PUBLIC WORKS WTTP OFFICE
BUILDING GENERATOR
8500 69TH ST E, PALMETTO, FL 34221

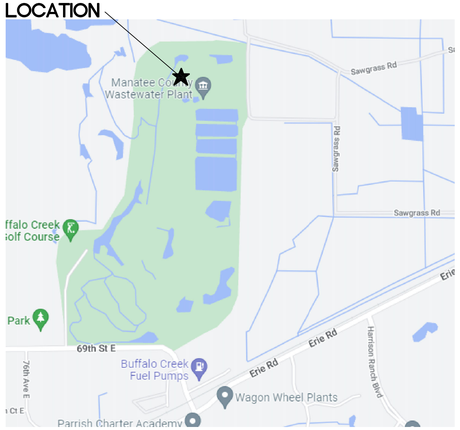
LOCATION MAP

FLORIDA

SITE LOCATION

SITE LOCATION

SITE LOCATION



SITE MAP

GENERATOR SCOPE OF WORK NOTES:

1. PROVIDE AND INSTALL A NEW GENERATOR WITH UNDERBELLY TANK, LEAK DETECTION, AND CONTROLS, AS DESCRIBED IN THE SPECIFICATIONS AND PLANS, A NEW PAD, AND CONDUITS/WIRING TO POWER THE BUILDING AND PROVIDE POWER AND CONTROLS(INCLUDING WIRING AND CONDUITS) FOR THE GENERATOR ACCESSORIES. PROVIDE AND INSTALL THE ATS(SERVICE ENTRANCE RATED)AS SHOWN ON THE PROJECT. ALL MATERIALS SHALL BE SUPPLIED TO MAKE THE PROJECT COMPLETE AND FUNCTIONING GENERATOR AND ELECTRICAL SYSTEM. ALL SUPPLIES SHALL BE PROVIDED TO TEST GENERATOR INCLUDING FLUIDS AND BATTERIES.
2. ALL BID QUESTIONS SHALL BE COORDINATED THROUGH THE PURCHASING DEPARTMENT. AFTER THE COLLECTION OF ALL BID QUESTIONS IN WRITING, A SINGLE ADDENDUM WILL BE PROVIDED TO ANSWER ALL THE BID QUESTIONS TO THE BIDDERS.
3. ALL QUESTIONS FOR THE OWNER AFTER THE BID AND DURING THE CONSTRUCTION PROCESS WILL BE ANSWERED BY THE COUNTY REPRESENTATIVE.

To the best of the engineer's knowledge, said plans and specifications comply with the applicable building codes and the applicable minimum fire safety standards as determined in accordance with Chapters 553 and 633, Florida Statutes.

SHEET SCHEDULE

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY MATTHEW J. CAMDEN, P.E. (FL#79284) ON 02-14-2023 USING AN SHA AUTHENTICATION CODE.

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SEAL

MATTHEW J CAMDEN LICENSE No. 79284 STATE OF FLORIDA PROFESSIONAL ENGINEER

MATTHEW J. CAMDEN
FL#79284

ELECTRICAL SYMBOLS AND ABBREVIATIONS

EQUIPMENT

SYMBOL	DESCRIPTION
	DISTRIBUTION PANELBOARD AND CABINET – RECESSED MOUNT
	DISTRIBUTION PANELBOARD AND CABINET – SURFACE MOUNT
	BRANCH PANELBOARD AND CABINET – RECESSED MOUNT
	BRANCH PANELBOARD AND CABINET – SURFACE MOUNT
	LOAD CENTER – SURFACE MOUNT
	LOAD CENTER – RECESSED MOUNT
A	DENOTES PANEL/PANELBOARD DESIGNATION
X Y	MOTOR "X" INDICATES HORSEPOWER "Y" INDICATES PHASE
X PF	CAPACITOR "X" INDICATES KVAR
X Y	DISCONNECT SWITCH – FUSED "X"= RATING, "Y" = FUSE SIZE
	DISCONNECT SWITCH – NON–FUSED
	DISCONNECT SWITCH – CIRCUIT BREAKER
	MOTOR STARTER
h	COMBINATION MOTOR STARTER
T XX	DRY TYPE TRANSFORMER – "XX" INDICATES KVA
M	METER SOCKET
M	CURRENT TRANSFORMER METER SOCKET
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
G	GENERATOR
N E ATS/MTS L E	TRANSFER SWITCH ATS = AUTOMATIC TRANSFER SWITCH MTS = MANUAL TRANSFER SWITCH N = NORMAL POWER E = EMERGENCY POWER L = LOAD
	WIREWAY
B B	BUSWAY
	GROUND CONNECTION
S_x	HORSEPOWER RATED MANUAL MOTOR STARTER TOGGLE SWITCH WITH THERMAL OVERLOAD PROTECTION "X" INDICATES AS FOLLOWS NONE – SINGLE POLE 2 – 2 POLE 3 – 3 POLE
S_xP_y	HORSEPOWER RATED MANUAL MOTOR STARTER TOGGLE SWITCH WITH THERMAL OVERLOAD PROTECTION WITH PILOT LIGHT "X" INDICATES AS FOLLOWS NONE – SINGLE POLE 2 – 2 POLE 3 – 3 POLE "Y" INDICATES AS FOLLOWS Y – YELLOW LENS G – GREEN LENS R – RED LENS W – WHITE LENS B – BLUE LENS A – AMBER
A	LOW VOLTAGE DRAWOUT TYPE CIRCUIT BREAKER "X" INDICATES AS FOLLOWS A – AIR TYPE S – SF6 TYPE V – VACUUM TYPE
	MOLDED CASE CIRCUIT BREAKER
	FUSE
	DRAW OUT MOTOR STARTER ASSEMBLY

RACEWAY SYSTEM

SYMBOL	DESCRIPTION
	CONCEALED CONDUIT
E	4" CONDUIT SLEEVE WITH BUSHINGS THRU WALL ABOVE CEILING
XX	LETTER DESIGNATION REFERS TO SYSTEM (SEE ABBREVIATIONS)
A–XX PHASE CONDUCTORS, GROUND, SWITCH LEG, NEUTRAL; F50	QUANTITY OF CONDUCTORS OR CABLES IN CONDUIT "F50" DENOTES THE FEEDER SIZE "A–XX" DENOTES PANEL AND CIRCUIT #
	CONDUIT TURNED UP
	CONDUIT TURNED DOWN
	JUNCTION OR PULL BOX
	CABLE TRAY
	U/G CONDUIT TURNED UP
	U/G CONDUIT TURNED DOWN

LIGHTING

SYMBOL	DESCRIPTION
X–2–C	X = FIXTURE TYPE, 2 = CIRCUIT NUMBER, C = SWITCH LEG F – FLUORESCENT K – INCANDESCENT H – H.I.D.
	FLUORESCENT STRIP TYPE FIXTURE
	FLUORESCENT TYPE FIXTURE
	FLUORESCENT TYPE FIXTURE WITH EMERGENCY BATTERY BALLAST
	CEILING MOUNT LIGHT FIXTURE
	CEILING MOUNT RECESSED LIGHT FIXTURE (ROUND OR SQUARE, SEE SCHEDULE
	INTERIOR WALL MOUNT FIXTURE
	EXTERIOR WALL MOUNT FIXTURE
	LIGHTED BOLLARD FIXTURE (ROUND OR SQUARE, SEE SCHEDULE)
	STEPLIGHT FIXTURE
	LIGHT POLE WITH ONE FIXTURE (FIXTURE LOCATION AND SPACING AS SHOWN)
	2 HEAD POLE LIGHT. LOCATION AND SPACING AS SHOWN.
	3 HEAD POLE LIGHT. LOCATION AND SPACING AS SHOWN.
	EXIT LIGHT –CEILING MOUNTED ARROWS DENOTE EGRESS PATH
	EXIT LIGHT – WALL MOUNTED ARROWS DENOTE EGRESS PATH
	EMERGENCY WALL MOUNT W/ BATTERY UNIT
	EXIT / EMERGENCY WALL MOUNT W/ BATTERY UNIT ARROWS DENOTE EGRESS PATH
	EMERGENCY WALL MOUNT REMOTE HEAD

DEVICES

SYMBOL	DESCRIPTION
x	DUPLEX RECEPTACLE – NORMAL CIRCUIT "X" INDICATES AS FOLLOWS: NONE = 20 AMP, 125VAC GFI = 20 AMP, 125VAC, GROUND FAULT INTERRUPTER TYPE HM = 20 AMP, 125VAC, HORIZONTAL MOUNT TYPE IG = 20 AMP, 125VAC, ISOLATED GROUND TYPE S = 20 AMP, 125VAC, TVSS PROTECTION TYPE WP = 20 AMP, 125VAC, WEATHERPROOF TYPE
	DOUBLE DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE – 1 OUTLET CONTROLLED BY SWITCH
	DUPLEX RECEPTACLE – 2 OUTLETS CONTROLLED BY SWITCH
	DOUBLE DUPLEX RECEPTACLE – 1 OUTLET CONTROLLED BY SWITCH
	DOUBLE DUPLEX RECEPTACLE – 2 OUTLETS CONTROLLED BY SWITCH
	DUPLEX RECEPTACLE – ABOVE COUNTER. 44" AFF
	DOUBLE DUPLEX RECEPTACLE – ABOVE COUNTER. 44" AFF
	SINGLE RECEPTACLE – SEE DRAWINGS AND SPECIFICATIONS.
A	SPECIAL RECEPTACLE – SEE DRAWINGS AND SPECIFICATIONS.
	SINGLE RECEPTACLE – FLOOR, SEE DRAWINGS AND SPECIFICATIONS.
	DUPLEX RECEPTACLE – FLOOR, SEE DRAWINGS AND SPECIFICATIONS.
C HEIGHT	CLOCK RECEPTACLE – 120VAC
S	TOGGLE SWITCH – SINGLE POLE
S_2	TOGGLE SWITCH – DOUBLE POLE
S_3	TOGGLE SWITCH – 3–WAY
S_4	TOGGLE SWITCH – 4–WAY
S_a	TOGGLE SWITCH – a= INDICATES TYPE T: TIMER, K: KEY OPERATED
S_D	SWITCH – DIMMER
S_F	SWITCH – FAN SPEED CONTROL
$\$^W$	WALL MOUNTED OCCUPANCY SENSOR
CSx	CEILING MOUNTED OCCUPANCY SENSOR x = TYPE, SEE PLANS
	HANDICAP PUSH BUTTON DOOR SWITCH
JB	JUNCTION BOX
T	HVAC THERMOSTAT
H	HVAC HUMIDISTAT
PP	FURNITURE POWER POLE
CP	FURNITURE CABLE MANAGEMENT POLE.
	MUSHROOM HEAD RED PUSH BUTTON

FIRE ALARM SYSTEM

SYMBOL	DESCRIPTION
	HORN / STROBE ○= CEILING MOUNT □= WALL MOUNT
	HORN ○= CEILING MOUNT □= WALL MOUNT
S	SPEAKER/STROBE ○= CEILING MOUNT □= WALL MOUNT
	STROBE ○= CEILING MOUNT □= WALL MOUNT
F F	BELL ○= CEILING MOUNT □= WALL MOUNT
P	SMOKE DETECTOR
	HEAT DETECTOR
	PULL STATION
F	ELEVATOR WARNING LIGHT
F	FIREFIGHTER PHONE JACK
	TAMPER SWITCH
	FLOW SWITCH
F.A.A.P.	REMOTE ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
	DOOR RELEASE DEVICE – FIRE ALARM ACTIVATED
S	SPEAKER – FIRE ALARM
D x	AUTOMATIC DUCT DETECTOR ("X" DENOTES AS FOLLOWS:) NONE = PHOTO ELECTRIC TYPE S= SUPPLY R= RETURN
R	EQUIPMENT SHUT DOWN RELAY
RI x	REMOTE DUCT DETECTOR INDICATOR LIGHT X= AIR HANDLER / ROOF TOP UNIT
FSS	FIRE SUPPRESSION SYSTEM

TELEVISION SYSTEM

SYMBOL	DESCRIPTION
TV	TELEVISION ROUGH–IN

DOOR SECURITY SYSTEM

SYMBOL	DESCRIPTION
D	DOOR CONTACT ROUGH–IN
C	PROXIMITY CARD READER ROUGH–IN
E	ELECTRO–MAGNETIC DOOR LOCK
	DURESS / PANIC BUTTON

COMMUNICATION SYSTEMS

SYMBOL	DESCRIPTION
	WALL MOUNTED VOICE OUTLET
	WALL MOUNTED DATA OUTLET
	WALL MOUNTED COMBINATION VOICE / DATA OUTLET
	FLOOR MOUNTED VOICE OUTLET.
F	FLOOR MOUNTED DATA OUTLET.
	FLOOR MOUNTED COMBINATION VOICE / DATA OUTLET.
TTC	TELEPHONE CABINET
CC	COMMUNICATIONS CABINET

PAGING / AUDIO SYSTEM

SYMBOL	DESCRIPTION
S_1	LOUDSPEAKER – CEILING MOUNTED CONTROLLED BY VOLUME CONTROL "1"
V_1	VOLUME CONTROL – CONTROLS SPEAKERS "1"
S	PAGING ROUGH–IN
A	AUDIO JACK ROUGH–IN
M	MICROPHONE ROUGH–IN
P	PROJECTOR ROUGH–IN

DRAWING SYMBOLS

2 / E X	DETAIL NUMBER DRAWING NUMBER WHERE DRAWN
A / E X	SECTION LETTER DRAWING NUMBER WHERE DRAWN
1	REFER TO LIKE NUMBER NOTES.
1	REFER TO LIKE NUMBER NOTES.

ABBREVIATIONS

A	AMPERE
AC	AIR CONDITIONING OR ALTERNATING CURRENT
ACC	ACCESS
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLER UNIT
AM	AMMETER
ARCH	ARCHITECT
AT	AMPERE TRIP
ATC	AUTOMATIC TEMPERATURE CONTROL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CAT	CATEGORY
CB	CIRCUIT BREAKER
CH	CHILLER
CKT	CIRCUIT
CL	CENTER LINE
CLF	CURRENT–LIMITING FUSE
CM	CEILING MOUNTED
CNTL	CONTROL
CU	COPPER
DWG(S)	DRAWING(S)
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EX	EXISTING TO REMAIN
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FACC	FIRE ALARM COMMAND CENTER
FATC	FIRE ALARM TERMINAL CABINET
FLR	FLOOR
FMC	FURNISHED BY MECHANICAL CONTRACTOR
FO	FIBER OPTIC
FOTC	FIBER OPTIC TERMINAL CABINET
FSS	FIRE SUPPRESSION SYSTEM
FWE	FURNISHED WITH EQUIPMENT
GFI	GROUND FAULT INTERRUPTER
GND,G	GROUND
GRS	GALVANIZED RIGID STEEL CONDUIT
HOA	HAND–OFF–AUTO
HACR	HEATING/AIR CONDITIONING–RATED
HID	HIGH INTENSITY DISCHARGE
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HZ	HERTZ
HP	HORSEPOWER
IG	ISOLATED GROUND
IMC	INTERMEDIATE METALLIC CONDUIT
JB	JUNCTION BOX
KAIC	KILO AMPERE INTERRUPTING CAPACITY
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERE
KW	KILOWATT
LC	LIGHTING CONTACTOR
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
M–G	MOTOR GENERATOR
MDP	MAIN DISTRIBUTION PANEL
MH	METAL HALIDE
MOD	MOTOR OPERATED DAMPER OR DOOR
MTD	MOUNTED
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF	NON–FUSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OCPD	OVER CURRENT PROTECTIVE DEVICE
PNL	PANEL
ø	PHASE
PB	PUSHBUTTON
PE	PHOTOELECTRIC CONTROLLER
PC	PLUMBING CONTRACTOR
PVC	POLYVINYL CHLORIDE CONDUIT
RTU	ROOF TOP UNIT
SCH	SCHEDULE
SEC	SECURITY
SPD	SURGE PROTECTION DEVICE
SW	SWITCH
SWGR	SWITCHGEAR
TEL.T	TELEPHONE
TBB	TELEPHONE BACKBOARD
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TC	TIME CLOCK
XFMR	TRANSFORMER
XFR	TRANSFER
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL,U.L.	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
U.O.N.	UNLESS OTHERWISE NOTED
VT	VAPORTIGHT
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE
V	VOLT
W	WATT
WP	WEATHER PROOF

GENERAL NOTES (APPLY TO ALL DRAWINGS):

