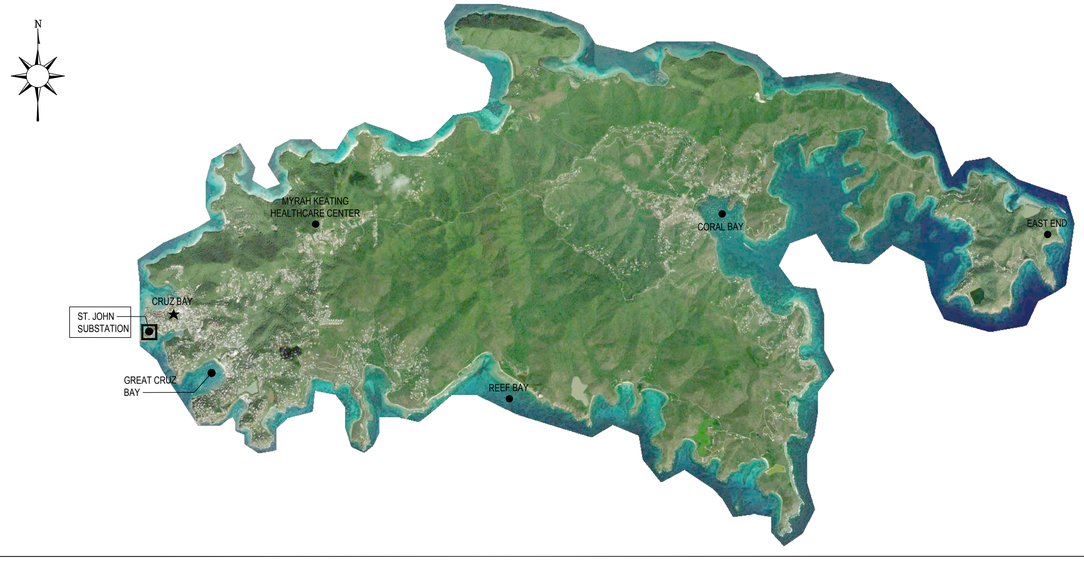
PROJECT

FRANK BAY SUBSTATION "E"
EMERGENCY GENERATOR (PHASE 1)
ST. JOHN, USVI

DRAWINGS INCLUDED IN THIS PACKAGE

DRAWING #	DRAWING NAME	ISSUE A: 06.12.26 ISSUE FOR 80% REVIEW	ISSUE B: 06.18.26 ISSUE FOR FEMA / EHP REVIEW	
GENERAL				
STJ-E11-G-100	GENERAL NOTES, ABBREVIATIONS & SYMBOLS	○	●	
STJ-E11-G-101	GENERATOR & FUEL OIL SYSTEM GENERAL ARRANGEMENT PLAN	○	●	
STJ-E11-G-200	EMERGENCY GENERATOR DETAILS	○	●	
STJ-E11-G-201	STEP UP TRANSFORMER PAD DETAILS	○	●	
DEMOLITION				
STJ-E1-D-100	SUBSTATION "E" SITE DEMOLITION PLAN	○	●	
ELECTRICAL				
STJ-E1-E-100	SUBSTATION "E" UNDERGROUND DUCT BANK PLAN	○	●	
STJ-E1-E-101	SUBSTATION "E" PARTIAL GROUNDING PLAN	○	●	
STJ-E1-E-200	SWITCHING STATION "E" SYSTEM ONE LINE DIAGRAM	○	●	
STJ-E1-E-300	ELECTRICAL EQUIPMENT & RACEWAY SCHEDULES	○	●	
STJ-E1-E-301	ELECTRICAL DETAILS	○	●	
STJ-E1-E-302	GROUNDING DETAILS	○	●	
STJ-E1-E-400	NEW RELAY PANEL ELEVATIONS & BILL OF MATERIALS		●	
MECHANICAL				
STJ-E1-MP-100	MECHANICAL SYMBOLS, NOTES & SCHEDULES	○	●	
STJ-E1-MP-200	SUBSTATION "E" FUEL OIL SYSTEM PLAN	○	●	
STRUCTURAL				
STJ-H1-S-0.0	GENERAL STRUCTURAL NOTES	○	●	
STJ-H1-S-0.1	SCHEDULE OF SEPCIAL INSPECTIONS	○	●	
STJ-H1-S-1.0	FOUNDATION PLAN & SECTIONS	○	●	

