

ELECTRICAL GENERAL NOTES:

1. WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER, PER INDUSTRY STANDARD, AND TO THE SATISFACTION OF THE ARCHITECT AND ENGINEER.
2. WORK, MATERIALS, AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITIONS OF LOCAL, STATE AND NATIONAL CODES, STANDARDS AND ORDINANCES.
3. ALL MATERIALS USED IN THIS INSTALLATION SHALL BE U.L. APPROVED AND NEW.
4. DO NOT PENETRATE STRUCTURAL ELEMENTS OF FLOORS, WALLS, CEILINGS, ROOF, ETC.
5. DETAILS ARE SHOWN ON DIFFERENT SHEETS. THE CONTRACTOR SHALL REFER TO THOSE DETAILS WHETHER OR NOT CALLED IN REFERENCE NOTES.
6. ELECTRICAL CONTRACTOR SHALL NOTIFY AND COOPERATE WITH THE MECHANICAL CONTRACTOR SUCH THAT NO DUCTS, PIPING, OR EQUIPMENT FOREIGN TO THE OPERATION OF THE ELECTRICAL EQUIPMENT SHALL BE PERMITTED TO BE INSTALLED IN, ENTER, OR PASS THROUGH ELECTRICAL ROOMS OR SPACES, OR ABOVE OR BELOW ELECTRICAL EQUIPMENT IN OTHER AREAS.
7. NO WIRING SHALL RUN IN DUCT WORK.
8. THE MINIMUM SIZE OF THE CONDUCTORS ARE TO BE #12 AWG THHN COPPER, UNLESS INDICATED OTHERWISE ON THE DRAWINGS. STRANDED CONDUCTORS ARE NOT ALLOWED IN THE CONDUCTORS SMALLER THAN #10 AWG.
9. USE EPOXY ANCHORS TO SUPPORT THE ELECTRICAL EQUIPMENT. EXPANSION ANCHOR BOLTS ARE NOT ACCEPTED.
10. THE ELECTRICAL CONTRACTOR SHALL REVIEW AND COORDINATE WITH ARCHITECTURAL, CIVIL, STRUCTURAL, MECHANICAL, PLUMBING, AND OTHER DRAWINGS PRIOR TO BID.
11. ELECTRICAL CONTRACTOR SHALL REVIEW ALL ARCHITECT'S ELEVATIONS, SECTIONS, AND FLOOR PLANS PRIOR TO ROUGH-IN OF ELECTRICAL JUNCTION BOXES.
12. ALL JUNCTION BOXES SHALL HAVE MINIMUM DEPTH OF 2-1/8" UNLESS OTHERWISE SPECIFIED. SECURE ALL JUNCTION BOXES AS SHOWN IN THE DETAILS. FURNISH AND INSTALL PROPER PLASTER RINGS.
13. REFER TO ARCHITECTURAL CABINET CASEWORK ELEVATION DRAWINGS FOR CLARIFICATION ON MOUNTING AND PLACEMENT OF ALL RACEWAY, RECEPTACLES, AND SWITCHES.
14. ANY DEVICE MOUNTING LOCATIONS ARE DEPENDENT ON MILLWORK LOCATIONS. COORDINATE ALL APPLICABLE LOCATIONS WITH MILLWORK INSTALLER PRIOR TO BEGINNING WORK.
15. LIGHT SWITCHES INSTALLED ADJACENT TO EACH OTHER, SHALL BE GANGED TOGETHER WITH ONE PIECE COVER PLATE.
16. ALL WALL MOUNTED MOTION SENSORS SHALL BE A DUAL TECHNOLOGY MOTION SENSOR WITH INTEGRAL OVERRIDE SWITCH. MOTION SENSOR TO MOUNT IN A STANDARD SWITCH BOX. MOTION SENSOR TO HAVE A FIFTEEN MINUTE TIME DELAY SET AT TEN MINUTES TO SENSOR SET TO MANUAL ON. USE HUBBELL, SENSOR SWITCH, LEVITON, OR APPROVED EQUAL.
17. CONSULT ARCHITECT'S REFLECTED CEILING PLANS FOR EXACT LOCATION OF LIGHTING FIXTURES, SPEAKERS, SMOKE DETECTORS, ETC.
18. ELECTRICAL CONTRACTOR SHALL MEET WITH THE CEILING AND MECHANICAL CONTRACTORS TO COORDINATE LOCATIONS, CLEARANCES, CEILING TYPES, AND ROUGH-IN REQUIREMENTS OF ALL LIGHTING FIXTURES PRIOR TO DUCT, PIPING, AND CEILING INSTALLATIONS.
19. ALL CEILING MOUNTED MOTION SENSORS SHALL BE A DUAL TECHNOLOGY MOTION SENSOR WITH POWER PACK AS REQUIRED TO CONTROL LIGHTING. MOTION SENSOR TO HAVE A FIFTEEN MINUTE DELAY SET AT TEN MINUTES TO SENSOR SET TO MANUAL ON. CONTRACTOR TO SUBMIT FLOOR PLAN TO MOTION SENSOR SUPPLIER FOR FACTORY TO LOCATED MOTION SENSOR FOR OPTIMAL PERFORMANCE TO AVOID NUISANCE SHUT OFF OF LIGHTING. MANUFACTURERS LAYOUT PLAN TO BE PART OF SUBMITTALS. PROVIDE SUFFICIENT BOX DEPTH AND CORRECT PLASTER RING TO ACCOMMODATE ACTUAL RELAY UNIT AND OCCUPANCY SENSOR INSTALLED. PROVIDE PROPER SEPARATION OF 120 VOLT AND CLASS 2 WIRING AS NECESSARY IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE. USE HUBBELL, SENSOR SWITCH, LEVITON OR APPROVED EQUAL.
20. CONNECT ALL EM FIXTURES, NIGHT LIGHTS, EGRESS LIGHTS, AND EXIT SIGNS TO UNSWITCHED CONDUCTOR.
21. THE ELECTRICAL CONTRACTOR SHALL TERMINATE THE ELECTRICAL CONNECTIONS TO ALL THE EQUIPMENT BY PROVIDING THE NECESSARY MALE/FEMALE CONNECTOR, RECEPTACLE, PLUG, ETC.
22. FINAL CONNECTIONS TO EQUIPMENT SHALL BE MADE AS PER MANUFACTURERS WRITTEN INSTRUCTIONS AND APPROVED WIRING DIAGRAMS AND DETAILS. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROVIDE ALL MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL ELECTRICAL LOADS (VOLTAGE, PHASE, CONNECTION REQUIREMENTS, ETC.) OF EQUIPMENT FURNISHED UNDER OTHER DIVISIONS WITH APPROVED SHOP DRAWINGS PRIOR TO BEGINNING ROUGH-IN.
23. VERIFY EXACT LOCATION(S) OF ALL EQUIPMENT TO BE FURNISHED BY OTHERS PRIOR TO ROUGH-IN.
24. AT THE END OF THE JOB, PROVIDE BLANK COVER PLATES TO MATCH THE OTHER COVER PLATES FOR ALL JUNCTION BOXES WHERE DEVICES HAVE NOT YET BEEN INSTALLED.

ELECTRICAL SYMBOLS

SYMBOL	EXPLANATION	SYMBOL	EXPLANATION	SYMBOL	EXPLANATION
	BRANCH CIRCUIT CONCEALED IN CEILING OR WALL	F1	FIXTURE TYPE SYMBOL		TAMPER AND FLOW
	BRANCH CIRCUIT CONCEALED IN GROUND OR FLOOR		LINEAR FIXTURE (TYPICAL)	FACP	FIRE ALARM CONTROL PANEL
A-1,3	BRANCH CIRCUIT HOMERUNS TO PANEL		EMERGENCY LIGHTING UNIT	RFAA	REMOTE FIRE ALARM ANNUNCIATOR PANEL
135	ROOM NUMBER		SURFACE OR PENDANT MOUNTED FIXTURE	NAC	FIRE ALARM NAC PANEL
	MECHANICAL EQUIPMENT SYMBOL		RECESSED FIXTURE	VOICE	FIRE ALARM VOICE PANEL
	KEYED NOTE REFERENCE	-O	WALL MOUNTED FIXTURE	D/H	DOOR HOLDER
42X	FEEDER TAG (SEE FEEDER SCHEDULE)		WALL PACK	F/S	FIRE/SMOKE DAMPER
	LIGHTING AND POWER PANELBOARD		STRIP FIXTURE		FIRE ALARM PULL STATION
	DISCONNECT SWITCH		TRACK LIGHTING		FIRE ALARM STROBE
	DISCONNECT SWITCH WITH MOTOR STARTER		EMERGENCY LIGHTING UNIT		FIRE ALARM HORN/STROBE
	MOTOR STARTER		WALL MOUNTED EXIT LIGHT (SINGLE FACE)		FIRE ALARM HORN/STROBE (LF = LOW FREQUENCY)
	VARIABLE FREQUENCY DRIVE		WALL MOUNTED EXIT LIGHT (DOUBLE FACE)		FIRE ALARM HORN/STROBE WITH PROTECTIVE COVER
C	CONDUIT STUB		CEILING MOUNTED EXIT LIGHT		FIRE ALARM SPEAKER/STROBE
J	JUNCTION BOX		CEILING MOUNTED EXIT LIGHT (DOUBLE FACE)		FIRE ALARM SPEAKER/STROBE (LF = LOW FREQUENCY)
	ELECTRIC VEHICLE CHARGING STATION		EXIT LIGHT WITH PROTECTIVE COVER		FIRE ALARM SPEAKER
	WP A-3 REF	\$	SINGLE POLE SWITCH (SUBSCRIPT AS INDICATED BELOW)		FIRE ALARM SPEAKER (LF = LOW FREQUENCY)
		2	TWO POLE SWITCH		FIRE ALARM HORN
		3	3-WAY SWITCH		FIRE ALARM HORN (LF = LOW FREQUENCY)
		4	4-WAY SWITCH		FIRE ALARM STROBE CEILING MOUNTED
WP	WEATHERPROOF COVER & LISTED WEATHER RESISTANT DEVICE	D	DIMMER SWITCH		FIRE ALARM HORN/STROBE CEILING MOUNTED
GFCI	PROTECTED BY FAULT CIRCUIT INTERRUPTER	K	KEYED SWITCH		FIRE ALARM HORN/STROBE CEILING MOUNTED (LF = LOW FREQUENCY)
+44	MOUNTING HEIGHT ABOVE FLOOR OR GRADE GIVEN IN INCHES.	T	TIMER SWITCH		FIRE ALARM HORN CEILING MOUNTED
REF	REFRIGERATOR	M	MANUAL STARTER WITH THERMAL OVERLOAD		FIRE ALARM HORN CEILING MOUNTED (LF = LOW FREQUENCY)
DW	DISHWASHER	F	PADDLE FAN SPEED CONTROL (CANARM "CN" SERIES)		SMOKE DETECTOR (SUBSCRIPT AS INDICATED BELOW)
DISP	DISPOSAL	OC	OCCUPANCY SENSOR SWITCH		SMOKE ALARM BATTERY-BACKED
WASH	WASHING MACHINE	W	LOW VOLTAGE CONTROL SWITCH		SMOKE/CARBON MONOXIDE ALARM COMBO BATTERY-BACKED
EW	ELECTRIC WATER COOLER	W/P	LOW VOLTAGE CONTROL SWITCH WITH DIMMER		DUCT SMOKE DETECTOR
USB	HUBBELL USB15ACSW OR EQUAL DUPLEX PLUS USB CHARGER	OC/D	OCCUPANCY SENSOR CONTROL SWITCH WITH DIMMER		SMOKE DETECTOR WITH ADDRESSABLE RELAY
TR	TAMPER RESISTANT	OC/2	DUAL RELAY OCCUPANCY SENSOR CONTROL SWITCH		SMOKE DETECTOR WITH SOUNDER BASE
	DUPLEX RECEPTACLE OUTLET				HEAT DETECTOR
	QUAD RECEPTACLE OUTLET	SS	DOUBLE GANG SWITCH		GAS DETECTOR
	SPLIT WIRED DUPLEX RECEPTACLE OUTLET		LOW VOLTAGE MULTI BUTTON CONTROL SWITCH (LETTER INDICATES CONTROL OF CORRESPONDING FIXTURES)		CARBON MONOXIDE DETECTOR
	220V RECEPTACLE OUTLET		CONTROLLING SWITCH (LETTER INDICATES CONTROL OF CORRESPONDING FIXTURES)		CARBON MONOXIDE/NITROGEN DIOXIDE SENSOR (GARAGE)
	ISOLATED GROUND RECEPTACLE		OCCUPANCY SENSOR (CEILING MOUNTED)		ADA TWO-WAY COMMUNICATIONS SYSTEM
	RECEPTACLE FLOOR DEVICE		DUAL TECHNOLOGY OCCUPANCY SENSOR (CEILING MOUNTED)		ACCESS CONTROL KEY PAD
	CEILING MOUNTED DEVICE		PASSIVE INFRARED OCCUPANCY SENSOR (CEILING MOUNTED)		ACCESS CONTROL CARD READER
	SPECIAL RECEPTACLE		ROOM CONTROLLER		ACCESS CONTROL DOOR STRIKE
	MOTOR OUTLET		DAYLIGHT SENSOR		ACCESS CONTROL MAG LOCK
	EXHAUST FAN		PHOTOCELL		ACCESS CONTROL DOOR SENSOR
	THERMOSTAT OUTLET		VOLUME CONTROL		ACCESS CONTROL REQUEST TO EXIT
	REMOTE SENSOR OUTLET		WALL SPEAKER		PUSHBUTTON
	TELEPHONE OUTLET		CEILING SPEAKER		BELL
	COMPUTER DATA OUTLET (#) INDICATES JACK QUANTITIES		SURVEILLANCE CAMERA		
	NETWORK AND VOICE OUTLET		SURVEILLANCE DIGITAL VIDEO RECORDER		
	WIRELESS ACCESS POINT CEILING MOUNTED		NURSE CALL ANNUNCIATOR PANEL		
	TELEVISION OUTLET		NURSE CALL EMERGENCY CALL DEVICE		
			NURSE CALL EMERGENCY CALL LIGHT		

NOTE: ALL SYMBOLS MAY NOT BE USED.

ABBREVIATIONS INDEX

#	NUMBER	DC	DIRECT CURRENT	KW	KILOWATT	PT	POTENTIAL TRANSFORMER
Φ	PHASE	DISP	DISPOSAL	LRA	LOCKED ROTOR AMPS	PV	PHOTOVOLTAIC
1Φ	SINGLE PHASE	DRY	DRYER	LTC	LIGHTING	PVC	POLYVINYL CHLORIDE
2P	TWO-POLE	DW	DISHWASHER	MATV	MASTER ANTENNA TELEVISION	(R)	RELOCATE
3Φ	THREE PHASE	DWG	DRAWING	MAX	MAXIMUM	RECP	RECEPTACLE
4P	FOUR-POLE	EC	EMPTY CONDUIT	MB	MAIN BUS	REF	REFRIGERATOR
AC	ALTERNATING CURRENT	EM	EMERGENCY	MCB	MAIN CIRCUIT BREAKER	REQ	REQUIRED
AF	ABOVE FINISHED FLOOR	EMG	EMERGENCY GENERATOR	MCC	MOTOR CONTROL CENTER	RLA	RATED LOAD AMPS
AFG	ABOVE FINISHED GRADE	EMT	ELECTRICAL METALLIC TUBING	MCM	1000 CIRCULAR MILLS	RMS	ROOT MEAN SQUARE
AFP	ARC FAULT PROTECTOR	EPO	EMERGENCY POWER OFF	MH	MANHOLE	SE	SERVICE ENTRANCE
AHJ	AUTHORITY HAVING JURISDICTION	EW	ELECTRIC WATER COOLER	MIC	MICROPHONE	SPD	SURGE PROTECTION DEVICE
AIC	AMP INTERRUPTING CURRENT (SYMMETRICAL)	EW	ELECTRIC WATER HEATER	MIN	MINIMUM	SPEC	SPECIFICATION
AL	ALUMINUM	(E)	EXISTING	MLO	MAIN LUGS ONLY	SPK	SPEAKER
AM	AMPS METER	(F)	FUTURE	MNF	MANUFACTURER	SS	SELECTOR SWITCH
AMP	AMPERE	FA	FIRE ALARM	MNT	MOUNTING	SW	SWITCH
ANN	ANNUNCIATOR	FACP	FIRE ALARM CONTROL PANEL	MTR	MOTOR	SWBD	SWITCHBOARD
ATS	AUTOMATIC TRANSFER SWITCH	FC	FOOT CANDLE	MW	MICROWAVE	SWGR	SWITCHGEAR
AUX	AUXILIARY	FLA	FULL LOAD AMPS	(N)	NEW	TTB	TELEPHONE TERMINAL BOARD
AWG	AMERICAN WIRE GAUGE	FT	FOOT	N/A	NOT APPLICABLE	TBC	TELEPHONE TERMINAL CABINET
BC	BARE COPPER	FRZ	FREEZER	NC	NORMALLY CLOSED	TV	TELEVISION
BFG	BELOW FINISH GRADE	FS	FUSED SWITCH	NEC	NATIONAL ELECTRICAL CODE	UG	UNDERGROUND
C	CONDUIT	GFAF	DUAL FUNCTION GFCI/AFCI CIRCUIT BREAKER	NEMA	NATIONAL MANUFACTURING ASSOCIATION	UNO	UNLESS NOTED OTHERWISE
CAB	CABINET	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	NFC	NATIONAL FIRE CODE	UPS	UNINTERRUPTIBLE POWER SUPPLY
CATB	COMMUNITY ANTENNA TELEVISION	GFEP	GROUND-Fault EQUIPMENT PROTECTION	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	V	VOLT (KV-KILOVOLT)
CATV	CABLE TELEVISION	GFP	GROUND FAULT PROTECTOR	NFS	NON FUSED SWITCH	VA/R	VOLT-AMPS/REACTIVE
CFI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED	GRC	GALVANIZED RIGID CONDUIT	NIC	NOT IN CONTRACT	VM	VOLT METER
CKT	CIRCUIT	GRD	GROUND	NL	NIGHT LIGHT	W	WATTS
CLG	CEILING	HP	HORSE POWER	NO	NORMALLY OPEN	W/	WITH
CNTR	CONTRACTOR	HZ	HERTZ	NTS	NOT TO SCALE	WASH	WASHER
CO	CONVENIENCE OUTLET	IG	ISOLATED GROUND	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED	WH	WATHOUR
CRT	COMPUTER TERMINAL	IMC	INTERMEDIATE METALLIC CONDUIT	OFOI	OWNER FURNISHED OWNER INSTALLED	W/O	WITHOUT
CT	CURRENT TRANSFORMER	IN	INCH	OS&T	OUTSIDE SCREW AND YOKE	WP	WEATHER PROOF
CU	COPPER	JB	JUNCTION BOX	PB	PUSH BUTTON	XFMR	TRANSFORMER
C/W	CONDUIT WITH	J-KV	KILOVOLT	PF	POWER FACTOR	XFMR-SW	TRANSFORMER SWITCH
(D)	DEMOLISH/DELETE	KVA	KILOVOLT AMPERES	PFR	PHASE FAILURE RELAY	XP	EXPLOSION PROOF
DB	DECIBEL	KVAR	KILOVARS	PNL	PANEL		

NOTE: THIS IS A TYPICAL ABBREVIATION LIST. NOT ALL ABBREVIATIONS MAY BE USED ON THIS PROJECT.

DESIGN CONTACTS

ELECTRICAL ENGINEER:	RYAN BEAGLES
ELECTRICAL TEAM LEAD:	MANUEL MASBERNAT
ELECTRICAL DESIGNER:	CHASE CHRISTENSEN

SHEET INDEX

SHEET NUMBER	SHEET TITLE
E0.0	ELECTRICAL COVERSHEET
E2.1	LIGHTING PLAN - AREA A
E2.2	LIGHTING PLAN - AREA B
E3.1	POWER PLAN - AREA A
E3.2	POWER PLAN - AREA B
E6.1	ELECTRICAL SCHEDULES
E6.2	ELECTRICAL SCHEDULES
E6.3	ELECTRICAL SCHEDULES
E7.1	ELECTRICAL DETAILS
E7.2	ELECTRICAL DETAILS
E7.3	ELECTRICAL DETAILS
E8.1	ELECTRICAL SPECIFICATIONS

COMMISSIONING NOTES:

- C408.3 LIGHTING SYSTEM FUNCTIONAL TESTING. CONTROLS FOR AUTOMATIC LIGHTING SYSTEMS SHALL COMPLY WITH SECTION C408.3.
- C408.3.1 FUNCTIONAL TESTING. TESTING SHALL ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND MANUFACTURERS' INSTALLATION INSTRUCTIONS. THE CONSTRUCTION DOCUMENTS SHALL STATE THE PARTY WHO WILL CONDUCT THE REQUIRED FUNCTIONAL TESTING. WHERE REQUIRED BY THE CODE OFFICIAL, AN APPROVED PARTY INDEPENDENT FROM THE DESIGN OR CONSTRUCTION OF THE PROJECT SHALL BE RESPONSIBLE FOR THE FUNCTIONAL TESTING AND SHALL PROVIDE DOCUMENTATION TO THE CODE OFFICIAL CERTIFYING THAT THE INSTALLED LIGHTING CONTROLS MEET THE PROVISIONS OF SECTION C405. WHERE OCCUPANT SENSORS, TIME SWITCHES, PROGRAMMABLE SCHEDULE CONTROLS, PHOTOSENSORS OR DAYLIGHTING CONTROLS ARE INSTALLED, THE FOLLOWING PROCEDURES SHALL BE PERFORMED:
 - CONFIRM THAT THE PLACEMENT, SENSITIVITY AND TIME-OUT ADJUSTMENTS FOR OCCUPANT SENSORS YIELD ACCEPTABLE PERFORMANCE.
 - CONFIRM THAT THE TIME SWITCHES AND PROGRAMMABLE SCHEDULE CONTROLS ARE PROGRAMMED TO TURN THE LIGHTS OFF.
 - CONFIRM THAT THE PLACEMENT AND SENSITIVITY ADJUSTMENTS FOR PHOTOSENSOR CONTROLS REDUCE ELECTRIC LIGHT BASED ON THE AMOUNT OF USABLE DAYLIGHT IN THE SPACE AS SPECIFIED.



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SEAL:



project:
GoEngineer T.I.

