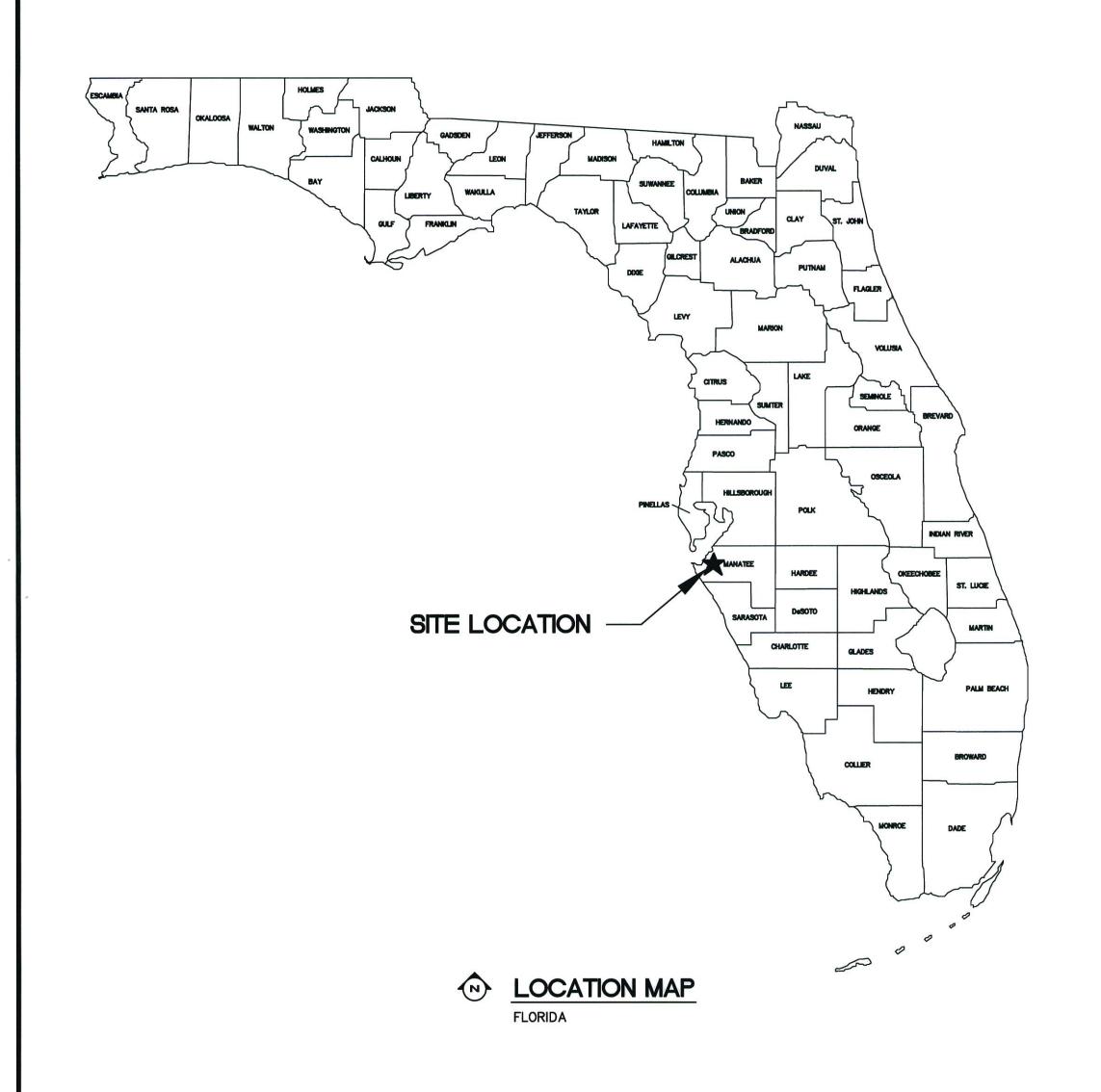
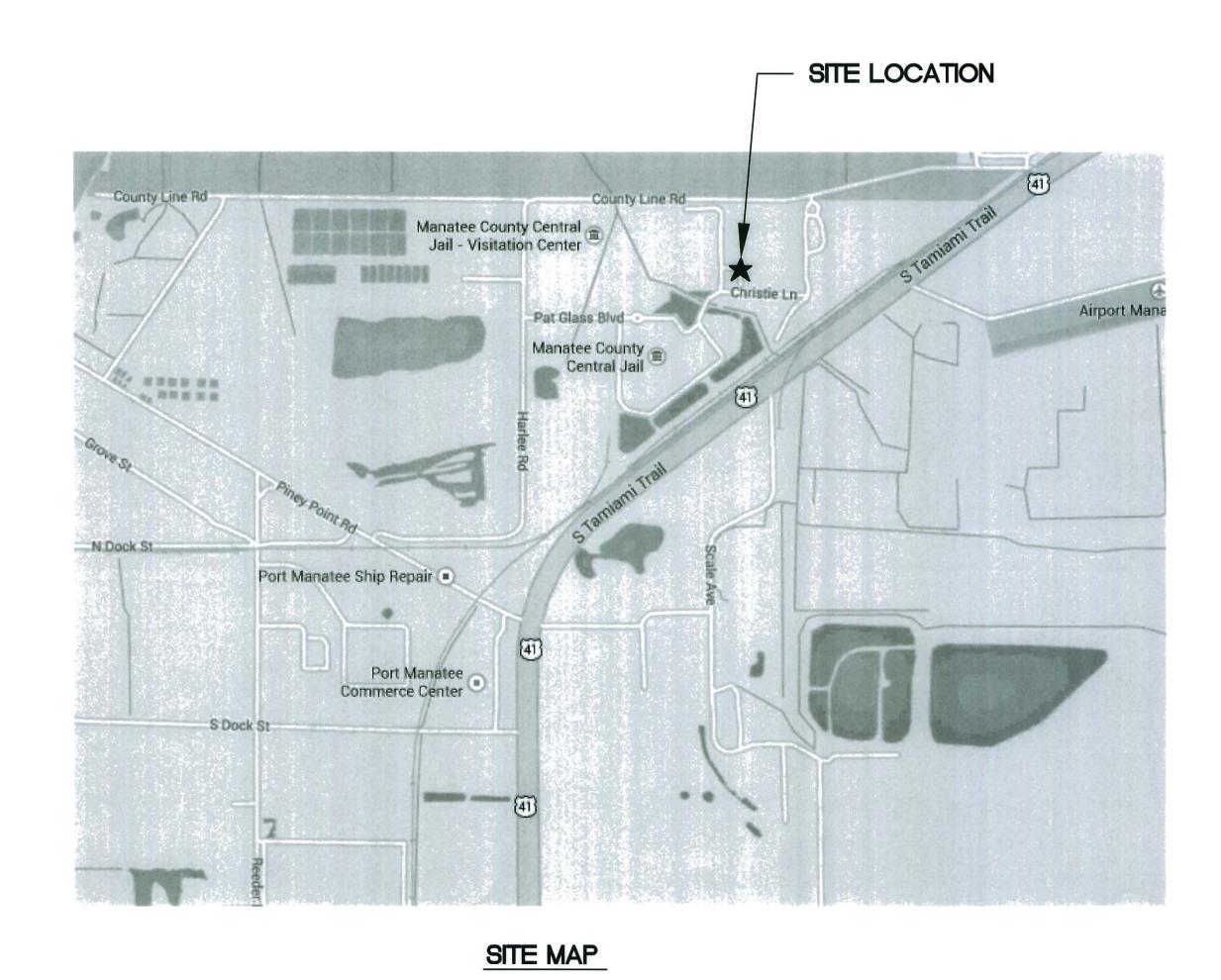
MANATEE COUNTY DETENTION CENTER AGRICULTURAL CENTER AND FISH HATCHERY ELECTRICAL IMPROVEMENTS 14470 HARLEE RD. PALMETTO, FLORIDA 34221

WORK ASSIGNMENT #32





SHEET SCHEDULE

COVER PROJECT NAME, LOCATION & SITE MAP

E1.0 ELECTRICAL LEGEND, SYMBOLS, GENERAL

NOTES, DETAILS & SPECIFICATIONS
E2.0 ELECTRICAL NEW PLAN

3.0 ELECTRICAL DEMOLITION PLAN

E5.0 ELECTRICAL FEEDER SCHEDULE, ONE-LINE

1 EXISTING LOAD CALCULATIONS, FAULT CURRENT CALCULATIONS

7.0 ELECTRICAL SPECIFICATIONS

E7.1 ELECTRICAL SPECIFICATIONS

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

SPECIFICATIONS:

(APPLY TO ALL ELECTRICAL SHEETS)

- 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 WITH BOLT IN TYPE CIRCUIT BREAKERS. 2.1. ALL NEW PANELS TO BE NEMA 3R OR HIGHER.
- 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
 - 3.4. ALL RECEPTACLES SHALL HAVE CIRCUIT NUMBERS WRITTEN ON THE INSIDE OF THE COVERPLATE.
- 4. 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.
- ALL ELECTRICAL CONNECTORS, LUGS, BREAKERS, EQUIPMENT, ETC. SHALL BE RATED AT A MINIMUM OF 75 DEG. C.
- WIRING METHODS:

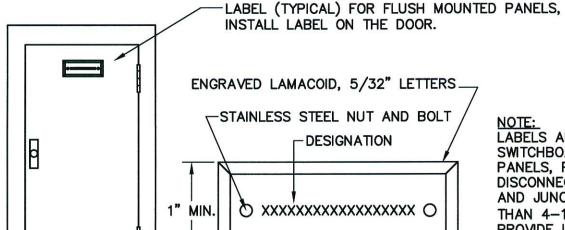
ALL WIRING SHALL BE COPPER. NO ALUMINUM WIRING WILL BE ALLOWED. MC TYPE CABLE SHALL NOT BE USED.