PROJECT LOCATION MAP:



ENGINEER :

FXB PARTNERSHIPS THROUGH ENGINEERING
5 Christy Drive, Suite 307
Chadds Ford, PA 19317
610.558.3464 office
www.fxbinc.com
Engineering Excellence Since 1968

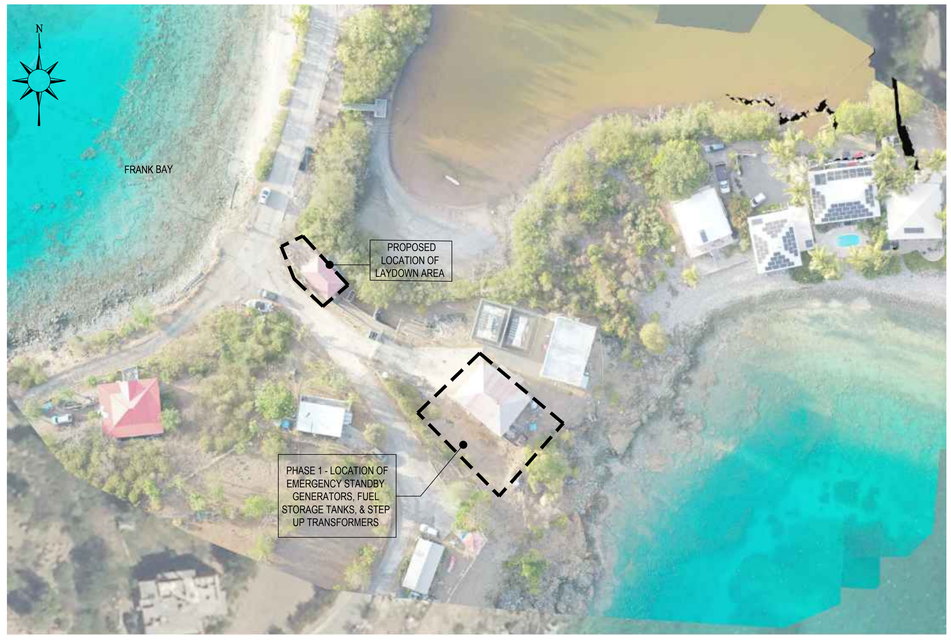
OWNER:

Virgin Islands Water & Power Authority St. Thomas U.S. Virgin Islands

VIRGIN ISLANDS WATER AND POWER AUTHORITY

ENLARGED PROJECT LOCATION MAPS:





ABBREVIATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
A	AMPERES	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISH FLOOR	MCC	MOTOR CONTROL CENTER
AFG	ABOVE FINISH GRADE	KCMIL	THOUSAND CIRCULAR MILS
AHU	AIR HANDLING UNIT	MCP	MOTOR CIRCUIT PROTECTOR
AL	ALUMINUM	MISC	MISCELLANEOUS
ARCH	ARCHITECT	MLO	MAIN LUGS ONLY
ATC	AIR TERMINAL CHAMBER	(N)	NEW
ATS	AUTOMATIC TRANSFER SWITCH	N.C.	NORMALLY CLOSED
AWG	AMERICAN WIRE GAUGE	N.O.	NORMALLY OPEN
BIL	BASIC IMPULSE LEVEL	NEC	NATIONAL ELECTRICAL CODE
BLDG	BUILDING	NFSS	NON-FUSED SAFETY SWITCH
C	CONDUIT – RACEWAY	NGR	NEUTRAL GROUNDING RESISTOR
CC1	CLOSE COIL 1	NL	NIGHT LIGHT
CKT	CIRCUIT	NTS	NOT TO SCALE
C/L	CENTERLINE	P	POLE
COL	COLUMN	(PH1)	PHASE 1
CU	COPPER	(PH2)	PHASE 2
C/B	CIRCUIT BREAKER	PNL	PANEL OR PANELBOARD
CT	CURRENT TRANSFORMER	PVC	POLYVINYL CHLORIDE
DWG	DRAWING	PWR	POWER
DN	DOWN	PT	POTENTIAL TRANSFORMER
EC	ELECTRICAL CONTRACTOR	PRIM	PRIMARY
ECB	ENCLOSED CIRCUIT BREAKER	(R)	TO BE REMOVED
EM	EMERGENCY	RTU	ROOF TOP UNIT
(EX)	EXISTING TO REMAIN	SA	SURGE ARRESTER
F	FUSE	SEC	SECONDARY
FA	FIRE ALARM	SP	SPARE
FAAP	FIRE ALARM ANNUNCIATOR PANEL	SW	SWITCH
FACP	FIRE ALARM CONTROL PANEL	TC1	TRIP COIL 1
FBO	FURNISHED BY OTHERS	TC2	TRIP COIL 2
F/S	FUSED SWITCH	TEL	TELEPHONE
FT	FEET	V	VOLT
FU.	FUSES	W	WIRE
G	GROUND OR GROUNDING	WP	WEATHERPROOF
GRD	GROUND OR GROUNDING	WG	WITH WIREGUARD
KVA	KILOVOLT AMPERES	TRANSF	TRANSFORMER
KW	KILOWATTS	Ø	PHASE
LTG	LIGHTING	%Z	PERCENT IMPEDANCE
		VB	VISIBLE BREAK
		VFI	VACUUM FAULT INTERRUPTER

