POLE, ONE MAST ARM, ONE LUMINAIRE
- LIGHT POLE, TWO MAST ARMS, TWO LUMINAIRES
- LIGHT POLE, POST TOP MOUNT LUMINAIRE
- LIGHT EXTERIOR BUILDING MOUNTED FIXTURE
- LIGHT POLE, ONE LUMINAIRE
- LIGHT POLE, TWO LUMINAIRES
- LIGHTING, EXTERIOR BUILDING
- EXTERIOR FLOOD LIGHT
- LIGHT FIXTURE, BOLLARD
- LIGHT FIXTURE, DIRECTIONAL

Issued: Date:

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STAMP: 8/5/2020

U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
ELECTRICAL SYMBOLS	100% CONSTRUCTION DOCUMENTS	OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION	436-114
Approved: Project Director		Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636	Building Number: 173 & 154
		Issue Date: 08/05/2020 · Checked: TL · Drawn: BWW	Drawing Number: E-002

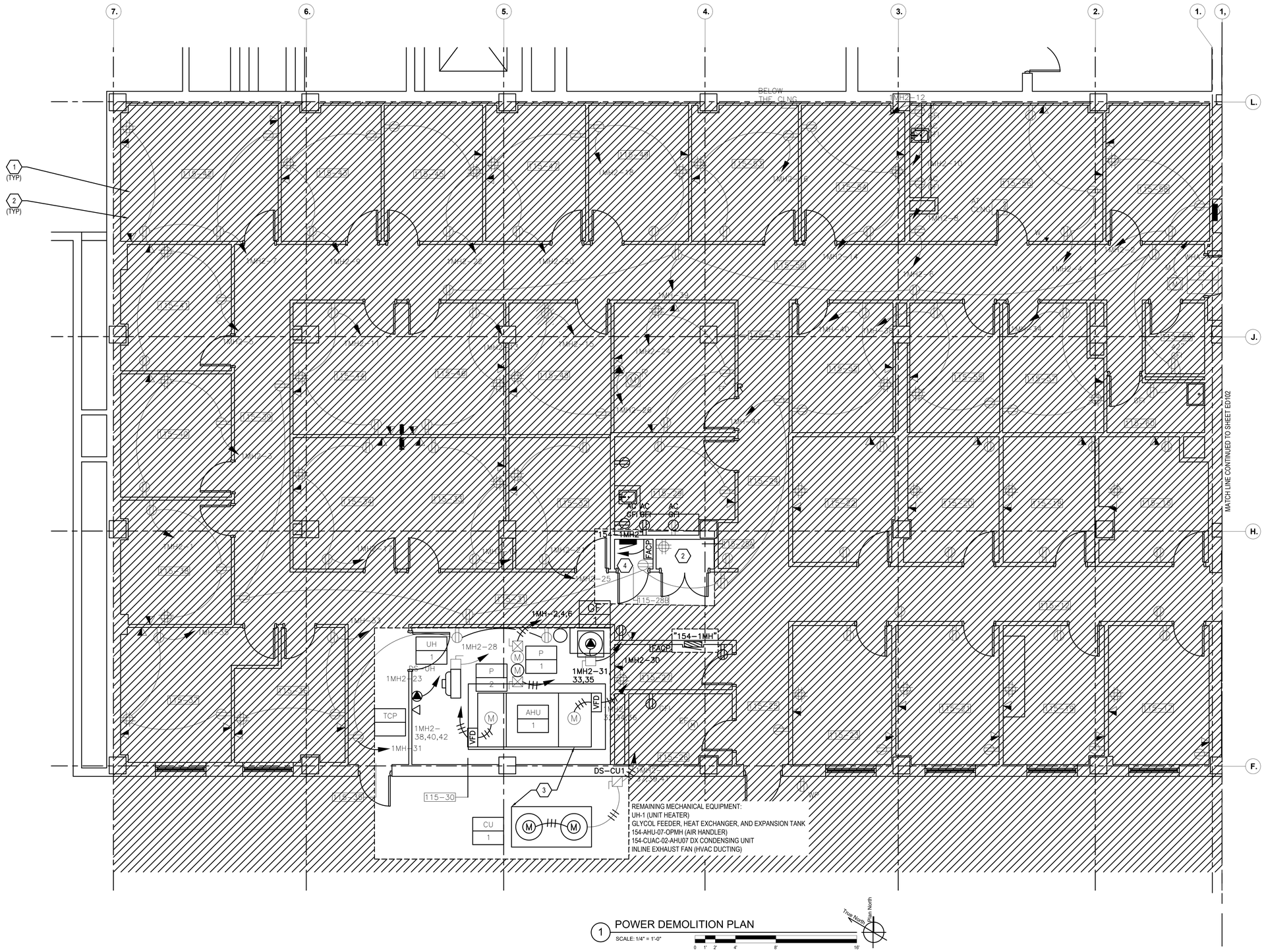
VA FORM 08 - 6231

ELECTRICAL GENERAL NOTES:

A. FOR GENERAL NOTES AND SYMBOLS SEE SHEETS E-001 & E-002.

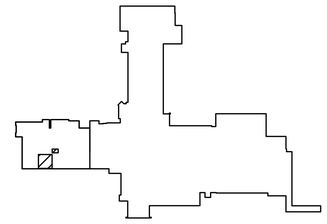
KEY NOTES:

1. DEMOLISH ALL EXISTING RECEPTACLES, VAV CIRCUITS, AND LIGHTS IN HATCHED AREA. CONDUCTORS AND CONDUIT TO BE DEMOLISHED BACK TO PANEL.
2. DEMOLISH DATA AND COMMUNICATION RECEPTACLES TO INCLUDE CONDUIT BACK TO HEAD-END EQUIPMENT.
3. RETAIN CONDUCTOR AND CONDUIT FOR EXISTING MECHANICAL EQUIPMENT TO REMAIN. REFER TO MECHANICAL PLANS FOR EQUIPMENT SCHEDULE.
4. FIRE ALARM CONTROL PANEL TO BE REMOVED FROM WALL AND RETAINED FOR REINSTALLATION.



MATCH LINE CONTINUED TO SHEET ED102

1 POWER DEMOLITION PLAN
SCALE: 1/4" = 1'-0"
0 1' 2' 4' 8' 16'
True North Plan North



KEY PLAN True North

Issued:	Date:

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U.S. Department of Veterans Affairs

Drawing Title: POWER DEMOLITION PLAN - FIRST FLOOR WEST	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION	Project Number: 436-114
Approved: Project Director			Building Number: 154
		Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636	Drawing Number: ED101-P2
		Issue Date: 08/05/2020 / Checked: TL / Drawn: BWW	

File Path

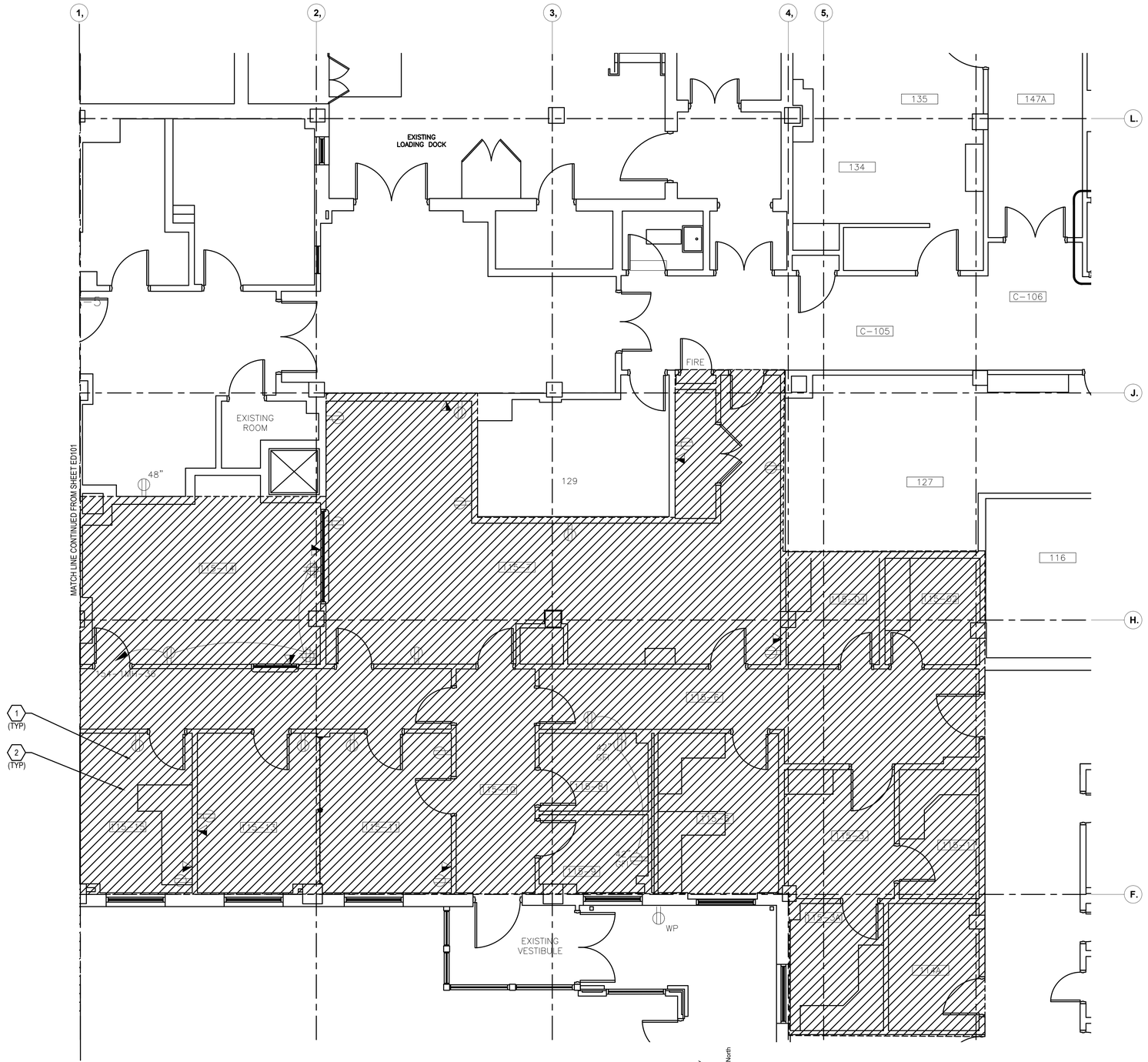
VA FORM 08 - 6231

ELECTRICAL GENERAL NOTES:

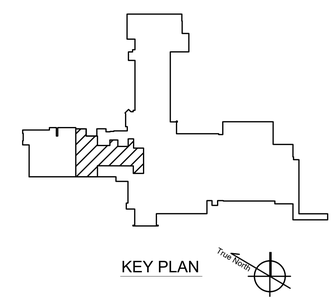
A. FOR GENERAL NOTES AND SYMBOLS SEE SHEETS E-001 & E-002.

KEY NOTES:

1. DEMOLISH ALL EXISTING RECEPTACLES, VAV CIRCUITS, AND LIGHTS IN HATCHED AREA. CONDUCTORS AND CONDUIT TO BE DEMOLISHED BACK TO PANEL.
2. DEMOLISH DATA AND COMMUNICATION RECEPTACLES TO INCLUDE CONDUIT BACK TO HEAD-END EQUIPMENT.



1 POWER DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



Issued:	Date:

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Drawing Title: POWER DEMOLITION PLAN - FIRST FLOOR EAST	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION	Project Number: 436-114
Approved: Project Director		Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636	Building Number: 154
		Issue Date: 08/05/2020 / Checked: TL / Drawn: BWW	Drawing Number: ED102-P2

File Path

VA FORM 08 - 6231

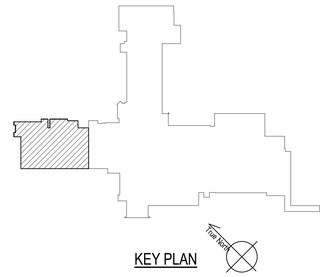
ELECTRICAL GENERAL NOTES:

A. REFER TO DRAWING E-002 FOR GENERAL NOTES PERTAINING TO THIS DRAWING.
B. FOR NON-DIMMED FIXTURES CONNECTED TO EMERGENCY INVERTER POWER PROVIDE A DIGITAL EMERGENCY SWITCHED RELAY PACK FOR EVERY CHANNEL CONTROLING NON-DIMMED LIGHT FIXTURES.
C. FOR 0-10VDC DIMMED FIXTURES CONNECTED TO EMERGENCY INVERTER POWER PROVIDE A DIGITAL EMERGENCY 0-10VDC DIMMING RELAY PACK FOR EVERY CHANNEL CONTROLING 0-10VDC DIMMING LIGHT FIXTURES.

KEY NOTES:

1. PROVIDE WALL MOUNTED INVERTER FOR EMERGENCY (LIFE SAFETY) EGRESS LIGHTING. MOUNT INVERTER AT 6'-0" A.F.F. TO THE BOTTOM OF INVERTER.
2. LOW VOLTAGE LIGHTING CONTROL, PROVIDED BY CONTRACTOR, MUST INTERFACE TO CAMPUS WIDE LAN. PROVIDE AN ETHERNET CONNECTION TO CAMPUS LAN. INTERFACE DEVICE MUST BE MOUNTED WITHIN A 14"X14"X4" DEEP NEMA 1 RATED SURFACE MOUNTED BACKBOX. BACKBOX TO HAVE A SURFACE MOUNTED COVER. PROVIDE A 120VOLT CONNECTION TO CIRCUIT INV C-1.
3. LOW VOLTAGE LIGHTING CONTROL CHANNEL MUST BE PROGRAMMED TO OPERATE CONTINUOUSLY.

1 EDUCATION BUILDING - FIRST FLOOR LIGHTING
1/8" = 1'-0"



KEY PLAN

Issued:	Date:

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JIRSA HEDRICK Structural Engineers

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U.S. Department of Veterans Affairs

Drawing Title	EDUCATION BUILDING - FIRST FLOOR LIGHTING
Phase	100% CONSTRUCTION DOCUMENTS
Approved: Project Director	
Project Title	OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION
Location	3687 Veterans Drive, Fort Harrison, MT 59636
Issue Date	08/05/2020
Checked	TL
Drawn	JEE
Project Number	436-114
Building Number	154
Drawing Number	EL101-P2

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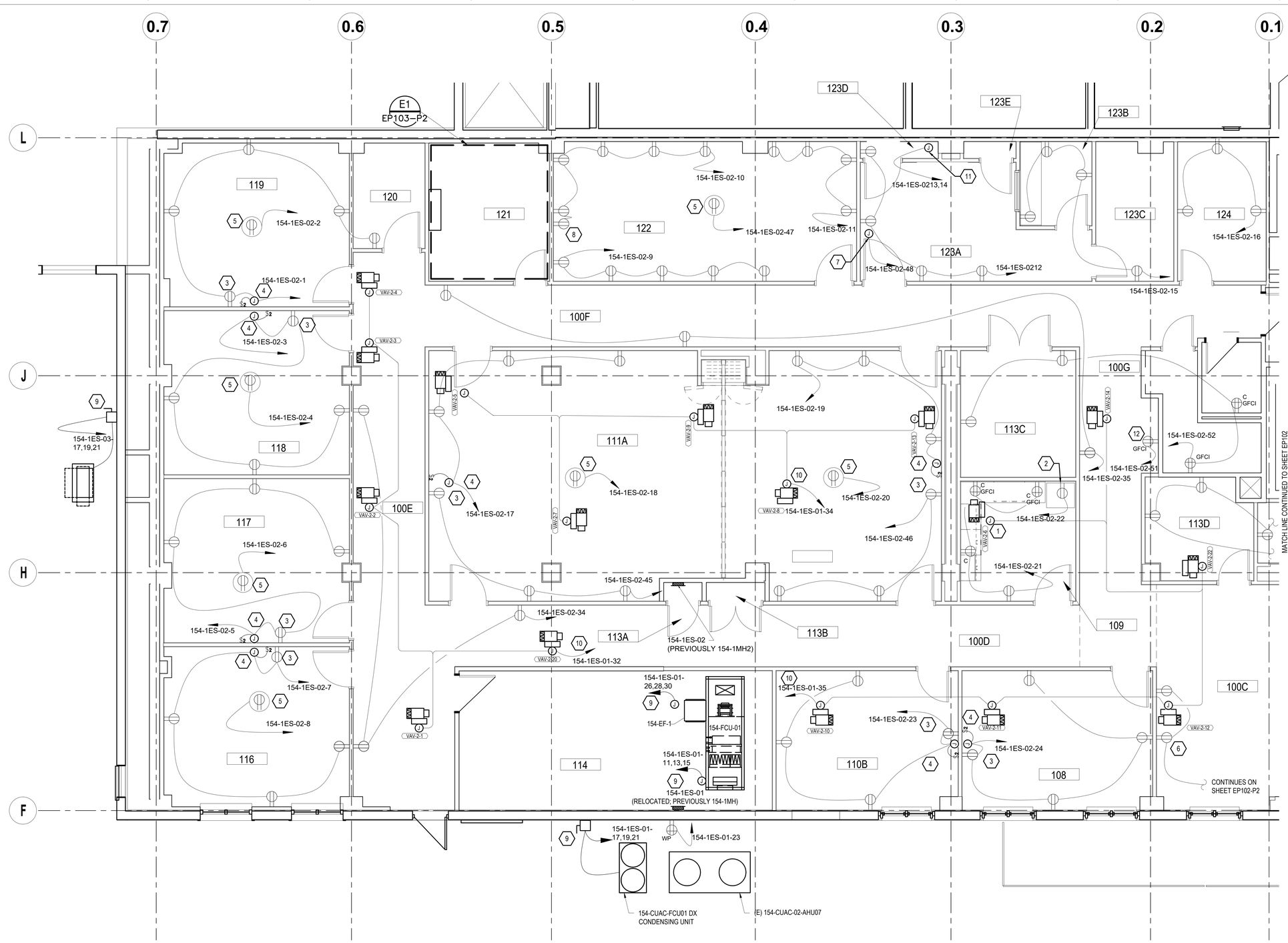
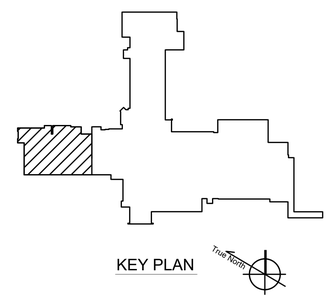


1 POWER PLAN
SCALE: 1/4" = 1'-0"



ELECTRICAL GENERAL NOTES:

A. FOR GENERAL NOTES AND SYMBOLS SEE SHEETS E-001 & E-002.

KEY NOTES:

1. PROVIDE RECEPTACLE FOR MICROWAVE. COORDINATE EXACT LOCATION AND HEIGHT WITH CASEWORK ELEVATIONS.
2. RECEPTACLE FOR REFRIGERATOR. COORDINATE EXACT LOCATION AND HEIGHT WITH CASEWORK ELEVATIONS.
3. PROVIDE DUPLEX RECEPTACLE AND EMPTY SINGLE GANG BOX BEHIND PROJECTOR SCREEN MOUNTED 18" ABOVE FINISHED FLOOR. PROVIDE 3/4" CONDUIT WITH PULL STRING TO ABOVE ACCESSIBLE CEILING FOR LOW VOLTAGE CABLING BY OTHERS. COORDINATE EXACT MOUNTING HEIGHT WITH CASE WORK DETAIL.
4. PROVIDE JBOX IN CEILING AND SWITCH FOR DROP DOWN PROJECTION SCREEN.
5. PROVIDE CEILING MOUNTED DEDICATED 120V, 20A RECEPTACLE FOR PROJECTOR.
6. PROVIDE DUPLEX RECEPTACLE AND EMPTY SINGLE GANG BOX FOR TV LOCATION MOUNTED AT 60" ABOVE FINISHED FLOOR. PROVIDE 3/4" CONDUIT WITH PULL STRING TO ABOVE ACCESSIBLE CEILING FOR LOW VOLTAGE CABLING BY OTHERS. COORDINATE EXACT MOUNTING HEIGHT WITH CASE WORK DETAIL.
7. PROVIDE JBOX WITH DEDICATED CIRCUIT AS SHOWN FOR BATTERY CHARGING STATION FOR PATIENT LIFT SYSTEM.
8. PROVIDE DUPLEX RECEPTACLE AND EMPTY SINGLE GANG BOX FOR SMART BOARD LOCATION MOUNTED AT 60" ABOVE FINISHED FLOOR. PROVIDE 3/4" CONDUIT WITH PULL STRING TO ABOVE ACCESSIBLE CEILING FOR LOW VOLTAGE CABLING BY OTHERS. COORDINATE EXACT MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN.
9. PROVIDE CONNECTION FOR MECHANICAL EQUIPMENT AS SHOWN.
10. ELECTRICAL CONTRACTOR SHALL PROVIDE A 50VA, 120V/24V CONTROL TRANSFORMER TO VAV'S AND A 20A, 120V CIRCUIT. REFER TO SHEET EP601-P2 FOR MORE INFORMATION.
11. PROVIDE JBOX FOR PBPU RECEPTACLE POWER. COORDINATE WITH OTHERS TO INSTALL LOW VOLTAGE, MEDICAL GAS, VACUUM, OXYGEN, ETC. WITHOUT CONFLICT.
12. PROVIDE DEDICATED GFCI DUPLEX RECEPTACLE FOR DRINKING FOUNTAIN.