1. THE WORK INDICATED ON THESE DRAWINGS IS DIAGRAMMATIC AND IS INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT OF EQUIPMENT AND DEVICES FOR A COMPLETE SYSTEM IN EVERY RESPECT AND DETAIL, TESTED AND LEFT READY IN PERFECT OPERATING CONDITION FOR THE OWNER'S USE. MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS' LABORATORIES AND SHALL BE INSTALLED IN ACCORDANCE WITH SUCH LISTINGS. INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. WORK SHALL MEET THE REQUIREMENTS OF THE SPECIFICATIONS AND CONFORM TO THE NEC (NFPA 70 & 72) AND ALL APPLICABLE CODES, AND BE COMPLETED BY A QUALIFIED, EXPERIENCED, LICENSED ELECTRICAL CONTRACTOR.
2. THE ENGINEER HAS MADE AN EFFORT TO COORDINATE WORK WITH OTHER TRADES AND IDENTIFY ANY AND ALL CONFLICTS. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE FIELD WORK BETWEEN TRADES AND TO IDENTIFY FIELD CONDITIONS PRIOR TO INSTALLATION AND REPORT ANY CONFLICTS TO THE ENGINEER.
3. FOR BIDDING PURPOSES, WHEN A CONFLICT OCCURS BETWEEN THE SPECIFICATIONS AND DRAWINGS, THE ITEMS OF GREATER QUANTITY AND/OR COST SHALL BE PROVIDED. ANY SUCH CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.
4. CONTRACTOR SHALL VERIFY THE LOCATION AND ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT FURNISHED BY OTHER TRADES PRIOR TO INSTALLATION. COORDINATE ROUGH–IN INSTALLATION WITH EQUIPMENT DETAILS.
5. ALL OPENINGS IN FIRE AND SMOKE PARTITIONS SHALL BE SEALED AS REQUIRED BY THE NEC/ FLORIDA BUILDING CODE. PROVIDE UL LISTED COMPOUND TO MATCH PARTITION RATING.
6. DO NOT SCALE DRAWINGS. VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION FOR EXACT DEVICE / EQUIPMENT LOCATION.
7. DEMOLITION WORK: PROVIDE DEMOLITION AND REMOVAL WORK AS INDICATED OR NEEDED. EQUIPMENT THAT IS TO BE REMOVED INCLUDES ALL ASSOCIATED WIRING, BOXES AND CONDUIT BACK TO SOURCE. CLOSE ALL UNUSED OPENINGS IN JUNCTION BOXES THAT REMAIN WITH SUITABLE PLUG OR COVER. WHEN REMOVING OR RELOCATING LIGHT FIXTURES OR OTHER DEVICES, FIELD VERIFY REMAINING DEVICES IN THE SAME CIRCUIT AND RECONNECT FOR CONTINUED SERVICE. EXISTING ELECTRICAL WORK INTERFERING WITH NEW CONSTRUCTION SHALL BE RELOCATED OR REROUTED TO SUIT FINAL INSTALLATION. CUTTING AND PATCHING REQUIRED SHALL BE DONE TO RESTORE AREAS TO ORIGINAL CONDITION.
8. CONTRACTOR SHALL PROVIDE TO LOCAL AHJ OR PERMITTING AGENCY A COPY OF ALL MAJOR EQUIPMENT CUT SHEETS AT TIME OF APPLICATION IF REQUESTED.
9. LIGHT POLES , AND BASE DESIGNS ARE TO BE COMPLETED BY THE LIGHTING MANUFACTURER AND ELECTRICAL CONTRACTOR . THE ELECTRICAL CONTRACTOR SHALL PROVIDE SIGNED AND SEALED LIGHT POLE AND BASE DRAWINGS MEETING THE FBC WIND LOAD CRITERIA CH 16.
10. ALL AS–BUILT DRAWINGS SHALL BE PROVIDED TO THE OWNER WITHIN 90 DAYS OF THE CERTIFICATE OF OCCUPANCY PER FLORIDA ENERGY CODE 405 AND 408. AS–BUILT DRAWINGS SHALL INCLUDE ALL PRIMARY AND SECONDARY FEEDERS WITH SIZES, PANEL SCHEDULES, EQUIPMENT DISCONNECTS WITH SIZES AND BREAKERS/FUSES, AND ALL CONNECTED BUILDING EQUIPMENT. ENSCRIBED PLAQUES WITH THE KAIC VALUE, ANALYSIS DATE, PANEL IDENTIFICATION, AND VOLTAGE SHALL BE PLACED ON EACH NEW PANEL BOARD ALONG WITH A TYPE WRITTEN SCHEDULE THAT IS LAMINATED. A COPY OF THE PANEL SCHEDULES SHALL BE PROVIDED TO THE OWNER FOR FUTURE REFERENCE ALONG WITH THE AS–BUILT PLANS.

NOTE:

THESE ARE STANDARD SYMBOLS AND MAY NOT ALL APPEAR ON THE PROJECT DRAWINGS; HOWEVER WHEREVER THE SYMBOL APPEARS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED AND INSTALLED

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MATTHEW J CAMDEN LICENSE No. 79284 STATE OF FLORIDA PROFESSIONAL ENGINEER

MATTHEW J. CAMDEN
FL#79284

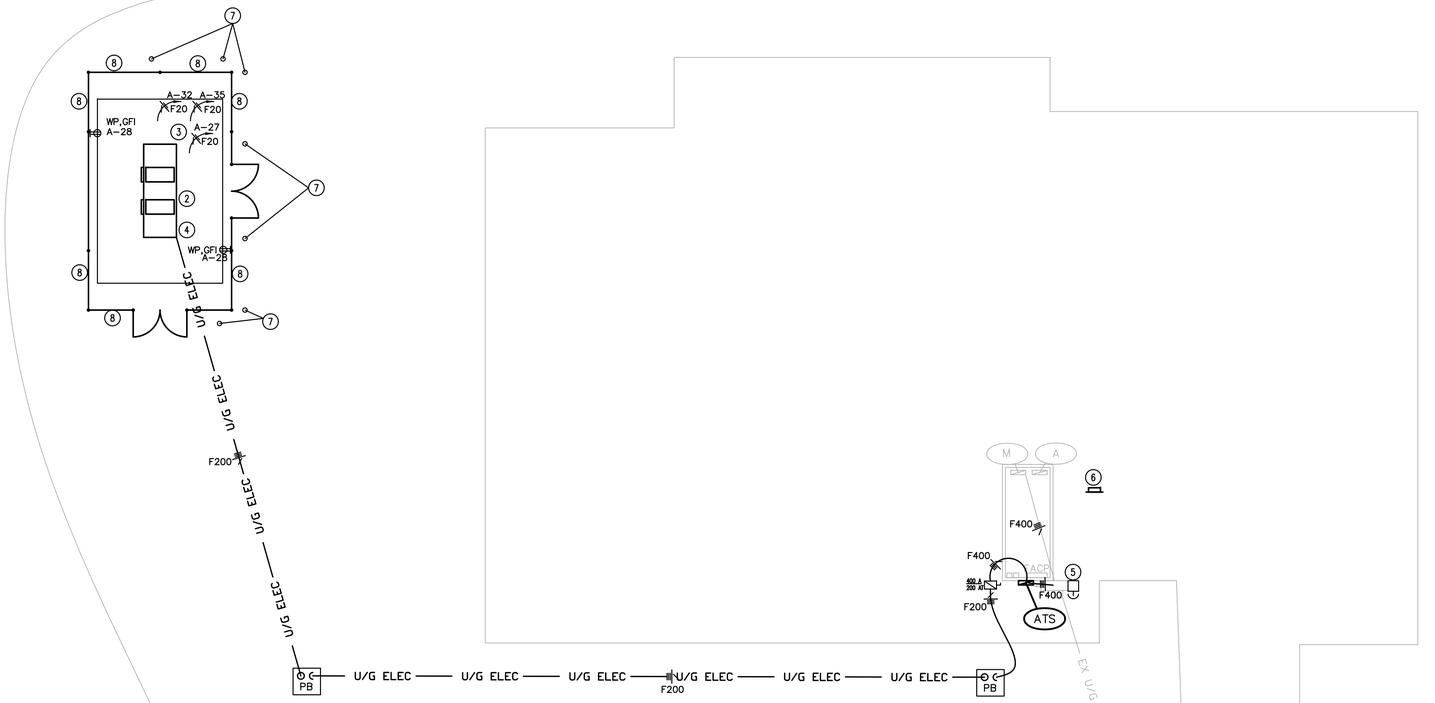
ATP ENGINEERING SOUTH
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485
ENGINEERING SOUTH

REV.#	DESCRIPTION	DATE

PUBLIC WORKS WTTP OFFICE
BUILDING GENERATOR
8500 69TH ST E, PALMETTO, FL 34221

DRAWING TITLE: ELECTRICAL LEGEND AND SYMBOLS

FILE:	2022.20
JOB NO.:	WA#1
DATE :	04/08/2022
PLOT SIZE:	1:1
DRAWN BY:	HG
CHECKED BY:	MC
SHEET No.:	E1.0



PLAN NOTES:

1. " PB "INDICATE PULL BOXES FOR UNDERGROUND CONDUITS.
2. PROVIDE AND INSTALL 1.5" CONDUIT FOR THE CONTROLS WIRING. COORDINATE WIRING TYPE AND CONNECTIONS FOR CONTROLS.
3. PROVIDE AND INSTALL 3 20AMP CIRCUITS FROM PANEL M TO THE GENERATOR FOR HEATER AND BATTERY CHARGER REQUIREMENTS.
4. PROVIDE AND INSTALL TWO SERVICE RECEPTACLES (GFI) FOR GENERATOR ENCLOSURE. COORDINATE LOCATION WITH MANATEE COUNTY PERSONNEL.
5. COORDINATE LOCATION FOR EMERGENCY STOP BUTTON.
6. COORDINATE LOCATION OF REMOTE ANNUCIATOR PANEL FOR GENERATOR.
7. BALLARDS
8. CHAIN-LINK FENCE

GENERAL NOTES:

ALL EXTERIOR EQUIPMENT SHALL BE NEMA 3R RATED AT A MINIMUM.

TREES/FOLIAGE MAY NEED TO BE REMOVED WITH GENERATOR SET LOCATION. EXHAUST WILL BURN TREES AND BUSHES. KEEP AND MAINTAIN AT LEAST A 10' CLEARANCE FROM EXHAUST AND GREENERY.

ATS, MTS, AND GDS SHALL HAVE A 6" HOUSEKEEPING PAD. THE ATS, MTS, AND GDS SHALL HAVE CONCRETE PADS TO MOUNT UPON.

PLACE PAD LOCKS ON ALL EQUIPMENT, COORDINATE PAD LOCK TYPE WITH OWNER'S REPRESENTATIVE. PROVIDE KEYS TO OWNER'S REPRESENTATIVE.

PROVIDE AND INSTALL ALL CONTROL CONDUITS AND WIRING AS REQUIRED BY MANUFCATURER AND INSTALL REMOTE ANNUNCIATOR PANEL IN FIELD LOCATED LOCATION..
PROVIDE/INSTALL REMOTE SHUTOFF AND EMERGENCY SHUTOFF- COORDINATE LOCATION OF EMERGENCY SHUTOFF SYSTEM WITH CODE OFFICIAL. LOCATION MUST BE CLOSE TO GENERATOR BUT NOT IN THE ENCLOSURE AREA.

FIELD VERIFY ELEVATION AND COORDINATE REQUIREMENTS FOR GENERATOR PLACEMENT. SEE PAD DETAILS.

N

1 / E3.0 **ELECTRICAL PROPOSED SITE PLAN**

1/16" = 1'-0"

UTILITIES ARE PLOTTED FROM FIELD LOCATION AND ANY RECORD INFORMATION AVAILABLE, AND SHOULD BE CONSIDERED APPROXIMATE. OTHER UTILITIES MAY EXIST WHICH ARE NOT EVIDENT OR FOR WHICH RECORD INFORMATION WAS NOT AVAILABLE. CONTRACTORS MUST CONTACT ALL UTILITY COMPANIES BEFORE EXCAVATING AND DRILLING.

sunshine state ONE CALL of florida

811 Know what's below. Call before you dig.

CALL BEFORE YOU DIG

EXISTING UTILITIES AND FACILITIES ARE IN PLACE. CALL BEFORE YOU DIG! CALL SUNSHINE STATE ONE-CALL OF FLORIDA AT "811" TWO FULL BUSINESS DAYS BEFORE ANY EXCAVATION TO LOCATE ALL UNDER GROUND UTILITIES. (IN FLORIDA, THE LAW REQUIRING EXCAVATORS TO CALL 811 BEFORE DIGGING IS ***THE UNDERGROUND FACILITY DAMAGE PREVENTION AND SAFETY ACT***, CHAPTER 556, FLORIDA STATUTES.) CONTRACTOR SHALL BE RESPONSIBLE TO HAVE ALL EXISTING UTILITIES LOCATED PRIOR TO THE START OF ANY WORK, AND SHALL REPAIR/ REPLACE ANY SYSTEMS HE/SHE DAMAGES DURING CONSTRUCTION AT HIS/HER OWN EXPENSE.

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DRAWING TITLE: ELECTRICAL SITE PLAN

FILE:	2022.20
JOB NO.:	WA#1
DATE :	04/08/2022
PLOT SIZE:	1:1
DRAWN BY:	HG
CHECKED BY:	MC
SHEET No.:	E3.0

FEEDER AND BRANCH CIRCUIT SCHEDULE

FEEDER/BRANCH DESIGNATION	COPPER CONDUCTOR THHN,THWN,&THWN-2		SETS OF CONDUCTORS	CONDUIT SIZE AND QUANTITY [QUANTITY OF CONDUIT IS 1, UNLESS NOTED IN ( )]					
	PHASE & NEUTRAL	EQUIPMENT GROUND		1P, 1N, 1G, 2P, 1G	2P, 1N, 1G, 3P, 1G	3P, 1N, 1G	3P, 2N, 1G	3P, 3N, 1G	3P, 1N, 2G
F20	12	12	1	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
F30	10	10	1	3/4"	3/4"	3/4"	1"	1"	1"
F50	8	10	1	3/4"	1"	1"	1 1/4"	1 1/4"	1 1/4"
F60	6	10	1	1"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
F80	4	8	1	1"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"
F100	3	8	1	1 1/4"	1 1/4"	1 1/2"	1 1/2"	2"	1 1/2"
F110	2	6	1	1 1/4"	1 1/2"	1 1/2"	2"	2"	2"
F125	1	6	1	1 1/2"	2"	2"	2"	2 1/2"	2"
F150	1/0	6	1	1 1/2"	2"	2"	2 1/2"	2 1/2"	2 1/2"
F175	2/0	6	1	2"	2"	2 1/2"	2 1/2"	3"	2 1/2"
F200	3/0	6	1	2"	2 1/2"	2 1/2"	3"	3"	3"
F225	4/0	4	1	2"	2 1/2"	3"	3"	3"	3"
F250	250	4	1	2 1/2"	3"	3"	3 1/2"	3 1/2"	3-1/2"
F300	350	4	1	3"	3"	3 1/2"	3 1/2"	4"	3 1/2"
F350	2/0	3	2	(2) 2"	(2) 2 1/2"	(2) 2 1/2"	(2) 2 1/2"	(2) 3"	(2) 2 1/2"
F400	3/0	3	2	(2) 2"	(2) 2 1/2"	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 2 1/2"
F450	4/0	2	2	(2) 2"	(2) 2 1/2"	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"
F500	250	2	2	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"	(2) 3 1/2"	(2) 3 1/2"

NOTES:
1. DO NOT COMBINE NEUTRAL CONDUCTORS FOR ALL CIRCUITS. USE SEPARATE INDEPENDENT NEUTRAL CONDUCTORS FOR ALL CIRCUITS.

VOLTAGE DROP FOR 1ϕ, 20A BRANCH CIRCUITS

SIZED TO PREVENT VOLTAGE DROP EXCEEDING 2 PERCENT PER FL ENERGY CODE.

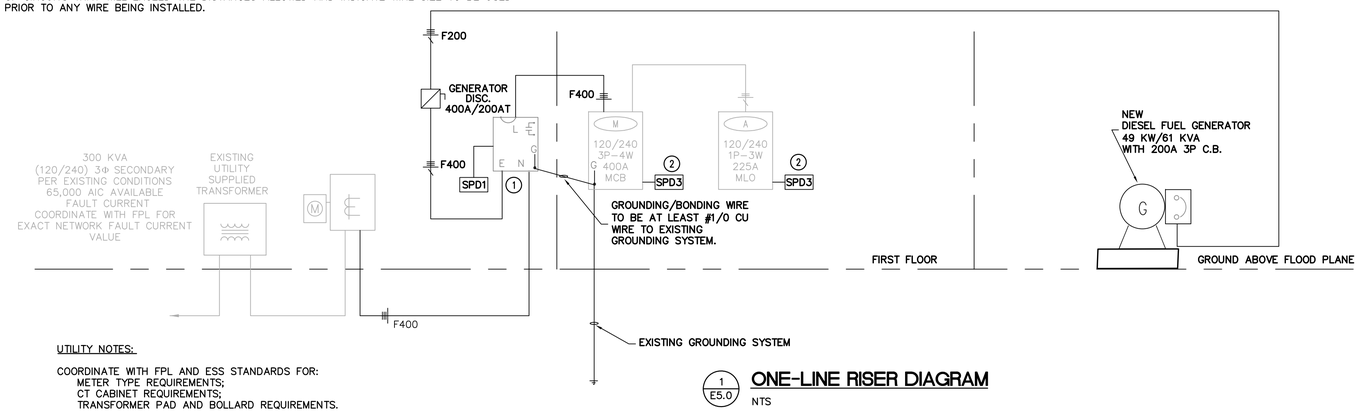
	DISTANCE ALLOWED			
FEEDER SIZE TO USE	120V	240V		
F20	0 - 30 FEET	0 - 61 FEET		
F30	30 - 48 FEET	61 - 97 FEET		
F50	48 - 77 FEET	97 - 154 FEET		
F60	77 - 122 FEET	154 - 244 FEET		

NOTES:

1. 20 A BRANCH CIRCUITS SHALL BE SIZED FOR VOLTAGE DROP. WIRE SIZES ARE NOT INDICATED ON THE DRAWINGS TO COMPENSATE FOR VOLTAGE DROP FOR THESE CIRCUITS. CONTRACTOR SHALL UTILIZE WIRE SIZE SHOWN ABOVE FOR DISTANCES LISTED ABOVE.
2. VOLTAGE DROP WIRE SIZES WILL BE STRICTLY ENFORCED. CONTRACTOR SHALL SUBMIT A LIST OF CIRCUITS THAT WILL EXCEED THE DISTANCES ALLOWED AND INDICATE WIRE SIZE TO BE USED PRIOR TO ANY WIRE BEING INSTALLED.