METHOD OF PROCEDURE ("M.O.P.")

WHERE CALLED FOR THROUGHOUT THE CONSTRUCTION DOCUMENTS, OR AS REQUESTED THROUGH THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL SUBMIT A M.O.P. FOR ANY ACTIVITY DEEMED BY THE OWNER/ENGINEER TO POTENTIALLY IMPACT UTILITY CUSTOMERS. CONTRACTOR TO RELEASE M.O.P. TO THE ENGINEER FOR REVIEW AND COMMENT A MINIMUM OF TWO WEEKS PRIOR TO THE SCHEDULED ACTIVITY. THE M.O.P. SHALL INCLUDE ITEMS SUCH AS, BUT NOT LIMITED TO:

1. SHORT DESCRIPTION OF ACTIVITY
2. PROPOSED SCHEDULE/ CALENDAR DAY(S) OF ACTIVITY
3. ESTIMATED START AND END TIME
4. IDENTIFICATION AND REQUIRED ACTION FOR CRITICAL PATH MILESTONES, INCLUDING OWNER DEPENDENCIES.
5. LENGTH OF ANY PLANNED DOWNTIME OF LIVE POWER SYSTEMS.
6. STEP BY STEP PROCEDURE WITH ITEMIZED TIME ESTIMATE FOR EACH MAJOR STEP.
7. EMERGENCY BACK OUT PROCEDURE WHERE APPLICABLE.
8. SAFETY EQUIPMENT AND/OR ANY OTHER SPECIAL SAFETY MEASURES TO BE TAKEN.
9. IDENTIFY LEAD PERSONNEL INVOLVED, INCLUDING 24 HR. CONTACT INFORMATION.
10. IDENTIFY REQUIRED TRADES TO PARTICIPATE AND TASKS TO BE PERFORMED.

ELECTRICAL TESTING REQUIREMENTS

CONTRACTOR SHALL PERFORM ELECTRICAL ACCEPTANCE TESTING FOR NEW EQUIPMENT AND MATERIALS AS DESCRIBED BELOW. IF QUALIFIED, THE CONTRACTOR MAY SELF PERFORM ALL MV CABLE AND LV CABLE TESTING.

DIESEL EMERGENCY BACKUP GENERATOR (REFERENCE: ANSI/NETA ATS–2021 SECTION 7.22.1)

1. REFER TO SPECIFICATION 263213.
2. REFER TO SPECIFICATION 260800 "ELECTRICAL INSPECTION & TESTING" FOR ADDITIONAL INFORMATION.

MEDIUM VOLTAGE CABLES (REFERENCE: ANSI/NETA ATS–2021 SECTION 7.3.3)

1. REFER TO SPECIFICATION 260513, SECTION 3.2 "FIELD QUALITY CONTROL" FOR DETAILS.
2. REFER TO SPECIFICATION 260800 "ELECTRICAL INSPECTION & TESTING" FOR ADDITIONAL INFORMATION.

