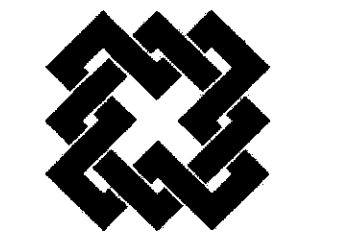




**NORTH CAROLINA
AQUARIUM**
On Roanoke Island

**ROANOKE ISLAND AQUARIUM
TURTLE REHABILITATION
CENTER**

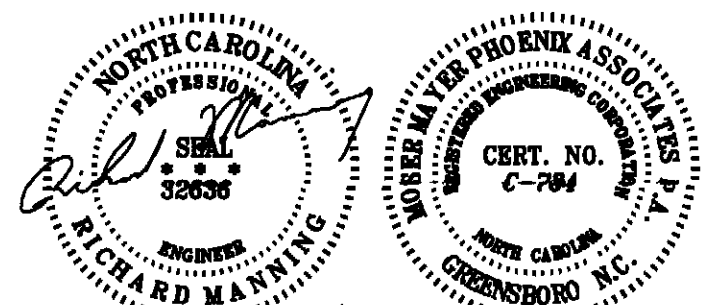
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4/13/12



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SCO ID# 10-08584-01A

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 04-13-2012
PROJECT NUMBER: 11007.01
SCALE: AS NOTED
DRAWN BY: RES
CHECKED BY: RJM

**ELECTRICAL LEGEND,
NOTES, AND
SCHEDULES**

E0.1

ELECTRICAL SYMBOL LEGEND

NOTE: NOT ALL SYMBOLS LISTED ARE USED

	RECESSED, SURFACE, OR PENDANT LUMINAIRE. SEE LUMINAIRE SCHEDULE. SINGLE DIAGONAL LINE OR NO LINE INDICATES CONNECTION TO A NORMAL LIGHTING CIRCUIT.		FLOOR BOX DUPLEX RECEPTACLE AND DATA OUTLET, LEGRAND RFR2 SERIES OR EQUIVALENT.
	DUPLEX RECEPTACLE OUTLET; "WP" = PROVIDE WEATHER-RESISTANT GROUND FAULT PROTECTED DEVICE WITH WEATHERPROOF IN-USE COVER.		DOUBLE DUPLEX RECEPTACLE OUTLET; "WP" = PROVIDE GROUND FAULT PROTECTED DEVICE WITH WEATHERPROOF IN-USE COVER; "TR" = TAMPER RESISTANT DEVICE.
	SPECIAL RECEPTACLE, NEMA DESIGNATION AS SHOWN ON THE PLANS		JUNCTION BOX, SIZE PER NEC, WALL, CEILING, AND FLOOR MOUNTED, RESPECTIVELY
	WALL MOUNTED LUMINAIRE. SEE LUMINAIRE SCHEDULE.		NEC-REQUIRED GROUNDING ELECTRODE SYSTEM FOR SERVICE OR SEPARATELY DERIVED SYSTEM
	EXIT SIGN. SEE LUMINAIRE SCHEDULE. PROVIDE DIRECTIONAL ARROWS AS INDICATED.		FIRE ALARM SYSTEM CONTROL PANEL
	ALL EXIT SIGNS TO BE CONNECTED UNSWITCHED.		FIRE ALARM SYSTEM ANNUCIATOR PANEL
	EXTERIOR LIGHTING PHOTOCELL, MOUNT FACING NORTH AND SHIELD FROM ARTIFICIAL LIGHT.		MANUAL FIRE ALARM PULL STATION
	SINGLE POLE WALL SWITCH		AUTOMATIC HEAT DETECTOR, RATE OF RISE UNLESS OTHERWISE NOTED
	THREE-WAY WALL SWITCH		SMOKE DETECTOR, PHOTOELECTRIC TYPE, UNLESS NOTED OTHERWISE. "D" DENOTES DUCT DETECTOR
	FOUR-WAY WALL SWITCH		FIRE ALARM SYSTEM HORN/STROBE COMBINATION UNIT, NUMBER INDICATES CATALOG RATING, "CW" DENOTES CEILING MOUNTED OR MOUNTED TO BOTTOM OF STRUCTURE IF NO FINISHED CEILING.
	MOTOR RATED TOGGLE SWITCH		FIRE ALARM SYSTEM STROBE ONLY UNIT, NUMBER INDICATES CATALOG RATING, "CW" DENOTES CEILING MOUNTED.
	LOW VOLTAGE OVERRIDE SWITCH - SEE SPECIFICATIONS		FIRE ALARM SYSTEM REMOTE INDICATOR LIGHT & TEST SWITCH FOR DUCT DETECTOR
	KEYED SWITCH WITH WEATHERPROOF IN-USE COVER - SEE SPECIFICATIONS		PANELBOARD, SEE SCHEDULE FOR MOUNTING, RATINGS AND DETAILS
	WALL MOUNTED OCCUPANCY SENSOR - SEE SPECIFICATIONS		SOUND SYSTEM OUTLET - 4x4 BOX, ADAPTER TO SINGLE-GANG FACE PLATE, 1" CONDUIT STUBBED 6" ABOVE ACCESSIBLE CEILING UNLESS NOTED OTHERWISE.
	RACEWAY CONCEALED		DISCONNECT SWITCH, RATED FOR EQUIPMENT SERVED.
	RACEWAY IN SLAB, BELOW SLAB OR BELOW GRADE		ENCLOSED CIRCUIT BREAKER, WALL MOUNTED, RATING AS INDICATED.
	CIRCUIT HOMERUN TO PANELBOARD. LETTERS AND NUMBERS DENOTE PANELBOARD AND CIRCUIT NUMBER.		FUSED DISCONNECT SWITCH, RATING, FUSES AND POLES AS INDICATED.
	CONDUIT SLEEVE WITH INSULATED BUSHINGS.		DUAL-TECHNOLOGY OCCUPANCY SENSOR - SEE SPECIFICATIONS
	RACEWAY/WIRING TURNED UP		TELE/DATA OUTLET - 4x4 BOX, ADAPTER TO SINGLE-GANG FACE PLATE, 3/4" CONDUIT STUBBED 6" ABOVE ACCESSIBLE CEILING UNLESS NOTED OTHERWISE.
	RACEWAY/WIRING TURNED DOWN		
	RACEWAY STUBBED OUT		
	EXPOSED OR SURFACE MOUNTED RACEWAY WITH DEVICES AS SHOWN.		

LUMINAIRE SCHEDULE #11007.00									
TYPE	MANUFACTURER AND CATALOG NUMBER	LAMPS		BALLAST		INPUT VOLTS	MOUNTING	DESCRIPTION	#
		NO.	TYPE	WATTS	NO.				
A	LITHONIA AFTD SERIES DAYWHITE 1F SERIES SIMKAR 1F SERIES METALUX STN SERIES LIGHTOLIER T14A OR APPROVED EQUIVALENT	3	T8 4100K	28	2	ESB NBF PS	63 120	SUSPEND AT 49" AFF	4" INDUSTRIAL STRIP. SYMMETRIC SIDE REFLECTORS WITH 10% UPLIGHT. STEEL HOUSING, BAKED WHITE ENAMEL FINISH. PROVIDE MOUNTING AND SUPPORT HARDWARE AND WIREGUARD. HIGH EFFICIENCY LAMP/BALLAST COMBINATION. SEE NOTE 7. PROVIDE TWO BALLASTS TO ALLOW FOR MULTILEVEL SWITCHING.
M	LITHONIA FEM4 SERIES DAYWHITE LWIR SERIES SIMKAR EN2 SERIES OR APPROVED EQUIVALENT	2	T8 4100K	28	1	ESB NBF PS	55 120	SURFACE/ PENDANT AT HEIGHT NOTED ON PLAN	4x7" SEALED AND GASKETED, SHALLOW FIBERGLASS HOUSING, WHITE FINISH, CLEAR LINEAR PRISMATIC POLYCARBONATE LENS, UL WET LOCATION LABEL. HIGH EFFICIENCY LAMP/BALLAST COMBINATION. SEE NOTE 7.
ME	SAME AS TYPE M, EXCEPT PROVIDE WITH 1100 LUMEN BATTERY/INVERTER, TEST SWITCH, AND INDICATOR LIGHT.								
P	DM LIGHTING 8522 SERIES ARCH AREA LIGHTING UCS SERIES LURALINE HL301 STEM SERIES OR APPROVED EQUIVALENT	1	TRT 4100K	32	1	EB	36 120	PENDANT, PENDANT TO 110" AFF	DECORATIVE STEM PENDANT WITH LAMP REVEAL IN HOUSING, BRONZE FINISH, REMOTE BALLAST IN CANOPY.
WE	LITHONIA WST SERIES BROWALISE T038 SERIES DAYWHITE WCL SERIES GARDCO 111 SERIES DECO D444 SERIES	1	TRT 4100K	32	1	EB	36 120	WALL 110-120" AFF. COORDINATE WITH ARCH. ELEVATION	12"W x 9"H DIE-CAST ALUMINUM HOUSING, ALUMINUM REFLECTOR WITH BRONZE FINISH, TRAPEZOIDAL SHAPE, FULLY GASKETED ONE-PIECE INJECTION MOLDED UV STABILIZED POLYCARBONATE REFRACTOR, UL WET LOCATION LABEL, O/F BALLAST, DARK-SKY FULL CUT-OFF DISTRIBUTION. PROVIDE WITH 900 LUMEN BATTERY/INVERTER, TEST SWITCH, AND INDICATOR LIGHT.
X	MCPHLBEN CXX SERIES DUAL-LITE LX SERIES BEGHELLI VAA4 SERIES OR APPROVED EQUIVALENT		LED	-	-	-	9 120	WALL OR CEILING	LED EXIT SIGN, MATTE WHITE HOUSING, STENOGELED FACE WITH RED LETTERS, UNIVERSAL MOUNTING, FACES AS INDICATED. TEST/POWER INDICATOR LIGHT, NICKEL CADMIUM BATTERY, SOLID-STATE VOLTAGE LIMITED CHARGER, NFPA 101 COMPLIANT KNOCKOUT CHEVRONS AS INDICATED.

LUMINAIRE SCHEDULE NOTES:

- ABBREVIATIONS:
CWA = CONSTANT WATTAGE AUTOTRANSFORMER
DIM = DIMMING BALLAST
DTT = DOUBLE TWIN TUBE
EB = ELECTRONIC BALLAST
ESB = ELECTRONIC ENERGY-SAVING BALLAST
FS = FULL SPECTRUM
IS = INSTANT START
NBF = NORMAL BALLAST FACTOR
PS = PROGRAMMED START
TRT = TRIPLE TUBE
- NOTES:
1. VERIFY LUMINAIRE FINISHES AND COLORS WITH ARCHITECT.
2. COORDINATE MOUNTING WITH CEILING TYPE.
3. FLUORESCENT LAMPS SHALL BE CRI 80, MINIMUM, AND TCLP COMPLIANT.
4. FLUORESCENT BALLASTS SHALL BE ELECTRONIC AND SOUND RATING "A".
5. PROVIDE ALL NECESSARY SUPPORT HARDWARE AND ADAPTERS FOR EACH LUMINAIRE.
6. LUMINAIRES WITH DOUBLE-ENDED FLUORESCENT LAMPS SHALL HAVE A DISCONNECT MEANS TO COMPLY WITH NEC 410.130(G).
7. ENERGY-SAVING BALLAST SHALL BE SYLVANIA QUICKTRONIC HIGH-EFFICIENCY (QHE) AND OPERATE COMPATIBLE SYLVANIA T8 XP SUPERSAVER LAMPS, OR EQUIVALENT SYSTEM.

