

Revision	Date

INSTALLATION NOTES - ELECTRICAL

- A. CONTRACTORS SHALL FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS PRIOR TO BID.
- B. INCREASE CONDUCTOR SIZES ON 120V-1 PHASE CIRCUITS EXCEEDING 100 FEET TO CENTER OF LOAD TO ACCOUNT FOR VOLTAGE DROP.
- C. RACEWAYS AND BOXES ARE SHOWN DIAGRAMMATICALLY ONLY AND INDICATE THE GENERAL AND APPROXIMATE LOCATION. THE LAYOUT DOES NOT NECESSARILY SHOW THE TOTAL NUMBER OF RACEWAYS OR BOXES FOR THE CIRCUITS REQUIRED. NOR ARE THE LOCATIONS OF INDICATED RUNS INTENDED TO SHOW THE ACTUAL ROUTING OF THE RACEWAYS.
- D. LIGHT FIXTURES, SWITCHES, DEVICES, ETC. ARE SHOWN IN PREFERRED LOCATION. E.C. RESPONSIBLE FOR MODIFYING CONDUIT, HANGERS, CIRCUITING, ETC. TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
- E. PROVIDE A DEDICATED GREEN INSULATED GROUND CONDUCTOR TO ALL DEVICES. THE CONDUIT SYSTEM SHALL NOT BE USED AS THE ONLY EQUIPMENT GROUNDING METHOD. DO NOT INSTALL DEVICES BACK TO BACK ON OPPOSITE SIDES OF WALL. MAINTAIN MINIMUM OF 8" DISTANCE BETWEEN WHEREVER APPLICABLE.
- F. BALANCE THE LOAD ON PANELS AS EVENLY AS POSSIBLE DURING INSTALLATION. CIRCUIT NUMBERING SHOWN ON PLANS MAY BE ADJUSTED.
- G. PROVIDE FINAL TYPED PERMANENT PANEL DIRECTORY AT PROJECT COMPLETION. CONTRATOR IS RESPONSIBLE FOR OPENINGS IN WALLS CREATED BY THEIR WORK. PENETRATIONS SHALL BE SEALED IN ACCORDANCE WITH THE RATINGS OF THE AFFECTED WALL. REFER TO ARCHITECTURAL CODE PLAN FOR RATED WALLS.

INSTALLATION NOTES - LIGHTING

- A. UNLESS NOTED OTHERWISE, CONNECT ALL EMERGENCY BATTERY FIXTURES WITH AN UN-SWITCHED LEG OF THE LIGHTING CIRCUIT THAT SERVES THE SPACE THE EMERGENCY FIXTURE IS LOCATED WITHIN. NORMAL SWITCHING SCHEME SHOULD BE MAINTAINED UNDER NORMAL OPERATING OF EMERGENCY FIXTURES DESIGNATED. WIRE PER EMERGENCY FIXTURE OR TRANSFER DEVICE INSTRUCTIONS.
- B. VERIFY CEILING TYPE (IE. GRID, GYP) WITH ARCHITECTURAL REFLECTED CEILING PLANS PRIOR TO RELEASE OF LIGHTING FIXTURE EQUIPMENT PACKAGE. ADJUST FIXTURE TYPE, CONSTRUCTION, FLANGE, OR OTHER COORDINATION DETAILS AS REQUIRED FOR CEILING TYPE.
- C. OCCUPANCY SENSORS SHOWN ON PLANS ARE SUGGESTED LOCATIONS ONLY AND MUST BE VERIFIED WITH SPECIFIC MANUFACTURER GUIDELINES AND INSTALLATION RECOMMENDATIONS AS NOTED IN LIGHTING CONTROL SHOP DRAWINGS. ADJUST LOCATIONS AS REQUIRED TO MEET MANUFACTURER GUIDELINES.
- D. PROVIDE LIGHTING CONTROL SYSTEMS AS A COMPLETE OPERATING SYSTEM AND INCLUDE MATERIAL AND INSTALLATION FOR ALL POWER PACKS, ACCESSORIES, CONTROLLERS, AND WIRING REQUIRED FOR THE SYSTEM.

CODE NOTES - ELECTRICAL

- A. THE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES.
- B. THE CURRENT ADOPTED EDITION OF THE ELECTRICAL CODE SHALL BE THE STANDARD FOR THE ELECTRICAL INSTALLATION, NEC 2017. VERIFY WITH LOCAL OFFICIALS WHEN PERMITS ARE OBTAINED. NOTIFY DESIGN TEAM OF ANY DISCREPANCIES BETWEEN THE PROJECT MANUAL OR DRAWINGS AND THE GOVERNING CODE.
- C. INSTALLATION SHALL FOLLOW ALL REQUIREMENTS OF THE ADAAG - AMERICANS WITH DISABILITIES ACT.

BUILDING EQUIPMENT COORDINATION NOTES - ELECTRICAL

- A. REFER TO HVAC, PLUMBING, AND FIRE PROTECTION EQUIPMENT CONNECTION SCHEDULE FOR COORDINATION DETAILS BETWEEN MECHANICAL AND ELECTRICAL SYSTEMS.
- B. THE ELECTRICAL SYSTEMS SHALL BE PROVIDED AND INSTALLED UNDER THIS CONTRACT TO MEET THE REQUIREMENTS OF THE SPECIFIED MECHANICAL SYSTEMS. THE ENTIRE PROJECT DOCUMENTS AND MANUALS SHALL BE REFERENCED AS A COMPLETE PROJECT. ELECTRICAL CONTRACTOR SHALL REFER TO ALL SCHEDULES, DETAILS, AND NOTES AND PROVIDE ELECTRICAL EQUIPMENT, WIRING, AND INSTALLATION REQUIRED UNDER THIS PROJECT.
- C. PROVIDE ELECTRICAL CONNECTIONS AND ACCESSORIES INCLUDING STARTERS, DISCONNECTS, CONTROL, WIRING, ETC. AS REQUIRED FOR THE BUILDING MECHANICAL EQUIPMENT. INFORMATION HEREIN AND ON THE DRAWINGS IS FOR GENERAL DESCRIPTION AND ESTIMATING PURPOSES ONLY. VERIFY VOLTAGE, AMPERAGE, PHASE, INRUSH, ETC. FOR EACH ITEM OF EQUIPMENT BEFORE PROCEEDING WITH WIRING FOR IT, WRING DETAILS SHALL BE IN ACCORDANCE WITH INSTRUCTIONS TO BE FURNISHED BY THE SUPPLIERS OF THE EQUIPMENT AS NECESSARY TO PROVIDE PROPER OPERATION OF THE EQUIPMENT.
- D. REVIEW MECHANICAL EQUIPMENT SHOP DRAWINGS FOR COMPLIANCE AND COORDINATION WITH ELECTRICAL CONNECTIONS. NOTIFY ENGINEER IF CHANGES TO ELECTRICAL CONNECTIONS, WIRING, AND BREAKER REQUIREMENTS ARE NECESSARY TO ACCOMMODATE EQUIPMENT BEING SUPPLIED.
- E. NO ELECTRICAL DISTRIBUTION EQUIPMENT SHALL BE RELEASED UNTIL ALL MECHANICAL EQUIPMENT REQUIRING ELECTRICAL INFRASTRUCTURE HAS BEEN SUBMITTED AND APPROVED. ADJUSTMENTS TO BREAKER SIZES AND SIMILAR CHANGES MUST BE MADE TO ELECTRICAL EQUIPMENT PRIOR TO RELEASE, FABRICATION, AND SHIPPING OF ELECTRICAL EQUIPMENT. COORDINATE SCHEDULING OF SHOP DRAWINGS WITH ALL TRADES SUCH AS NOT TO CAUSE ANY DELAYS TO PROJECT.
- F. PROVIDE DISCONNECTS RATED FOR EQUIPMENT AS REQUIRED AND AS INDICATED WITHIN EQUIPMENT CONNECTION SCHEDULE. MOUNTING OF DISCONNECTS SHOULD BE COORDINATED TO ALLOW FOR REMOVAL OF MECHANICAL EQUIPMENT WITHOUT NEEDING TO REMOVE THE DISCONNECT AND MINIMIZE WIRING WORK REQUIRED.
- G. ALL MECHANICAL EQUIPMENT DISCONNECTS SHALL BE HEAVY DUTY TYPE AND RATED FOR THE ENVIRONMENT THEY SERVE. EXTERIOR DISCONNECTS SHALL BE RATED A MINIMUM OF 3R OR AS INDICATED.
- H. VERIFY LOCATION OF ALL MECHANICAL EQUIPMENT WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR. ADJUST ELECTRICAL INSTALLATION AS REQUIRED.