TRANSFORMERS, LIQUID FILLED (REFERENCES: NFPA 70B & ANSI/NETA ATS–2021 SECTION 7.2.2)

1. REFER TO SPECIFICATION 261219, SECTION 3.5 "FIELD QUALITY CONTROL" FOR DETAILS.
2. REFER TO SPECIFICATION 260800 "ELECTRICAL INSPECTION & TESTING" FOR ADDITIONAL INFORMATION.

CABLES, LOW VOLTAGE, 600–VOLT MAXIMUM (REFERENCE: ANSI/NETA ATS–2021 SECTION 7.2.2)

1. REFER TO SPECIFICATION SECTION 260519, SECTION 3.5 "FIELD QUALITY CONTROL" FOR DETAILS.
2. REFER TO SPECIFICATION 260800 "ELECTRICAL INSPECTION & TESTING" FOR ADDITIONAL INFORMATION.

PROTECTIVE RELAYS, MICROPROCESSOR–BASED

1. PERFORM VISUAL/MECHANICAL INSPECTION AND ELECTRICAL TESTING IN ACCORDANCE WITH ANSI/NETA ATS–2021 SECTION 7.9.2

GROUNDING SYSTEM SHALL BE TESTED IN ACCORDANCE WITH 260800 "ELECTRICAL INSPECTION & TESTING" AND IEEE STD 81–2025 AND NESC.

GENERAL CONSTRUCTION NOTES

GENERAL CONSTRUCTION NOTES:

1. ALL CONSTRUCTION WORK SHALL COMPLY WITH THE LATEST ADOPTED VERSION OF ALL RELEVANT CODES, REGULATIONS AND REQUIREMENTS INCLUDING FEMA, HUD, IBC, OSHA, NESC, NFPA 70, DPW, VISHPO, DPNR, CZM, FISH & WILDLIFE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ON SITE SAFETY AND SECURITY OF EMPLOYEES, SUBCONTRACTORS, OUTSIDE CONSULTANTS, OWNERS REPRESENTATIVE AND THE PUBLIC, FROM MOBILIZATION THRU CONTRACT CLOSEOUT. ALL WORK SHALL BE IN COMPLETE COMPLIANCE WITH THE LATEST OSHA REQUIREMENTS, AND ALL LOCAL AND FEDERAL AGENCIES.
3. THE CONTRACTOR MUST MAINTAIN A FULL SIZE SET OF THE LATEST SET OF WORKING DRAWINGS, AND SPECIFICATIONS, ON THE PROJECT JOBSITE AT ALL TIMES.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL MEASURES, AND DEVICES AND ROAD CLOSURE PERMITS (WHERE REQUIRED) AND ASSOCIATED COSTS.

COORDINATION/PROTECTION OF EXISTING UTILITIES AND STRUCTURES:

1. LOCATIONS, SIZES AND TYPES OF EXISTING UTILITIES HAVE NOT BEEN CONFIRMED. THIS INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR BY MEANS OF A SUBSURFACE UTILITY ENGINEERING (SUE) STUDY, AND CLOSE COORDINATION WITH VINGN, LIBERTY, AND OTHER COMMUNICATIONS CARRIERS, VIWAPA'S POWER & WATER DEPARTMENT, THE DEPARTMENT OF PUBLIC WORKS, AND WASTE MANAGEMENT. REFER TO SUE STUDY NOTES BELOW, AND PROJECT SPECIFICATIONS.
2. THE CONTRACTOR SHALL AVOID INTERFERENCE WITH EXISTING UTILITIES TO THE EXTENT THAT IS PRACTICAL. IF IT IS DETERMINED BY THE CONTRACTOR THAT AN EXISTING UTILITY MUST BE REWORKED/REROUTED IN ORDER TO ACCOMMODATE THE NEW WORK, WRITTEN APPROVAL FROM VIWAPA, THE PROJECT MANAGEMENT COMPANY, AND THE OWNER OF THE EXISTING UTILITY IS REQUIRED, PRIOR TO PERFORMING ANY OF THE RELOCATION WORK. ALL REROUTED UTILITIES MUST BE RECONNECTED AND PLACED BACK INTO SERVICE.
3. THE CONTRACTOR IS RESPONSIBLE TO PROTECT EXISTING UTILITIES, AND STRUCTURES, PRIOR TO PERFORMING EXCAVATION. WHERE NEWLY PROPOSED DUCT BANKS ARE TO CROSS ABOVE OR BELOW EXISTING WATER, SANITARY, COMMUNICATIONS DUCTS, ELECTRIC DUCTS, OR STORM SEWER PIPING OR DRAINAGE, THE EXISTING UTILITY MUST BE PROPERLY PROTECTED AND SUPPORTED AS REQUIRED TO MAINTAIN THE INTEGRITY OF THE UTILITY, AND UTILIZING MEANS AND METHODS AS APPROVED BY THE PROJECT MANAGEMENT TEAM.
4. WHERE POSSIBLE AND PRACTICAL, ALL NEW ELECTRICAL DUCT BANKS RUNS SHALL MAINTAIN A MINIMUM HORIZONTAL SEPARATION OF 5'–0" AND VERTICAL SEPARATION OF 18" FROM FROM WATER (POTABLE AND FIRE) LINES. MAINTAIN A MINIMUM HORIZONTAL SEPARATION OF 2'–0" AND VERTICAL SEPARATION OF 12" FROM ALL OTHER UTILITIES. WHERE A MINIMUM OF 12" VERTICAL SEPARATION CANNOT BE MAINTAINED, CONCRETE ENCASEMENT OF THE PROPOSED DUCT BANK IS REQUIRED AND WRITTEN APPROVAL OF THE PROJECT MANAGER IS REQUIRED. WHERE A MINIMUM OF 18" VERTICAL SEPARATION CANNOT BE MAINTAINED FROM WATER LINES, WRITTEN APPROVAL OF VIWAPA WATER AND/OR THE PROJECT MANAGER IS REQUIRED.
5. WHERE NECESSARY, THE CONTRACTOR SHALL UTILIZE TEMPORARY RETAINING STRUCTURES TO PROTECT ADJACENT STRUCTURES, AND UTILITIES DURING CONSTRUCTION.
6. ALL EXCAVATION IN CLOSE PROXIMITY TO EXISTING UTILITIES SHALL BE PERFORMED BY HAND IN ORDER TO DETERMINE THE PRECISE UTILITY LOCATION, PRIOR TO MACHINE EXCAVATION.
7. ANY EXISTING UTILITIES THAT ARE DAMAGED BY THE CONTRACTOR DURING THE CONSTRUCTION PROCESS SHALL BE REPAIRED AND FULLY RESTORED AND PLACED BACK INTO SERVICE, AT THE CONTRACTORS EXPENSE. ALL REPAIRS SHALL BE CLOSELY COORDINATED WITH THE APPROPRIATE UTILITY COMPANY AND THE PROJECT MANAGEMENT TEAM. ALL DAMAGED UTILITIES MUST BE RESTORED AND PLACED BACK INTO SERVICE AS QUICKLY AS POSSIBLE IN ORDER TO MITIGATE THE DURATION OF THE INTERRUPTION.

GENERAL ELECTRICAL NOTES

1. ALL ELECTRICAL EQUIPMENT AND MATERIAL SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER.
2. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH LATEST VERSION OF THE NESC, NEC AND VIWAPA STANDARDS.
3. ALL ELECTRICAL EQUIPMENT, INCLUDING, BUT NOT LIMITED TO CONDUIT, WIRE, BOXES, AND FITTINGS, SHALL BE NEW AND FREE OF DEFECTS, SHALL BEAR THE UL LABEL, AND SHALL MEET NEMA AND ANSI STANDARDS.
4. ALL WORK AND MATERIALS SHALL BE GUARANTEED FREE FROM DEFECTS FOR A MINIMUM PERIOD OF ONE YEAR UNLESS NOTED OTHERWISE. THE WARRANTY PERIOD SHALL BEGIN AT THE DATE OF SUBSTANTIAL COMPLETION OF WORK UNLESS NOTED OTHERWISE IN THE PROJECT SPECIFICATIONS.
5. ELECTRICAL CONTRACTOR MUST SUBMIT A METHOD OF PROCEDURE "MOP" FOR ALL POWER TRANSITIONS AND FEEDER/EQUIPMENT SHUTDOWNS, INTERCEPTION OF EXISTING CONDUITS, BREAKING INTO EXISTING ELECTRICAL MANHOLES, REFEEDING OF EXISTING PAD MOUNTED ELECTRICAL EQUIPMENT, AND WHERE SPECIFICALLY CALLED FOR ON THE CONTRACT DRAWINGS. "MOPS" MUST BE REVIEWED & APPROVED BY THE ENGINEER AND VIWAPA. REFER TO "MOP" REQUIREMENTS ON THIS DRAWING.