FP+L DEMAND DATA-24 MONTHS MAXIMUM

	METER# KJ58016 - VERIFIED
DATE	DEMAND VALUE (KWD)
1/18/2020	9
2/18/2020	12
3/18/2020	10
4/17/2020	8
5/19/2020	7
6/18/2020	8
7/20/2020	10
8/19/2020	9
9/18/2020	9
10/19/2020	8
11/17/2020	8
12/17/2020	10
1/19/2021	10
2/17/2021	12
3/18/2021	9
4/19/2021	10
5/19/2021	11
6/18/2021	10
7/20/2021	13
8/19/2021	10
9/20/2021	9
10/19/2021	9
11/17/2021	8
12/17/2021	9
DEMAND MAXIMUM	13



UTILITY NOTES:

COORDINATE WITH FPL AND ESS STANDARDS FOR:
METER TYPE REQUIREMENTS;
CT CABINET REQUIREMENTS;
TRANSFORMER PAD AND BOLLARD REQUIREMENTS.

1 E5.0 **ONE-LINE RISER DIAGRAM**

NTS

FAULT CURRENT INFORMATION:

- PLACE A PACARD ON THE PANELS SHOWING THE NEW FAULT CURRENT VALUE, THE VOLTAGE, PHASE, FREQUENCY, AND DATE (3-28-2022) OF FAULT CURRENT ANALYSIS PER NEC REQUIREMENTS.
- NO CHANGES TO THE EXISTING PANELS EXCEPT ADDITIONS OF (2) 30A CIRCUIT FOR SPD UNITS ON PANEL M AND PANEL A AND (4) 20A-1P CIRCUITS FROM PANEL A WILL BE USED FOR BATTERY CHARGER CIRCUITS(2 @ 360W), A HEATER CIRCUIT (1000W), AND A CIRCUIT FOR MAINTENANCE RECEPTACLES(360W).
- VERIFY AIC RATINGS WITH THIS ENGINEER PRIOR TO PURCHASING ANY ELECTRICAL GEAR.

  EXISTING PANELS ARE RATED AT 65KAIC- WITH A 240V- 3P SYSTEM AT 400A- THE SIZE OF THE TRANSFORMER WOULD BE A MAXIMUM OF 300KVA. A 300KVA TRANSFORMER WOULD PROVIDE A FAULT CURRENT LEVEL OF 24,057AIC WITH A 3% IMPEDANCE AND 721AMPS MAX BASED UPON INFINITE BUS METHOD.

GENERAL NOTES:

SPD1 - SERVICE ENTRANCE RATED SURGE PROTECTION DEVICE TO BE LIKE PQ PROTECTION POM200 OR LEVITON 52000 SERIES, TYPE 2 PANEL MOUNT, OR APPROVED EQUAL.

SPD2 - SURGE PROTECTION DEVICE TO BE LIKE PQ PROTECTION PQC100 OR LEVITON 42000 SERIES, TYPE 2 PANEL MOUNT, OR APPROVED EQUAL.

PLAN NOTES:

1. PROVIDE 400A SERVICE ENTRANCE RATED ATS WITH SPD AND TIE TO EXISTING GROUNDING SYSTEM.
2. PROVIDE NEW SPD UNITS ON PANEL M AND A USE A THREE POLE 30A BREAKER ON PANEL M AND A 30A TWO POLE BREAKER ON PANEL A.

FAULT CURRENT CALCULATIONS VALUES:

Fault Current Rating - Existing Panel M is rated at 65KAIC
65000 AIC

	Length(ft)	Current	Number of Conductors	Wire Constant	Voltage	Voltage	f	f	Factor M	Factor M	Short Circuit Value				Max value
Panel ID	L	I	N	C	E(L-N)	E(L-L)	(L-N)	(L-L)	(L-L)	(L-N)	(L-N)	(L-L)	Rating	Short Circuit
ATS	10	65000	2	12844	120	240	0.365227	0.182613	0.732479	0.845585	47611.14	54963.02	65KAIC	54963.02
M	30	54963.02	2	12844	120	240	0.92649	0.463245	0.519079	0.683412	28530.13	37562.41	Existing	37562.41
A	15	37562.41	1	15082	120	240	0.311318	0.155659	0.762591	0.865307	28644.77	32503.02	Existing	32503.02

GENERAL NOTES:

ITEMS IN GRAYSCALE ARE EXISTING.

ITEMS BOLD ARE NEW.

PER FEMA MAP 120153 THE LOCATION IS IN AN "AE" ZONE AND IS APPROX. 20-25' ABOVE SEA LEVEL. AREAS SUBJECT TO INUNDATION BY THE 1-PERCENT-ANNUAL-CHANCE FLOOD EVENT DETERMINED BY DETAILED METHODS. BASE FLOOD ELEVATIONS ARE SHOWN ON THE MAP. THE ELEVATION OF THE GENERATOR HAS TO BE RAISED BY AT LEAST 1 FT TO BE ABOVE THE BASE FLOOD ZONE.

POWER DISTRIBUTION PANELBOARD SCHEDULE	DESIGNATION: M LOCATION: VOLTAGE: 240/120 PHASE: 3 PHASE, 4 WIRE	MAINS: 400 A MCB BUS SIZE: 400A PANEL MOUNTING: SURFACE ALL BREAKERS: 42 KAIC

CKT NO.	LOAD DESCRIPTION	LOAD CODE	CONN. KVA	BREAKER AMPS	BREAKER POLE	CONNECTED LOAD A	CONNECTED LOAD B	CONNECTED LOAD C	BREAKER AMPS	BREAKER POLE	CONN. KVA	LOAD CODE	LOAD DESCRIPTION	CKT NO.
1	AHU-1	M	5.76	60	2	8.76			40	3	3.00	M	WATER HEATER	2
3		M	5.76				8.76				3.00	M		4
5	OAU-1	M	5.76	60	2			8.76			3.00	M		6
7		M	5.76			10.16			40	3	4.40	M	AIR COMPRESS	8
9	LIFT STATION	M	3.32	30	3		7.72				4.40	M		10
11		M	3.32					7.72			4.40	M		12
13		M	3.32			6.20			30	2	2.88	R	240V RECEPT	14
15	240V RECEPT	R	2.88	30	2		5.76				2.88	R		16
17		R	2.88					3.88	20	1	1.00	M	ICE MACHINE	18
19	EF-1 NORTH	M	0.25	20	3	0.75			20	3	0.50	M	ERV-1	20
21		M	0.25				0.75				0.50	M		22
23		M	0.25					0.75			0.50	M		24
25	EF-1 SOUTH	M	3.32	30	3	3.16			30	2	2.88	M	AHU-1	26
27		M	3.32				3.16				2.88	M		28
29		M	3.32					3.32	20	1			SPARE	30
31	SPARE			20	1	0.00			20	1			SPARE	32
33	SPARE			20	1		0.00		20	1			SPARE	34
35	SPARE			20	1			1.00	20	1	1.00	P	FIRE ALARM CNTL PANEL	36
37	SPARE			30	3	0.00			30	3			SPD	38
39							0.00							40
41								0.00						42
	TOTAL CONNECTED AMPS:		241.92 AMPS			29.03	26.15	25.43	KVA					
	TOTAL CONNECTED LOAD:		86.69 KVA			241.92	217.92	211.92	AMPS					
	TOTAL DEMAND AMPS:		194.44 AMPS											
	TOTAL DEMAND LOAD:		62.39 KVA											

LOAD CODES:
L= LIGHTING
R= RECEPTACLES
M= MECHANICAL
C= COMPUTER
K= KITCHEN
P= PANELBOARD

3 E5.0 **PANEL M**

NTS

PANELBOARD SCHEDULE	DESIGNATION: A LOCATION: VOLTAGE: 240/120 PHASE: 1 PHASE, 3 WIRE	MAINS: 225 MCB BUS SIZE: 225 AMP PANEL MOUNTING: SURFACE ALL BREAKERS: 22 KAIC

CKT NO.	LOAD DESCRIPTION	LOAD CODE	CONN. KVA	BREAKER AMPS	BREAKER POLE	CONN. LOAD A	CONN. LOAD B	BREAKER AMPS	BREAKER POLE	CONN. KVA	LOAD CODE	LOAD DESCRIPTION	CKT NO.
1	IT RM	R	0.90	20	1	1.90		20	1	1.00	M	REFRIG	2
3	RECEPT	R	0.90	20	1		1.44	20	1	0.54	R	MICROWAVE	4
5	RECEPT	R	0.90	20	1	1.80		20	1	0.90	R	RECEPT	6
7	RECEPT	R	0.90	20	1		1.80	20	1	0.90	R	RECEPT	8
9	RECEPT	R	0.90	20	1	1.80		20	1	0.90	R	RECEPT	10
11	RECEPT	R	0.90	20	1		1.44	20	1	0.54	M	HAND DYER	12
13	RECEPT	R	0.90	20	1	1.62		20	1	0.72	M	DISPOSAL	14
15	RECEPT	R	0.90	20	1		1.44	20	1	0.54	M	HAND DRYER	16
17	RECEPT	R	0.90	20	1	1.62		20	1	0.72	M	WATER COOLER	18
19	RECEPT	R	0.90	20	1		1.90	20	1	1.00	L	GARAGE LTS	20
21	LIGHTS	L	1.00	20	1	2.00		20	1	1.00	L	ATTIC LTS AND POWER	22
23	TV POWER	R	0.72	20	1		0.90	20	1	0.18	M	TIMCLOCK	24
25	LIGHTS	L	1.00	20	1	2.00		20	1	1.00	L	LIGHTS	26
27	GENERATOR HEATER	M	1.00	20	1		1.36	20	1	0.36	R	GENERATOR RECEPT	28
29	CORD REEL	M	0.72	20	1	1.26		20	1	0.54	M	HAND DRYER	30
31	SPARE			30	1		0.84	20	1	0.84	M	GENERATOR BATTERY	32
33						0.00		50	2			SPARE	34
35	GENERATOR BATTERY	M	0.84	20	1		0.84						36
37	SPACE					0.00		30	3			SPD	38
39	SPACE						0.00						40
41	SPACE					0.00							42
	TOTAL CONNECTED AMPS:		116.67 AMPS			14.00	11.96	KVA					
	TOTAL CONNECTED LOAD:		25.96 KVA			116.67	99.67	AMPS					
	TOTAL DEMAND AMPS:		79.38 AMPS										
	TOTAL DEMAND LOAD:		16.89 KVA										

LOAD CODES:
L= LIGHTING
R= RECEPTACLES
M= MECHANICAL
C= COMPUTER
K= KITCHEN
P= PANELBOARD

2 E5.0 **PANEL A**

NTS

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY MATTHEW J. CAMDEN, P.E. (FL#79284) ON 02-14-2023 USING AN SHA AUTHENTICATION CODE.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA AUTHENITCATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SEAL

MATTHEW J CAMDEN LICENSE No. 79284 STATE OF FLORIDA PROFESSIONAL ENGINEER

MATTHEW J. CAMDEN
FL#79284

ATP ENGINEERING SOUTH
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

REV.#	DESCRIPTION	DATE

PUBLIC WORKS WTTP OFFICE
BUILDING GENERATOR
8500 69TH ST E, PALMETTO, FL 34221

DRAWING TITLE: ELECTRICAL ONE-LINE RISER DIAGRAM

FILE:	2022.20
JOB NO.:	WA#1
DATE :	04/08/2022
PLOT SIZE:	1:1
DRAWN BY:	HG
CHECKED BY:	MC
SHEET No.:	E5.0

SPECIFICATIONS:

(APPLY TO ALL ELECTRICAL SHEETS)

1. PROVIDE AND INSTALL NEW GREEN INSULATED COPPER GROUNDING CONDUCTORS AS THE EQUIPMENT GROUNDING MEANS FOR ALL ELECTRICAL DEVICES AND EQUIPMENT.
2. ALL PANELBOARDS AND SWITCHBOARDS SHALL HAVE COPPER BUS, COPPER GROUND BAR, AND RATINGS AS SPECIFIED. REFERENCE STANDARDS SHALL BE GENERAL ELECTRIC "A" SERIES "PRO-STOCK" BRANCH PANELS AND SPECTRA SERIES DISTRIBUTION PANELS WITH BOLT IN TYPE CIRCUIT BREAKERS.
3. PROVIDE LABELING FOR ALL PANELBOARDS, SWITCHBOARDS, AND DISCONNECT SWITCHES TO INCLUDE AN ENGRAVED PLASTIC LABEL IDENTIFYING THE EQUIPMENT AND WHERE IT IS FED FROM.
   - 3.1. ALL BRANCH DEVICES IN THE MAIN SWITCHBOARD SHALL HAVE AN ENGRAVED PLASTIC LABEL.
   - 3.2. ALL PANELBOARDS SHALL INCLUDE A TYPEWRITTEN DIRECTORY. ALL RECEPTACLES SHALL HAVE CIRCUIT NUMBERS WRITTEN ON THE INSIDE OF THE COVERPLATE.
   - 3.3. ALL JUNCTION BOX COVERS SHALL BE IDENTIFIED TO INDICATE CIRCUITS CONTAINED.
   - 3.4. WHERE MULTIPLE SWITCHES ARE GANGED TOGETHER THE SWITCHES SHALL BE IDENTIFIED.
   - 3.5. PROVIDE (1) 3/4" SPARE CONDUIT FOR EACH 3 SPACES OR SPARES IN EACH FLUSH MOUNTED PANEL FROM PANEL TO ABOVE ACCESSIBLE CEILING FOR FUTURE USE.
   - 3.6. ALL RECEPTACLES SHALL HAVE CIRCUIT NUMBERS WRITTEN ON THE INSIDE OF THE COVERPLATE.
   - 3.7. ALL JUNCTION BOXES ON EMERGENCY POWER SHALL BE RED IN COLOR.
3. ALL CONDUIT INSIDE THE BUILDING SHALL BE A ELECTRICAL METALLIC TUBING (EMT) AND SHALL BE A MINIMUM 1/2" UNLESS OTHERWISE NOTED. ALL CONDUIT INSTALLED UNDERGROUND SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE NOTED. ALL CONDUIT INSTALLED ABOVE GRADE OUTSIDE THE BUILDING SHALL BE GALVANIZED RIGID STEEL. NO PVC CONDUIT SHALL BE USED ABOVE THE FLOOR SLAB.
4. ALL ELECTRICAL CONNECTORS, LUGS, BREAKERS, EQUIPMENT, ETC. SHALL BE RATED AT A MINIMUM OF 75 DEG. C.
5. WIRING METHODS:

   ALL WIRING SHALL BE COPPER. NO ALUMINUM WIRING WILL BE ALLOWED.

   MC TYPE CABLE SHALL NOT BE USED.
6. SWITCHES SHALL BE 20 AMPERE RATED, 120/277 VOLT, LEVITON 1221S SERIES OR APPROVED EQUIVALENT, UNLESS OTHERWISE NOTED.
   - 6.1. SWITCHES CONTROLLING LIGHTING SHALL HAVE NEUTRAL CONDUCTOR.
7. COMMON AREA/PUBLIC USE AREA RECEPTACLES SHALL BE 20A, 120V GROUNDING TYPE LIKE LEVITON 5362S SERIES, UNLESS OTHERWISE NOTED.
   - 7.1. WHITE IN COLOR
   - 7.2. PROVIDE GROUND FAULT CIRCUIT-INTERRUPTER (GFI) TYPE RECEPTACLE IF SHOWN OR AS REQUIRED BY NEC.
8. ARC-FAULT CIRCUIT-INTERRUPTER RECEPTACLES SHALL BE 20A, 120V GROUNDING TYPE LIKE LEVITON AFTR2-W.
   - 8.1. WHITE IN COLOR.
9. ALL COVERPLATES FOR INTERIOR WIRING DEVICES SHALL BE WHITE NYLON TYPE. DEVICES SHALL BE WHITE IN COLOR.
10. ALL EXTERIOR RECEPTACLES SHALL BE GFCI (GFI) TYPE AND HAVE IN-USE TYPE WEATHERPROOF COVERPLATES.