ADDITIONAL GENERAL NOTES:

- THERE SHALL BE NO MORE THAN THREE CURRENT CARRYING CONDUCTORS AND A SINGLE NEUTRAL FOR A THREE-PHASE POWER SERVICE. IF MORE CONDUCTORS OCCUPY A SINGLE RACEWAY FOR ANY REASON, PROVIDE A SEPARATE NEUTRAL FOR EACH ADDITIONAL CONDUCTOR.
- ALL FIRE ALARM DEVICES SHALL BE ACCESSIBLE AND HAVE SURGE PROTECTION.
- PERMANENTLY MARK ALL JUNCTION BOX COVERS WITH THE PANEL BOARD NAME AND CIRCUIT NUMBER.
- ALL 4"x4" JUNCTION BOXES TO BE A MINIMUM OF 2-1/8" DEEP.
- ALL CONDUITS SHALL BE RUN IN A STRAIGHT LINE WITH 90 DEGREE BENDS WHERE NEEDED. CROSSING ABOVE CEILINGS AT ANGLES IS NOT ACCEPTABLE.

ABBREVIATIONS

ALL MAY NOT APPLY

A	AMPERES
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ATS	AUTOMATIC TRANSFER SWITCH
BAS	BUILDING AUTOMATION SYSTEM PANEL
C	CONDUIT
CATV	CABLE TELEVISION
Cd	CANDELA RATING
CB	CIRCUIT BREAKER
CM	CEILING MOUNTED
Db	DECEBEL LEVEL
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EWC	ELECTRIC WATER COOLER CONNECTION WITH GROUND FAULT PROTECTION
EX	EXISTING TO REMAIN
FACP	FIRE ALARM CONTROL PANEL
FATC	FIRE ALARM TERMINAL CABINET
FPN	FUSED PER NAMEPLATE RATING
G	GROUNDING CONDUCTOR
GF	GROUND FAULT CIRCUIT INTERRUPTER
LC	LIGHTING CONTRACTOR
M	MICROWAVE
NL	NEUTRAL CONDUCTOR
N	NIGHT LIGHT
P	POLE
PH	PHASE
PNL	PANELBOARD
PP	POWER POLE
RE	RELOCATED EXISTING DEVICE
REC	RECEPTACLE
RET	REFRIGERATOR
SPD	SURGE PROTECTION DEVICE
TR	TAMPER RESISTANT
UC	UNDER COUNTER
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
W	WATTS, WIRES
WP	WEATHERPROOF
WG	WIRE GUARD
XFMR	TRANSFORMER

ELECTRICAL SYSTEM AND EQUIPMENT

METHOD OF COMPLIANCE:
Prescriptive Performance Energy Cost Budget

Luminaire Schedule..... N/A REFER TO E0.1
Lamp type required in luminaire.....
Number of lamps in luminaire.....
Ballast type used in the luminaire.....
Number of ballasts in luminaire.....
Total wattage per luminaire.....

Total interior wattage..... N/A specified 936 allowed 1713
Total exterior wattage..... N/A specified 180 allowed 535

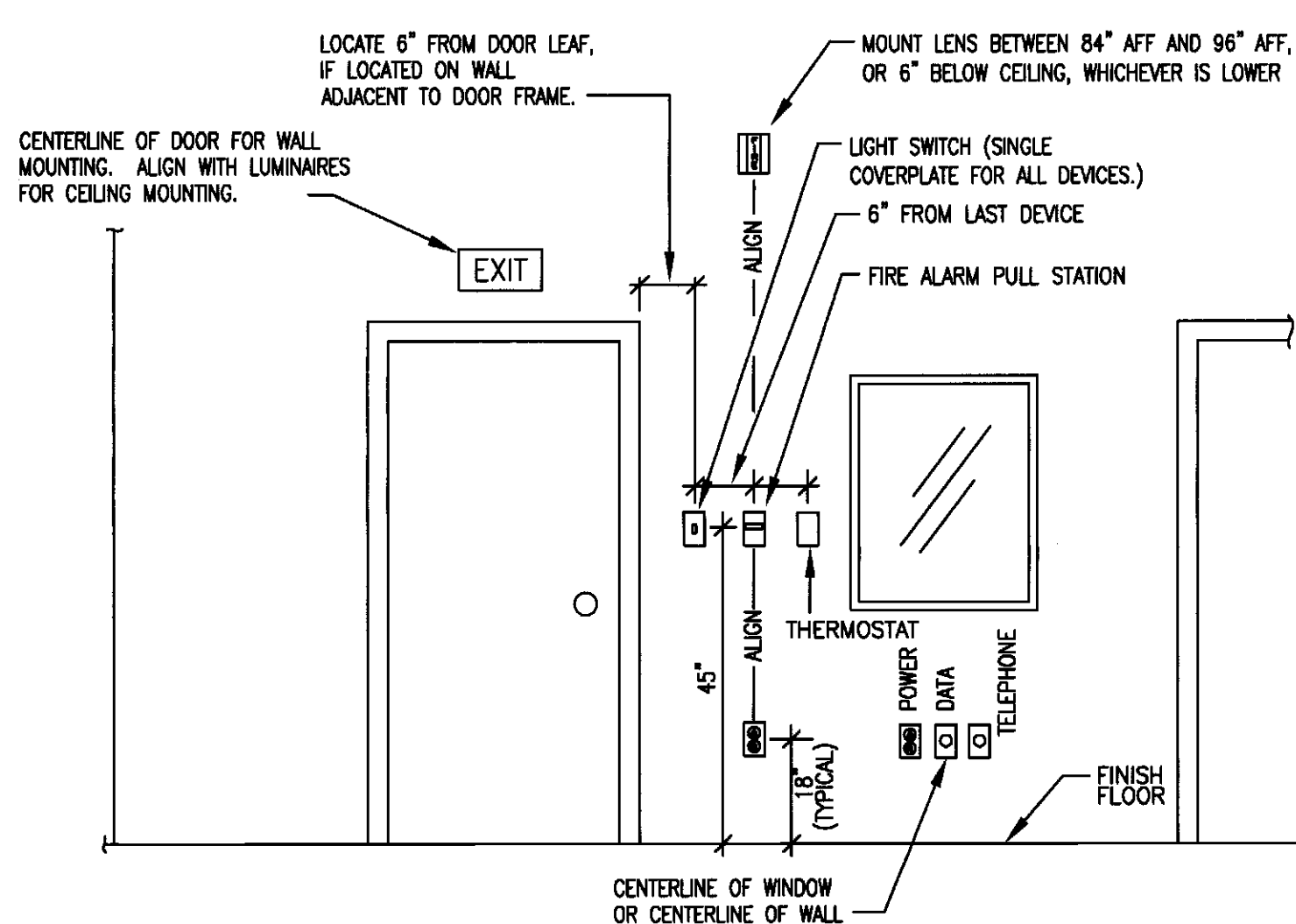
Equipment schedules with motors (not used for mechanical systems)..... N/A
Motor horsepower.....
Number of phases.....
Minimum efficiency.....
Motor type.....
of poles.....

DESIGNER STATEMENT:
To the best of my knowledge and belief, the design of this building complies with the electrical system and equipment requirements of the North Carolina State Building Code, Volume X-Energy.

NAME: Richard Manning, PE
TITLE: Electrical Engineer

LIGHTING LEVEL CALCULATION RESULTS

TYPE OF SPACE	IES RECOMMENDED FOOTCANDLE LEVEL	AVERAGE FOOTCANDLE LEVEL
TURTLE REHAB 501	30	30.4
OFFICE 502	50	58.3
TREATMENT ROOM 503	30	35.2
OZONE ROOM	30	34.9
CORRIDOR	20	24.8



NOTE: ANY SPECIFIC DIMENSIONING OR INSTRUCTIONS GIVEN ELSEWHERE ON THE DRAWINGS SHALL SUPERSEDE THESE INSTRUCTIONS.

**1 MOUNTING HEIGHTS AND ALIGNMENT CRITERIA
E0.1 NO SCALE**



**NORTH CAROLINA
AQUARIUM**
On Roanoke Island

**ROANOKE ISLAND AQUARIUM
TURTLE REHABILITATION
CENTER**

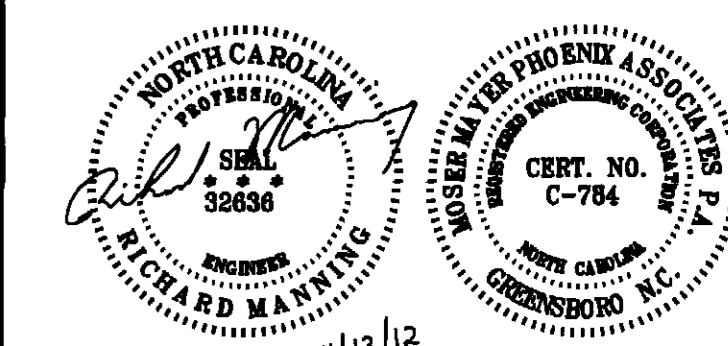
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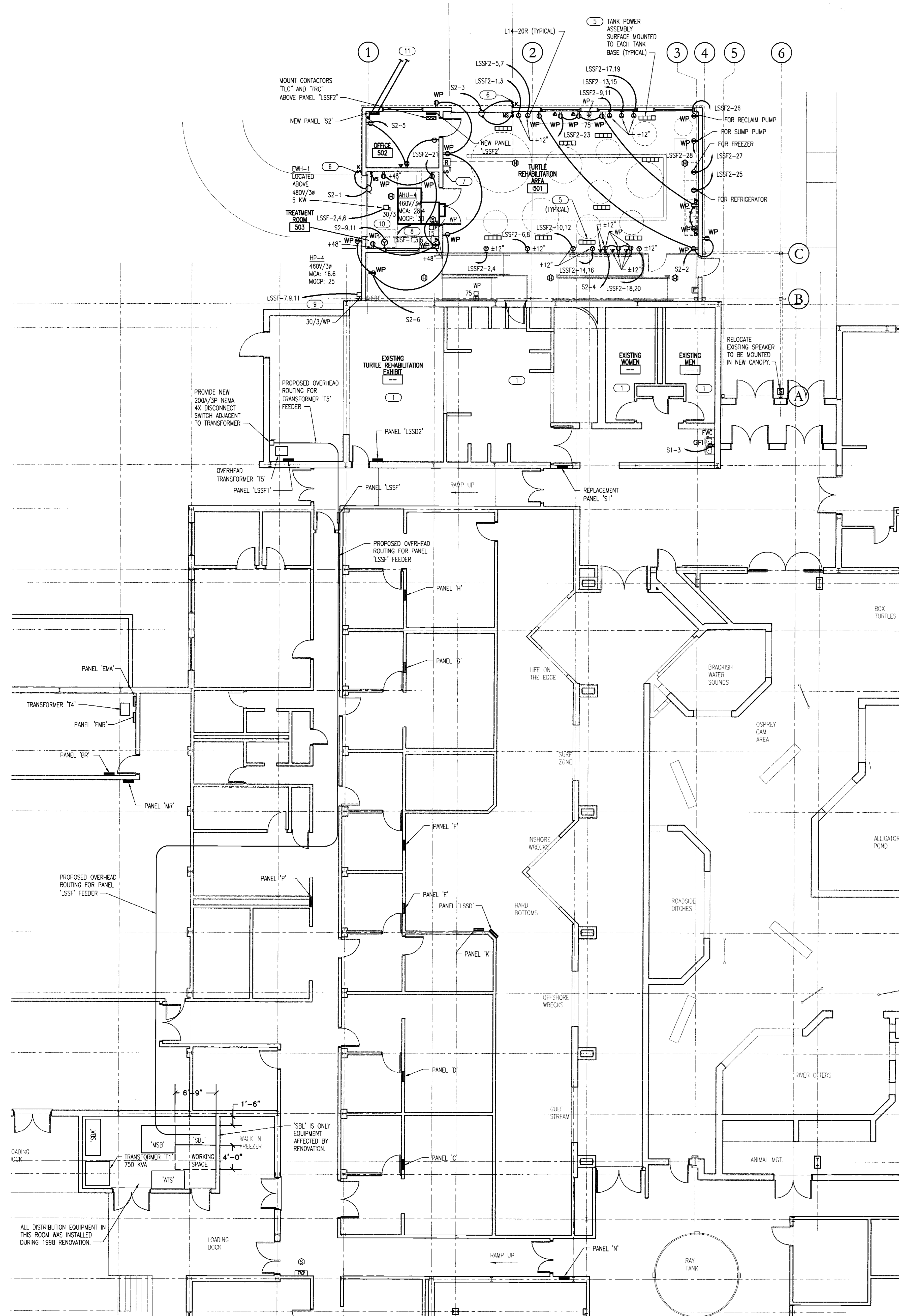
REVISIONS