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U.S. Department of Veterans Affairs

Drawing Title: POWER PLAN - FIRST FLOOR WEST
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION
Project Number: 436-114
Building Number: 154
Approved: Project Director
Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636
Issue Date: 07/31/2020
Checked: TL
Drawn: BWW
Drawing Number: EP101-P2

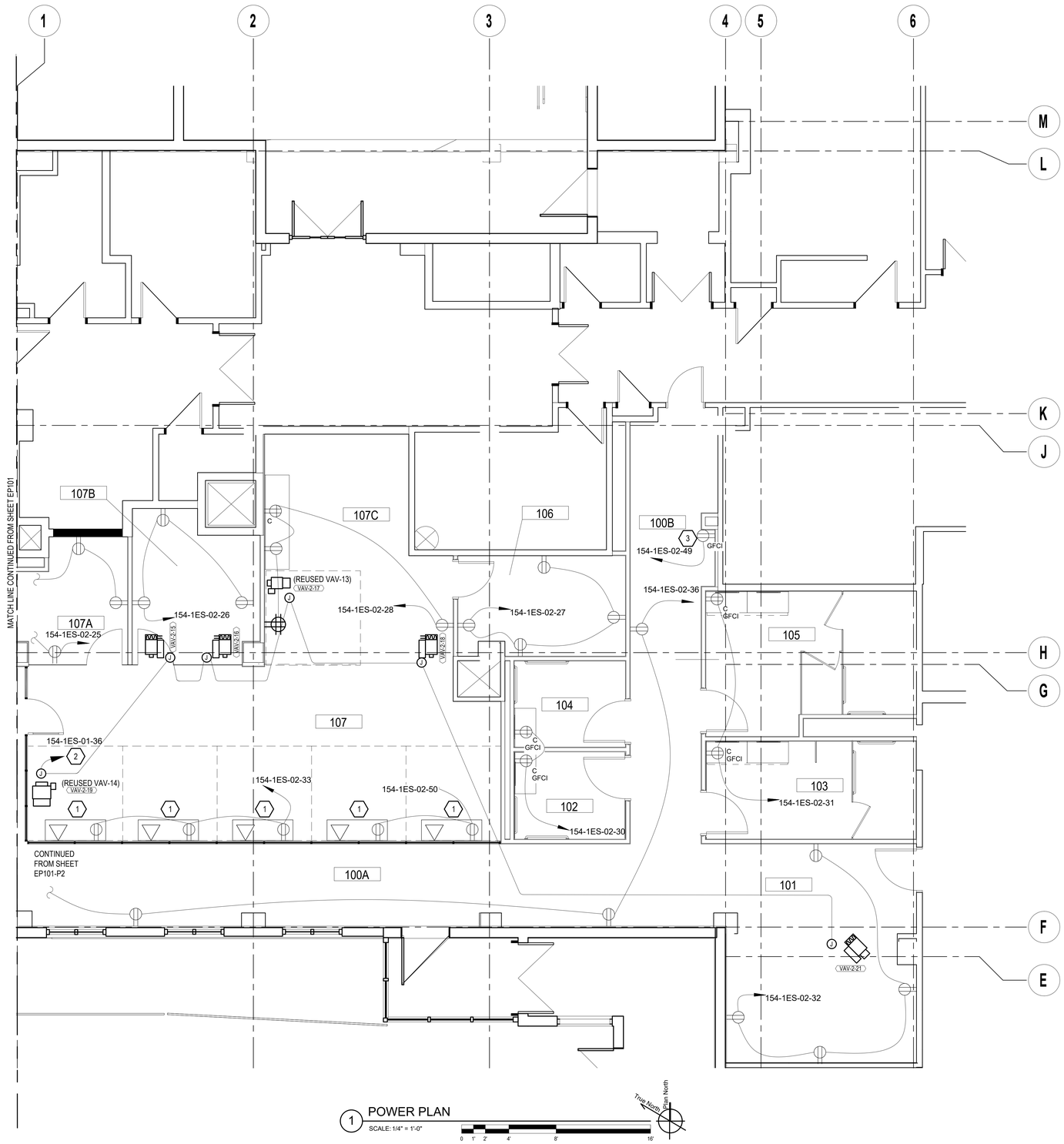
Issued: Date:
File Path:
VA FORM 08 - 6231

ELECTRICAL GENERAL NOTES:

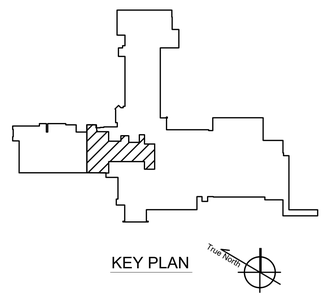
A. FOR GENERAL NOTES AND SYMBOLS SEE SHEET E-001 & E-002.

KEY NOTES:

1. PROVIDE CONCRETE FLOOR BOX WITH A SINGLE DUPLEX 20A, 120V RECEPTACLE AND A DUPLEX DATA OUTLET SIMILAR TO LEGRAND RPB2-OG. VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE A 50VA, 120V/24V CONTROL TRANSFORMER TO VAV'S AND A 20A, 120V CIRCUIT. REFER TO SHEET EP601-P2 FOR MORE INFORMATION.
3. PROVIDE DEDICATED GFCI DUPLEX RECEPTACLE FOR DRINKING FOUNTAIN.



1 POWER PLAN
SCALE: 1/4" = 1'-0"



Issued:	Date:

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U.S. Department of Veterans Affairs

Drawing Title: POWER PLAN - FIRST FLOOR EAST	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION	Project Number: 436-114
Approved: Project Director		Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636	Building Number: 154
		Issue Date: 08/05/2020 / Checked: TL / Drawn: BWW	Drawing Number: EP102-P2

File Path

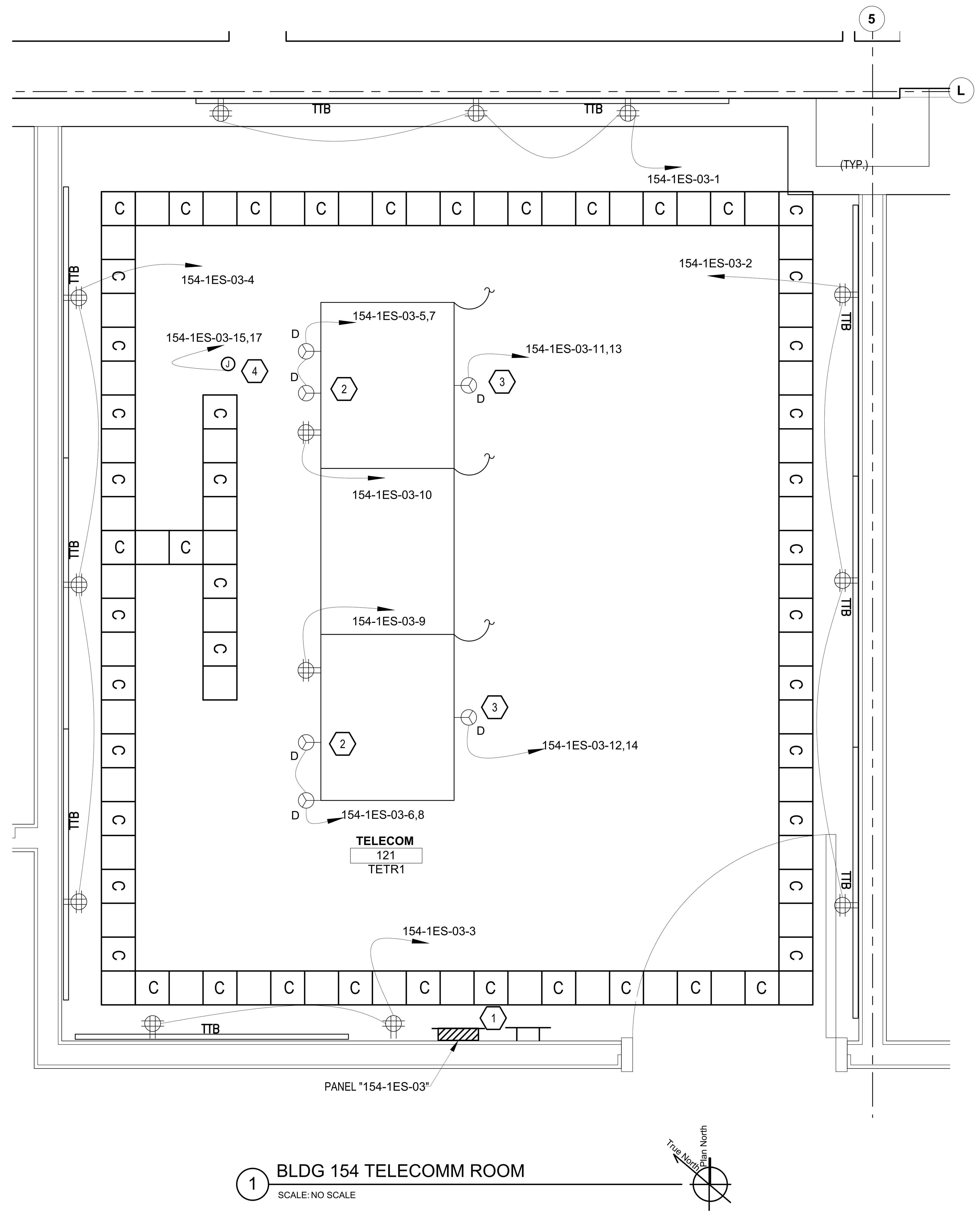
VA FORM 08 - 6231

ELECTRICAL GENERAL NOTES:

A. FOR SYMBOLS AND GENERAL NOTES SEE SHEET E-001 AND E-002.

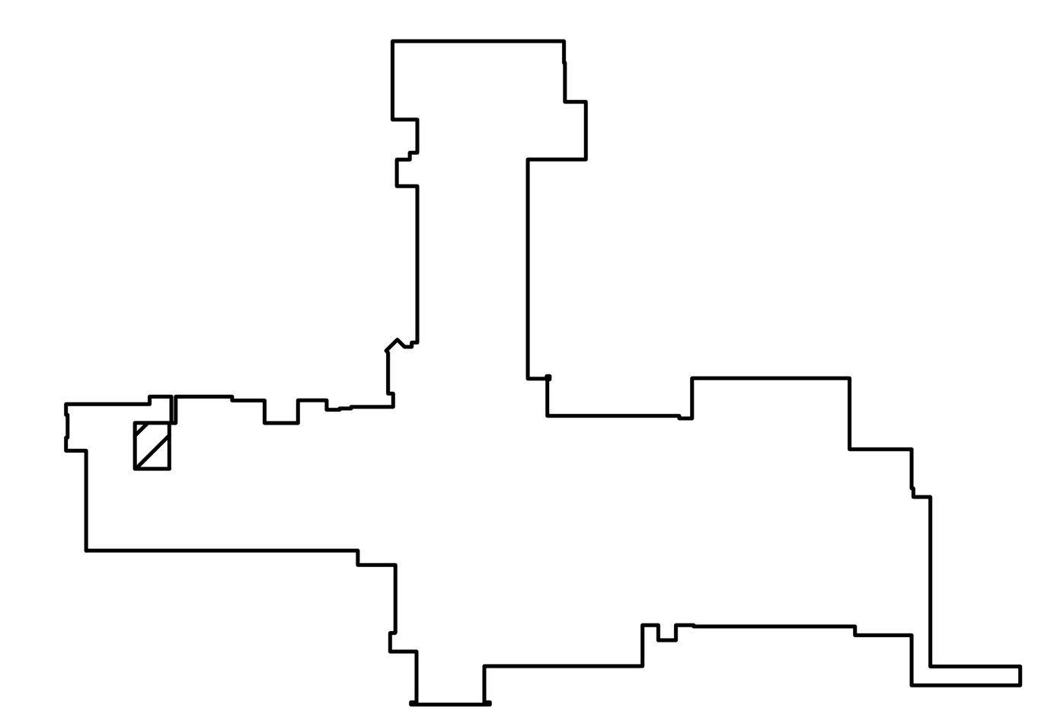
KEY NOTES:

1. PROVIDE PANEL "154-1ES-03" AS SCHEDULED TO BE DEDICATED FOR "" ROOM POWER.
2. PROVIDE (2) NEMA L5-30R AND (1) DOUBLE-DUPLEX RECEPTACLE ABOVE RACK. CIRCUIT AS INDICATED.
3. PROVIDE NEMA L5-30R RECEPTACLE ON RACK FOR UPS SIMILAR TO APC SMART-UPS 500VA RACKMOUNT/TOWER UPS. UPS SHALL BE PROVIDED WITH DRY CONTACTS AND ONE "FORM C" CONTACT FOR LOCAL COMPUTER SIGNALING AND SHALL COME WITH COMPUTER SYSTEM SHUTDOWN SOFTWARE AND HARDWARE CONNECTIVITY, AS REQUIRED. UPS SHALL BE CAPABLE OF SUPPORTING 100% OF LOAD CONSISTING OF (2) CISCO 3850 SERVERS FOR A PERIOD OF ONE HOUR MINIMUM.
4. PROVIDE CONNECTION FOR WALL-MOUNT COOLING UNIT. REFER TO MECHANICAL DRAWINGS FOR MORE INFORMATION.



1 BLDG 154 TELECOMM ROOM

SCALE: NO SCALE



KEY PLAN

Issued:	Date:

CONSULTANTS: HOEFER WYSOCKI; LAND3; Protection Engineering Consultants; JIRSA HEDRICK Structural Engineers

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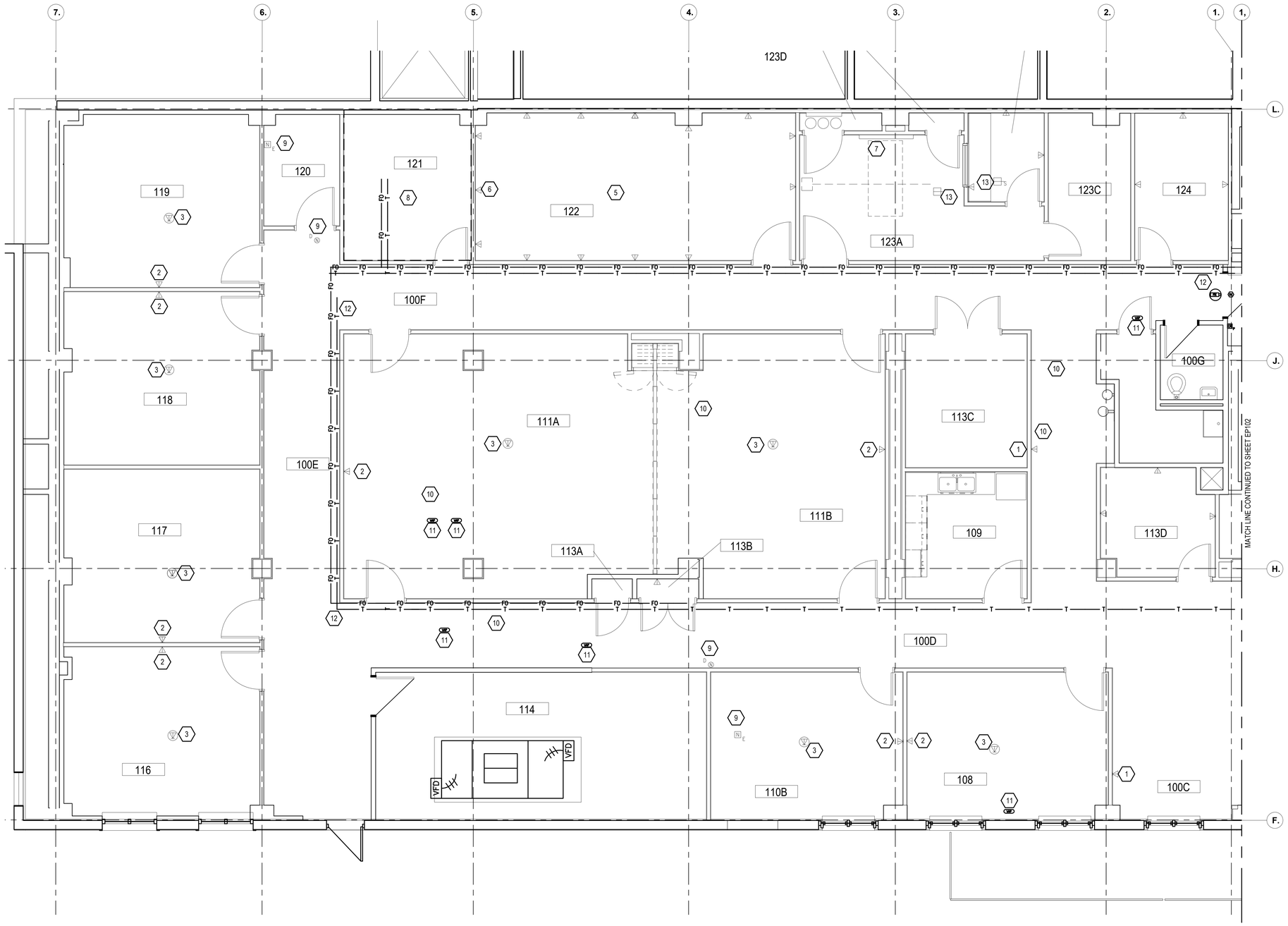
STAMP: 8/5/2020

U.S. Department of Veterans Affairs

Drawing Title	TELECOM ROOM POWER PLAN
Approved: Project Director	
Phase	100% CONSTRUCTION DOCUMENTS
Project Title	OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION
Location	3687 VETERANS DRIVE , FORT HARRISON, MT 59636
Issue Date	08/05/2020
Checked	TL
Drawn	GH
Project Number	436-114
Building Number	154
Drawing Number	EP103-P2

VA FORM 08 - 6231



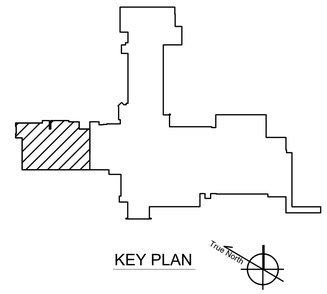
1 TELCO / INSTURMENTATION

ELECTRICAL GENERAL NOTES:

A. FOR GENERAL NOTES AND SYMBOLS SEE SHEETS E-001 & E-002.

KEY NOTES:

1. PROVIDE DUPLEX DATA RECEPTACLE AND EMPTY SINGLE GANG BOX FOR TV LOCATION MOUNTED AT 60" ABOVE FINISHED FLOOR. PROVIDE 3/4" CONDUIT WITH PULL STRING TO ABOVE ACCESSIBLE CEILING FOR LOW VOLTAGE CABLING BY OTHERS. COORDINATE EXACT MOUNTING HEIGHT WITH CASE WORK DETAIL.
2. PROVIDE DUPLEX DATA BEHIND DROP DOWN PROJECTION SCREEN.
3. PROVIDING CEILING MOUNTED DUPLEX DATA OUTLET FOR PROJECTOR.
4. NOT USED
5. COORDINATE WITH VHA COR ON QUANTITY, TYPE, AND LOCATION OF DATA RECEPTACLES IN THIS ROOM PRIOR TO ROUGH-IN.
6. PROVIDE DUPLEX DATA RECEPTACLE AND EMPTY SINGLE GANG BOX FOR SMART BOARD LOCATION MOUNTED AT 60" ABOVE FINISHED FLOOR. PROVIDE 3/4" CONDUIT WITH PULL STRING TO ABOVE ACCESSIBLE CEILING FOR LOW VOLTAGE CABLING BY OTHERS. COORDINATE EXACT MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN.
7. PROVIDE JBOX FOR HEADWALL UNIT. COORDINATE WITH OTHERS TO INSTALL LOW VOLTAGE, MEDICAL GAS, VACUUM, OXYGEN, ETC. WITHOUT CONFLICT. JBOX LOCATED IN CHASE BEHIND HEADWALL IS FOR ALL LANDING ALL SIGNAL WIRES TO BE BROUGHT INTO HEADWALL
8. SEE SHEET EP-103-P2 FOR MORE DETAIL ON TELCOM ROOM POWER. SEE SHEET ET-103-P2 FOR MORE DETAIL ON TELCOM ROOM DATA.
9. LINK NURSE CALL AND LIGHT POWER OVER ETHERNET BACK TO NURSE CALL ROUTER IN TELECOM ROOM TO FEED SIGNAL AND POWER INTO EXISTING NURSE CALL SYSTEM HEAD IN ROOM B13 IN BASEMENT USING CAT6 CABLE.
10. EXISTING SPEAKERS FOR PUBLIC ADDRESS SYSTEM TO BE REINSTALLED IN NEW CEILING.
11. FIELD COORDINATE ALL WIFI LOCATIONS WITH THE IT DEPARTMENT PRIOR TO START. ACCESS POINT HEAT MAP PROVIDED BY OIT.
12. RE-USE EXISTING CABLE J-HOOKS AND EXTEND INTO NEW IT ROOM 121 PER VA SPECIFICATION 270533 AND 270526 HEAD IN LOCATION ARE AS FOLLOWS: ROOM 9 IN BASEMENT FOR IT, ROOM B1A IN BASEMENT FOR FIBER, ROOM B13 IN BASEMENT FOR PUBLIC ADDRESS, INTERCOM , VAV CONTROL AND FOR WIRELESS ACCESS POINT.
13. PROVIDE VOICE ACTIVATED INTERCOM FROM CONTROL TO LAB.