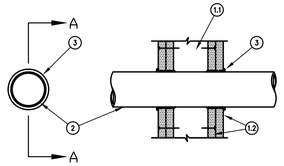
GENERAL NOTES:

(APPLY TO ALL ELECTRICAL SHEETS)

1. PROVIDE COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM.
2. ALL WORK SHALL CONFORM TO OR EXCEED THE MINIMUM REQUIREMENTS OF THE CURRENT ANSI/NFPA 70 WITH STATE OF FLORIDA AMENDMENTS, ANSI/IEEE C2 AND ALL FEDERAL, STATE, LOCAL, AND MUNICIPAL CODES AND ORDINANCES. THE ELECTRICAL SUBCONTRACTOR SHALL COMPLY WITH THE DIRECTIONS OF ALL AUTHORITIES HAVING JURISDICTION.
3. INSTALL WORK USING PROCEDURES DEFINED IN NECA STANDARDS OF INSTALLATION. ALL WORK SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED.
4. REFER TO THE ARCHITECTURAL DRAWINGS FOR CEILING AND MILLWORK WORK BY THE SEPARATE GENERAL CONTRACT. COORDINATE ALL ELECTRICAL WORK.
5. THE ELECTRICAL SUBCONTRACTOR SHALL PROVIDE ALL FLOOR, WALL, AND CEILING PENETRATIONS TO COMPLETE HIS WORK. PROVIDE PROPER FIRE SAFEING FOR ALL PENETRATIONS MADE.
6. COORDINATE ALL ELECTRICAL WORK WITH ALL OTHER TRADES TO ENSURE EFFECTIVE AND EFFICIENT OVERALL INSTALLATION.
7. COORDINATE ALL ELECTRICAL SYSTEM DOWNTIME WITH THE OWNER, PERFORMANCE SERVICES, AND OTHER TRADES. DOWNTIME OF THE SYSTEM SHALL BE MINIMIZED. WEEKEND AND AFTER HOUR WORK SHALL BE REQUIRED TO PREVENT OR MINIMIZE INTERFERENCE WITH THE OWNER'S OPERATION.
8. THE LOCATIONS OF RECEPTACLES, PHONE/DATA JACKS, AND ROOM EQUIPMENT SHOWN ON THESE DRAWINGS ARE APPROXIMATE. FINAL LOCATIONS WILL BE DETERMINED DURING THE CONSTRUCTION PHASE- COORDINATE AND REFER TO ARCHITECTURAL DRAWINGS.
9. ALL NEW EQUIPMENT SHALL BE SUBMITTED FOR APPROVAL PRIOR TO ORDERING. PROVIDE COPIES OF ALL LIGHTING EQUIPMENT AND CONTROLS DATA SHEETS FOR THE LEED CONSULTANT AND COMMISSIONING CONSULTANT. ALL LIGHTING SYSTEMS SHALL MEET OR EXCEED ASHRAE 90.1 IN ENERGY USAGE PER SQUARE FOOT.
10. PHYSICAL SIZES AND LOCATIONS OF ALL MECHANICAL EQUIPMENT SHOWN ON THESE DRAWINGS ARE APPROXIMATE. COORDINATE ELECTRICAL WORK FOR THIS EQUIPMENT WITH THE OTHER TRADES.
11. PROVIDE APPROPRIATE SEALANT (I.E. FIRESAFEING) TO MAINTAIN CONSTRUCTION INTEGRITY FOR ANY PENETRATIONS THROUGH FLOORS, STRUCTURAL CEILINGS, AND FIRE WALLS.
12. ALL BRANCH CIRCUITS SHALL UTILIZE SEPARATE INDEPENDENT NEUTRAL CONDUCTOR, AND INSULATED GROUNDING CONDUCTOR. DO NOT COMBINE NEUTRAL CONDUCTORS.
13. ALL FEEDER NEUTRAL/GROUNDED CONDUCTORS SHALL BE CONSIDERED CURRENT CARRYING. DERATE MULTIPLE CONDUCTORS IN A RACEWAY ACCORDINGLY WITH NEC TABLES.
14. INSTALL ALL CONDUITS, RACEWAYS, AND CABLE TRAY FOR MAXIMUM HEAD CLEARANCE IN MECHANICAL AREAS, AND ATTIC. COORDINATE CLEARANCES WITH PERFORMANCE SERVICES AND THE OWNER.
15. ALL ELECTRICAL SERVICE WORK SHALL COMPLY WITH THE LOCAL UTILITY. COORDINATE ALL REQUIREMENTS AND MAXIMUM AVAILABLE FAULT CURRENT PRIOR TO BID AND INCLUDE ALL NECESSARY MATERIAL AND LABOR REQUIRED FOR THE ADDITION TO THE ELECTRICAL SERVICE. PROVIDE PRICING FOR ANY UTILITY FEES.
16. TEST GROUNDING SYSTEM AFTER COMPLETION OF JOB TO INSURE PROPER GROUND CONDUCTIVITY. VERIFY PROPER PHASE ROTATION.
17. RECORD DRAWINGS: PROVIDE AMPERE READINGS ON ALL PANELBOARDS TO PROVE PANELS ARE BALANCED. PROVIDE PHASE ROTATION READINGS ON ALL PANELBOARDS. PROVIDE ALL RECORD DRAWINGS TO THE OWNER'S REPRESENTATIVE. PROVIDE RECORD DRAWINGS PER FBC ENERGY CODE REQUIREMENTS: INCLUDE ALL BRANCH CIRCUITS, CONDUIT SIZES, WIRE SIZES, VOLTAGE DROP VALUES, PANEL SCHEDULES, RISER DIAGRAMS, GROUNDING SYSTEM, AND ANY MODIFICATIONS TO THE ELECTRICAL SYSTEM IN GENERAL.
18. ALL DOCUMENTATION INCLUDING COMPLETE AS-BUILT(CONTRACTOR) DRAWINGS SHALL BE PROVIDED TO THE OWNER WITHIN 90 DAYS OF RECEIVING THE CERTIFICATE OF OCCUPANCY.
19. NFPA 70/NEC SECTION 501 SHALL BE FOLLOWED FOR ANY AREAS OF FUEL STORAGE/DISPENSING AND DIESEL FUEL UTILIZATION FOR GENERATORS.
20. COORDINATE WITH FPL ON ALL ELECTRICAL UTILITY REQUIREMENTS INCLUDING METERING. ALL PERMITTING FEES AND UTILITY FEES WILL BE PAID BY THE CONTRACTOR.
22. ALL SURVEY AND GEOTECHNICAL WORK IS TO BE PROVIDED BY THE CONTRACTOR. THE FEES ARE THE RESPONSIBILITY OF THE CONTRACTOR.

SYSTEM NO. WL1001

(FORMERLY SYSTEM NO. 147)
F RATING – 1, 2, 3 AND 4HR. (SEE ITEM 2 AND 3)
T RATINGS– 0, 1, 2, 3, AND 4 HR. (SEE ITEM 3)



SECTION A-A

1. WALL ASSEMBLY – THE 1, 2, 3 OR 4 HOUR FIRE-RATED GYPSUM WALLBOARD / STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   - 1.1. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS CONSIST OF NOMINAL 2 BY 4 IN. LUMBER SPACED 16 INCHES OC WITH NOMINAL 2 BY 4 IN. LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN. 3–5/8 IN. WIDE BY 1–3/8 IN. DEEP CHANNELS SPACED MAX 24 IN. OC.
   - 1.2. WALL BOARD GYPSUM* – 1/2 IN. OR 5/8 IN. THICK 4 FOOT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 13–1/2 IN.
2. PIPE OR CONDUIT – NOMINAL 12 IN. DIAM. (OR SMALLER) SCHEDULE 10 (OR HEAVIER STEEL CONDUIT, NOM. 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL CONDUIT MECHANICAL OR TYPE L OR (HEAVIER) COPPER TUBING OR MON. 1 IN. DIAM (OR SMALLER) FLEXIBLE STEEL CONDUIT.
3. FILL, VOID OR CAVITY MATERIAL* – CAULK – CAULK FILL MATERIAL INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND W/ A MIN. 1/4 IN. DIAM BEAD OF CAULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT ITS EGRESS FROM THE WALL. CAULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

MAXIMUM PIPE OR CONDUIT DIAMETER (IN INCHES)	ANNULAR SPACE (IN INCHES)	F RATING HR	T RATING HR
1	0 TO 3/16	1 OR 2	0+, 1 OR 2
1	1/4 TO 1/2	3 OR 4	3 OR 4
4	0 TO 1 1/2	1 OR 2	0
6	1/4 TO 1/2	3 OR 4	0
12	3/16 TO 3/8	1 OR 2	0
+WHEN COPPER PIPE IS USED, T RATING IS 0 H.			

MINNESOTA MINING & MANUFACTURING CO. – TYPES CP-25 S/L, CP-25 N/S, CP-25 WB, CP-25 WB+

* BEARING THE UL CLASSIFICATION MARKING

1 / E6.0 **U.L. PENETRATION DETAIL**

NOT TO SCALE

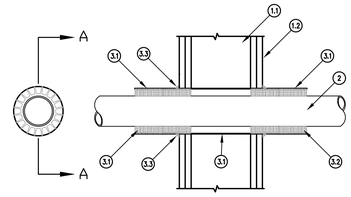
120/240/120V 3ϕ HI-LEG DELTA SURGE PROTECTION DEVICE (MODULAR)

SURGE PROTECTION DEVICE TO BE LIKE LEVITON 52412 SERIES, TYPE 2 PANEL MOUNT, OR APPROVED EQUAL.

1. ELECTRICAL SPECIFICATIONS
   a. VOLTAGE CONFIGURATION: 120/240/120V HI-LEG DELTA
   b. FREQUENCY: 50/60HZ
   c. SURGE TECHNOLOGY: 40MM MOV DESIGN
   d. RECOMMENDED CIRCUIT BREAKER RATING: 30A, 120/240V
2. ENVIRONMENTAL SPECIFICATIONS
   a. ENCLOSURE TYPE: NEMA 12 ENCLOSURE
   b. OPERATING TEMPERATURE: -20°C TO 40°C
   c. STORAGE TEMPERATURE: -4°F TO 185°F (-20°C TO 85°C)
   d. FLAMMABILITY: RATED V-2 PER UL94
   e. RELATIVE HUMIDITY: 5% TO 95% NON-CONDENSING
3. MECHANICAL SPECIFICATIONS
   a. CONNECTION TYPE: PARALLEL-HARDWIRED, FEED-THROUGH DUAL WIRE TERMINAL BLOCK: ACCEPTS UP TO #3 AWG WIRE
4. PERFORMANCE DATA
   a. MCOV L-N: L-N:150V, H-N:320V
   b. MCOV L-G: L-G:300V, H-G:470V
   c. MCOV N-G: 150V
   d. MCOV L-L: L-L:300V, H-L:470V
   e. VPR L-N: L-N:1000V, H-N:1500V
   f. VPR L-G: L-G:1500V, H-G:2000V
   g. VPR N-G: 700V
   h. VPR L-L: L-L:1500V, H-L:2500V
   i. PROTECTION MODE: 4-MODE
   j. MAXIMUM SURGE CURRENT, PER MODE (PER PHASE): 100KA (100KA)
   k. SHORT CIRCUIT CURRENT RATING: 100KA
   l. NOMINAL DISCHARGE CURRENT RATING: 20KA
   m. NOISE REJECTION: -20 TO -40 DB AT 5KHZ-10MHZ
   n. DIAGNOSTICS: REAL TIME PROTECTION STATUS LEDS & AUDIBLE ALARM
   o. REMOTE MONITORING: DRY CONTACT LEADS-N.O./N.C. FORM C RATED AT 7AMPS @ 240VAC OR 30 VDC
5. PRODUCT FEATURES
   a. DIAGNOSTICS: LED
   b. SURGE COUNTER: WITHOUT
   c. MODULE NO.: (2) 2120 (120V) & (1) 2412 (HI-LEG)
   d. MCOV: L-L 250V AC
   e. STANDARDS AND CERTIFICATIONS: UL1449 / CSA / ANSI/IEEE
6. STANDARDS AND CERTIFICATIONS
   a. UL1449 3RD EDITION: CSA CERTIFIED AND UL LISTED TYPE 2
   b. ANSI/IEEE CATEGORY A, B & C: C-62.41 & 62.45
7. WARRANTY
   a. PRODUCT WARRANTY: LIMITED LIFETIME
   b. REPLACEMENT MODULE WARRANTY: LIMITED LIFETIME

SYSTEM NO. WL2154

F Ratings – 1 or 2 HR (See Item 1)
T Ratings – 1 or 2 HR (See Item 1)



SECTION A-A

1. WALL ASSEMBLY – THE 1 OR 2 HR FIRE RATED GYPSUM WALLBOARD / STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   - 1.1. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 3–1/2 IN. WIDE AND SPACED MAXIMUM 24 IN. OC.
   - 1.2. WALLBOARD, GYPSUM BOARD* – THICKNESS, TYPE, NUMBER OF LAYERS AND FASTENERS AS REQUIRED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAXIMUM DIAMETER OF OPENING IS 7–3/4 IN. THE HOURLY F AND T RATINGS OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
2. THROUGH PENETRANTS – ONE NONMETALLIC PIPE OR CONDUIT TO BE CENTERED WITHIN OPENING WITH A NOM. 1/4 IN. ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND PERIPHERY OF OPENING. PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NONMETALLIC PIPES OR CONDUITS MAY BE USED:
   - 2.1. POLYVINYL CHLORIDE (PVC) PIPE – NOM. 6 IN. DIAMETER (OR SMALLER) SCHEDULE 40 SOLID CORE PVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEM.
   - 2.2. RIGID NONMETALLIC CONDUIT ++ – NOM. 6 IN. DIAMETER (OR SMALLER) SCHEDULE 40 PVC CONDUIT INSTALLED IN ACCORDANCE WITH ARTICLE 347 OF THE NATIONAL ELECTRICAL CODE (NFPA NO. 70).
   - 2.3. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE – NOM 6 IN. DIAMETER (OR SMALLER) SDR17 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEMS.
3. FIRESTOP SYSTEM – THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:
   - 3.1. STEEL SLEEVE – MINIMUM 26 GAUGE GALVANIZED STEEL CUT 6 IN. LONGER THAN OVERALL WIDTH OF WALL WITH THE OUTSIDE DIAMETER EQUAL TO DIAMETER OF OPENING IN WALL WITH A MINIMUM 1 IN. OVERLAP ALONG LONGITUDINAL SEAM. SLEEVE PLACED IN WALL OPENING SUCH THAT 3 IN. EXTENDS BEYOND BOTH SIDES OF WALL. EDGES OF SLEEVE TO BE PROVIDED WITH 1/2 IN. LONG SLITS TO FORM RETAINING TABS.
   - 3.2. FILL, VOID OR CAVITY MATERIALS* – WRAP STRIP – NOM. 1/8 IN. THICK INTUMESCENT MATERIAL SUPPLIED IN 2 IN. WIDE STRIPS. MINIMUM FOUR CONTINUOUS LAYERS OF WRAP STRIP TIGHTLY WRAPPED AROUND NONMETALLIC PIPE ON BOTH SIDES OF WALL, AND RECESSED WITHIN STEEL SLEEVE 2–1/2 IN. FROM THE END OF SLEEVE ON BOTH SIDE OF WALL AN ADDITIONAL STACK OF FOUR CONTINUOUS LAYERS OF WRAP STRIP TIGHTLY WRAPPED AROUND NONMETALLIC PIPE ON BOTH SIDES OF THE WALL AND BUTTED TIGHTLY AGAINST SLEEVE. THE SLIT EDGES OF SLEEVE TO BE BENT 90 DEGREES TOWARD PIPE. TWO MINIMUM 1/2 IN. WIDE BY 0.028 IN. THICK STAINLESS STEEL BAND CLAMPS SHALL BE TIGHTLY FASTENED AROUND SLEEVE ON BOTH SIDES OF WALL, APPROXIMATELY 1/2 IN. FROM THE WALL SURFACES AND 3/4 IN. FROM EACH END OF SLEEVE. MINNESOTA MINING & MFG. CO. – ULTRA GS
   - 3.3. FILL, VOID OR CAVITY MATERIALS* – CAULK – MINIMUM 1/2 IN. DIAMETER BEAD OF CAULK SHALL BE APPLIED TO OUTER PERIMETER OF SLEEVE ON BOTH SIDES OF WALL AT SLEEVE / WALL INTERFACE. MINNESOTA MINING & MFG. CO. – CP 25WB+ CAULK

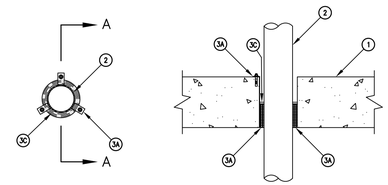
* BEARING THE UL CLASSIFICATION MARKING
++ BEARING THE UL LISTED MARK

2 / E6.0 **U.L. PENETRATION DETAIL**

NOT TO SCALE

SYSTEM NO. C-AJ-2002

May 18, 2005
F Rating – 2 Hr
T Ratings – 0 and 2 Hr
L Rating at Ambient – 7 CFM/sq ft
L Rating at 400 F – less than 1 CFM/sq ft (See Item 3C)
W Rating – Class I (See Item 3)



SECTION A-A

1. FLOOR OR WALL ASSEMBLY – MIN 2–1/2 IN. (64 MM) THICK LIGHTWEIGHT OR NORMAL WEIGHT (100–150 PCF OR 1600–2400 KG/M3) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF CIRCULAR OPENING IS 6–1/2 IN. (165 MM).

   SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. NONMETALLIC PIPE OR CONDUIT – NOM 4 IN. (102 MM) DIAM (OR SMALLER) SCHEDULE 40 SOLID CORE OR CELLULAR CORE, POLYVINYL CHLORIDE (PVC) PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEMS OR RIGID NONMETALLIC CONDUIT++ OR SDR 13.5 CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS. A MAX OF ONE PIPE OR CONDUIT IS PERMITTED IN THE FIRESTOP SYSTEM. EXCEPT AS NOTED IN ITEM B, THE PIPE OR CONDUIT SHALL BE CENTERED IN THE THROUGH OPENING. PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.