EARTHWORK

1. THE CONTRACTOR SHALL ENSURE THAT ALL TEMPORARY EROSION & SEDIMENT CONTROL, DUST CONTROL MEASURES, AND POLLUTION CONTROL MEASURES ARE IN PLACE PRIOR TO PERFORMING ANY EXCAVATION WORK. ALL TEMPORARY CONTROLS MEANS AND METHODS SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND ALL LOCAL AND FEDERAL AGENCY REQUIREMENTS.
2. THE CONTRACTOR SHALL EMPLOY DEWATERING METHODS WHERE NECESSARY, AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL NOTIFY THE PROJECT MANAGEMENT TEAM WHEN DEWATERING METHODS ARE REQUIRED. ALL GROUND WATER REMOVED FROM EXCAVATED TRENCHES, MANHOLES AND HANDHOLES MUST BE DISCHARGED IN ACCORDANCE WITH LOCAL AND FEDERAL REGULATORY AGENCIES. DISCHARGES TO STORM DRAINS MUST BE PROPERLY FILTERED.
3. THE CONTRACTOR SHALL NOTIFY VIWAPA WHEN "ROCK" IS ENCOUNTERED DURING THE EXCAVATION PROCESS. REFER TO THE CONTRACT DOCUMENTS FOR THE DEFINITION OF "ROCK" AS IT RELATES TO THIS PROJECT. "ROCK" QUANTITIES (IN CUBIC YARDS) MUST BE AGREED UPON (IN WRITING) ON A WEEKLY BASIS DURING EXCAVATION ACTIVITIES.
4. AN ONSITE "PRE–EXCAVATION" CONFERENCE IS REQUIRED, AS DESCRIBED IN THE PROJECT SPECIFICATIONS PRIOR TO COMMENCEMENT OF EXCAVATION WORK.
5. THE CONTRACTOR SHALL PREPARE "PRE–EXCAVATION" PHOTOGRAPHS, AND VIDEO FOOTAGE, AS DESCRIBED IN THE PROJECT SPECIFICATIONS.
6. EXCEPT WHERE OTHERWISE INDICATED IN THE CONTRACT BOOK SPECIFICATIONS, BACKFILL SHALL BE COMPACTED IN 6" MAXIMUM LIFTS. BACKFILL SHALL BE VOID OF ALL FOREIGN DEBRIS. COMPACTION SHALL BE TO 95% DENSITY OF THEORETICAL DRY DENSITY.
7. TRENCH PROTECTION: WHERE NECESSARY, THE CONTRACTOR SHALL INSTALL AND MAINTAIN SUITABLE TRENCH PROTECTION, INCLUDING BUT NOT LIMITED TO SHEETING AND BRACING, TO ENSURE SAFETY OF PERSONNEL OR THE PUBLIC, AND TO PREVENT EROSION, CAVING, OR LOSS OF GROUND. WHERE STRUCTURAL TRENCH PROTECTION IS NECESSARY, DETAILS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL, SIGNED & SEALED BY A USVI LICENSED CIVIL, STRUCTURAL OR GEOTECHNICAL ENGINEER.
8. ALL EXPOSED TRENCHES, MANHOLES, AND HANDHOLES MUST BE COMPLETELY COVERED WITH SOLID STEEL PLATING AT THE END OF EACH CONSTRUCTION DAY, IN ORDER TO ENSURE PROTECTION TO THE PUBIC AND TO PREVENT UNAUTHORIZED ACCESS. PLYWOOD SHALL NOT BE UTILIZED FOR TRENCH PROTECTION.