DEMOLITION AND RENOVATION NOTES - ELECTRICAL

- A. THE ELECTRICAL DEMOLITION DRAWING SHOWING EXISTING CONDITIONS HAVE BEEN PREPARED BASED ON FIELD OBSERVATION AND ORIGINAL DRAWINGS. ADDITIONAL COMPONENTS MAY EXIST WHICH ARE NOT SHOWN, AND SUCH ITEMS SHALL BE DEALT WITH IN A MANNER SIMILAR TO THOSE ITEMS WHICH ARE SHOWN.
- B. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH EXISTING ELECTRICAL SYSTEM WHICH WILL BE AFFECTED BY THE DEMOLITION WORK. CONTRACTOR SHALL OBTAIN PERMISSION FROM OWNER'S REPRESENTATIVE TO SHUT OFF SERVICES OR SYSTEMS WHICH MAY AFFECT OTHER AREAS BEYOND THE LIMITS OF THE DEMOLITION AREA. SUCH PERMISSION WILL BE GRANTED ONLY AFTER OWNER'S REPRESENTATIVE IS INFORMED OF THE REASON FOR AND DURATION OF THE SHUTDOWN AND IS SATISFIED THAT THE SHUTDOWN CAN BE MADE WITH AS LITTLE INCONVENIENCE TO OTHER AREAS AS POSSIBLE.
- C. PROVIDE PLANT, LABOR, AND MATERIALS TO REMOVE ELECTRICAL FACILITIES AND CLEAR THE AREA TO RECEIVE THE NEW WORK TO BE PROVIDED UNDER THIS CONTRACT.
- D. CONDUITS, BOXES, ETC., SHALL BE REMOVED AS REQUIRED BY WALL AND CEILING DEMOLITION AND ADJACENT REMOVALS. REMOVE EXISTING WIRING FOR REMOVED DEVICES.
- E. ALL WIRING FOR REMODELED AREAS SHALL BE NEW UNLESS SPECIFICALLY NOTED OTHERWISE. ALL CONDUIT SHALL BE NEW UNLESS SPECIFICALLY NOTED OTHERWISE OR WHERE FIELD VERIFIED FOR SUITABLE USE WHEN LOCATED WITHIN EXISTING BLOCK WALLS OR BELOW SLABS.
- F. BRANCH CIRCUITS TO BE DISCONNECTED SHALL BE IDENTIFIED AS TO LOCATION OR ITEM SERVED BEFORE DISCONNECTING.
- G. CIRCUITS SERVING AREAS BEYOND THE DEMOLITION AREA SHALL BE MAINTAINED. EXTEND AND/OR RECONNECT NEW WIRING TO EXISTING AS REQUIRED TO MAINTAIN EXISTING CIRCUITS.
- H. EXISTING BUILDING SYSTEMS THAT ARE NOT AFFECTED BY THE SCOPE OF THE PROJECT ARE TO BE KEPT OPERATIONAL IN OCCUPIED AREAS OF THE BUILDING THROUGHOUT THE DURATION OF THE PROJECT. COORDINATE REQUIRED OUTAGES WITH THE OWNER IN ADVANCE OF SHUT DOWN.
- I. INSTALL STAINLESS STEEL COVER PLATE OVER HOLE AT REMOVED DEVICE LOCATIONS, INCLUDING BUT NOT LIMITED TO, RECEPTACLES, SWITCHES, JUNCTION BOXES, ETC. PROVIDE CUTTING AND PATCHING OF EXISTING CONSTRUCTION AS REQUIRED FOR THE PROPER COMPLETION OF THE DEMOLITION WORK AND THE INSTALLATION OF THE NEW WORK.
- K. EQUIPMENT AND DEVICES SHOWN AS EXISTING OR AS REMOVE/RELOCATE SHALL BE PROTECTED AND HANDLED WITH APPROPRIATE CARE SO AS TO MAINTAIN FULL FUNCTIONAL AND AESTHETIC INTEGRITY OF THE DEVICE.
- L. REMOVED EQUIPMENT AND SYSTEMS SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS OTHERWISE NOTED. ALL MATERIALS NOT SALVAGED BY THE OWNER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR PROPER DISPOSAL.

FIRE DETECTION AND ALARM SYMBOLS

- [F] MANUAL FIRE ALARM PULL STATION
- [S] SMOKE DETECTOR
- [I] DUCT SMOKE DETECTOR
- [C] CARBON MONOXIDE DETECTOR
- [H] HEAT DETECTOR
- [M] COMBINATION HORN WITH STROBE - WALL MOUNTED
- [S] STROBE - WALL MOUNTED
- [AIM] ADDRESSABLE INPUT MODULE
- [AOM] ADDRESSABLE OUTPUT MODULE
- [FACP] FIRE ALARM CONTROL PANEL + EMERGENCY COMMUNICATIONS PANEL

GENERAL SYMBOLS

- [J] JUNCTION BOX, CEILING OR FLOOR MOUNTED.
- [J] JUNCTION BOX, WALL MOUNTED, ELEVATION AS NOTED.
- [C] CIRCUIT HOMERUN, CONCEALED CONDUIT OR CABLE
- [K] KEYNOTE
- [XXX] EQUIPMENT IDENTIFICATION TAG. REFER TO EQUIPMENT CONNECTION SCHEDULE
- [1/AT01] SIM DETAIL DRAWING REFERENCE TAG, SIM-SIMILAR, TYP-TYPICAL, OPP-OPPOSITE SHEET REFERENCE

GROUNDING AND BONDING SYMBOLS

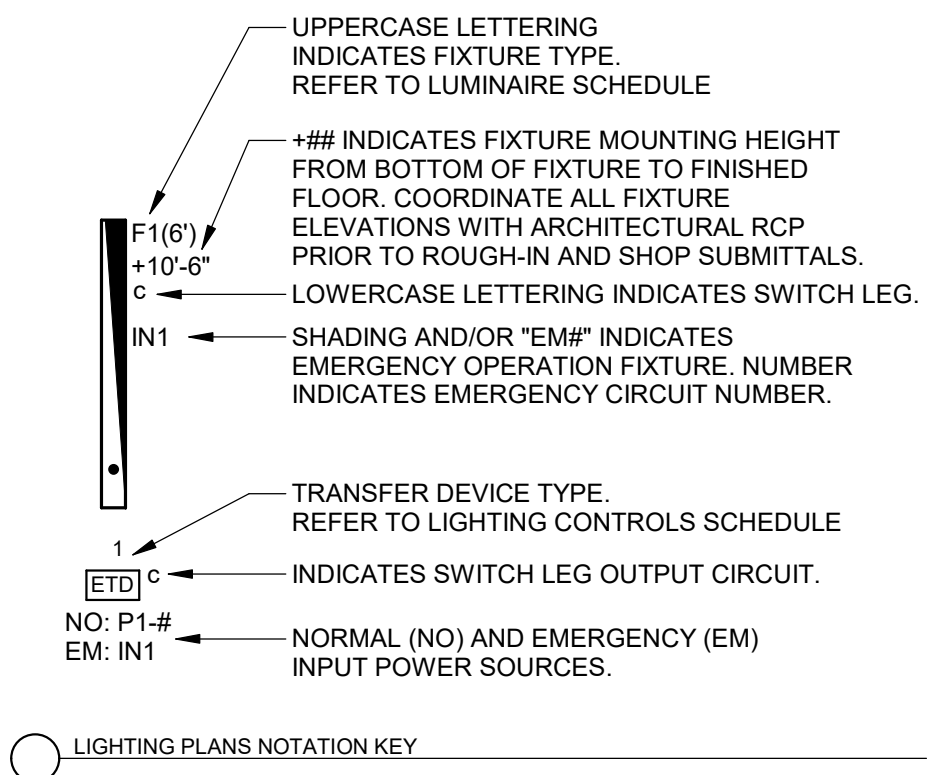
- [GB] GROUND BAR
- [TMGB] TELECOMMUNICATIONS MAIN GROUND BAR
- [TGB] TELECOMMUNICATIONS GROUND BAR
- SEE RISER DIAGRAM AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

TELECOMMUNICATIONS INFRASTRUCTURE SYMBOLS

- [#] DATA CABLING - SEE SCHEDULE FOR EXACT REQUIREMENTS
- [WAP] WIRELESS ACCESS POINT- SEE SCHEDULE FOR EXACT REQUIREMENTS
- [TV] CABLE TELEVISION LOCATION - RADIO GRADE CABLING
- SEE RISER DIAGRAM AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

ELECTRICAL ABBREVIATIONS

A	DEVICE MOUNTED +8" ABOVE COUNTER TOP (VERIFY LOCATION)	NIC	NOT IN CONTRACT
AFF	ABOVE FINISHED FLOOR	NM	NONMETALLIC
ATS	AUTOMATIC TRANSFER SWITCH	NTS	NOT TO SCALE
C	CEILING	OC	OWNER FURNISHED
CB	CIRCUIT BREAKER	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
CT	CURRENT TRANSFORMER	OFOI	OWNER FURNISHED, OWNER INSTALLED
E	EXISTING ITEM TO REMAIN	R	EXISTING ITEM TO BE REMOVED
EC	ELECTRICAL CONTRACTOR	RR	EXISTING ITEM TO BE REMOVED AND RELOCATED
EM	EMERGENCY LIGHT FIXTURE	RN	EXISTING ITEM TO BE REMOVED AND REPLACED WITH NEW
ER	NEW LOCATION OF EXISTING ITEM	SCCR	SHORT CIRCUIT CURRENT RATING
F	ROUGH IN FOR FUTURE DEVICE	T	TAMPER PROOF DEVICE
FAAP	FIRE ALARM ANNUNCIATOR PANEL	TCC	TEMPERATURE CONTROL CONTRACTOR
FACP	FIRE ALARM CONTROL PANEL	TV	TELEVISION
FSD	FIRE SMOKE DAMPER	TYP	TYPICAL
G	GROUND FAULT CIRCUIT INTERRUPTER	UPS	UNINTERRUPTIBLE POWER SUPPLY
GND	GROUND	V	VOLTS
KVA	KILO-VOLT-AMPERES	VA	VOLT-AMPERES
KW	KILOWATTS	WG	WIREGUARD COVER
MC	MECHANICAL CONTRACTOR	WP	WEATHERPROOF DEVICE
MCB	MAIN CIRCUIT BREAKER	WR	WEATHER RESISTANT DEVICE
MDP	MAIN DISTRIBUTION PANEL	+24"	INDICATES MOUNTING HEIGHT CENTER LINE OF DEVICE TO FINISHED FLOOR
MLO	MAIN LUGS ONLY		
N	NEW DEVICE IN EXISTING LOCATION		