   SEE RIGID NONMETALLIC CONDUIT (DZKT) CATEGORY IN THE UL ELECTRICAL CONSTRUCTION MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS.
3. FIRESTOP SYSTEM – THE HOURLY T RATINGS FOR THE FIRESTOP SYSTEM ARE DEPENDENT UPON THE FIRESTOP ORIENTATION (WALL OR FLOOR), THE SIZE OF THE NONMETALLIC PIPE OR CONDUIT, AND THE FLOOR THICKNESS, AS TABULATED BELOW:

ORIENTATION (a)	NOMINAL PIPE DIAMETER In. (mm)	ANNULAR SPACE In. (mm)	F RATING HR	T RATING HR
F(b)	1/2–2 (13–51 mm)	1/4–1 (6–25 mm)	2	0
F(b)	2–1/2, 3 (64, 76 mm)	1/2–1 (13–25 mm)	2	0
W,F	1/2–2 (13–51 mm)	1/4–1 (6–25 mm)	2	2
W,F	2–1/2, 3 (64, 76 mm)	1/2–1 (13–25 mm)	2	2
W,F	3–1/2, 4 (89, 102 mm)	3/4–1 (19–25 mm)	2	2

(a) W = WALL, F = FLOOR
(b) MIN CONCRETE FLOOR THICKNESS IS 2–1/2 IN. (64 MM).
THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:

A. STEEL SUPPORT CLIPS – NOM 1 IN. (25 MM) WIDE BY NOM 0.019 IN. (0.5 MM) THICK (28 GAUGE) GALV STEEL STRIPS FIELD-FORMED INTO "Z"-SHAPE WITH HEIGHT OF Z-SHAPE EQUAL TO THE FLOOR THICKNESS AND WITH WIDTH OF BOTTOM (AS INSTALLED) LEG OF SUFFICIENT LENGTH TO SPAN ANNULAR SPACE. TOP (AS INSTALLED) LEG OF Z-SHAPE TO BE MIN 2 IN. (51 MM) LONG AND MAY OR MAY NOT BE SECURED TO TOP SURFACE OF FLOOR WITH MASONRY ANCHORS. AS AN ALTERNATE TO THE Z-SHAPE CLIPS, THE GALV STEEL STRIPS MAY BE FORMED INTO "L"-SHAPE WITH HEIGHT EQUAL TO 2 IN. (51 MM) AND WITH BOTTOM (AS INSTALLED) LEG OF SUFFICIENT LENGTH TO SPAN ANNULAR SPACE. CLIPS SECURED TO OUTERMOST WRAP STRIP LAYER WITH STEEL WIRE TIE PRIOR TO INSERTION IN THROUGH OPENING. MIN OF THREE STEEL SUPPORT CLIPS TO BE USED, SYMMETRICALLY LOCATED, WITH BOTTOM LEG OF CLIPS FLUSH WITH BOTTOM PLANE OF FLOOR. WHEN ANNULAR SPACE AROUND NOM 1/2 IN. TO 2 IN. (13 MM TO 51 MM) DIAM PIPE IN FLOOR ASSEMBLY IS 1/4 IN. TO 3/8 IN. (6 MM TO 10 MM) , STEEL SUPPORT CLIPS ARE NOT REQUIRED.

B. FILL, VOID OR CAVITY MATERIALS* – WRAP STRIP – NOM 1/4 IN. (6 MM) THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL, SUPPLIED IN 2 IN. (51 MM) WIDE STRIPS. NOM 2 IN. (51 MM) WIDE STRIPS TIGHTLY WRAPPED AROUND NONMETALLIC PIPE (FOIL SIDE EXPOSED) TO FILL ANNULAR SPACE AROUND PIPE. A MIN OF ONE LAYER OF WRAP STRIP IS REQUIRED FOR NOM 1/2 IN. TO 2 IN. (13 MM TO 51 MM) DIAM PIPES. A MIN OF TWO LAYERS OF WRAP STRIP IS REQUIRED FOR NOM 2–1/2 IN. AND 3 IN. (64 MM AND 76 MM) DIAM PIPES. A MIN OF THREE LAYERS OF WRAP STRIP IS REQUIRED FOR NOM 3–1/2 IN. AND 4 IN. (89 MM AND102 MM) DIAM PIPES. EACH LAYER OF WRAP STRIP TO BE INSTALLED WITH BUTTED SEAMS IN SUCCESSIVE LAYERS STAGGERED. WRAP STRIP LAYERS SECURELY BOUND WITH STEEL WIRE OR ALUMINUM FOIL TAPE AND SLID INTO THROUGH OPENING SUCH THAT THE BOTTOM EDGES ARE FLUSH WITH THE BOTTOM PLANE OF THE FLOOR AND ARE RESTING ON THE STEEL SUPPORT CLIP LEGS. WHEN NOM 2 IN. TO 4 IN. (51 MM TO 102 MM) DIAM PVC PIPE IS USED IN MIN 4–1/2 IN. (114 MM) THICK CONCRETE FLOOR, THE PIPE MAY BE INSTALLED ECCENTRICALLY IN THE THROUGH OPENING (MIN ZERO CLEARANCE AT POINT CONTACT LOCATION) PROVIDED THAT (1) THE INSIDE DIAM OF THE THROUGH OPENING IS 1.3 TO 1.5 TIMES LARGER THAN THE OUTSIDE DIAM OF THE PIPE, (2) THE ANNULAR SPACE BETWEEN THE PIPE AND THE SIDES OF THE OPENING AT THE BOTTOM 2 IN. (51 MM) OF THE THROUGH OPENING IS COMPLETELY FILLED WITH WRAP STRIP LAYERS INSTALLED FOLLOWING THE CONTOUR OF THE PIPE AND (3) THE BOTTOM EDGES OF THE WRAP STRIP LAYERS ARE RELIABLY SUPPORTED BY "Z"-SHAPED STEEL SUPPORT CLIPS ANCHORED TO THE TOP SURFACE OF THE CONCRETE FLOOR. IN WALL ASSEMBLIES, THE WRAP STRIP LAYERS ON THE NONMETALLIC PIPE ARE TO BE INSTALLED IN THE SAME MANNER USED FOR FLOOR ASSEMBLIES, BUT SHALL BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF THE WALL WITH THE EXPOSED EDGES OF THE WRAP STRIP LAYERS FLUSH WITH THE WALL SURFACES.

C. FILL, VOID OR CAVITY MATERIALS* – CAULK OR SEALANT – MIN 1/4 IN. (6 MM) DIAM CONTINUOUS BEAD APPLIED TO INSIDE WALLS OF THROUGH OPENING PRIOR TO INSTALLATION OF STEEL SUPPORT CLIPS AND/OR WRAP STRIP. CAULK BEAD TO BE RECESSED 1 IN. (25 MM) FROM THE BOTTOM PLANE OR FLOOR. IN WALL ASSEMBLIES, CAULK BEAD TO BE RECESSED 1 IN. (25 MM) FROM WALL SURFACE ON BOTH SIDES OF WALL. IN FLOOR ASSEMBLIES, A NOM 1/2 IN. (13 MM) THICK COATING OF CAULK IS TO BE APPLIED TO THE TOP EDGES OF THE WRAP STRIP LAYERS AND TO FILL ALL GAPS AT THE WRAP STRIP/ CONCRETE INTERFACE. IN WALL ASSEMBLIES, THE EXPOSED EDGES OF THE WRAP STRIP LAYERS AND ALL GAPS AT THE WRAP STRIP/CONCRETE INTERFACE ON BOTH SIDES OF THE WALL TO BE COATED WITH THIN LAYER OF CAULK.
(NOTE: W RATING APPLIES ONLY WHEN FB-3000 WT SEALANT IS USED. CP 25WB+ NOT SUITABLE FOR USE WITH CPVC PIPES.)
*BEARING THE UL CLASSIFICATION MARKING
++BEARING UL LISTING MARK

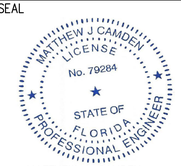
3 / E6.0 **CONCRETE WALL OR FLOOR PENETRATION DETAIL**

NOT TO SCALE

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY MATTHEW J. CAMDEN, P.E. (FL#79284) ON 02-14-2023 USING AN SHA AUTHENTICATION CODE.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA AUTHENTICATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SEAL



MATTHEW J. CAMDEN
FL#79284

ATP ENGINEERING SOUTH
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485
ENGINEERING SOUTH

REV.#	DESCRIPTION	DATE

PUBLIC WORKS WTTP OFFICE
BUILDING GENERATOR
8500 69TH ST E, PALMETTO, FL 34221

DRAWING TITLE: ELECTRICAL SPECS

FILE:	2022.20
JOB NO.:	WA#1
DATE :	04/08/2022
PLOT SIZE:	1:1
DRAWN BY:	HG
CHECKED BY:	MC
SHEET No.:	E6.0

GENERATOR SITE REQUIREMENT SPECIFICATIONS:

A. THIS SECTION PROVIDES THE BASIC REQUIREMENTS FOR THE GENERATOR.

B. PROVIDE ELECTRICAL PANEL FOR ALL ACCESSORIES IN THE GENERATOR AREA AND A TRANSFORMER AS REQUIRED. CONNECT A SMALL SEPARATE BREAKER FOR THE ACCESSORY PANEL.

C. PROVIDE AN LED LIGHT IN THE GENERATOR ENCLOSURE AREA FOR WORK DURING LOW LIGHT HOURS.

D. FACTORY START-UP SHALL BE DONE TO START THE WARRANTY PERIOD OF AT LEAST 3 YEARS- COMPREHENSIVE.

D. PROVIDE ACCESSORY DUPLEX RECEPTACLE INSIDE THE HOUSING FOR WORK TO BE PERFORMED.

E. STAIRS MEETING ADA STANDARDS SHALL BE SUPPLIED AS REQUIRED. IF THE GENERATOR MANUFACTURER DOES NOT SUPPLY STAIRS, THEN THE CONTRACTOR WILL NEED TO SUPPLY STAIRS FOR THE GENERATOR.

1) ADDITIONAL ELECTRICAL CONTRACTOR COMMENTS:

A. ALL FDEP, EPA, AND GOVERNMENTAL STANDARDS SHALL BE MET FOR FUEL TYPE (DIESEL). THE PAPERWORK FOR THE FDEP AND EPA REQUIREMENTS SHALL BE FILLED OUT BY THE INSTALLING CONTRACTOR. THE ON-SITE FUEL STORAGE IS LESS THAN 500 GALLONS FOR THE SPECIFIED UNIT. THERE IS AN UNDERBELLY TANK ON THE NEW GENERATOR.

B. ALL REQUIREMENTS SHALL BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR FOR THE INSTALLATION OF THE GENERATOR. SYSTEM SHALL BE A LEVEL 2 SYSTEM (NON-CRITICAL) AS DEFINED IN NFPA 110.

C. ALL EQUIPMENT SHALL BE INSTALLED ABOVE FLOOD PLANE.

D. HAVE THE MANUFACTURER PROVIDE A SERVICE/MAINTENANCE CONTRACT FOR AT LEAST 5 YEARS. MAINTENANCE AND SERVICE IS THE RESPONSIBILITY OF THE OWNER, EQUIPMENT IS REQUIRED TO BE MAINTAINED.

AUTOMATIC TRANSFER SWITCH SPECIFICATIONS:

1.01 SCOPE

A. FURNISH AND INSTALL AUTOMATIC TRANSFER SWITCHES (ATS) WITH NUMBER OF POLES, AMPERAGE, VOLTAGE, AND WITHSTAND CURRENT RATINGS AS SHOWN ON THE PLANS. EACH AUTOMATIC TRANSFER SHALL CONSIST OF AN INHERENTLY DOUBLE THROW POWER TRANSFER SWITCH UNIT AND A MICROPROCESSOR CONTROLLER, INTERCONNECTED TO PROVIDE COMPLETE AUTOMATIC OPERATION.

B. FURNISH AN ENCLOSURE FOR THE ATS THAT IS FOR SERVICE ENTRY. IT SHALL
PROVIDE ALL OF THE PROPER DISCONNECTING, PROTECTION, GROUNDING AND BONDING REQUIRED FOR SERVICE ENTRANCE EQUIPMENT. BREAKERS ON BOTH THE INCOMING SERVICES AT THE ATS.

1.02 ACCEPTABLE MANUFACTURERS

SERVICE ENTRANCE AUTOMATIC TRANSFER SWITCHES SHALL BE ASCO SERIES 300SE OR EQUIVALENT SERVICE ENTRANCE RATED AUTOMATIC TRANSFER SWITCH. ANY ALTERNATE SHALL BE SUBMITTED TO THE ENGINEER IN WRITING AT LEAST 10 DAYS PRIOR TO BID. EACH ALTERNATE BID MUST LIST ANY DEVIATIONS FROM THIS SPECIFICATION.

1.03 CODES AND STANDARDS

THE AUTOMATIC TRANSFER SWITCHES AND ACCESSORIES SHALL CONFORM TO THE REQUIREMENTS OF:

A. UL 1008 – STANDARD FOR AUTOMATIC TRANSFER SWITCHES
B. NFPA 70 – NATIONAL ELECTRICAL CODE
C. NFPA 110 – EMERGENCY AND STANDBY POWER SYSTEMS
D. IEEE STANDARD 446 – IEEE RECOMMENDED PRACTICE FOR EMERGENCY AND STANDBY POWER SYSTEMS FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS
E. NEMA STANDARD ICS10-1993 (FORMERLY ICS2-447) – AC AUTOMATIC TRANSFER SWITCHES
F. NEC ARTICLES 700, 701, 702
G. INTERNATIONAL STANDARDS ORGANIZATION ISO 9001
H. UL 891 ACCORDING TO THIS UL STANDARD THE EQUIPMENT SHALL BE LABELED:
"SUITABLE FOR USE ONLY AS SERVICE EQUIPMENT."
I. UL 508 INDUSTRIAL CONTROL EQUIPMENT

PART 2 PRODUCTS

2.01 MECHANICALLY HELD TRANSFER SWITCH

A. THE TRANSFER SWITCH UNIT SHALL BE ELECTRICALLY OPERATED AND MECHANICALLY HELD. THE ELECTRICAL OPERATOR SHALL BE A SINGLE-SOLENOID MECHANISM, MOMENTARILY ENERGIZED. MAIN OPERATORS WHICH INCLUDE OVERCURRENT DISCONNECT DEVICES WILL NOT BE ACCEPTED. THE SWITCH SHALL BE MECHANICALLY INTERLOCKED TO ENSURE ONLY ONE OF TWO POSSIBLE POSITIONS, NORMAL OR EMERGENCY.

B. THE SWITCH SHALL BE POSITIVELY LOCKED AND UNAFFECTED BY MOMENTARY OUTAGES SO THAT CONTACT PRESSURE IS MAINTAINED AT A CONSTANT VALUE
AND TEMPERATURE RISE AT THE CONTACTS IS MINIMIZED FOR MAXIMUM RELIABILITY AND OPERATING LIFE.

C. ALL MAIN CONTACTS SHALL BE SILVER COMPOSITION. SWITCHES RATED 600 AMPERES AND ABOVE SHALL HAVE SEGMENTED, BLOW-ON CONSTRUCTION FOR HIGH WITHSTAND CURRENT CAPABILITY AND BE PROTECTED BY SEPARATE ARCING CONTACTS.

D. INSPECTION OF ALL CONTACTS SHALL BE POSSIBLE FROM THE FRONT OF THE SWITCH WITHOUT DISASSEMBLY OF OPERATING LINKAGES AND WITHOUT DISCONNECTION OF POWER CONDUCTORS. A MANUAL OPERATING HANDLE SHALL BE PROVIDED FOR MAINTENANCE PURPOSES. THE HANDLE SHALL PERMIT THE OPERATOR TO MANUALLY STOP THE CONTACTS AT ANY POINT THROUGHOUT THEIR ENTIRE TRAVEL TO INSPECT AND SERVICE THE CONTACTS WHEN REQUIRED.

E. DESIGNS UTILIZING COMPONENTS OF MOLDED-CASE CIRCUIT BREAKERS, CONTACTORS, OR PARTS THEREOF WHICH ARE NOT INTENDED FOR CONTINUOUS
DUTY, REPETITIVE SWITCHING OR TRANSFER BETWEEN TWO ACTIVE POWER SOURCES ARE NOT ACCEPTABLE.

F. WHERE NEUTRAL CONDUCTORS MUST BE SWITCHED, THE ATS SHALL BE PROVIDED WITH FULLY-RATED NEUTRAL TRANSFER CONTACTS. REFER TO GENERATOR MANUFACTURER'S REQUIREMENTS.

G. WHERE NEUTRAL CONDUCTORS ARE TO BE SOLIDLY CONNECTED, A NEUTRAL TERMINAL PLATE WITH FULLY-RATED AL-CU PRESSURE CONNECTORS SHALL BE
PROVIDED.

2.02 MICROPROCESSOR CONTROLLER WITH MEMBRANE INTERFACE PANEL

A. THE CONTROLLER SHALL DIRECT THE OPERATION OF THE TRANSFER SWITCH. THE CONTROLLER'S SENSING AND LOGIC SHALL BE CONTROLLED BY A BUILT-IN MICROPROCESSOR FOR MAXIMUM RELIABILITY, MINIMUM MAINTENANCE, AND INHERENT SERIAL COMMUNICATIONS CAPABILITY. THE CONTROLLER SHALL BE CONNECTED TO THE TRANSFER SWITCH BY AN INTERCONNECTING WIRING HARNESS. THE HARNESS SHALL INCLUDE A KEYED DISCONNECT PLUG TO ENABLE THE CONTROLLER TO BE DISCONNECTED FROM THE TRANSFER SWITCH FOR ROUTINE MAINTENANCE.