- 7. RECEPTACLES SHALL BE COMMERCIAL GRADE, 20A, 120V GROUNDING TYPE LIKE LEVITON BR20 SERIES, UNLESS OTHERWISE NOTED.
 - 7.1. WHITE IN COLOR PROVIDE GROUND FAULT CIRCUIT-INTERRUPTER (GFI) TYPE BREAKERS
 - FOR RECEPTACLE CIRCUITS. RECEPTACLES SHALL HAVE DIE-CAST ZINC IN-USE TYPE WEATHERPROOF COVERPLATES, LIKE LEVITON 5979 SERIES.

120/240V 10 SURGE PROTECTION DEVICE

SURGE PROTECTION DEVICE TO BE LIKE LEVITON 52120-M2, TYPE 2 PANEL MOUNT, OR APPROVED EQUAL.

- 1. ELECTRICAL SPECIFICATIONS
- 1.1. VOLTAGE CONFIGURATION: 120/240V 1 PHASE WYE 1.2. FREQUENCY: 50/60HZ
- SURGE TECHNOLOGY: 40MM MOV DESIGN 1.4. RECOMMENDED CIRCUIT BREAKER RATING: 30A, 240V
- ENVIRONMENTAL SPECIFICATIONS
- ENCLOSURE TYPE: NEMA 12 STEEL ENCLOSURE
- OPERATING TEMPERATURE: -20 □C TO 40 □C STORAGE TEMPERATURE: -4°F TO 185°F (-20°C TO 85°C)
- FLAMMABILITY: RATED V-2 PER UL94
- 2.5. RELATIVE HUMIDITY: 5% TO 95% NON-CONDENSING
- MECHANICAL SPECIFICATIONS
- 3.1. CONNECTION TYPE: PARALLEL-HARDWIRED, FEED-THROUGH DUAL WIRE TERMINAL BLOCK: ACCEPTS UP TO #3 AWG WIRE
- 4. PERFORMANCE DATA
- 4.1. NOMINAL DISCHARGE CURRENT RATING: 20KA
- 4.2. MCOV: L-N:150V, L-G:300V, N-G:150V, L-L:300V VPR: L-N:1000V, L-G:1500V, N-G:700V , L-L:1500V
- 4.4. MAXIMUM SURGE CURRENT, PER MODE (PER PHASE): 100KA (100KA) PROTECTION MODE: 3-MODE
- 4.6. SHORT CIRCUIT CURRENT RATING: 100KA
- 4.7. NOISE REJECTION: -20 TO -40 DB AT 5KHZ-10MHZ 4.8. DIAgnostics: Real Time Protection status LEDs & Audible ALARM
- REMOTE Monitoring: Dry Contact Leads—N.O./N.C. Form C Rated at 7Amps @ 240VAC or 30 VDC
- 5. STANDARDS AND CERTIFICATIONS
- 5.1. UL1449 3RD EDITION: CSA CERTIFIED AND UL LISTED TYPE 2 5.2. ANSI/IEEE CATEGORY A, B & C: C-62.41 & 62.45
- 6.1. PRODUCT WARRANTY: LIMITED LIFETIME 6.2. REPLACEMENT MODULE WARRANTY: LIMITED LIFETIME



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 LÁBELS 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

I. 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



EQUIPMENT LABELING DETAIL

NOT TO SCALE

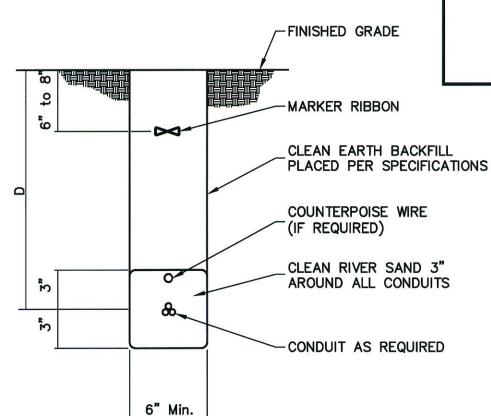
ORDER OF OPERATIONS:

<u>SHUT DOWN OF EXISTING POWER SHALL BE KEPT TO A MINIMUM</u> AND SHALL BE COORDINATED WITH HATCHERY PERSONNEL. EXTENDED LOSS OF POWER WILL CAUSE MAJOR LOSS OF FISH

- A. PROVIDE AND INSTALL NEW CONDUITS AND CONDUCTORS AND MAKE CONNECTIONS TO NEW METER, NEW 200A ATS, AND PANEL "M". SAFE-OFF ANY UN-CONNECTED CONDUCTORS
- PROVIDE AND INSTALL NEW CONDUITS AND CONDUCTORS FROM PANEL "ATS" TO EXISTING GENERATOR. SAFE-OFF CONDUCTORS. DO NOT CONNECT EXISTING GENERATOR TO NEW ATS AT THIS TIME.
- PROVIDE AND INSTALL CONDUITS AND CONDUCTORS FROM PANEL "M" TO GENERATOR FOR BATTERY CHARGER & GEN PLUG (CIRCUITS 9 & 10). SAFE-OFF CONDUCTORS. DO NOT MAKE FINAL CONNECTIONS AT THIS TIME.
- D. PROVIDE AND INSTALL NEW CONDUIT & CONDUCTORS FROM PANEL "M" TO PANEL "A". SAFE-OFF CONDUCTORS AND DO NOT CONNECT TO PANEL "A". THIS PANEL SHALL REMAIN
- POWERED FROM PANEL "2" UNTIL PANEL "M" IS ENERGIZED. E. PROVIDE AND INSTALL NEW CONDUIT AND CONDUCTORS AND MAKE CONNECTIONS FROM PANEL "M" TO NEW DISCONNECT
- F. PROVIDE AND INSTALL NEW CONDUIT & CONDUCTORS FROM PANEL "M" TO NEW PANEL "C".
- G. PROVIDE AND INSTALL NEW CONDUIT & CONDUCTORS FROM PANEL "M" TO PANEL "D". SAFE-OFF CONDUCTORS AND DO NOT CONNECT TO PANEL "D". THIS PANEL SHALL REMAIN POWERED FROM PANEL "2" UNTIL PANEL "M" IS ENERGIZED.
- H. ENERGIZE PANEL "M".
- MAKE THE CHANGE OF FEED AT PANEL "A".

SWITCH AND NEW PANEL "B".

- CONNECT EXISTING GENERATOR TO NEW ATS. CONNECT BATTERY CHARGER AND GEN PLUG TO NEW CIRCUITS FROM
- K. RELOCATE ALL BRANCH CIRCUITS IN EXISTING PANEL "B" TO NEW PANEL "B". SEE SHEET E2.0 FOR ADDITIONAL CHANGES AT PANEL "B". EXTEND CONDUITS AND REPLACE CONDUCTORS
- L. RELOCATED ALL BRANCH CIRCUITS IN EXISTING PANEL "C" TO NEW PANEL "C". EXTEND CONDUITS AND REPLACE CONDUCTORS AS NEEDED.
- M. MAKE THE CHANGE OF FEED AT PANEL "D".
- N. RELOCATE EXISTING LIGHTING CIRCUITS IN PANEL "2" TO NEW PANEL "M". (CIRCUITS 5, 6, 7 & 8). PROVIDE NEW CONDUIT AND CONDUCTORS AS NEEDED.
- O. SEE SHEET E2.0 FOR NEW RECEPTACLES ON PANEL "M".
- INSURE ALL FISH HATCHERY EQUIPMENT THAT WAS ORIGINALLY POWERED FROM PANEL "2" IS OPERATIONAL AND BEING POWERED FROM PANEL "M" AND THAT THE GENERATOR / ATS CONNECTION IS OPERATIONAL.
- REMOVE ALL GEAR. SWITCHES. CONDUITS AND CONDUCTORS THAT ARE NO LONGER BEING USED. NOTHING SHALL BE ABANDONED IN PLACE.