LIGHTING PLANS NOTATION KEY

POWER SYMBOLS

- [D] DUPLEX RECEPTACLE, CEILING MOUNT
- [R] DUPLEX RECEPTACLE, TAMPER-RESISTANT, WALL MOUNT +18", OR AS NOTED
- [G] DUPLEX GFCI RECEPTACLE, TAMPER-RESISTANT, WALL MOUNT +18", OR AS NOTED
- [EWC] DUPLEX RECEPTACLE, MOUNTED WITHIN WATER COOLER HOUSING, VERIFY HEIGHT, CONNECT TO GFCI, CIRCUIT BREAKER OR REMOTE WALL DEVICE.
- [W] DUPLEX GFCI WEATHER RESISTANT RECEPTACLE WITH WEATHER-PROOF IN-USE COVER, TAMPER-RESISTANT, WALL MOUNT +24", OR AS NOTED
- [Q] QUADRAPLEX RECEPTACLE, TAMPER-RESISTANT, WALL MOUNT +18", OR AS NOTED
- [Q] QUADRAPLEX GFCI RECEPTACLE, TAMPER-RESISTANT, WALL MOUNT +18", OR AS NOTED
- [S] SPECIAL RECEPTACLE, WALL MOUNT +18", OR AS NOTED, REFER TO ELECTRICAL EQUIPMENT CONNECTION SCHEDULE FOR RECEPTACLE TYPE
- [E] EQUIPMENT CONNECTION, REFER TO ELECTRICAL EQUIPMENT CONNECTION SCHEDULE FOR CONNECTION TYPE
- [E] EQUIPMENT CONNECTION, WALL MOUNT +18", OR AS NOTED, REFER TO ELECTRICAL EQUIPMENT CONNECTION SCHEDULE FOR CONNECTION TYPE
- [J] JUNCTION BOX, WITH PULL STRING, WALL MOUNT, REFER TO PLAN OR DETAIL FOR MOUNTING HEIGHT
- [G] GROUND BAR
- [SPD] SURGE PROTECTIVE DEVICE
- [D] SAFETY DISCONNECT SWITCH
- [S] VFD
- [S] VFD WITH INTEGRAL DISCONNECT
- [E] EMERGENCY PUSH BUTTON
- [P] PANELBOARD - SURFACE MOUNTED
- [R] PANELBOARD - RECESSED IN WALL
- [D] DISTRIBUTION PANELBOARD/SWITCHBOARD - SURFACE MOUNTED AS NOTED.
- [R] CORD REEL, CEILING MOUNTED - REFER TO DETAIL
- [GEN] GENERATOR
- [G] GROUND RING

LIGHTING SYMBOLS

- [a] RECESSED LIGHT FIXTURE, LETTER INDICATES SWITCH LEG (TYPICAL), SHADING INDICATES EMERGENCY LIGHT (TYPICAL)
- [O] ROUND LIGHT FIXTURE - SURFACE MOUNTED
- [S] SURFACE MOUNTED STRIP FIXTURE
- [L] LINEAR PENDANT MOUNTED FIXTURE
- [W] WALL MOUNTED STRIP LIGHT FIXTURE.
- [E] EMERGENCY LIGHT FIXTURE, WALL MOUNT, +96" OR AS NOTED
- [E] EMERGENCY LIGHT FIXTURE, CEILING MOUNT
- [E] EXIT SIGN, WALL MOUNT +96", SHADED AREAS INDICATE NUMBER OF FACES, ARROWS INDICATE SIGN ARROWS
- [E] EXIT SIGN, CEILING MOUNT, SHADED AREAS INDICATE NUMBER OF FACES, ARROWS INDICATE SIGN ARROWS
- [E] EXTERIOR LIGHT FIXTURE, WALL MOUNT +10", OR AS NOTED
- [O] INTERIOR LIGHT FIXTURE, WALL MOUNT
- [E] EXTERIOR FLOOD LIGHT FIXTURE, REFER TO LIGHT FIXTURE SCHEDULE
- [F] CEILING FAN
- [S] SINGLE POLE SWITCH, WALL MOUNT +48", OR AS NOTED, LETTER INDICATES SWITCH LEG
- [S] THREE WAY SWITCH, WALL MOUNT +48", OR AS NOTED, LETTER INDICATES SWITCH LEG
- [S] OCCUPANCY SENSOR, WALL MOUNT +48" OR AS NOTED, NUMBER INDICATES TYPE, LETTER INDICATES SWITCH LEG, REFER TO LIGHTING CONTROLS SCHEDULE
- [S] OCCUPANCY SENSOR, CEILING MOUNT, NUMBER INDICATES TYPE, LETTER INDICATES SWITCH LEG, REFER TO LIGHTING CONTROLS SCHEDULE
- [S] DAYLIGHTING SENSOR, CEILING MOUNT, NUMBER INDICATES TYPE, LETTER INDICATES SWITCH LEG, REFER TO LIGHTING CONTROLS SCHEDULE



KEYNOTES

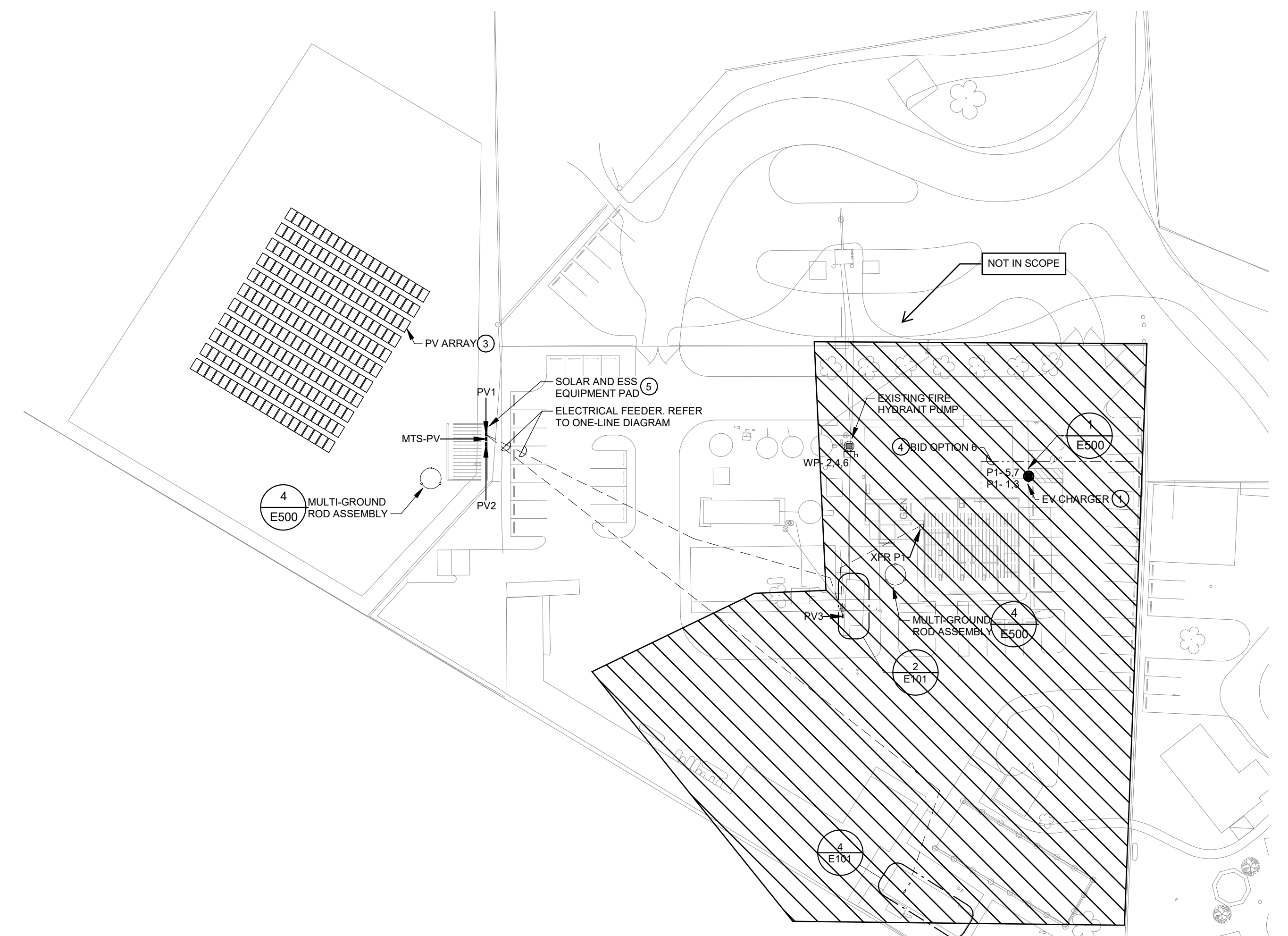
1. PROVIDE AND INSTALL FULLY OPERATIONAL LEVEL 2 NETWORKED DUAL PORT PUBLIC USE CHARGING STATION EQUAL TO LEVITON EVR-GREEN 4000 SERIES CPHUS-BPMBX-CPAPB-PCBX-CPMK. FREE STANDING BOLLARD TYPE WITH CONCRETE BASE MOUNTING KIT. NEMA 3R ENCLOSURE. DUAL CHARGING PORTS WITH INTEGRAL CABLE MANAGEMENT. CHARGEPOINT NETWORK SERVICE ENABLED WITH INTEGRAL LTE CELLULAR SIM CARD NETWORK CAPABLE. COLOR LCD DISPLAY AND RFID CARD READER. POWERED THROUGH (2) 208V 40A/2P SINGLE PHASE CIRCUITS. INTEGRAL SURGE SUPPRESSION. FULLY UL LISTED FOR APPLICATION. PROVIDE AS A COMPLETE PACKAGE INCLUDING ALL MANUFACTURER REQUIRED START-UP SERVICES, PROGRAMMING, STANDARD WARRANTY, AND 5 YEAR SERVICE PLAN WITH PURCHASE OF EQUIPMENT, BEGINNING AT SUBSTANTIAL COMPLETION.
2. MAINTAIN EXISTING UNDERGROUND ELECTRICAL FROM WELL PUMP BUILDING TO EXISTING HYDRANT PUMP. REFER TO ENLARGED PLANS AND ONE-LINE DIAGRAMS.
3. PV ARRAY SHOWN IS FOR QUANTITY AND APPROXIMATE LAYOUT ESTIMATION ONLY. FINAL RACKING LAYOUT REQUIREMENTS AND SPACING DETERMINED BY DELEGATED DESIGN SOLAR ENGINEER. MAINTAIN REQUIRED CLEARANCES/SPACES FOR OPTIMAL RADIANCE ABSORPTION. REFER TO SPECIFICATIONS AND DETAILS. MAINTAIN REQUIRED CLEARANCES TO GROUNDED SYSTEM PER NFPA 1.
4. BID OPTION: BASE BID, PROVIDE CIRCUIT ROUGH-IN AND CONDUIT STUB-UP TO LOCATION SHOWN FOR FUTURE EV CHARGER INSTALLATION. UNDER BID OPTION PROVIDE AND FULLY INSTALL EV CHARGER AS INDICATED.
5. PV PAD LAYOUT PER SOLAR ENGINEER FINAL DRAWINGS.