B. THE CONTROLLER SHALL BE ENCLOSED WITH A PROTECTIVE COVER AND BE MOUNTED SEPARATE FROM THE TRANSFER SWITCH UNIT FOR SAFETY AND EASE
OF MAINTENANCE. SENSING AND CONTROL LOGIC SHALL BE PROVIDED ON PRINTED CIRCUIT BOARDS. INTERFACING RELAYS SHALL BE INDUSTRIAL GRADE
PLUG-IN TYPE WITH DUST COVERS.

C. THE CONTROLLER SHALL MEET OR EXCEED THE REQUIREMENTS FOR ELECTROMAGNETIC COMPATIBILITY (EMC) AS FOLLOWS:

1. ANSI C37.90A/IEEE 472 VOLTAGE SURGE TEST
2. NEMA ICS – 109.21 IMPULSE WITHSTAND TEST
3. IEC801-2 ELECTROSTATIC DISCHARGE (ESD) IMMUNITY
4. ENV50140 AND IEC 801 – 3 RADIATED ELECTROMAGNETIC FIELD IMMUNITY
5. IEC 801 – 4 ELECTRICAL FAST TRANSIENT (EFT) IMMUNITY
6. ENV50142 SURGE TRANSIENT IMMUNITY
7. ENV50141: CONDUCTED RADIO-FREQUENCY FIELD IMMUNITY
8. EN55011: GROUP 1, CLASS A CONDUCTED AND RADIATED EMISSIONS
9. EN61000 -4 – 11 VOLTAGE DIPS AND INTERRUPTIONS IMMUNITY

2.03 ENCLOSURE

A. THE ATS SHALL BE FURNISHED IN A NEMA TYPE 3R ENCLOSURE UNLESS OTHERWISE SHOWN ON THE PLANS.
B. PROVIDE STRIP HEATER WITH THERMOSTAT FOR TYPE 3R ENCLOSURE REQUIREMENTS.
C. CONTROLLER SHALL BE FLUSH-MOUNTED DISPLAY WITH LED INDICATORS FOR SWITCH POSITION AND SOURCE AVAILABILITY. IT SHALL ALSO INCLUDE TEST AND TIME DELAY BYPASS SWITCHES.
D. THE COMPLETE ASSEMBLY SHALL BE DEGREASED, AND THOROUGHLY CLEANED THROUGH A FIVE-STAGE ASSOCIATED PROCESS. THE FINISH SHALL BE ANSI-61, LIGHT GRAY, ELECTROSTATICALLY-CHARGED POLYESTER POWDER PAINT OVER A PHOSPHATE COATING, AT A MINIMUM OF 2.0 MILS IN DENSITY. FINISH SHALL BE SUITABLE FOR INDOOR AND OUTDOOR ENVIRONMENTS.
E. FOR THOSE AUTOMATIC TRANSFER SWITCHES THAT ARE LESS THAN 1000 AMPERES, THE CONNECTION BETWEEN THE NORMAL DISCONNECTING DEVICE AND THE ATS SHALL BE MADE WITH THE APPROPRIATE SIZE CABLE. FOR THOSE AUTOMATIC TRANSFER SWITCHES THAT ARE GREATER THAN 1000 AMPERES, THE CONNECTION BETWEEN THE NORMAL DISCONNECTING DEVICE AND THE ATS SHALL BE MADE WITH THE APPROPRIATE SIZE BUS. BUS SHALL BE SILVER PLATED COPPER RATED NO LESS THAN 1000 AMPS PER SQUARE INCH.
F. A PRESSURE DISCONNECT LINK SHALL BE PROVIDED TO DISCONNECT THE NORMAL SOURCE NEUTRAL CONNECTION FROM THE EMERGENCY AND LOAD NEUTRAL CONNECTIONS FOR 4-WIRE APPLICATIONS. A GROUND BUS SHALL BE PROVIDED FOR CONNECTION OF THE GROUNDING CONDUCTOR TO THE GROUNDING ELECTRODE. A PRESSURE DISCONNECT LINK FOR THE NEUTRAL TO GROUND BONDING JUMPER SHALL BE PROVIDED TO CONNECT THE NORMAL NEUTRAL CONNECTION TO THE GROUND BUS.
G. CONTROL WIRING SHALL BE RATED FOR 600 VOLT, UL 1015. WIRES SHALL BE PLACED IN WIRE DUCT OR HARNESSED, AND SHALL BE SUPPORTED TO PREVENT SAGGING OR BREAKAGE FROM WEIGHT OR VIBRATION. ALL WIRING TO HINGED DOORS SHALL BE RUN THROUGH DOOR TERMINAL BLOCKS OR CONNECTION PLUGS.

2.04 DISCONNECTING AND OVERCURRENT PROTECTION DEVICE

A. FOR THOSE AUTOMATIC TRANSFER SWITCHES LESS THAN 1000 AMPERES, THE NORMAL CONNECTION SHALL BE PROVIDED WITH A INSULATED CASE BREAKER WITH TRIP PROTECTION WITH CURRENT RATINGS AS SHOWN ON THE PLANS.

PART 3 OPERATION

3.01 VOLTAGE AND FREQUENCY SENSING

A. THE VOLTAGE OF EACH PHASE OF THE NORMAL SOURCE SHALL BE MONITORED, WITH PICKUP ADJUSTABLE TO 95% OF NOMINAL AND DROPOUT ADJUSTABLE FROM 70% TO 90% OF PICKUP SETTING.

B. SINGLE-PHASE VOLTAGE AND FREQUENCY SENSING OF THE EMERGENCY SOURCE SHALL BE PROVIDED.

3.02 TIME DELAYS

A. AN ADJUSTABLE TIME DELAY SHALL BE PROVIDED TO OVERRIDE MOMENTARY NORMAL SOURCE OUTAGES AND DELAY ALL TRANSFER AND ENGINE STARTING SIGNALS.

B. AN ADJUSTABLE TIME DELAY SHALL BE PROVIDED ON TRANSFER TO EMERGENCY, ADJUSTABLE FROM 0 TO 5 MINUTES FOR CONTROLLED TIMING OF TRANSFER OF LOADS TO EMERGENCY.

C. AN ADJUSTABLE TIME DELAY SHALL BE PROVIDED ON RETRANSFER TO NORMAL, ADJUSTABLE TO 30 MINUTES. TIME DELAY SHALL BE AUTOMATICALLY BYPASSED IF EMERGENCY SOURCE FAILS AND NORMAL SOURCE IS ACCEPTABLE.

D. A 5-MINUTE COOLDOWN TIME DELAY SHALL BE PROVIDED ON SHUTDOWN OF ENGINE GENERATOR.

E. ALL ADJUSTABLE TIME DELAYS SHALL BE FIELD ADJUSTABLE WITHOUT THE USE OF TOOLS.

3.03 ADDITIONAL FEATURES

A. A SET OF GOLD-FLASHED CONTACTS RATED 10 AMPS, 32 VDC SHALL BE PROVIDED FOR A LOW-VOLTAGE ENGINE START SIGNAL. THE START SIGNAL SHALL PREVENT DRY CRANKING OF THE ENGINE BY REQUIRING THE GENERATOR SET TO REACH PROPER OUTPUT, AND RUN FOR THE DURATION OF THE COOL DOWN SETTING, REGARDLESS OF WHETHER THE NORMAL SOURCE RESTORES BEFORE THE LOAD IS TRANSFERRED.

B. A PUSH-BUTTON TYPE TEST SWITCH SHALL BE PROVIDED TO SIMULATE A NORMAL SOURCE FAILURE.

C. A PUSH-BUTTON TYPE SWITCH TO BYPASS THE TIME DELAY ON TRANSFER TO EMERGENCY, THE ENGINE EXERCISER PERIOD ON THE RETRANSFER TO NORMAL TIME DELAY WHICHEVER DELAY IS ACTIVE AT THE TIME THE PUSH-BUTTON IS ACTIVATED.

D. AUXILIARY CONTACTS, RATED 10 AMPS, 250 VAC SHALL BE PROVIDED CONSISTING OF ONE CONTACT, CLOSED WHEN THE ATS IS CONNECTED TO THE NORMAL SOURCE AND ONE CONTACT, CLOSED, WHEN THE ATS IS CONNECTED TO THE EMERGENCY SOURCE.

E. INDICATING LIGHTS SHALL BE PROVIDED, ONE TO INDICATE WHEN THE ATS IS CONNECTED TO THE NORMAL SOURCE (GREEN) AND ONE TO INDICATE WHEN THE ATS IS CONNECTED TO THE EMERGENCY SOURCE (RED). ALSO PROVIDE INDICATING LIGHTS FOR BOTH NORMAL AND EMERGENCY SOURCE AVAILABILITY.

F. TERMINALS SHALL BE PROVIDED TO INDICATE ACTUAL AVAILABILITY OF THE NORMAL AND EMERGENCY SOURCES, AS DETERMINED BY THE VOLTAGE SENSING PICKUP AND DROPOUT SETTINGS FOR EACH SOURCE.

G. ENGINE EXERCISER – AN ENGINE GENERATOR EXERCISING TIMER SHALL BE PROVIDED, INCLUDING A SELECTOR SWITCH TO SELECT EXERCISE WITH OR WITHOUT LOAD TRANSFER.

H. INPHASE MONITOR – AN INPHASE MONITOR SHALL BE INHERENTLY BUILT INTO THE CONTROLS. THE MONITOR SHALL CONTROL TRANSFER SO THAT MOTOR LOAD INRUSH CURRENTS DO NOT EXCEED NORMAL STARTING CURRENTS, AND SHALL NOT REQUIRE EXTERNAL CONTROL OF POWER SOURCES. THE INPHASE MONITOR SHALL BE SPECIFICALLY DESIGNED FOR AND BE THE PRODUCT OF THE ATS MANUFACTURER.

I. SELECTIVE LOAD DISCONNECT – A DOUBLE THROW CONTACT SHALL BE PROVIDED TO OPERATE AFTER A TIME DELAY, ADJUSTABLE TO 20 SECONDS PRIOR TO TRANSFER AND RESET 0 TO 20 SECONDS AFTER TRANSFER. THIS CONTACT CAN BE USED TO SELECTIVELY DISCONNECT SPECIFIC LOAD(S) WHEN THE TRANSFER SWITCH IS TRANSFERRED. OUTPUT CONTACTS SHALL BE RATED 6 AMPS AT 24 VDC OR 120 VAC.

OPTIONAL ACCESSORIES (PROVIDE OWNER'S REP WITH THE FOLLOWING OPTIONS)

A. COMMUNICATIONS INTERFACE – SERIAL MODULE (5110) TO ALLOW LOCAL OR REMOTE COMMUNICATIONS WITH ASCO POWERQUEST OR SITEWEB COMMUNICATION PRODUCTS. TO CONNECT SERIES 300 SERVICE ENTRANCE AUTOMATIC TRANSFER SWITCHES, AND ASCO ATS ANNUNCIATORS TO THE SERIAL NETWORK VIA AN RS485 INTERFACE (ACCESSORY 72A).

B. PROGRAMMABLE ENGINE EXERCISER – A SEVEN OR FOURTEEN DAY PROGRAMMABLE ENGINE EXERCISER WITH DIGITAL READOUT DISPLAY. SHALL INCLUDE ONE FORM C CONTACT FOR AVAILABILITY OF NORMAL AND EMERGENCY. INCLUDE "WITH OR WITHOUT" LOAD CONTROL SWITCH FOR EXERCISER PERIOD. THE EXERCISER SHALL BE BACKED UP BY A PERMANENT BATTERY. (ACCESSORY 11BG).

C. ENCLOSURE HEATER – A 125 WATT ENCLOSURE HEATER WITH TRANSFORMER AND THERMOSTAT (ADJUSTABLE FROM 30 TO 140 F) (ACCESSORY 44 G).

D. POWERQUEST (MONITORING SYSTEM)
A PC BASED AUTOMATIC TRANSFER SWITCH (ATS) MONITORING SYSTEM DESIGNED TO COMMUNICATE WITH OTHER ATSS LOCATED IN REMOTE LOCATIONS SHALL BE PROVIDED. SYSTEM SHALL UTILIZE SERIAL COMMUNICATIONS CAPABILITY INHERENT WITH THE ATS MICROPROCESSOR-BASED CONTROL PANEL PRODUCT OFFERING. REFER TO SEPARATE SUGGESTED SPECIFICATION.

PART 4 ADDITIONAL REQUIREMENTS

4.01 WITHSTAND AND CLOSING RATINGS

A. THE ATS SHALL BE RATED TO CLOSE ON AND WITHSTAND THE AVAILABLE RMS SYMMETRICAL SHORT CIRCUIT CURRENT AT THE ATS TERMINALS WITH THE TYPE OF OVERCURRENT PROTECTION SHOWN ON THE PLANS. WCR ATS RATINGS AS BE AS FOLLOWS WHEN USED WITH SPECIFIC CIRCUIT BREAKERS:

ATS SIZE WITHSTAND & CLOSING RATING
(SEE KAIC CALCULATIONS AND RISER DIAGRAM FOR MINIMUM RATINGS)

4.02 TESTS AND CERTIFICATION

A. THE COMPLETE ATS SHALL BE FACTORY TESTED TO ENSURE PROPER OPERATION OF THE INDIVIDUAL COMPONENTS AND CORRECT OVERALL SEQUENCE OF OPERATION AND TO ENSURE THAT THE OPERATING TRANSFER TIME, VOLTAGE, FREQUENCY AND TIME DELAY SETTINGS ARE IN COMPLIANCE WITH THE SPECIFICATION REQUIREMENTS.

B. UPON REQUEST, THE MANUFACTURER SHALL PROVIDE A NOTARIZED LETTER CERTIFYING COMPLIANCE WITH ALL OF THE REQUIREMENTS OF THIS SPECIFICATION INCLUDING COMPLIANCE WITH THE ABOVE CODES AND STANDARDS, AND WITHSTAND AND CLOSING RATINGS. THE CERTIFICATION SHALL IDENTIFY, BY SERIAL NUMBER(S), THE EQUIPMENT INVOLVED. NO EXCEPTIONS TO THE SPECIFICATIONS, OTHER THAN THOSE STIPULATED AT THE TIME OF THE SUBMITTAL, SHALL BE INCLUDED IN THE CERTIFICATION.

C. THE ATS MANUFACTURER SHALL BE CERTIFIED TO ISO 9001 INTERNATIONAL QUALITY STANDARD AND THE MANUFACTURER SHALL HAVE THIRD PARTY CERTIFICATION VERIFYING QUALITY ASSURANCE IN DESIGN/DEVELOPMENT, PRODUCTION, INSTALLATION AND SERVICING IN ACCORDANCE WITH ISO 9001.

4.03 SERVICE REPRESENTATION

A. THE ATS MANUFACTURER SHALL MAINTAIN A NATIONAL SERVICE ORGANIZATION OF COMPANY-EMPLOYED PERSONNEL LOCATED THROUGHOUT THE CONTIGUOUS UNITED STATES. THE SERVICE CENTER'S PERSONNEL MUST BE FACTORY TRAINED AND MUST BE ON CALL 24 HOURS A DAY, 365 DAYS A YEAR.

B. EMERGENCY RESPONSE TIME TO THE SITE MUST BE WITHIN 24 HOURS.

C. THE MANUFACTURER SHALL MAINTAIN RECORDS OF EACH SWITCH, BY SERIAL NUMBER, FOR A MINIMUM OF 20 YEARS.

D. FOR EASE OF MAINTENANCE AND PARTS REPLACEMENT, THE SWITCH NAMEPLATE SHALL INCLUDE DRAWING NUMBERS, PART NUMBERS FOR MAIN COIL AND CONTROL.

LEAK DETECTION AND MONITORING SYSTEM SPECS:

THE ELECTRICAL CONTRACTOR SHALL PROVIDE POWER, CONDUITS, AND COMMUNICATIONS SYSTEMS FOR THE LEAK DETECTION MONITORING SYSTEMS.

ALL TANKS SHALL HAVE A LEAK DETECTION SYSTEM INSTALLED FOR ELECTRONIC DETECTION. A HORN/STROBE NOTIFICATION DEVICE, PUMP AND GENERATOR SHUTDOWN CONTROLS, AND A MONITORING SYSTEM SHALL BE PROVIDED AND INSTALLED WITH ALL OF THE PIPING AND EACH OF THE TANKS. THE LEAK DETECTION SYSTEM SHALL BE ABLE TO BE MONITORED VIA THE ETHERNET OR NETWORK SYSTEMS PER THE COUNTY. AN EMERGENCY DIALER SYSTEM SHALL BE INSTALLED WITH AN AUTODIALER TO CALL THE CITY PERSONNEL IF THERE IS A LEAK OR EMERGENCY SITUATION. THE REMOTE ANNUNCIATOR SHALL BE LABELLED AS: "DIESEL FUEL LEAK DETECTOR (WITH TANK IDENTIFIER)", AND INSTALLED IN AN OWNER SPECIFIED LOCATION. ALL OF THE TANKS AND PIPING SHALL BE ON A SINGLE CONTINUOUS LEAK ALARM SYSTEM TO COORDINATE ALL COMPONENTS ON THE SINGLE SYSTEM. THE SYSTEM SHALL MEET ALL UL LISTING REQUIREMENTS AND GOVERNMENTAL APPROVALS. EXAMPLES OF LEAK DETECTION SYSTEM IS: TRACETEK BY TYCO THERMAL(JOHNSON CONTROLS) OR A TLS SYSTEM BY VEEDER ROOT WITH THE APPROPRIATE CABLES AND EQUIPMENT. ALL EQUIPMENT SHALL BE PROVIDED AND INSTALLED TO MAKE A COMPLETE LEAK DETECTION SYSTEM. THE LEAK DETECTION SYSTEM SHALL HAVE A EMERGENCY SHUT OFF SWITCH CONNECTED TO THE SUPPLY AND RETURN PUMPS FOR THE GENERATOR SYSTEM AS AN EMERGENCY SHUT OFF AND PROVIDE A WARNING LIGHT ON THE LABELED REMOTE ANNUNCIATOR.