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

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.



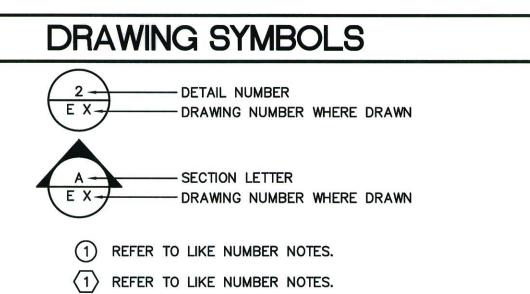
ELECTRICAL SYMBOLS AND ABBREVIATIONS

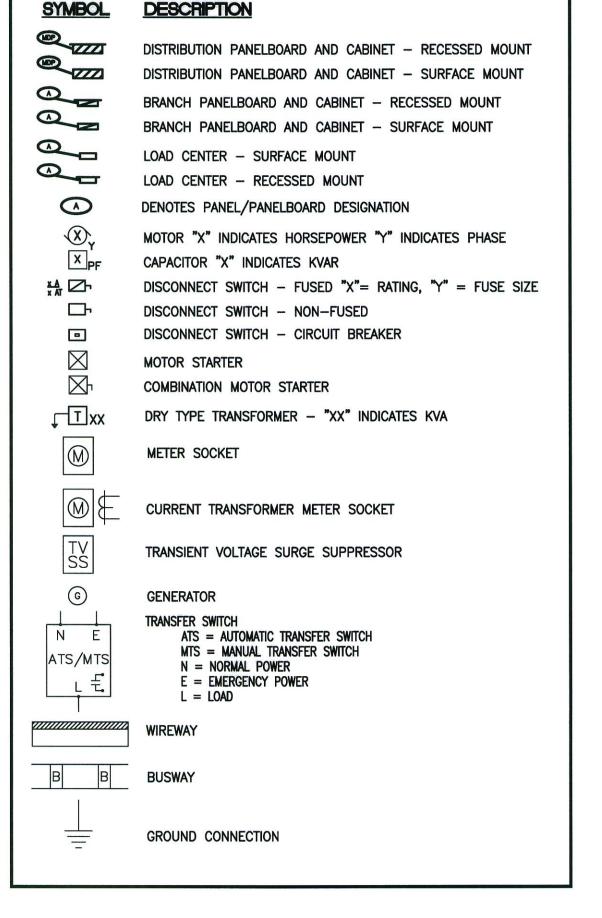
THESE ARE STANDARD SYMBOLS AND MAY NOT ALL APPEAR ON THE PROJECT DRAWINGS; HOWEVER WHEREVER THE SYMBOL APPEARS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED AND INSTALLED.

EQUIPMENT

RACEWAY SYSTEM **DESCRIPTION** CONCEALED CONDUIT 4" CONDUIT SLEEVE WITH BUSHINGS THRU WALL ABOVE CEILING LETTER DESIGNATION REFERS TO SYSTEM (SEE ABBREVIATIONS) CONDUCTORS QUANTITY OF CONDUCTORS OR CABLES IN CONDUIT F50 "F50" DENOTES THE FEEDER SIZE SWITCH LEG "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

DEVICES SYMBOL DESCRIPTION DUPLEX RECEPTACLE - NORMAL CIRCUIT "X" INDICATES AS FOLLOWS: NONE = 20 AMP, 125VACGFI = 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



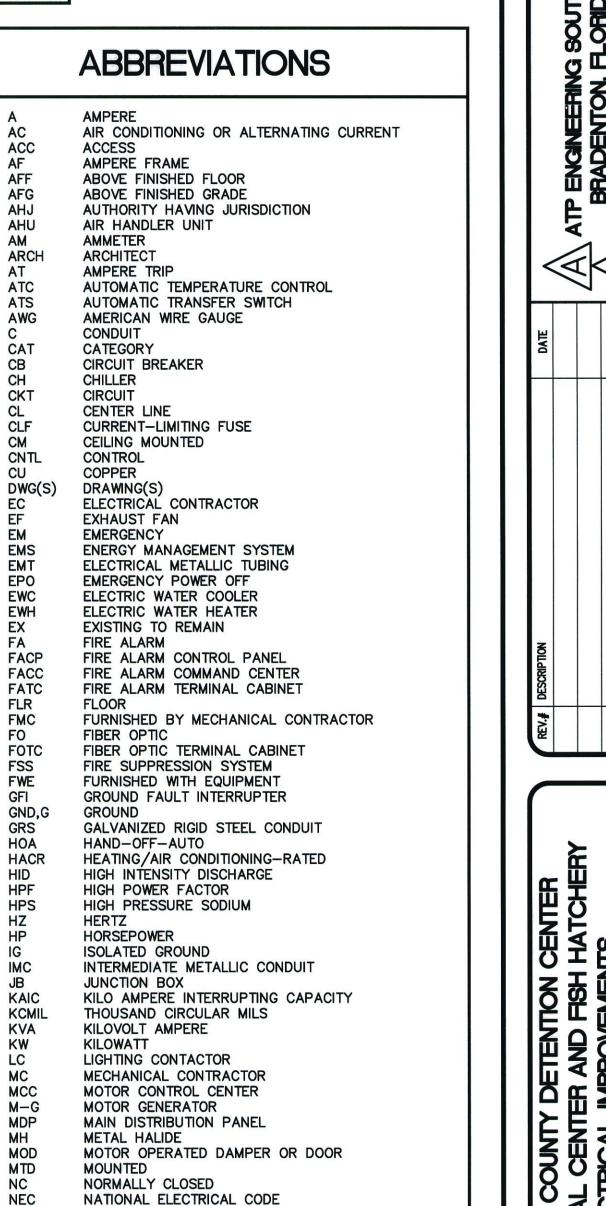


GENERAL NOTES (APPLY TO ALL DRAWINGS):

- 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. DO NOT SCALE DRAWINGS. VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION FOR EXACT DEVICE / EQUIPMENT LOCATION.
- 6. 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.
- 7. CONTRACTOR SHALL PROVIDE TO LOCAL AHJ OR PERMITTING AGENCY A COPY OF ALL MAJOR EQUIPMENT CUT SHEETS AT TIME OF APPLICATION IF REQUESTED.

SCOPE:

THE INTENT OF THE PROJECT IS TO REPLACE THE INCOMING SERVICE TO PANEL "2", RE-FEED PANELS "A", "B", "C" & "D", REPLACE PANELS "B" AND "C", AND RE-FEED TURBINE MOTOR AT PANEL "B". DEMOLITION/REMOVAL OF EXISTING GEAR SHALL NOT PROCEED UNTIL AFTER ALL NEW POWER, GEAR, CONDUITS AND CONDUCTORS ARE INSTALLED AND FINAL CONNECTIONS TO EQUIPMENT ARE MADE. THE EXISTING ELECTRICAL SYSTEM SHALL BE UTILIZED AS "TEMPORARY" POWER UNTIL CHANGE OUT IS COMPLETE.



NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION NON-FUSED **NFPA** NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NIGHT LIGHT NORMALLY OPEN NOT TO SCALE OVER CURRENT PROTECTIVE DEVICE OCPD PANEL PHASE PUSHBUTTON PHOTOELECTRIC CONTROLLER PLUMBING CONTRACTOR POLYVINYL CHLORIDE CONDUIT

PVC RELOCATED RTU ROOF TOP UNIT SCH SCHEDULE SEC SECURITY SW SWITCH **SWITCHGEAR SWGR**

NIC

NL

NO

NTS

PNL

TEL,T TELEPHONE TELEPHONE BACKBOARD TRANSIENT VOLTAGE SURGE SUPPRESSOR TIME CLOCK **XFMR** TRANSFORMER

TYPICAL UNDERGROUND UG UH UNIT HEATER UNDERWRITERS LABORATORIES UNINTERRUPTIBLE POWER SUPPLY

U.O.N. UNLESS OTHERWISE NOTED VAV VARIABLE AIR VOLUME **VFD** VARIABLE FREQUENCY DRIVE

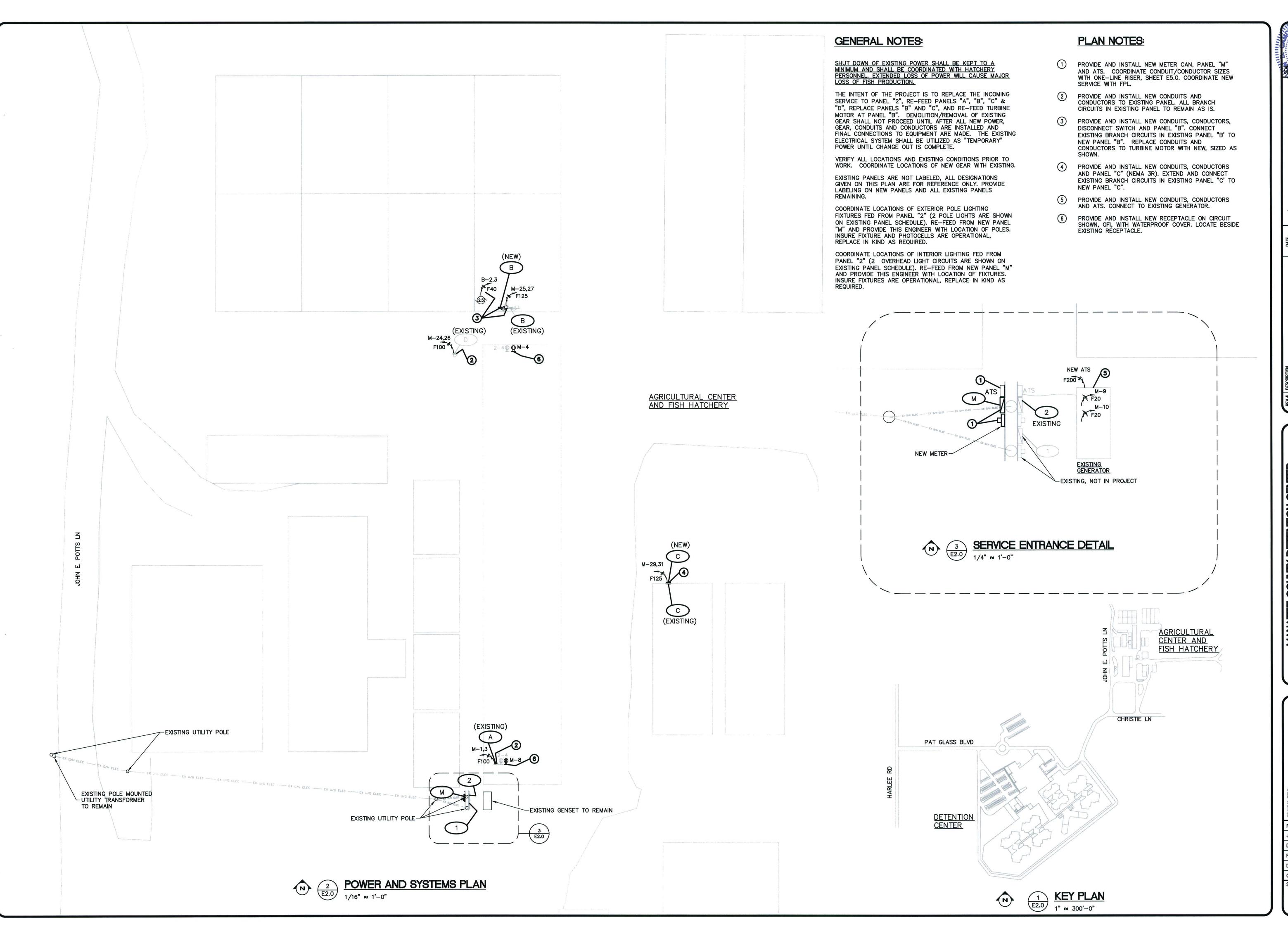
WEATHER PROOF

THESE DOCUMENTS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE CONSULTANT HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS THAT MAY BE INCORPORATED AS A RESULT OF ERRONEOUS INFORMATION PROVIDED BY OTHERS. NOTIFY THIS ENGINEER IMMEDIATELY OF ANY DISCREPANCIES FOUND.

ELECTRIC/ SYMBOLS, AND GENE

FILE:M.C.Jail Agricultural Center 2014.26 7/14/2014 CMD/MC

CHECKED BY:





REV.# DESCRIPTION

ATP ENGINEERING SOUTH, PE.

BRADENTON, FLORIDA ENGINESS #6908 941-751-6485

941-751-6485

MANATEE COUNTY DETENTION CENTER
AGRICULTURAL CENTER AND FISH HATCHERY
ELECTRICAL IMPROVEMENTS
14470 HARLEE RD.
PALMETTO, FLORIDA 34221

ELECTRICAL POWER
AND SYSTEMS PLAN

FILE: M.C. Jail Agricultural Center

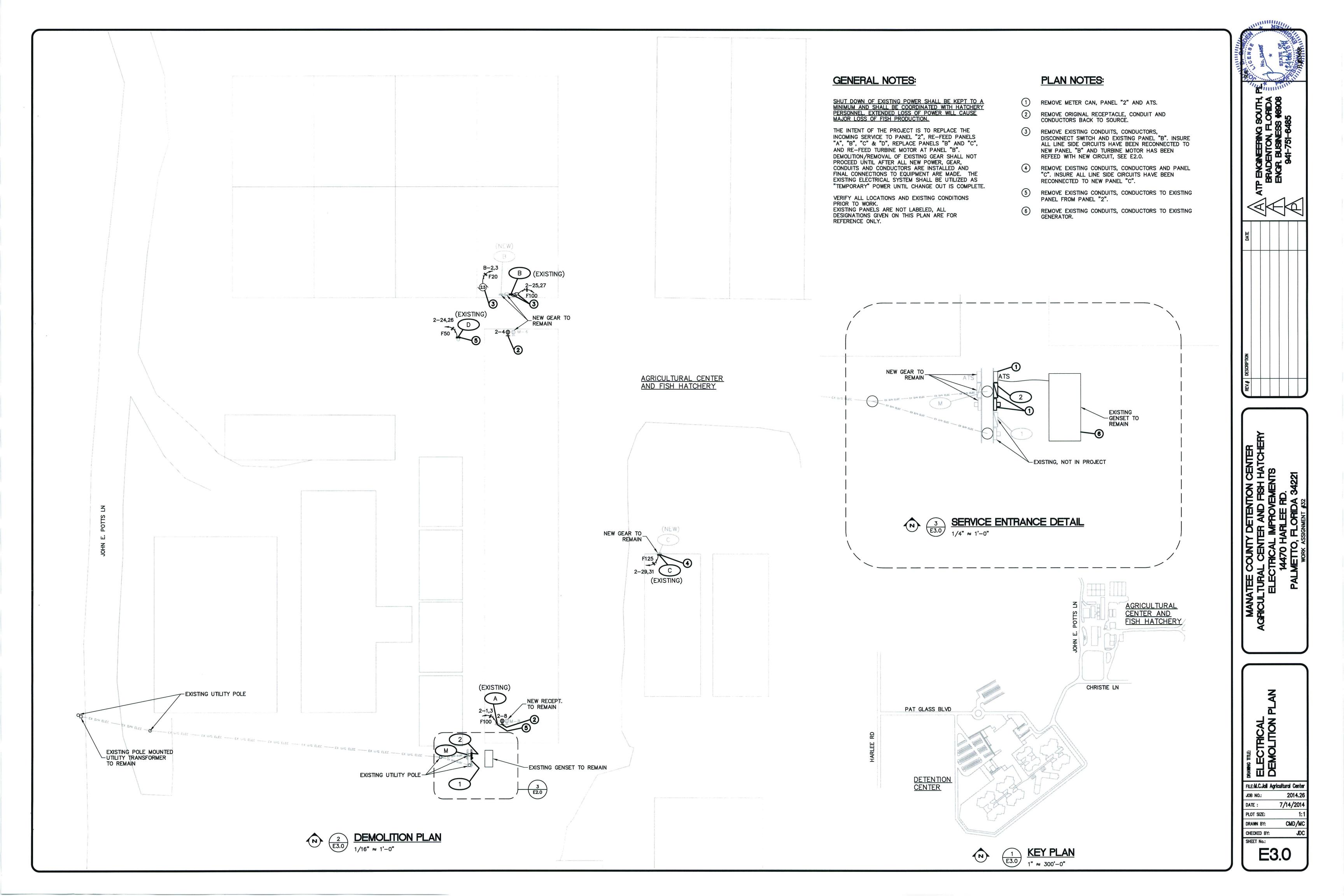
JOB NO.: 2014.26

DATE: 7/14/2014

PLOT SIZE: 1:1

DATE: 7/14/2014
PLOT SIZE: 1:1
DRAWN BY: CMD/MC
CHECKED BY: JDC

E2.0



	FEEDER AND BRANCH CIRCUIT SCHEDULE												
FEEDER/BRANCH		ONDUCTOR N,&THWN-2	SETS OF	CONDUIT SIZE AND QUANTITY [QUANTITY OF CONDUIT IS 1, UNLESS NOTED IN ()]									
DESIGNATION	PHASE & NEUTRAL	EQUIPMENT GROUND	CONDUCTORS	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"				
F40-50	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"				
F70-F80	4	8	1	1"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"				
F90-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"				