739 E Fort Union Blvd
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project no: 20021

date: 2020.08.19

revisions:

Permit Set

sheet:
ELECTRICAL
COVERSHEET

E0.0

SHEET SIZE: 24" x 36"



ELECTRICAL
1837 S. EAST BAY BLVD.
PHONE: 801.375.2228

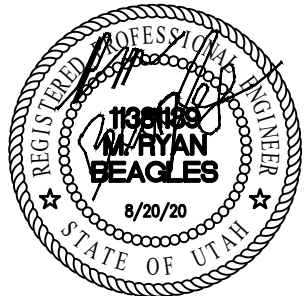
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sheet:
LIGHTING PLAN - AREA A

E2.1

SHEET SIZE: 24" x 36"

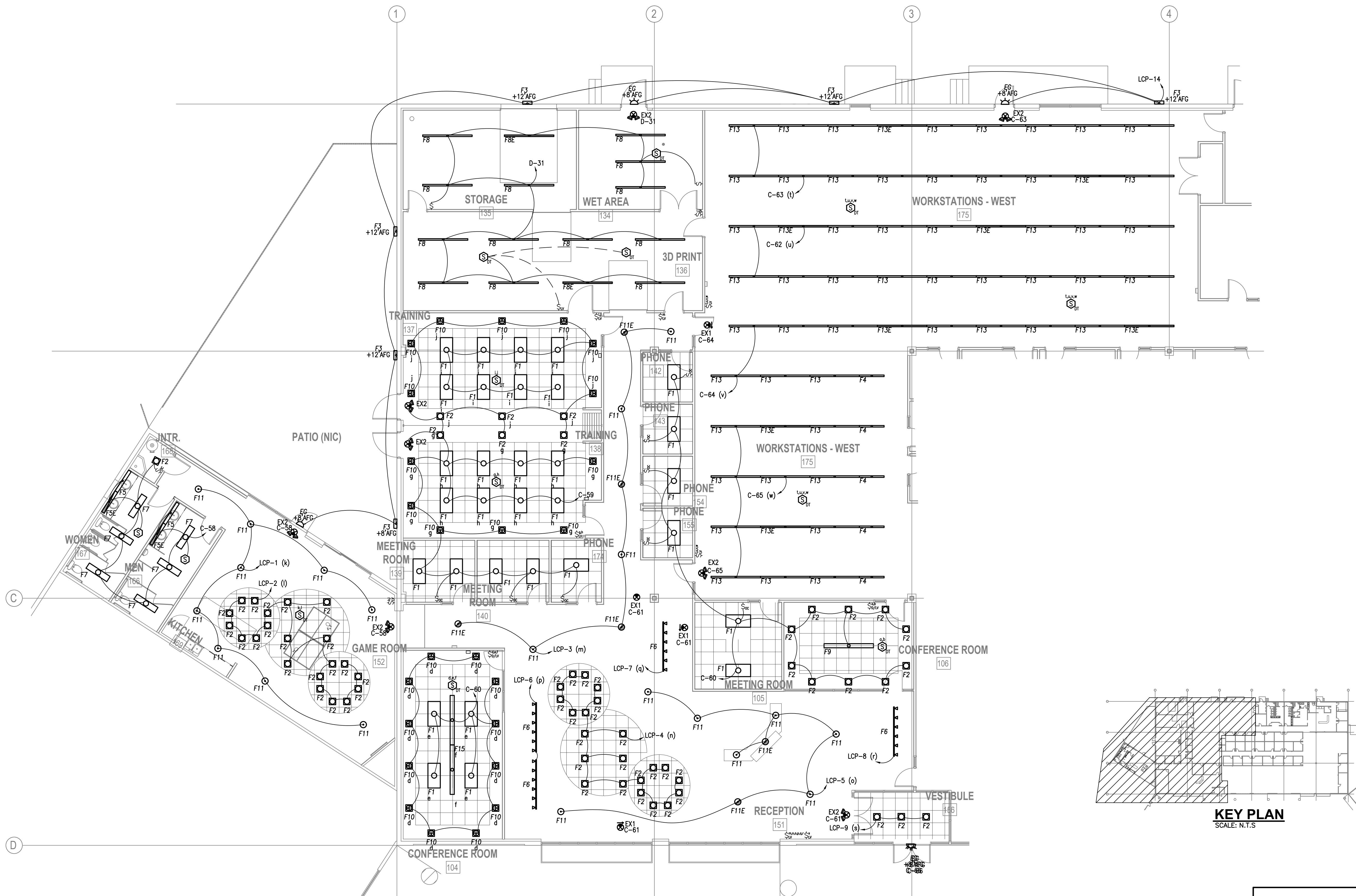


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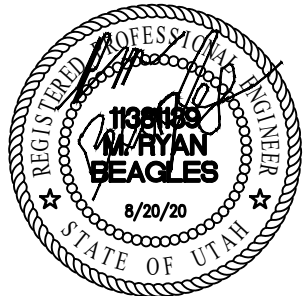
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TRIUMPH
DESIGN BUILD

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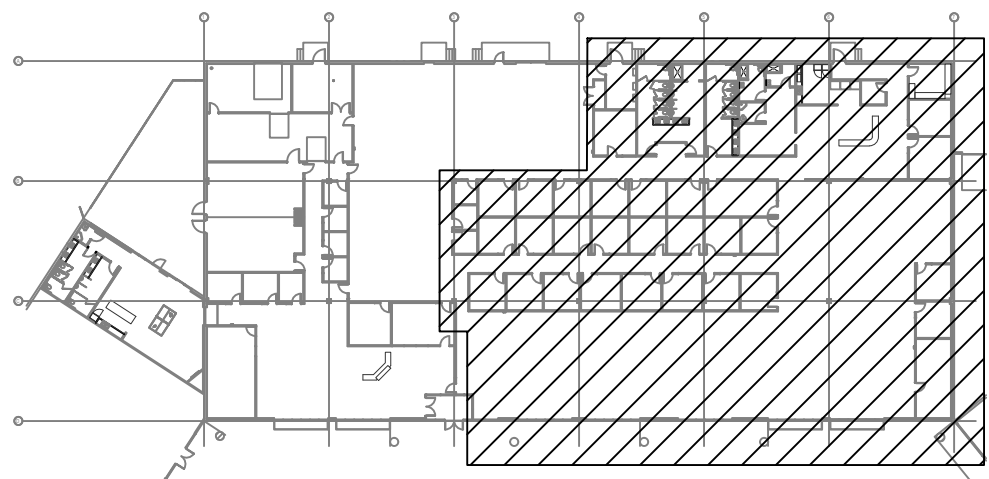
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sheet:

LIGHTING PLAN -
AREA B

E2.2

SHEET SIZE: 24" x 36"



KEY PLAN
SCALE: N.T.S

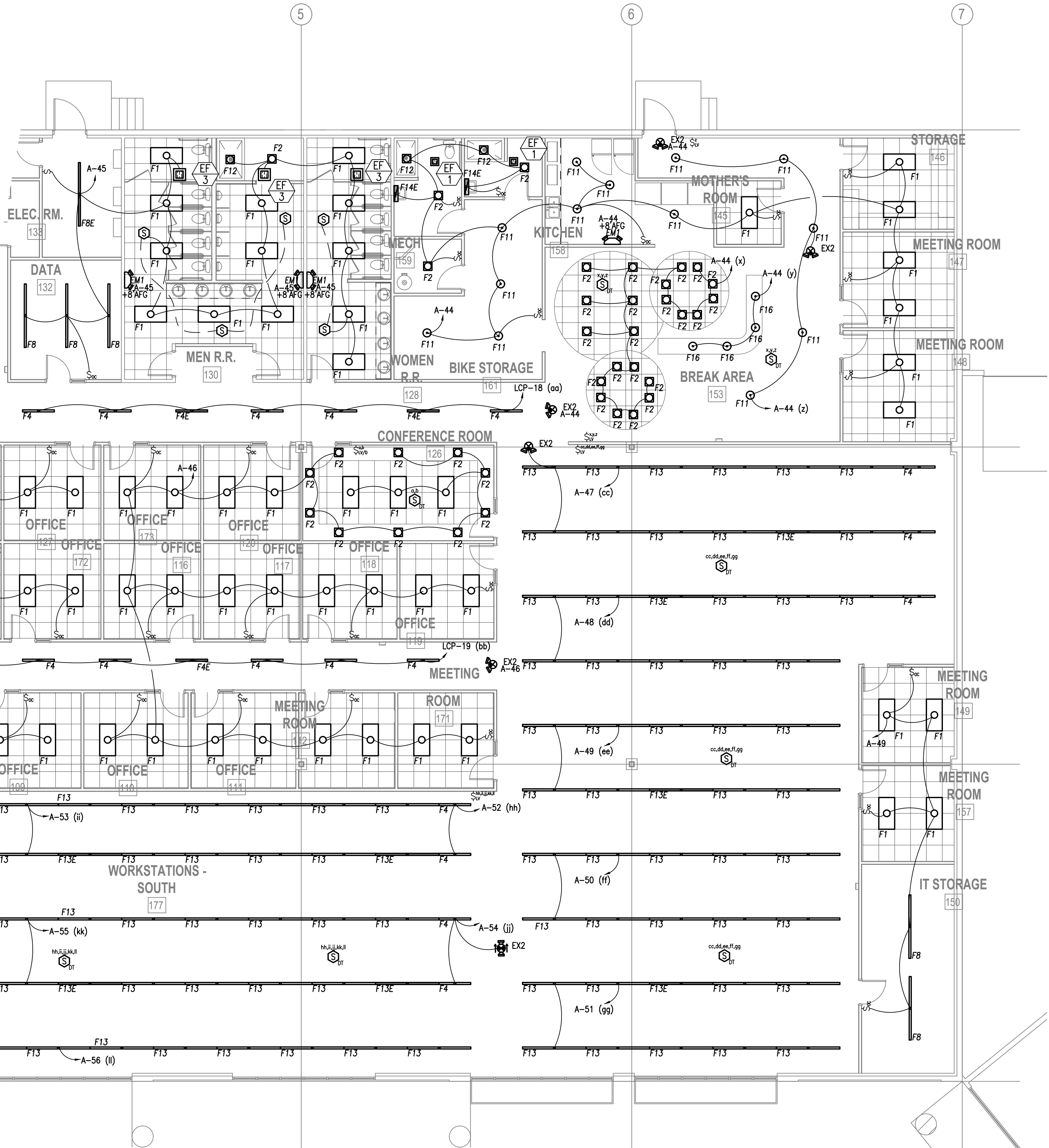
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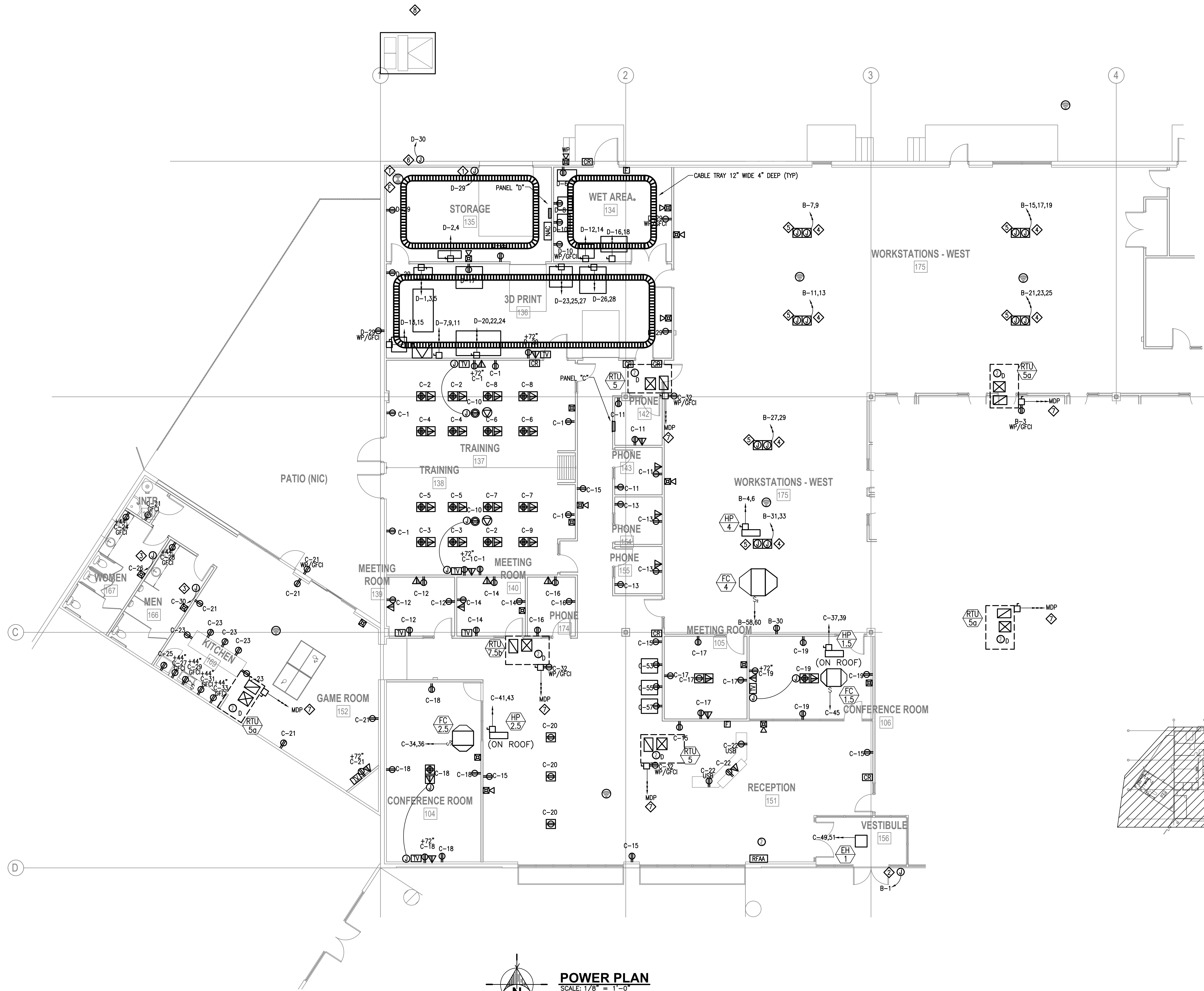
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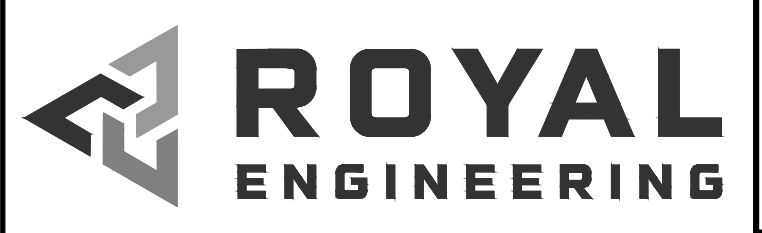
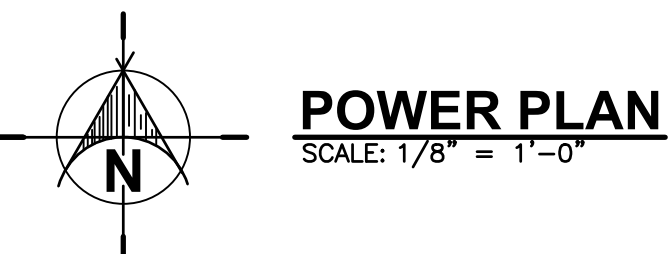
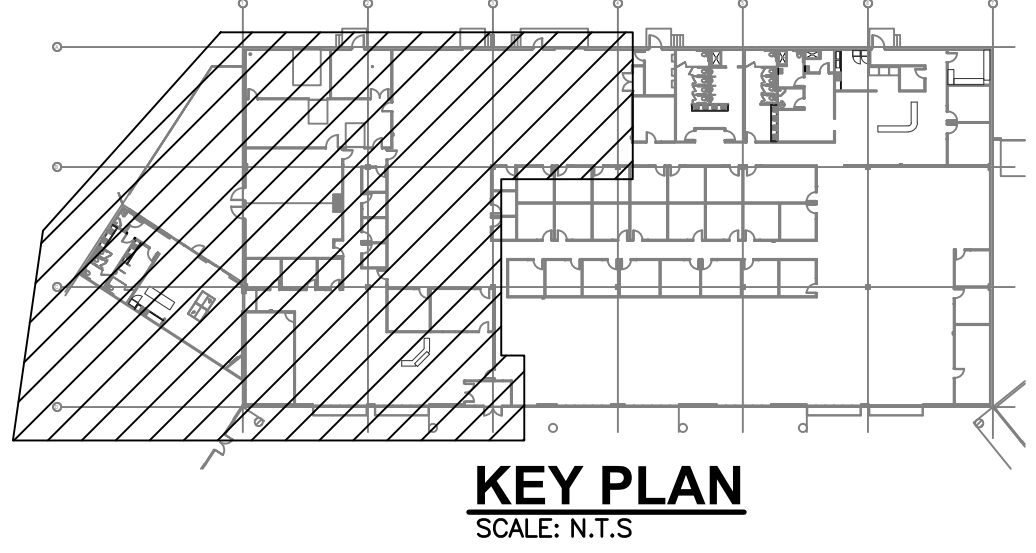
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- ELECTRICAL KEYED NOTES:**
- ◇ JUNCTION BOX FOR DOOR POWER.
 - ◇ BUILDING SIGN.
 - ◇ HAND DRYER.
 - ◇ FLOOR BOX FOR CUBICLE POWER.
 - ◇ FLOOR BOX FOR CUBICLE PHONE/DATA. RUN (2) 1" CONDUITS.
 - ◇ SPRINKLER BELL.
 - ◇ SEE ONE LINE DIAGRAM FOR CIRCUIT SIZE.
 - ◇ UTILITY TRANSFORMER. COORDINATE WITH POWER COMPANY PRIOR TO ROUGH-IN.



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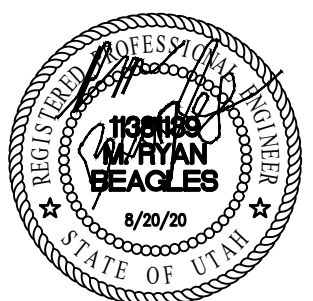
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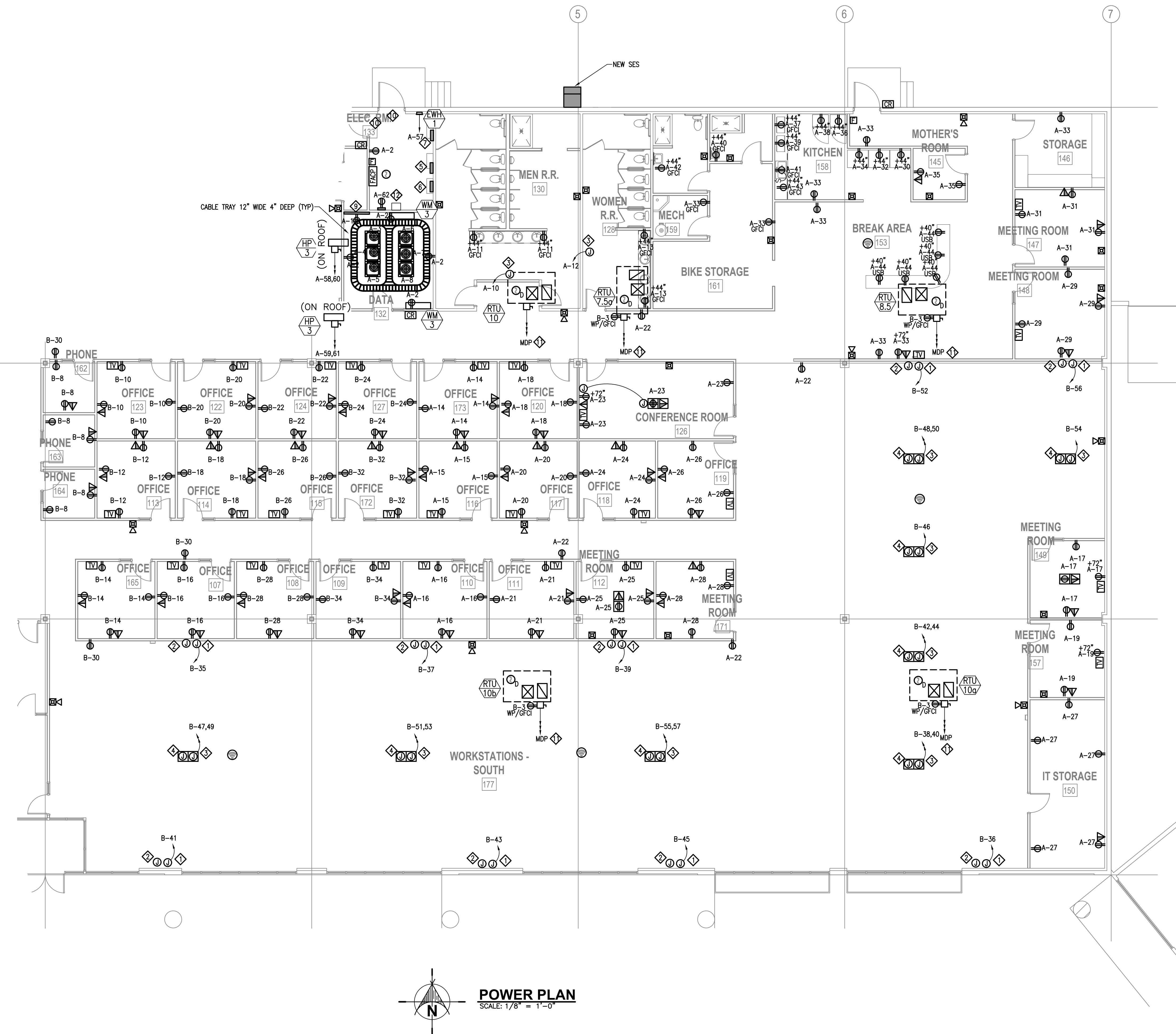
Permit Set

sheet:

POWER PLAN - AREA A

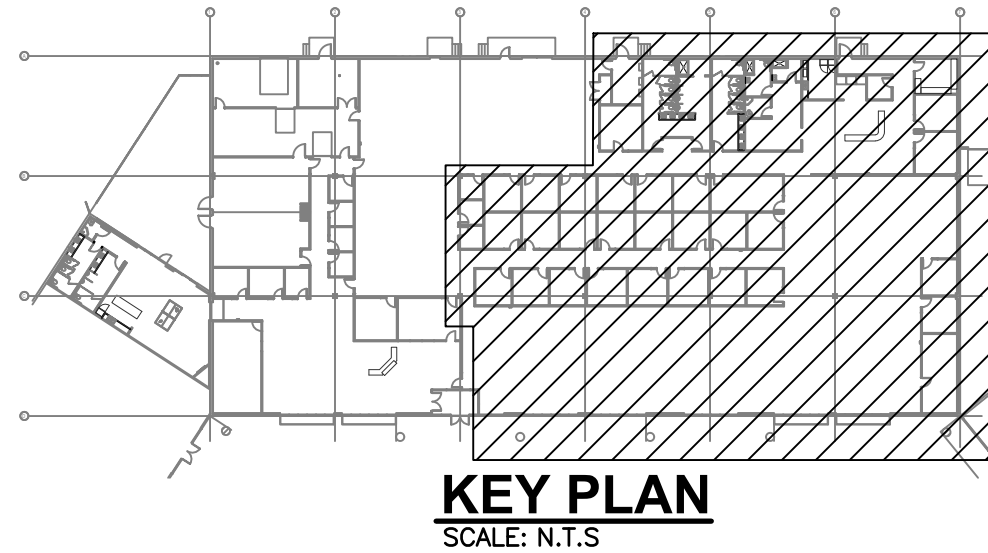
E3.1

SHEET SIZE: 24" x 36"



ELECTRICAL KEYED NOTES:

- ◆ J-BOX FOR CUBICLE POWER.
- ◆ J-BOX FOR CUBICLE PHONE/DATA. RUN (2) 1" CONDUITS.
- ◆ FLOOR BOX FOR CUBICLE POWER.
- ◆ FLOOR BOX FOR CUBICLE PHONE/DATA.
- ◆ PANEL "A".
- ◆ PANEL "B".
- ◆ MDP.
- ◆ TELEPHONE TERMINAL BOARD.
- ◆ LCP.
- ◆ PROVIDE PANIC HARDWARE PER NEC 110.26 (C)(3).
- ◆ SEE ONE LINE DIAGRAM FOR CIRCUIT SIZE.
- ◆ UPS.