PROVIDE AND INSTALL A MECHANICAL TANK FUEL LEVEL GAGE ON ALL TANKS TO MONITOR FUEL TANK LEVEL FROM EMPTY TO FULL AND LOCATE ON TOP OF THE TANK NEAR THE FUEL FILL.

GENERATOR SPECIFICATIONS:

1. PROVIDE A COMPLETE, OPERATING (SYNCHRONOUS) GENERATOR SYSTEM THAT MEETS OR EXCEEDS EPA EMISSIONS REGULATIONS IN FLORIDA. FUEL TYPE IS DIESEL. SIZE OF SYSTEM INDICATES A TIER 3 UNIT.

2. MINIMUM STANDBY POWER RATING OF 49KW/61KVA AT 60HZ, 240 VOLTS THREE PHASE-FOUR WIRE SYSTEM- POWER FACTOR OF 0.8. EXAMPLE SYSTEM 50REOZK FROM KOHLER.

COUNTY ACCEPTABLE GENERATOR MANUFACTURERS:
CATERPILLAR, KOHLER, ONAN, AND CUMMINS

STANDARD EQUIPMENT:

3. ALL INPUT CONNECTIONS MUST BE EASILY ACCESSIBLE FOR MAINTENANCE AND INSTALLATION.(ONE LOCALIZED AREA FOR THE CONNECTIONS IF POSSIBLE)

4. HIGH COOLANT TEMPERATURE SHUTDOWN.

5. LOW OIL PRESSURE SHUTDOWN.

6. LOW COOLANT SHUTDOWN.

7. LOW FUEL PRESSURE WARNING OR SHUTDOWN.

8. OVER SPEED AUTOMATIC SHUTDOWN.

9. ADJUSTABLE CRANKING TIMER.

10. ADJUSTABLE EXERCISE TIMER.

11. OIL DRAIN EXTENSION TO FRAME RAIL.

12. COOL FLOW RADIATOR. RADIATOR DRAIN EXTENSION.

13. CLOSED COOLANT RECOVERY SYSTEM.

14. UV/O-ZONE RESISTANT HOSES

15. WATERTIGHT ELECTRICAL CONNECTORS.

16. MAINLINE CIRCUIT BREAKER (200 AMPS FOR 3-PHASE 240V 60HZ SYSTEM WITH AN EXTRA SET OF LUGS OR SEPARATE CONNECTION FOR LOAD TESTING) ON THE GENERATOR SYSTEM.

17. BATTERY CHARGE ALTERNATOR, STATIC BATTERY CHARGER, BATTERY, BATTERY CABLES, BATTERY RACK.

18. FAN AND BELT GUARDS.

19. ISOCHRONOUS, ELECTRONIC GOVERNOR. STEADY STATE REGULATION OF +/- 0.25%.

20. COOLANT HEATER OR BLOCK HEATER (IF REQUIRED FOR OPERATION AT SITE ENVIRONMENTAL CONDITIONS).

UNDERBELLY TANK SPECS:

UNDER BELLY TANK SHALL BE PROVIDED AS PER MANUFACTURER OF GENERATOR AND MUST BE DOUBLE WALL CONTAINED. TANK SHALL MEET ALL FLORIDA REQUIREMENTS FOR SPILL AND CONTAINMENT: FDEP FILE# EQ-345 AND EQ-257 APPROVED. TANK SIZE SHALL MATCH MANUFACTURER'S REQUIREMENTS FOR 72 HOUR RUN TIME AT 100% CAPACITY.

FEATURES:

21. FULLY PROTOTYPE TESTED

22. UL2200 LISTED, MEETS NFPA 110, LEVEL 1 CAPABILITY

23. SOLID STATE FREQUENCY COMPENSATED DIGITAL VOLTAGE REGULATOR.

24. DYNAMIC AND STATIC BATTERY CHARGER.

25. SOUND ATTENUATED ACOUSTICALLY DESIGNED WEATHER ENCLOSURE WITH EXHAUST SILENCER. SELF VENTILATED AND DRIP PROOF CONSTRUCTION. CONSTRUCTION OF ENCLOSURE SHALL BE STAINLESS STEEL OR EQUIVALENT WITH POWDER COAT OF PAINT FOR CORROSION RESISTANCE.

26. QUIET TEST FOR LOW NOISE LEVEL EXERCISE.

27. ACOUSTICALLY DESIGNED LOW NOISE AND HIGH WIND RATED MIAMI DADE ENCLOSURE.

28. HIGH FLOW LOW NOISE FACTORY ENGINEERED EXHAUST SYSTEM WITH WATER DEFLECTION.

29. DIGITAL CONTROL SYSTEM WITH MICROPROCESSOR CONTROL PANEL. CONTROLS SYSTEM SHOULD BE ABLE TO NOTIFY OWNER WITH REMOTE ANNUNCIATOR. REMOTE ANNUNCIATOR AND EMERGENCY STOP OPTIONS SHOULD BE INCLUDED IN THE BID PACKAGE.

30. BUILT-IN VOLTAGE, AMPERAGE, kW, kVAR, AND POWER FACTOR METERS.

31. RODENT PROOF CONSTRUCTION. LOCKS AND KEYS TO THE SYSTEM SHALL BE PROVIDED.

32. HIGH EFFICIENCY, LOW DISTORTION ALTERNATOR.

33. VIBRATION ISOLATED FROM MOUNTING BASE. STRUCTURAL STEEL SUPPORT BOLT-ABLE TO THE ISOLATION SUPPORT AND THE CONCRETE SUPPORT PAD.

34. TRANSFER SWITCHES WORK WITH THE GENERATOR AS A COMPLETE SYSTEM.

35. ALL COMPONENTS ARE EASILY ACCESSIBLE FOR MAINTENANCE. GAS FUEL SYSTEM INCLUDES: FUEL MIXER, MANUAL PLUG SHUT-OFF VALVES, ELECTRONIC SECONDARY GAS REGULATOR, GAS SOLENOID VALVES, AND FLEXIBLE FUEL LINE BETWEEN THE ENGINE AND THE SKID MOUNTED FUEL SYSTEM COMPONENTS.

36. INSULATION FOR SYSTEMS (ROTOR,STATOR) IS CLASS H RATED AT 150 DEGREES C RISE OR BETTER.

37. ALTERNATOR PROTECTION FROM L-N AND L-L SHORT CIRCUITS. A GROUND TO THE MAIN GROUNDING SYSTEM SHALL BE RUN FROM THE GENERATOR.

38. EMERGENCY STOP SWITCH AND A REMOTE EMERGENCY STOP SWITCH(NEMA 3R) FOR THE EXTERIOR OF THE BUILDING.

39. PROGRAMMABLE AUTO CRANK FUNCTION. ATS INTERFACE SHALL HAVE AT LEAST 4 SETS OF CONTACTS FOR CONTROLLED START/STOP FUNCTION.

40. TOTAL HARMONIC DISTORTION (%THD) < 3.5% FOR GENERATOR SYSTEM.

41. TELEPHONE INTERFACE FACTOR (TIF) < 50

42. MUST BE FUNCTIONAL IN SOUTH FLORIDA ENVIRONMENTAL CONDITIONS: TEMPERATURES DOWN TO FREEZING, TEMPERATURES UP TO 104 DEGREES F, EXTREME RAIN AND CORROSIVE ENVIRONMENTS, FLORIDA BUILDING CODE REQUIREMENTS FOR WIND LOADING- 140 MPH.

43. VOLTAGE REGULATION: FULL DIGITAL TYPE PREFERRED, 3-PHASE SENSING, REGULATION OF +/- 0.25% VOLTAGE AND GAIN SHOULD BE ADJUSTABLE THROUGH CONTROL PANEL.

44. GENERATOR RATING AND PERFORMANCE IN ACCORDANCE WITH ISO8525-5, BS5514, SAE J1349, ISO3046, AND DIN6271 STANDARDS.

45. FACTORY INSTRUCTIONS FOR THE INSTALLATION OF THE GENERATOR SHALL BE FOLLOWED. THE SYSTEM VOLTAGE AND CURRENTS SHOULD BE VERIFIED AFTER INSTALLATION. FACTORY OR FACTORY AUTHORIZED SERVICE REPRESENTATIVE SHALL PERFORM A 4 HOUR LOAD BANK TEST ON THE SYSTEM AFTER INSTALLATION. THE GENERATOR SYSTEM MUST MEET THE SPECIFICATIONS SET BY THE MANUFACTURER.

46. ALL FLUIDS AND BATTERY COMPONENTS SHALL BE PROVIDED BY THE INSTALLER/AUTHORIZED SERVICE REPRESENTATIVE. INCLUDING COOLANT, DEF, AND DIESEL FUEL TANK SHALL BE FILLED AS REQUIRED BY MANUFACTURER TO FOR TESTING.

47. THE FACTORY AND INSTALLER SHOULD PROVIDE AT LEAST A 3 YEAR WARRANTY ON ALL EQUIPMENT, COMPONENTS, AND LABOR AFTER INSTALLATION AND A WORKING VERIFICATION(1 HOUR LOAD TEST). A PRICE FOR AN OPTIONAL EXTENDED WARRANTY(5-10 YEARS OR MORE) AND OPTIONAL SERVICE CONTRACT FROM THE FACTORY AUTHORIZED SERVICE PROVIDER SHALL BE GIVEN TO MANATEE COUNTY GOVERNMENT- SERVICE SHALL BE PROVIDED THROUGH THE WARRANTY PERIOD TO MAINTAIN WARRANTY REQUIREMENTS.

48. THE GENERATOR SHALL BE PLACED TO LIMIT THE EXPOSURE OF FOLIAGE AND FLAMMABLE MATERIALS AWAY FROM THE EXHAUST. THE EXHAUST CAN REACH UPWARDS OF 600 DEGREES F AND CAN KILL TREES, FOLIAGE, AND CAUSE FIRES.

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY MATTHEW J. CAMDEN, P.E. (FL#79284) ON 02-14-2023 USING AN SHA AUTHENTICATION CODE.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA AUTHENITCATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SEAL

MATTHEW J CAMDEN LICENSE No. 79284 STATE OF FLORIDA PROFESSIONAL ENGINEER

MATTHEW J. CAMDEN
FL#79284

REV	DESCRIPTION	DATE

ATP ENGINEERING SOUTH
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

ATP ENGINEERING SOUTH

PUBLIC WORKS WTTP OFFICE
BUILDING GENERATOR
8500 69TH ST E, PALMETTO, FL 34221

DRAWING TITLE: ELECTRICAL SPECS

FILE:	2022.20
JOB NO.:	WA#1
DATE :	04/08/2022
PLOT SIZE:	1:1
DRAWN BY:	HG
CHECKED BY:	MC
SHEET No.:	E6.1

STRUCTURAL PAD DETAILS:

PAD DESIGN GENERAL NOTES:
1. GENERAL

.1 THE STRUCTURAL PAD THAT IS DESCRIBE IN THESE DRAWINGS BEEN DESIGNED TO COMPLY WITH THE STRUCTURAL REQUIREMENTS OF THE 2020 FLORIDA BUILDING CODE (7TH EDITION).

.2 DESIGN LOADS:
THE FOUNDATION HAS BEEN DESIGNED TO SUPPORT A GENERATOR, ENCLOSURE, AND BELLY TANK WITH THE COMBINED WEIGHT OF ~10,000 LBS.

GENERATOR ENCLOSURE SHALL BE MIAMI-DADE RATED WITH ANCHOR BOLTS.

WIND LOAD CRITERIA: PER ASCE 7-10
BUILDING RISK CATEGORY (4) V= 156MPH (ULTIMATE 3 SEC GUST)
N/A - STRUCTURAL PAD (HT = 7" ABOVE GRADE)
OPEN STRUCTURE PAD (GCPI = N/A)

.3 ALL DIMENSIONS SHALL BE COORDINATED WITH THE GENERATOR MANUFACTURER AND SITE LOCATIONS. REPORT ANY DESCREPANCIES TO THIS ENGINEER PRIOR TO MOVING FORWARD.COORDINATE ANCHOR BOLT SIZES AND LOCATIONS FOR GENERATOR AND GENERATOR ENCLOSURE WITH FINAL SHOP DRAWINGS FROM THE GENERATOR MANUFACTURER.
.4 COORDINATE ELECTRICAL CONDUITS AND PLUMBING LINES THROUGH THE PAD PRIOR TO POURING THE CONCRETE.
.5 DO NOT SCALE THE DRAWINGS.
.6 NO PROVISION HAS BEEN MADE IN THE STRUCTURAL DESIGN FOR TEMPORARY CONDITIONS OCCURRING DURING CONSTRUCTION, UNLESS SPECIFICALLY NOTED ON THE DRAWINGS.
THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SHORING AND BRACING REQUIRED TO RESIST STRESSES OR INSTABILITY OCCURRING FROM ANY CAUSE DURING CONSTRUCTION. THE CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR SUCH MEASURES.

2. FOUNDATIONS:
.1 THE FOUNDATION DESIGN IS BASED ON AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 2000 POUNDS PER SQUARE FOOT. VERIFICATION OF ACTUAL SOIL CONDITIONS ON SITE HAS NOT BEEN CARRIED OUT AT THE TIME OF DESIGN. THE OWNER SHALL RETAIN A GEOTECHNICAL ENGINEER TO PERFORM ON-SITE REVIEW OF EXISTING SOIL CONDITIONS, PRIOR TO POURING FOUNDATIONS, TO CONFIRM THE DESIGN ASSUMPTIONS.
.2 SOIL OF THIS VALUE IS ASSUMED TO BE FOUND AT THE ELEVATIONS SHOWN. REPORT ANY VARIATIONS TO THE ENGINEER OF RECORD BEFORE PROCEEDING .
.3 KEEP FOOTING EXCAVATIONS CONTINUALLY DRY BEFORE POURING FOOTINGS. EXCAVATE MATERIAL SOFTENED BY WATER AND THICKEN FOOTING TO SUIT.
.4 BACK-FILL SLAB-ON-GRADE, FOOTING EXCAVATIONS AND TRENCHES WITH APPROVED GRANULAR MATERIAL, PLACED IN 8"(MAX) LIFTS, COMPACTED TO 98% STANDARD PROCTOR DRY DENSITY.
.5 PROVIDE 6 MIL POLYETHYLENE VAPOR BARRIER UNDER NEW FOOTING/ SLAB WITH 6' TAPED LAPS .
.6 GENERATOR SLAB SHALL BE 12" THICK, REINFORCED WITH 1 LAYER OF 6,6 / 10-10 WELDED WIRE MESH CHAIRED IN CENTER OF SLAB. PROVIDE SAWCUT CONTROL JOINTS AS SHOWN ON PLAN, WITHIN 18 HOURS OF CONCRETE POUR. PITCH 2' AROUND THE PAD AT ¼" PER FOOT FOR WATER SHED.
3. CONCRETE:
.1 CONCRETE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE AND SHALL CONFORM WITH ACI 301, ACI 318 AND ASTM C-94, AND 2020 FBC .
.2 FORM WORK, SHORING AND RESHORING: THE STRUCTURAL ADEQUACY OF THE DESIGN AND CONSTRUCTION OF ALL FORMWORK, SHORING AND RE-SHORING IS THE RESPONSIBILITY OF THE CONTRACTOR. THE DESIGN OF ALL FORMWORK, SHORING AND RE-SHORING FOR ALL ELEVATED FRAMED CONCRETE SHALL BE CARRIED OUT BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER, RETAINED BY THE CONTRACTOR. REVIEW BY THE ENGINEER OF RECORD OF ANY DRAWINGS OR CONSTRUCTION OF FORMWORK, SHORING OR RE-SHORING IS FOR GENERAL LAYOUT AND EFFECTS ON THE COMPLETED BUILDING STRUCTURE ONLY.
REMOVAL OF FORMWORK: DO NOT REMOVE FORM WORK FOR CONCRETE SUPPORTING ITS OWN WEIGHT AT ANY TIME PRIOR TO CONCRETE REACHING A PROVEN COMPRESSIVE STRENGTH OF 75% OF THE SPECIFIED 28 DAY STRENGTH. RESHORING INSTALLATION TO PROCEED IMMEDIATELY FOLLOWING THE REMOVAL OF SHORING. RESHORING SHALL REMAIN IN PLACE UNTIL CONCRETE REACHES PROVEN 100% DESIGN COMPRESSIVE STRENGTH .
.3 MINIMUM 28-DAY COMPRESSIVE STRENGTH (F'C) FOR ALL STRUCTURAL CONCRETE = 3000 PSI.
.4 SUBMIT CONCRETE MIX DESIGNS FOR REVIEW AND APPROVAL BY THE ENGINEER OF RECORD PRIOR TO ANY PLACEMENT OF STRUCTURAL CONCRETE.
.5 REINFORCING STEEL: DEFORMED BARS, CONFORMING TO ASTM A615, WITH A MINIMUM YIELD STRENGTH OF 60 KSI.
.6 WELDED WIRE FABRIC: 'WELDED STEEL 'MRE FABRIC' CONFORMING TO ASTM A185 .
.7 MINIMUM LAP SPLICE LENGTH FOR CONTINUOUS REINFORCEMENT: 36, BAR DIAMETER. DO NOT SPLICE TIEBEAM REINFORCEMENT OVER OPENINGS. DO NOT SPLICE FOOTING REINFORCEMENT UNDER OPENINGS .
.8 MINIMUM CONCRETE COVER TO REINFORCING STEEL:
CAST AGAINST EARTH: 3'
FORMED SURFACES:
EXPOSED TO EARTH OR WEATHER: 2"
SLABS 1-1/2"
.9 FOR READYMIX CONCRETE THE MAXIMUM TIME PERMITTED BETWEEN BATCHING AND DEPOSITING IN THE FORMWORK IS 90 MINUTES. CONCRETE NOT PLACED WITHIN THIS TIME LIMIT SHALL BE REJECTED .
.10 THE ADDITION OF MIX WATER AT THE SITE TO INCREASE THE CONCRETE SLUMP SHALL NOT BE ALLOWED AND SHALL BE CAUSE FOR REJECTION OF THAT BATCH OF CONCRETE.
.11 PROVIDE 48 HOURS PRIOR TO NOTICE TO ENGINEER FOR REVIEW PRIOR TO ANY POUR OF STRUCTURAL CONCRETE.
.12 ARRANGE FOR CONCRETE TESTING BY AN INDEPENDENT TESTING LAB IN ACCORDANCE WITH ACI REQUIREMENTS.