CONSTRUCTION IMPACT MITIGATION REQUIREMENTS

1. VIWAPA IS COMMITTED TO ENSURING THAT OVERALL DISRUPTIONS TO THE USVI, THE COMMUNITY, AND NORMAL TRAFFIC PATTERNS, ARE MINIMIZED TO THE EXTENT THAT IS POSSIBLE, AND PRACTICAL, DURING THE ENTIRE PERIOD OF CONSTRUCTION.
2. COMMUNICATION: IT IS CRITICAL THAT THE COMMUNITY IS INITIALLY INFORMED, AND PERIODICALLY UPDATED, OF ALL CONSTRUCTION ACTIVITIES THAT WILL DIRECTLY AFFECT THE RESIDENTS, TOURISTS, BUSINESS OPERATIONS, ETC. IN THE PROJECT AREA. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING AND MAINTAINING ACCURATE CONSTRUCTION SCHEDULES, TWO–WEEK LOOK AHEADS, PROJECT CONSTRUCTION SIGNS, AND TRAFFIC CONTROL PLANS & MEASURES. THE CONSTRUCTION SIGN SHALL BE PLACED NEAR THE ENTRANCE TO THE SITE. CONSTRUCTION SIGNS ARE TO BE 5'–0" X 4'–0". VIWAPA WILL PROVIDE A SAMPLE OF THE SPECIFIC SIGN AT THE BEGINNING OF THE PROJECT.
3. DUST CONTROL MEASURES MUST BE MAINTAINED DURING ALL CIVIL CONSTRUCTION ACTIVITIES. DUST CONTROL SHALL INCLUDE, BUT NOT BE LIMITED TO, WATER SUPPRESSION VIA WATER TRUCKS, OR MISTING SYSTEMS, COVERING OF EXCAVATED MATERIALS, AND BY IMMEDIATE DISPOSAL OF EXCAVATED WASTE MATERIALS.
4. NOISE/VIBRATION CONTROL MEASURES MUST BE MAINTAINED DURING ALL CONSTRUCTION ACTIVITIES.
5. POLLUTION CONTROL, CHEMICAL CONTROL, SPILL CONTROL AND PAINT SPLATTER CONTROL CONTROL MEASURES MUST BE MAINTAINED DURING ALL CONSTRUCTION ACTIVITIES.
6. GROUND WATER & STORMWATER CONTROL MEAUSURES, INCLUDING SEDIMENT & EROSION CONTROL, AND DEWATERING MUST IMPLEMENTED PRIOR TO, DURING, AND AFTER CIVIL CONSTRUCTION ACTIVITES.
7. TRAFFIC CONTROL MEASURES MUST BE IMPLEMENTED, AND MAINTAINED, DURING ALL CONSTRUCTION ACTIVITIES WITHIN PUBLIC OR PRIVATE ROADWAYS. ALL FLAGGERS MUST MAINTAIN APPROPRIATE CERTIFICATIONS FROM ATSSA, THE NATIONAL SAFETY COUNCIL, A STATE DEPARTMENT OF TRANSPIRATION, OR OTHER APPROVED ORGANIZATIONS. THE CONTRACTOR MUST PROVIDE, INSTALL, AND MAINTAIN TRAFFIC CONTROL DEVICES ADJACENT TO AND WITHIN THE PROJECT ACCORDING TO THE MUTCD, TEMPORARY TRAFFIC CONTROL PLAN, AND SECTION 156. THE CONTRACTOR SHALL PREPARE AND SUBMIT AN OVERALL TRAFFIC CONTROL PLAN, AND PROJECT SPECIFIC TRAFFIC CONTROL PLANS FOR PARTIAL AND FULL ROAD CLOSURES, INTERSECTION CLOSURES, AND DETOURS. THESE PLANS WILL BE REVIEWED BY VIWAPA, THE PM TEAM AND DPW.
8. PUBLIC SAFETY: ALL EXCAVATION FOR FOUNDATIONS, TRENCHES, MANHOLES, HANDHOLES, AND PAD MOUNTED EQUIPMENT MUST BE CONDUCTED IN STRICT ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND ALL RELEVANT SAFETY RULES, REGULATIONS, AND MEASURES TO ENSURE PUBLIC SAFETY.TRENCHES, OR OPENINGS SHALL NOT BE LEFT OPEN AT ANY TIME WHEN THE CONTRACTOR IS NOT PRESENT AT THE LOCATION OF THE OPENING, AND UNDER NO CIRCUMSTANCES, SHALL SUCH OPENINGS BE LEFT OVERNIGHT.
9. REFER TO SPECIFICATION SECTION 00100 (SPECIAL PROVISIONS & CONSTRUCTION IMPACT MITIGATION REQUIREMENTS) AND OTHER PORTIONS OF THESE CONTRACT DOCUMENTS FOR ADDITIONAL REQUIREMENTS RELATED TO CONSTRUCTION IMPACT MITIGATION.
10. PROPOSED STAGING/LAYDOWN AREAS MUST BE SENT TO VIWAPA FOR REVIEW AND APPROVAL PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.