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

	VOLTAGE DROP FOR 1¢, 20A BRANCH CIRCUITS SIZED TO PREVENT VOLTAGE DROP EXCEEDING 3 PERCENT PER NEC 210.19A NOTE 4.										
DISTANCE ALLOWED											
FEEDER SIZE TO USE	120V	208V	277V	480V							
F20	0 - 45 FEET	0 - 79 FEET	0 - 105 FEET	0 - 182 FEET							
F30	45 - 72 FEET	79 - 126 FEET	105 - 168 FEET	182 - 290 FEET							
F40-50	72 - 115 FEET	126 - 201 FEET	168 - 267 FEET	290 - 463 FEET							
F60	115 - 183 FEET	201 - 318 FEET	267 - 423 FEET	463 - 733 FEET							
F70-80	183 - 292 FEET	318 - 506 FEET	423 - 675 FEET	733 - 1169 FEET							
F90-100	292 - 367 FEET	506 - 637 FEET	675 - 848 FEET	1169 - 1469 FEET							
F110	367 - 464 FEET	637 - 804 FEET	848 - 1071 FEET	1469 - 1856 FEET							
F125	464 - 584 FEET	804 - 1013 FEET	1071 - 1349 FEET	1856 - 2338 FEET							
F150	584 - 738 FEET	1013 - 1279 FEET	1349 - 1703 FEET	2338 - 2951 FEET							

- 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.
- 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.

	NEW	DESIG	NATION:		M			MAINS	:		250 A	MCB 22KAIC	
	PANELBOARD	LOCAT	ION:		Electri	cal Boar	d	BUS S	IZE:		400 A	MP	
	SCHEDULE	VOLTA	GE:		240/1	20		PANEL	MOUNT	TING:	SURFACE 10 KAIC		
		PHASE	:		1 PHAS	SE, 3 WI	RE	ALL BE	REAKER	S:			
СКТ	LOAD	LOAD	CONN.	BRE	AKER	CONN.	LOAD	BRE	AKER	CONN.	LOAD	LOAD	СК
NO.	DESCRIPTION	CODE	KVA	AMPS	POLE	Α	В	AMPS	POLE	KVA	CODE	DESCRIPTION	NO
1	Panel "A" Fish house	P	6.89	100	2	7.29		20	1	0.40	L	South exterior Pole Light	2
3	(Control Panel)	P	6.78				7.14	20	1	0.36	R	North Duplex Receptacle	*4
5	West Overhead Lights	L	0.40	20	1	0.80		20	1	0.40	L	North exterior Pole Light	6
7	East Overhead Lights	L	0.40	20	1		0.76	20	1	0.36	R	Duplex Recept - Control Panel	*8
9	Battery Charger	R	0.50	20	1	0.86		20	1	0.36	R	Gen Plug	10
11							0.00						12
13						0.00	\langle						14
15						-	0.00						16
17						0.00	>		7527 - 730 - 730				18
19			a a				0.00						20
21						0.00							22
23	Spare - all the way to North End			20	1		3.44	50	2	3.44		F.H. Boiler (Panel D)	24
25	Fish House Panel (Panel B)		7.36	100	2	10.92				3.56		"	26
27	(North)		7.36				7.36						28
29	Fish House Panel (Panel C)		2.80	125	2	2.80							30
31	(East)		3.32				3.32						32
33						0.00							34
35							0.00						36
37						0.00							38
39		To be					0.00						40
41		Time to the second				0.00	\nearrow						42
						22.67	22.02	KVA					
	TOTAL CONNECTED AMPS:		188.89	AMPS		188.89	183.48	AMPS			10.00		
	TOTAL CONNECTED LOAD:		44.68	KVA									
	TOTAL DEMAND AMPS:	100000	69.98	AMPS									
	TOTAL DEMAND LOAD:		15.90	KVA								According to the second	
	LOAD CODES:								·				
L-	LIGHTING												
	RECEPTACLES					PROVID	E GFCI F	REAKE	R FOR	CRTS 4	& 8		
121.20	MECHANICAL						_						
	COMPUTER												
K=	KITCHEN PANELBOARD												

DES	GNATION:	В				
LOC	ATION:	Fish H				
VOL	TAGE:	120/2				
РНА	SE:	1 PHA				
MAII	NS:		Main Di		et Swite	eh
BUS	SIZE:	100 A	MP			
PAN	EL MOUNTING:	FLUSH				
ALL	BREAKERS:	FIELD	VERIFY (JTILITY	KAIC	
СКТ	LOAD	LOAD	CONN.	BRE	AKER	r
NO.	DESCRIPTION	CODE	KVA	AMPS	POLE	
1	< <blank>></blank>	Р	10.00			
2	Turbine Motor - 2.5HP	М	0.66	20	2	
3	"	M	0.66			
4	Spare			20	1	
5	Computer	R	1.00	20	1	
6	Fans	М	1.20	20	1	
7	Lights	L	1.20	20	1	
8	< <blank>></blank>					
	TOTAL CONNECTED AMPS:		122.67	AMPS		
	TOTAL CONNECTED LOAD:		14.72	KVA		
	TOTAL DEMAND AMPS:		112.25	AMPS		
	TOTAL DEMAND LOAD:		13.47	KVA		
	LOAD CODES:					
L-	LIGHTING					
R=	RECEPTACLES					
M-	MECHANICAL					
C=	COMPUTER					
K=	KITCHEN					
P=	PANELBOARD					

	EXISTING	DESIG	NATION:		Α			MAINS	:		100 A	MCB		
	PANELBOARD	LOCAT	ION:		Electri	cal Boar	d	BUS S	ZE:		250 AMP			
	SCHEDULE	VOLTAGE:			240/120			PANEL MOUNTING:			SURFACE			
		PHASE	:		1 PHA	SE, 3 WI	RE	ALL BE	REAKER	S:	10 KA	IC		
СКТ	LOAD	LOAD	CONN.	BRE	AKER	CONN	LOAD	BRE	AKER	CONN.	LOAD	LOAD	С	
NO.	DESCRIPTION	CODE	KVA	AMPS	POLE	Α	В	AMPS	POLE	KVA	CODE	DESCRIPTION	N	
1	Air Blower (see Circuit 17	М	2.88	40	2	4.54		30	2	1.66	M	Return Pumps	٠,	
3	& note below)	М	2.88			><	4.54			1.66	М	11	1	
5	Aerator #1	М	0.58	15	2	1.16		15	2	0.58	М	Aerator #4		
7	п	М	0.58			><	1.16			0.58	М	19		
9	Aerator #2	М	0.58	15	2	1.16	><	15	2	0.58	M	Aerator #5	1	
11	п	М	0.58				1.16			0.58	M	H	1	
13	Aerator #3	M	0.58	15	2	1.16		15	2	0.58	М	Aerator #6	1	
15		М	0.58			><	1.16			0.58	M	н	1	
17	Air Blower Magnetic Starter	M	0.50	15	1	1.00		15/15	1	0.50	P	Timer Control	1	
19	three Overhead Blower Fans	M	0.45	15	1	\sim	1.03	15	1	0.58	M	Aeroscope Pumps	*:	
21						0.00	\geq						2	
23						><	0.00						2	
						9.02	9.05	KVA						
	TOTAL CONNECTED AMPS:		75.38	AMPS		75.13	75.38	AMPS						
	TOTAL CONNECTED LOAD:		18.06	KVA										
	TOTAL DEMAND AMPS:	No (2) 22 22 23 24 25 25 25 25 25 25 25 25 25 25 25 25 25	57.39	AMPS)									
	TOTAL DEMAND LOAD:		13.67	KVA										
	LOAD CODES:													
L=	LIGHTING													
R=	RECEPTACLES		Note: C	ircuit 1	7, Over	load S.F	. Switch	ì						
м-	MECHANICAL		* = Thr		50									
C=	COMPUTER													
K-	KITCHEN													
P=	PANELBOARD													