POWER GENERAL NOTES

- A. COORDINATE LOCATION/INSTALLATION OF MECHANICAL AND ELECTRICAL WORK WITH ALL OTHER TRADES. NO ASPECT OF A SYSTEM INSTALLATION OR ITS ROUGH-IN SHALL COMMENCE UNTIL PROPER AND TIMELY COORDINATION WITH ALL TRADES ASSOCIATED WITH THE INSTALLATION HAS TRANSPIRED. ITEMS TO BE COORDINATED SHALL INCLUDE BUT NOT BE LIMITED TO: BUILDING STRUCTURE, SHEET METAL, PIPING SYSTEMS, LIGHT FIXTURES, CONDUITS, CABLE TRAYS, ETC. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
- B. COORDINATE ELECTRICAL REQUIREMENTS FOR MECHANICAL UNITS WITH M.C. AND FINAL MECHANICAL SHOP DRAWINGS.
- C. PROVIDE PENETRATIONS REQUIRED FOR ROUTING RACEWAYS THROUGH THE BUILDING. COORDINATE FIRE RATED WALL PENETRATIONS AND PROVIDE CONDUIT SLEEVES AND FIRE STOPPING TO MAINTAIN RATING.



1 ELECTRICAL SITE PLAN - DEMOLITION
1" = 50'-0"



2 ELECTRICAL SITE PLAN - NEW CONSTRUCTION
1" = 50'-0"

STAR SCHOOL MAKERSPACE RENOVATIONS

145 Leupp Rd, Flagstaff, AZ 86004

Project No: KCL #21088

Date: 2021.10.31

PERMIT SET

Revision	Date

Drawing Name:
ELECTRICAL SITE PLAN

Drawing #:
E001



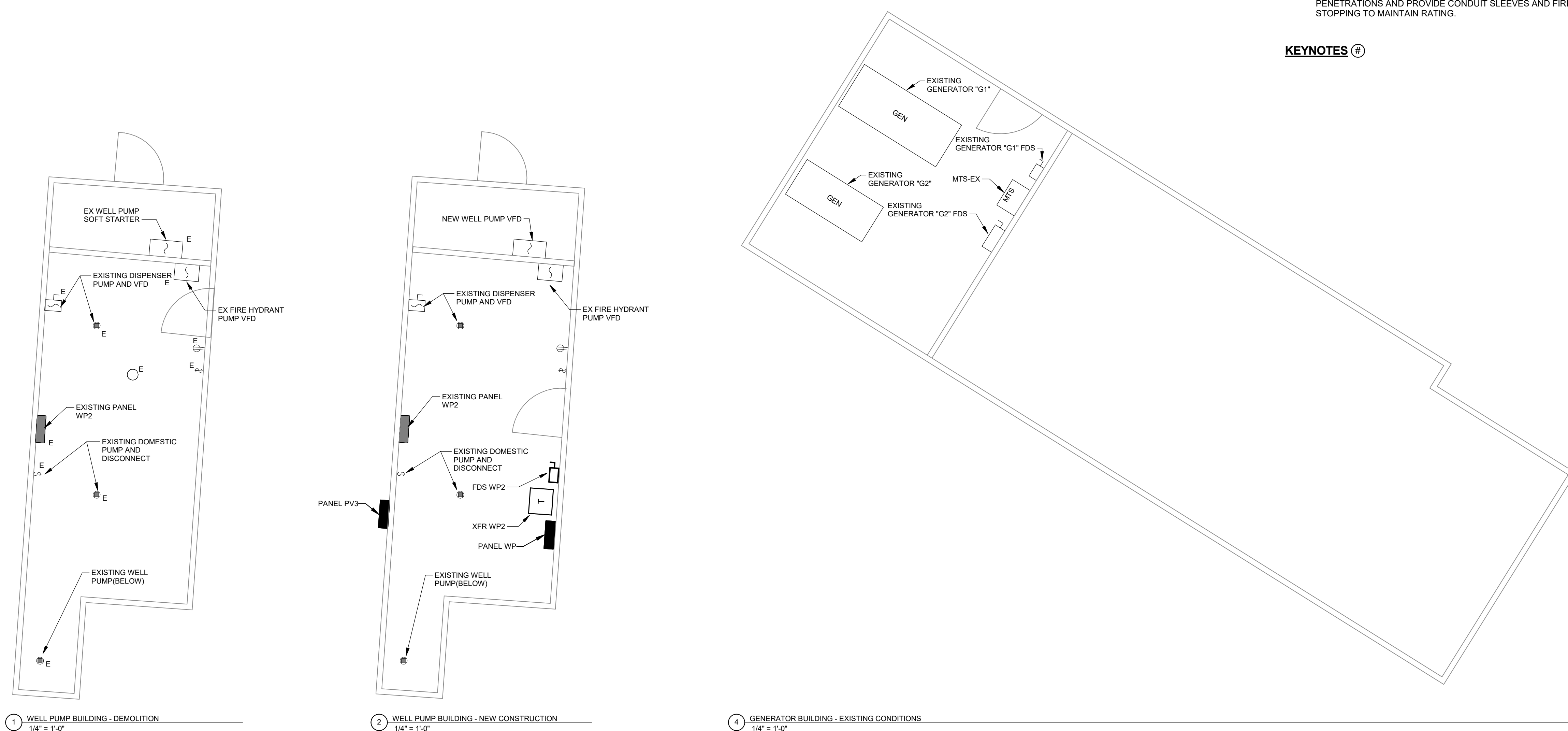
ELECTRICAL DEMOLITION NOTES

- DEMOLITION DRAWINGS PRESENT LAYOUT OF EXISTING CONDITIONS AND MAJOR MECHANICAL/ELECTRICAL ITEMS. THEY ARE NOT TO BE CONSTRUED AS COMPLETE IN REPRESENTATION OF ACCESSORIES AND INCIDENTALS TO BE REMOVED, REPLACED, OR REWORKED. NOR SHOULD ACCESSIBILITY BE INFERRED. THE CONTRACTOR IS RESPONSIBLE TO FAMILIARIZE THEMSELVES WITH THE BUILDING AND EXISTING CONDITIONS. PRIOR TO THE SUBMITTING OF A BID FOR THIS PROJECT.
- REMOVE ELECTRICAL FACILITIES AND CLEAR THE AREA TO RECEIVE THE NEW WORK TO BE PROVIDED UNDER THIS CONTRACT.
- THIS ELECTRICAL DEMOLITION DRAWING SHOWING EXISTING CONDITIONS HAS BEEN PREPARED BASED ON FIELD OBSERVATION AND ORIGINAL DRAWINGS. ADDITIONAL COMPONENTS MAY EXIST WHICH DO NOT SHOW, AND SUCH ITEMS SHALL BE DEALT WITH IN A MANNER SIMILAR TO THOSE ITEMS WHICH DO SHOW. CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING CONDITIONS.
- CONDUITS, BOXES, ETC., SHALL BE REMOVED AS REQUIRED BY WALL AND CEILING DEMOLITION AND REMOVALS. WIRING SHALL BE NEW UNLESS SPECIFICALLY NOTED OTHERWISE. ALL BRANCH CIRCUITS TO BE DISCONNECTED SHALL BE IDENTIFIED AS TO LOCATION OR ITEM SERVED BEFORE DISCONNECTING. CIRCUITS SERVING AREAS BEYOND THE IMMEDIATE DEMOLITION AREA SHALL BE MAINTAINED.
- CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH EXISTING ELECTRICAL SYSTEM WHICH WILL BE AFFECTED BY THE DEMOLITION WORK. CONTRACTOR SHALL OBTAIN PERMISSION FROM OWNER'S REPRESENTATIVE TO SHUT OFF SERVICES OR SYSTEMS WHICH MAY AFFECT OTHER AREAS BEYOND THE LIMITS OF THE IMMEDIATE DEMOLITION AREA. SUCH PERMISSION WILL BE GRANTED ONLY AFTER OWNER'S REPRESENTATIVE IS INFORMED OF THE REASON FOR AND DURATION OF THE SHUTDOWN AND IS SATISFIED THAT THE SHUTDOWN CAN BE MADE WITH AS LITTLE INCONVENIENCE TO OTHER AREAS AS POSSIBLE.