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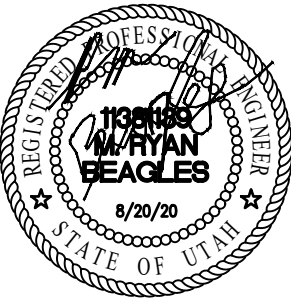
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project no:

20021

date:

2020.08.19

revisions:

Permit Set

sheet:

POWER PLAN -
AREA B

E3.2

SHEET SIZE: 24" x 36"

LIGHT FIXTURE SCHEDULE									
FIXTURE NUMBER	FIXTURE MANUFACTURER	FIXTURE CATALOG #	LAMPS		VOLTS	FIXTURE		DESCRIPTION	REMARKS
			TYPE	QTY.		WATTS	MOUNTING		
F10	HALO COMMERCIAL LITHONIA LIGHTOLIER ATLANTIC PRESCOLITE MAXILUME	LD8B10D019EUB8102080356LBSW1U1 LDN6 3510 LW6AR LSS MVOLT E21 P6RD10N210UVB WIPR6RD835VB WIP6RLWCC LED6WW-CLM11-35K-U-4LED80-SS LF6SL-MW46-FSL11135K0WW HH6-LED-1200L-DIM10-MVOLT-MD-35K-80HH6-6507-CL-WH	LED 3500 KELVIN 1000 LUMENS 80 CRI	-	120	21	RECESSED	LED WALL WASHER WITH ALZAK TRIM	
F11	EDISON LIGHTING OR APPROVED EQUAL	SONIC TUBE+16-20W-120-S6-DL-Q-10V-6S-WH-WH-35K	LED	-	120	20	PENDANT	LED CYLINDER FIXTURE	ACUSTIC PANEL COLOR CHOOSE BY OWNER
F11E	EDISON LIGHTING OR APPROVED EQUAL	SONIC TUBE+16-20W-120-S6-DL-Q-10V-6S-WH-WH-35K-EM	LED	-	120	20	PENDANT	LED PENDANT FIXTURE WITH EMERGENCY BATTERY PACK	ACUSTIC PANEL COLOR CHOOSE BY OWNER
F12	HALO JUNO WESTINGHOUSE PRESCOLITE RAYON	SM0R6035WH 6RLS 10LM 30K 90CRI 120 FRPC WH 63221 LBS9LED10L-35K-8-WH RLJ56-12-12-30-W	LED 3500 KELVIN 600 LUMENS 90 CRI	-	120	9.6	SURFACE CEILING	LED SURFACE LIGHT WET LOCATION LISTED	
F13	NULITE OR APPROVED EQUAL	RP1-AD-16-FF-08-L35-1C-120-D-W-T1/120-8	LED 3500 KELVIN 6000 LUMENS	-	120	56.8	PENDANT	NARROW LINEAR PENDANT LED	ACOUSTIC PANEL COLOR CHOSEN BY OWNER
F13E	NULITE OR APPROVED EQUAL	RP1-AD-16-FF-08-L35-1B6-120-D-W-T1/120-8	LED 3500 KELVIN 6000 LUMENS	-	120	56.8	PENDANT	NARROW LINEAR PENDANT LED WITH BATTERY PACK	ACOUSTIC PANEL COLOR CHOSEN BY OWNER
F14E	METALUX LITHONIA DAY-BRITE LSI VISIONEERING ORACLE	2BCLED-LD4-28HL-UNV-EL14W-L835-CD1-U WL2-Z2L-E21-LP835 W10TA L1B-CP16-X CSW4-28-35-UNV-DZT-ZO-EMLED W442-LED-SS-WW-UJE-EM LCAD24-LED-8-35K-020L-UNV-839 2-OW1B-LED-3000L-DIM10-MVOLT-35K-80-Q-EMG-LED	LED 3500 KELVIN 2000 LUMENS 80 CRI	-	120	31	SURFACE WALL	24" WALL MTD. LED WITH EMERGENCY BATTERY PACK	
F15	CORELITE OR APPROED EQUAL	DSI-WS-3-40L-835-1-D-120-DC-CC-AC48-T1-16	LED	-	120	120	SUSPENDED	LED 16" SUSPENDED FIXTURE	
F16	EUREKA OR APPROVED EQUAL	4258-16-LED-30 80-120-DV-C-60-WHE-WH	LED	-	120	17.3	PENDANT	16.5" ACOUSTIC PENDANT	FINISH TO BE SELECTED BY ARCHITECT
EG	SURELITE LITHONIA PROLITE LSI DUAL-LITE MAXILUME	SELV25XX AFN-DB-EXT DBEL-ACEM-W-SDT-CW CSN405-CT PGZ-HTR ELM-807-BZ	6W XENON INCLUDED	2	120	12	SURFACE WALL	EMERGENCY EGRESS LIGHT	FINISH TO BE SELECTED BY ARCHITECT
EM1	SURELITE LITHONIA LIGHTOLIER LSI DUAL-LITE MAXILUME	SEL17 ELM2 E611W LITEM-WH EZ-2 ELM-LED-861	INCLUDED	2	120	5.4	SURFACE WALL	2-HEAD EM WALL PACK (SURFACE)	
EX1	SURELITE LITHONIA CHLORIDE LSI DUAL-LITE MAXILUME	APX7G LOM-S-W-3-G-EL-N ERS5L3WG EX-G-U-WB-WH EVEUGWE ELX-803-G-W	INCLUDED	2	120	1.5	UNIVERSAL	UNIVERSAL MOUNT WITH EXTRA FACE PLATE FOR FIELD CONVERSION 1/2 FACE	NICKEL/CADMIUM BATTERY SINGLE FACE EXIT
EX2	SURELITES LITHONIA LIGHTOLIER LSI MAXILUME	LPX-70-DGWHDH LITHONIA-S-G-EL-N LC18NHT1GW LPRX-G-U-WH-LD11 ELX-703-G-W	INCLUDED	2	120	5.4	SURFACE WALL	2-HEAD EM WALL PACK (SURFACE) WITH EXIT LIGHT	

LIGHT FIXTURE SCHEDULE									
FIXTURE NUMBER	FIXTURE MANUFACTURER	FIXTURE CATALOG #	LAMPS		FIXTURE			DESCRIPTION	REMARKS
			TYPE	QTY.	VOLTS	WATTS	MOUNTING		
F1	METALUX	24SR-LD2-39-C-UNV-L835-CD1-U	LED 3500 KELVIN 3900 LUMENS 80 CRI	-	120	31.9	LAY-IN GRID	2X4 LED LAY-IN VOLUMETRIC	NO SUBSTITUTIONS. PROVIDE A CONTRACTOR ALLOWANCE OF \$163
F2	HALO COMMERCIAL LITHONIA LIGHTOLIER ATLANTIC PRESCOLITE MAXILUME	PD610ED015PDM6A83561VC LDN6 3515 L06AR LSS MVOLT E21 P6RD10N210UVB WIPR6RD835VB WIPR6DCC LED6-CLM15-35K-U-6LED10-SS LF6SL-6LFS1L15L3K HH6-LED-1500L-DIM10-MVOLT-MD-35K-80HH6-6501-CL-WH	LED 3500 KELVIN 1500 LUMENS 80 CRI	-	120	21	RECESSED	LED DOWNLIGHT WITH ALZAK TRIM	
F3	LITHONIA OR APPROVED EQUAL	TWR2 LED ALO	LED 5000 KELVIN 10000 LUMENS	-	120	87	SURFACE/ WALL	WALL PACK	
F4	NULITE OR APPROVED EQUAL	RP1-AD-16-FF-08-L35-1C-120-D-W-T11/20-4	LED 3500 KELVIN 3000 LUMENS	-	120	28.4	PENDANT	NARROW LINEAR PENDANT LED	ACOUSTIC PANEL COLOR CHOSEN BY OWNER
F4E	NULITE OR APPROVED EQUAL	RP1-AD-16-FF-08-L35-1B6-120-D-W-T11/20-4	LED 3500 KELVIN 3000 LUMENS	-	120	28.4	PENDANT	NARROW LINEAR PENDANT LED WITH BATTERY PACK	ACOUSTIC PANEL COLOR CHOSEN BY OWNER
F5	METALUX LITHONIA DAY-BRITE LSI VISIONEERING ORACLE	4BCLED-LD4-36SL-UNV-L835-CD1-U WL4-30L-E21-LP835 CSW-48-28-35-UNV-DZT-ZO W444-LED-SS-WW-UJE LCAD48-LED-8-35K-037L-UNV 4-OW1B-LED-3000L-DIM10-MVOLT-35K-80	LED 3500 KELVIN 3000 LUMENS 80 CRI	-	120	37	SURFACE WALL	48" WALL MTD. LED	
F5E	METALUX LITHONIA DAY-BRITE LSI VISIONEERING ORACLE	4BCLED-LD4-36SL-UNV-EL14W-L835-CD1-U WL4-30L-E21-LP835-EL14L CSW-48-28-35-UNV-DZT-ZO-EMLED W444-LED-SS-WW-UJE-EM LCAD48-LED-8-35K-037L-UNV-839 4-OW1B-LED-3000L-DIM10-MVOLT-35K-80-Q-EMG4LED	LED 3500 KELVIN 3000 LUMENS 80 CRI	-	120	37	SURFACE WALL	48" WALL MTD. LED WITH EMERGENCY BATTERY PACK	
F6	HALO LITHONIA LIGHTOLIER ELCO CONTECH ELITE	L652 FIXTURE 6008N EP008 L78 ET8	LED	-	-	30	SURFACE	8 FOOT TRACK WITH 6 HEADS	PROVIDE ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.
F7	METALUX LITHONIA DAY-BRITE LSI COLUMBIA ORACLE	4WSNLED-LD4-32SL-F-UNV-L835-CD1-U LB4-3000LM-80CRI-35K-MN1-2T-MVOLT CWL4-4-40L-835-UNV-DIM WNA10-LED-SS-WW-UJE LWCA104-35LM-EUJ 4-OW1W-LED-3400L-DIM10-MVOLT-35K-80	LED 3500 KELVIN 3200 LUMENS 80 CRI	-	120	46	SURFACE CEILING	1X4 SURFACE LED	
F8	METALUX LITHONIA DAY-BRITE LSI COLUMBIA ORACLE	8TSNLED-LD4-95SL-LW-UNV-L835-CD2-U ZL1N-L96-10000LM-FST-MVOLT-35K-80CRI-WH FSS8100L835-UNV-DIM SDL8-LED-HO-WW-UJE LCL8-35ML-EUJ 8-OC1-LED-6000L-DIM10-MVOLT-35K-80	LED 3500 KELVIN 9500 LUMENS 80 CRI	-	120	106	SURFACE/CHAIN	96" LED STRIP	
F8E	METALUX LITHONIA DAY-BRITE LSI COLUMBIA ORACLE	8TSNLED-LD4-95SL-LW-UNV-EL14W-L835-CD2-U ZL1N-L96-10000LM-FST-MVOLT-35K-80CRI-ETW-WH FSS8100L835-UNV-DIM-EMLED SDL8-LED-HO-WW-UJE-EM LCL8-35ML-EU-ELL14 8-OC1-LED-6000L-DIM10-MVOLT-35K-80-Q-EMG4LED	LED 3500 KELVIN 9500 LUMENS 80 CRI	-	120	106	SURFACE/CHAIN	96" LED STRIP WITH EMERGENCY BATTERY PACK	
F9	CORELITE OR APPROED EQUAL	DSI-WS-3-40L-835-1-D-120-DC-CC-AC48-T1-8	LED	-	120	60	SUSPENDED	LED 8" SUSPENDED FIXTURE	

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sheet:
ELECTRICAL
SCHEDULES

E6.1

SHEET SIZE: 24" x 36"

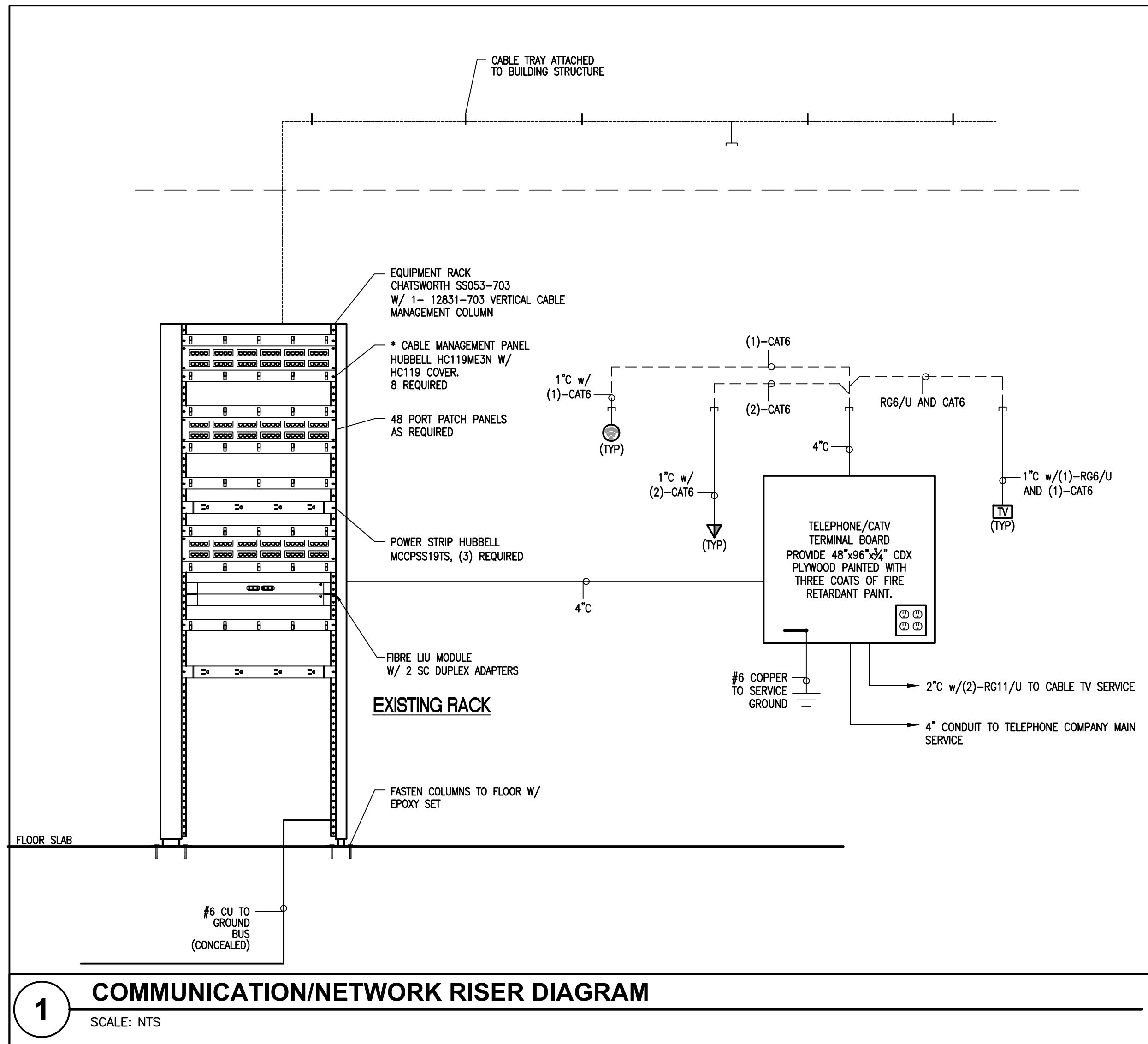


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FAULT CURRENT CALCULATION TABLE																
MAIN UTILITY COMPANY TRANSFORMER (ROCKY MOUNTAIN POWER)			TRANSFORMER KVA	AFC AT UTILITY	%Z											
30 120/208V -1200A PAD MOUNTED			500	38.233 A	3.63%											
CONFIGURATION					FEEDER			SYSTEM								
FROM		TO	LENGTH	SOURCE FAULT CURRENT	FEEDER SIZE	FEEDERS PER PHASE	WIRE CONSTANT	LINE TO LINE VOLTS	XFMR SECONDARY VOLTS	PHASE	KVA	%Z	MOTOR LOAD	FAULT CURRENT AT EQUIPMENT	FULL OR SERIES RATED	MINIMUM SYMMETRICAL EQUIPMENT AIC RATINGS
TRANSFORMER	UTILITY	SWITCHBOARD	METER	180'-0"	38.233 AIC	500 AL	4	21,390	208 V		30	-		22,897 AIC	FULL	42,000 AIC
SWITCHBOARD	METER	PANELBOARD	MDP	35'-0"	22,897 AIC	500 AL	4	21,390	208 V		30	-		21,240 AIC	FULL	22,000 AIC
PANELBOARD	MDP	PANELBOARD	A	10'-0"	22,897 AIC	300 AL	1	14,922	208 V		30	-		20,393 AIC	FULL	22,000 AIC
PANELBOARD	MDP	PANELBOARD	B	12'-0"	22,897 AIC	300 AL	1	14,922	208 V		30	-		19,853 AIC	FULL	22,000 AIC
PANELBOARD	MDP	PANELBOARD	C	110'-0"	22,897 AIC	300 AL	1	14,922	208 V		30	-		9,518 AIC	FULL	10,000 AIC
PANELBOARD	MDP	PANELBOARD	D	95'-0"	22,897 AIC	250 AL	2	12,862	208 V		30	-		13,436 AIC	FULL	22,000 AIC
NOTE: DISTANCES INDICATED ARE FOR FAULT-CURRENT ANALYSIS ONLY. CONTRACTOR SHALL USE FIELD MEASUREMENTS ESTABLISH CONDUCTOR LENGTHS FOR ORDERING PURPOSES.																

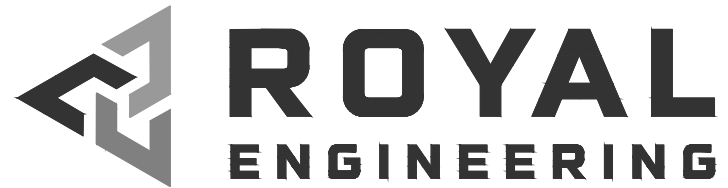
SYMBOL	DESCRIPTION	SERVICE VOLTS	PHASE	SIZE	FUSE	STARTER	HP/TON	VA	AMPS	MCCP/ BRKR	REMARKS
HP 1.5	HEAT PUMP	208 V	10	30A NEMA 3R	-	INTEGRAL		2,704	13.0A	20A	
HP 2.5	HEAT PUMP	208 V	10	30A NEMA 3R	-	INTEGRAL		4,160	20.0A	30A	
HP 3	HEAT PUMP	208 V	10	30A NEMA 3R	-	INTEGRAL		6,240	30.0A	50A	
HP 4	HEAT PUMP	208 V	10	30A NEMA 3R	-	INTEGRAL		7,280	35.0A	50A	
FC 1.5	FAN COIL	208 V	10	2 POLE SWITCH	-	INTEGRAL		250	1.2A	20A	
FC 2.5	FAN COIL	208 V	10	2 POLE SWITCH	-	INTEGRAL		510	2.5A	20A	
FC 3	FAN COIL	208 V	10	2 POLE SWITCH	-	INTEGRAL		83	0.4A	20A	
FC 4	FAN COIL	208 V	10	2 POLE SWITCH	-	INTEGRAL		759	3.7A	20A	
RTU 5	ROOF TOP UNIT	208 V	30	60A NEMA 3R	-	INTEGRAL		10,087	28.0A	40A	FACTORY INSTALLED DISCONNECT AND RECEPTACLE.
RTU 8.5	ROOF TOP UNIT	208 V	30	60A NEMA 3R	-	INTEGRAL		16,572	46.0A	60A	FACTORY INSTALLED DISCONNECT AND RECEPTACLE.
RTU 10	ROOF TOP UNIT	208 V	30	100A NEMA 3R	-	INTEGRAL		19,094	53.0A	70A	FACTORY INSTALLED DISCONNECT AND RECEPTACLE AND DUCT DETECTOR.
RTU 5	ROOF TOP UNIT	208 V	30	60A NEMA 3R	-	INTEGRAL		10,448	29.0A	40A	FACTORY INSTALLED DISCONNECT AND RECEPTACLE AND DUCT DETECTOR.
RTU 7.5	ROOF TOP UNIT	208 V	30	60A NEMA 3R	-	INTEGRAL		14,411	40.0A	50A	FACTORY INSTALLED DISCONNECT AND RECEPTACLE AND DUCT DETECTOR.
RTU 7.5	ROOF TOP UNIT	208 V	30	60A NEMA 3R	-	INTEGRAL		15,491	43.0A	60A	FACTORY INSTALLED DISCONNECT AND RECEPTACLE AND DUCT DETECTOR.
RTU 10	ROOF TOP UNIT	208 V	30	100A NEMA 3R	-	INTEGRAL		19,094	53.0A	70A	FACTORY INSTALLED DISCONNECT AND RECEPTACLE AND DUCT DETECTOR.
RTU 10	ROOF TOP UNIT	208 V	30	100A NEMA 3R	-	INTEGRAL		20,895	58.0A	80A	FACTORY INSTALLED DISCONNECT AND RECEPTACLE AND DUCT DETECTOR.
EF 1	EXHAUST FAN	120 V	10	INTEGRAL PLUG	-	-		85	0.7A	20A	EF CONTROLLED WITH LIGHTING
EF 2	EXHAUST FAN	120 V	10	INTEGRAL PLUG	-	-		125	1.0A	20A	EF CONTROLLED WITH LIGHTING
EF 3	EXHAUST FAN	120 V	10	INTEGRAL PLUG	-	-		240	2.0A	20A	EF CONTROLLED WITH LIGHTING
EW 1	ELECTRIC WALL HEATER	120 V	10	T-STAT	-	-		1,500	12.5A	20A	
EH 1	ELECTRIC HEATER	208 V	10	T-STAT	-	-		3,001	14.4A	20A	

- NOTES:
1. VERIFY ALL EQUIPMENT LOCATIONS AND CONNECTION REQUIREMENTS (i.e. VOLTAGE, PHASE, FLA, ETC.) WITH MECHANICAL DRAWINGS/SUBMITTALS BEFORE FOR ACTUAL EQUIPMENT INSTALLED.
 2. ALL FUSES SHALL BE DUAL ELEMENT TIME DELAY. FINAL BREAKER/FUSE & DISCONNECT SIZE SHALL BE DETERMINED BY MANUFACTURER'S RECOMMENDATION FOR ACTUAL EQUIPMENT INSTALLED.
 3. MAXIMUM VALUES INDICATED.
 4. DISCONNECTING MEANS NOT REQUIRED FOR EQUIPMENT WITHIN SIGHT (AS DEFINED IN NEC) OF BRANCH PANEL SERVING EQUIPMENT. SEE NEC 422.31 (B).
 5. DISCONNECTING MEANS NOT REQUIRED FOR APPLIANCES NOT OVER 300 VA. SEE NEC 422.31 (A).