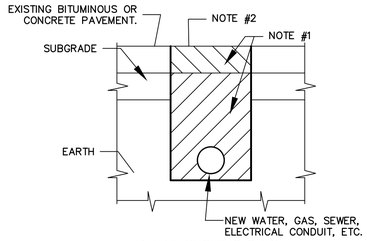
STUB-INS FOR ELECTRICAL:
COORDINATE REQUIRED STUB-INS WITH SELECTED GENERATOR MANUFACTURER. OBTAIN DRAWINGS FOR DIESEL FUEL GENERATOR SYSTEM AND STUB IN AT LOCATIONS SPECIFIED BY MANUFACTURER. PROVIDE AND INSTALL CONDUITS UNDERNEATH THE FOOTERS AND THROUGH THE SLAB AND THROUGH THE BELLY TANK. CUT OUTS SHALL BE ALLOWED AS LONG AS THEY ARE SHORED AND RE-INFORCED.

FENCING AROUND GENERATOR:
PROVIDE A 6' TALL FENCE AROUND THE GENERATOR SYSTEM WITH TWO 6' WIDE DOUBLE DOOR OPENINGS FOR SERVICE AND FUELING SEE SHEET E3.0. THE FENCING SHALL BE A 10 GAUGE GALVANIZED FENCING WITH VINYL COATING. COLOR OF COATING SHALL BE SPECIFIED BY OWNER'S REPRESENTATIVE., PROVIDE AND INSTALL GALVANIZED- VINYL COATED FENCE RAILS. POLES/POSTS 2-3/8" GALVANIZED- VINYL COATED UNITS - 8' TALL TO INSTALL 2' IN THE GROUND WITH CONCRETE - 3000PSI AT 28 DAYS. GATES TO BE VINYL COATED AND SAME GAUGE AS FENCE. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

GENERAL NOTES:

(APPLY TO ALL ELECTRICAL GENERATOR SHEETS)

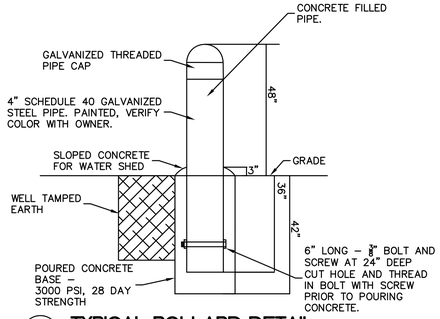
1. PROVIDE COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM.
2. ALL WORK SHALL CONFORM TO OR EXCEED THE MINIMUM REQUIREMENTS OF THE CURRENT ANSI/NFPA 70 WITH STATE OF FLORIDA AMENDMENTS, ANSI/IEEE C2 AND ALL FEDERAL, STATE, LOCAL, AND MUNICIPAL CODES AND ORDINANCES. THE ELECTRICAL SUBCONTRACTOR SHALL COMPLY WITH THE DIRECTIONS OF ALL AUTHORITIES HAVING JURISDICTION.
3. INSTALL WORK USING PROCEDURES DEFINED IN NECA STANDARDS OF INSTALLATION. ALL WORK SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED.
4. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL FLOOR, WALL, AND CEILING PENETRATIONS TO COMPLETE HIS WORK. PROVIDE PROPER FIRE SAFEING FOR ALL PENETRATIONS MADE.
5. COORDINATE ALL ELECTRICAL WORK WITH ALL OTHER TRADES TO ENSURE EFFECTIVE AND EFFICIENT OVERALL INSTALLATION.
6. COORDINATE ALL ELECTRICAL SYSTEM DOWNTIME WITH THE OWNER, PERFORMANCE SERVICES, AND OTHER TRADES. DOWNTIME OF THE SYSTEM SHALL BE MINIMIZED. WEEKEND AND AFTER HOUR WORK SHALL BE REQUIRED TO PREVENT OR MINIMIZE INTERFERENCE WITH THE OWNER'S OPERATION.
7. THE LOCATIONS OF ALL ELECTRICAL EQUIPMENT, RECEPTACLES, PHONE/DATA JACKS, AND ROOM EQUIPMENT SHOWN ON THESE DRAWINGS ARE APPROXIMATE. FINAL LOCATIONS WILL BE DETERMINED DURING THE CONSTRUCTION PHASE- COORDINATE WITH OWNER'S REPRESENTATIVE AND FIELD VERIFY LOCATIONS.
8. PHYSICAL SIZES AND LOCATIONS OF ALL MECHANICAL EQUIPMENT SHOWN ON THESE DRAWINGS ARE APPROXIMATE. COORDINATE ELECTRICAL WORK FOR THIS EQUIPMENT WITH THE OTHER TRADES.
9. PROVIDE ALL COORDINATION AND CONTROLS WIRING AND CONDUITS FOR THE ATS. BUILDING IS TO BE FED BY GENERATOR SYSTEM. MAKE SURE GENERATOR SYSTEM IS PROPERLY GROUNDED AND BONDED PER 2017 NEC 250 AND 445. GENERATOR SHALL HAVE A REMOTE ANNUNCIATOR AND EMERGENCY STOP PROVIDED WITH THE SYSTEM.
10. PROVIDE APPROPRIATE SEALANT (I.E. FIRESAFEING) TO MAINTAIN CONSTRUCTION INTEGRITY FOR ANY PENETRATIONS THROUGH FLOORS, STRUCTURAL CEILINGS, AND FIRE WALLS.
11. ALL BRANCH CIRCUITS SHALL UTILIZE SEPARATE INDEPENDENT NEUTRAL CONDUCTOR, AND INSULATED GROUNDING CONDUCTOR. DO NOT COMBINE NEUTRAL CONDUCTORS.
12. ALL FEEDER NEUTRAL/GROUNDED CONDUCTORS SHALL BE CONSIDERED CURRENT CARRYING. DERATE MULTIPLE CONDUCTORS IN A RACEWAY ACCORDINGLY WITH NEC TABLES.
13. INSTALL ALL CONDUITS, RACEWAYS, AND CABLE TRAY FOR MAXIMUM HEAD CLEARANCE IN MECHANICAL AREAS, AND ATTIC. COORDINATE CLEARANCES WITH PERFORMANCE SERVICES AND THE OWNER.
14. PROVIDE SEPARATIONS OF CONTROLS(LOW VOLTAGE) AND POWER (120V+) SYSTEMS. CONTROLS SHALL BE IN SEPARATE CONDUITS AND SEPARATED PULL BOXES FROM POWER COMPONENTS PER NEC REQUIREMENTS.
15. ALL ELECTRICAL SERVICE WORK SHALL COMPLY WITH THE LOCAL UTILITY. COORDINATE ALL REQUIREMENTS AND MAXIMUM AVAILABLE FAULT CURRENT PRIOR TO BID AND INCLUDE ALL NECESSARY MATERIAL AND LABOR REQUIRED FOR THE ADDITION TO THE ELECTRICAL SERVICE. PROVIDE PRICING FOR ANY UTILITY FEES.
16. TEST GROUNDING SYSTEM AFTER COMPLETION OF JOB TO INSURE PROPER GROUND CONDUCTIVITY.
17. RECORD DRAWINGS: PROVIDE ALL REQUIRED DRAWINGS PER FBC: ONE-LINE RISER, ALL BRANCH CIRCUITS SHALL BE IDENTIFIED AND STATED CONDUIT AND WIRE SIZE, LABELLING OF ALL CIRCUIT BREAKERS, VOLTAGE DROP (IF REQUIRED), ALL PANEL SCHEDULES, ALL DISCONNECTS WITH AMPERAGE SIZES AND FUSES(IF PRESENT), ALL BREAKERS ON THE PANEL BOARDS, AND ALL FLOOR PLANS AND SITE PLANS. PROVIDE PHASE ROTATION AND AMPERE READINGS ON THE ATS. PROVIDE ALL RECORD DRAWINGS TO THE OWNER'S REPRESENTATIVE WITHIN 90 DAYS OF OBTAINING THE CERTIFICATE OF OCCUPANCY.



DETAIL SHOWING CUTS

NOTES:
1. THE CONTRACTOR INSTALLING THE NEW UTILITY SERVICE SHALL MAKE THE CUT, EXCAVATE, INSTALL NEW SERVICE, INSTALL AN APPROVED BANK RUN GRAVEL BACKFILL TO TOP OF SUBGRADE, AND HAUL AWAY EXCESS MATERIALS. ALL ENGINEERED MATERIALS SHALL BE COMPACTED TO 95% COMPACTION MIN.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL THE FINAL PAVING AT ALL LOCATIONS NOTED ON THE SITE PLANS. FINAL PAVING FOR CUTS MADE IN LOCATIONS NOT NOTED ON THE SITE PLANS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR MAKING THE CUT.

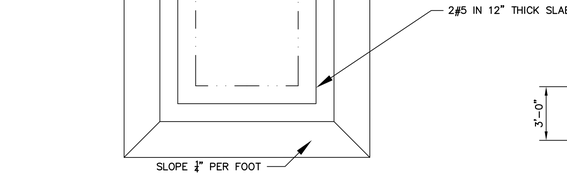
(1 / E7.0) **EXISTING PAVED SURFACES**
NOT TO SCALE



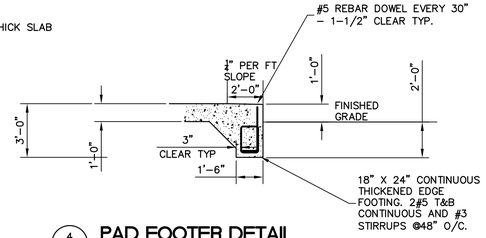
(2 / E7.0) **TYPICAL BOLLARD DETAIL**
NOT TO SCALE

GENERAL NOTES:

PER FEMA MAP 120153 THE LOCATION IS IN AN "AE" ZONE AND IS APPROX. 20-25' ABOVE SEA LEVEL. AREAS SUBJECT TO INUNDATION BY THE 1-PERCENT-ANNUAL-CHANCE FLOOD EVENT DETERMINED BY DETAILED METHODS. BASE FLOOD ELEVATIONS ARE SHOWN ON THE MAP. THE ELEVATION OF THE GENERATOR HAS TO BE RAISED BY AT LEAST 1 FT TO BE TO BE ABOVE THE BASE FLOOD ZONE. CONTRACTOR WILL NEED TO VERIFY EXACT LOCATION REQUIREMENTS- THE AREA WILL NEED TO BE RAISED AT LEAST 1 FT. PAD IS SHOWN TO RAISE UNIT 1 FT. NOTE: GENERATOR UNIT WILL BE SETTING ON TALL BELLY TANK DESIGNED FOR EXTERIOR CONDITIONS UP TO 3' DEPENDING UPON MANUFACTURER. CONTRACTOR MAY NEED TO HIRE A SURVEYOR TO COMPLETE PROJECT. COUNTY MAY BE ABLE TO PROVIDE SURVEYOR DEPENDING UPON AVAILABILITY.



(3 / E7.0) **GENERATOR PAD DESIGN**
NOT TO SCALE



(4 / E7.0) **PAD FOOTER DETAIL**
NOT TO SCALE

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY MATTHEW J. CAMDEN, P.E. (FL#79284) ON 02-14-2023 USING AN SHA AUTHENTICATION CODE.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA AUTHENITCATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SEAL

MATTHEW J. CAMDEN LICENSE No. 79284 STATE OF FLORIDA PROFESSIONAL ENGINEER

MATTHEW J. CAMDEN
FL#79284

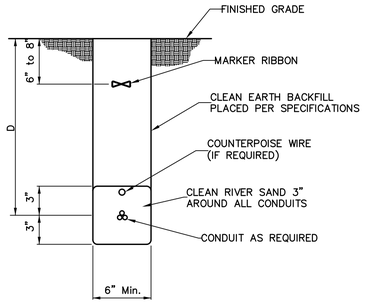
ATP ENGINEERING SOUTH
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485
ENGINEERING SOUTH

REV.#	DESCRIPTION	DATE

PUBLIC WORKS WTTP OFFICE
BUILDING GENERATOR
8500 69TH ST E, PALMETTO, FL 34221

DRAWING TITLE:
ELECTRICAL
DETAILS FOR PAD

FILE:	2022.20
JOB NO.:	WA#1
DATE :	04/08/2022
PLOT SIZE:	1:1
DRAWN BY:	HG
CHECKED BY:	MC
SHEET No.:	E7.0



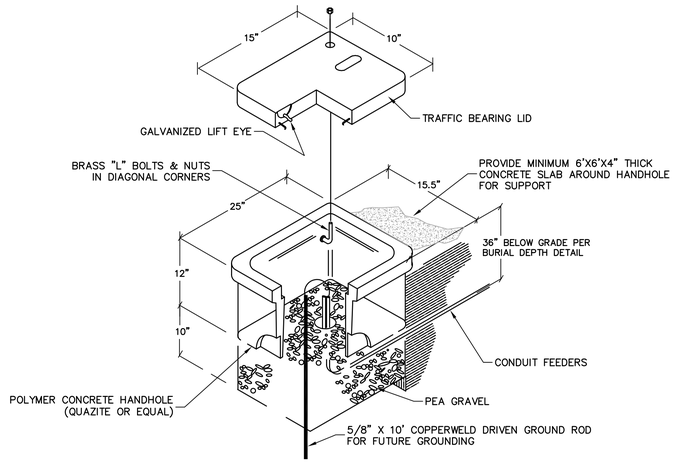
BURIAL DEPTH	
SERVICE	"D"
CCTV cable	1'-6"
Telephone	2'-0"
Power under 600V	2'-0"
Medium voltage power	3'-0"

NOTE:

USE BURIAL DEPTHS SHOWN ON TABLE UNLESS NOTED OTHERWISE IN SPECIFICATIONS OR ON DRAWINGS. BURIAL DEPTHS FOR UTILITY COMPANY CABLES SHALL BE AS DIRECTED BY THE UTILITY COMPANY.

2 / E7.0 CONDUIT BURIAL DETAIL

NOT TO SCALE



NOTE;

HANDHOLES TO BE LIKE QUAZITE PG STYLE, TIER 22 WITH DRIVE-OVER RATED ONE-PIECE COVER.

COVER TO HAVE "ELECTRICAL" LOGO.

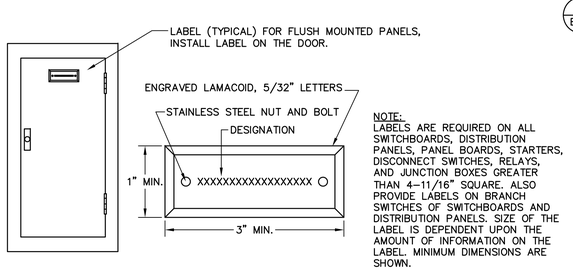
COORDINATE SIZES OF HANDHOLE WITH SIZE AND QUANTITY OF CONDUITS.

PROVIDE CAPS ON CONDUITS.

PROVIDE PULLSTRING IN ALL CONDUITS.

3 / E7.0 CONCRETE HANDHOLE INSTALLATION DETAIL

NOT TO SCALE



NOTE:
LABELS ARE REQUIRED ON ALL SWITCHBOARDS, DISTRIBUTION PANELS, PANEL BOARDS, STARTERS, DISCONNECT SWITCHES, RELAYS, AND JUNCTION BOXES GREATER THAN 4-11/16" SQUARE. ALSO PROVIDE LABELS ON BRANCH SWITCHES OF SWITCHBOARDS AND DISTRIBUTION PANELS. SIZE OF THE LABEL IS DEPENDENT UPON THE AMOUNT OF INFORMATION ON THE LABEL. MINIMUM DIMENSIONS ARE SHOWN.

STANDARD COLORS:
1. NORMAL POWER- BLACK BACKGROUND, WHITE LETTERS
2. EMERGENCY POWER- RED BACKGROUND, WHITE LETTERING
3. IN ADDITION TO THE FUNCTION LABELS, PROVIDE LABELS IDENTIFYING ALL "MAIN SERVICE LABEL DISCONNECTS"- RED BACKGROUND, WHITE LETTERING

1 / E7.0 EQUIPMENT LABELING DETAIL

NOT TO SCALE

ATP ENGINEERING SOUTH
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