	NEW	DESIG	NATION:		С			MAINS	:		100 A	MCB		
	PANELBOARD	LOCAT	ION:		Electri	cal Boar	d	BUS SIZE:			250 AMP			
	SCHEDULE	VOLTA	GE:		240/1	20		PANEL	MOUNT	TING:	G: SURFACE			
		PHASE	:		1 PHA	SE, 3 WI	RE	ALL BE	REAKER	S:	10 KA	IC		
СКТ	LOAD	LOAD	CONN.	BRE	AKER	CONN.	LOAD	BRE	AKER	CONN.	LOAD	LOAD	СКТ	
NO.	DESCRIPTION	CODE	KVA	AMPS	POLE	Α	В	AMPS	POLE	KVA	CODE	DESCRIPTION	NO.	
1	< <blank>></blank>		180900000000000000000000000000000000000		AL AMERIA DOS	0.75	><	20	2	0.75	М	Air Pump Heat Pump 260	2	
3	Timer 115	М	0.84	15		><	1.59			0.75	М		4	
5	Fertroler 115	М	0.75	20		1.50	><	20	2	0.75	М	Feed Pump 220	6	
7	Soak Tank Pump 120	M	0.75	20		><	1.50			0.75	M		8	
9	GFI PIUg 120	R	0.36	20		0.72		20	1	0.36	R	Panel #2 Plug 120	10	
11	Security Boxes (Poles)	R	0.50	20		><	1.00	20	1	0.50	M	120	12	
13						0.50		20	1	0.50	M	120	14	
15							0.50	20	1	0.50	M	120	16	
17						0.50		20	1	0.50	M		18	
19							0.00						20	
21						0.00	><						22	
23							0.00						24	
						3.97	4.59	KVA						
	TOTAL CONNECTED AMPS:		38.25	AMPS		33.08	38.25	AMPS						
	TOTAL CONNECTED LOAD:		8.56	KVA				X						
	TOTAL DEMAND AMPS:		27.65	AMPS										
	TOTAL DEMAND LOAD:		6.12	KVA		2000-0-10-10-10-10-10-10-10-10-10-10-10-1								
	LOAD CODES:								- in the second					
L=	LIGHTING													
R=	RECEPTACLES													
M-	MECHANICAL													
C-	COMPUTER													
K=	KITCHEN													
P=	PANELBOARD													

	EXISTING	DESIGI	NATION:		D			MAINS	i :		100 A	MLO	
	PANELBOARD	LOCAT	ION:		Electri	cal Boar	ď	BUS SIZE:			250 AMP		
	SCHEDULE	VOLTA	GE:		240/1	.20		PANEL	MOUN	TING:	SURFA	CE	
		PHASE	: :		(2 159795) (F-01)	SE, 3 WI	RE	ALL BI	REAKER	S:	10 KA	IC	
СКТ	LOAD	LOAD	CONN.	BRE	AKER	CONN	. LOAD	BRE	AKER	CONN.	LOAD	LOAD	СКТ
NO.	DESCRIPTION	CODE	KVA	AMPS		Α	В	AMPS		KVA	CODE	DESCRIPTION	NO.
1		R	0.36	20	1	0.72		20	1	0.36	R	West GFI Receptacle	2
3	O.H. Louvers & Ex. Fans	М	0.75	20	1		1.50	20	1	0.75	M	East & West Main Louvers	4
	East O.H. Circulating Fans	М	0.75	20	1	1.50	><	20	1	0.75	М	West O.H. Circulating Fans	6
7	O.H. Roof Blowers	М	0.50	15	1	><	1.25	20	1	0.75	М	two Sump Pumps	8
9	E-1 Exhaust Fan	M	0.50	20	1	1.00	><	20	1	0.50	M	E-2 Exhaust Fan	10
11	W-1 Exhaust Fan	М	0.50	20	1		1.00	20	1	0.50	M	W-2 Exhaust Fan	12
13	#1 West Table Pump	М	0.50	20	2	1.00		20	2	0.50	M	#2 East Table Pump	14
15	п	М	0.50				1.00			0.50	M	**	16
17	O.H. Light & Receptacle	L	0.50	20	1	0.50		20	1			spare	18
19							0.00						20
21						0.00							22
23							0.00						24
						4.72	4.75	KVA					
	TOTAL CONNECTED AMPS:		39.58	AMPS		39.33	39.58	AMPS					
	TOTAL CONNECTED LOAD:		9.47	KVA									
	TOTAL DEMAND AMPS:		29.69	AMPS						270000			
	TOTAL DEMAND LOAD:		7.00	KVA									
	LOAD CODES:												
L-	LIGHTING												
R=	RECEPTACLES												
M-	MECHANICAL												
C-	COMPUTER												
K-	KITCHEN												
P=	PANELBOARD												

EXISTING UTILITY SUPPLIED POLE	7 8	Fans Lights < <blank>></blank>
MOUNTED TRANSFORMER CONTROL CONDUIT	120/240 1P-3W 100A MAIN BREAKER 100A MLO 120/240 1P-3W 100A MCB F250 F250 F250 F250	TOTAL CONNECT TOTAL CONNECT TOTAL DEMAND TOTAL DEMAND LOAD CODES: LIGHTING RECEPTACLES MECHANICAL COMPUTER KITCHEN PANELBOARD
M 2 ATS 120/240 1P-3W 200A MCB	LXIS IING 45KVA GENERATOR 120/240 1P-3W 100A MCB 120/240 1P-3W 100A MCB 120/240 1P-3W 100A MCB 120/240 1P-3W 100A MCB 120/240 1P-3W 100A MCB 120/240 SPD M L ATS 120/240 MCB 250A MCB 250A MCB 22KAIC	PANELBUARD
EXISTING GROUNDING SYSTEM	F125 F125 GRADE	<u>:</u> _
GENERAL NOTES:	F200 RUN ALL NEW CONDUITS FOR GENERATOR UNDERGROUND 1" CONTROL CONDUIT 1#4 AWG BARE GROUNDING LOOP TO BUILDING STRUCTURE STEEL AND TO ALL METAL PIPING SYSTEMS COORDINATE LOCATION IN FIELD	
DENOTES ITEMS TO BE REMOVED. ITEMS IN GRAYSCALE ARE EXISTING. ITEMS BOLD ARE NEW.	1 #4 AWG CU 1 #4 AWG CU 1 #4 AWG CU 1 #4 AWG CU	
	ONE-LINE RISER DIAGRAM NTS (3) GROUND RODS SPACED EVENLY AS PER NEC.	

7/14/2014 CMD/MC JDC

DRAWN BY: CHECKED BY: SHEET No.:

E5.0

	FLORIDA POWER AND LIGHT EXISTING DEMAND LOAD											
DATE	KWH USED	SERVICE DAYS	DEMAND KW	DEMAND AMPS								
7/22/2014	28700	32	40	166.7								
6/20/2014	27029	30	40	166.7								
5/21/2014	27699	30	42	175.0								
4/21/2014	24813	31	39	162.5								
3/21/2014	22422	29	38	158.3								
2/20/2014	20003	28	38	158.3								
1/23/2014	26396	34	41	170.8								
12/20/2013	24798	30	41	170.8								
11/20/2013	23868	29	41	170.8								
10/22/2013	25488	29	40	166.7								
9/23/2013	29587	33	43	179.2								
8/21/2013	26477	30	41	170.8								

ELECTRIC UTILITY DEMAND LOAD

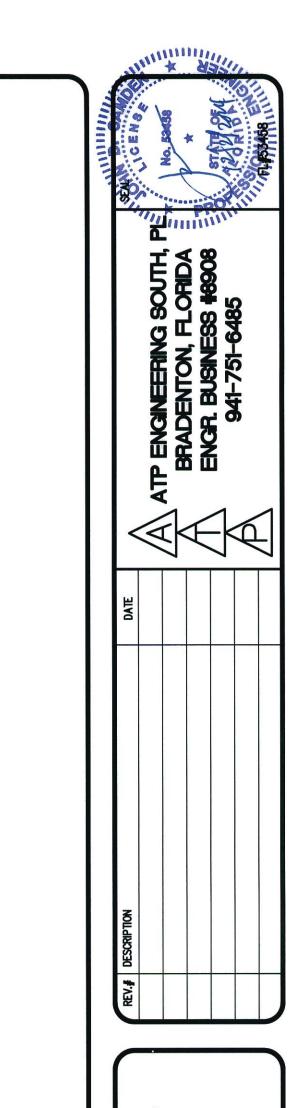
EXISTING ELECTRIC SERVICE RATING - 200 AMPS AT 240 VOLTS

MAXIMUM DEMAND AS PER UTILITY COMPANY METERING AND BILLING: 9/23/2013 - MAXIMUM DEMAND KW - 43kw
MAXIMUM DEMAND AMPS - 179.2A

AS PER NEC 220-87.