True North
Plan North

Issued:	Date:

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8/5/2020

U.S. Department of Veterans Affairs

Drawing Title: TELCO / INSTURMENTATION PLAN - FIRST FLOOR WEST	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION	Project Number: 436-114
Approved: Project Director			Building Number: 154
		Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636	Drawing Number: ET101-P2
		Issue Date: 08/05/2020 / Checked: TL / Drawn: GG	

File Path

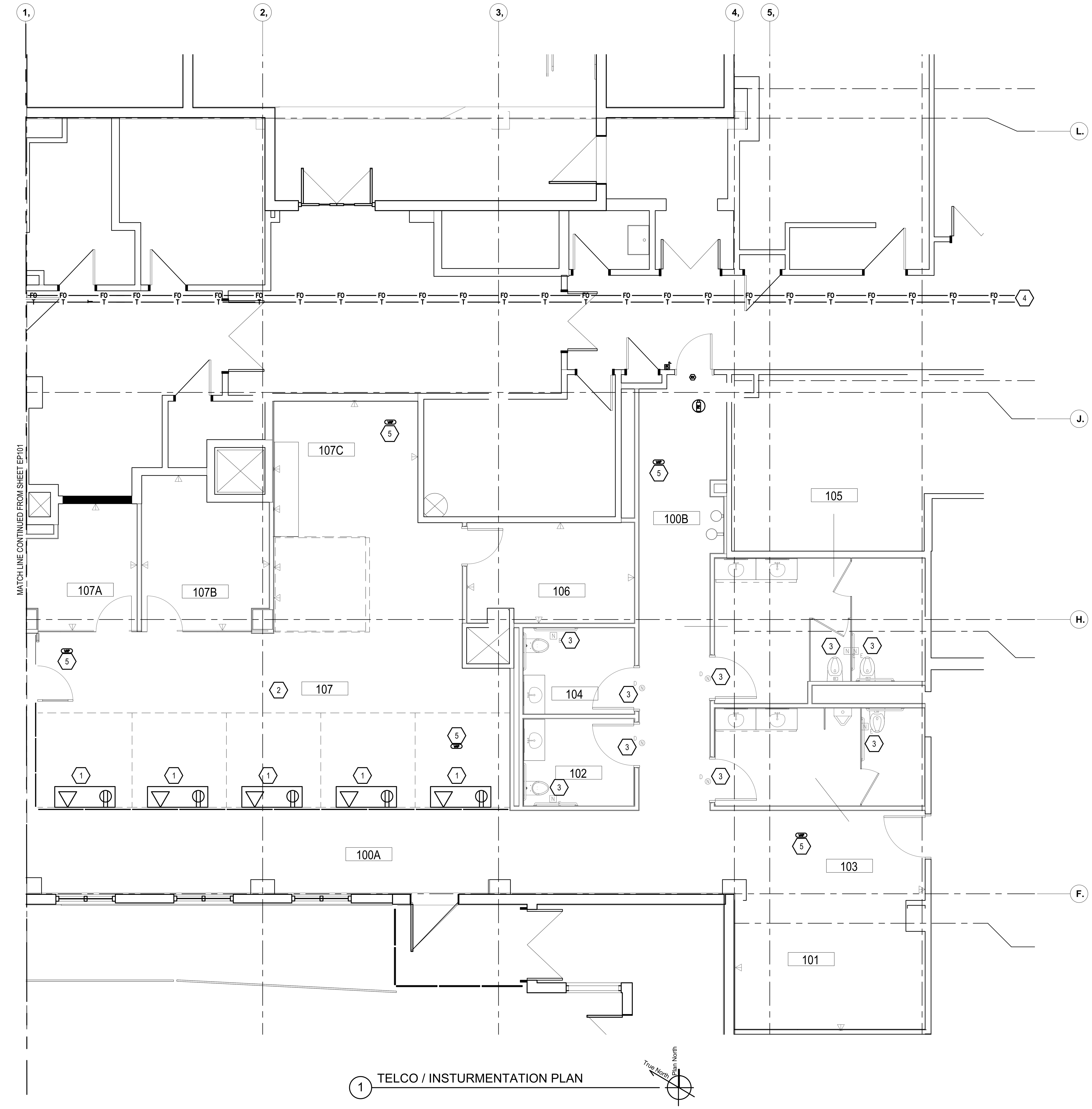
VA FORM 08 - 6231

ELECTRICAL GENERAL NOTES:

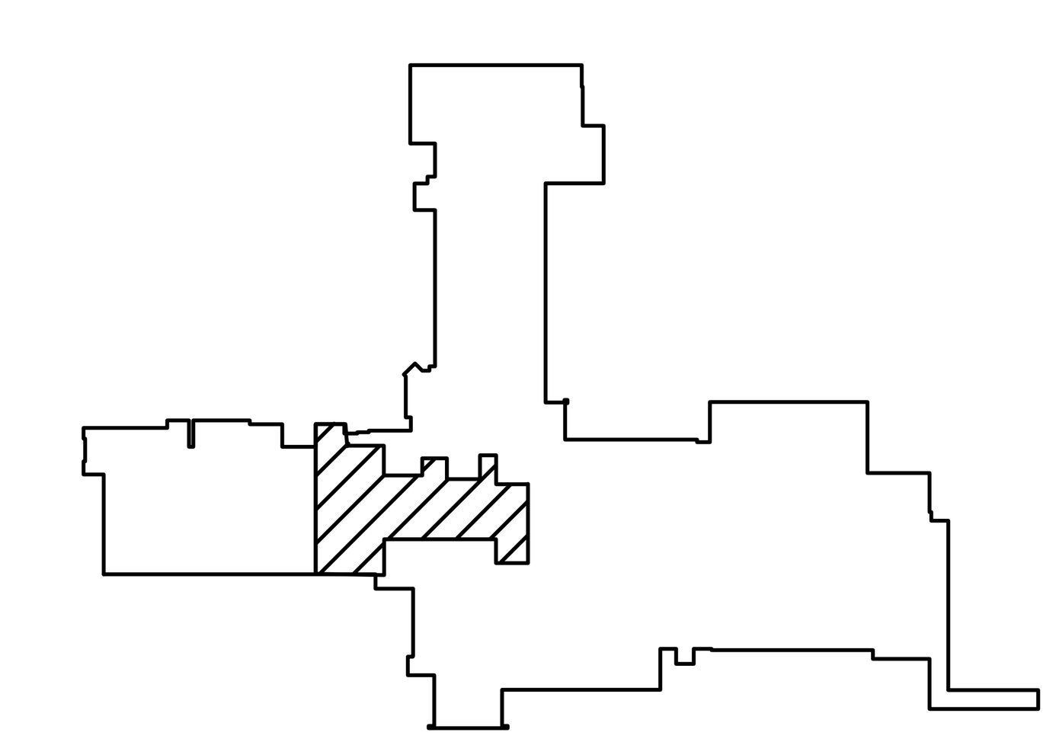
A. FOR GENERAL NOTES AND SYMBOLS SEE SHEET E-001 & E-002.

KEY NOTES:

1. PROVIDE CONCRETE FLOOR BOX WITH A SINGLE DUPLEX 20A, 120V RECEPTACLE AND A DUPLEX DATA OUTLET SIMILAR TO LEGRAND RPB2-OG. VERIFY EXACT LOCATION PRIOR TO ROUGH-IN
2. COORDINATE WITH VHA COR ON QUANTITY, TYPE, AND LOCATION OF DATA RECEPTACLES IN THIS ROOM PRIOR TO ROUGH-IN.
3. LINK NURSE CALL AND LIGHT POWER OVER ETHERNET BACK TO NURSE CALL ROUTER IN TELECOM ROOM 121 TO FEED SIGNAL AND POWER INTO EXISTING NURSE CALL SYSTEM HEAD IN ROOM B13 IN BASEMENT USING CAT6 CABLE.
4. RE-USE EXISTING CABLE J-HOOKS AND EXTEND INTO NEW IT ROOM 121 PER VA SPECIFICATION 270533 AND 270526 HEAD IN LOCATION ARE AS FOLLOWS: ROOM 9 IN BASEMENT FOR IT, ROOM B1A IN BASEMENT FOR FIBER, ROOM B13 IN BASEMENT FOR PUBLIC ADDRESS, INTERCOM , VAV CONTROL AND FOR WAP.
5. FIELD COORDINATE ALL WIFI LOCATIONS WITH THE VHA COR PRIOR TO START. ACCESS POINT HEATMAP PROVIDED BY OIT.



1 TELCO / INSTURMENTATION PLAN



KEY PLAN

CONSULTANTS: HOEFER WYSOCKI; LAND3; Protection Engineering Consultants; JIRSA HEDRICK Structural Engineers

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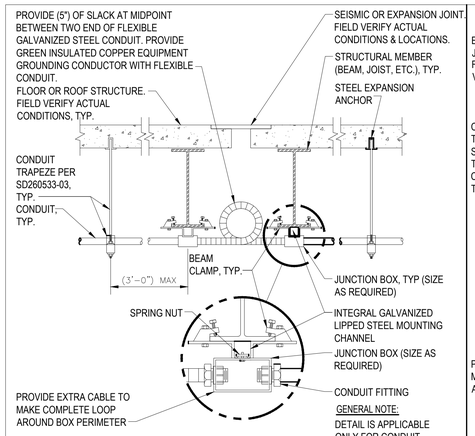
U.S. Department of Veterans Affairs

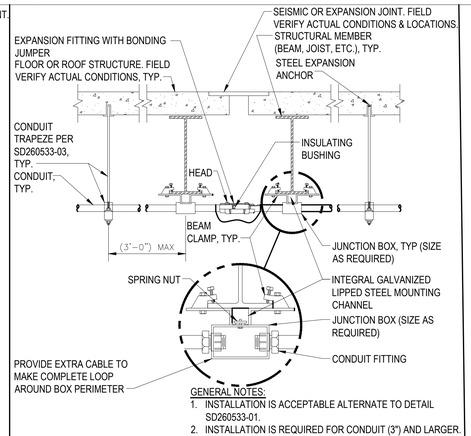
Drawing Title	Phase	Project Title	Project Number
TELCO / INSTURMENTATION PLAN - FIRST FLOOR EAST	100% CONSTRUCTION DOCUMENTS	OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION	436-114
Approved: Project Director		Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636	Building Number: 154
		Issue Date: 07/31/2020; Checked: TL; Drawn: GG	Drawing Number: ET102-P2

Issued: Date:

VA FORM 08 - 6231



1 CONDUIT EXPANSION JOINT CROSSING DETAIL - FLEXIBLE CONDUIT
SCALE: NO SCALE



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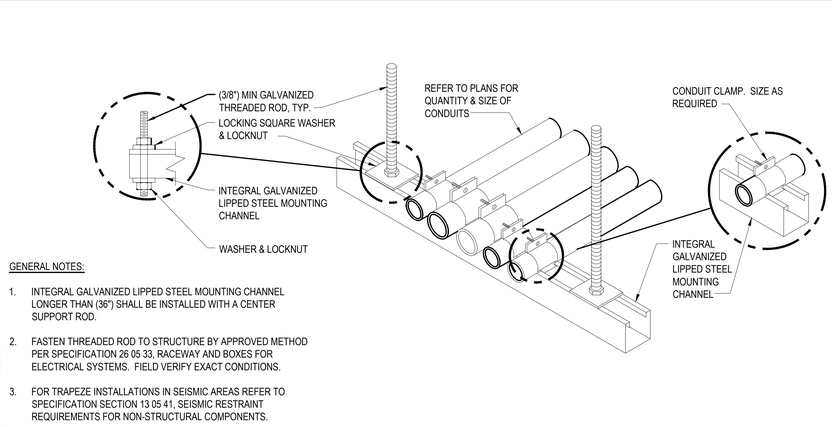
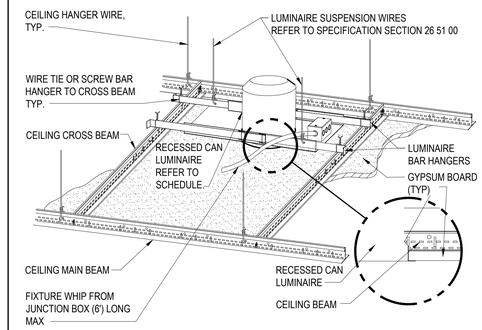
SCALE: NO SCALE



3 CONDUIT TRAPEZE MOUNTING DETAIL
SCALE: NO SCALE



4 DOWNLIGHT MOUNTING-GYPBOARD CEILING
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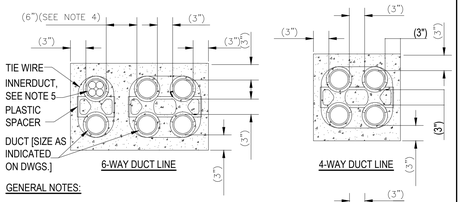
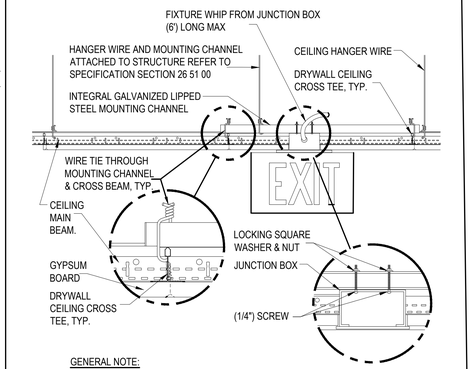


5 DUCT BANK DETAILS
SCALE: NO SCALE



6 EXIT SIGN MOUNTING - GYPBOARD CEILING
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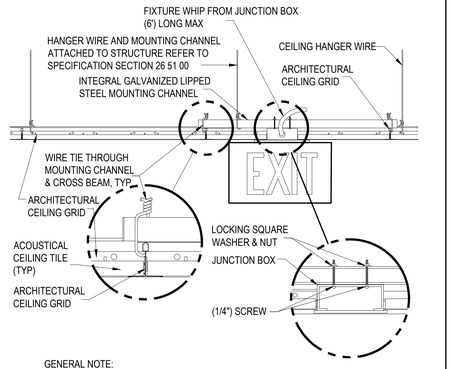

7 LAY-IN CEILING - ACOUSTICAL CEILING
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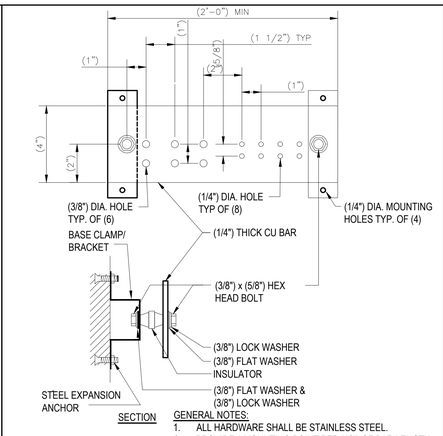
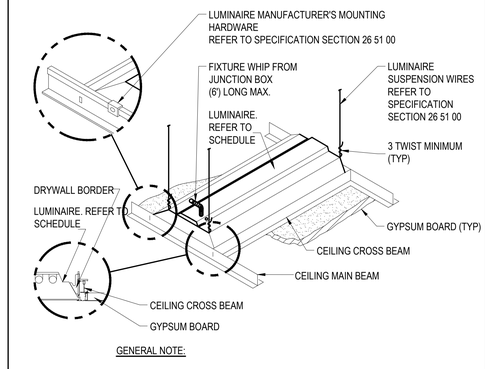
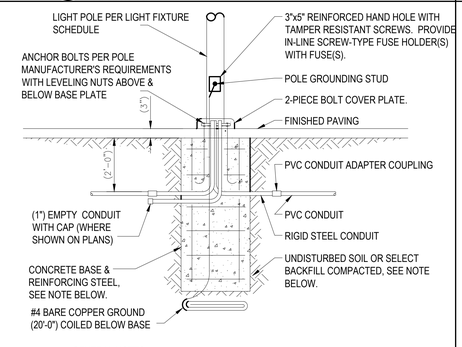


8 GROUNDING BAR DETAIL
SCALE: NO SCALE



9 LUMINAIRE MOUNTING - GYPBOARD CEILING
SCALE: NO SCALE



10 POLE BASE DETAIL - PAVED AREAS
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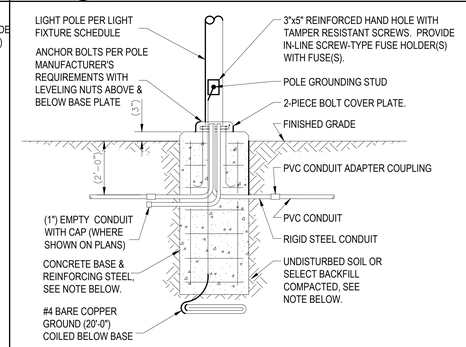
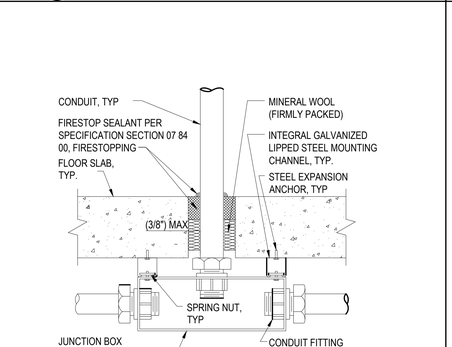