- PANELBOARDS, DISCONNECTS, FIXTURES, WIRING DEVICES, SIGNAL DEVICES, ETC., SHOWN ON PLANS SHALL BE REMOVED UNLESS NOTED OTHERWISE. REMOVAL SHALL BE DONE IN A TIMELY MANNER IN ACCORDANCE WITH THE GENERAL DEMOLITION WORK. COORDINATE WITH THE OWNER AND OTHER CONTRACTORS.
- ABBREVIATIONS:
E - EXISTING ITEM TO REMAIN
ER - NEW LOCATION OF EXISTING ITEM
N - NEW ITEM IN EXISTING LOCATION
R - EXISTING ITEM TO BE REMOVED, PATCH AND/OR COVER
RN - REPLACE EXISTING WITH NEW
RR - EXISTING ITEM TO BE REMOVED AND RELOCATED

POWER GENERAL NOTES

- COORDINATE LOCATION/INSTALLATION OF MECHANICAL AND ELECTRICAL WORK WITH ALL OTHER TRADES. NO ASPECT OF A SYSTEM INSTALLATION OR ITS ROUGH-IN SHALL COMMENCE UNTIL PROPER AND TIMELY COORDINATION WITH ALL TRADES ASSOCIATED WITH THE INSTALLATION HAS TRANSPIRED. ITEMS TO BE COORDINATED SHALL INCLUDE BUT NOT BE LIMITED TO: BUILDING STRUCTURE, SHEET METAL, PIPING SYSTEMS, LIGHT FIXTURES, CONDUITS, CABLE TRAYS, ETC. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
- COORDINATE ELECTRICAL REQUIREMENTS FOR MECHANICAL UNITS WITH M.C. AND FINAL MECHANICAL SHOP DRAWINGS.
- PROVIDE PENETRATIONS REQUIRED FOR ROUTING RACEWAYS THROUGH THE BUILDING. COORDINATE FIRE RATED WALL PENETRATIONS AND PROVIDE CONDUIT SLEEVES AND FIRE STOPPING TO MAINTAIN RATING.

KEYNOTES



1 WELL PUMP BUILDING - DEMOLITION
1/4" = 1'-0"

2 WELL PUMP BUILDING - NEW CONSTRUCTION
1/4" = 1'-0"

4 GENERATOR BUILDING - EXISTING CONDITIONS
1/4" = 1'-0"

Project No: KCL #21088

Date: 2021.10.31

PERMIT SET

Revision	Date

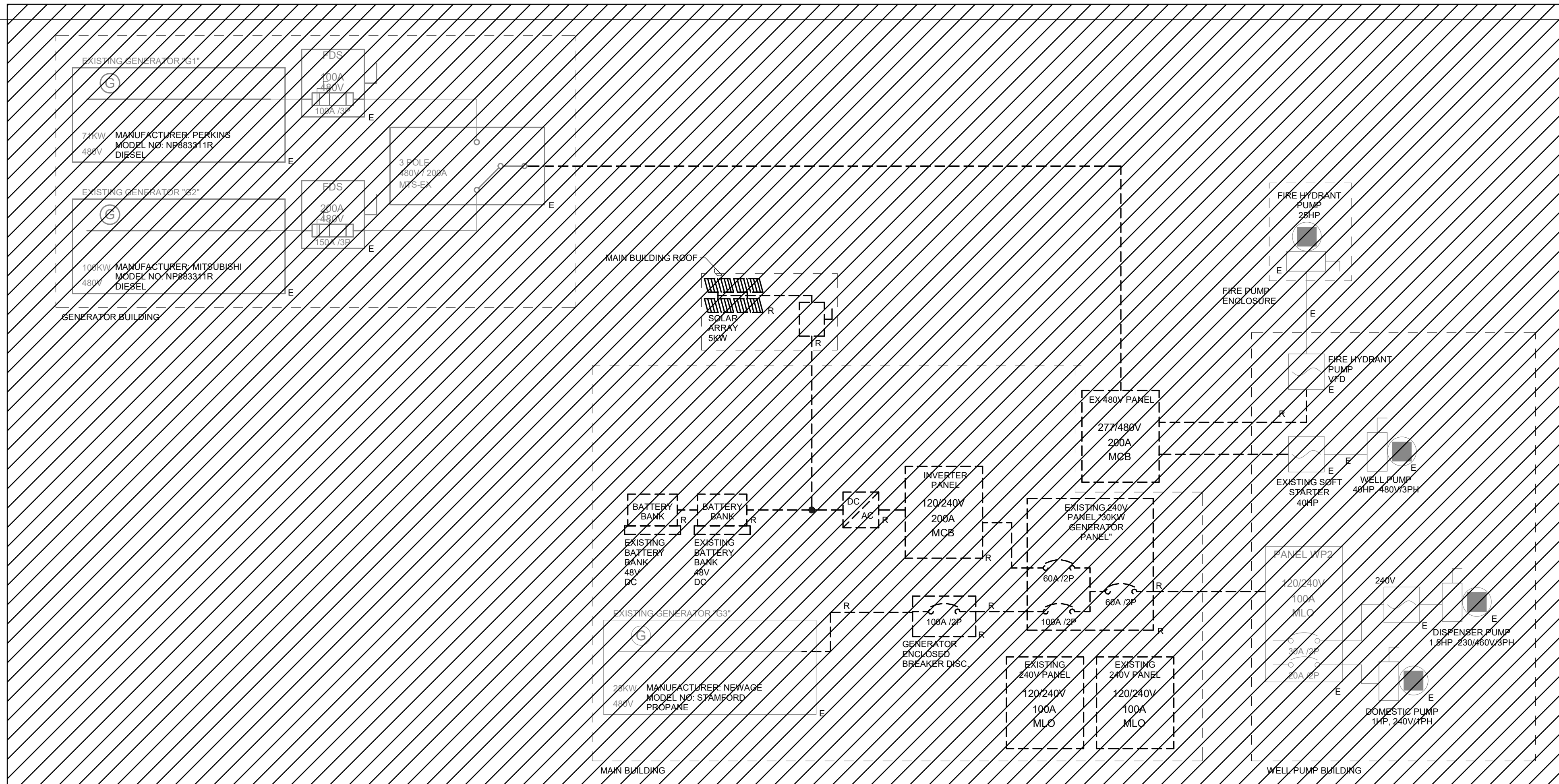
Drawing Name:
ELECTRICAL ENLARGED FLOOR PLANS

Drawing #:

E101



EXPIRES 06/30/2024



1 ELECTRICAL RISER DIAGRAM - DEMOLITION
NOT TO SCALE

PV AND ENERGY STORAGE SYSTEM NARRATIVE:

- PROVIDE SELF-SUFFICIENT ENERGY STORAGE AND PV SYSTEM, INDEPENDANT FROM UTILITY GRID. SYSTEM SHALL BE DESIGNED, DOCUMENTED AND STAMPED BY A QUALIFIED AND LICENSED PV SYSTEMS ENGINEER.
- SYSTEM SHALL COMPLY WITH REQUIREMENTS OF NEC 705 AND NEWC 706.
- SYSTEM MINIMUM CRITERIA:
 - 112.5KW DC SOLAR PANELS:
 - BASIS OF DESIGN:
 - (232) HANWHA Q CELLS Q.PEAK DUO XL G10.3/BFG 585W MONOCRYSTALLINE MODULE.
 - 20% EFFICIENCY
 - 25 YEAR WARRANTY
 - 180KVA INVERTER SYSTEM:
 - BASIS OF DESIGN:
 - (3) SOL ARK 60K-3P-480V
 - SUITABLE FOR 277/480V 3 PHASE CONFIGURATION.
 - ANTI-ISLANDING PROTECTION.
 - 220 KWH LITHIUM BATTERY STORAGE SYSTEM
 - BASIS OF DESIGN:
 - (6) SOL ARK L3 60K-HV-60-IP55
 - 100Ah
 - 98% EFFICACY
 - 10 YEAR PROXRATED WARRANTY
- PROVIDE AC COUPLED ENERGY STORAGE AND PV SYSTEM. PROVIDE SYSTEM WITH COMPATIBLE AC/DC INVERTERS, CHARGE CONTROLLERS, MONITORING SYSTEM, USER INTERFACE CONTROLLERS, AND PV ARRAY RAPID SHUTDOWN COMPONENTS.
- PROVIDE WIRE RACKS, AND OTHER APPURTENANCES AND ELECTRICAL EQUIPMENT NECESSARY FOR COMPLETE SYSTEM INSTALLATION.
- SYSTEM SHALL BE CAPABLE OF POWERING 40HP WELL PUMP WITH SOFT STARTER UNDER NORMAL CONDITIONS.