240V Sing	alo Phoco	and a livery squared part of require parts of the constraints		
Utility Fau	Marketine and the second of th	31939	AIC	
1		10 10 10 10 10 10 10	10, 00000000	
Point to P	oint Method Calculation	2 11 22 2		
Length of	Run	80	feet	
Utility Fau		31939		
, 	uctors/phase	1		
	nductor Constant	16483		size of wire
	o line (E (I-I))	240		250
f	2 x L x I	1.291796		mcm
- appropriate the state of the	N x C x E(I-I)	Direction of the state of the s		
Volt line to	o Ground (E (I-n))	120	72.2	
f	2 x L x I	2.583591		1
	N x C x E(l-n)			
Multiplier	(M - E(I-I)) = 1/(1+f)		0.436339	
	(M - E(I-n)) = 1/(1+f)	all the second live of the secon	0.27905	
			CROSSIONES SANS	
Short Circ	uit Line = IxM (E (I-I))		13936	AIC
	uit Ground= lxM (E (l-n))		8913	
The second secon				
Service E	ntrance to Main Panel			
Length of	Run	5	feet	generalization of the state of
Service Er	ntrance Fault Current	13936	AIC	
# of Condi	uctors/phase	1	e-preliment of	
	nductor Constant	16483		size of wire
Volt line to	o line (E (I-I))	240		250
f	2 x L x l	0.035228		mcm
3-4-4-1	N x C x E(I-I)			
Volt line to	o Ground (E (l-n))	120		
f	2 x L x I	0.045062	1 v	
	$N \times C \times E(I-n)$		t	
	(, , ,			
Multiplier	(M - E(I-I)) = 1/(1+f)		0.965971	
	(M - E(I-n)) = 1/(1+f)		0.956881	
Short Circ	uit Line = lxM (E (I-I))		13462	AIC
	uit Ground= lxM (E (l-n))		8529	
Main Pane	el to a Distribution Panel			t
				1
Length of	Run	50	feet	f
3 - Marriago	ntrance Fault Current	13462	AIC	
# of Cond	uctors/phase	1		
positions about the state of th	nductor Constant	7293	December of the second	size of wire
Volt line to	o line (E (I-I))	240		+
f	2 x L x I	0.769117	-11226	#
	N x C x E(I-I)			The second secon
Volt line to	o Ground (E (I-n))	120		1
f	2 x L x I	0.974565		
	$N \times C \times E(I-n)$			
	- V V			1
Multiplier	(M - E(I-I)) = 1/(1+f)		0.565254	
	(M - E(I-n)) = 1/(1+f)		0.506441	
	··· – · · · // · · / · · //			
Short Circ	uit Line = IxM (E (I-I))		7609	AIC
) management management management	cuit Ground= IxM (E (I-n))		4319	
	CIT CITCHIA INTO (E (I-II))		- 1 019	, 110

FAULT CURRENT CALCULATIONS



2014.26 7/14/2014

CMD/MC DRAWN BY: CHECKED BY:

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 NEW RECEPTACLES, PHONE/DATA JACKS, AND ROOM EQUIPMENT SHOWN ON THESE DRAWINGS ARE APPROXIMATE. FINAL LOCATIONS WILL BE DETERMINED DURING THE CONSTRUCTION PHASE.
- 9. ALL EQUIPMENT SHALL BE SUBMITTED FOR APPROVAL PRIOR TO ORDERING.
- 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. ADD UTILITY FEES TEXT.
- 16. CONTRACTOR SHALL DEMOLISH ANY REMAINING EXISTING ELECTRICAL EQUIPMENT, DEVICES, CONDUIT, FIXTURES, WIRE, UTILITY TRANSFORMER, ETC. COMPLETE. FIELD VERIFY EXACT REQUIREMENTS PRIOR TO BID. ALL REMOVED EQUIPMENT/FIXTURES SHALL BE TURNED OVER TO THE OWNER.
- 17. CAP AND FIRE STOP ALL EXISTING UNUSED CONDUITS AND CONDUIT PENETRATIONS THROUGH THE FLOOR AND TO THE FLOOR ABOVE.
- 18. IF A NEW CONDUIT IS REQUIRED FOR A RECEPTACLE, THERMOSTAT, OR WALL SWITCH, THE ELECTRICAL CONTRACTOR SHALL PATCH THE DRYWALL.
- 19. TEST GROUNDING SYSTEM AFTER COMPLETION OF JOB TO INSURE PROPER GROUND CONDUCTIVITY.
- 20. RECORD DRAWINGS: PROVIDE AMPERE READINGS ON ALL PANELBOARDS THAT ARE TOUCHED TO PROVE PANELS ARE BALANCED. PROVIDE PHASE ROTATION READINGS ON ALL SYSTEMS THAT ARE TOUCHED.

SURGE PROTECTION DEVICE (TVSS OR SPD):

PROVIDE AND INSTALL AT ALL SWITCHBOARD, DISTRIBUTION PANELBOARDS AND PANELBOARD LOCATION'S, TRANSIENT VOLTAGE SURGE SUPPRESSER'S (TVSS), FOR EACH SHOWN WITH THE FOLLOWING REQUIREMENTS: RATED AND TESTED FOR CATEGORY B & C3 (8 BY 20 MICROSECOND WAVE FORM) AS DEFINED BY ANSI/IEEE C62.41 AND C62.45. WITH SYSTEM VOLTAGE RATING: 120/240 (VERIFY VOLTAGES) 1 PHASE, 3 WIRE GROUNDED, 60HZ; PROTECTION MODES: EACH LINE TO NEUTRAL, EACH LINE TO GROUND, NEUTRAL TO GROUND,

MAXIMUM SURGE CURRENT CAPACITY (8 X 20 MICROSECONDS) FOR MULTIPLE OCCURRENCES: MINIMUM CAPACITY ALLOWED IS 160,000 AMPS PER PHASE FOR BRANCH PANELBOARDS AND 240,000 AMPS FOR SWITCHBOARDS AND DISTRIBUTION PANELBOARDS. UL-1449 VOLTAGE SUPPRESSION RATING: L-N, 400, L-G = 400 AND N-G = 400 FOR 120/240 VOLT SYSTEMS.

PROVIDE WITH INTEGRAL SURGE RATED FUSE ,THERMAL CUTOUT DEVICE, MODULE STATUS INDICATOR LIGHTS, UNIT STATUS INDICATOR LIGHTS, AUDIBLE ALARM AND SILENCE SWITCH, AND TRANSIENT COUNTER, AND SHALL BE UL 1283 LISTED, AND COMPLY WITH UL 1449 2ND EDITION. ACCEPTABLE MANUFACTURES: GE TRANQUELL, LEA, JOSLYN, INNOVATIVE TECHNOLOGY, AND SQUARE D SURGELOGIC. INTEGRATED OR EXTERNAL MOUNTED.

SPECIFICATIONS:

(APPLY TO ALL ELECTRICAL SHEETS)

- 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.
- ALL CIRCUIT BREAKERS SHALL BE COORDINATED BY THE FACTORY/ MANUFACTURER AND ELECTRICAL CONTRACTOR PRIOR TO INSTALLATION.
- 4. PROVIDE LABELING FOR ALL PANELBOARDS, SWITCHBOARDS, AND DISCONNECT SWITCHES TO INCLUDE AN ENGRAVED PLASTIC LABEL IDENTIFYING THE EQUIPMENT AND WHERE IT IS FED FROM.
- 4.1. ALL BRANCH DEVICES IN THE MAIN SWITCHBOARD SHALL HAVE AN ENGRAVED PLASTIC LABEL.
- 4.2. ALL PANELBOARDS SHALL INCLUDE A TYPEWRITTEN DIRECTORY. ALL RECEPTACLES SHALL HAVE CIRCUIT NUMBERS WRITTEN ON THE INSIDE OF
- 4.3. 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 LISE
- 4.4. ALL RECEPTACLES SHALL HAVE CIRCUIT NUMBERS WRITTEN ON THE INSIDE OF THE COVERPLATE.
- 4.5. ALL JUNCTION BOX COVERS SHALL BE IDENTIFIED TO INDICATE CIRCUITS CONTAINED.
- 4.6. WHERE MULTIPLE SWITCHES ARE GANGED TOGETHER THE SWITCHES SHALL
- 4.7. ALL JUNCTION BOXES ON EMERGENCY POWER SHALL BE RED IN COLOR.
- 4.8. ALL DISCONNECTS SHALL HAVE CIRCUIT NUMBER, VOLTAGE, AMPERAGE, AND PHASE IDENTIFIED ON AN IDENTIFICATION LABEL.
- 5. 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.
- 6. ALL ELECTRICAL CONNECTORS, LUGS, BREAKERS, EQUIPMENT, ETC. SHALL BE RATED AT A MINIMUM OF 75 DEG. C.
- 7. WIRING METHODS:

ALL WIRING SHALL BE COPPER. NO ALUMINUM WIRING WILL BE ALLOWED. MC TYPE CABLE SHALL NOT BE USED.