11 POLE BASE DETAIL - TURF AREAS
SCALE: NO SCALE



12 FLOOR SLAB PENETRATION DETAIL
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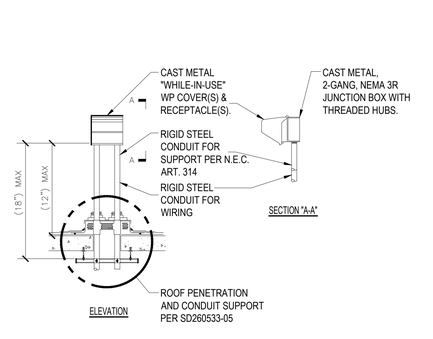

13 RECEPTACLE ROOF MOUNTING DETAIL
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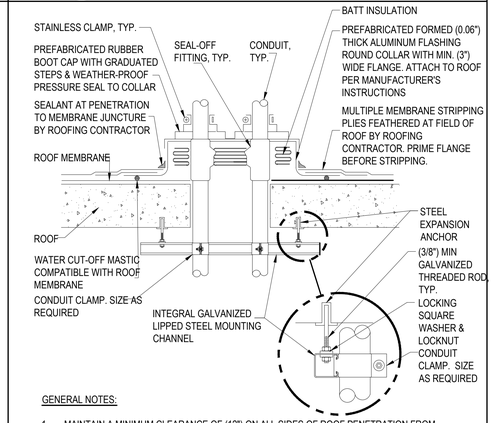

14 CONDUIT ROOF PENETRATION DETAIL
SCALE: NO SCALE

Issued:	Date:

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Drawing Title: ELECTRICAL DETAIL SHEET	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION	Project Number: 436-114
Approved: Project Director			Building Number: 173 & 154
		Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636	Drawing Number: E-501
		Issue Date: 08/05/2020 / Checked: TL / Drawn: BWW	

File Path:

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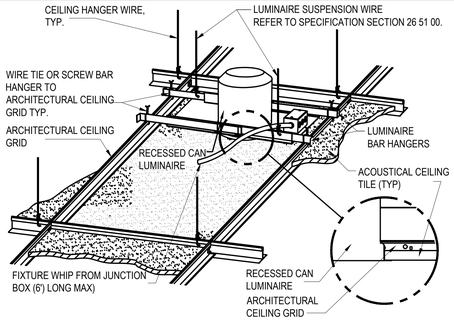
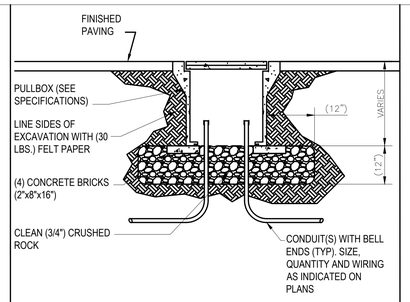


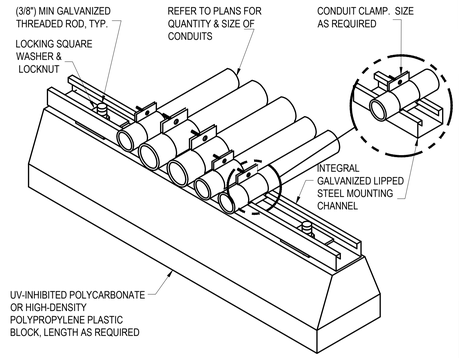
GENERAL NOTE:

1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S MOUNTING INSTRUCTIONS AND USING RECOMMENDED MOUNTING HARDWARE

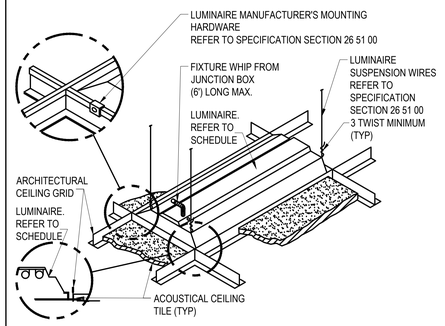
1 DOWNLIGHT MOUNTING- LAY-IN CEILING
SCALE: NO SCALE



2 UNDERGROUND CONCRETE PULLBOX - PAVED AREAS
SCALE: NO SCALE



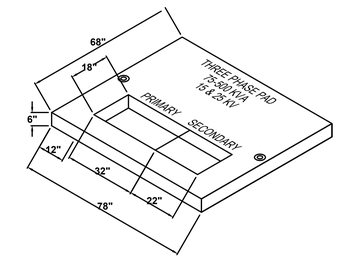
3 ROOF CONDUIT SUPPORT DETAIL
SCALE: NO SCALE



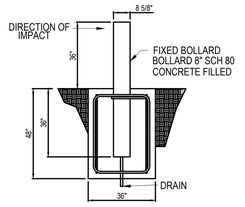
GENERAL NOTE:

1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S MOUNTING INSTRUCTIONS AND USING THE RECOMMENDED MOUNTING HARDWARE.

4 LUMINAIRE MOUNTING - LAY-IN CEILING
SCALE: NO SCALE



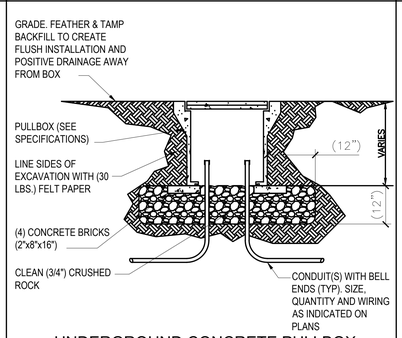
5 THREE PHASE TRANSFORMER PAD
SCALE: NO SCALE



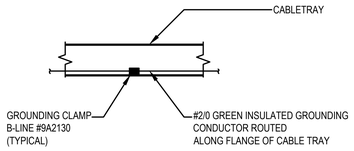
SECTION VIEW

NOTES:
1. CONTACT MANUFACTURER DIRECTLY FOR REBAR AND FOOTING LOCATIONS.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. DO NOT SCALE DRAWING.
4. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
5. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.

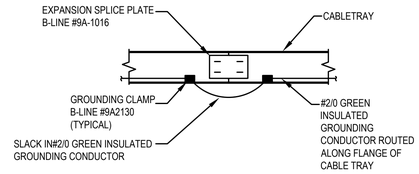
6 K4 HIGH-SECURITY FIXED BOLLARD
SCALE: NO SCALE



7 UNDERGROUND CONCRETE PULLBOX - TURF AREAS
SCALE: NO SCALE



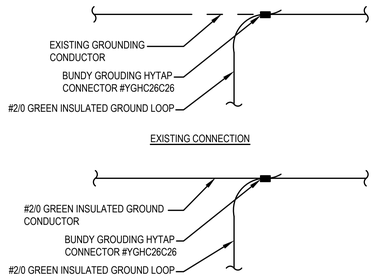
8 CABLE TRAY GROUNDING
SCALE: NO SCALE



GENERAL NOTE:

1. INSTALLED WHERE REQUIRED DURING CONSTRUCTION.

9 CABLE TRAY EXPANSION JOINT
SCALE: NO SCALE



GROUNDING JUNCTION

10 TYPICAL GROUNDING CONNECTION
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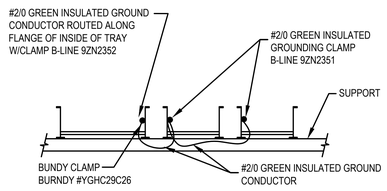

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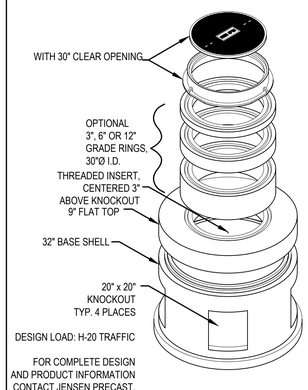
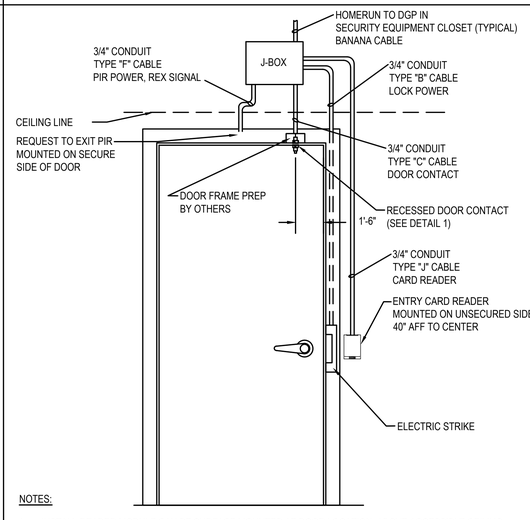
SCALE: NO SCALE



12 4832 OR SIM. FIBER SPLICE PIT ASSEMBLY
SCALE: NO SCALE

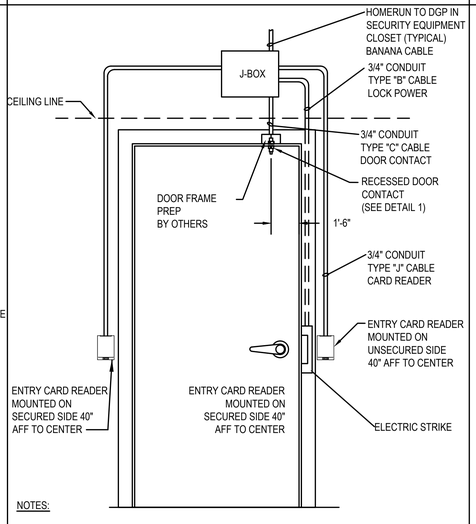


NOTES:

1. INSTALL READER MODULE CAN BE SURFACE MOUNTED AT DOOR LOCATION, ABOVE ACCESSIBLE CEILING ON SECURE SIDE OF DOOR, AS INDICATED ON THE PLANS.
2. STUB CONDUIT INTO HEAD OF DOOR FRAME FOR DOOR POSITION SWITCH.
3. STUB CONDUIT DOWN DOOR FRAME AND CONNECT TO ELECTRIC STRIKE.
4. STUB CONDUIT INTO CENTERLINE OF DOOR FRAME FOR REQUEST-TO-EXIT MOTION SENSOR.
5. PROVIDE 4" x 4" x 2 1/8" DEEP BOX WITH SINGLE GANG DEVICE RING FLUSH MOUNTED FOR CARD READER.

TYPICAL SINGLE DOOR DETAIL WITH DOOR POSITION SWITCH, REQUEST TO EXIT CARD READER & ELECTRIC STRIKE

13 NTS

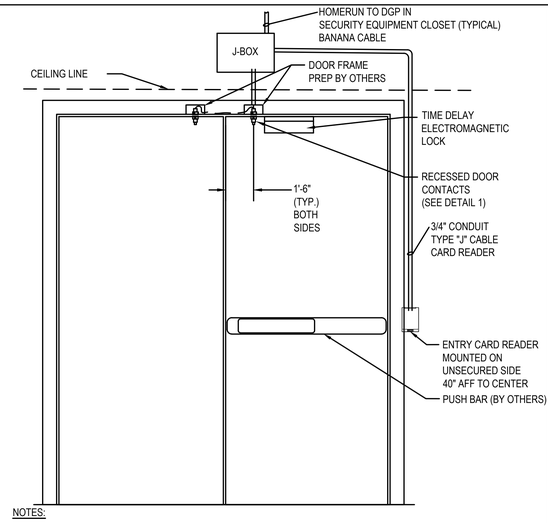


NOTES:

1. INSTALL READER MODULE CAN BE SURFACE MOUNTED AT DOOR LOCATION, ABOVE ACCESSIBLE CEILING ON SECURE SIDE OF DOOR, AS INDICATED ON THE PLANS.
2. STUB CONDUIT INTO HEAD OF DOOR FRAME FOR DOOR POSITION SWITCH.
3. STUB CONDUIT DOWN DOOR FRAME AND CONNECT TO ELECTRIC STRIKE.
4. STUB CONDUIT INTO CENTERLINE OF DOOR FRAME FOR REQUEST-TO-EXIT MOTION SENSOR.
5. PROVIDE 4" x 4" x 2 1/8" DEEP BOX WITH SINGLE GANG DEVICE RING FLUSH MOUNTED FOR CARD READERS.

TYPICAL SINGLE DOOR DETAIL WITH DOOR POSITION SWITCH, TWO CARD READERS & ELECTRIC STRIKE

14 NTS



NOTES:

1. INSTALL READER MODULE CAN BE SURFACE MOUNTED AT DOOR LOCATION, ABOVE ACCESSIBLE CEILING ON SECURE SIDE OF DOOR, AS INDICATED ON THE PLANS.
2. STUB CONDUIT INTO HEAD OF DOOR FRAME FOR DOOR POSITION SWITCHES. WIRE DOOR POSITION SWITCHES IN SERIES.
3. STUB CONDUIT INTO CENTERLINE OF DOOR FRAME FOR REQUEST-TO-EXIT MOTION SENSOR.
4. STUB CONDUIT DOWN DOOR FRAME AND CONNECT TO FRAME BACKBOX FOR POWER TRANSFER.
5. PROVIDE 4" x 4" x 2 1/8" DEEP BOX WITH SINGLE GANG DEVICE RING FLUSH MOUNTED FOR CARD READER.

TYPICAL DOUBLE DOOR DETAIL WITH TIME-DELAY MAGNETIC LOCK, TWO CARD READERS & DOOR POSITION SWITCH

15 NTS

Issued: Date:

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LAND3
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JIRSA HEDRICK Structural Engineers

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COLORADO LICENSED THOMAS L. TL KEY PROFESSIONAL ENGINEER
8/5/2020

U.S. Department of Veterans Affairs

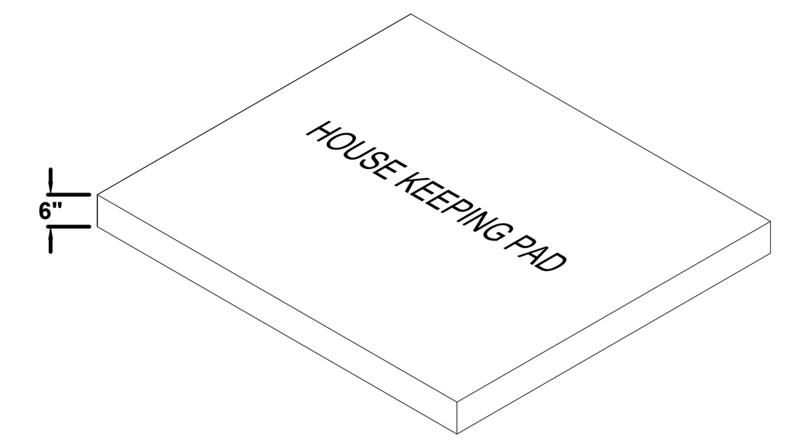
Drawing Title: ELECTRICAL DETAIL SHEET
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION
Project Number: 436-114
Building Number: 173 & 154
Approved: Project Director
Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636
Issue Date: 08/05/2020
Checked: TL
Drawn: BWW
Drawing Number: E-502

File Path

VA FORM 08 - 6231

ELECTRICAL GENERAL NOTES:

1. SEE SHEET E-001 FOR SEISMIC RESTRAINT NOTES AND FACILITY-SPECIFIC SEISMIC DESIGN BASIS PARAMETERS.
2. FIGURES ARE FROM FEMA E-74 REDUCING THE RISKS OF NONSTRUCTURAL EARTHQUAKE DAMAGE - A PRACTICAL GUIDE, DECEMBER 2012.