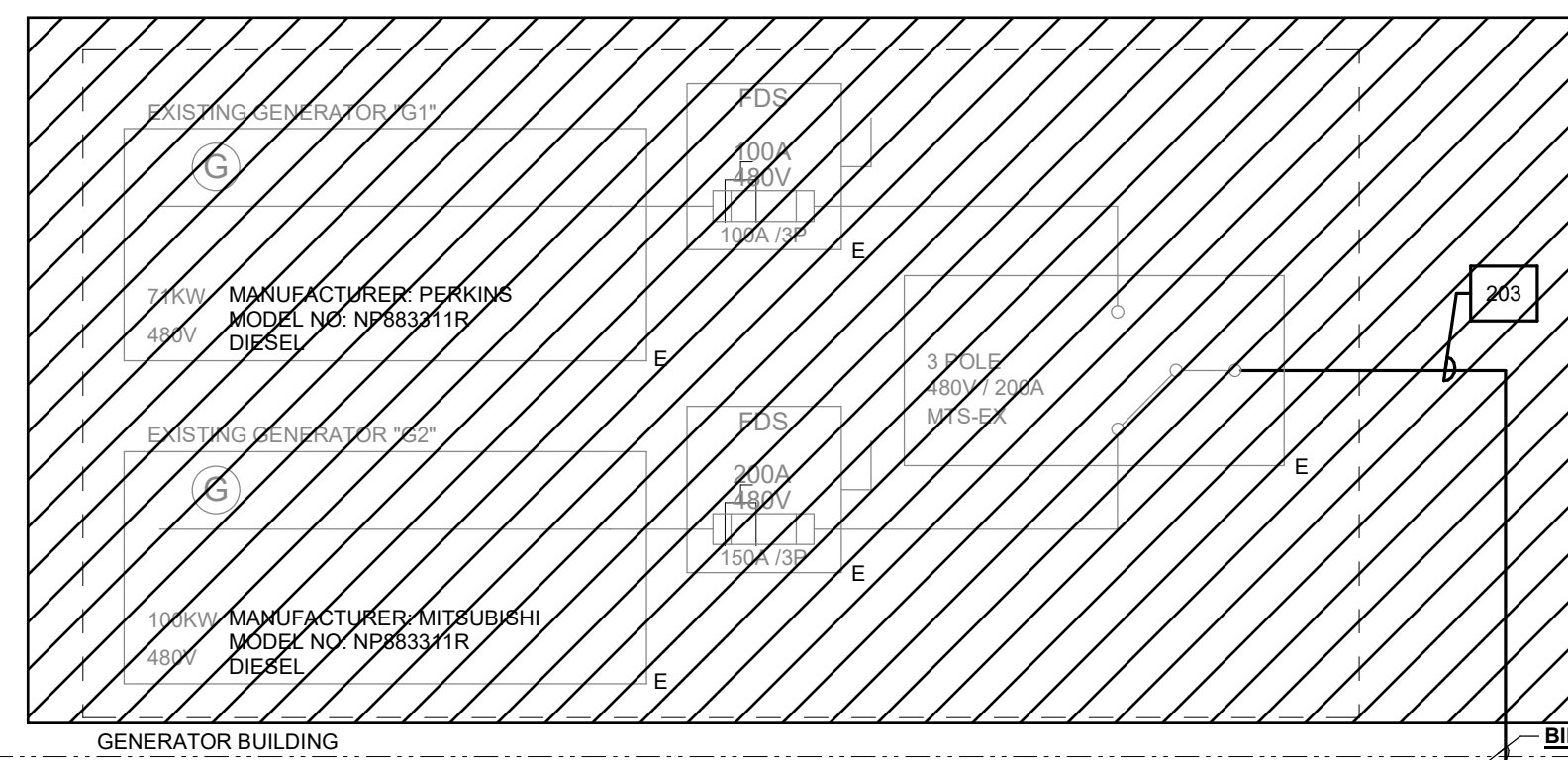
FEEDER SCHEDULE

NOTE: ALL CONDUCTORS THHN COPPER UNLESS OTHERWISE NOTED.

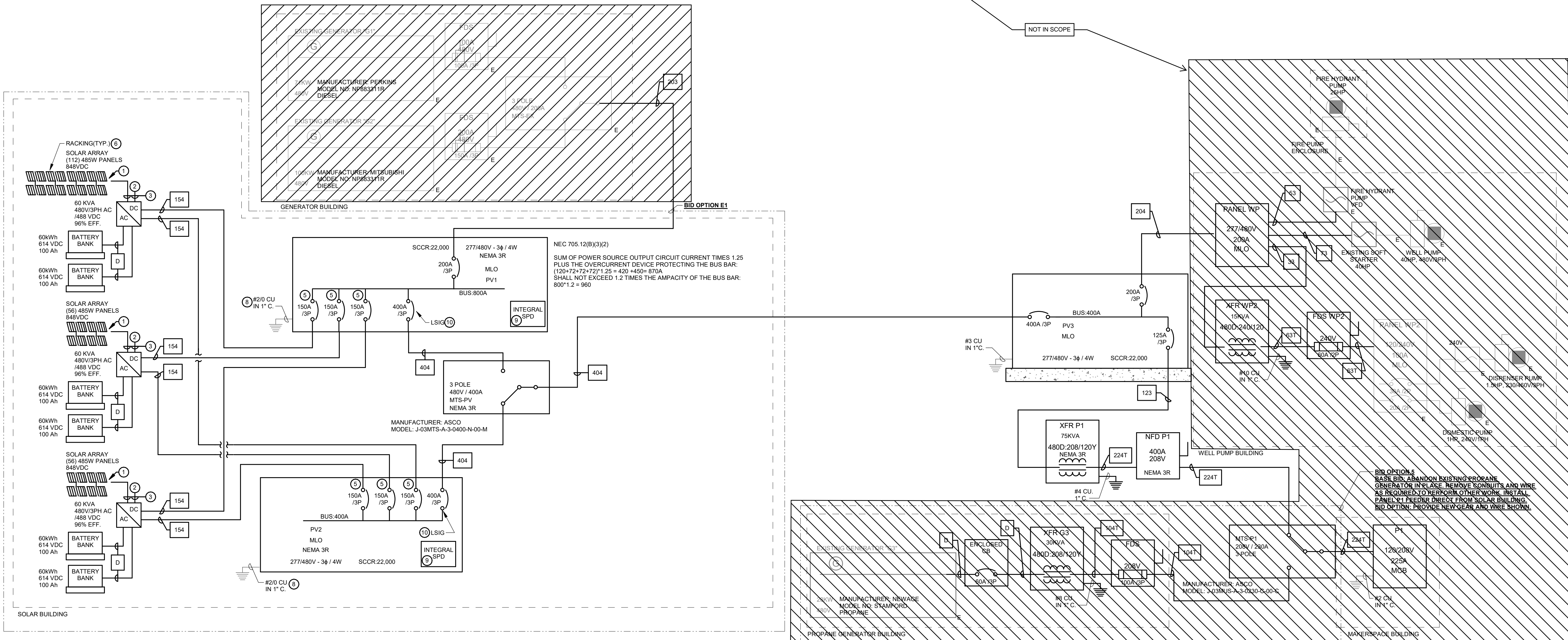
TAG	PHASE	GROUND	CONDUIT
33	1-SET (3) #8	#10	(1) 1"
53	1-SET (3) #8	#10	(1) 1"
63T	1-SET (3) #6	#8	(1) 1"
73	1-SET (3) #4	#8	(1) 1"
104T	1-SET (4) #3	#8	(1) 1 1/4"
123	1-SET (3) #1	#6	(1) 1 1/2"
154	1-SET (4) #1/0	#6	(1) 2"
203	1-SET (3) #3/0	#4	(1) 2"
204	1-SET (4) #3/0	#4	(1) 2 1/2"
224T	1-SET (4) #4/0	#4	(1) 2 1/2"
404	1-SET (4) 500 MCM	#3	(1) 4"
D	1-SET (3) #6	#10	(1) 1"
F	1-SET (4) #3	#8	(1) 1 1/4"
I	1-SET (4) #2/0	#4	(1) 2"
K	1-SET (3) 500 MCM	#3	(1) 4"