LOAD CALCULATIONS			
GROSS BUILDING AREA:	30,945	SQ. FT.	
BUILDING VOLTAGE:	208	VOLTS	
PHASE:	3	PHASE	
OCCUPANCY TYPE:	BUSINESS		
GENERAL LOADS:			
LIGHTING LOAD W/ 125% DEMAND:	27,302	VA	
RECEPTACLE LOAD:	100,870	VA	
FIRST 10,000 VA @ 100%:	10,000	VA	
REMAINDER @50%:	45,435	VA	
ADJUSTED RECEPTACLE TOTAL LOAD:	55,435	VA	
SMALL APPLIANCE LOAD:	-	VA	
KITCHEN EQUIPMENT:	1,000	VA	
MISC:	3,269	VA	
TOTAL LOAD:	4,269	VA	
HVAC LOADS:			
COOLING/HEATING:	185,000	VA	
RESISTANCE HEATING:	4,500	VA	
EXHAUST:	-	VA	
WATER HEATING:	-	VA	
TOTAL:	189,500	VA	
EQUIPMENT LOADS:			
MACHINERY:	65,293	VA	
ELEVATOR:	-	VA	
PUMPS:	-	VA	
WELDERS:	-	VA	
AIR COMPRESSORS:	5,616	VA	
MOTORS:	-	VA	
NET COMPUTED LOAD	347,415	VA	
NET COMPUTED LOAD (VA, VOLTS):	964	AMPS	

LIGHTING CONTROL PANEL "LCP" SCHEDULE							AUTOMATION SCHEDULE						
							Schedule ON / OFF	Manual ON / Auto OFF	Dark - Down	Dark - Auto OFF	V-100 Dimming	Phase Dimming	Daylight Sensor
MOUNTING: SURFACE		LOCATION: ELECTRICAL ROOM											
BRANCH CIRCUIT FOR CONTROL A-62													
SPACE NUMBER	RELAY		SUPPLY	VA	AREA SERVED	LV SWITCH*							
	AMP	POLE											
1	20	1	C-58	180	GAME ROOM PENDANTS	k		X			X		
2	20	1	C-58	462	GAME ROOM RECESSED CANS	l		X			X		
3	20	1	C-61	160	CORRIDOR LTG	m		X			X		
4	20	1	C-61	462	RECEPTION RECESSED CANS	n		X			X		
5	20	1	C-61	180	RECEPTION LTG	o		X			X		
6	20	1	C-61	30	TRACK LTG	p		X			X		
7	20	1	C-61	30	TRACK LTG	q		X			X		
8	20	1	C-61	30	TRACK LTG	r		X			X		
9	20	1	C-61	63	ENTRY LTG	s		X			X		
10	20	1			SPACE								
11	20	1			SPACE								
12	20	1			SPACE								
13	20	1			SPACE								
14	20	1	C-66	522	EXTERIOR LTG		X						
15	20	1	A-44	462	BREAK AREA CANS	x		X			X		
16	20	1	A-44	160	BREAK AREA LTG	y		X			X		
17	20	1	A-44	25	BREAK AREA LTG	z		X			X		
18	20	1	A-44	199	CORRIDOR LTG	aa		X			X		
19	20	1	A-46	284	CORRIDOR LTG	bb		X			X		
20	20	1			SPACE								
21	20	1			SPACE								
22	20	1			SPACE								
23	20	1			SPACE								
24	20	1			SPACE								
25	20	1			SPACE								
26	20	1			SPACE								
27	20	1			SPACE								
28	20	1			SPACE								
29	20	1			SPACE								
30	20	1		0	SPARE								

* SEE PLAN FOR LOCATION OF LOW VOLTAGE SWITCH



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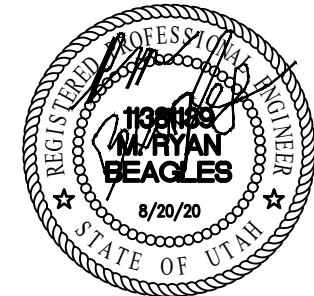
Architecture
Landscape Architecture
Land Planning
Interior Design
Construction Management
LEED Consulting

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SEAL:



project:
GoEngineer T.I.
739 E Fort Union Blvd
Midvale, UT 84047

project no: 20021

date: 2020.08.19

revisions:

Permit Set

sheet:
ELECTRICAL
SCHEDULES

E6.2

SHEET SIZE: 24" x 36"

VOLTAGE: 208 Y/120 VOLTS

MOUNTING: SURFACE

ENCLOSURE: NEMA 1

PHASE: 3

WIRE: 4

BUS RATING (AMPS): 400

MAX LOAD ONLY

MINIMUM EQUIPMENT RATING:

REMARKS:

SEE FAILURE CURRENT TABLE

CIRCUIT BREAKER				FEEDER				LOAD/PHASE (VA)				CKT. LOAD		FEEDER				CIRCUIT BREAKER							
No.	AMPS	POLE	WOD.	CIRCUIT NAME		C	WIRE	GRD	TERMINAL FACTOR	WATTS	ØA	ØB	ØC	WATTS	TERMINAL FACTOR	GRD	WIRE	C	CIRCUIT NAME		WOD.	POLE	AMPS	No.	
1	20	3	-	H350 POWDER RECOVERY		½"	#12	#12	1.00	600	3,408			2,808	1.00	#10	#8	½"	AIR COMPRESSOR		-	2	40	2	
3	-	-	-	-		-	#12	-	1.00	600		3,408		2,808	1.00		#8	-	-		-	-	-	4	
5	-	-	-	-		-	#12	-	1.00	600			2,400	1,800	1.00	#12	#12	½"	RADOR		-	1	20	8	
7	60	3	-	H350 TRANSFORMER		1"	#6	#10	1.00	5,533	7,333			1,800	1.00	#12	#12	½"	FORTI		-	1	20	8	
9	-	-	-	-		-	#6	-	1.00	5,533		7,333		1,800	1.00	#12	#12	½"	1900BT		-	1	20	10	
11	-	-	-	-		-	#6	-	1.00	5,533			9,069	3,536	1.00	#10	#8	½"	F375M CHILLER		-	2	50	12	
13	20	2	-	8001		½"	#12	#12	1.00	1,248	4,784			3,536	1.00	-	#8	-	-		-	-	-	14	
15	-	-	-	-		-	#12	-	1.00	1,248		6,448		5,200	1.00	#8	#4	1"	F375M FURNACE		-	2	70	16	
17	20	1	-	770M		½"	#12	#12	1.00	1,800			7,000	5,200	1.00	-	#4	-	-		-	-	-	18	
19	20	1	-	SPARE					1.00		2,160			2,160	1.00	#10	#10	½"	F770		-	3	30	20	
21	20	1	-	SPARE					1.00			2,160		2,160	1.00	-	#10	-	-		-	-	-	22	
23	30	3	-	450CM		½"	#10	#10	1.00	2,160			4,320	2,160	1.00	-	#10	-	-		-	-	-	24	
25	-	-	-	-		-	#10	-	1.00	2,160	2,888			728	1.00	#12	#12	½"	J850		-	2	20	26	
27	-	-	-	-		-	#10	-	1.00	2,160		2,888		728	1.00	-	#12	-	-		-	-	-	28	
29	20	1	-	RECEPTACLE		½"	#12	#12	1.00	900			1,100	200	1.00	#12	#12	½"	SPRINKLER BELL		RED	1	20	30	
31	20	1	-	LIGHTING		½"	#12	#12	1.25	1,590	1,590				1.00				SPACE		-	-	-	32	
33	-	-	-	SPACE					1.00			0			1.00				SPACE		-	-	-	34	
35	-	-	-	SPACE					1.00				0		1.00				SPACE		-	-	-	36	
37	-	-	-	SPACE					1.00			0			1.00				SPACE		-	-	-	38	
39	-	-	-	SPACE					1.00				0		1.00				SPACE		-	-	-	40	
41	-	-	-	SPACE					1.00					0	1.00				SPACE		-	-	-	42	
43	-	-	-	SPACE					1.00						1.00				SPACE		-	-	-	44	
45	-	-	-	SPACE					1.00			0	0		1.00				SPACE		-	-	-	46	
47	-	-	-	SPACE					1.00					0	1.00				SPACE		-	-	-	48	
49	-	-	-	SPACE					1.00			0			1.00				SPACE		-	-	-	50	
51	-	-	-	SPACE					1.00				0		1.00				SPACE		-	-	-	52	
53	-	-	-	SPACE					1.00					0	1.00				SPACE		-	-	-	54	
55	-	-	-	SPACE					1.00			0			1.00				SPACE		-	-	-	56	
57	-	-	-	SPACE					1.00				0		1.00				SPACE		-	-	-	58	
59	-	-	-	SPACE					1.00					0	1.00				SPACE		-	-	-	60	
61	-	-	-	SPACE					1.00			0			1.00				SPACE		-	-	-	62	
63	-	-	-	SPACE					1.00				0		1.00				SPACE		-	-	-	64	
65	-	-	-	SPACE					1.00					0	1.00				SPACE		-	-	-	66	
67	-	-	-	SPACE					1.00						1.00				SPACE		-	-	-	68	
69	-	-	-	SPACE					1.00				0		1.00				SPACE		-	-	-	70	
71	-	-	-	SPACE					1.00					0	1.00				SPACE		-	-	-	72	
73	-	-	-	SPACE					1.00			0			1.00				SPACE		-	-	-	74	
75	-	-	-	SPACE					1.00				0		1.00				SPACE		-	-	-	76	
77	-	-	-	SPACE					1.00					0	1.00				SPACE		-	-	-	78	
79	-	-	-	SPACE					1.00			0			1.00				SPACE		-	-	1	20	80
81	-	-	-	SPACE					1.00				0		1.00				SPACE		-	-	1	20	82
83	-	-	-	SPACE					1.00					0	1.00				SPACE		-	-	1	20	84

NOTES:

1. ALL INSULATION ON CONDUCTORS TO BE THIN, UNLESS NOTED OTHERWISE.

2. INSULATION ON ALL UNDERGROUND EXTERIOR CONDUCTORS SHALL BE THIN.

3. LOAD DEMANDS CALCULATED AS PER SECTIONS 219 & 220 OF THE NATIONAL ELECTRICAL CODE.

4. PANEL COVER SHALL BE FIELD MARKED FOR FLASH PROTECTION WITH A PERMANENT LABEL AS REQUIRED BY THE NATIONAL ELECTRICAL CODE SECTION 110. LABEL SHALL READ: "DANGER. POTENTIAL ARC FLASH HAZARD"

5. FIRE ALARM SYSTEMS SHALL HAVE BRANCH CIRCUITS IDENTIFIED BY RED LABELS

6. STATING FIRE ALARM CIRCUIT AS REQUIRED BY THE NATIONAL ELECTRICAL CODE ARTICLE 760.418

7. ABBREVIATIONS: CO=COMMENCEMENT; OUTLET, REAR=RESTROOM; NORTH, SOUTH, EAST, WEST.

ØA	ØB	ØC	TOTALS	CONNECTED LOAD (VA)
22,163	22,237	23,889	68,289	CONNECTED LOAD (VA)
339	0	0	339	DEMAND FACTOR ADJUSTMENTS (VA)
22,561	22,237	23,889	68,687	TOTAL LOAD (VA)
188	185	199		TOTAL LOAD (A)
			199	MAXIMUM LOAD (A)
33%	32%	35%		PHASE BALANCE

VOLTAGE: 208 V 120 VOLTS

MOUNTING: SURFACE

ENCLOSURE: NEMA 1

PHASE 3

WIRE 4

BUS RATING (AMPS): 225

MAIN LUGS ONLY

MINIMUM EQUIPMENT RATING:

REMARKS:

CIRCUIT BREAKER			FEEDER			CKT LOAD			LOAD/PHASE (VA)			CKT LOAD			FEEDER			CIRCUIT BREAKER								
No.	AMPS	POLE	MOD.	CIRCUIT NAME	C	WIRE	GRD	WATTS	ØA	ØB	ØC	WATTS	ØA	ØB	ØC	WATTS	ØA	ØB	ØC	WIRE	C	CIRCUIT NAME	MOD.	POLE	AMPS	No.
1	20	1	-	BUILDING SIGN	1/2"	#12	#12	1.25	1,000	1,000						3,640	100	#10	#8	3/4"		SPACE	-	2	50	41
3	20	1	-	ROOF RECEPT	1/2"	#12	#12	1.00	900	4,540						3,640	100			#8	-	HP-4	-	2	50	42
5	20	1	-	OFFICE LTG	1/2"	#12	#12	1.25	1,055			4,995				3,640	100									8
7	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	900	1,980						1,080	100	#12	#12	1/2"		PHONE ROOM	-	1	20	10
9	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	900		1,620					720	100	#10	#12	3/4"		OFFICE 123	-	1	20	10
11	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	900		1,620		1,620			720	100	#12	#12	3/4"		OFFICE 113	-	1	20	12
13	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	900	1,620						720	100	#12	#12	3/4"		OFFICE 165	-	1	20	14
15	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	720		1,440					720	100	#12	#12	3/4"		OFFICE 107	-	1	20	16
17	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	720		1,440		1,440			720	100	#12	#12	3/4"		OFFICE 114	-	1	20	18
19	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	720	1,440						720	100	#12	#12	3/4"		OFFICE 122	-	1	20	20
21	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	720		1,440					720	100	#12	#12	3/4"		OFFICE 124	-	1	20	22
23	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	720		1,440		1,440			720	100	#12	#12	3/4"		OFFICE 127	-	1	20	24
25	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	720	1,440						720	100	#12	#12	3/4"		OFFICE 115	-	1	20	26
27	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	720		1,440					720	100	#12	#12	3/4"		OFFICE 108	-	1	20	28
29	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	720		1,440		1,260			540	100	#12	#12	3/4"		RECEPTACLE	-	1	20	30
31	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	720	1,440						720	100	#12	#12	3/4"		OFFICE 172	-	1	20	32
33	20	1	-	WEST CUBICLE POWER	1/2"	#12	#12	1.00	720		1,440					720	100	#12	#12	3/4"		OFFICE 109	-	1	20	34
35	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	720		1,620		1,620			900	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	36
37	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	720	1,620						900	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	38
39	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	720		1,620					900	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	40
41	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	720		1,620		1,620			900	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	42
43	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	720	1,620						900	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	44
45	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	720		1,620					900	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	46
47	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	900		1,800		1,800			900	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	48
49	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	900	1,800						900	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	50
51	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	900		1,800					900	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	52
53	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	900		1,800		1,620			720	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	54
55	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	900	1,260						380	100	#12	#12	3/4"		EAST CUBICLE POWER	-	1	20	56
57	20	1	-	SOUTH CUBICLE POWER	1/2"	#12	#12	1.00	900		1,260					380	100	#12	#12	3/4"		FC-4	-	2	20	58
59	-	-	-	SPACE				1.00					380	380	100	-	#12	-					-	-	-	60
61	-	-	-	SPACE				1.00		0						1.00						SPACE	-	-	-	62
63	-	-	-	SPACE				1.00								1.00						SPACE	-	-	-	64
65	-	-	-	SPACE				1.00					0			1.00						SPACE	-	-	-	66
67	-	-	-	SPACE				1.00								1.00						SPACE	-	-	-	68
69	-	-	-	SPACE				1.00		0						1.00						SPACE	-	-	-	70
71	-	-	-	SPACE				1.00					0			1.00						SPACE	-	-	-	72
73	-	-	-	SPACE				1.00		0						1.00						SPARE	-	1	20	74
75	-	-	-	SPACE				1.00								1.00						SPARE	-	1	20	76
77	-	-	-	SPACE				1.00					0			1.00						SPARE	-	1	20	78
79	-	-	-	SPACE				1.00		0						1.00						SPARE	-	1	20	80
81	-	-	-	SPACE				1.00					0			1.00						SPARE	-	1	20	82
83	-	-	-	SPACE				1.00					0			1.00						SPARE	-	1	20	84

NOTES:

1. ALL INSULATION ON CONDUCTORS TO BE THIN UNLESS NOTED OTHERWISE

2. INSULATION ON ALL UNDERGROUND EXTERIOR CONDUCTORS SHALL BE THIN

3. LOAD DEMANDS CALCULATED AS PER SECTIONS 21 & 22 OF THE NATIONAL ELECTRICAL CODE

4. PANEL COVER SHALL BE FIELD MARKED FOR FLASH PROTECTION WITH A PERMANENT LABEL AS REQUIRED BY THE NATIONAL ELECTRICAL CODE SECTION 110. LABEL SHALL READ "DANGER- POTENTIAL ARC FLASH HAZARD"

5. FIRE ALARM SYSTEMS SHALL HAVE BRANCH CIRCUITS IDENTIFIED BY RED LABELS

6. STATING FIRE ALARM CIRCUIT AS REQUIRED BY THE NATIONAL ELECTRICAL CODE ARTICLE 760.14 B

7. ABBREVIATIONS: CO=COMMON, OUTLET, RR=RESTROOM, NORTH, SOUTH, EAST, WEST.

ØA	ØB	ØC	TOTALS
15,220	16,240	17,495	50,959
250	0	294	514
15,470	16,240	17,758	51,468
129	152	148	
			152
30%	35%	35%	PHASE BALANCE

CONNECTED LOAD (VA)

CONNECTED LOAD (VA)

DEMAND FACTOR ADJUSTMENTS (VA)