- 8 SWITCHES SHALL BE 20 AMPERE RATED, 120/277 VOLT, LEVITON 1221—21 SERIES OR APPROVED EQUIVALENT, UNLESS OTHERWISE NOTED. 8.1 SWITCHES CONTROLLING LIGHTING SHALL HAVE NEUTRAL CONDUCTOR.
- 9. RECEPTACLES SHALL BE 20A, 120V GROUNDING TYPE LIKE LEVITON T5820 SERIES, UNLESS OTHERWISE NOTED.
- 9.2 PROVIDE GROUND FAULT CIRCUIT-INTERRUPTER (GFI) TYPE RECEPTACLE IF SHOWN OR AS REQUIRED BY NEC.

10. ALL COVERPLATES FOR INTERIOR WIRING DEVICES SHALL BE INDUSTRIAL GRADE

- TYPE STAINLESS STEEL. COLOR SHALL BE SELECTED BY OWNER. EMERGENCY POWER CIRCUITS SHALL BE INDICATED BY A NYLON COVER PLATE, COLOR SHALL BE RED.
- 11. ALL EXTERIOR RECEPTACLES SHALL BE GFCI (GFI) TYPE AND HAVE IN-USE TYPE WEATHERPROOF COVERPLATES.
- 12. ALL ACCESSORIES THAT REQUIRE ELECTRICAL CONNECTIONS SHALL BE NOTED BY THE CONTRACTOR PRIOR TO BID THAT CIRCUITS AND A TRANSFORMER MAY BE REQUIRED.
- 13. THE ACCESSORIES SHALL BE POWERED OUT OF THE INSTALLED PANEL IN THE
- 14. ALL CONDUITS, BREAKERS, PANELS, AND PULLBOXES SHALL BE LABELED.
- 15. ALL UNDERGROUND CONDUIT SHALL HAVE A DIG STRIP INSTALLED ABOVE IT'S LOCATION.
- 16. PAINT ALL EQUIPMENT COLORS IN ACCORDANCE WITH OWNER'S STANDARDS AND
- 17. WARRANTY: AT A MINIMUM ALL PARTS, LABOR, AND TRAVEL SHALL HAVE A WARRANTY OF AT LEAST 3 YEARS.

AUTOMATIC TRANSFER SWITCH SPECIFICATIONS:

1.01 SCOP

- 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

2.01 MECHANICALLY HELD TRANSFER SWITCH

PART 2 PRODUCTS

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 AQUEOUS 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 CREATER THAN 1000 AMPERES.

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 LOAD AMERICAN ASSOCIATION OF THE SHALL BE PROVIDED TO DISCONNECT THE NORMAL SOURCE NEUTRAL CONNECTION FROM THE EMERGENCY AND LOAD LOAD AMERICAN ASSOCIATION OF THE SHALL BE PROVIDED TO DISCONNECT THE NORMAL SOURCE NEUTRAL CONNECTION FROM THE EMERGENCY AND LOAD LOAD AMERICAN ASSOCIATION OF THE SHALL BE S

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 GREATER THAN 100 AMPERES, THE NORMAL CONNECTION SHALL BE PROVIDED WITH A INSULATED CASE BREAKER WITH TRIP PROTECTION WITH CURRENT RATINGS AS SHOWN ON THE PLANS. TWO BREAKER SHALL BE INSTALLED IN THE ATS ON THE UTILITY SOURCE SIDE AND THE GENERATOR SOURCE SIDE.

PART 3 OPERATION

3.01 VOLTAGE AND FREQUENCY SENSING

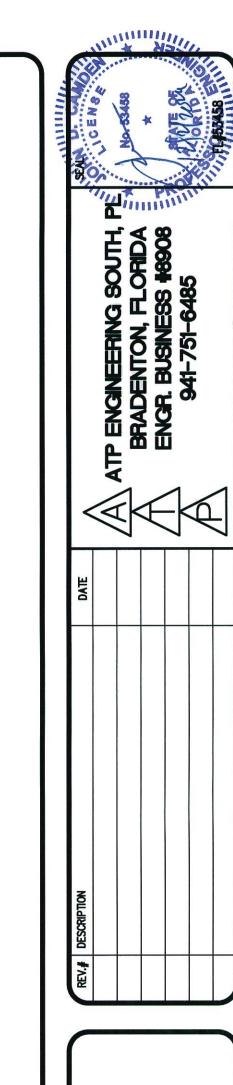
- A. THE VOLTAGE OF EACH PHASE OF THE NORMAL SOURCE SHALL BE MONITORED, WITH PICKUP ADJUSTABLE TO 95% OF NOMINAL AND DROPOUT ADJUSTABLE FROM 70% TO 90% OF PICKUP SETTING.
- B.SINGLE-PHASE VOLTAGE AND FREQUENCY SENSING OF THE EMERGENCY SOURCE SHALL BE PROVIDED.

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.



MANATEE COUNTY DETENTION CENT GRICULTURAL CENTER AND FISH HATO ELECTRICAL IMPROVEMENTS 14470 HARLEE RD. PALMETTO, FLORIDA 34221

ELECTRICAL
SPECIFICATIONS

| FILE:M.C.Jail Agricultural Center |
| JOB NO.: 2014.26 |
| DATE : 7/14/2014 |
| PLOT SIZE: 1:1 |
| DRAWN BY: CMD/MC

ET No.:

CHECKED BY:

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. 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 400 22,000A (OR GREATER)

MCCBW/CLF 100,000

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.

UTILITY METERING SPECIFICATIONS:

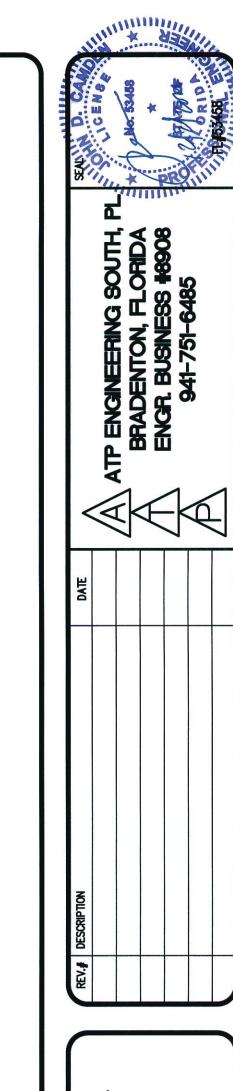
- 1.01 SCOF
 - A. FURNISH AND INSTALL ALL REQUIRED EQUIPMENT FOR UTILITY METERING TO MEET ALL CURRENT UTILITY AND NEC STANDARDS.
- B. PAY FOR ALL UTILITY CHANGE OUT/OUTAGE AND METER INSTALLATION FEES FOR THE FACILITY.
- C. CHECK METER STANDARDS AND COORDINATE WORK WITH THE UTILITY COMPANY: FLORIDA POWER AND LIGHT, ASSOCIATE ENGINEER, MR. ANTHONY NOVAK, (941)-723-4424.
- D. COORDINATE METER TYPE WITH UTILITY: 320A CAN METER OR 400A BOLT IN METER.
- E.THE UTILITY MAY REQUIRE AN ELECTRICAL PULL FROM THE TRANSFORMER TO THE NEW PANEL. VERIFY ALL EXISTING CONDITIONS AT THE FACILITY PRIOR TO BIDDING AND START OF CONSTRUCTION.

2.01 EQUIPMENT

- A. EQUIPMENT AND WORK MAY INCLUDE: A CT METERING BOX, METER CAN, METER, EXTRA CONDUITS, WIRING, TRENCHING, TERMINATING, LUGS, CURRENT TRANSFORMERS, AND TRANSFORMERS.
- B. PROVIDE AND INSTALL ALL NECESSARY EQUIPMENT TO PROPERLY METER THE FACILITY.

3.00 WARRANTY

A. PROVIDE AN ALL INCLUSIVE 3 YEAR WARRANTY ON ALL WORK PERFORMED.



AGRICULTURAL CENTER AND FISH HATCHER
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