NO.	DATE	DESCRIPTION

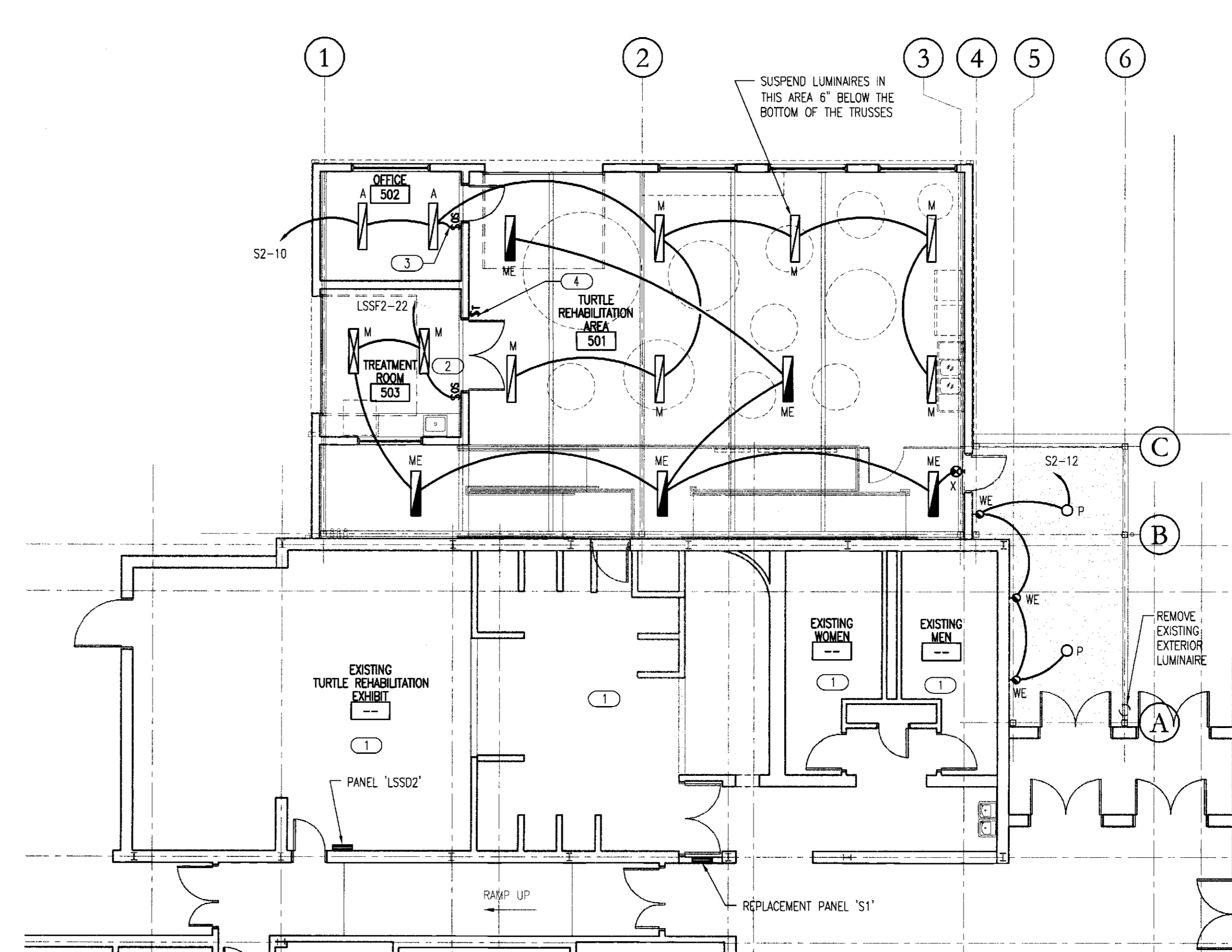
DATE 04-13-2012
PROJECT NUMBER 11007.01
SCALE AS NOTED
DRAWN BY RES
CHECKED BY RJM

**ELECTRICAL FLOOR
PLAN**

E1.1



2 POWER AND SYSTEMS PLAN
E1.1 1/8" = 1'-0"



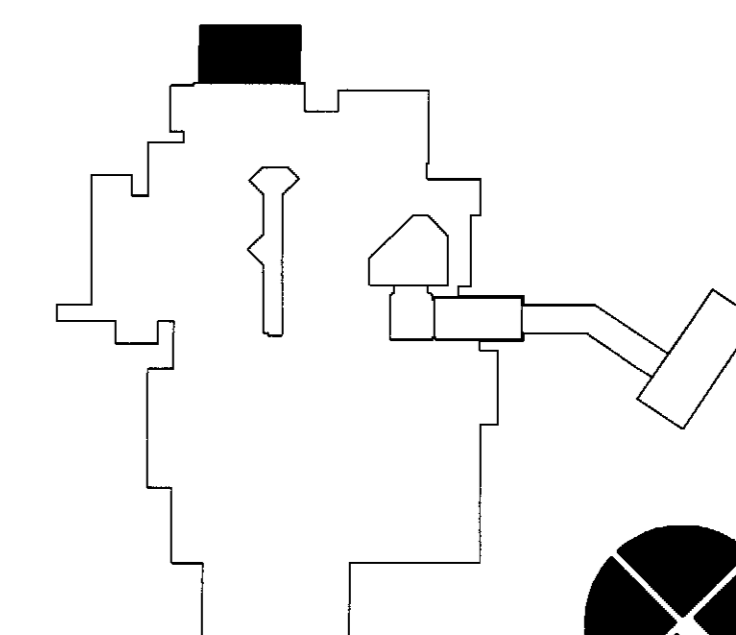
1 LIGHTING PLAN
E1.1 1/8" = 1'-0"

GENERAL NOTES:

- A. COORDINATE FINAL LOCATION AND SUPPORT HARDWARE FOR LUMINAIRES WITH DUCTWORK, PIPING, AND EQUIPMENT.
- B. CONNECT EXIT SIGNS, NIGHT LIGHTS, AND BATTERY INVERTERS AHEAD OF ALL SWITCHING AND CONTROLS.
- C. PROVIDE PHOTOCELL MOUNTED ON ROOF FACING NORTH TO CONTROL ALL NEW EXTERIOR LUMINAIRES.
- D. PROVIDE WEATHER PROOF FIRE ALARM DEVICES, SWITCHES, AND POWER DEVICES WITHIN 6' OF SALTWATER OR BRACKISH WATER, AND PROVIDE HOPE PROTECTIVE COATING FOR ALL OUTLETS AND ASSOCIATED RACKWAYS.
- E. COMPLY WITH NEC ARTICLE 680 FOR ALL LIGHTING, POWER, AND GROUNDING REQUIREMENTS AT EACH INTERIOR WATER FEATURE OR AQUARIUM.
- F. PROVIDE ALUMINUM SCREWS WHERE EXPOSED WITHIN TANK AREA.
- G. PROVIDE CORROSION RESISTANT CONDUIT AND OUTLET BOXES ABOVE AND WITHIN 6' HORIZONTALLY OF ANY TANK DISPLAY, TANK STAGING, OR TANK STORAGE. EXPOSED CONDUITS SHALL BE PVC AND OUTLET BOXES AND COVERPLATES SHALL BE HIGH DENSITY THERMOPLASTIC RESIN. HARDWARE, CLAMPS, AND SUPPORT DEVICES SHALL BE PLASTIC WITHIN AQUARIUM BACK-OF-HOUSE AREA WHERE LOCATED BETWEEN THE FINISHED FLOOR AND UP TO 8' AFF.
- H. PROVIDE GROUND-FAULT PROTECTION FOR 120V, 15 AND 20 AMP RECEPTACLES IN ALL TURTLE REHABILITATION AREAS.
- I. LOCATE ALL WALL-MOUNTED DEVICES 48 INCHES (MINIMUM) AFF WITHIN REHABILITATION AREA, UNLESS NOTED OTHERWISE.
- J. ALL LIFE SUPPORT SYSTEM (LSS) EQUIPMENT SHALL BE FURNISHED BY THE OWNER. COORDINATE CONNECTION REQUIREMENTS TO EQUIPMENT PRIOR TO ROUGH-IN.
- K. PROVIDE RED DEVICES AND COVERPLATES FOR ALL GENERATOR-SUPPORTED CIRCUITS. PROVIDE GRAY DEVICES AND STAINLESS STEEL COVERPLATES FOR ALL NORMAL CIRCUITS.

KEY NOTES:

- (1) NO WORK IN THIS AREA, EXCEPT TO ALLOW FOR RENOVATION WORK.
- (2) PROVIDE TWO BUTTON WALL MOUNTED OCCUPANCY SENSOR AND CONNECT ONE BUTTON TO CONTROL ONE BALLAST IN TREATMENT ROOM. TANDUM WIRE LUMINAIRES IN ROOM SO THAT EACH BALLAST IS CONNECTED TO ONE LAMP IN EACH LUMINAIRE. SUSPEND LUMINAIRES AT 48" AFF.
- (3) PROVIDE TWO BUTTON WALL MOUNTED OCCUPANCY SENSOR IN OFFICE. FIRST BUTTON CONTROLS OUTER LAMPS AND SECOND BUTTON CONTROLS INNER LAMPS. PROVIDE SEPARATE BALLAST IN LUMINAIRES TO CONTROL INNER LAMPS AND OUTER LAMPS TO ALLOW FOR MULTI-LEVEL SWITCHING. OCCUPANCY SENSOR TO BE MANUAL ON AND AUTOMATIC OFF.
- (4) PROVIDE ASTRONOMIC PROGRAMMABLE TIMER SWITCH (LEGRAND RT24 OR EQUIVALENT) AT STANDARD SWITCH HEIGHT WITH CLEAR WEATHERPROOF COVER. TIMER SWITCH TO CONTROL CONTACTOR "TLC" MOUNTED ABOVE PANEL "SSSF2". PROVIDE "TURTLE REHAB LIGHTING CONTROLS" LABEL ON SWITCH COVER. SET PROGRAM CONTROL SCHEDULE TO ENERGIZE LUMINAIRES AT DAWN AND TURN OFF AT SUNSET. REFER TO DETAIL 1 ON SHEET E3.1 FOR ADDITIONAL INFORMATION.
- (5) PROVIDE TANK POWER DISTRIBUTION ASSEMBLY. PROVIDE HANDLE TIES AS NECESSARY TO CONTROL (2) 20A/1P CIRCUIT BREAKERS SERVING EACH TANK ASSEMBLY. REFER TO DETAILS 12, 13, AND 14 ON SHEET E4.1 FOR PLUG AND RECEPTACLE INFORMATION. SAND FILTER PUMP (SUPPLIED BY OWNER) BASIS OF DESIGN AT EACH TANK IS HAYWARD 3/4 HP POWER-FLO II, 0.56KW, 115V, PENDING OWNER FINAL SELECTION. PROVIDE AND INSTALL CORD AND PLUG ASSEMBLY FOR PUMP CONNECTION TO TANK POWER DISTRIBUTION ASSEMBLY.
- (6) PROVIDE CONNECTION TO MOTORIZED ROLL-UP DOOR THROUGH MOTOR-RATED SWITCH AND UP/DOWN/STOP CONTROLLERS. PROVIDE THREE-POSITION MAINTAINED KEYED SELECTOR SWITCH FOR OUTDOOR CONTROLLER WITH WEATHERPROOF COVER AND UP, DOWN, STOP, AND RELEASE POSITIONS (SQUARE-D XBSA633 OR EQUIVALENT). PROVIDE SWITCH AND CONTROLLERS IF NOT SUPPLIED WITH UNIT. COORDINATE CONNECTION REQUIREMENTS WITH MOTORIZED DOOR INSTALLER PRIOR TO ROUGH-IN. BASIS OF DESIGN MOTOR IS 120V/14, 1/2 HP.
- (7) PROVIDE ASTRONOMIC PROGRAMMABLE TIMER SWITCH (LEGRAND RT24 OR EQUIVALENT) AT STANDARD SWITCH HEIGHT WITH CLEAR WEATHERPROOF COVER. TIMER SWITCH TO CONTROL CONTACTOR "TRC" MOUNTED ABOVE PANEL "SSSF2". PROVIDE "TURTLE REHAB TANK CONTROLS" LABEL ON SWITCH COVER. COORDINATE PROGRAM CONTROL SCHEDULE WITH OWNER. REFER TO DETAIL 2 ON SHEET E3.1 FOR ADDITIONAL INFORMATION.
- (8) PROVIDE CIRCUITRY FOR NEW INDOOR AIR HANDLING UNIT PROVIDE BRANCH CIRCUITING UP TO INDOOR AIR HANDLING UNIT. FINAL CONNECTION BY INDOOR AIR HANDLING UNIT INSTALLER.
- (9) PROVIDE CIRCUITRY FOR NEW OUTDOOR HEAT PUMP. PROVIDE BRANCH CIRCUITING UP TO OUTDOOR HEAT PUMP. FINAL CONNECTION BY OUTDOOR HEAT PUMP INSTALLER.
- (10) PROVIDE NEMA 14-20 RECEPTACLE FOR STACKED WASHER-DRYER COMBINATION APPLIANCE USING 3/10, 1/106, 1/10, 1/106, 1/106, 1/106, 1/106. COORDINATE EXACT LOCATION, CORD SET CONFIGURATION, AND CONNECTION REQUIREMENTS OF OWNER-FURNISHED APPLIANCE PRIOR TO ROUGH-IN.
- (11) STUB (2) 1-1/2" PVC CONDUITS 10 FEET BEYOND THE BUILDING FOR FUTURE DOCK LIGHTING. ROUTE CONDUITS 24" BELOW GRADE MINIMUM, CAP AND MARK LOCATION OF ENDS.



KEY PLAN

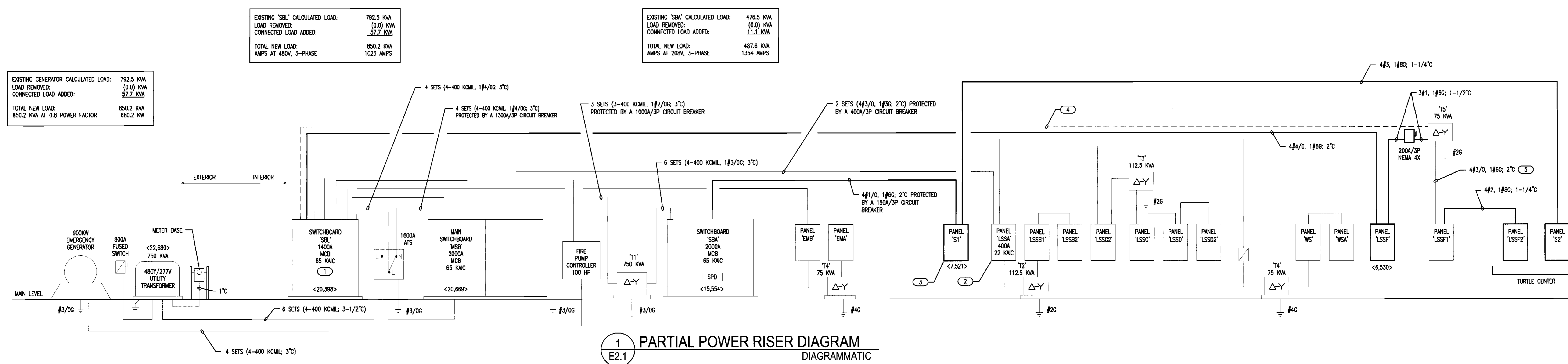
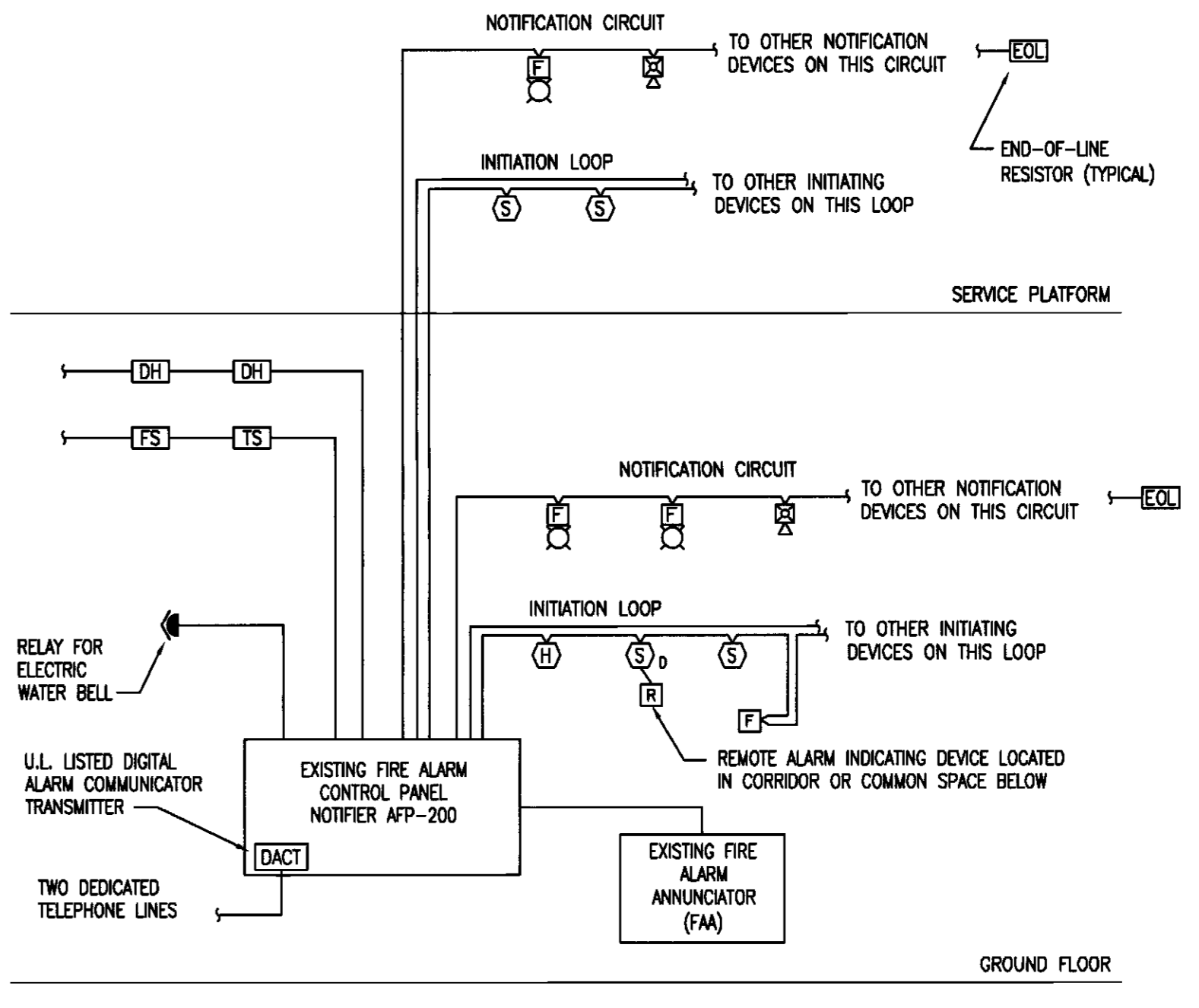


North

SYSTEM OUTPUTS

FIRE ALARM MATRIX BASED ON NFPA 72 FIGURE A.14.6.2.4(9)	SYSTEM OUTPUTS																										
	CONTROL UNIT ANNUNCIATION										NOTIFICATION					REQUIRED FIRE SAFETY CONTROL					SUPPLEMENTARY						
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	T	U	V	X	Y	Z	AA	BB	CC	DD
1 MANUAL FIRE ALARM PULL STATIONS - 1ST FLOOR	X	X						X		X	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
2 MANUAL FIRE ALARM PULL STATIONS - MEZZAINE	X	X									X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
3 SMOKE DETECTORS - 1ST FLOOR	X	X					X				X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
4 SMOKE DETECTORS - MEZZAINE	X	X						X			X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
5 AHU BYPASS SWITCH ON				X	X									X	X												
6 IN-DUCT SMOKE DETECTORS - SUPPLY FANS	X	X									X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
7 IN-DUCT SMOKE DETECTORS - 1ST FLOOR	X	X					X				X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
8 IN-DUCT SMOKE DETECTORS - MEZZAINE	X	X						X			X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
9 IN-DUCT SMOKE DETECTORS - ROOF	X	X							X		X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
10 HEAT DETECTORS - 1ST FLOOR	X	X					X				X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
11 HEAT DETECTORS - MEZZAINE	X	X						X			X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
12 WATERFLOW - 1ST FLOOR	X	X					X				X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
13 SPRINKLER CONTROL VALVE - 1ST FLOOR			X	X							X	X						X		X	X	X					
14 FIRE ALARM AC POWER FAILURE					X	X								X													
15 FIRE ALARM SYSTEM LOW BATTERY					X	X								X													
16 OPEN CIRCUIT					X	X								X													
17 GROUND FAULT					X	X								X													
18 NOTIFICATION APPLIANCE CIRCUIT SHORT					X	X								X													