RISER DIAGRAM GENERAL NOTES

- DIAGRAM INDICATES OVERALL LAYOUT OF ELECTRICAL DISTRIBUTION SYSTEM. REFER TO FLOOR PLANS FOR EQUIPMENT LOCATIONS.
 - USE COPPER CONDUCTORS UNLESS OTHERWISE INDICATED. MATCH NEUTRAL CONDUCTOR SIZE TO THE PHASE CONDUCTORS UNLESS OTHERWISE NOTED.
 - ALL WIRING SHALL BE IN RACEWAY AS NOTED. REFER TO SPECIFICATIONS FOR CONDUIT APPLICATION REQUIREMENTS.
 - INSTALL UTILITY TRANSFORMER PAD, METERING EQUIPMENT, AND SERVICE ENTRANCE FEEDERS IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS.
- Ⓡ RISER DIAGRAM KEYED NOTES:
- PROVIDE PV MODULES WITH DC ISOLATOR/DISCONNECT SWITCHES. QUANTITY OF ISOLATORS DETERMINED BY DESIGNER/PANEL MANUFACTURER BASED UPON MAXIMUM STRING LENGTH.
 - PROVIDE MONITORING SYSTEM WITH WEB ACCESSIBLE INTERFACE INCLUDING COMPLETE SYSTEM EQUIPMENT LAYOUT, DEVICE CODES, MODULE/ARRAY LEVEL PERFORMANCE MONITORING, AND EXTRACTABLE DATA STORAGE.
 - PROVIDE CABLES/CONDUIT SIZED PER MANUFACTURERS REQUIREMENTS AND LOCAL CODES. ROUTE IN EMT CONDUIT WHERE INTERIOR LOCATED, IMC CONDUIT WHERE EXTERIOR LOCATED.
 - SIZE PANELBOARD BUS PER NEC
 - ADJUST QUANTITY AND SIZE OF ENERGY STORAGE/PV SYSTEM OVERCURRENT DEVICES TO MATCH INVERTER RATINGS AND QUANTITY PROVIDED
 - PROVIDE SOLAR PV ARRAY RACKING EQUIPMENT AND INSTALLATION WITH PANEL ARRANGEMENT INSTALLED/OPTIMIZED FOR LOCAL CONDITIONS. MAINTAIN REQUIRED EQUIPMENT WORKING CLEARANCES.
 - PROVIDE DC BUS BETWEEN BATTERY STORAGE SYSTEM AND GRID FORMING INVERTERS.
 - PROVIDE ALL CODE REQUIRED GROUNDING AND BONDING FOR SOLAR SYSTEM INSTALLATION. FINAL REQUIREMENTS VERIFIED WITH SOLAR DESIGNER.
 - PROVIDE PANEL WITH INTEGRAL SURGE PROTECTION DEVICE PER SPECIFICATIONS
 - PROVIDE BREAKERS EQUIPED WITH LSIG FUNCTION TO FACILITATE SELECTIVE COORDINATION.



2 ELECTRICAL RISER DIAGRAM - NEW CONSTRUCTION
NOT TO SCALE



Project No: KCL #21088

Date: 2021.10.31

PERMIT SET

Revision Date

Drawing Name:
ELECTRICAL ONE-LINE
DIAGRAMS

Drawing #:



BRANCH PANEL: WP
 LOCATION: STORAGE 107
 SUPPLY FROM: ES1
 MOUNTING: SURFACE
 ENCLOSURE: TYPE 1
 VOLTAGE: 480/277 WYE
 PHASES: 3
 WIRES: 4
 SCCR RATING: 19,000 A
 MAINS TYPE: MCB
 MAINS RATING: 225 A
 MCB RATING: 200 A

NOTES:

CIRCUIT DESCRIPTION	P	AMP	CKT NO	A	B	C	CKT NO	AMP	P	CIRCUIT DESCRIPTION
WELL PUMP	3	90 A	3	14411	8422		4	60 A		FIRE HYDRANT PUMP
YER WP2	2	30 A	7	0	0		8	20 A		SPARE
SPARE	1	20 A	11				10	20 A		SPARE
SPARE	1	20 A	13	0	0		14	20 A		SPARE
SPARE	1	20 A	15				16	20 A		SPARE
SPARE	1	20 A	17				18	20 A		SPARE
SPARE	1	20 A	19	0	0		20	20 A		SPARE
SPARE	1	20 A	21				22	20 A		SPARE
SPARE	1	20 A	23				24	20 A		SPARE
SPARE	1	20 A	25	0	0		26	20 A		SPARE
SPARE	1	20 A	27				28	20 A		SPARE
SPARE	1	20 A	29	0	0		29	20 A		SPARE
SPARE	1	20 A	31				30	20 A		SPARE
				36533 VA	23963 VA	36533 VA				
				86 A	86 A	86 A				

LEGEND:
 G INDICATES GFCI TYPE BREAKER

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
POWER	71499 VA	100.00%	71499 VA	TOTAL CONN. LOAD: 71499 VA TOTAL EST. DEMAND: 71499 VA TOTAL CONN.: 86 A TOTAL EST. DEMAND: 86 A

NOTES:

BRANCH PANEL: P1
 LOCATION: STORAGE 107
 SUPPLY FROM: SURFACE
 ENCLOSURE: TYPE 1
 VOLTAGE: 120/208 WYE
 PHASES: 3
 WIRES: 4
 SCCR RATING: 19,000 A
 MAINS TYPE: MCB
 MAINS RATING: 400 A
 MCB RATING: 400 A

NOTES:

CIRCUIT DESCRIPTION	P	AMP	CKT NO	A	B	C	CKT NO	AMP	P	CIRCUIT DESCRIPTION
EV Charger	2	40 A	1	3160	0		2	20 A		DUCT DETECTOR
EV Charger	2	40 A	3		3120	1090	4	20 A		RECEPTACLE
EV Charger	2	40 A	5		3120	960	6	20 A		RECEPTACLE
RJU-1	2	25 A	7		3448	900	8	20 A		ICE MAKER
CU-1	2	25 A	11		1638	2960	12	20 A	G	BOTTLING MACHINE
CU-1	2	25 A	13		1638	2960	14	20 A		WASHER
CU-1	2	25 A	15		1638	2960	16	30 A	S	DRYER
WALK-IN COOLER EVAPORATOR	1	28 A	17			154	18	20 A		RECEPTACLE
WALK-IN COOLER AUX	1	28 A	19		285	368	20	20 A		RECEPTACLE
GENBUILDING POWER	1	28 A	21		1916	2200	22	20 A		FRIDGE
EF-1	1	28 A	23			500	24	20 A		FRIDGE
WATER HEATER	1	20 A	25	180	1200		26	20 A		FRIDGE
RECEPTACLE	1	20 A	27		360	1800	28	20 A		FRIDGE
RECEPTACLE	1	20 A	29			360	30	20 A		FRIDGE
RECEPTACLE	1	20 A	31		360		32			
RECEPTACLE	1	20 A	33		368		34			
RECEPTACLE	1	20 A	35			800	36			
RECEPTACLE	1	20 A	37	1650			38			
RECEPTACLE	1	20 A	39		720		40			
RECEPTACLE	1	20 A	41			720	42			
LIGHTING	1	20 A	43	1215			44			
			45				46			
			47				48			
			49				50			
			51				52			
			53				54			
				6748 VA	15443 VA	10994 VA				
				137 A	135 A	91 A				

LEGEND:
 G INDICATES GFCI TYPE BREAKER

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
LIGHTING	1365 VA	125.00%	1365 VA	TOTAL CONN. LOAD: 42088 VA TOTAL EST. DEMAND: 38769 VA TOTAL CONN.: 117 A TOTAL EST. DEMAND: 102 A
LIGHTING - EXTERIOR	8 VA	125.00%	8 VA	
Other	0 VA	0.00%	0 VA	
POWER	19395 VA	100.00%	19395 VA	
RECEPTACLE	21320 VA	73.45%	18660 VA	

NOTES:

NOT IN SCOPE

LOAD CENTER S1
 LOCATION: BATTERY STORAGE 109
 SUPPLY FROM: ES1
 MOUNTING: SURFACE
 ENCLOSURE: TYPE 1
 VOLTAGE: 120/208 SINGLE
 PHASES: 1
 WIRES: 3
 SCCR RATING: 10,000 A
 MAINS TYPE: MLO
 MAINS RATING: 60 A

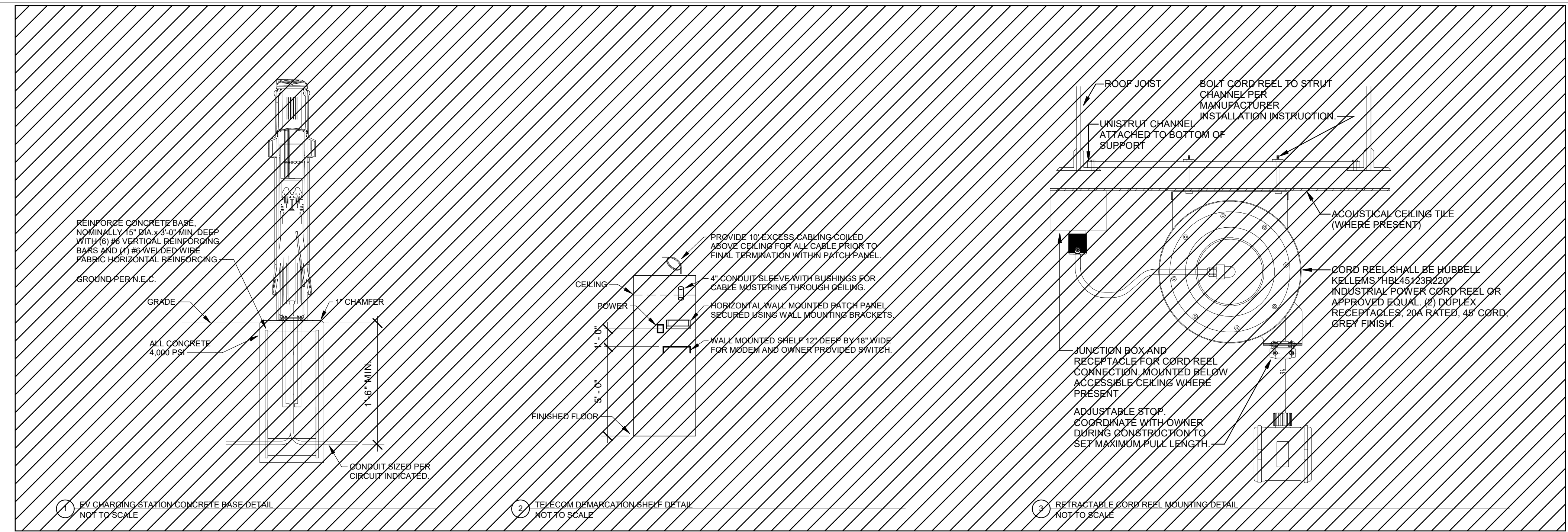
NOTES:

CIRCUIT DESCRIPTION	P	AMP	CKT NO	A	B	CKT NO	AMP	P	CIRCUIT DESCRIPTION
RECEPTACLE	1	20 A	1	1260	500	2	20 A		FIRE ALARM CONTROL PANEL
EC-1	1	20 A	3		710	0	4	20 A	FIRE PROTECTION SYSTEM CONTROLLER
LIGHTING	1	20 A	5	336	0	6	20 A		SPARE
SPARE	1	20 A	7		0	8	20 A		SPARE
SPARE	1	20 A	9	0	0	10	20 A		SPARE
SPARE	1	20 A	11		0	12	20 A		SPARE
SPARE	1	20 A	13	0	0	14	20 A		SPARE
SPARE	1	20 A	15		0	16	20 A		SPARE
				2096 VA	710 VA				
				18 A	7 A				

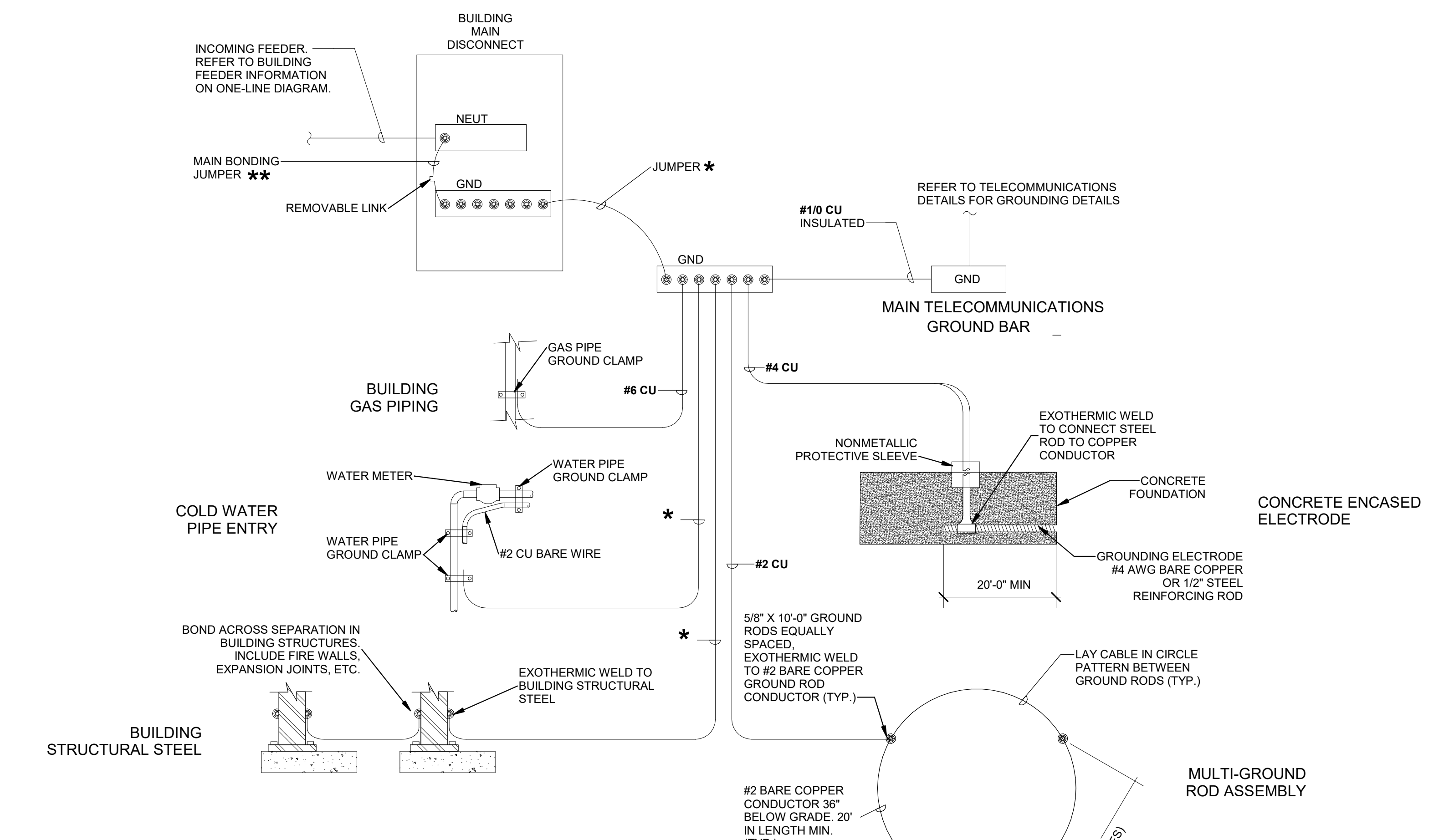
LEGEND:
 G INDICATES GFCI TYPE BREAKER

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
LIGHTING	332 VA	125.00%	415 VA	TOTAL CONN. LOAD: 2806 VA TOTAL EST. DEMAND: 2890 VA TOTAL CONN.: 13 A TOTAL EST. DEMAND: 14 A
LIGHTING - EXTERIOR	4 VA	125.00%	5 VA	
POWER	1210 VA	100.00%	1210 VA	
RECEPTACLE	1260 VA	100.00%	1260 VA	

NOTES:



NOT IN SCOPE



* SIZE GROUNDING ELECTRODE CONDUCTOR AND BONDING PER NEC 250.66 AND TABLE BELOW. ALL CONDUCTORS TO BE COPPER. TABLE BASED ON NEC 2017. TABLE 250.66 GROUNDING ELECTRODE CONDUCTOR FOR ALTERNATING-CURRENT SYSTEMS

SIZE OF LARGEST UNGROUNDING CONDUCTOR OR EQUIVALENT AREA FOR PARALLEL CONDUCTORS (AWG/KCMIL)	ALUMINUM OR COPPER-CLAD AL	SIZE OF GROUNDING ELECTRODE CONDUCTOR (AWG/KCMIL)
COPPER		COPPER
#2 OR SMALLER	#1/0 OR SMALLER	#8
#1 OR #1/0	#2/0 OR #3/0	#6
#2/0 OR #3/0	#4/0 OR 250	#4
OVER #3/0 THROUGH 350	OVER 250 THROUGH 500	#2
OVER 350 THROUGH 600	OVER 500 THROUGH 900	#1/0
OVER 600 THROUGH 1100	OVER 900 THROUGH 1750	#2/0
OVER 1100	OVER 1750	#3/0

** SIZE BONDING JUMPER PER NEC 250.102. USE TABLE ABOVE FOR ALL CONDUCTORS BETWEEN #2 AND #1/0. ALL INCOMING CONDUCTORS OVER #1/0 CU OR #1/0 AL SHALL BE SIZED PER THE TABLE 250.102(C). SERVICE EQUIPMENT SHALL BE SUPPLIED WITH BONDING JUMPER FROM THE MANUFACTURER.

- NOTES
- A. ALL AVAILABLE GROUNDING ELECTRODES WHICH ARE PRESENT AT THE BUILDING OR STRUCTURE SHALL BE BONDED TOGETHER TO FORM THE GROUNDING ELECTRODE SYSTEM (GES). ADDITIONAL CODE-REQUIRED GROUNDING CONNECTIONS NOT SHOWN SHALL BE PROVIDED. CONNECTIONS WHICH ARE ENCASED, UNDERGROUND, OR INACCESSIBLE SHALL BE EXOTHERMIC WELD.
 - B. ALL BONDING JUMPERS CONNECTING GROUNDING ELECTRODES TO THE GES SHALL BE SIZED EQUAL TO THE GROUNDING ELECTRODE CONDUCTOR (GEC) IN ACCORDANCE WITH NEC 250.53(C). OTHER BONDING JUMPERS SHALL BE SIZED AS OTHERWISE DESCRIBED IN NEC ARTICLE 250. CONDUCTORS SHALL BE BARE COPPER UNLESS OTHERWISE NOTED.
 - C. REFER TO SPECIFICATIONS FOR ADDITIONAL PRODUCT AND MATERIAL REQUIREMENTS. GROUNDING AND BONDING METHODS AND MATERIALS SHALL COMPLY WITH NEC ARTICLE 250.
 - D. REFER TO TECHNOLOGY DETAILS FOR ADDITIONAL REQUIREMENTS RELATED TO TELECOM GROUNDING.

Revision	Date