1 COMMON ELECTRICAL EQUIPMENT HOUSE KEEPING PAD

SCALE: NO SCALE

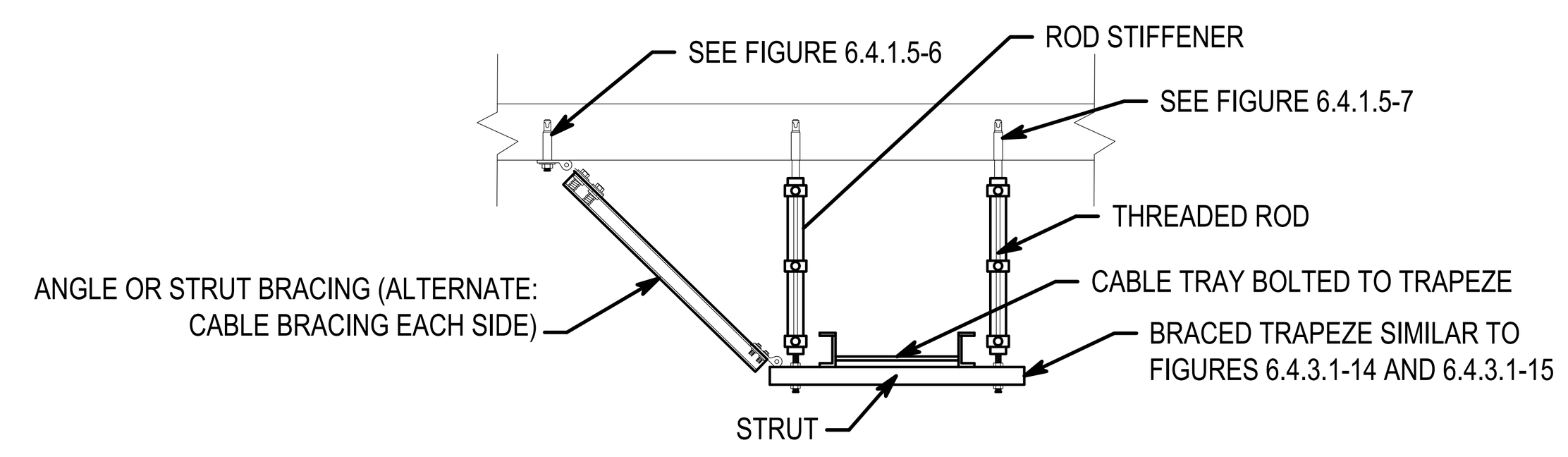


FIGURE 6.4.8.1-5

2 CABLE TRAY ON BRACED TRAPEZE

SCALE: NO SCALE

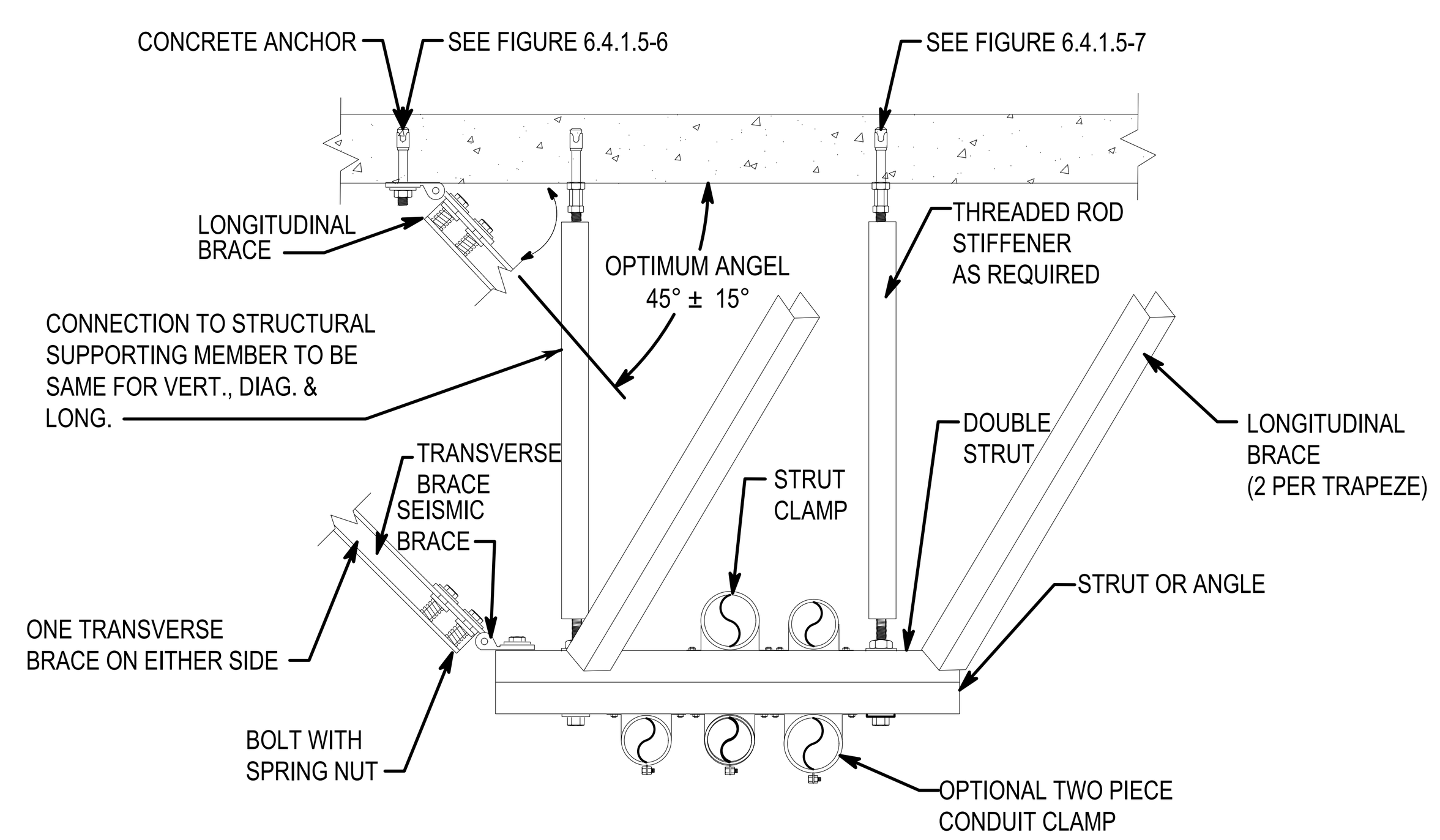


FIGURE 6.4.3.1-15

3 RIGID BRACING - TRAPEZE SUPPORTED CONDUIT

SCALE: NO SCALE

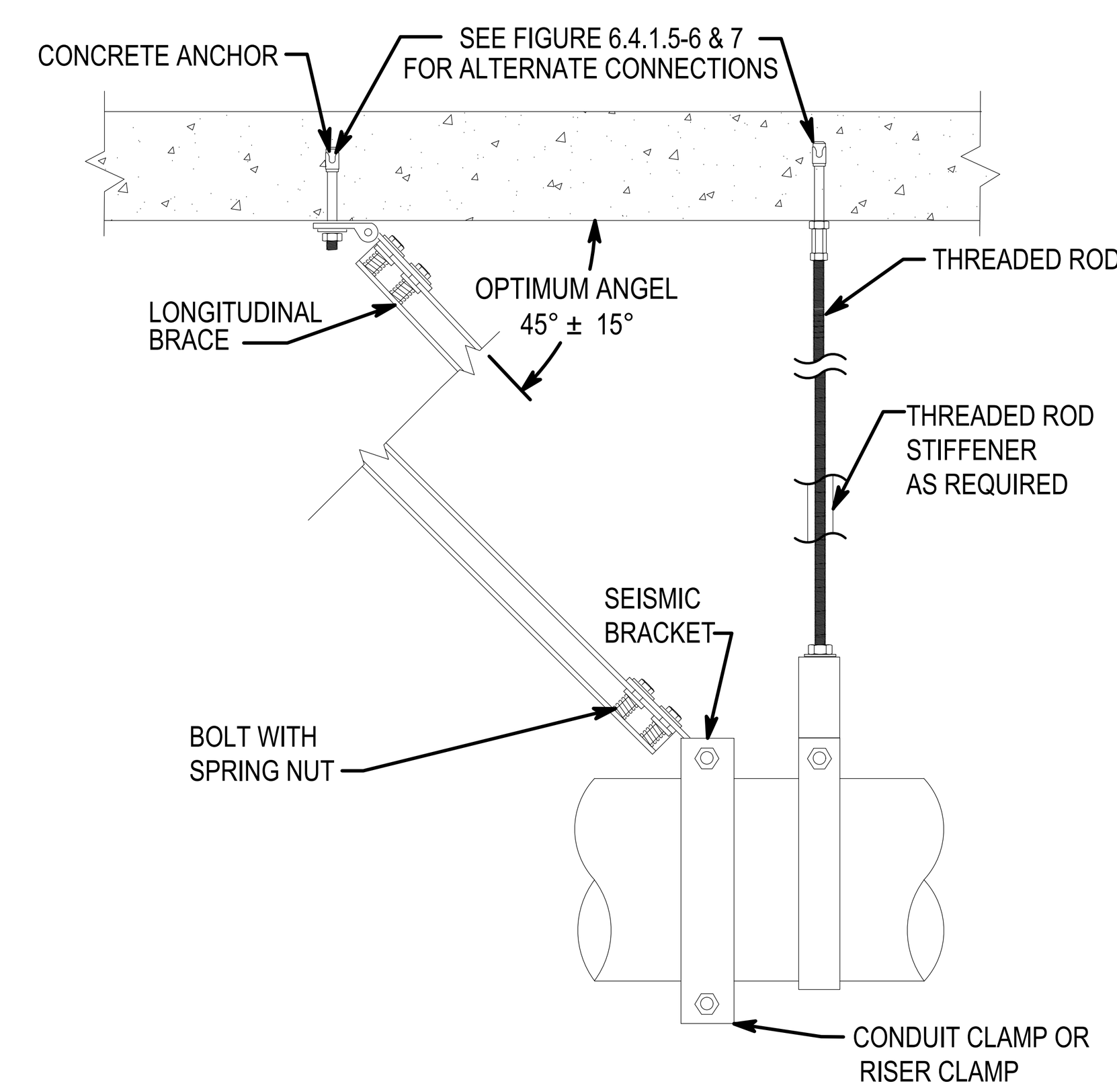


FIGURE 6.4.3.1-14

4 RIGID BRACING - SINGLE CONDUIT LONGITUDINAL

SCALE: NO SCALE

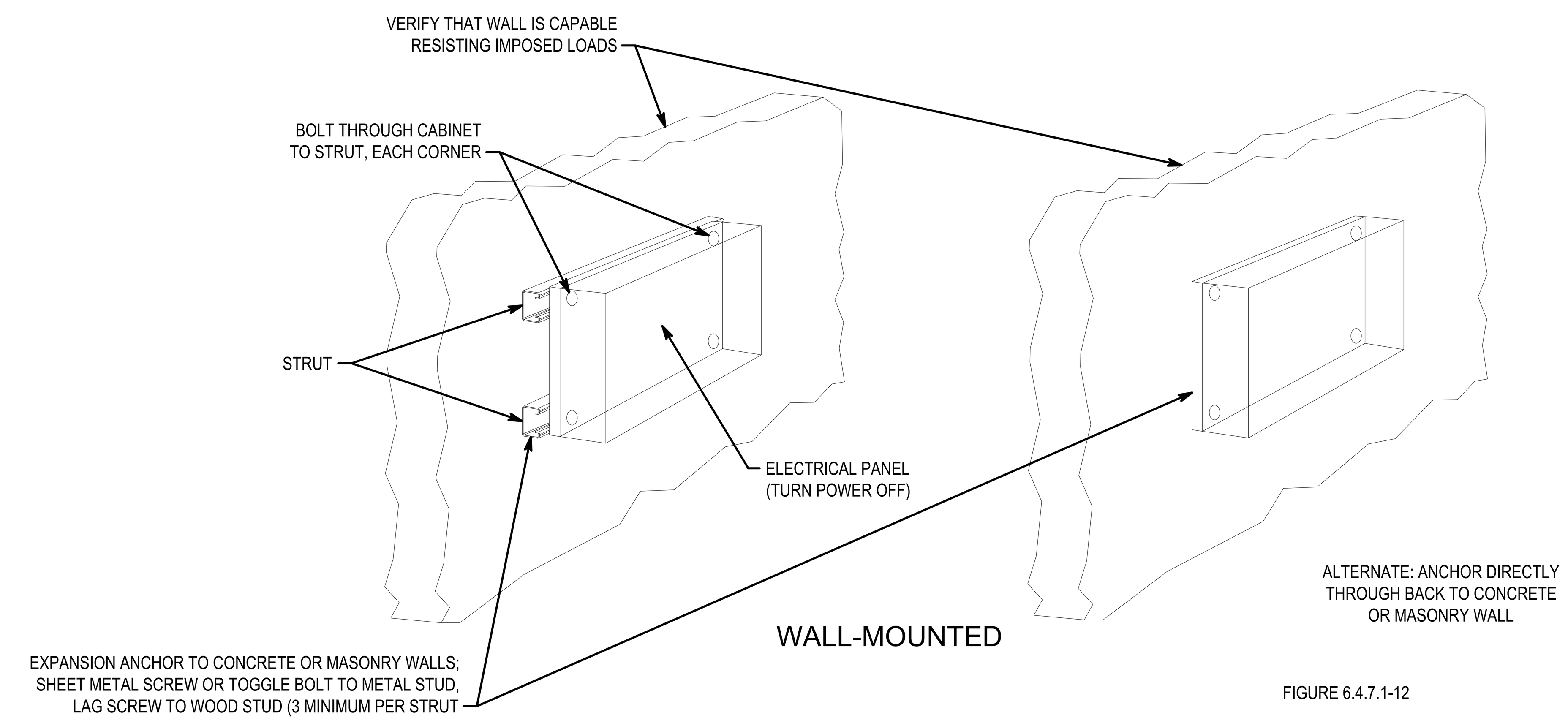


FIGURE 6.4.7.1-12

7 WALL-MOUNTED ELECTRICAL CONTROL PANELS, MOTOR CONTROLS CENTERS OR SWITCHGEAR (ER).

SCALE: NO SCALE

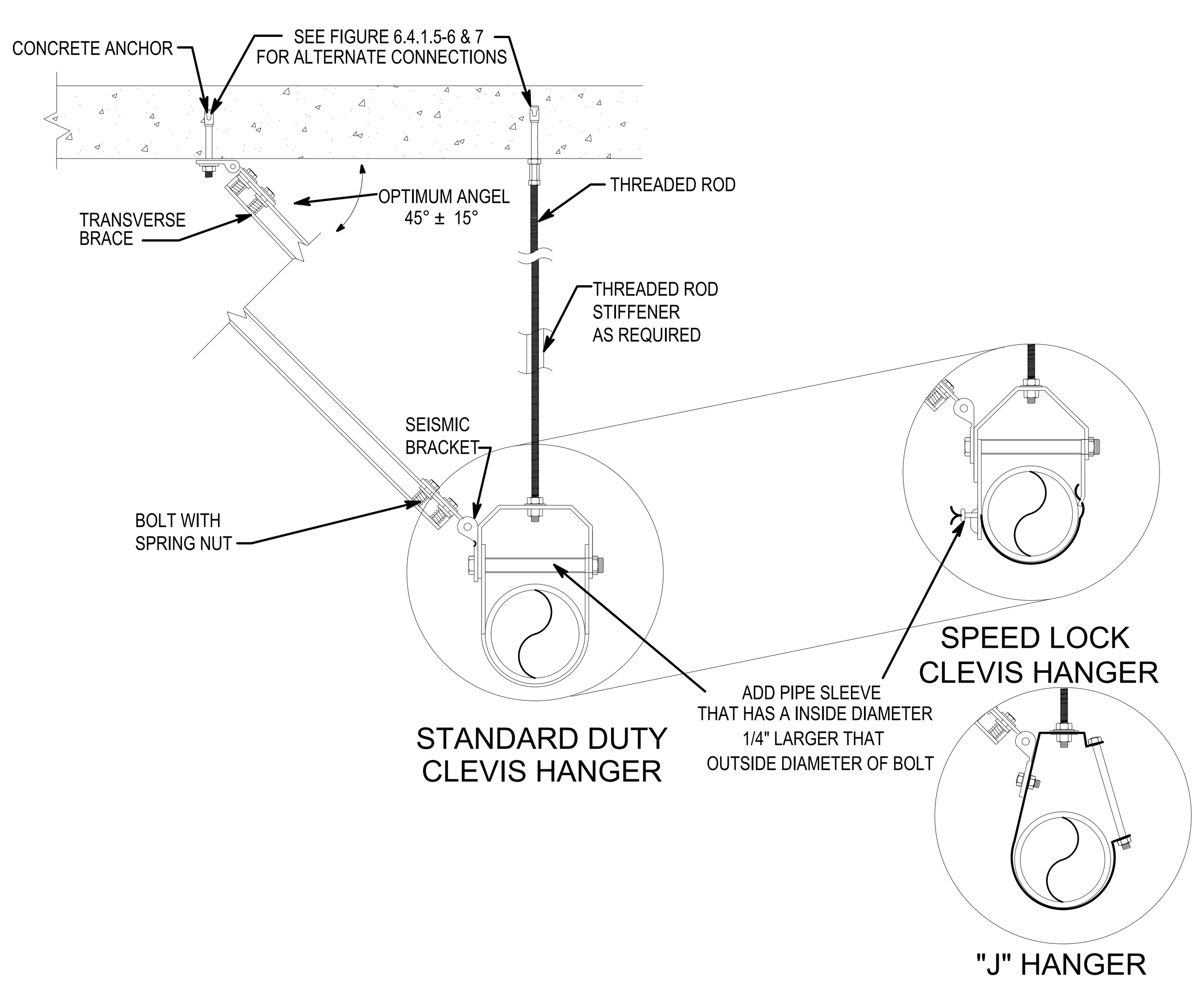
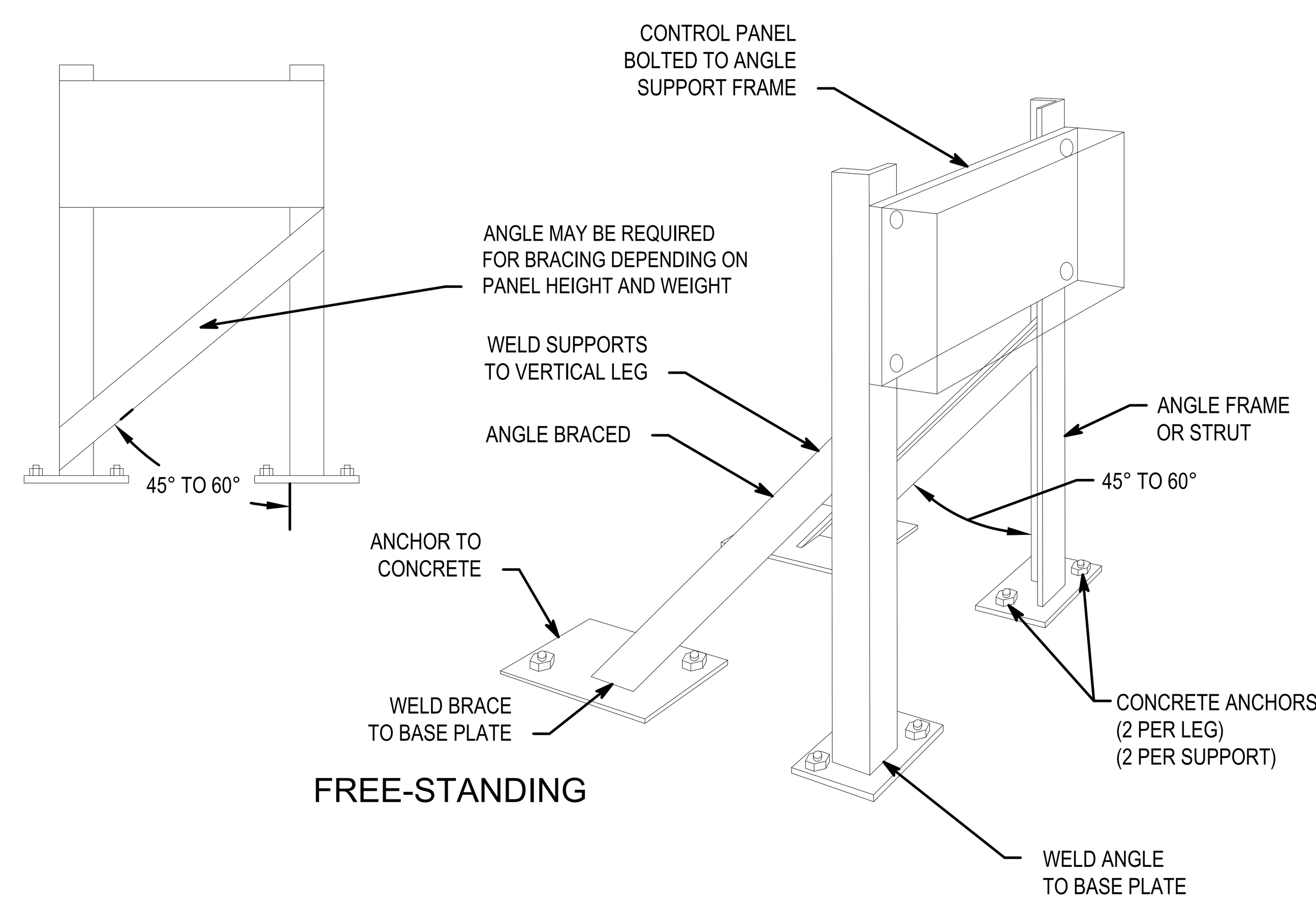


FIGURE 6.4.3.1-11

5 RIGID BRACING - SINGLE CONDUIT TRANSVERSE

SCALE: NO SCALE



6 FREE STANDING ELECTRICAL CONTROL PANELS, MOTOR CONTROLS CENTERS OR SWITCHGEAR (ER).

SCALE: NO SCALE

Issued:	Date:

CONSULTANTS: HOEFER WYSOCKI; LAND3; Protection Engineering Consultants; JIRSA HEDRICK Structural Engineers

ARCHITECT/ENGINEERS:

VALHALLA ENGINEERING GROUP, LLC
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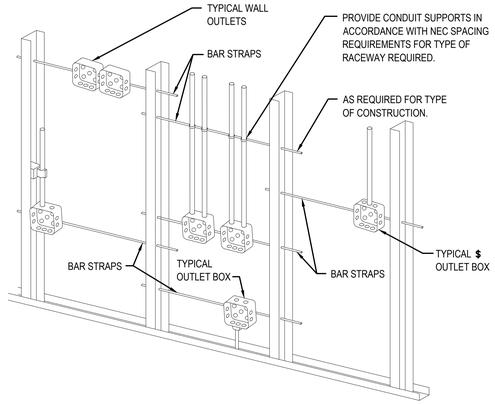
STAMP: 8/5/2020

U.S. Department of Veterans Affairs

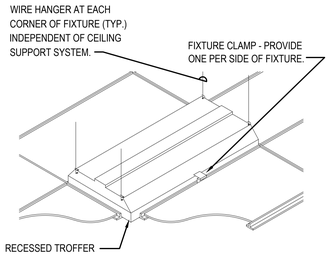
Drawing Title	Phase	Project Title	Project Number
ELECTRICAL SEISMIC DETAILS	100% CONSTRUCTION DOCUMENTS	OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION	436-114
			Building Number: 173 & 154
Approved: Project Director		Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636	Drawing Number
		Issue Date: 08/05/2020; Checked: TL; Drawn: BWW	E-503

VA FORM 08 - 6231



2 TYPICAL ROUGH-IN SUPPORT METHODS DETAIL

SCALE:NO SCALE

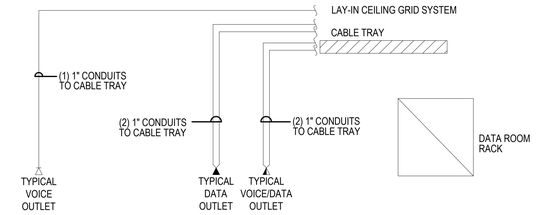


3 RECESSED FIXTURE MOUNTING DETAIL

SCALE:NO SCALE

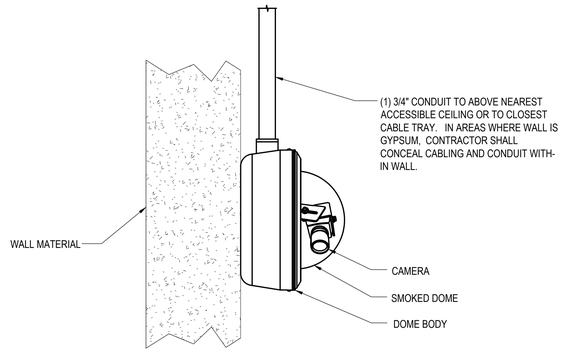
ELECTRICAL GENERAL NOTES:

1. SEE SHEET E-001 FOR SESIMIC RESTRAINT NOTES AND FACILITY-SPECIFIC SEISMIC DESIGN BASIS PARAMETERS.
2. FIGURES ARE FROM FEMA E-74 REDUCING THE RISKS OF NONSTRUCTURAL EARTHQUAKE DAMAGE - A PRACTICAL GUIDE, DECEMBER 2012.
3. COORDINATE EXACT LOCATION OF CAMERA ON SITE WITH WORK BY OTHER TRADES TO ENSURE DESIRED VIEWING AREA AND SERVICE ACCESS AFTER COMPLETION OF PROJECT AND TO MINIMIZE ANY POSSIBLE DAMAGE TO INSTALLED CAMERA OR ASSOCIATED CABLING.
4. CONDUIT SHALL STUB TO NEAREST ACCESSIBLE CEILING AND TERMINATE ORIENTED HORIZONTALLY AT THE HEIGHT OF THE ASSOCIATED CABLE TRAY OR J-HOOK ROUTE. CONDUIT RUN SHALL NOT CONTAIN MORE THAN 180 DEGREES OF BEND BETWEEN ACCESSIBLE JUNCTION BOXES OR BETWEEN JUNCTION BOX AND END OF CONDUIT. WHERE CONDUIT STUBS THROUGH A WALL IN TO A CORRIDOR AND TERMINATES AT AN ASSOCIATED J-HOOK ROUTE, THE CONDUIT SHOULD ONLY EXTEND 2-4 INCHES IN TO THE CORRIDOR. WHERE CONDUIT STUBS TO AN ASSOCIATED CABLE TRAY, CONDUIT SHOULD EXTEND TO CABLE TRAY. ALL CONDUITS MUST BE FITTED WITH A NYLON BUSHING ON EACH END OF THE CONDUIT.
5. INSTALLING CONTRACTOR SHALL FURNISH AND INSTALL FIRESTOP MATERIALS FOR CAMERA ROUGH-INS PER PROJECT REQUIREMENTS. REFER TO SPECIFICATIONS FOR FIRESTOP REQUIREMENTS.