- #### FIRE ALARM GENERAL NOTES:
- REFER TO FLOOR PLANS FOR EXACT NUMBER OF DEVICES AND CANDELA RATINGS.
 - ENTIRE FIRE ALARM SYSTEM DESIGN SHALL BE APPROVED BY THE FIRE MARSHAL PRIOR TO ROUGH-IN.
 - PROVIDE WIRING ACCORDING TO MANUFACTURER RECOMMENDATIONS. ALL SIGNAL WIRING FOR INITIATION SHALL BE CLASS A. ALL SIGNAL WIRING FOR NOTIFICATION DEVICES TO BE CLASS B.
 - NO WIRING SHALL BE SMALLER THAN #14 AWG. NO WIRING OTHER THAN THAT DIRECTLY ASSOCIATED WITH THE FIRE ALARM SYSTEM AND ITS AUXILIARY FUNCTIONS SHALL BE PERMITTED IN FIRE ALARM RACEWAYS.
 - PROVIDE ALL FIRE ALARM WIRING IN CONDUIT, 3/4" MINIMUM SIZE.
 - FIRE ALARM SYSTEM DEVICE AND EQUIPMENT QUANTITIES, WIRING SIZES, ROUTING, ETC. SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS AND REQUIREMENTS OF THE FIRE ALARM SYSTEM MANUFACTURER AND AS APPROVED BY THE OFFICE OF THE FIRE MARSHAL.
 - PROVIDE ANY ADDITIONAL FIRE ALARM DEVICES TO COMPLY WITH CODE REQUIREMENTS.
 - ALL FIRE ALARM SYSTEM JUNCTION BOXES, PULL BOXES, ETC. SHALL BE PAINTED RED AND SHALL BE NEATLY STENCILED IN BLACK LETTERS "FIRE ALARM".
 - FURNISH AND INSTALL ALL REQUIRED INTERLOCK WIRING BETWEEN THE FIRE ALARM SYSTEM AND AIR HANDLING EQUIPMENT CONTROLS, DUCT SMOKE DAMPERS AND/OR MOTORIZED DAMPERS AS REQUIRED TO PERFORM THE AIR HANDLING SYSTEM SHUTDOWN FUNCTIONS AS DESCRIBED IN THE PROJECT SPECIFICATIONS OR AS REQUIRED BY CODE. PROVIDE ALL NECESSARY WIRING TO FIRE DAMPERS. SEE MECHANICAL DRAWINGS FOR QUANTITIES AND LOCATIONS.
 - ALL AUDIBLE NOTIFICATION DEVICES SHALL ALARM WITH A THREE-PULSE TEMPORAL PATTERN WHEN BUILDING EVACUATION IS REQUIRED.
 - NOTIFICATION DEVICES SHALL BE SYNCHRONIZED ACCORDING TO NFPA 72 6.8.6.4.J AND ANNEX A WHERE MORE THAN TWO VISIBLE APPLIANCES ARE LOCATED WITHIN THE SAME FIELD OF VIEW OR NOTIFICATION ZONE. MORE THAN TWO VISIBLE APPLIANCES ARE NOT PERMITTED IN ANY FIELD OF VIEW UNLESS THEIR FLASHES ARE SYNCHRONIZED.
 - SMOKE DETECTORS SHALL NOT BE LOCATED IN DIRECT AIR FLOW NOR CLOSER THAN 3 FEET FROM AN AIR SUPPLY DIFFUSER.
 - ALL NEW FIRE ALARM DEVICES SHALL BE COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM.



EXISTING GENERATOR CALCULATED LOAD: 792.5 KVA
LOAD REMOVED: (0.0) KVA
CONNECTED LOAD ADDED: 27.7 KVA
TOTAL NEW LOAD: 850.2 KVA
850.2 KVA AT 0.8 POWER FACTOR
680.2 KW

EXISTING 'SB' CALCULATED LOAD: 792.5 KVA
LOAD REMOVED: (0.0) KVA
CONNECTED LOAD ADDED: 27.7 KVA
TOTAL NEW LOAD: 850.2 KVA
AMPS AT 480V, 3-PHASE
1023 AMPS

EXISTING 'SBA' CALCULATED LOAD: 476.5 KVA
LOAD REMOVED: (0.0) KVA
CONNECTED LOAD ADDED: 11.1 KVA
TOTAL NEW LOAD: 487.6 KVA
AMPS AT 208V, 3-PHASE
1354 AMPS

EXISTING 'MSB' PEAK DEMAND LOAD: 663.9 KVA
LOAD REMOVED: (0.0) KVA
CONNECTED LOAD ADDED: 183.1 KVA
25% CONNECTED LOAD: 163.1 KVA
TOTAL LOAD: 915.8 KVA
AMPS AT 480V, 3-PHASE
1102 AMPS

- #### RISER GENERAL NOTES:
- ALL EQUIPMENT AND FEEDERS SHOWN BOLD ARE NEW. ALL EQUIPMENT AND FEEDERS SHOWN THIN ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE. REMOVE EQUIPMENT, FEEDERS, AND ASSOCIATED HARDWARE FOR ITEMS SHOWN DASHED.
 - EXISTING INFORMATION SHOWN WAS PROVIDED THROUGH DOCUMENTATION PROVIDED BY OWNER AND NON-INVASIVE FIELD INVESTIGATION.
 - CAREFULLY COORDINATE PHASING AND SCHEDULING OF ALL DEMOLITION AND RENOVATION WORK WITH AQUARIUM STAFF. ENSURE EXISTING CIRCUITS THAT ARE DIRECTLY OR INDIRECTLY AFFECTED BY RENOVATION REMAIN CONNECTED TO EXISTING CIRCUIT.
 - NOT ALL EQUIPMENT SHOWN IS AFFECTED BY NEW WORK.
 - CONDUCTOR SIZES SHOWN BASED ON COPPER AND 75°C CONNECTIONS.
 - FIELD VERIFY THAT EITHER A GROUNDING CONDUCTOR EXISTS FOR EACH EXISTING FEEDER SHOWN, OR THAT ALL METAL PARTS OF EQUIPMENT OR CONDUIT ARE EFFECTIVELY CONNECTED TO ENSURE BONDING AND GROUNDING CONTINUITY BETWEEN FITTINGS, METAL RACEWAYS, AND ENCLOSURES ACCORDING TO NEC 250.86. EQUIPMENT GROUND CONDUCTOR SIZES SHALL COMPLY WITH NEC TABLE 250.122.
 - TWELVE MONTH PEAK DEMAND IS 531.1 KW OR 663.9 KVA AT 0.8 POWER FACTOR, 799 AMPS AT 480V/277V. TWELVE MONTH PEAK DEMAND WAS PROVIDED BY DOMINION POWER REPRESENTATIVE.
 - VALUES SHOWN IN ANGLE BRACKETS < > INDICATE THE CALCULATED AVAILABLE FAULT CURRENT IN AMPS. VALUES GREATER THAN 10,000A ARE SHOWN. TRANSFORMER FAULT CURRENT WAS PROVIDED BY DOMINION POWER REPRESENTATIVE.
- #### KEYED POWER RISER NOTES:
- (1) PROVIDE NEW 225A/3P CIRCUIT BREAKER IN SPACE AVAILABLE TO SERVE NEW PANEL 'LSSF'. EXISTING SWITCHBOARD IS CUTLER HAMMER POW-R-LINE C SERIES G.O. NUMBER HVB2455.
 - (2) EXISTING PANEL IS CUTLER HAMMER PRL1A SERIES.
 - (3) REPLACE EXISTING FEDERAL PACIFIC PANEL 'S1' WITH NEW PANEL 'S1'. REUSE EXISTING FEEDER AND CONNECT ALL EXISTING BRANCH CIRCUITS TO NEW PANEL BRANCH CIRCUIT BREAKERS USING CURRENT BREAKER ASSIGNMENTS.
 - (4) REMOVE EXISTING FEEDER AND ASSOCIATED CONDUIT AND HARDWARE BACK TO SOURCE WHERE PRACTICAL. SWITCH OFF CIRCUIT BREAKER AND MARK AS SPARE.
 - (5) REPLACE EXISTING GROUND CONDUCTOR WITH #2 AWG GROUND CONDUCTOR BETWEEN TRANSFORMER AND PANEL 'LSSF'.



ROANOKE ISLAND AQUARIUM

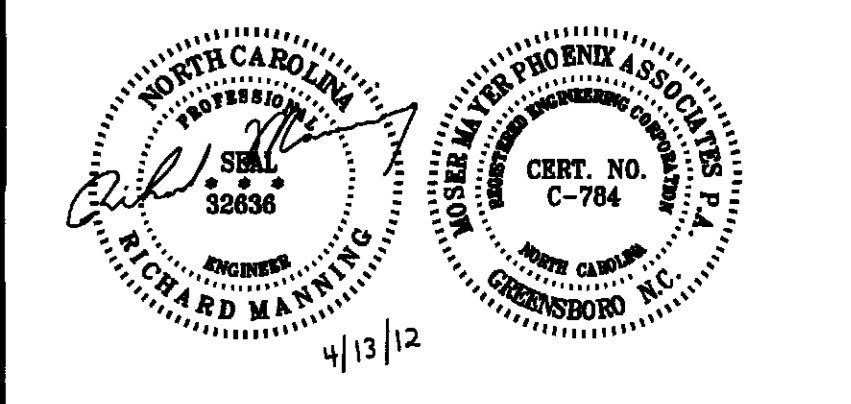
TURTLE REHABILITATION CENTER

374 AIRPORT ROAD
MANTEO, NORTH CAROLINA 27954

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SCO ID# 10-08584-01A

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 04-13-2012
PROJECT NUMBER: 11007.01
SCALE: AS NOTED
DRAWN BY: RES
CHECKED BY: RJM

RISER DIAGRAMS

E2.1



**NORTH CAROLINA
AQUARIUM**
On Roanoke Island

**ROANOKE ISLAND AQUARIUM
TURTLE REHABILITATION
CENTER**

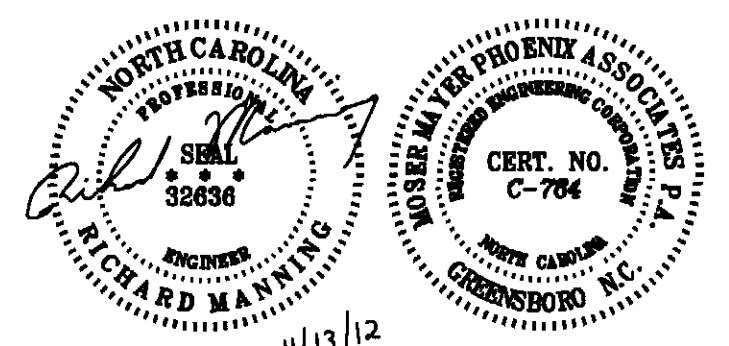
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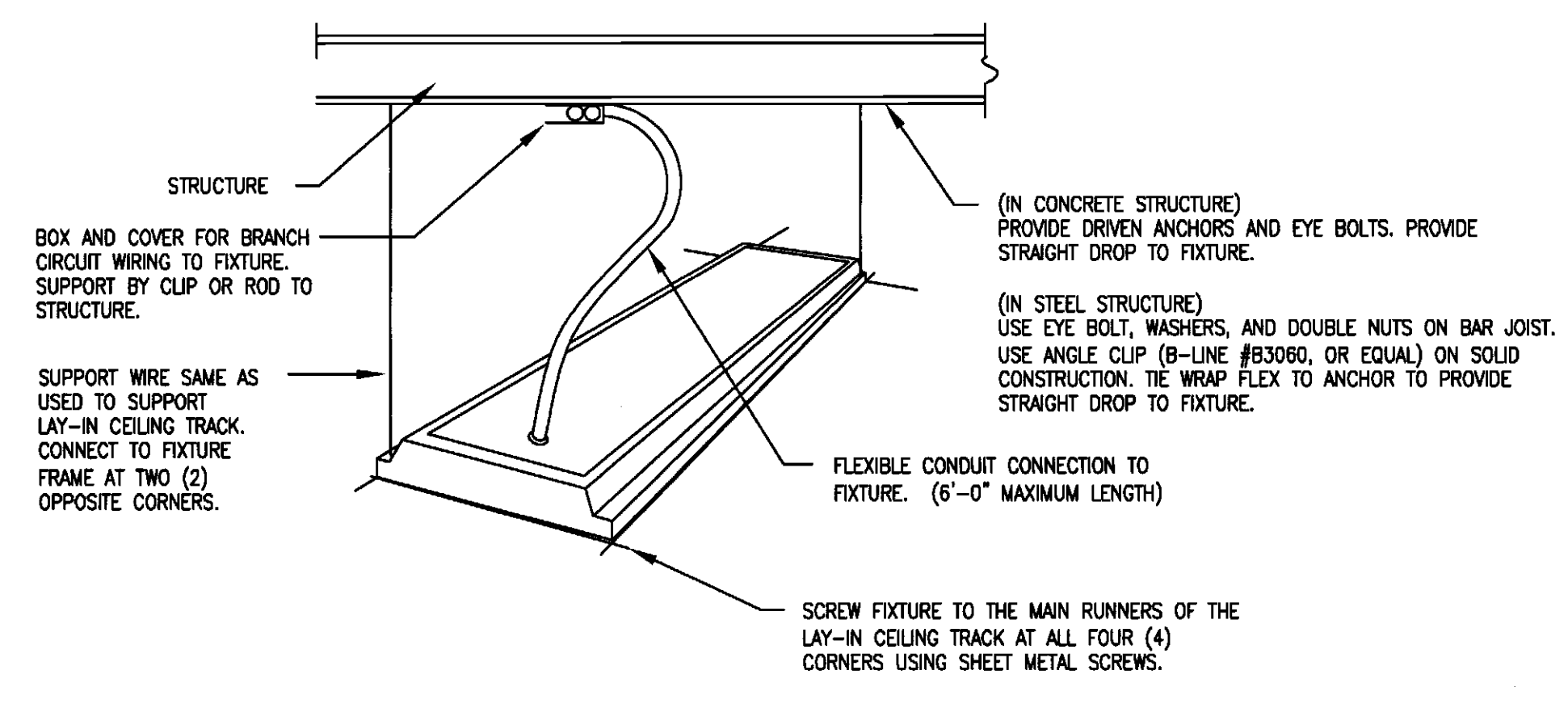
REVISIONS