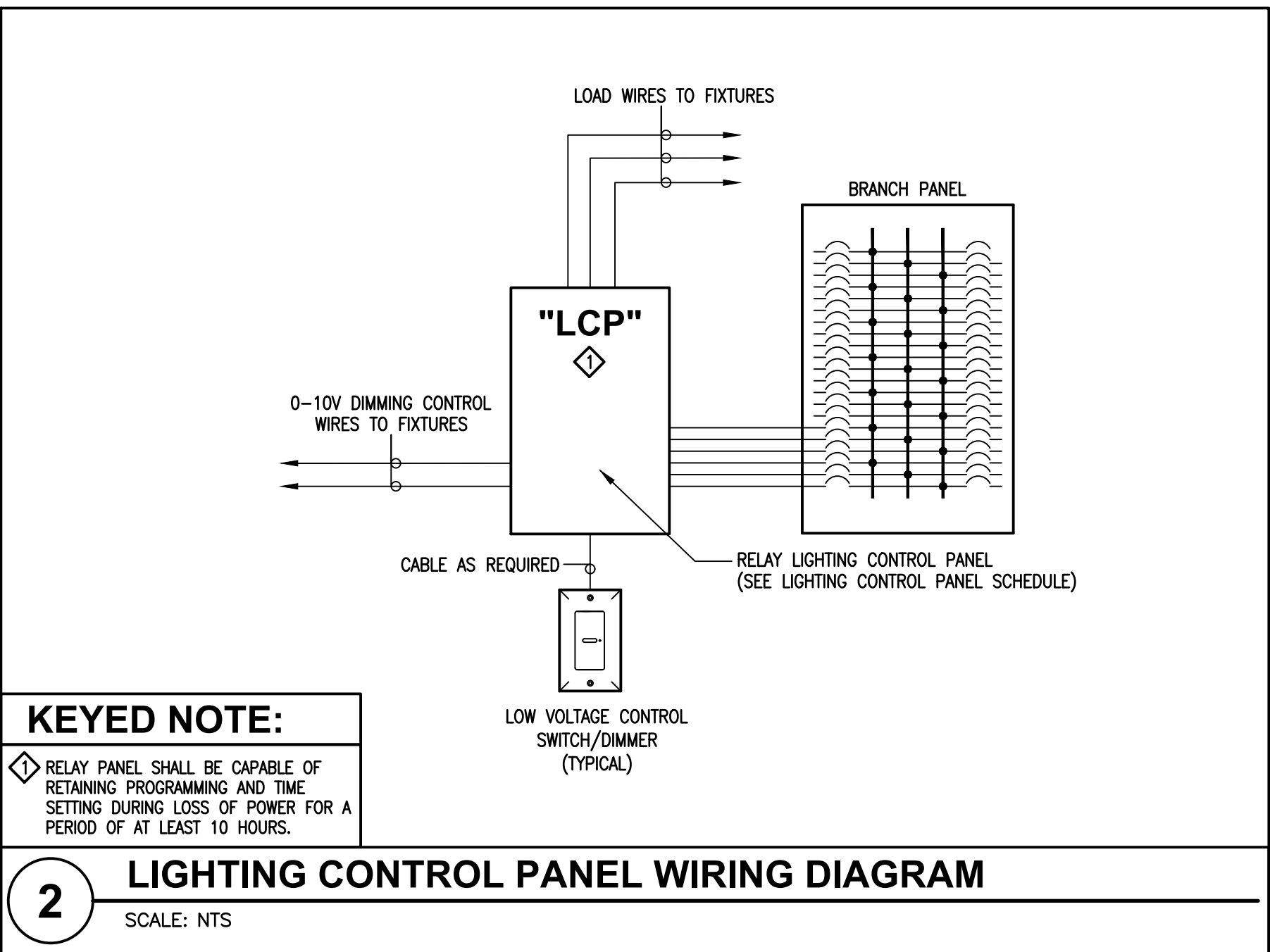
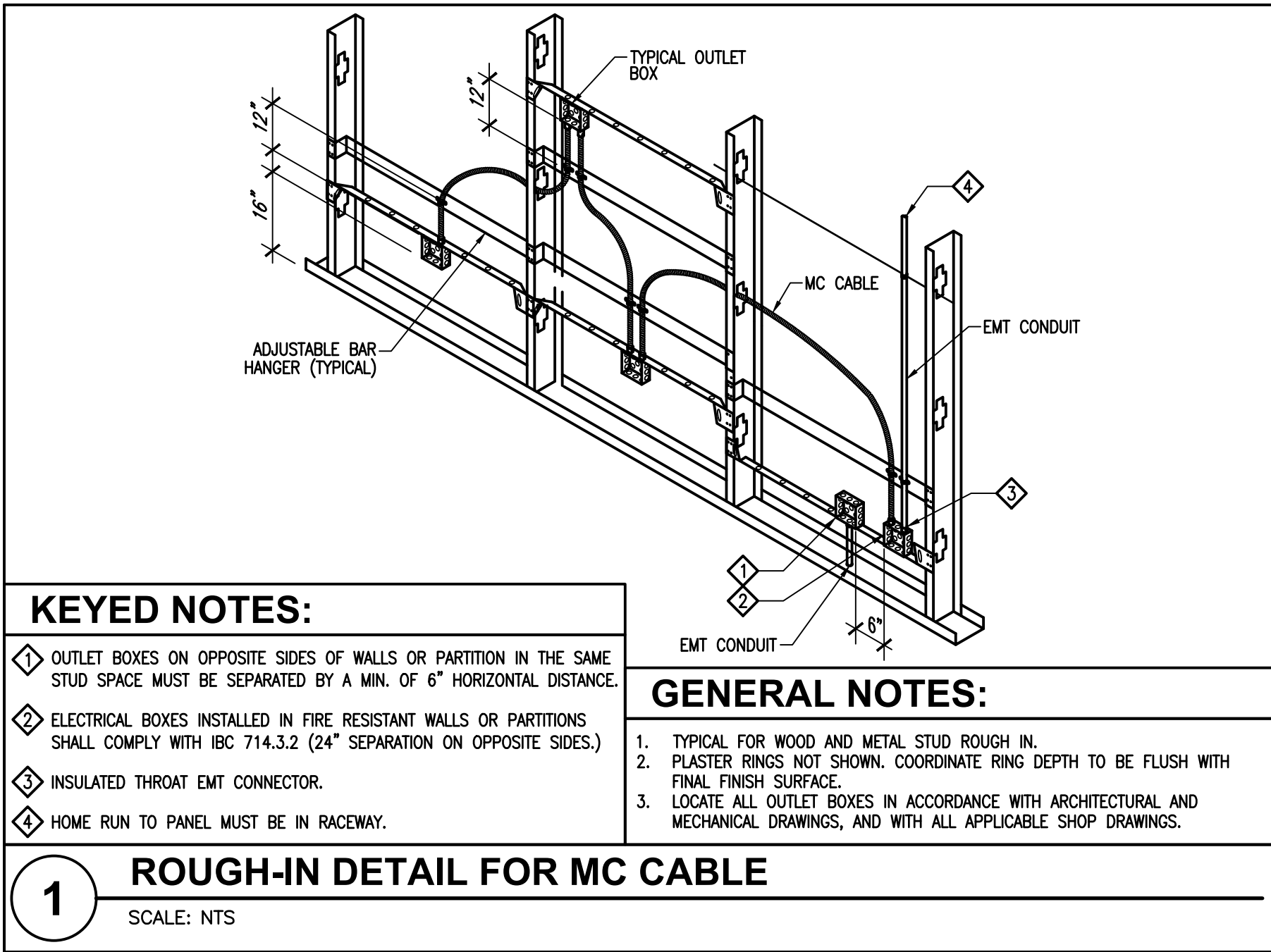
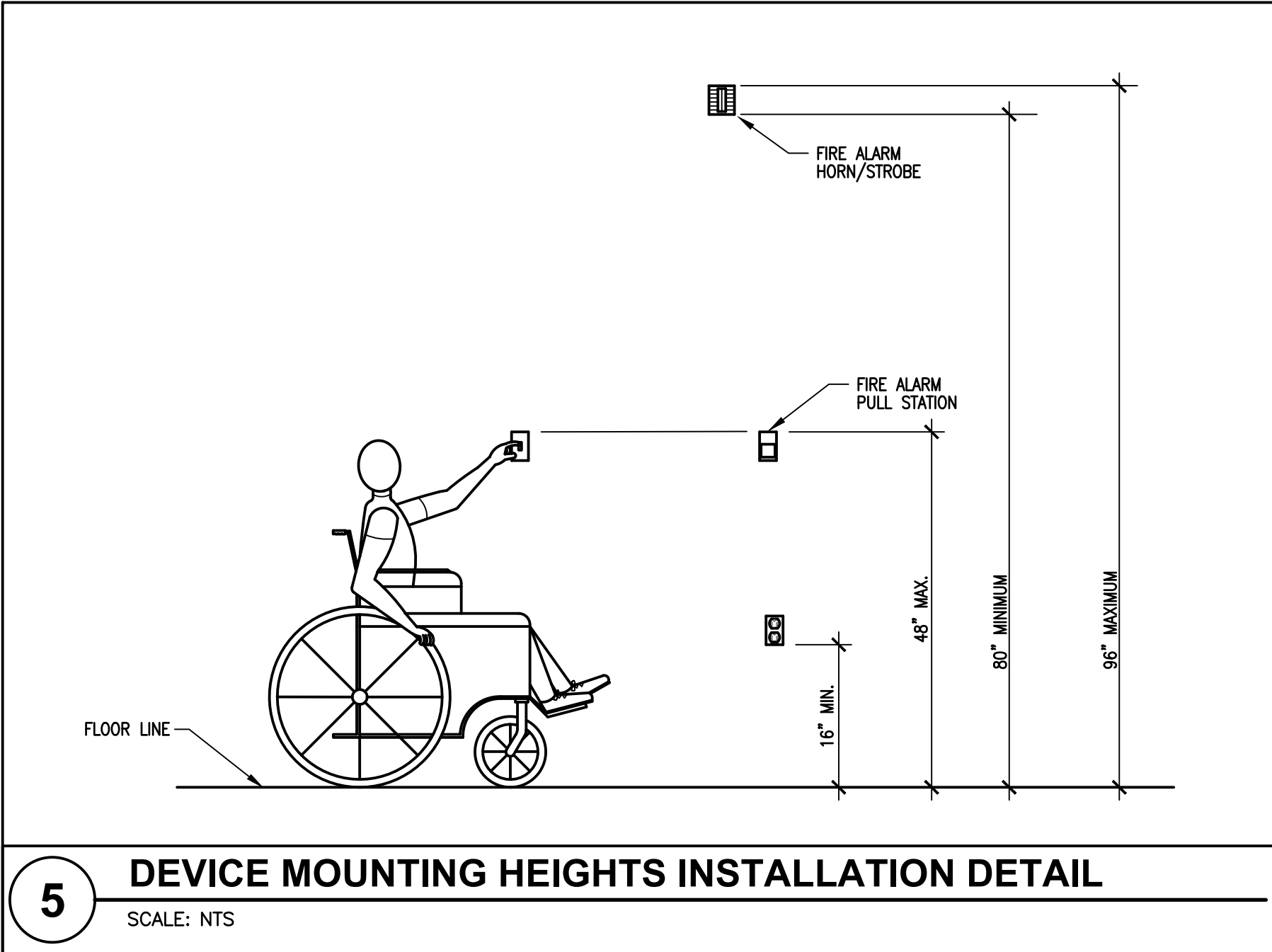
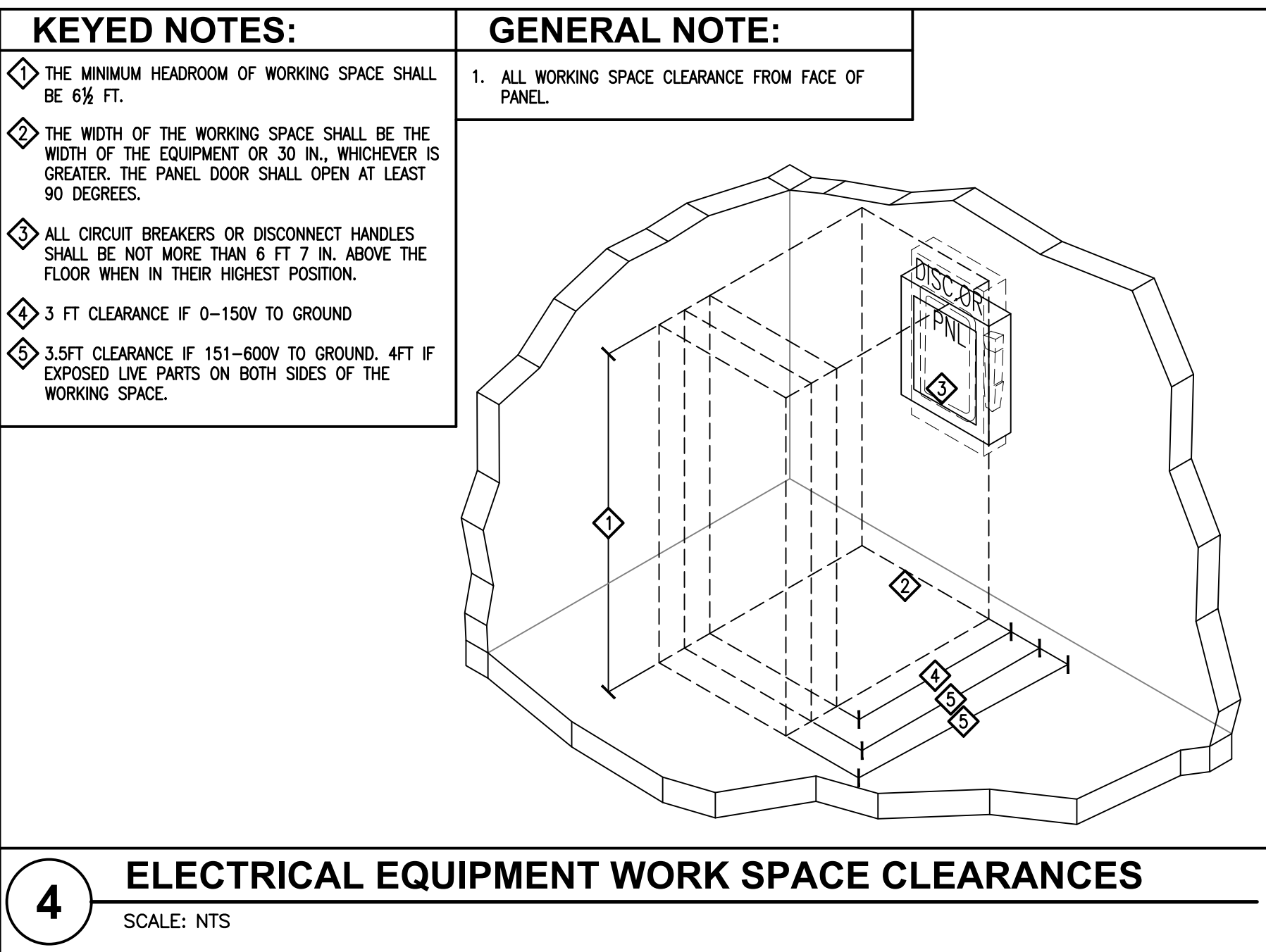
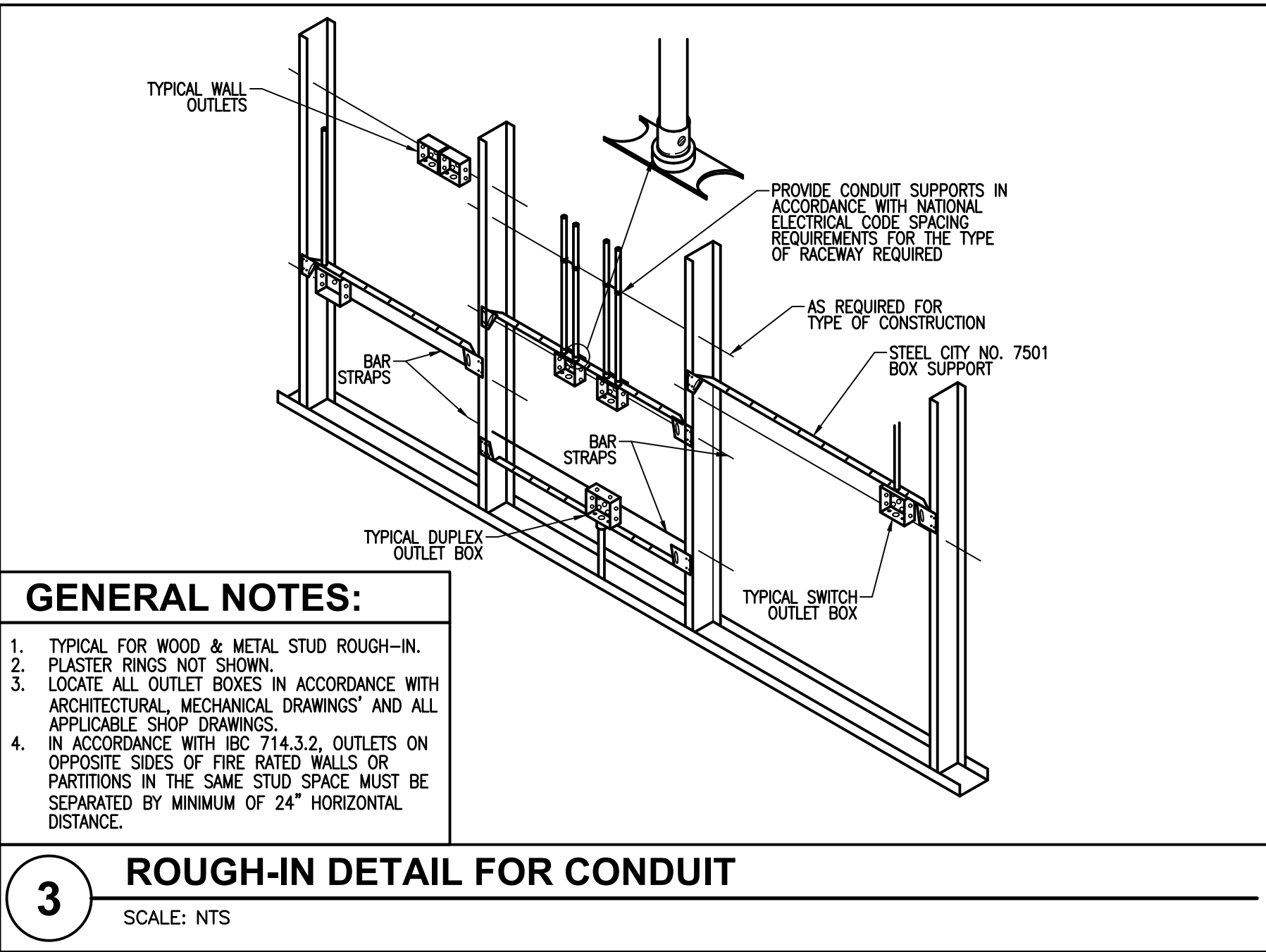
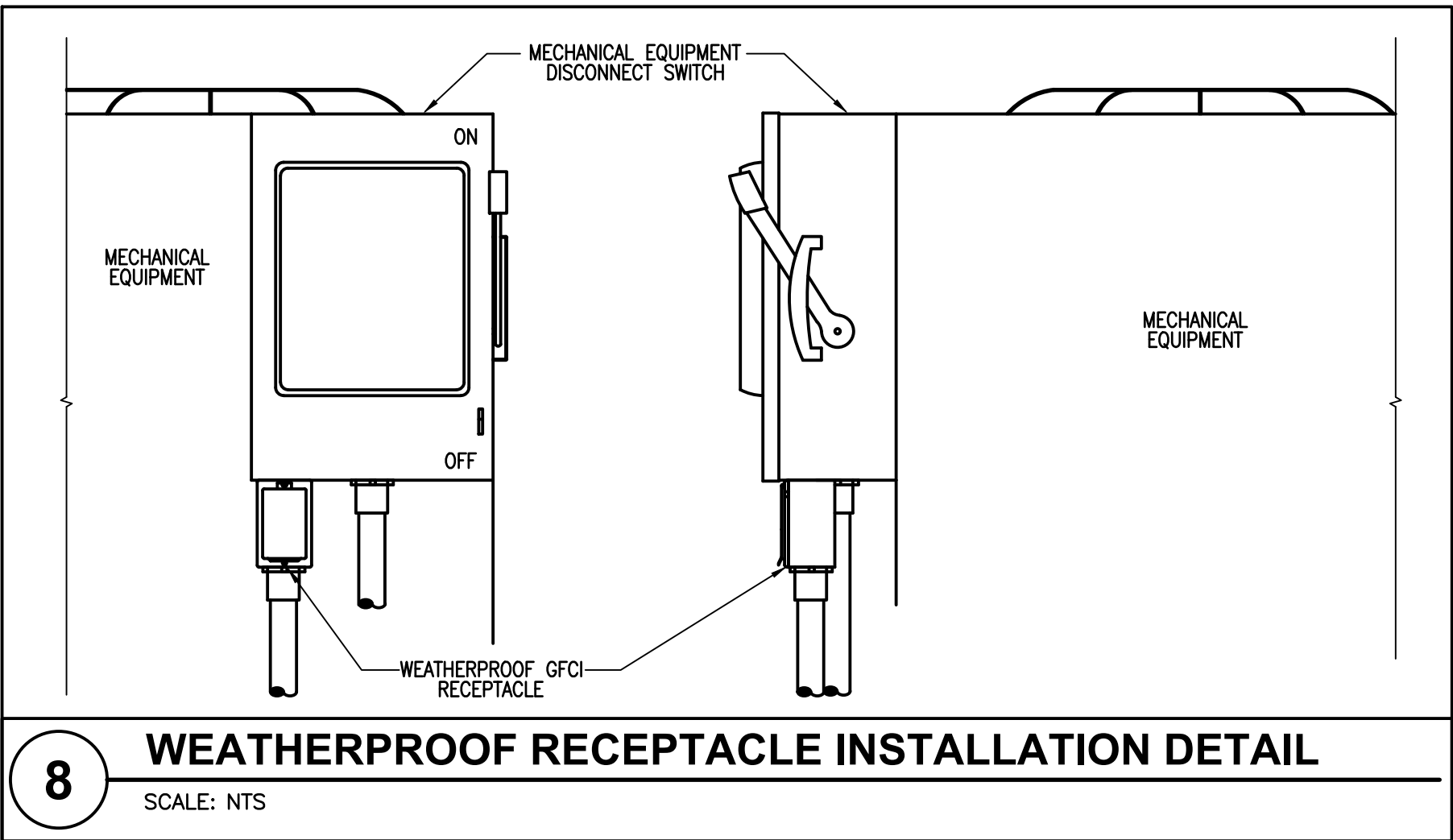
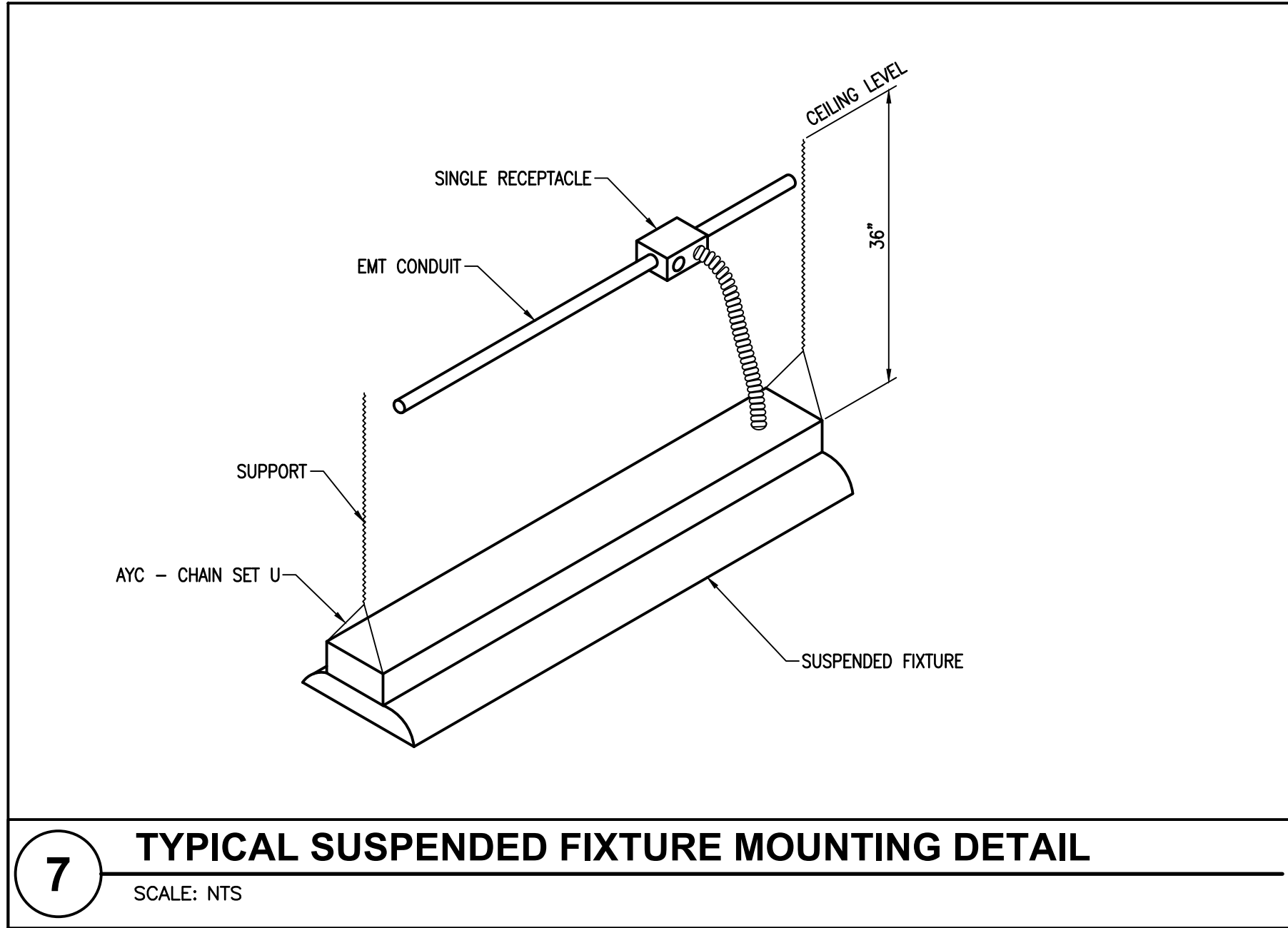
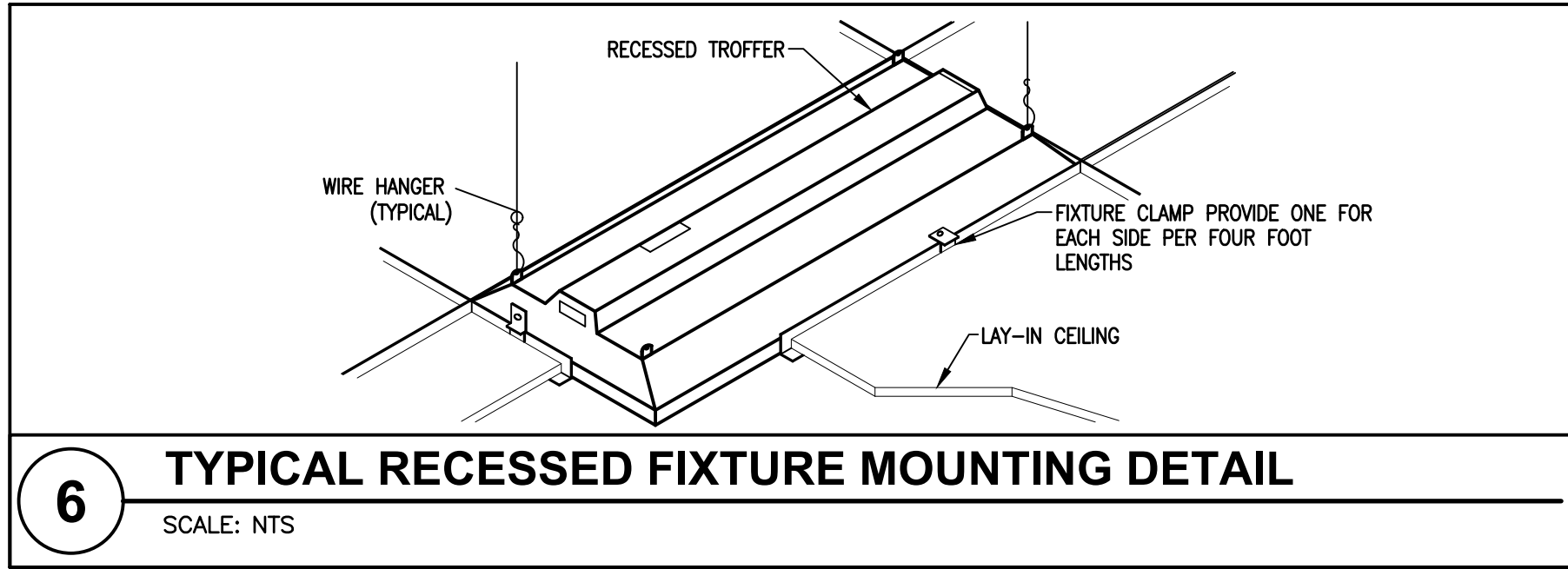
TOTAL LOAD (VA)

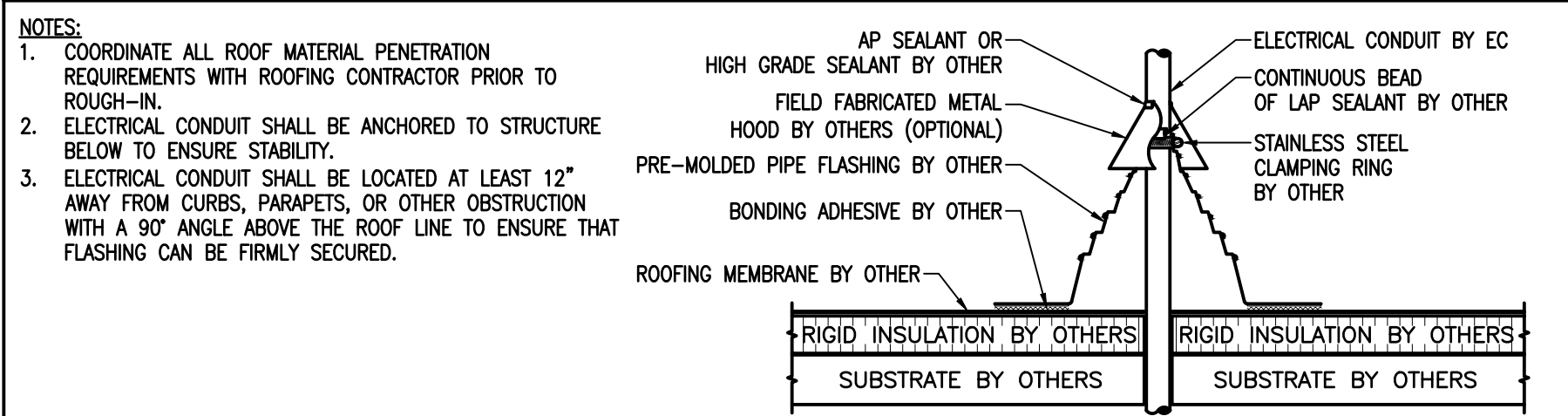
TOTAL LOAD (VA)

MAXIMUM LOAD (A)

revisions:

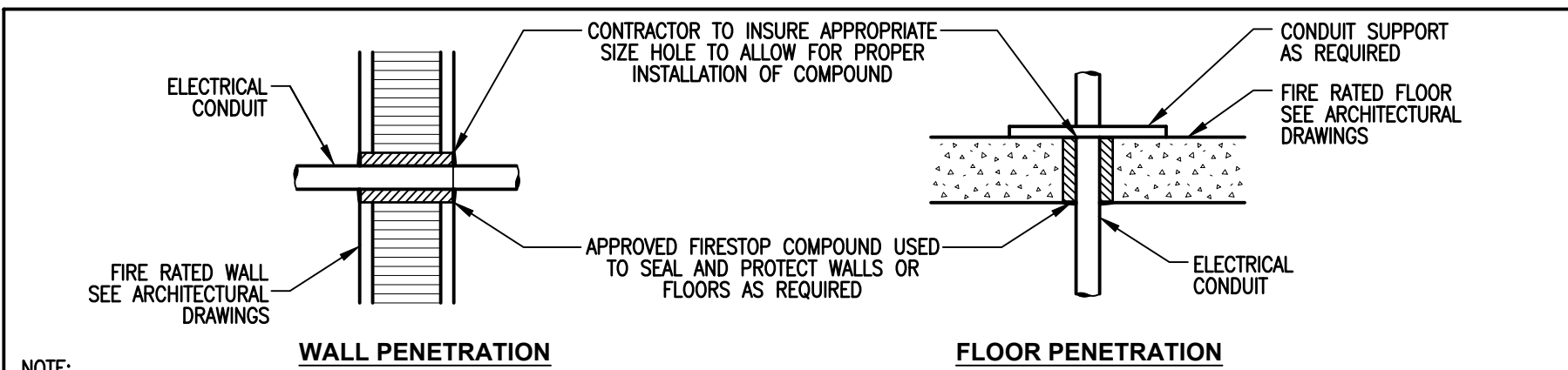
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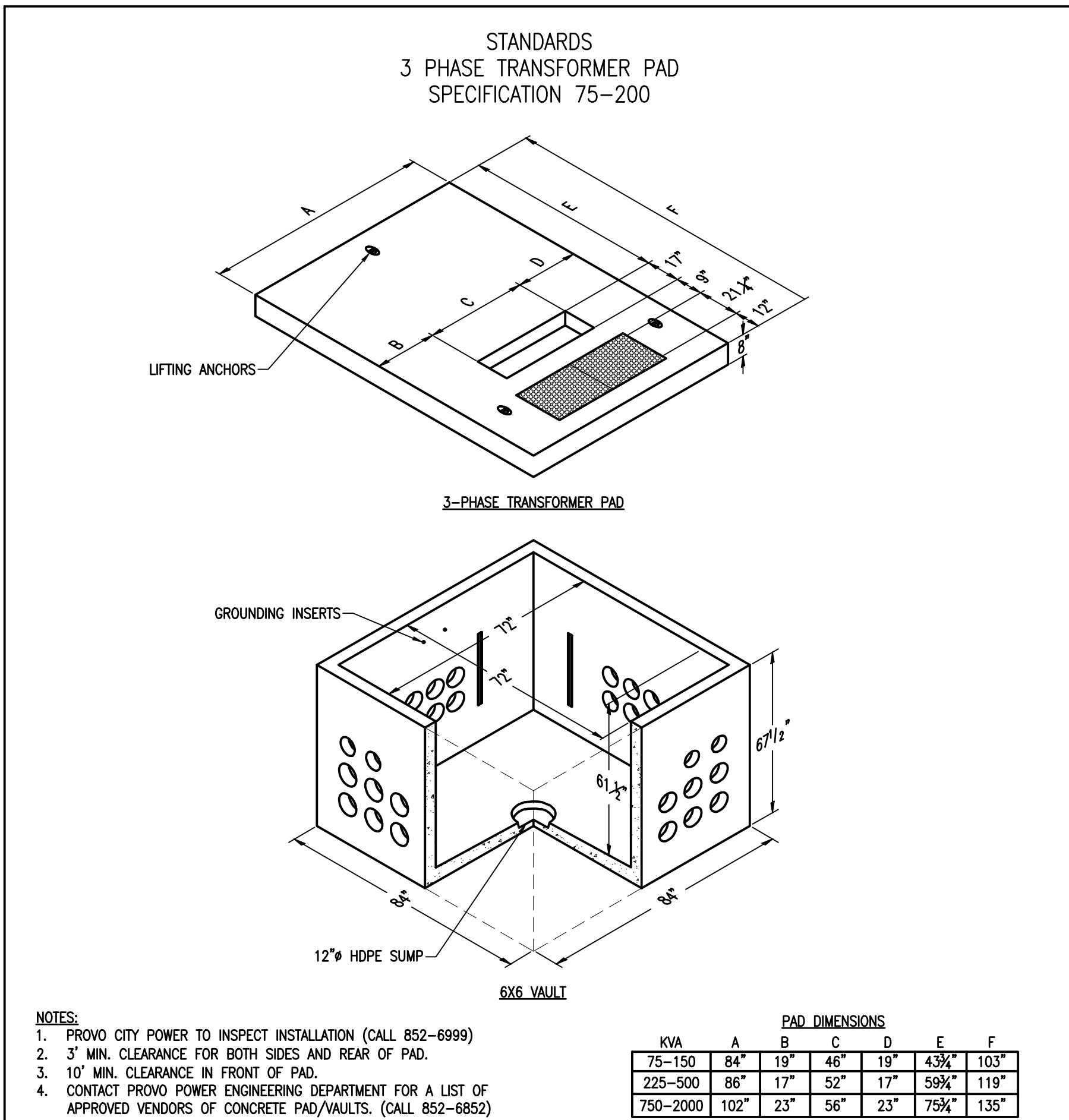
6 ROOF PENETRATION DETAIL

SCALE: NTS



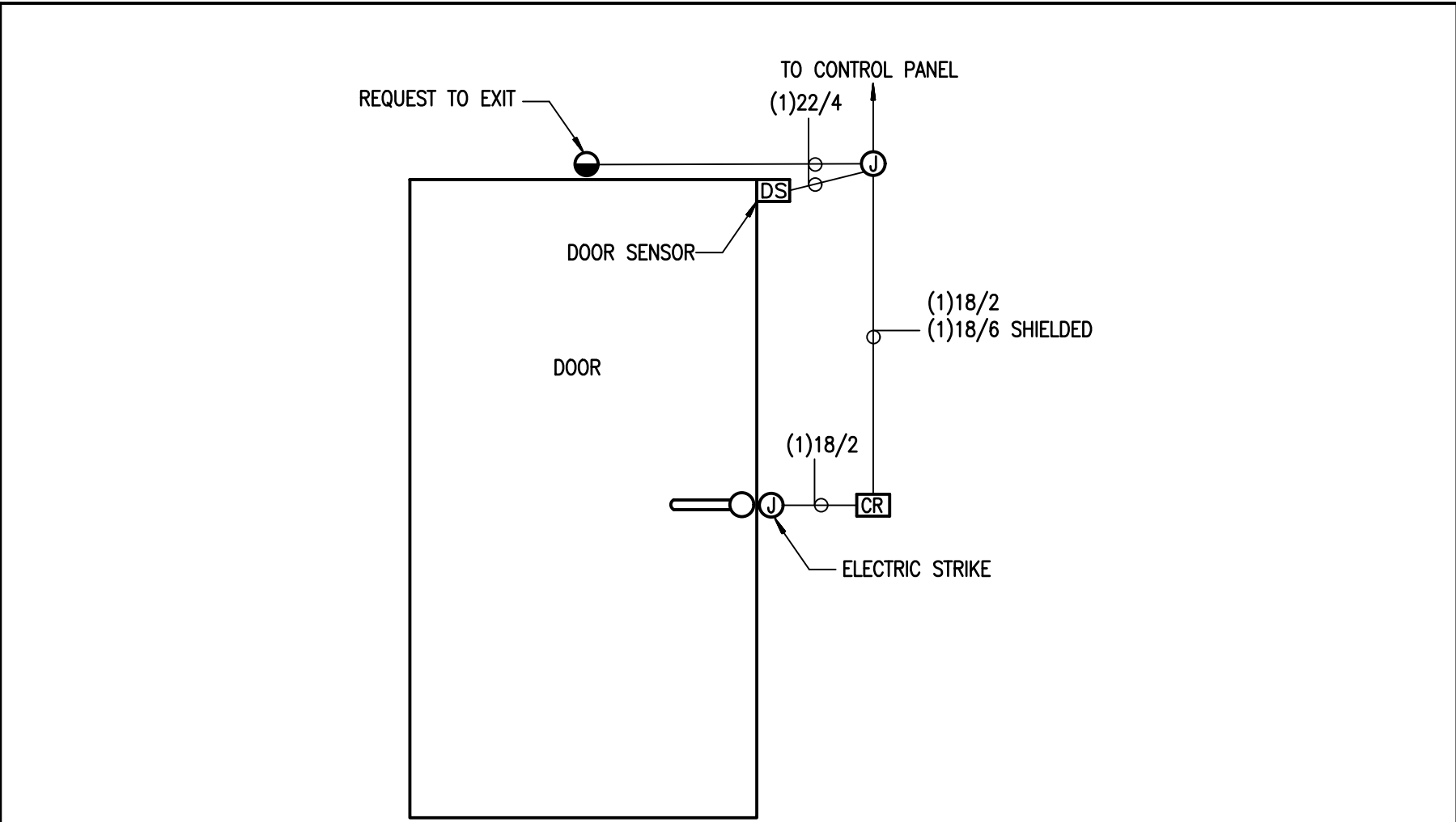
7 FIRE RATED PENETRATION DETAIL

SCALE: NTS



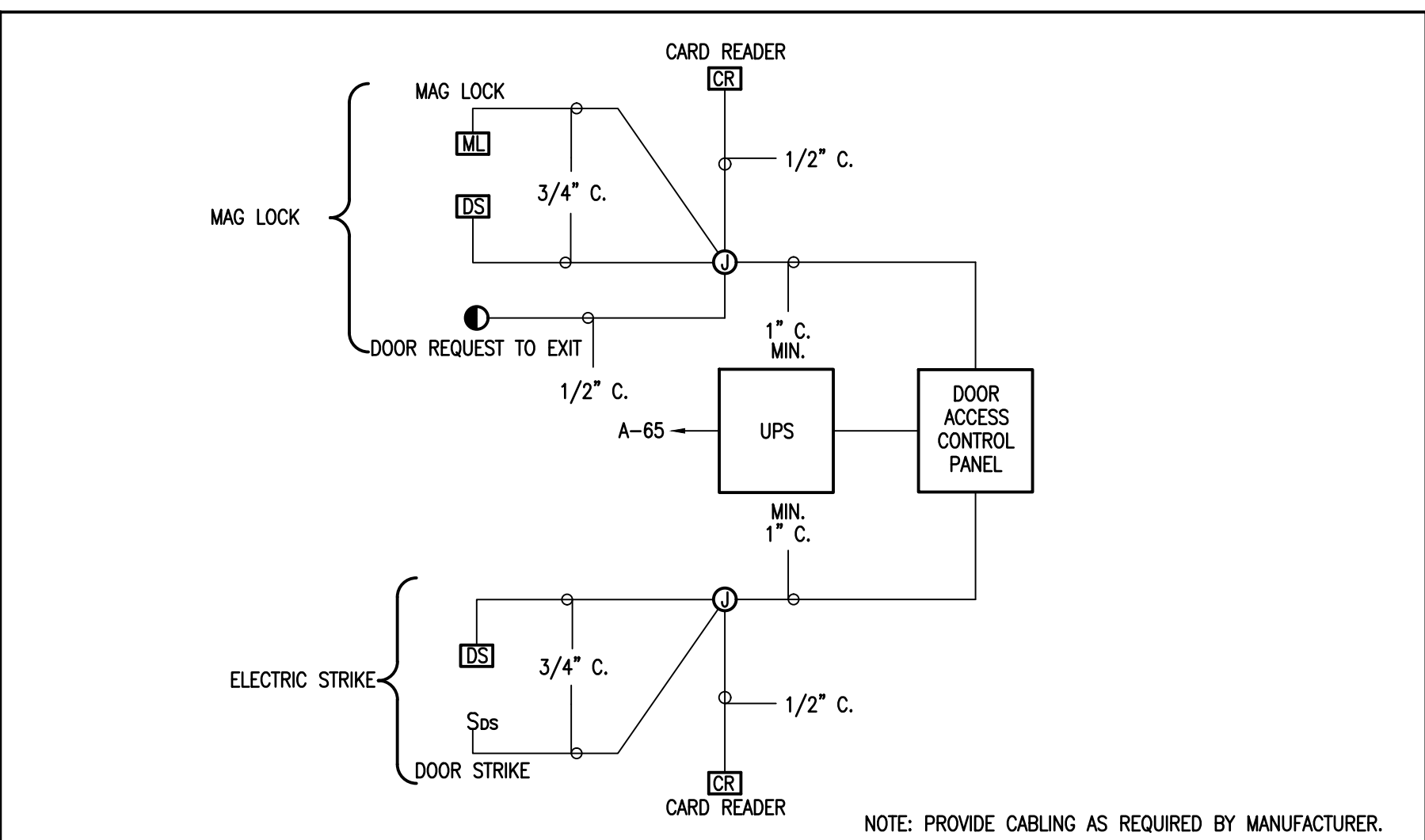
8 PROVO CITY POWER TRANSFORMER PAD VAULT

SCALE: NTS



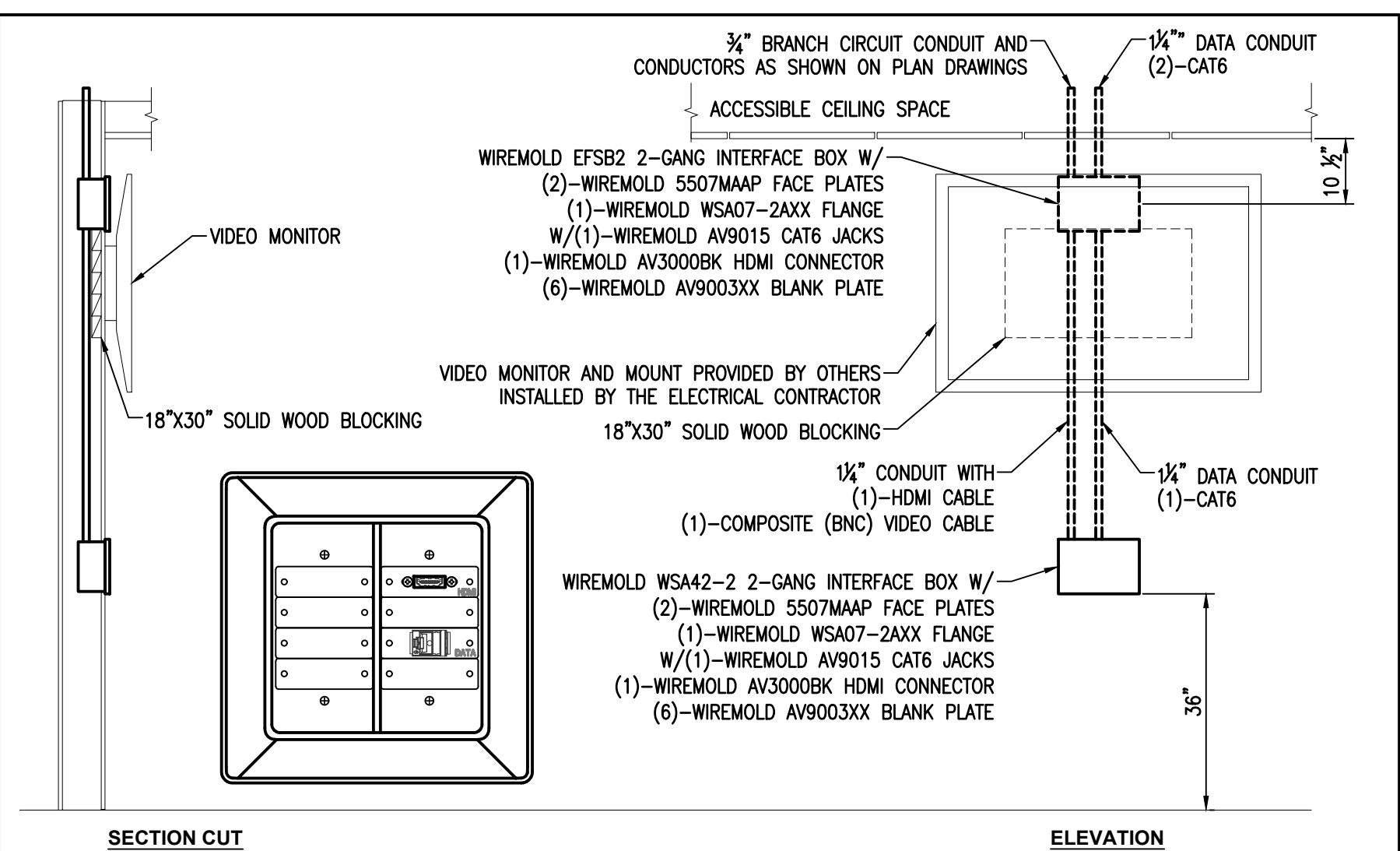
3 ACCESS CONTROL DOOR LOCK DETAIL

SCALE: NTS



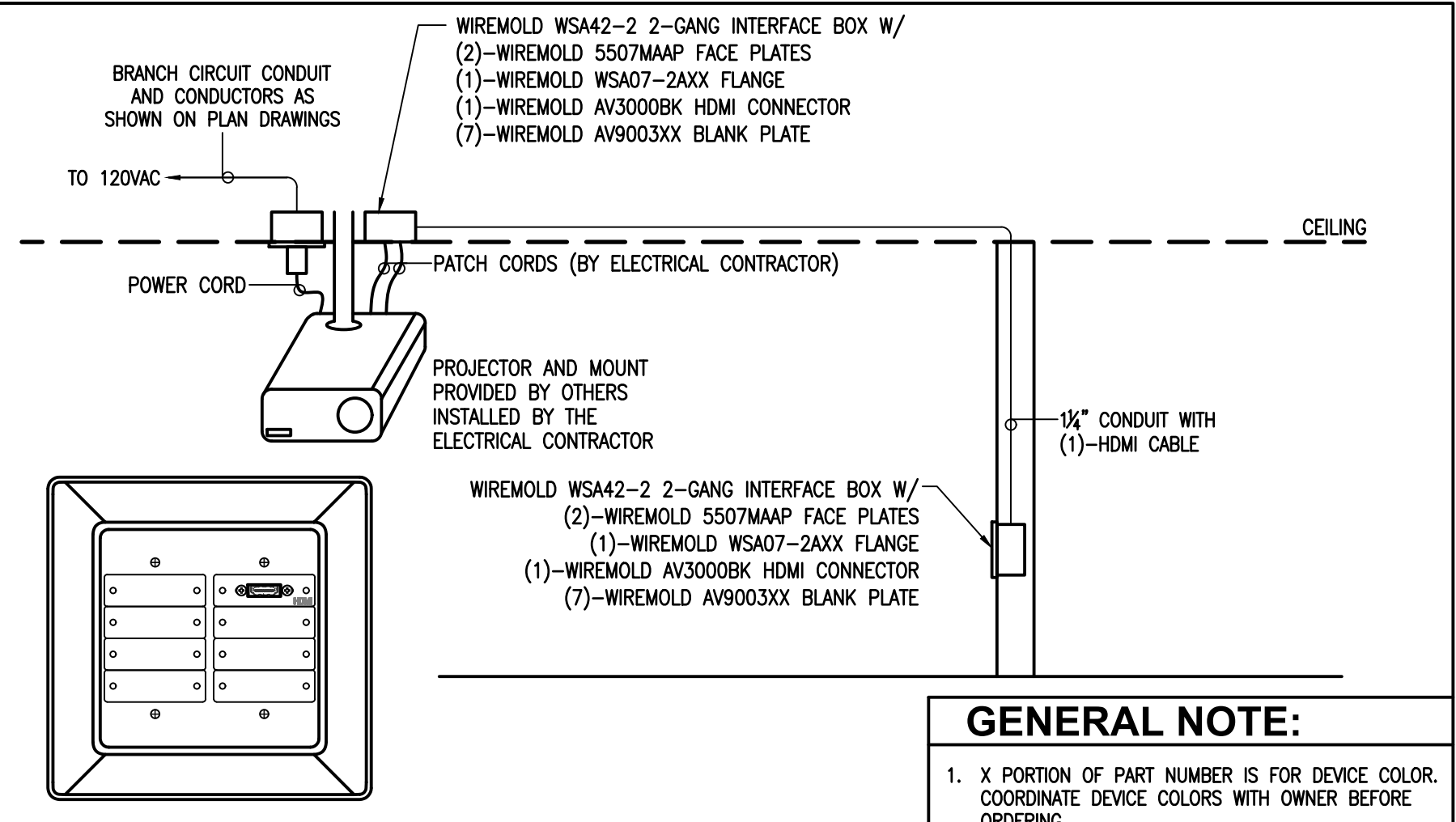
4 ACCESS CONTROL RISER DIAGRAM

SCALE: NTS



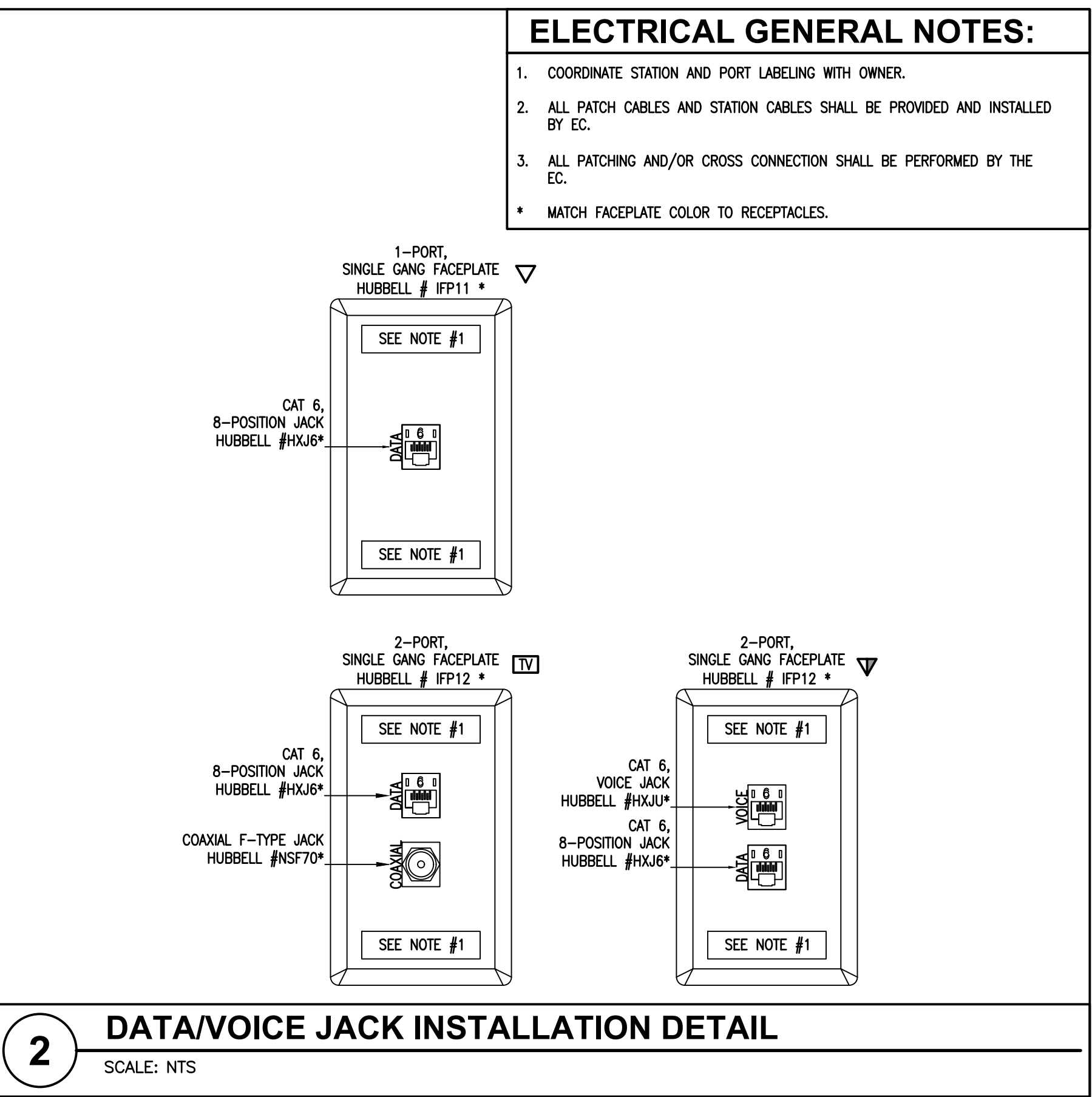
5 VIDEO MONITOR WIRING DETAIL

SCALE: NTS



1 PROJECTOR WIRING DETAIL

SCALE: NTS



2 DATA/VOICE JACK INSTALLATION DETAIL

SCALE: NTS

ROYAL ENGINEERING

ELECTRICAL
1837 S. EAST BAY BLVD.
PHONE: 801.375.2228

MECHANICAL
PROVO, UTAH 84606
FAX: 801.375.2676

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ELECTRICAL SPECIFICATIONS

GENERAL PROVISION

A. REFERENCE

1. THE GENERAL CONDITIONS AND OTHER CONTRACT DRAWINGS AS SET FORTH IN THE FOREGOING PAGES ARE HEREBY INCORPORATED INTO AND BECOME A PART OF THE SPECIFICATIONS FOR WORK UNDER THIS TITLE, INsofar AS THEY APPLY HERETO.
2. ALL SPECIFICATIONS UNDER THIS DIVISION ARE DIRECTED TO AND ARE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR, UNLESS OTHER TRADES OR PERSONS ARE SPECIFICALLY MENTIONED, "ELECTRICAL CONTRACTOR" IS INFERRED AND INTENDED.
3. CONTRACT DRAWINGS
1. THE DRAWINGS ACCORDING TO THESE SPECIFICATIONS ARE COMPLEMENTARY EACH TO THE OTHER AND WHAT IS CALLED FOR BY ONE SHALL BE AS IF CALLED FOR BY BOTH.
2. CONSULT ALL CONTRACT DRAWINGS WHICH MAY AFFECT THE LOCATION OF EQUIPMENT, CONDUIT AND WIRING AND MAKE MINOR ADJUSTMENTS IN LOCATION TO SECURE COORDINATION.
3. WIRING LAYOUT IS SCHEMATIC AND EXACT LOCATIONS SHALL BE DETERMINED BY FIELD CONDITIONS.
4. OTHER THAN MINOR ADJUSTMENTS SHALL BE SUBMITTED TO THE OWNERS REPRESENTATIVE FOR APPROVAL BEFORE PROCEEDING WITH THE WORK.