4 DATA ROOM RACK DETAIL

SCALE:NO SCALE



INTERIOR FIXED CAMERA WALL MOUNTING DETAIL

5 SCALE: NO SCALE

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U.S. Department of Veterans Affairs

Drawing Title: ELECTRICAL SEISMIC DETAILS
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION
Project Number: 436-114
Building Number: 173 & 154
Approved: Project Director
Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636
Drawing Number: E-504
Issue Date: 08/05/2020
Checked: TL
Drawn: BWW

Issued: Date:

File Path

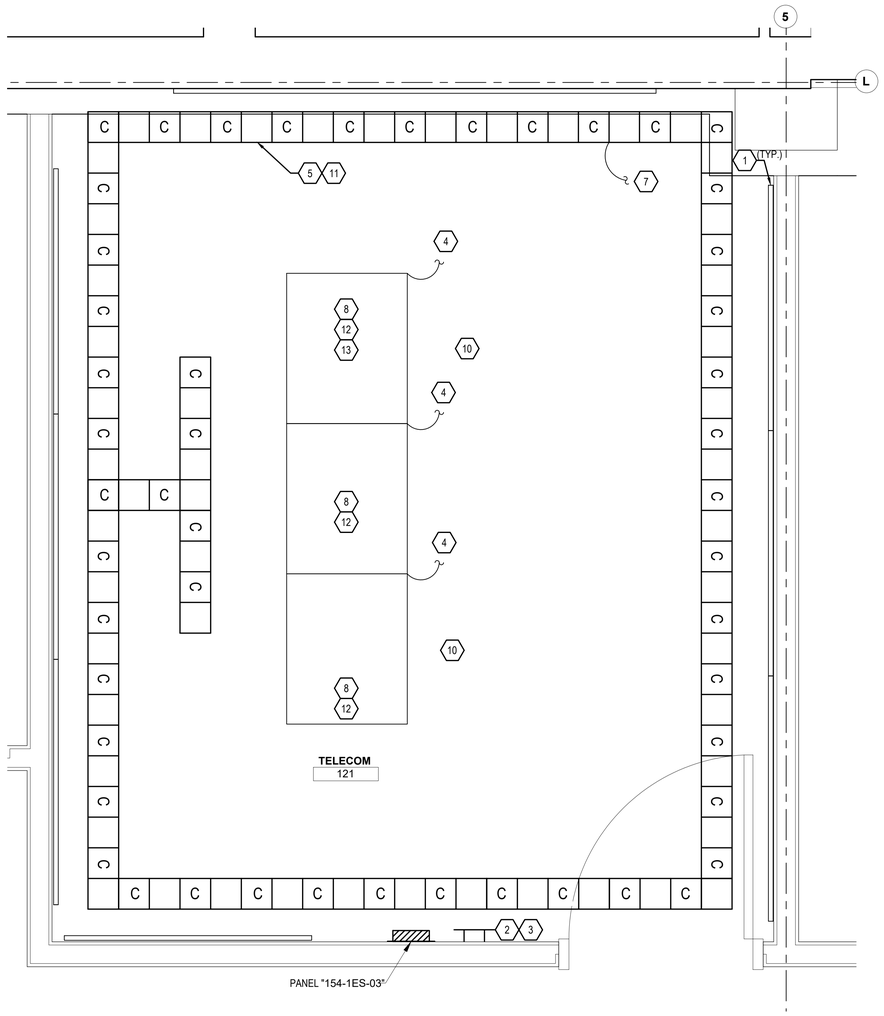
VA FORM 08 - 6231

ELECTRICAL GENERAL NOTES:

A. FOR SYMBOLS AND GENERAL NOTES SEE SHEET E-001 AND E-002.
B. ALL COMPONENTS ARE REQUIRED TO BE INSTALLED BY OEM CERTIFIED INSTALLER OF ITEMS PROVIDED FOR TELECOMMUNICATIONS CLOSET.
C. PROVIDE AND INSTALL SHEETS OF 3/4" FIRE RETARDANT PLYWOOD, PAINTED WITH WHITE FIRE RETARDANT PAINT (FIRE RETARDANT MARKINGS ON PLYWOOD MUST REMAIN VISIBLE) FROM 36" ABOVE FLOOR, UP 4' ALONG THREE WALLS INCLUDING DEMARC (LOCAL EXCHANGE CARRIER POINT OF PRESENCE) WALL OF THE IT CLOSET.SEE SPECIFICATION 07-84-00 "FIRESTOPPING" FOR ADDITIONAL INFORMATION.

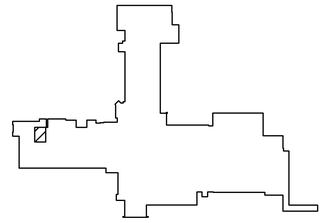
KEY NOTES:

1. GENERAL CONTRACTOR SHALL PROVIDE 4'X8' FIRE TREATED BACKBOARD MOUNTED VERTICALLY WITH TOP AT 72" AFF PER SPECIFICATION 07-84-00 "FIRESTOPPING".
2. PROVIDE GROUND BAR PER DETAIL 8 ON SHEET E-501 AND PER SPECIFICATIONS 27-05-26 "GROUNDING AND BONDING FOR COMMUNICATION SYSTEMS."
3. PROVIDE #1/0 AWG STRANDED COPPER WIRE FROM GROUND BAR TO BUILDING STEEL WITHIN 6 FEET OF THE GROUND BAR, AND TERMINATE BOTH ENDS.
4. PROVIDE #6 AWG STRANDED COPPER WIRE INSTALLED WITH MINIMUM 2" SEPARATION FROM ALL OTHER CABLE TYPES, TO GROUND BAR IN ROOM AND TERMINATE BOTH ENDS.
5. REFERENCE TECHNICAL SPECIFICATIONS FOR THE UPS CHARACTERISTICS, SPECIFICATION No. 27-15-00 "COMMUNICATIONS STRUCTURED CABLING" AND 27- 11-00 "COMMUNICATIONS EQUIPMENT ROOM FITTINGS".
6. NOT USED.
7. PROVIDE CONTINUOUS #6 AWG STRANDED COPPER WIRE LOOP AROUND CABLE TRAY AND TERMINATE ON GROUND BAR IN ROOM. BOND CONDUCTOR TO TRAY AS REQUIRED BY SPECIFICATION 27-05-26 "GROUNDING AND BONDING FOR COMMUNICATION SYSTEMS."
8. REFERENCE TECHNICAL SPECIFICATIONS FOR THE COMPUTER RACK CHARACTERISTICS, SPECIFICATION No. 27-11-00 "COMMUNICATIONS EQUIPMENT ROOM FITTINGS".
9. NOT USED.
10. REFERENCE TECHNICAL SPECIFICATIONS FOR THE UPS CHARACTERISTICS, SPECIFICATION No. 27-15-00 "COMMUNICATIONS STRUCTURED CABLING" AND 27- 11-00 "COMMUNICATIONS EQUIPMENT ROOM FITTINGS".
11. ALL HORIZONTAL WIRE AND CABLE SHALL BE INSTALLED IN A RACEWAY SYSTEM WITHIN THE TELECOMMUNICATION CLOSET. THIS RACEWAY SHALL BE SUPPORTED FROM ABOVE THE RACK AREA WITH ENOUGH VERTICAL SPACE TO ALLOW FOR EASY ACCESS TO BOTH THE RACEWAY AND TOP OF THE RACK SYSTEM AND A GRACEFUL ENTRY FROM THE ABOVE RACEWAYS TO THE EQUIPMENT WITHIN THE RACKS BELOW. WATERFALL DEVICES PROVIDE THE SOFT TRANSITION FROM THE RACEWAY ABOVE THE RACKS TO THE DEVICES BELOW AND SHALL BE INSTALLED IN ADEQUATE NUMBERS TO FACILITATE THE NETWORK HARDWARE BEING DEPLOYED AND ADDITIONAL WATERFALL DEVICES PROVIDED TO IT FOR CURRENT AND FUTURE NEEDS. RACEWAY MUST RUN ACROSS THE TOP OF THE RACK IN FOUR DIRECTIONS, EACH POINT MEETING AT THE CENTER.
12. CONTRACTOR MUST INCLUDE IN THE PROCUREMENT THE NECESSARY PATCH CABLING TO SUPPORT EACH NETWORK JACK THAT IS INSTALLED. THESE CABLES SHALL BE GRAY 10' (STATION) AND GRAY 7'(CLOSET CABLES) SUPPORTING BOTH THE STATION SIDE AND THE TELECOMMUNICATIONS CLOSET.
13. CONTRACTOR MUST PROVIDE AND INSTALL POINT OF DEMARCATION EXTENSION FROM THE LOCAL EXCHANGE CARRIER (LEC) DEMARCATION POINT TO THE MAIN IT TELECOMMUNICATIONS ROOM. IF LEC FIBER DATA CIRCUIT HANDOFF IS AVAILABLE AT THE DEMARC, A 6 PAIR SINGLE MODE FIBER TERMINATED WITH LC BULKHEADS WILL BE PROVIDED FOR EXTENDING THE CIRCUIT.



1 BLDG 154 TELECOMM ROOM
SCALE: NO SCALE

True North / Grid North



KEY PLAN

True North

Issued:	Date:	

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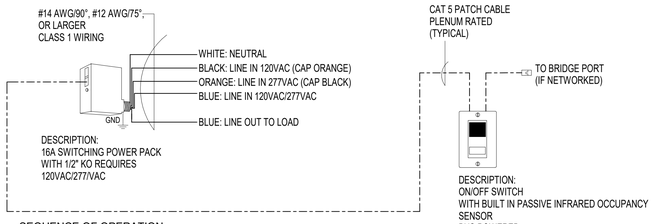
8/5/2020

U.S. Department of Veterans Affairs

Drawing Title: TELECOMM ROOM LAYOUT TELE-COMMUNICATIONS	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION	Project Number: 436-114
Approved: Project Director		Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636	Building Number: 154
		Issue Date: 08/05/2020 / Checked: TL / Drawn: GH	Drawing Number: ET103-P2

File Path

VA FORM 08 - 6231

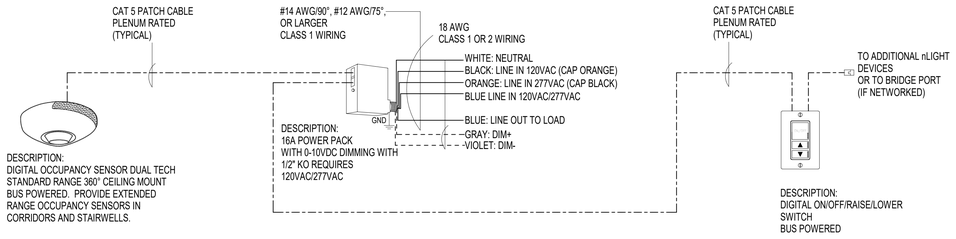


SEQUENCE OF OPERATION:

1. LIGHTS ARE MANUAL ON.
2. OCCUPANCY SENSOR PROVIDES AUTOMATIC OFF OF LIGHTS BASED ON ROOM OCCUPANCY. USE DEFAULT TIME DELAY FOR OCCUPANCY SENSOR.
3. SWITCH PROVIDES MANUAL OVERRIDE OF THE LIGHTS: ON/OFF.

1 LOW VOLTAGE LIGHT SWITCH WITH INTEGRAL OCCUPANCY SENSOR SWITCH - PH 2

NO SCALE

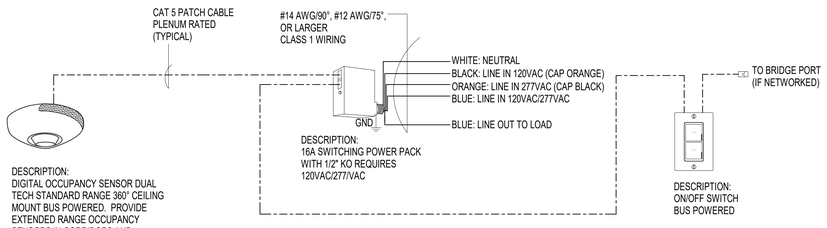


SEQUENCE OF OPERATION:

1. LIGHTS ARE MANUAL ON.
2. OCCUPANCY SENSOR PROVIDES AUTOMATIC ON/OFF OF LIGHTS BASED ON ROOM OCCUPANCY (USE DEFAULT TIME DELAY FOR OCCUPANCY SENSOR).
3. DIMMER SWITCH PROVIDES MANUAL OVERRIDE OF THE LIGHTS: ON/OFF/RAISE/LOWER.

2 LOW VOLTAGE LIGHTING CONTROL WITH DIMMING - PH 2

NO SCALE

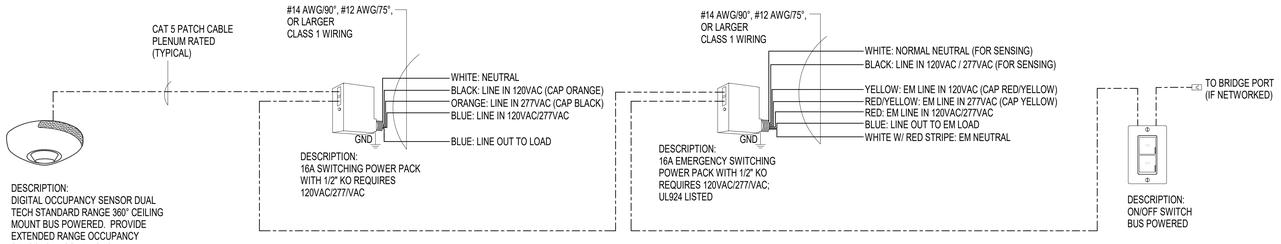


SEQUENCE OF OPERATION:

1. LIGHTS ARE MANUAL ON.
2. OCCUPANCY SENSOR PROVIDES AUTOMATIC OFF OF LIGHTS BASED ON ROOM OCCUPANCY. USE DEFAULT TIME DELAY FOR OCCUPANCY SENSOR.
3. SWITCH PROVIDES MANUAL OVERRIDE OF THE LIGHTS: ON/OFF.

3 LOW VOLTAGE LIGHTING CONTROL WITH SWITCHING- PH 2

NO SCALE

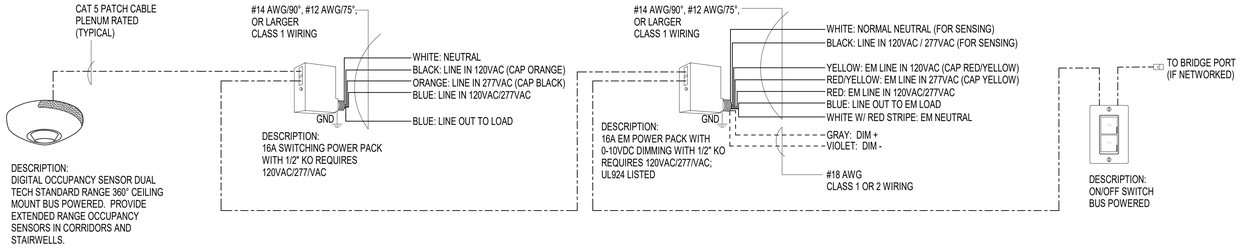


SEQUENCE OF OPERATION:

1. LIGHTS ARE MANUAL ON.
2. OCCUPANCY SENSOR PROVIDES AUTOMATIC OFF OF LIGHTS BASED ON ROOM OCCUPANCY. USE DEFAULT TIME DELAY FOR OCCUPANCY SENSOR.
3. SWITCH PROVIDES MANUAL OVERRIDE OF THE LIGHTS: ON/OFF.

4 LOW VOLTAGE LIGHTING CONTROL WITH SWITCHING W/EMER. TRANSFER DEVICE- PH 2

NO SCALE



SEQUENCE OF OPERATION:

1. LIGHTS ARE MANUAL ON.
2. OCCUPANCY SENSOR PROVIDES AUTOMATIC OFF OF LIGHTS BASED ON ROOM OCCUPANCY. USE DEFAULT TIME DELAY FOR OCCUPANCY SENSOR.
3. SWITCH PROVIDES MANUAL OVERRIDE OF THE LIGHTS: ON/OFF.