NO.	DATE	DESCRIPTION

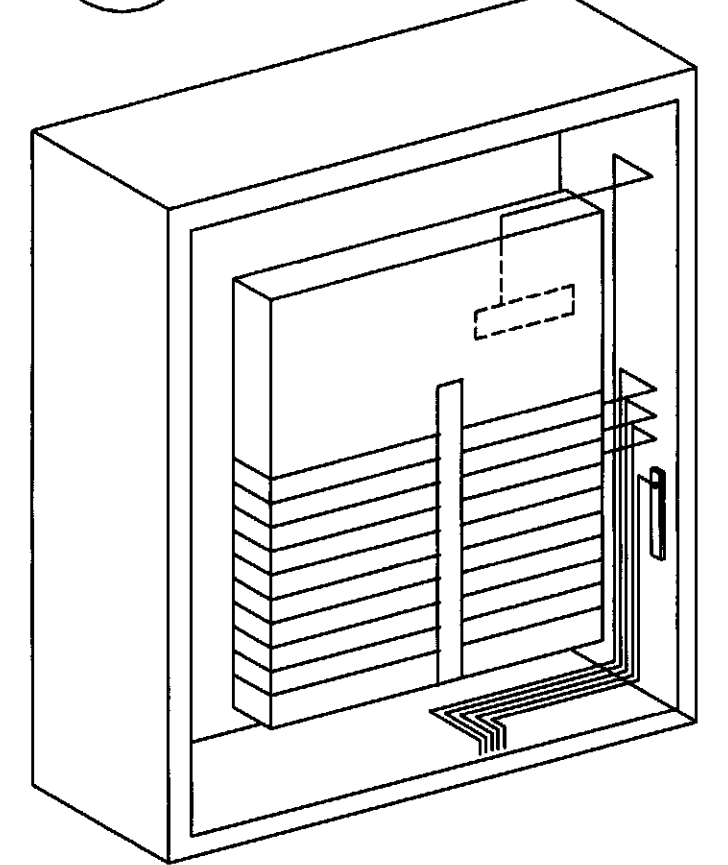
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SCALE AS NOTED
DRAWN BY RES
CHECKED BY RJM

DETAILS

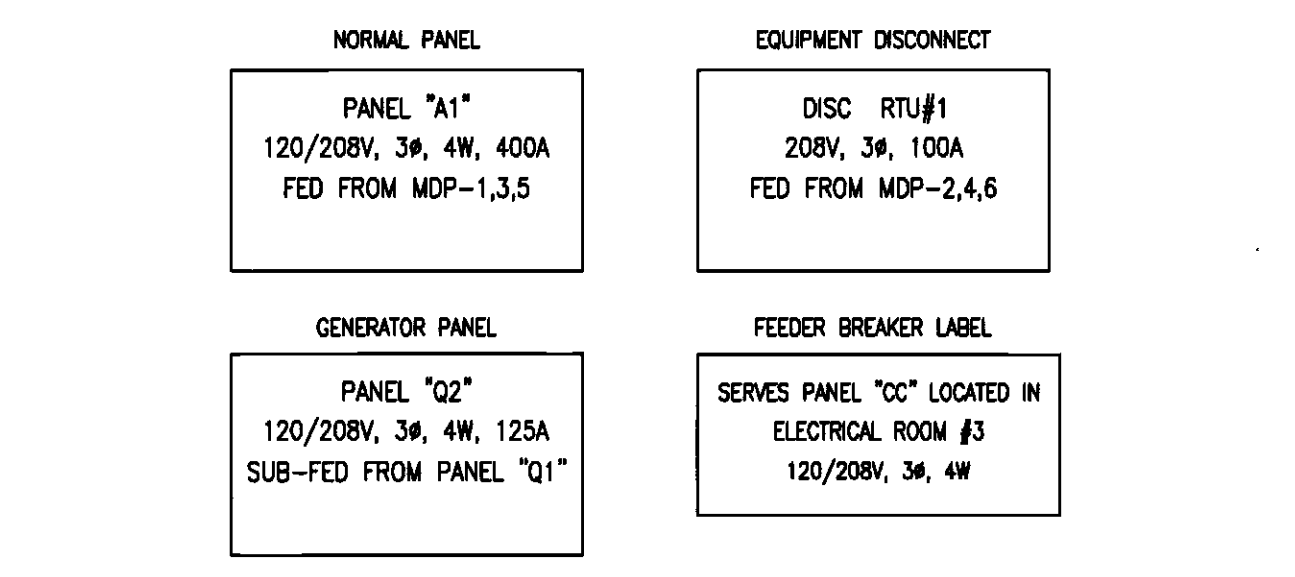
E4.1



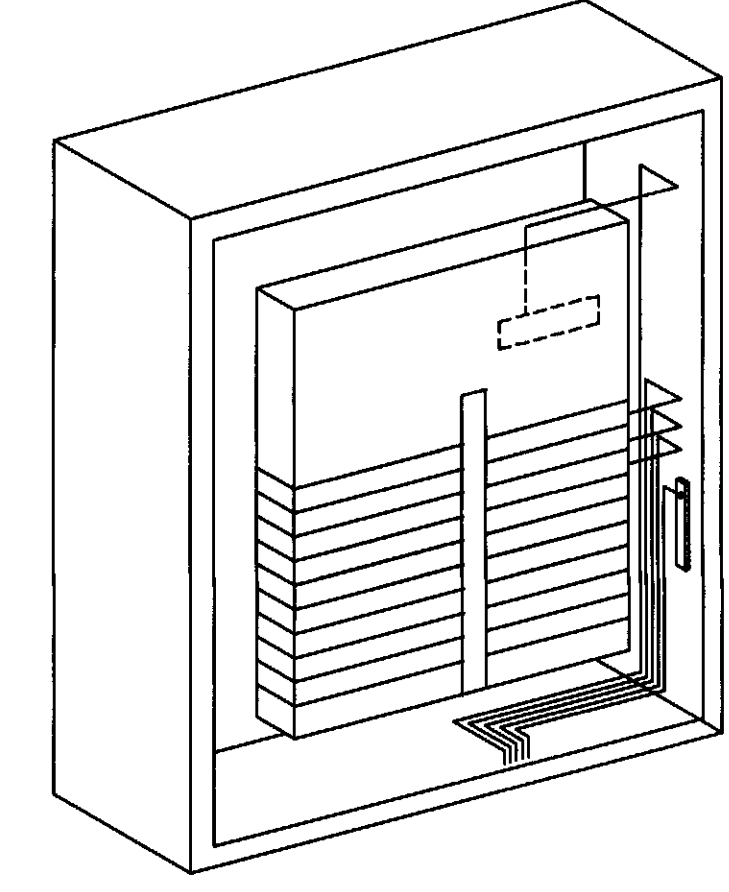
1
E4.1 **TYPICAL RECESSED FIXTURE SUPPORT**
NO SCALE



2
E4.1 **EXIT LIGHT MOUNTED AT CEILING**
NO SCALE



3
E4.1 **TYPICAL EQUIPMENT GROUNDING**
NO SCALE



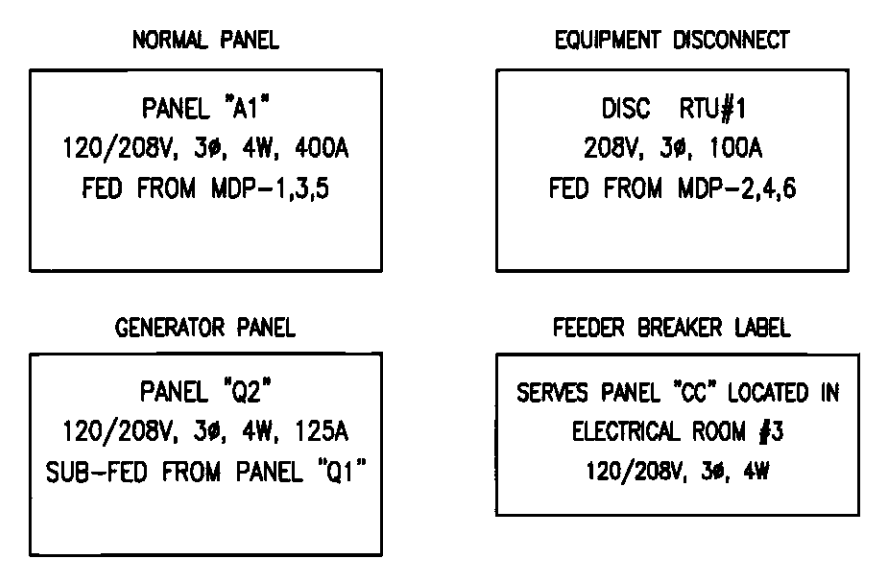
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E4.1 **TYPICAL PANELBOARD WORKMANSHIP**
NO SCALE

- NOTES:**
- ALL BENDS IN CONDUCTORS #10 AND SMALLER SHALL BE 90 DEGREES STRAIGHT AND TRUE. BENDS IN LARGER SIZE CONDUCTORS SHALL HAVE A UNIFORM RADIUS.
 - BEND CONDUCTORS TOWARD THE BACK CORNERS OF THE PANEL CAN. BEND CONDUCTORS FORWARD TO CONNECT TO CIRCUIT BREAKERS.
 - THE WRAP CONDUCTORS TO FORM NEAT AND ORDERLY BUNDLES, BUT ALLOW SUFFICIENT AIR FLOW. AVOID EXCESSIVE USE OF THE WRAPS.
 - NO CONDUCTORS SHALL TOUCH PANEL CAN.
 - FINISHED PANEL SHALL PRESENT A CLEAN, SHARP, AND ORDERLY APPEARANCE.
 - EACH ELECTRICAL PANEL SHALL HAVE:
 - AN ENGRAVED NAMEPLATE PERMANENTLY ATTACHED TO THE EXTERIOR COVER
 - A TYPED CIRCUIT DIRECTORY INSIDE EACH DOOR
 - A TYPED WRING COLOR CODE INSIDE EACH DOOR