C. JOB-SITE COPY OF DOCUMENTS

1. MAINTAIN AT THE SITE, ONE COPY OF ALL DRAWINGS, SPECIFICATIONS, ADDENDA APPROVED SHOP DRAWINGS, CHANGE ORDERS AND OTHER MODIFICATIONS, IN GOOD ORDER AND MARKED TO RECORD ALL CHANGES MADE DURING CONSTRUCTION. THESE SHALL BE AVAILABLE TO THE OWNERS REPRESENTATIVE. THE DRAWINGS MARKED TO RECORD ALL CHANGES MADE DURING CONSTRUCTION SHALL BE DELIVERED TO THE OWNERS REPRESENTATIVE FOR THE OWNER UPON COMPLETION OF THE WORK. AN ADDITIONAL SET OF DRAWINGS WILL BE FURNISHED BY THE OWNERS REPRESENTATIVE FOR THIS PURPOSE UPON REQUEST.
2. MANUFACTURER'S DRAWINGS
1. THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR REVIEW, (6) COPIES OF MANUFACTURER'S DRAWINGS AND WIRING DIAGRAMS. THE ENGINEER WILL REVIEW CONTRACTOR'S SHOP DRAWINGS AND RELATED SUBMITTALS (AS INDICATED BELOW) WITH RESPECT TO THE ABILITY OF THE DETAILED WORK, WHEN COMPLETE, TO BE A PROPERLY FUNCTIONING INTEGRAL ELEMENT OF THE OVERALL SYSTEM DESIGNED BY THE ENGINEER. BEFORE SUBMITTING A SHOP DRAWING OR ANY RELATED MATERIAL TO THE ENGINEER, CONTRACTOR SHALL REVIEW EACH SUCH SUBMISSION FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND OPERATIONS OF CONSTRUCTION, AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF CONTRACTOR. APPROVE EACH SUCH SUBMISSION BEFORE SUBMITTING IT, AND SO STAMP EACH SUCH SUBMISSION BEFORE SUBMITTING IT. THE ENGINEER SHALL ASSUME THAT NO SHOP DRAWING OR RELATED SUBMITTAL COMPRISES A VARIATION UNLESS CONTRACTOR ADVISES ENGINEER OTHERWISE VIA A WRITTEN INSTRUMENT WHICH IS ACKNOWLEDGED BY ENGINEER IN WRITING. THE ITEMS, TYPES OF SUBMITTALS AND RELATED MATERIAL (IF ANY) CALLED FOR ARE INDICATED BELOW.

ITEMS	TYPE SUBMITTALS REQUESTED
LIGHTING AND POWER PANELS	SHOP DRAWINGS
LIGHTING FIXTURES	CATALOG CUTS

E. GUARANTEES

1. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEFECTS, REPAIRS AND REPLACEMENTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF SUBSTANTIAL COMPLETION AS DETERMINED BY THE OWNERS REPRESENTATIVE. PRODUCT GUARANTEES GREATER THAN ONE (1) YEAR SHALL BE PASSED ALONG TO THE OWNER FOR FULL BENEFIT OF THE MANUFACTURER'S WARRANTY.

WORK INCLUDED

1. FURNISH AND INSTALL ALL NECESSARY ANCHORS, SUPPORTS, STRAPS, BOXES, FITTINGS AND OTHER SIMILAR APPURTENANCES NOT INDICATED ON THE DRAWINGS BUT WHICH ARE REQUIRED FOR A COMPLETE AND PROPERLY INSTALLED SYSTEM CONSISTENT WITH THE ARCHITECTURAL TREATMENT OF THE BUILDING.
2. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE PREMISES IN A NEAT AND ORDERLY CONDITION, AND AT THE COMPLETION OF THE WORK, SHALL PROPERLY CLEAN UP AND CART AWAY DEBRIS AND EXCESS MATERIALS. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF DUMPSTER & REFUSED DISPOSAL AS REQUIRED FOR ELECTRICAL WORK.
3. ALL MATERIALS SHALL BE NEW AND UNDETERIORATED AND OF A QUALITY NOT LESS THAN THE MINIMUM SPECIFIED.
4. COORDINATION OF PLANS AND SPECIFICATIONS
1. CONTRACT THE OWNERS REPRESENTATIVE IMMEDIATELY IF THERE IS ANY QUESTIONS REGARDING THE MEANING OR INTENT OF EITHER PLANS OR SPECIFICATIONS, OR UPON NOTICING ANY DISCREPANCIES OR OMISSIONS IN EITHER PLANS OR SPECIFICATIONS.
5. CUTTING AND PATCHING
1. ALL ELECTRICAL EQUIPMENT SHALL BE KEPT DRY AND CLEAN DURING THE CONSTRUCTION PERIOD. INTERIOR OF ALL ENCLOSURES SHALL BE CLEANED OF DIRT AND DEBRIS BEFORE INSTALLING TRIM OR COVERS.
2. ALL FINISHED SURFACES OF EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE THOROUGHLY CLEANED OF DIRT AND ALL SCRATCHED OR DAMAGED SURFACES SHALL BE TOUCHED UP WITH MATCHING MATERIALS BEFORE FINAL ACCEPTANCE OF THE WORK.
3. WHEN ALL WORK IS COMPLETED AND ALL WORK HAS BEEN SATISFACTORILY TESTED AND ACCEPTED BY THE OWNERS REPRESENTATIVE, ALL CONDUIT AND OTHER EXPOSED SURFACES SHALL BE THOROUGHLY CLEANED.

CODES AND FEES

A. CODES:

1. ALL WORK PERFORMED UNDER THIS SPECIFICATION SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AS PREPARED AND PUBLISHED BY THE NATIONAL FIRE PROTECTION ASSOCIATION AND ANY APPLICABLE STATE OR LOCAL CODES.
2. FEES
1. OBTAIN AND PAY FOR ANY AND ALL PERMITS REQUIRED BY ALL LAWS AND REGULATIONS AND PUBLIC AUTHORITY HAVING SUCH JURISDICTION.

TESTS AND INSPECTIONS

1. OBTAIN ALL INSPECTIONS REQUIRED BY ALL LAWS, ORDINANCES, RULES, REGULATIONS OR PUBLIC AUTHORITY HAVING JURISDICTION AND OBTAIN CERTIFICATES OF SUCH INSPECTIONS AND SUBMIT SAME TO THE OWNERS REPRESENTATIVE. PAY ALL FEES, CHARGES AND OTHER EXPENSES IN CONNECTION THEREIN. OBTAIN OCCUPANCY PERMIT AS REQUIRED BY OWNER. FINAL PAYMENT SHALL NOT BE MADE UNTIL OCCUPANCY PERMIT IS OBTAINED.
2. WORK SHALL BE UNACCEPTABLE WHEN FOUND TO BE DEFECTIVE OR CONTRARY TO THE PLANS SPECIFICATIONS, CODES SPECIFIED OR ACCEPTED STANDARDS OF GOOD WORKMANSHIP.
3. THE CONTRACTOR SHALL PROMPTLY CORRECT ALL WORK FOUND UNACCEPTABLE BY THE OWNERS REPRESENTATIVE WHETHER OBSERVED BEFORE OR AFTER SUBSTANTIAL COMPLETION AND WHETHER OR NOT FABRICATED, INSTALLED OR COMPLETED. THE CONTRACTOR SHALL BEAR ALL COSTS OF CORRECTING SUCH UNACCEPTABLE WORK, INCLUDING COMPENSATION FOR THE OWNERS REPRESENTATIVE ADDITIONAL SERVICES MADE NECESSARY THEREBY.

CONDUIT

1. FURNISH AND INSTALL ALL CONDUITS, BOXES, FITTINGS, ETC., FOR A COMPLETE RACEWAY SYSTEM.
2. ALL WIRING SHALL BE RUN IN EMT CONDUIT OR MC CABLE WITH GROUND CONDUCTOR UNLESS OTHERWISE NOTED.
3. ALL CONDUIT SIZES STATED HEREIN OR MARKED ON THE DRAWINGS ARE MINIMUM SIZE AND SHALL BE NO LESS THAN 1/2" UNLESS OTHERWISE NOTED.
4. ALL CONDUIT SHALL BE SUBSTANTIALLY SUPPORTED BY PIPE STRAPS OR SUITABLE CLAMPS OR HANGERS ATTACHED TO THE ELEMENTS OF THE BUILDING STRUCTURE TO PROVIDE RIGID INSTALLATION. IN NO CASE SHALL CONDUIT BE ATTACHED OR SUPPORTED FROM ADJOINING PIPE OR INSTALLED IN SUCH A MANNER AS TO PREVENT THE READY REMOVAL OF OTHER PIPE FOR REPAIRS.

WIRE AND CABLE

1. ALL CONDUCTORS SHALL BE COPPER AND OF THE AWG SIZE AND TYPE SHOWN ON THE DRAWINGS. WHERE NO SIZE OR TYPE IS SHOWN, CONDUCTORS SHALL NOT BE LESS THAN #12 TYPE XHHW, THHN, OR THWN. CONDUCTORS #6 AWG AND LARGER SHALL BE STRANDED COPPER AND HAVE 600 VOLT INSULATION, BE UL LABELED AND OF AMERICAN MANUFACTURER.
2. ALL CONNECTIONS ARE TO BE MADE USING PRESSURE TYPE TERMINALS.
3. THE FOLLOWING COLOR CODE SHALL BE USED:

	120/240 VOLT	120/208 VOLT	277/480 VOLT
PHASE A	BLACK	BLACK	BROWN
PHASE B	RED	RED	ORANGE
PHASE C		BLUE	YELLOW
NEUTRAL	WHITE	WHITE	WHITE
GROUND	GREEN	GREEN	GREEN

 1. CONDUCTORS NO. 10 AWG OR SMALLER SHALL HAVE INSULATION COLORED AS NOTED ABOVE.
 2. CONDUCTORS NO. 8 AWG OR LARGER SHALL HAVE INSULATION COLORED AS NOTED ABOVE OR COLORED TAPE. MINIMUM SIZE 1/2", WRAPPED TYPE AROUND AT THE FOLLOWING POINTS:
 1. AT EACH TERMINAL.
 2. AT EACH CONDUIT ENTRANCE.
 3. AT INTERVALS NOT MORE THAN 12 INCHES APART IN ALL BOXES, PANEL TUBS, SWITCHBOARDS, ETC.

3. ALL BRANCH CIRCUITS SHALL BE MARKED IN THE PANEL BOARD GUTTERS. MARKERS SHALL INDICATE CORRESPONDING BRANCH-CIRCUIT NUMBERS.
4. EACH BRANCH CIRCUIT REQUIRING A NEUTRAL SHALL BE FURNISHED WITH A SEPARATE INDIVIDUAL NEUTRAL CONDUCTOR.

BOXES AND PLATES

1. FURNISH AND INSTALL ALL OUTLET, JUNCTION, AND PULL BOXES AS INDICATED ON THE DRAWINGS AND AS NECESSARY TO INSTALL THE REQUIRED CONDUIT AND WIRING IN A NEAT AND WORKMANLIKE MANNER.
2. PULL BOXES AND JUNCTION BOXES SHALL BE GALVANIZED AND OF THE CORRECT SIZE AND GAUGE, SIZED IN ACCORDANCE WITH CODE REQUIREMENTS AND SHALL BE U.L. LABELED.
3. BOXES AT EXTERIOR AREAS TO BE WATERTIGHT AND DUST-TIGHT WITH CASKETED COVERS.
4. ALL BOXES FOR EXPOSED WORK IN FINISHED SPACES SHALL BE "FS" TYPE WITH THREADED HUBS WITH RIGID CONDUIT RISER (DEEP WIRE MOLD BOXES).
5. ALL BOXES SHALL BE RIGIDLY SUPPORTED INDEPENDENT OF THE CONDUIT SYSTEM. BOXES CAST INTO MASONRY OR CONCRETE ARE CONSIDERED TO BE RIGIDLY SUPPORTED.
6. FLOOR BOXES
1. DESCRIPTION: FLOOR BOXES COMPATIBLE WITH FLOOR BOX SERVICE FITTINGS PROVIDED IN ACCORDANCE WITH THE WIRING DEVICES SECTION OF THIS SPECIFICATION, WITH PARTITIONS TO SEPARATE MULTIPLE SERVICES, FURNISHED WITH ALL COMPONENTS, ADAPTERS, AND TRIMS REQUIRED FOR COMPLETE INSTALLATION.
2. USE CAST IRON OR NONMETALLIC FLOOR BOXES WITHIN SLAB ON GRADE.
3. USE SHEET STEEL, CAST IRON, OR NONMETALLIC FLOOR BOXES WITHIN SLAB ABOVE GRADE.
4. METALLIC FLOOR BOXES: FULLY ADJUSTABLE (WITH INTEGRAL MEANS FOR LEVELING ADJUSTMENT PRIOR TO AND AFTER CONCRETE POUR).
5. MANUFACTURER: SAME AS MANUFACTURER OF FLOOR BOX SERVICE FITTINGS.
6. UNDERGROUND BOXES/ENCLOSURES
1. DESCRIPTION: IN-GROUND, OPEN BOTTOM BOXES FURNISHED WITH FLUSH, NON-SKID COVERS WITH LEGEND ENGRAVED INTO THE WHITE BACKGROUND. MINIMUM 1/4" HIGH. PLATES SHALL BE DRILLED ON EACH END FOR SHEET METAL SCREW ATTACHMENT. NO "DYMO" OR SIMILAR TYPE LABELS WILL BE ALLOWED.
2. SIZE: AS INDICATED ON DRAWINGS.
3. DEPTH: AS REQUIRED TO EXTEND BELOW FROST LINE TO PREVENT FROST UPRHEAVAL, BUT NOT LESS THAN 12 INCHES.
4. APPLICATIONS:
 - a. SIDEWALKS AND LANDSCAPED AREAS SUBJECT ONLY TO OCCASIONAL NONDELIBERATE VEHICULAR TRAFFIC: USE POLYMER CONCRETE OR COMPOSITE ENCLOSURE WITH MINIMUM SCTE 77, TIER 8 LOAD RATING.
 - b. PARKING LOTS, IN AREAS SUBJECT ONLY TO OCCASIONAL NONDELIBERATE VEHICULAR TRAFFIC: USE POLYMER CONCRETE OR COMPOSITE ENCLOSURE WITH MINIMUM SCTE 77, TIER 15 LOAD RATING.
 - c. DO NOT USE POLYMER CONCRETE ENCLOSURES IN AREAS SUBJECT TO DELIBERATE VEHICULAR TRAFFIC.
5. COMPOSITE UNDERGROUND BOXES/ENCLOSURES: COMPLY WITH SCTE 77.

WIRING DEVICES

1. WIRING DEVICES SHALL BE SIMILAR TO THOSE LISTED BELOW AND OF SPECIFIED AMPERAGE; OTHER SPECIAL PURPOSE DEVICES SHALL BE AS SPECIFIED ON THE DRAWINGS.
2. DUPLEX GROUNDED TYPE RECEPTACLE - 20 AMP, 125 VOLT
1. HUBBELL 5352
2. ARROW HART 5352
3. SINGLE POLE SWITCHES - 20 AMP, 120 VOLT
4. WEATHERPROOF RECEPTACLES - 20 AMP, 125 VOLT - NEMA 5-20R
1. HUBBELL 5352 WITH 5205 COVER INTERMATIC GUARDIAN
2. 1 SERIES, NEMA 3R COVER
3. WEATHERPROOF RECEPTACLES - 20 AMP, 125 VOLT - NEMA 5-20 R
4. G.F.C.I. RECEPTACLE - 20 AMP, 125 VOLT
1. HUBBELL GF 5262 WITH MATCHING NYLON COVER PLATE OR 20-46 W.P. COVER
2. GROUND ALL RECEPTACLES IN ACCORDANCE WITH ARTICLE 250-146 OF NEC AND AS INDICATED IN THE GROUNDING SECTION OF THIS SPECIFICATION.

IDENTIFICATION

1. EACH SYSTEM OF SERVICE EQUIPMENT AND INDIVIDUAL SWITCHES, ALL DISCONNECTS, STARTERS, ALL EXHAUST FAN MANUAL STARTING SWITCHES.
2. IDENTIFICATION SHALL BE IN THE FORM OF LAMINATED PLASTIC NAMEPLATES, BLACK RACE, WITH THE LETTERS ENGRAVED INTO THE WHITE BACKGROUND. MINIMUM 1/4" HIGH. PLATES SHALL BE DRILLED ON EACH END FOR SHEET METAL SCREW ATTACHMENT. NO "DYMO" OR SIMILAR TYPE LABELS WILL BE ALLOWED.
3. PANEL BOARD DIRECTORY: A TYPED CIRCUIT DIRECTORY SHALL BE PROVIDED INDICATING LOCAL AREA SERVED AND LOCATION FOR EACH BRANCH CIRCUIT.

GROUNDING

1. ALL FEEDERS AND BRANCH CIRCUITS OVER 100 VOLTS SHALL INCLUDE A GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NEC TABLE 250-122, EXCEPT NOT BE SMALLER THAN #12 FOR POWER AND LIGHTING CIRCUITS AND #14 FOR CONTROL CIRCUITS. ALL GROUND CONDUCTORS SHALL BE GREEN, OR AS SPECIFIED UNDER THE WIRE AND CABLE SECTION OF THIS SPECIFICATION.
2. WEATHERPROOF RECEPTACLES - 20 AMP, 125 VOLT OR SIMILAR BY O.Z. OR BURUNDY.
3. CONDUIT FOR SOLITARY GROUND CONDUCTORS SHALL BE RIGID SCHEDULE 40 PVC NON-METALLIC ELECTRICAL CONDUIT WITH U.L. LABEL. SOLITARY GROUND CONDUCTORS SHALL NOT BE PLACED THROUGH METALLIC SLEEVES OR CONDUITS AND SHALL NOT BE COMPLETELY ENCRUIED BY METALLIC HANGERS OR SUPPORTS.
4. THE GROUND CONDUCTOR SHALL BE CONNECTED TO THE NEUTRAL IN ONLY TWO LOCATIONS: ON THE SUPPLY SIDE OF THE SERVICE DISCONNECT MEANS PER NEC-250-24 AND ON SEPARATELY DERIVED SYSTEMS PER NEC 250-30.
5. AT EACH RECEPTACLE BOX, THE GROUND CONDUCTOR SHALL ENTER AND CONNECT, WITH NORMAL WIRING CONNECTOR, TO: 1) THE GROUND PIGTAIL TO RECEPTACLE; 2) THE GROUND PIGTAIL TO THE BOX GROUND SCREW; AND 3) THE OUTGOING GROUND CONDUCTOR TO NEXT DEVICE, IF NOT AT END OF RUN. METAL TO METAL CONTACT BETWEEN THE SERVICE YOE AND THE OUTLET BOX IS NOT ACCEPTABLE AS A BOND FOR EITHER SURFACE, MOUNTED BOXES OR FLUSH TYPE BOXES.
6. CONDUIT SYSTEM SHALL BE ELECTRICALLY CONTINUOUS. ALL LOCK NUTS SHALL CUT THROUGH ENAMELED OR PAINTED SURFACES ON ENCLOSURES, WHERE ENCLOSURES AND NON-CURRENT CARRYING METALS ARE ISOLATED FROM THE CONDUIT SYSTEM. USE BONDING JUMPS WITH APPROVED CLAMPS, WHERE REDUCING WASHERS ARE USED AND WHERE CONCENTRIC OR ECCENTRIC KNOCKOUTS ARE NOT COMPLETELY REMOVED BONDING BUSHINGS SHALL BE REQUIRED.

POWER AND LIGHTING PANELS

1. FURNISH AND INSTALL, AS SCHEDULED AND SHOWN ON THE DRAWINGS, POWER PANELS FOR OPERATION ON VOLTAGES INDICATED.
2. ALL TERMINATIONS SHALL BE MARKED "75°C ONLY", "90/75°C" OR LISTED FOR USE OF 75°C INSULATED CONDUCTORS AT FULL 75°C CAPACITY.
3. ALL BUS BARS SHALL BE SILVER OR TIN PLATED COPPER.
4. CABINETS SHALL BE OF COMMERCIAL GALVANIZED SHEET STEEL, CODE GAUGE AND SIZE, SURFACE OR RECESSED MOUNTED AS CALLED FOR IN THE DRAWINGS.
5. NEUTRAL ASSEMBLY SHALL HAVE INDIVIDUAL ANTI-TURN SOLDERLESS TERMINALS, SIMILAR TO SQUARE D TYPE PK, FOR CONNECTION OF ULTIMATE NUMBER OF NEUTRAL WIRES. SHEET METAL TERMINAL STRIPS AND CONNECTIONS WILL BE REJECTED.
6. PANEL SHALL HAVE A COPPER GROUND BAR SIMILAR TO NEUTRAL BAR IN NUMBER, SIZE, AND TYPE OF ANTI-TURN SOLDERLESS LUGS. THIS GROUND BAR SHALL BE FACTORY BONDED TO THE PANEL TUB IN THE GUTTER SPACE OPPOSITE THE MAINS AND THE NEUTRAL ASSEMBLY AND SHALL HAVE THE SCREWDRIVER SLOTS FACING THE FRONT OF THE PANEL.
7. QUALITY STANDARD: SQUARE D TYPE NQ.

LIGHTING FIXTURES

1. CONTRACTOR SHALL FURNISH AND INSTALL LIGHTING FIXTURES AS INDICATED IN FIXTURE SCHEDULE SHOWN ON DRAWINGS, AND SPECIFIED HEREIN.
2. NEUTRAL ASSEMBLY SHALL HAVE INDIVIDUAL ANTI-TURN SOLDERLESS TERMINALS, SIMILAR TO SQUARE D TYPE PK, FOR CONNECTION OF ULTIMATE NUMBER OF NEUTRAL WIRES. SHEET METAL TERMINAL STRIPS AND CONNECTIONS WILL BE REJECTED.
3. ALL LIGHTING FIXTURES INSTALLED BY THE ELECTRICAL CONTRACTOR SHALL BE FURNISHED COMPLETE WITH AS INDICATED ON THE FIXTURE SCHEDULE.
4. ANY LIGHTING FIXTURES SCRATCHED, BENT, CRACKED OR IN ANY WAY DAMAGED BEFORE ACCEPTANCE BY OWNER SHALL BE REPLACED AT THIS CONTRACTOR'S EXPENSE.
5. ALL LIGHTING FIXTURES SHALL BE IN WORKING ORDER AT THE TIME OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER.
6. ALL LIGHTING FIXTURES ARE TO BE GROUNDED ON THE INTERIOR OF THE FIXTURE HOUSING, ON CLEAN BARE METAL (FREE OF PAINT), BY USE OF PIGTAIL AND FASTENED BY A SCREW USED FOR NO OTHER PURPOSE.