5 LOW VOLTAGE LIGHTING CONTROL WITH 0-10VDC DIMMING W/EMER. TRANSFER DEVICE- PH 2

NO SCALE

Issued:	Date:

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COLORADO LICENSED — TRENTON W. LINDSAY — 37.1 — PROFESSIONAL ENGINEER
8/5/2020

U.S. Department of Veterans Affairs

Drawing Title: LOW VOLTAGE LIGHTING CONTROL WIRING DIAGRAMS
Approved: Project Director
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION
Location: 3687 Veterans Drive, Fort Harrison, MT 59636
Project Number: 436-114
Building Number: 154
Drawing Number: E-505-P2
Issue Date: 08/05/2020
Checked: TL
Drawn: JEE

8/5/2020 10:29:14 AM
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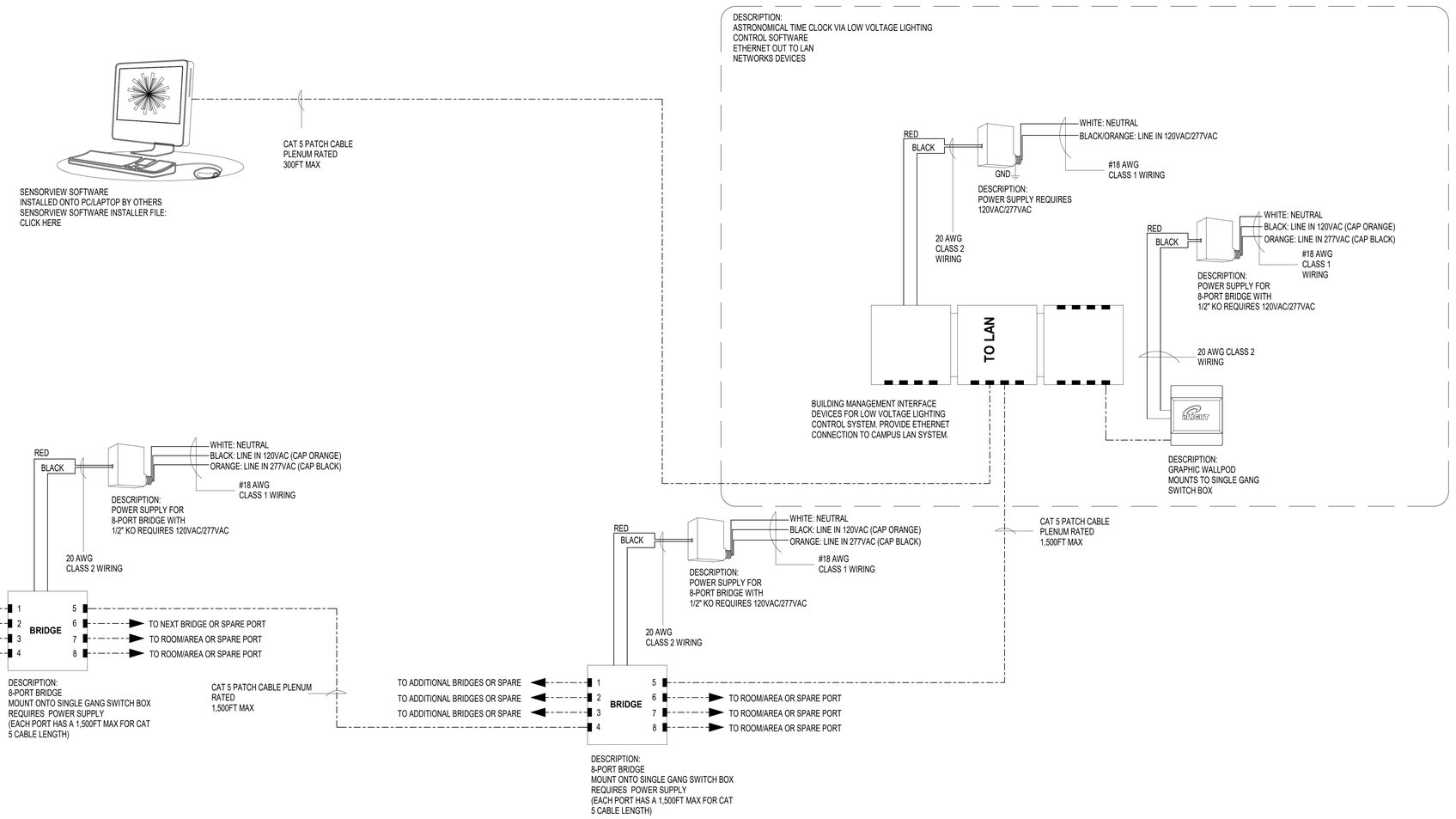

1 TYPICAL NETWORK BACKBONE RISER DIAGRAM - PH 2

NO SCALE

GENERAL SYSTEM NOTES:

ON DIGITAL SYSTEMS, ALL DEVICES TO BE CONNECTED IN A DAISY CHAIN PATTERN SO THAT THE FIRST AND LAST DEVICE IN THE CHAIN HAS AN OPEN PORT. NO T-TAP CONNECTIONS EXCEPT FOR NLIGHT "RJB" DEVICES UTILIZING THEIR INCLUDED RJ45 SPLITTER INSIDE PACKAGING.

ON DIGITAL SYSTEMS, CONTRACTOR SHALL NOTE AND LABEL ADDRESS AND LOCATION OF EACH DEVICE ON THE SYSTEM ONE-LINE DIAGRAMS OR SYSTEM LAYOUT DRAWINGS AT TIME OF INSTALLATION.

WIRING SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE (NEC) AND APPLICABLE LOCAL CODES, INCLUDING PROVISION OF EQUIPMENT GROUNDING AS REQUIRED BY THE NEC.

POWER CONDUCTORS SHALL BE SIZED PER THE NEC AMPACITY TABLES (ARTICLE 310), INCLUDING ADJUSTMENT FACTOR AND NEUTRAL CONDUCTOR REQUIREMENTS (FEED AND BRANCH NEUTRAL CONDUCTORS MUST BE COUNTED AS CURRENT CARRYING CONDUCTORS). RUN SEPARATE NEUTRAL CONDUCTORS FOR EACH DIMMED LOAD CIRCUIT.

FOR 0-10VDC DIMMING SYSTEMS, VIOLET AND GRAY CONDUCTORS ARE FOR 0-10VDC LOW VOLTAGE TERMINATIONS ONLY. NEVER TERMINATE LINE VOLTAGE (120/230/277VAC) TO VIOLET AND GRAY.

CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL TERMINATIONS. NO SPLICES ARE PERMITTED IN CONTROL WIRING.

POWER AND CONTROL CONDUCTORS MUST NOT SHARE THE SAME RACEWAY OR CONDUIT EXCEPT WHERE ALLOWED.

LIGHTING CONTROL EQUIPMENT MUST BE INSTALLED, MAINTAINED, AND OPERATED IN AN "OFFICE CLEAN" DRY ENVIRONMENT, INDOOR DRY LOCATIONS ONLY, 10% - 90% RELATIVE HUMIDITY; AMBIENT TEMPERATURE 0°- 40°C (32°- 104°F) - 0° - 35°C (32°- 95°F) RECOMMENDED.

SENSORS IN ELECTRICAL/MECHANICAL LOCATIONS NEED TO BE VERIFIED WITH AUTHORITY HAVING JURISDICTION. REFER TO NEC 110.26.D.

VERIFY MAXIMUM CABLE LENGTHS BASED ON CONTROL SYSTEM. MANUFACTURER IS NOT RESPONSIBLE FOR SYSTEMS EXCEEDING CABLING PARAMETERS.

LOW VOLTAGE CABLE MUST BE INSTALLED AT LEAST 12 INCHES FROM ALL LINE VOLTAGE CONDUCTORS EXCEPT TO CROSS OR MAKE TERMINATIONS. CAT. 5 CABLE MUST BE KEPT AWAY FROM ALL EMF DEVICES SUCH AS BALLASTS OR TRANSFORMERS.

NETWORKED LOW VOLTAGE SYSTEM NOTES:

EVERY DIGITAL LOW VOLTAGE LIGHTING CONTROL SYSTEM ENABLED DEVICE IS FURNISHED WITH (1) PERMANENTLY ADHERED ID TAG AND (1) MATCHING, PARTIALLY ADHERED ID TAG TO BE PLACED ON THE RISER DIAGRAM SHEET PROVIDED AS PART OF THE DIGITAL LOW VOLTAGE LIGHTING SYSTEM SUBMITTAL DRAWINGS. DURING INSTALLATION AND PRIOR TO FACTORY STARTUP, CONTRACTOR SHALL PLACE EACH ID TAG BELOW EACH CORRESPONDING DEVICE SHOWN ON RISER DIAGRAM TO FACILITATE FACTORY STARTUP. FAILURE TO COMPLY MAY RESULT IN STARTUP DELAYS AND ADDITIONAL COSTS AT THE CONTRACTOR'S EXPENSE. DO NOT PLACE DEVICE ID STICKERS ON FLOOR PLAN.

ONE RELAY PACK IS NEEDED PER CIRCUIT/ZONE TO BE CONTROLLED AND CAN RESIDE WITHIN SENSORS, WALLPODS, OR RELAY PACKS. REQUIRED POWER PACKS ARE NOT INDICATED ON DRAWINGS. REFER TO LOW VOLTAGE LIGHTING CONTROL SYSTEM RISER DIAGRAM PROVIDED BY SYSTEM MANUFACTURER WITHIN THE SUBMITTAL DRAWINGS. FINAL PLACEMENT IS UP TO DISCRETION OF CONTRACTOR/ENGINEER. PLEASE RECHECK COUNTS TO VERIFY THE NUMBER OF RELAYS NEEDED TO SWITCH ALL DESIRED LOADS.

BRIDGES, RELAYS, POWER PACKS ARE NOT INDICATED ON THE DRAWINGS. THE TYPICAL LIGHTING CONTROL WIRING DIAGRAMS SHALL BE USED TO DETERMINE THE QUANTITY OF REQUIRED BRIDGES, RELAYS AND POWER PACKS. WALLPODS, AND SENSORS ON DRAWINGS WERE PLACED WITH INFORMATION PROVIDED AT TIME OF DESIGN. ADDITIONAL BRIDGES AND/OR SENSORS MAY BE REQUIRED DEPENDING ON BUILDING CHANGES, FINAL PARTITION HEIGHT/PLACEMENT, FURNITURE PLACEMENT, EQUIPMENT HEIGHT/PLACEMENT AND SHELVING HEIGHT/PLACEMENT.

A TYPICAL LAYOUT OF THE NETWORK BACKBONE (BRIDGES AND GATEWAYS) HAS BEEN PLACED IN A SEPARATE TREE DIAGRAM AND NOT ON THE ACTUAL LAYOUT. FINAL PLACEMENT OF THE BRIDGE(S) AND GATEWAY(S) DEVICES SHALL BE AT THE CONTRACTOR'S / ENGINEER'S DISCRETION.

ALL DEVICES HAVE RJ-45 FEMALE PORTS. MARKING NETWORK CONTROL CABLES IS REQUIRED, T568B TERMINATIONS ARE RECOMMENDED. IT IS IMPERATIVE THAT ALL NETWORK CONTROL CABLES BE TESTED WITH A LAN CABLE TESTER TO VERIFY PROPER TERMINATIONS.

DAISY-CHAINED DEVICES SHOULD BE POWERED UP AND WORKING ON DEFAULT PROGRAMMING PRIOR TO CONNECTION TO BRIDGE OR GATEWAYS.

LOW VOLTAGE NETWORK CONTROL CABLE (CAT5/5E/6) RUNS FOR LOCAL ZONES, HOMERUNS AND BACKBONE SHOULD BE WHITE WITH CABLES LABELED.

CONTRACTOR TO VERIFY BLINK/DIAGNOSTIC CODES WHEN CONNECTING GATEWAYS/BRIDGES TO ZONES. MAXIMUM CABLE LENGTH FROM START DEVICE TO END DEVICE IS 1500' INCLUDING HOMERUN TO BRIDGE DEVICE, IF PRESENT. MANUFACTURER IS NOT RESPONSIBLE FOR SYSTEMS EXCEEDING CABLING PARAMETERS.

CONTRACTOR/INSTALLER TO VERIFY WITH THE MANUFACTURER TYPE AND QUANTITY OF OCCUPANCY SENSORS TO ENSURE 100% COVERAGE OF THE SPACE(S) WHERE SHOWN CONTROLLED BY OCCUPANCY SENSOR(S).

LOW VOLTAGE LIGHTING CONTROL SYSTEM SOFTWARE SHALL BE LOADED ONTO LAPTOP COMPUTER PROVIDED BY LOW VOLTAGE LIGHTING CONTROL SYSTEM MANUFACTURER. SYSTEM SOFTWARE IS PROHIBITED TO BE LOADED ONTO VA NETWORK.

DURING NETWORK SYSTEM SET-UP, ALL NETWORK DEVICES POPULATED IN THE LOW VOLTAGE LIGHTING CONTROLS SOFTWARE SHALL BE RENAMED USING OWNER DESIGNATED ROOM NAME AND ROOM NUMBER FOR EASY REFERENCE BY OWNER.

Issued:	Date:

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TIMOTHY W. LANGE
PROFESSIONAL ENGINEER
8/5/2020

U.S. Department of Veterans Affairs

Drawing Title: LOW VOLTAGE LIGHTING CONTROL NETWORK WIRING

Approved: Project Director

Phase: 100% CONSTRUCTION DOCUMENTS

Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION

Location: 3687 Veterans Drive, Fort Harrison, MT 59636

Project Number: 436-114

Building Number: 154

Drawing Number: E-506-P2

Issue Date: 08/05/2020 | Checked: TL | Drawn: JEE

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LIGHTING CONTROL ZONE SCHEDULE

ROOM NUMBER	ROOM NAME	CHANNEL	LIGHT CONTROL TYPE	REMARKS
100A	CORRIDOR	jg	0-10VDC DIMMED	1
100B	CORRIDOR	jg	0-10VDC DIMMED	1
100C	PREFUNCTION LOBBY	ja	0-10VDC DIMMED	1
100D	CORRIDOR	ja	0-10VDC DIMMED	1
100E	CORRIDOR	ja	0-10VDC DIMMED	1
100F	CORRIDOR	ja	0-10VDC DIMMED	1
101	WAITING	jg	0-10VDC DIMMED	1
102	TOILET - STAFF	gg	SWITCHED	
103	TOILET - MALE	gi	SWITCHED	
103	TOILET - MALE	kb	SWITCHED	3
104	TOILET - STAFF	gf	SWITCHED	
105	TOILET - FEMALE	gh	SWITCHED	
105	TOILET - FEMALE	ka	SWITCHED	3
106	OFFICE LEARNING SUPERVISOR	ge	0-10VDC DIMMED	2
107	INSTRUCTOR CUBICLE	gc	0-10VDC DIMMED	2
107	INSTRUCTOR CUBICLE	gd	0-10VDC DIMMED	2
107	INSTRUCTOR CUBICLE	jk	0-10VDC DIMMED	2, 3
107A	OFFICE CHIEF OF STAFF	ga	0-10VDC DIMMED	2
107B	OFFICE LEARNING OFFICER	gb	0-10VDC DIMMED	2
107C	COPY PRINT	jl	0-10VDC DIMMED	2, 3
108	CONFERENCE	hu	0-10VDC DIMMED	2
109	KITCHEN	hh	SWITCHED	
109	KITCHEN	hi	SWITCHED	
110	CONFERENCE	ht	0-10VDC DIMMED	2
111A	CONFERENCE/CLASSROOM	hj	0-10VDC DIMMED	2
111A	CONFERENCE/CLASSROOM	jm	0-10VDC DIMMED	2, 3
111B	CONFERENCE/CLASSROOM	hk	0-10VDC DIMMED	2
111B	CONFERENCE/CLASSROOM	hl	0-10VDC DIMMED	2, 3
112	HAC	hg	SWITCHED	
113B	ELECTRICAL CLOSET	gj		
115	STORAGE	he	SWITCHED	
116	CLASSROOM	hd	0-10VDC DIMMED	2
116	CLASSROOM	jc	0-10VDC DIMMED	2, 3
117	CLASSROOM	hc	0-10VDC DIMMED	2
117	CLASSROOM	jd	0-10VDC DIMMED	2, 3
118	CLASSROOM	hb	0-10VDC DIMMED	2
118	CLASSROOM	je	0-10VDC DIMMED	2, 3
119	CLASSROOM	ha	0-10VDC DIMMED	2
119	CLASSROOM	jf	0-10VDC DIMMED	2, 3
120	STORAGE	hr	SWITCHED	
121	TELECOM	hs	SWITCHED	
122	COMPUTER LAB	hm	0-10VDC DIMMED	2
122	COMPUTER LAB	jj	0-10VDC DIMMED	2, 3
123A	SIMULATION LAB	hn	0-10VDC DIMMED	2
123A	SIMULATION LAB	jh	0-10VDC DIMMED	2, 3
123B	CONTROL	ho	0-10VDC DIMMED	2
123C	SIM STORAGE	hv	SWITCHED	
124	LIBRARY	hq	0-10VDC DIMMED	2
125	TOILET	hf	SWITCHED	
126	OFFICE	gk	0-10VDC DIMMED	2
A106G	CORRIDOR	ja	0-10VDC DIMMED	1

GENERAL SCHEDULE NOTES:

A. PROVIDE A DIGITALLY CONTROLLED POWER/RELAY PACK MATCHING THE VOLTAGE AND CONTROL TYPE SCHEDULE FOR EACH CHANNEL.
B. ALL DIGITAL LOW VOLTAGE DEVICES SHALL BE CONNECTED TO LOW VOLTAGE LIGHTING CONTROL NETWORK.

SCHEDULE NOTES:

1. LIGHTING CHANNEL INTENSITY TO BE CONTROLLED AT NETWORK LEVEL.
2. LIGHTING CHANNEL INTENSITY TO BE CONTROLLED USING LOCAL DEVICE.
3. PROVIDE AUTOMATIC EMERGENCY POWER TRANSFER DEVICE FOR THIS CHANNEL.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	LENS-LOUVER	MOUNTING	LAMP	BALLAST / DRIVER	VOLT	WATT	MFR	CATALOG SERIES	NOTE
A11	EDGELIT FLAT PANEL 1X4 RECESSED LED LUMINAIRE,SEAMLESS ALUMINUM FRAME WITH WHITE FINISH.	FLUSH SATIN ACRYLIC DIFFUSER	LAY-IN GRID	3000 LUMEN / 4 FT @ 3500K LED	ELDO LED 0-10VDC 1-100% CD	120 V	26 W	LITHONIA	EPANL 1X4 3000LM 80CRI 35K MIN1 EZT MVOLT	
A12	EDGELIT FLAT PANEL 1X4 RECESSED LED LUMINAIRE,SEAMLESS ALUMINUM FRAME WITH WHITE FINISH.	FLUSH SATIN ACRYLIC DIFFUSER	LAY-IN GRID	3000 LUMEN / 4 FT @ 3500K LED	ELDO LED 0-10VDC 1-100%	120 V	38 W	LITHONIA	EPANL 1X4 4000LM 80CRI 35K MIN1 EZT MVOLT E10WCP	
A12E	EDGELIT FLAT PANEL 1X4 RECESSED LED LUMINAIRE,SEAMLESS ALUMINUM FRAME WITH WHITE FINISH.	FLUSH SATIN ACRYLIC DIFFUSER	LAY-IN GRID	3000 LUMEN / 4 FT @ 3500K LED	ELDO LED 0-10VDC 1-100% CD & 10W SELF DIAGNOSTIC BATTERY PACK	120 V	38 W	LITHONIA	EPANL 1X4 4000LM 80CRI 35K MIN1 EZT MVOLT E10WCP	
A21	EDGELIT FLAT PANEL 2X4 RECESSED LED LUMINAIRE,SEAMLESS ALUMINUM FRAME WITH WHITE FINISH.	FLUSH SATIN ACRYLIC DIFFUSER	LAY-IN GRID	6000 LUMEN @ 3500K LED	ELDO LED 0-10VDC 1-100% CD	120 V	53 W	LITHONIA	EPANL 2X4 6000LM 80CRI 35K MIN1 EZT MVOLT	
A22	EDGELIT FLAT PANEL 2X4 RECESSED LED LUMINAIRE,SEAMLESS ALUMINUM FRAME WITH WHITE FINISH.	FLUSH SATIN ACRYLIC DIFFUSER	LAY-IN GRID	4800 LUMEN @ 3500K LED	ELDO LED 0-10VDC 1-100% CD	120 V	47 W	LITHONIA	EPANL 2X4 4800LM 80CRI 35K MIN1 EZT MVOLT	
A31	EDGELIT FLAT PANEL 2X2 RECESSED LED LUMINAIRE,SEAMLESS ALUMINUM FRAME WITH WHITE FINISH.	FLUSH SATIN ACRYLIC DIFFUSER	RECESSED FLANGED	2000 LUMEN	END	120 V	18 W	LITHONIA	EPANL 2X2 2000LM 80CRI 35K	
BW	4 INCH DIAMETER OPEN WALLWASH DOWNLIGHT, SELF FLANGED TRIM, REFLECTOR TO HAVE CLEAR DIFFUSED FINISH.	NONE	RECESSED	LED 1000 LUMEN @ 3500K	ELDO LED 0-10VDC 1-100% CD	120 V	13 W	GOTHAM	EVO WW 35/10 4AR LD MVOLT GZI	
C2	2 FOOT LINEAR LUMINAIRE, 3 1/2" WIDE X 3 1/2" TALL, EXTRUDED ALUMINUM HOUSING WITH SATIN ANODIZED FINISH AND NO VISIBLE FASTENERS, FROSTED ACRYLIC WRAP LENS.	FROSTED ACRYLIC	SURFACE WALL	5760 LUMEN / 4 FT @ 3500K LED	0-10VDC 10-100% CD	120 V	16 W	LUMIUM	NB3 SMT LED M 35K 2 U 10D SC MF F	
E1	CONTEMPORARY LED DOUBLE FACED EXIT SIGN WITH WHITE POWDER PAINT ALUMINUM HOUSING, WHITE STENCIL FACE, RED LETTERS, AND CHEVRON ARROWS AS SHOWN ON PLANS.	---	UNIVERSAL	LED 50000 HR	---	120 V	5 W	LITHONIA	LES W 1 R 120/277	
E2	CONTEMPORARY LED DOUBLE FACED EXIT SIGN WITH WHITE POWDER PAINT ALUMINUM HOUSING, WHITE STENCIL FACE, RED LETTERS, AND CHEVRON ARROWS AS SHOWN ON PLANS.	---	UNIVERSAL	LED 50000 HR	---	120 V	5 W	LITHONIA	LES W 2 R 120/277	
F1	4 FOOT LINEAR LED INDUSTRIAL STRIP LUMINAIRE	FROSTED ACRYLIC	CHAIN SUSPEND	4,390 LUMENS @ 4000K	END	120 V	41 W	LITHONIA	ZL1N L48 5000LM FST MVOLT 40K 80CRI	1
K4	4 FOOT SOLID FRONT TASK LIGHT, STEEL HOUSING WITH WHITE PAINTED FINISH, PRISMATIC ACRYLIC LENS.	.125 ACRYLIC PRISMATIC	UNDERCABINET	760 LUMEN / FT 3500K	END	120 V	30 W	FAILSAFE	4LD4 35 A12125 EDC1 UW	