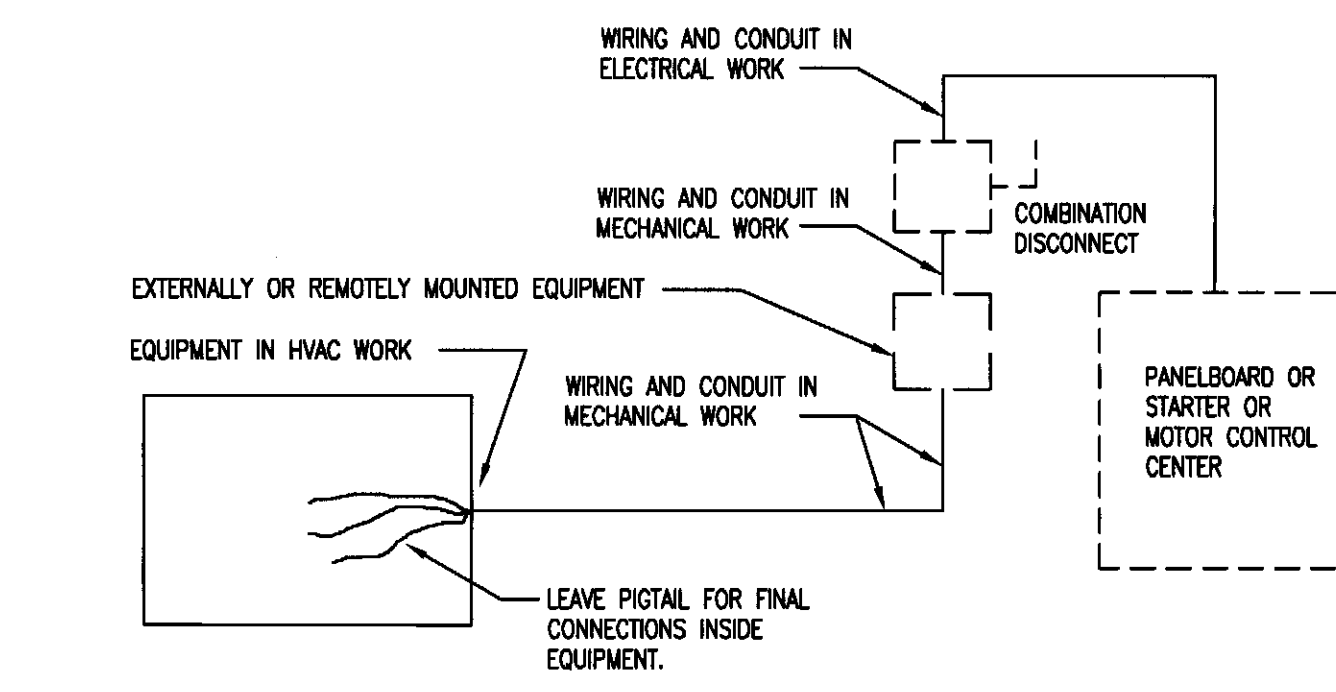
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E4.1 **TYPICAL PANELBOARD WORKMANSHIP**
NO SCALE

- NOTES:**
- ALL BENDS IN CONDUCTORS #10 AND SMALLER SHALL BE 90 DEGREES STRAIGHT AND TRUE. BENDS IN LARGER SIZE CONDUCTORS SHALL HAVE A UNIFORM RADIUS.
 - BEND CONDUCTORS TOWARD THE BACK CORNERS OF THE PANEL CAN. BEND CONDUCTORS FORWARD TO CONNECT TO CIRCUIT BREAKERS.
 - NO CONDUCTORS SHALL TOUCH PANEL CAN.
 - FINISHED PANEL SHALL PRESENT A CLEAN, SHARP, AND ORDERLY APPEARANCE.
 - EACH ELECTRICAL PANEL SHALL HAVE:
 - AN ENGRAVED NAMEPLATE PERMANENTLY ATTACHED TO THE EXTERIOR COVER.
 - A TYPED CIRCUIT DIRECTORY INSIDE EACH DOOR.
 - A TYPED WRING COLOR CODE INSIDE EACH DOOR.

6
E4.1 **TYPICAL NAMEPLATE DETAIL**
NO SCALE



- NOTES:**
- REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
 - SUBMIT COMPLETE LIST OF PROPOSED NAMEPLATES TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.



- NOTE:**
- A. UNLESS OTHERWISE INDICATED, ALL MOTORS AND CONTROLS SHALL BE FURNISHED, SET IN PLACE AND WIRED IN ACCORDANCE WITH THE TABLE AND DETAIL.

ITEM	FURNISHED UNDER	SET IN PLACE OR MOUNTED UNDER	WIRED AND CONNECTED UNDER
EQUIPMENT MOTORS, THERMAL OVERLOADS, RESISTANCE HEATERS	MC	MC	MC
MOTOR CONTROLLERS; MAGNETIC STARTERS, REDUCED VOLTAGE STARTERS, OVERLOAD RELAYS AND VARIABLE FREQUENCY MOTOR CONTROLLERS (DRIVES)	MC	MC	MC/EC
DISCONNECT SWITCHES, FUSED OR UNFUSED, HP RATED SWITCHES, THERMAL OVERLOAD SWITCHES AND FUSES AND MANUAL OPERATING SWITCHES.	EC	EC	MC/EC(1)
REDUCED VOLTAGE CONTROLS	MC	MC	MC
LINE VOLTAGE CONTROLS (2)	MC	MC	MC
DUCTMOUNTED FIRE & SMOKE DETECTORS (FOR HVAC EQUIPMENT)	MC/EC(3)	MC	MC(4)/EC(3)

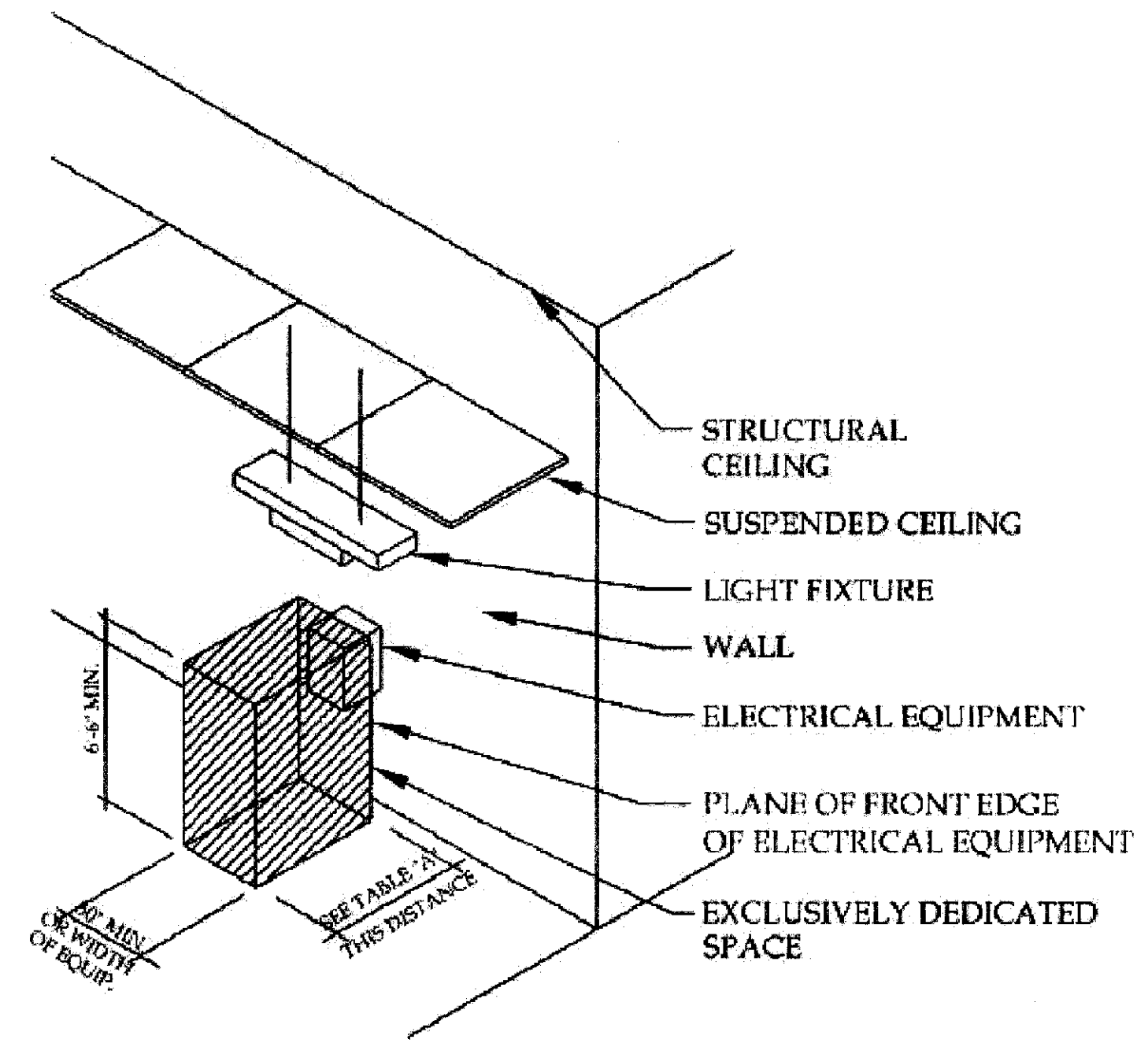
- NOTES:**
- IF FURNISHED AS PART OF FACTORY WIRED MECHANICAL EQUIPMENT, WIRING BY EC AND CONNECTIONS BY MC.
 - THOSE CONTROLS WHICH CARRY FULL LOAD METER CURRENTS OR OPERATE AT NOMINAL 120 V. TO GROUND OR LESS.
 - WIRING THROUGH PRIMARY CONTACTS OF THE DETECTOR TO ALARM SYSTEM BY EC. ALARM SYSTEM FURNISHED BY EC.
 - MC TO WIRE AUXILIARY CONTACTS OF DETECTOR THROUGH ASSOCIATED UNIT'S CONTROL CIRCUIT IN ORDER TO DE-ENERGIZE THE OPERATION OF THE FAN TO PREVENT THE SPREAD OF SMOKE/FIRE UPON ACTIVATION.
 - FURNISHED BY EC IF THE FIRE ALARM SYSTEM IS EXISTING OR IS TO BE PROVIDED BY THE EC. IF NO FIRE ALARM SYSTEM EXISTS OR IS TO BE PROVIDED, THEN THE MC IS TO FURNISH IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 50A, CURRENT EDITION.