ALARM & DETECTION SYSTEMS

A. SUMMARY

1. INCLUDES BUT NOT LIMITED TO: FURNISH AND INSTALL MICROPROCESSOR-CONTROLLED, INTELLIGENT REPORTING FIRE ALARM EQUIPMENT REQUIRED TO FORM A COMPLETE COORDINATED SYSTEM THAT IS READY FOR OPERATION.
2. SYSTEM DESCRIPTION
1. THE FIRE ALARM SYSTEM SHALL COMPLY WITH REQUIREMENTS OF NFPA STANDARD NO. 72 FOR PROTECTED

1. PREMISES SIGNALING SYSTEMS EXCEPT AS MODIFIED AND SUPPLEMENTED BY THIS SPECIFICATION, THE SYSTEM SHALL BE ELECTRICALLY SUPERVISED AND MONITOR THE INTEGRITY OF ALL CONDUCTORS. THE SYSTEM SHALL BE AN ACTIVE/INTERROGATIVE TYPE SYSTEM WHERE EACH DEVICE IS REPETITIVELY SCANNED, CAUSING A SIGNAL, TO BE TRANSMITTED TO THE MAIN FIRE ALARM CONTROL PANEL (FACP) INDICATING THAT THE ASSOCIATED INITIATING DEVICE AND NOTIFICATION APPLIANCE CIRCUIT WIRING IS FUNCTIONAL. LOSS OF SUCH A SIGNAL AT THE MAIN FACP SHALL RESULT IN A TROUBLE INDICATION AS SPECIFIED HEREINAFTER FOR THE PARTICULAR INPUT.
2. SYSTEM OPERATION: OPERATION OF MANUAL STATION OR AUTOMATIC ACTIVATION OF ANY SMOKE DETECTOR OR HEAT DETECTOR SHALL:

- a. CAUSE SYSTEM EVACUATION HORN TO SOUND AND LAMPS TO FLASH.
- b. THE 80 CHARACTER LCD DISPLAY SHALL INDICATE ALL INFORMATION ASSOCIATED WITH THE FIRE ALARM CONDITION, INCLUDING THE TYPE OF ALARM POINT AND ITS LOCATION WITHIN THE PROTECTED PREMISES.
- c. INITIATE OFF-SITE ALARM NOTIFICATION.
- d. RELEASE MAGNETIC DOOR HOLDERS.
- e. INITIATE SHUT DOWN OF MECHANICAL UNITS WITH AIR FLOW IN EXCESS OF 2000CFM.
- f. INITIATE CLOSURE OF ALL FIRE SMOKE DAMPERS.
3. WIRING: THE MULTIPLEX BUS AND DATA COMMUNICATION BUS (OPTIONS BUS) SHALL BE WIRED WITH STANDARD NEC 760 COMPLIANT WIRING. ALL FACP SCREW TERMINALS SHALL BE CAPABLE OF ACCEPTING 14 AWG (1.8 MM) TO 18 AWG (1.2 MM) WIRE. ALL SYSTEM WIRING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 70, THE NATIONAL ELECTRICAL CODE (NEC) AND ALSO COMPLY WITH ARTICLE 760 OF THE NEC.
4. QUALITY ASSURANCE

1. REGULATORY REQUIREMENTS
- a. SYSTEM SHALL MEET APPROVAL OF AUTHORITY HAVING JURISDICTION (AHJ), CHANGES OR ADDITIONS SHALL BE MADE TO THE SYSTEM AS REQUIRED WITH ADDITIONAL COST TO OWNER.
- b. EQUIPMENT, DEVICES, AND CABLE SHALL BE UL OR FACTORY MUTUAL LISTED FOR USE IN FIRE ALARM SYSTEMS.
- c. DESIGNER QUALIFICATIONS: NICET LEVEL III OR IV (3 OR 4) CERTIFIED FIRE ALARM TECHNICIAN OR REGISTERED FIRE PROTECTION ENGINEER, EMPLOYED BY FIRE ALARM CONTROL PANEL MANUFACTURER, CONTRACTOR, OR INSTALLER.
- d. INSTALLER QUALIFICATIONS: FIRM WITH MINIMUM 3 YEARS DOCUMENTED EXPERIENCE INSTALLING FIRE ALARM SYSTEMS OF THE SPECIFIED TYPE AND PROVIDING CONTRACT MAINTENANCE SERVICE AS A REGULAR PART OF THEIR BUSINESS.
 - 1) AUTHORIZED REPRESENTATIVE OF CONTROL UNIT MANUFACTURER; SUBMIT MANUFACTURER'S CERTIFICATION THAT INSTALLER IS AUTHORIZED; INCLUDE NAME AND TITLE OF MANUFACTURER'S REPRESENTATIVE MAKING CERTIFICATION.
 - 2) INSTALLER PERSONNEL: FACTORY TRAINED AND CERTIFIED WITH AT LEAST 2 YEARS OF EXPERIENCE INSTALLING FIRE ALARM SYSTEMS.
 - 3) SUPERVISOR: NICET LEVEL III OR IV (3 OR 4) CERTIFIED FIRE ALARM TECHNICIAN; FURNISH NAME AND ADDRESS.

D. FACP COMPONENTS

1. EQUIPMENT AND ACCESSORIES FURNISHED UNDER TERMS OF THIS SPECIFICATION SHALL BE STANDARD PRODUCTS OF SINGLE MANUFACTURER, OR INCLUDE WRITTEN STATEMENT BY CONTROL PANEL MANUFACTURER CONFIRMING COMPATIBILITY OF COMPONENTS AND INCLUSION OF THESE COMPONENTS UNDER SYSTEM WARRANTY.
2. THE MAIN FACP CENTRAL CONSOLE SHALL CONTAIN A MICROPROCESSOR BASED CENTRAL PROCESSING UNIT (CPU), THE FACP SHALL COMMUNICATE WITH AND CONTROL THE FOLLOWING TYPES OF EQUIPMENT USED TO MAKE UP THE SYSTEM: ADDRESSABLE DETECTORS, ADDRESSABLE MODULES, LOCAL AND REMOTE OPERATOR TERMINALS, ANNUNCIATORS, AND OTHER SYSTEM CONTROLLED DEVICES.
 - a. THE MAIN FACP AND CENTRAL CONSOLE SHALL PERFORM THE FOLLOWING FUNCTIONS:
 - 1) SUPERVISE AND MONITOR ALL ADDRESSABLE DETECTORS AND MONITOR MODULES CONNECTED TO THE SYSTEM FOR NORMAL, TROUBLE AND ALARM CONDITIONS.
 - 2) SUPERVISE ALL NOTIFICATION CIRCUITS THROUGHOUT THE FACILITY.
 - 3) VISUALLY AND AUDIBLY ANNUNCIATE ANY TROUBLE, SUPERVISORY OR ALARM CONDITION ON OPERATOR'S TERMINAL, PANEL DISPLAY, AND ANNUNCIATORS.
 3. THE FIRE ALARM CONTROL PANEL SHALL INCLUDE A FULL FEATURED OPERATOR INTERFACE CONTROL AND ANNUNCIATION PANEL, WHICH SHALL INCLUDE A BACKLIT LIQUID CRYSTAL DISPLAY, INDIVIDUAL, COLOR CODED SYSTEM STATUS LEDS, AND AN ALPHA-NUMERIC KEYPAD FOR FIELD PROGRAMMING AND CONTROL OF THE FIRE ALARM SYSTEM.
 4. THE SYSTEM SHALL INCLUDE EMERGENCY EVACUATION SIGNAL, UTILIZING INTELLIGENCE SUCH THAT LOSS OF OPERATION BY THE MAIN FACP WILL NOT RESULT IN THE LOSS OF EVACUATION SIGNAL THROUGHOUT THE BALANCE OF THE BUILDING.
 5. THE MAIN COMMUNICATION BUS (OPTIONS BUS) SHALL BE CAPABLE OF CLASS A OR CLASS B CONFIGURATION WITH A TOTAL BUS LENGTH OF 500 FEET (1,798 M).
 6. OFF-SITE ALARM NOTIFICATION SYSTEM
 - a. PROVIDE TELEPHONE LINE CONNECTION FROM TELEPHONE TERMINAL BOARD TO FIRE ALARM CONTROL PANEL.
 - b. PROVIDE DIALER DEVICE TO NOTIFY OFF-SITE PERSONNEL OF ALARM OR ABNORMAL CONDITIONS.
 - c. CONNECT TO FIRE ALARM CONTROL PANEL, SO SPECIFIED CONDITIONS INITIATE OFF-SITE CALL. USE ONE ALARM CODE FOR ALARM AND SECOND CODE FOR SUPERVISORY/TROUBLE ALARM.
 7. AUDIBLE HORN ALARM SHALL BE PEN-UNION "GR" TYPE OR SIMILAR BY O.Z. OR BURUNDY.
 - a. PROVIDE SEPARATE AND DISTINCT ALARM SIGNALS FOR ALARM AND TROUBLE CONDITIONS.
 - b. ALARM SIGNAL SHALL ALSO OPERATE STROBE LIGHTS, IF SPECIFIED.
 - c. PROVIDE ALARM SILENCE SWITCHES AT CONTROL PANEL.
 - d. TROUBLE ALARM SHALL BE HORN INTEGRAL TO CONTROL PANEL.
 - e. SUPERVISORY ALARM MAY BE SAME AUDIBLE ALARM AS TROUBLE ALARM, BUT WITH SEPARATE VISUAL ANNUNCIATION.

E. FIELD MOUNTED SYSTEM COMPONENTS

1. FIRE ALARM INITIATING DEVICES
 - a. DUCT DETECTOR HOUSING: PROVIDE SMOKE DETECTOR DUCT HOUSING ASSEMBLIES TO MOUNT AN ADDRESSABLE DETECTOR ALONG WITH A STAIR CASE DETECTOR BASE. DETECTOR BASE SHALL BE BASE. THE HOUSING SHALL ALSO PROTECT THE MEASURING CHAMBER FROM DAMAGE AND INSECTS. THE HOUSING SHALL UTILIZE AN AIR EXHAUST TUBE AND AN AIR SAMPLING INLET TUBE THAT EXTENDS INTO THE DUCT AIR STREAM UP TO TEN FEET. DRILLING TEMPLATES AND GASKETS TO FACILITATE LOCATING AND MOUNTING THE HOUSING SHALL ALSO BE PROVIDED. THE HOUSING SHALL BE FINISHED IN BAKED RED ENAMEL. REMOTE ALARM LED INDICATORS AND REMOTE TEST STATIONS SHALL BE PROVIDED.
 - b. ADDRESSABLE SMOKE DETECTORS
 - 1) CEILING MOUNTED, ADDRESSABLE PHOTOELECTRIC
 - 2) UL LISTED COMPATIBLE WITH THE FIRE ALARM CONTROL PANEL.
 - 3) SHALL HAVE A FLASHING STATUS LED FOR VISUAL SUPERVISION, WHEN THE DETECTOR IS ACTUATED, THE FLASHING LED WILL LATCH ON SOLID. THE LED SHALL FLASH AT A 1/2 SEC RATE IF THE CHAMBER IS OUT OF CALIBRATION RANGE. THE DETECTOR MAY BE RESET BY ACTUATING THE CONTROL PANEL'S RESET SWITCH.
 - c. SMOKE DETECTOR GUARDS
 - 1) UNDERWRITERS LABORATORIES TESTED AND LISTED BY FOR USE WITH THE SMOKE DETECTORS THEY PROTECT.
 - 2) GUARD DESIGN SHALL NOT AFFECT THE DETECTOR OPERATING SENSITIVITY AND SHALL NOT REDUCE THE LISTED DETECTOR SPACING.
 - 3) CONSTRUCTED OF 16-GAUGE STEEL WITH A BAKED WHITE FINISH TO MATCH THE DETECTORS.
 - 4) TAMPERPROOF MOUNTING HARDWARE SHALL BE PROVIDED.
 - d. DETECTOR BASES: STANDARD DETECTOR MOUNTING BASES SUITABLE FOR MOUNTING ON EITHER NORTH AMERICAN 1-GANG, 2-GANG, 3-GANG, 4-GANG, 5-GANG, 6-GANG, 8-GANG, 10-GANG, 12-GANG, 14-GANG, 16-GANG, 18-GANG, 20-GANG, 22-GANG, 24-GANG, 26-GANG, 28-GANG, 30-GANG, 32-GANG, 34-GANG, 36-GANG, 38-GANG, 40-GANG, 42-GANG, 44-GANG, 46-GANG, 48-GANG, 50-GANG, 52-GANG, 54-GANG, 56-GANG, 58-GANG, 60-GANG, 62-GANG, 64-GANG, 66-GANG, 68-GANG, 70-GANG, 72-GANG, 74-GANG, 76-GANG, 78-GANG, 80-GANG, 82-GANG, 84-GANG, 86-GANG, 88-GANG, 90-GANG, 92-GANG, 94-GANG, 96-GANG, 98-GANG, 100-GANG, 102-GANG, 104-GANG, 106-GANG, 108-GANG, 110-GANG, 112-GANG, 114-GANG, 116-GANG, 118-GANG, 120-GANG, 122-GANG, 124-GANG, 126-GANG, 128-GANG, 130-GANG, 132-GANG, 134-GANG, 136-GANG, 138-GANG, 140-GANG, 142-GANG, 144-GANG, 146-GANG, 148-GANG, 150-GANG, 152-GANG, 154-GANG, 156-GANG, 158-GANG, 160-GANG, 162-GANG, 164-GANG, 166-GANG, 168-GANG, 170-GANG, 172-GANG, 174-GANG, 176-GANG, 178-GANG, 180-GANG, 182-GANG, 184-GANG, 186-GANG, 188-GANG, 190-GANG, 192-GANG, 194-GANG, 196-GANG, 198-GANG, 200-GANG, 202-GANG, 204-GANG, 206-GANG, 208-GANG, 210-GANG, 212-GANG, 214-GANG, 216-GANG, 218-GANG, 220-GANG, 222-GANG, 224-GANG, 226-GANG, 228-GANG, 230-GANG, 232-GANG, 234-GANG, 236-GANG, 238-GANG, 240-GANG, 242-GANG, 244-GANG, 246-GANG, 248-GANG, 250-GANG, 252-GANG, 254-GANG, 256-GANG, 258-GANG, 260-GANG, 262-GANG, 264-GANG, 266-GANG, 268-GANG, 270-GANG, 272-GANG, 274-GANG, 276-GANG, 278-GANG, 280-GANG, 282-GANG, 284-GANG, 286-GANG, 288-GANG, 290-GANG, 292-GANG, 294-GANG, 296-GANG, 298-GANG, 300-GANG, 302-GANG, 304-GANG, 306-GANG, 308-GANG, 310-GANG, 312-GANG, 314-GANG, 316-GANG, 318-GANG, 320-GANG, 322-GANG, 324-GANG, 326-GANG, 328-GANG, 330-GANG, 332-GANG, 334-GANG, 336-GANG, 338-GANG, 340-GANG, 342-GANG, 344-GANG, 346-GANG, 348-GANG, 350-GANG, 352-GANG, 354-GANG, 356-GANG, 358-GANG, 360-GANG, 362-GANG, 364-GANG, 366-GANG, 368-GANG, 370-GANG, 372-GANG, 374-GANG, 376-GANG, 378-GANG, 380-GANG, 382-GANG, 384-GANG, 386-GANG, 388-GANG, 390-GANG, 392-GANG, 394-GANG, 396-GANG, 398-GANG, 400-GANG, 402-GANG, 404-GANG, 406-GANG, 408-GANG, 410-GANG, 412-GANG, 414-GANG, 416-GANG, 418-GANG, 420-GANG, 422-GANG, 424-GANG, 426-GANG, 428-GANG, 430-GANG, 432-GANG, 434-GANG, 436-GANG, 438-GANG, 440-GANG, 442-GANG, 444-GANG, 446-GANG, 448-GANG, 450-GANG, 452-GANG, 454-GANG, 456-GANG, 458-GANG, 460-GANG, 462-GANG, 464-GANG, 466-GANG, 468-GANG, 470-GANG, 472-GANG, 474-GANG, 476-GANG, 478-GANG, 480-GANG, 482-GANG, 484-GANG, 486-GANG, 488-GANG, 490-GANG, 492-GANG, 494-GANG, 496-GANG, 498-GANG, 500-GANG, 502-GANG, 504-GANG, 506-GANG, 508-GANG, 510-GANG, 512-GANG, 514-GANG, 516-GANG, 518-GANG, 520-GANG, 522-GANG, 524-GANG, 526-GANG, 528-GANG, 530-GANG, 532-GANG, 534-GANG, 536-GANG, 538-GANG, 540-GANG, 542-GANG, 544-GANG, 546-GANG, 548-GANG, 550-GANG, 552-GANG, 554-GANG, 556-GANG, 558-GANG, 560-GANG, 562-GANG, 564-GANG, 566-GANG, 568-GANG, 570-GANG, 572-GANG, 574-GANG, 576-GANG, 578-GANG, 580-GANG, 582-GANG, 584-GANG, 586-GANG, 588-GANG, 590-GANG, 592-GANG, 594-GANG, 596-GANG, 598-GANG, 600-GANG, 602-GANG, 604-GANG, 606-GANG, 608-GANG, 610-GANG, 612-GANG, 614-GANG, 616-GANG, 618-GANG, 620-GANG, 622-GANG, 624-GANG, 626-GANG, 628-GANG, 630-GANG, 632-GANG, 634-GANG, 636-GANG, 638-GANG, 640-GANG, 642-GANG, 644-GANG, 646-GANG, 648-GANG, 650-GANG, 652-GANG, 654-GANG, 656-GANG, 658-GANG, 660-GANG, 662-GANG, 664-GANG, 666-GANG, 668-GANG, 670-GANG, 672-GANG, 674-GANG, 676-GANG, 678-GANG, 680-GANG, 682-GANG, 684-GANG, 686-GANG, 688-GANG, 690-GANG, 692-GANG, 694-GANG, 696-GANG, 698-GANG, 700-GANG, 702-GANG, 704-GANG, 706-GANG, 708-GANG, 710-GANG, 712-GANG, 714-GANG, 716-GANG, 718-GANG, 720-GANG, 722-GANG, 724-GANG, 726-GANG, 728-GANG, 730-GANG, 732-GANG, 734-GANG, 736-GANG, 738-GANG, 740-GANG, 742-GANG, 744-GANG, 746-GANG, 748-GANG, 750-GANG, 752-GANG, 754-GANG, 756-GANG, 758-GANG, 760-GANG, 762-GANG, 764-GANG, 766-GANG, 768-GANG, 770-GANG, 772-GANG, 774-GANG, 776-GANG, 778-GANG, 780-GANG, 782-GANG, 784-GANG, 786-GANG, 788-GANG, 790-GANG, 792-GANG, 794-GANG, 796-GANG, 798-GANG, 800-GANG, 802-GANG, 804-GANG, 806-GANG, 808-GANG, 810-GANG, 812-GANG, 814-GANG, 816-GANG, 818-GANG, 820-GANG, 822-GANG, 824-GANG, 826-GANG, 828-GANG, 830-GANG, 832-GANG, 834-GANG, 836-GANG, 838-GANG, 840-GANG, 842-GANG, 844-GANG, 846-GANG, 848-GANG, 850-GANG, 852-GANG, 854-GANG, 856-GANG, 858-GANG, 860-GANG, 862-GANG, 864-GANG, 866-GANG, 868-GANG, 870-GANG, 872-GANG, 874-GANG, 876-GANG, 878-GANG, 880-GANG, 882-GANG, 884-GANG, 886-GANG, 888-GANG, 890-GANG, 892-GANG, 894-GANG, 896-GANG, 898-GANG, 900-GANG, 902-GANG, 904-GANG, 906-GANG, 908-GANG, 910-GANG, 912-GANG, 914-GANG, 916-GANG, 918-GANG, 920-GANG, 922-GANG, 924-GANG, 926-GANG, 928-GANG, 930-GANG, 932-GANG, 934-GANG, 936-GANG, 938-GANG, 940-GANG, 942-GANG, 944-GANG, 946-GANG, 948-GANG, 950-GANG, 952-GANG, 954-GANG, 956-GANG, 958-GANG, 960-GANG, 962-GANG, 964-GANG, 966-GANG, 968-GANG, 970-GANG, 972-GANG, 974-GANG, 976-GANG, 978-GANG, 980-GANG, 982-GANG, 984-GANG, 986-GANG, 988-GANG, 990-GANG, 992-GANG, 994-GANG, 996-GANG, 998-GANG, 1000-GANG, 1002-GANG, 1004-GANG, 1006-GANG, 1008-GANG, 1010-GANG, 1012-GANG, 1014-GANG, 1016-GANG, 1018-GANG, 1020-GANG, 1022-GANG, 1024-GANG, 1026-GANG, 1028-GANG, 1030-GANG, 1032-GANG, 1034-GANG, 1036-GANG, 1038-GANG, 1040-GANG, 1042-GANG, 1044-GANG, 1046-GANG, 1048-GANG, 1050-GANG, 105



Interior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: Go Engineer TI
Project Type: Alteration

Construction Site:
739 East Fort Union Blvd.
Midvale, UT 84047

Owner/Agent:

Designer/Contractor:

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft ²)	C Allowed Watts / ft ²	D Allowed Watts (B X C)
1-Retail	29250	1.06	31005
Total Allowed Watts =			31005

Proposed Interior Lighting Power

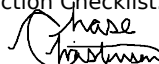
A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
<u>Retail (29250 sq.ft.)</u>				
LED 1: F1: Other:	1	106	31	3286
LED 2: F2: Other:	1	99	21	2079
LED 3: F4: Other:	1	29	28	812
LED 4: F5E: Other:	1	4	37	148
LED 5: F6: Other:	1	3	40	120
LED 6: F7: Other:	1	6	46	276
LED 7: F8: Other:	1	21	106	2226
LED 8: F9: Other:	1	1	60	60
LED 9: F10: Other:	1	25	21	525
LED 10: F11: Other:	1	47	20	940
LED 11: F12: Other:	1	3	9	27
LED 12: F13: Other:	1	173	56	9688
LED 13: F14: Other:	1	2	31	62
LED 14: F15: Other:	1	1	120	120
Total Proposed Watts =				20369

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Chase Christensen - Electrical Designer
Name - Title


Signature

8-19-20
Date



Inspection Checklist

Energy Code: 2018 IECC

Requirements: 0.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

Additional Comments/Assumptions:

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.2.2 [EL22] ¹	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern ≥ 50 percent.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.2.1, C405.2.1.1 [EL18] ¹	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, warehouse storage areas, and other spaces ≤ 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.2.1.2 [EL19] ¹	Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.2.1.3 [EL20] ¹	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces ≥ 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas ≤ 600 sq.ft. within the space, 2) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 3) are configured so that general lighting power in each control zone is reduced by $\geq 80\%$ of the full zone general lighting power within 20 minutes of all occupants leaving that control zone, and 4) are configured such that any daylight responsive control will activate space general lighting or control zone general lighting only when occupancy for the same area is detected.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.2.2, C405.2.2.1, C405.2.2.2 [EL21] ²	Each area not served by occupancy sensors (per C405.2.1) have time-switch controls and functions detailed in sections C405.2.2.1 and C405.2.2.2.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3, C405.2.3.1, C405.2.3.2 [EL23] ²	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.2.4 [EL26] ¹	Separate lighting control devices for specific uses installed per approved lighting plans.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.2.4 [EL27] ¹	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.3 [EL6] ¹	Exit signs do not exceed 5 watts per face.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.6 [EL26] ²	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.7 [EL27] ²	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.8.2, C405.8.2.1 [EL28] ²	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.9 [EL29] ²	Total voltage drop across the combination of feeders and branch circuits $\leq 5\%$.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [FI17] ³	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.4.1 [FI18] ¹	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Interior Lighting fixture schedule for values.
C408.1.1 [FI57] ¹	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C408.2.5.1 [FI16] ³	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C408.3 [FI33] ¹	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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