DRIVER TYPES:

END ELECTRONIC NON-DIM
0-10VDC CONTINUOUS DIMMING

GENERAL NOTES:

A. COMPLY WITH APPROPRIATE SECTIONS 260923, 265100 OF THE SPECIFICATIONS.
B. REFER TO SPECIFICATIONS FOR IMPORTANT TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES, DRIVERS AND LIGHT SOURCES.
C. THE CATALOG NUMBERS LISTED BELOW HAVE BEEN CAREFULLY PREPARED TO ASSIST BIDDERS IN SELECTING PRODUCTS TO ACHIEVE THE DESIGN CONCEPT, HOWEVER, PRIOR TO BIDDING, EACH MANUFACTURER SHALL COMPARE THE CATALOG NUMBERS SHOWN WITH THE DESCRIPTION AND REQUIREMENTS ON THE DRAWINGS, AND SHALL NOTIFY THE COR OF ANY DISCREPANCIES.
D. SPECIFICALLY INCLUDED IN THE EVALUATION SHALL BE THE VERIFYING OF PROPER MOUNTING KITS OR ACCESSORIES TO FACILITATE INSTALLATION AS SHOWN AT EACH LOCATION ON THE DRAWINGS.
E. NO ALLOWANCE OR REDRESS WILL BE ALLOWED FOR DISCREPANCIES THAT WERE NOT REPORTED TO THE COR IN TIME FOR CORRECTION OR CLARIFICATION BEFORE THE BID.THE REPORTING OF ANY AMBIGUITY IS THE RESPONSIBILITY OF THE BIDDER.
F. PROVIDE UNIT PRICES AND FIXTURE BRAND SELECTED FOR ADD/DELETE CHANGES FOR EACH FIXTURE TYPE SHOWN WITHIN 48 BUSINESS HOURS OF THE BID DATE. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY DISQUALIFY THE PRODUCTS AND EMPOWER THE ENGINEER TO DETERMINE FAIR VALUE FOR FIXTURE AND INSTALLATION CHANGES WITHOUT FURTHER INPUT FROM THE CONTRACTOR OR INSTALLER.
G. SUBMITTAL PACKAGE SHALL INCLUDE CATALOG NUMBER ON EACH FIXTURE SHEET.
H. ALL FIXTURES SHALL BE APPROVED BY UL OR ANOTHER ACCEPTABLE TESTING LAB FOR THE PURPOSE INTENDED AND WITH THE DRIVER AND LED PACKAGE PROPOSED.
I. UNIVERSAL VOLTAGE (120/277) DRIVERS REQUIRED UNLESS NOTED OTHERWISE.

SCHEDULE NOTES:

1. CAP OFF LOW VOLTAGE CONTROL WIRING TO ALLOW SWITCHING CONTROL.

INVERTER SCHEDULE

INV. NO.	MANUFACTURER	CATALOG NO.	DESCRIPTION	CAPACITY	MOUNTING	VOLTAGE INPUT	VOLTAGE OUTPUT	QTY. OF OUTPUT BREAKERS
INV C	MEYERS POWER PRODUCTS	LV-4-R-2-B2001	SINGLE-PHASE EMERGENCY LIGHTING SYSTEM, PURE SINE WAVE OUTPUT, COMPATIBLE WITH LED LIGHT SOURCE, UL924 TESTED, FIELD SELECTED 120/277V INPUT/OUTPUT, RED HOUSING FINISH COLOR. SYSTEM STATUS INDICATORS AND MOMENTARY TEST SWITCH, YL924 SELF TESTING AND DIAGNOSTIC, INPUT FUSE AND BATTERY FUSE PROTECTION.	750 VA	WALL	120V	120V	1

LIGHTING CONTROL DEVICE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	CATALOG No.	VOLTS	NOTES
OS DT1	DUAL TECHNOLOGY PASSIVE INFRARED AND ULTRASONIC OCCUPANCY SENSOR, WIDE ANGLE LENS, MINIMUM 1000 SQUARE FEET.	nLIGHT	nCM PDT 9 RJB	24 V	1, 2
$ LV	DIGITAL LOW VOLTAGE WALL SWITCH -	nLIGHT	nPODM	24 V	1, 2
$ LVD	DIGITAL LOW VOLTAGE DIMMER -	nLIGHT	nPODM DX	24 V	1, 2
$ OS	DIGITAL LOW VOLTAGE WALL SWITCH WITH INTEGRAL PIR OCCUPANCY SENSOR	nLIGHT	nWSX LV	24 V	1, 2
$ OSD	DIGITAL LOW VOLTAGE WALL DIMMER WITH INTEGRAL DUAL TECHNOLOGY OCCUPANCY SENSOR	nLIGHT	nWSX PDT LV DX	24 V	1, 2

SCHEDULE NOTES:

1. BUS POWERED DEVICE.
2. PROVIDE 24 VDC POWER PACK WITH INPUT TO MATCH LIGHTING FIXTURE VOLTAGE, SWITCHING CONTACT RATED FOR 20A. DRIVER.

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Issued:
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8/5/2020

U.S. Department of Veterans Affairs

Drawing Title: LIGHTING SCHEDULES

Approved: Project Director

Phase: 100% CONSTRUCTION DOCUMENTS

Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION

Location: 3687 Veterans Drive, Fort Harrison, MT 59636

Issue Date: 08/05/2020
Checked: TL
Drawn: JEE

Project Number: 436-114
Building Number: 154
Drawing Number: E-601-P2

VA FORM 08 - 6231

Branch Panel: 154-1ES-01 (154-1MH)

Location: EDU-MECH
Supply From: 154-DPI
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10K AIC
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1				950	950					2
3	[M] Circulating Pump P-2	15 A	3		950	950	3	15 A	[E] Circulating Pump P-1	4
5						950	950			6
7	[M] Unit Heater UH-1	20 A	1	200	2100					8
9	[M] Glycol Pump GF-1	20 A	1		850	2100	3	40 A	[M] AH-1 Return	10
11						2500	2100			12
13	154-AHU-01	25 A	3	2500	3000					14
15					2500	3000	3	60 A	[M] AH-1 Supply	16
17						3500	3000			18
19	COMPRESSOR "154-CUAC-AHU01"	50 A	3	3500	6800					20
21					3500	6800	3	80 A	[M] Condensing Unit C-1	22
23	154-CUAC-AHU01 Recept	20 A	1			100	6800			24
25	Spare	20 A	1	-	550					26
27	[M] Fire Alarm Panel	20 A	1		500	550	3	20 A	154-EF-01	28
29	[E] Fire Alarm Cabinet	20 A	1			500	550			30
31	[E] Mech Room Outlets	20 A	1	540	50		1	20 A	Corridor 100E/100D VAV	32
33	[M] Johnson Ctrl Panel	20 A	1		1800	50	1	20 A	Classroom 111A/111B VAV	34
35	Conference 108/Kitchen VAV	20 A	1			-	50	1	20 A	Instructor Cubes 107 VAV	36
37	[E] Exhaust Fan	20 A	1	400	-			1	20 A	Spare	38
39	Spare	20 A	1		-	-		1	20 A	Spare	40
41	Spare	20 A	1			-	-	1	20 A	Spare	42
			Total Load:	21360 VA		23550 VA		21000 VA			
			Total Amps:	- A		- A		- A			

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Receptacle	540 VA	100.00%	- VA	
Heating/Cooling	20 VA	100.00%	- VA	**Total Conn. Load:** 65810 VA
Other (100%)	2800 VA	100.00%	- VA	**Total Est. Demand:** 26660 VA
Motor Load	21600 VA	100.00%	- VA	**Total Conn.:** 183 A
				Total Est. Demand: 74 A

Notes: [M] indicates moved circuit. [E] indicated previously existing circuit.

Branch Panel: 154-1ES-02 (154-1MH2)

Location: ELEC-113
Supply From: 154-SWBP-1
Mounting: Recessed
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10K AIC
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	Room 119/120 Recepts	20 A	1	900	800		1	20 A	Room 119 Projector	2
3	Room 118 Recepts	20 A	1		720	800	1	20 A	Room 118 Projector	4
5	Room 117 Recepts	20 A	1			720	800	1	20 A	Room 117 Projector	6
7	Room 116 Recepts	20 A	1	720	800		1	20 A	Room 116 Projector	8
9	Room 122 Recepts	20 A	1		900	1080	1	20 A	Room 112 Recepts	10
11	Room 122 Recepts	20 A	1			720	540	1	20 A	Room 123 SimLab Recepts	12
13	Room 123 SimLab Headwall	20 A	1	1080	1080		1	20 A	Room 123 SimLab Wall	14
15	Room 123A/123C	20 A	1		720	540	1	20 A	Room 124 Recepts	16
17	Room 111 Recepts	20 A	1			360	800	1	20 A	Room 111 Projector	18
19	Room 109 Recepts	20 A	1	540	800		1	20 A	Room 109 Projector	20
21	Room 115 Kitchen Recepts	20 A	1		540	600	1	20 A	Room 115 Kitchen Refrig.	22
23	Room 100 Recepts	20 A	1			720	720	1	20 A	Room 108 Recepts	24
25	Room 107A Recepts	20 A	1	540	540		1	20 A	Room 107B Recepts	26
27	Room 106 Recepts	20 A	1		720	900	1	20 A	Room 107C Recepts	28
29	Recept at Panel 1MH2	20 A	1			180	360	1	20 A	Room 102/104 Recepts	30
31	Room 103/105 Recepts	20 A	1	360	720		1	20 A	Room 101 Recepts	32
33	Room 107 Floor Recepts	20 A	1		540	540	1	20 A	Corr 100E Recepts	34
35	Corr 110G Recepts	20 A	1			540	900	1	20 A	Corr 100B Recepts	36
37	[M] Outlets Office	20 A	1	1080	1080		1	20 A	[M] Outlets Office	38
39	[M] Outlets Office	20 A	1		1080	1080	1	20 A	[M] Outlets Office	40
41	[M] Outlets Waiting Rm	20 A	1			1080	1080	1	20 A	[M] Outlets Conf Room	42
43	[M] Outlets Waiting	20 A	1	1080	800		1	20 A	[M] Powered Door	44
45	Room 111 Recepts	20 A	1		540	540	1	20 A	Room 109 Recepts	46
47	Room 122 Projector	20 A	1			800	300	1	20 A	Room 123 SimLab Lift	48
49	Corr 100B Drinking Fountain	20 A	1	800	360		1	20 A	Room 107 Floor Recepts	50
51	Corr 100G Drinking Fountain	20 A	1		800	-	1	20 A	Room 113D & Bathroom Recept	52
53	LITES	20 A	1			1400	1600	1	20 A	LITES	54
55	LITES	20 A	1	700	1100		1	20 A	LITES	56
57	INV C	20 A	1		500	-	1	20 A	Spare	58
59	Spare	20 A	1			-	-	1	20 A	Spare	60
61	Spare	20 A	1	-	-		1	20 A	Spare	62
63	Spare	20 A	1		-	-	1	20 A	Spare	64
65	Spare	20 A	1			-	-	1	20 A	Spare	66
			Total Load:	15711 VA		12160 VA		13260 VA			
			Total Amps:	- A		- A		- A			

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
General Lighting	5265 VA	100.00%	6581 VA	
General Receptacle	21260 VA	100.00%	- VA	**Total Conn. Load:** 41085 VA
Kitchen	600 VA	100.00%	- VA	**Total Est. Demand:** 30341 VA
Other (100%)	1900 VA	100.00%	- VA	**Total Conn.:** 114 A
				Total Est. Demand: 84 A

Notes:

Branch Panel: 154-1ES-03

Location: EDU-TELCOMM
Supply From: 154-1ES-02
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10K AIC
Mains Type: MCB
Mains Rating: 60A
MCB Rating: 60 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	Wall Quad Receptss	20 A	1	1080	1080		1	20 A	Wall Quad Receptss	2
3	Wall Quad Receptss	20 A	1		720	1080	1	20 A	Wall Quad Receptss	4
5	Rack L5-30R Recept	30 A	2			250	250	2	30 A	Rack L5-30R Recept	6
7				250	250						8
9	Rack Quad Receptss	20 A	1		360	360		1	20 A	Rack Quad Receptss	10
11	Rack L5-30R Recept	30 A	2			250	250	2	30 A	Rack L5-30R Recept	12
13				250	250						14
15	154-ACU-01 (IT COOLING)	20 A	1		-	-		1	20 A	Spare	16
17						-	-	1	20 A	Spare	18
19	Spare	20 A	1	-	-			1	20 A	Spare	20
21	Spare	20 A	1					1	20 A	Spare	22
23	Spare	20 A	1			-	-	1	20 A	Spare	24
			Total Load:	- VA		- VA		- VA			
			Total Amps:	- A		- A		- A			

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Receptacle	540 VA	100.00%	- VA	
Heating/Cooling	200 VA	100.00%	- VA	**Total Conn. Load:** 65990 VA
Other (100%)	2800 VA	100.00%	- VA	**Total Est. Demand:** 26840 VA
Motor Load	21600 VA	100.00%	- VA	**Total Conn.:** 183 A
				Total Est. Demand: 75 A

Notes:

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

Mark	Load	HP	Voltage	Poles	Amps	Source	Wire Size	Disconnect	Notes
154-AHU-01	MOTOR	3 HP	208	3	7.33 A	154-1ES-01 -11,13,15	(3#12 & 1#12G)3/4"C	DISCONNECT	SEE NOTE 2
154-EF-01	MOTOR	1 HP	208	3	4.6 A	154-1ES-01 -26,28,30	(3#12 & 1#12G)3/4"C	DISCONNECT	SEE NOTE 3
154-CUAC -AHU-01	MOTOR	7.5 HP	208	3	35 A	154-1ES-01 -17,19,21	(3#8 & 1#8G) 3/4"C	PROVIDED	SEE NOTE 5
154-ACU-01	MOTOR	1 HP	208	3	17.00 A	154-1ES-03 -15,17	(3#12 & 1#12G)3/4"C	EXTERIOR / INTEGRAL	IT RM 121 SEE NOTE 4
VAV-2-1	MOTOR:		120VAC/ 24VDC	1	0.00 A	154-1ES-01 -32	(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-2	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-3	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-4	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-5	MOTOR:		120VAC/ 24VDC	1	0.06 A	154-1ES-01 -34	(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-6	MOTOR:		120VAC/ 24VDC	1	0.06 A	154-1ES-01 -35	(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-7	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-8	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-9	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-10	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-11	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-12	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-13	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-14	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-15	MOTOR:		120VAC/ 24VDC	1	0.06 A	154-1ES-01 -36	(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-16	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-17	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-18	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-19	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-20	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-21	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	
VAV-2-22	MOTOR:		120VAC/ 24VDC	1	0.06 A		(3#12 & 1#12G)3/4"C	JUNCTION BOX	

ELECTRICAL GENERAL NOTES:

1. NOT USED.
2. PROVIDE A 30A RATED, NEMA 3R, HEAVY DUTY, FUSIBLE DISCONNECT SAFETY SWITCH WITH A 20A FUSE.
3. CONTRACTOR MUST PURCHASE FAN OPTION THAT INCLUDES NEMA 1 DISCONNECT ACCESSORY.
4. CONTRACTOR MUST PROVIDE SAFETY DISCONNECT, WITHIN SIGHT OF EQUIPMENT. SWITCH MUST NOT BE OBSTRUCTED BY EQUIPMENT.
5. CONTRACTOR MUST PROVIDE UNIT MODEL YHT07C00A2BAA5 OR APPROVED EQUIVALENT, TO INCLUDE OPTION WITH DISCONNECT SWITCH.

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STAMP:

COLORADO LICENSED TREVOR W. TINDALL 37.1321 PROFESSIONAL ENGINEER
8/5/2020

U.S. Department of Veterans Affairs

Drawing Title: ELECTRICAL PANEL SCHEDULES
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION
Project Number: 436-114
Building Number: 154
Approved: Project Director
Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636
Drawing Number: EP601-P2
Issue Date: 08/05/2020 **Checked:** TL **Drawn:** GH

File Path

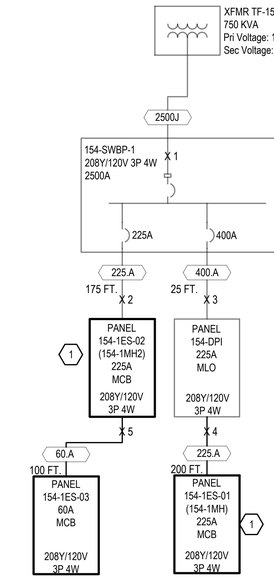
VA FORM 08 - 6231

ELECTRICAL GENERAL NOTES:

A. FOR GENERAL NOTES AND SYMBOLS SEE SHEET E-001.

KEY NOTES:

(1) WORK TO BE DONE IN EXISTING PANEL.



1 ONE LINE DIAGRAM BLDG 154
SCALE: NO SCALE

FEEDER SCHEDULE		
ID	FEEDER AMPS	CONDUIT AND FEEDER
60.A	60	(4#4 & 1#10G)1-1/2"C
100.A	100	(4#1 & 1#8G)EXTEND CONDUIT 25'
225.A	225	(4#4/0 & 1#4G)EXISTING CONDUIT
400.A	400	(4#500MVM, 1#1/0G)EXISTING CONDUIT
2500J	2500	6(4#600KCMIL & 1#1/0G)3-1/2"C

SIZING METHOD: COPPER, 60°C #12 THROUGH #1, 75°C 1/0 AND ABOVE FEEDER SCHEDULE

SHORT CIRCUIT TABLE	
ID	SHORT CIRCUIT VALUE
1	22800A Isc
2	7119A Isc
3	18782A Isc
4	3551A Isc
5	2783A Isc

Issued:	Date:

CONSULTANTS:

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LAND3
Protection Engineering CONSULTANTS
JIRSA HEDRICK Structural Engineers

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COLORADO LICENSED
TIMOTHY W. LINDSEY
8/5/2020
PROFESSIONAL ENGINEER

U.S. Department of Veterans Affairs

Drawing Title: ONE-LINE DIAGRAMS & PHASE DIAGRAMS
Approved: Project Director
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION
Location: 3687 VETERANS DRIVE , FORT HARRISON, MT 59636
Project Number: 436-114
Building Number: 154
Drawing Number: EP602-P2
Issue Date: 08/05/2020
Checked: TL
Drawn: GG

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