TABLE A - WORKING CLEARANCES

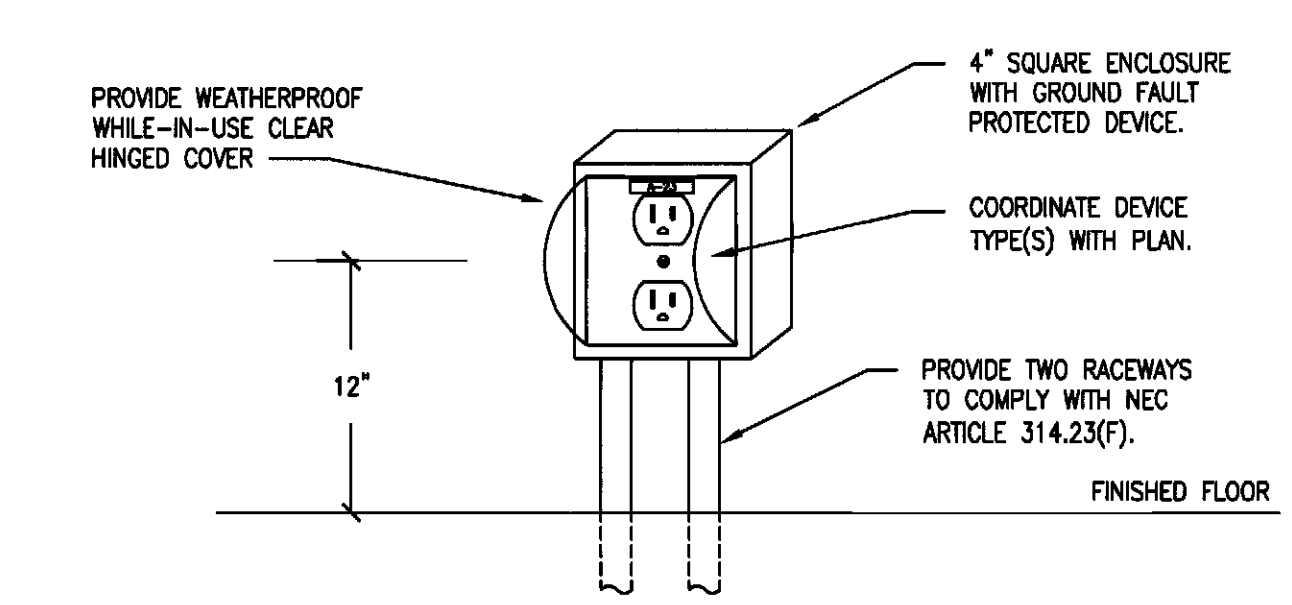
VOLTAGE TO GROUND NOMINAL	CONDITION	MINIMUM CLEAR DISTANCE (FEET)		
		1	2	3
0-150		3	3	3
151-600		3	3 1/2	4

WHERE THE "CONDITIONS" ARE AS FOLLOWS:

- EXPOSED LIVE PARTS ON ONE SIDE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES EFFECTIVELY GUARDED BY SUITABLE WOOD OR OTHER INSULATING MATERIALS. INSULATED WIRE OR INSULATED BUSBARS OPERATING AT NOT OVER 300V SHALL NOT BE CONSIDERED LIVE PARTS.
- EXPOSED LIVE PARTS ON ONE SIDE AND GROUNDED PARTS ON THE OTHER SIDE.
- EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.



8
E4.1 **WORKING SPACE CLEARANCE FOR ELECTRICAL EQUIPMENT - NEC ARTICLE 110.26**
NO SCALE

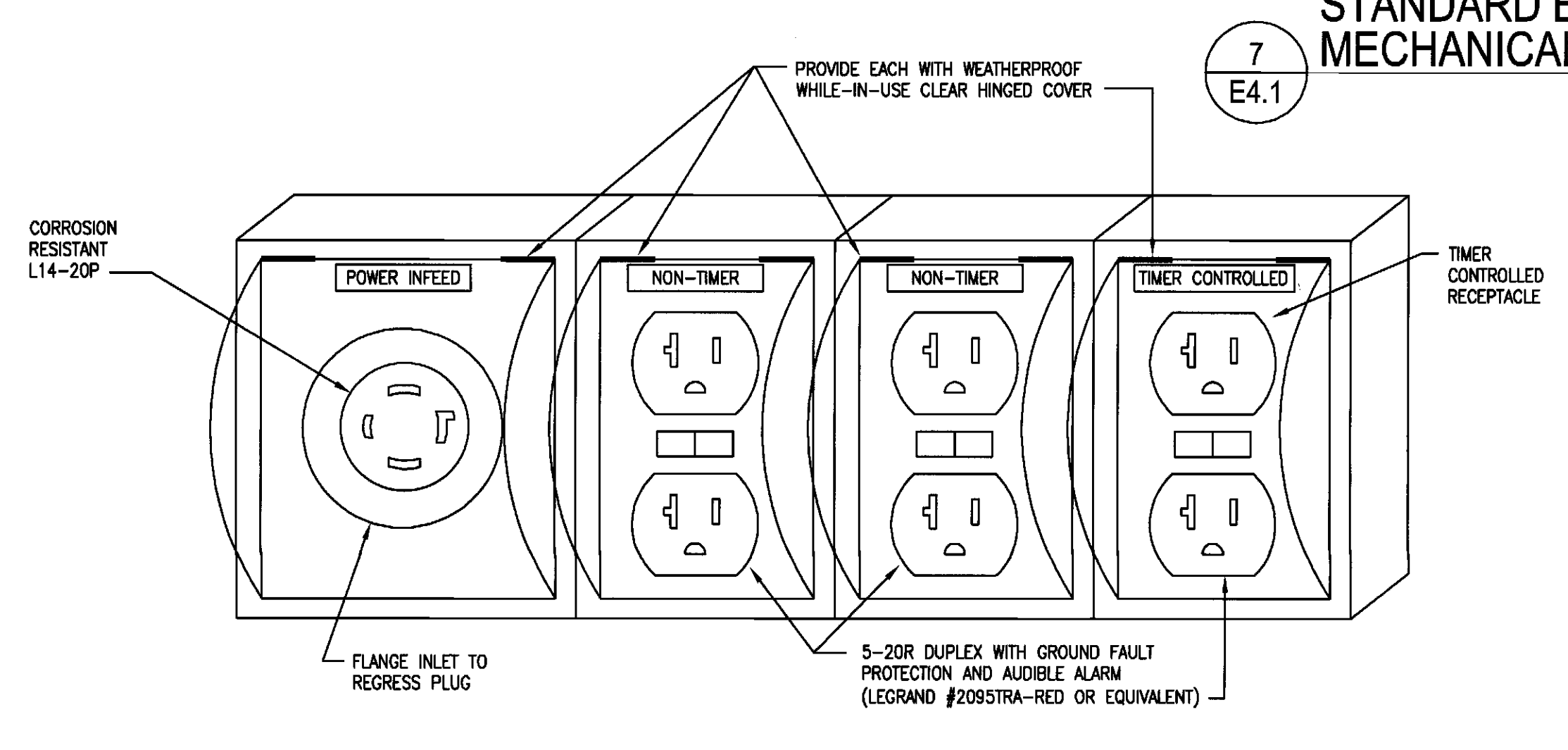


11
E4.1 **RACEWAY SUPPORTED ENCLOSURE**
NO SCALE

DETAIL
NO SCALE

12
E4.1 **RECEPTACLE FOR TANK BASE DETAIL**
NO SCALE

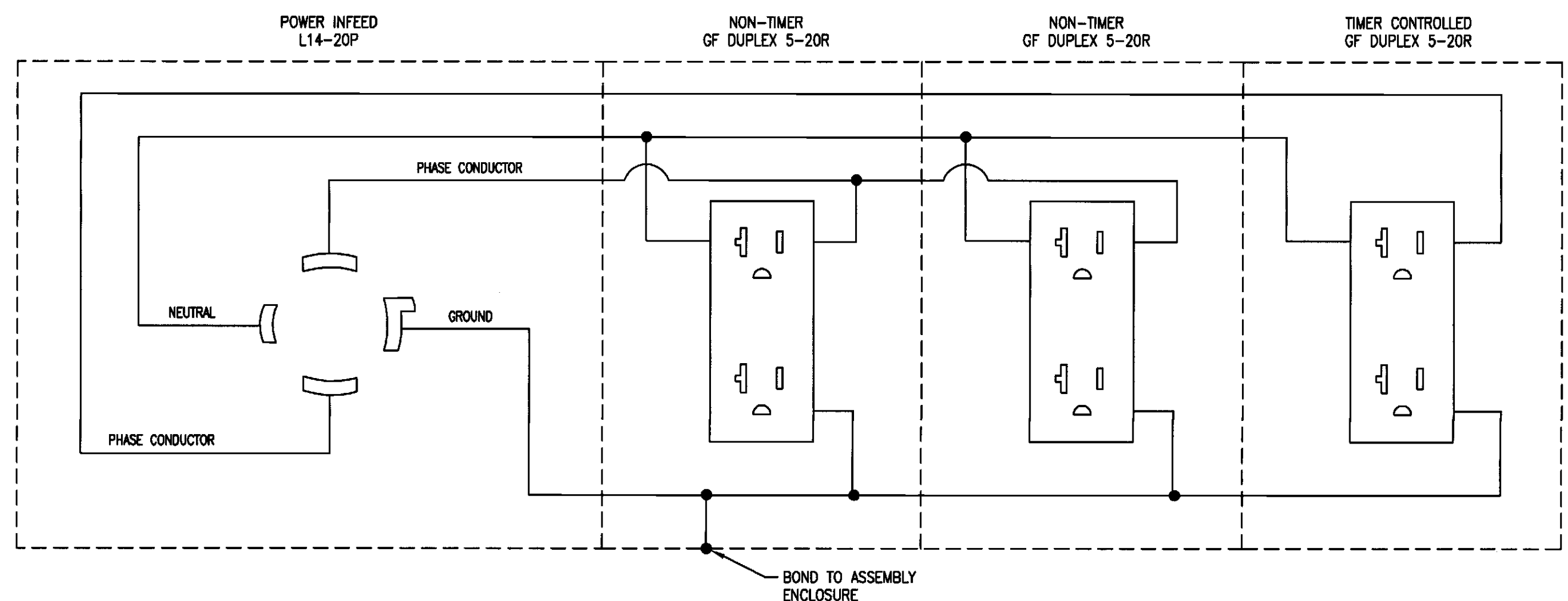
- DETAIL NOTE:**
- REFER TO TURTLE REHABILITATION AREA OF POWER PLAN FOR RECEPTACLE LOCATIONS ASSOCIATED WITH TANK BASE POWER ASSEMBLIES.
 - REFER TO DETAIL 3/E3.1 FOR GENERAL CONTROL WIRING FOR RECEPTACLE.



10
E4.1 **DETAIL - TYPICAL DUPLEX RECEPTACLE INSTALLATION**
NO SCALE

13
E4.1 **TANK BASE POWER ASSEMBLY DETAIL**
NO SCALE

- TANK BASE CORD-AND-PLUG ASSEMBLY NOTES:**
- PROVIDE (6) 12 FOOT LENGTHS OF SO CORD AND (4) 8 FOOT LENGTHS OF SO CORD WITH FOUR #12 AWG CONDUCTORS: TWO PHASE, ONE NEUTRAL, AND ONE EQUIPMENT GROUND CONDUCTOR.
 - PROVIDE L14-20R CORROSION RESISTANT DEVICE ON ONE END OF EACH SO CORD LENGTH.
 - PROVIDE L14-20P CORROSION RESISTANT DEVICE ON OPPOSITE END OF EACH SO CORD LENGTH.
 - REFER TO DETAIL 14, THIS SHEET FOR WIRING DIAGRAM ASSOCIATED WITH TANK BASE POWER ASSEMBLY.



14
E4.1 **WIRING DIAGRAM FOR TANK BASE POWER ASSEMBLY**
NO SCALE