SPECIALTY CONSULTANTS

SUBSURFACE ENGINEERING STUDY

REFER TO MISCELLANEOUS REQUIREMENTS SPECIFICATION 01005, SECTION 6 FOR DETAILED REQUIREMENTS FOR A SUBSURFACE UTILITY ENGINEERING (SUE) STUDY, AND REFER TO A BRIEF SUMMARY BELOW:

1. CONTRACTOR SHALL RETAIN THE SERVICES OF A PROFESSIONAL CIVIL ENGINEER, OR LAND SURVEYOR, TO PERFORM AN SUE STUDY TO DETERMINE, AND DOCUMENT THE ACTUAL LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO THE START OF ANY EXCAVATION WORK.
2. THE PROFESSIONAL SHALL BE EXPERIENCED IN PERFORMING SUE STUDIES, AND SHALL BE LICENSED IN THE USVI.
3. THE PROFESSIONAL SHALL PERFORM THE SUE STUDY IN ACCORDANCE WITH ASCE STANDARD 38–22 'STANDARD GUIDELINE FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES'.

GEOTECHNICAL ENGINEERING STUDY

A GEOTECHNICAL STUDY HAS BEEN PERFORMED FOR THIS SITE IN 2021. HOWEVER, THE SOIL BORINGS WERE DRILLED IN LOCATIONS THAT DO NOT MATCH THE NECESSARY SOIL BORING LOCATION FOR THIS PROECT. AS SUCH, THE SERVICES OF A GEOTECHNICAL ENGINEERING FIRM SHALL BE PROCURED BY THE CONTRACTOR TO PERFORM A GEOTECHNICAL EXPLORATION OF THE FRANK BAY SITE PRIOR TO CONSTRUCTION. SEE DETAILS ON THE PROPOSED SOIL BORING LOCATIONS ON DWG. G–101 "SUBSTATION "E" GENERAL ARRANGEMENT PLAN".

RECORD CONTRACT DRAWINGS

REFER TO GENERAL SPECIFICATION 01000, SECTION 19 FOR DETAILED REQUIREMENTS FOR 'RECORD' DRAWINGS, AND REFER TO A BRIEF SUMMARY BELOW:

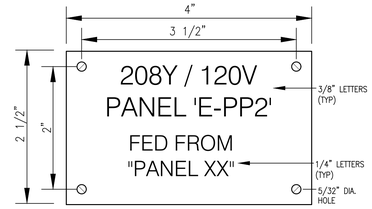
1. CONTRACTOR SHALL RETAIN THE SERVICES OF A PROFESSIONAL LAND SURVEYOR, CIVIL ENGINEER, OR LAND SURVEYOR, CURRENTLY LICENSED IN THE USVI, TO PROVIDE ONSITE VERIFICATION AND CONFIRMATION OF 'RECORD' CIVIL CONDITIONS FOR THIS PROJECT. THESE SERVICES SHALL BE IN ACCORDANCE WITH ASCE STANDARD 75–22 'STANDARD GUIDELINE FOR RECORDING AND EXCHANGING UTILITY INFRASTRUCTURE DATA'.
2. THE 'AS BUILT' / 'RECORD' DRAWINGS SHALL DOCUMENT ALL DEVIATIONS TO THE CONTRACT DRAWINGS INCLUDING BUT NOT LIMITED TO LOCATIONS OF STRUCTURES, DUCT BANK SIZING & ROUTING MODIFICATIONS, MANHOLE AND HANDHOLE LOCATION MODIFICATIONS, EQUIPMENT LOCATION MODIFICATIONS, ADJUSTMENTS TO ALL ELECTRICAL SCHEDULES TO INDICATE ALL DEVIATIONS, ADJUSTMENT TO THE DUCT BANK PLAN & PROFILE DRAWINGS TO INDICATE ALL DEVIATIONS, AND ALL KNOWN UTILITY LOCATIONS (AND DEPTHS), MODIFICATIONS TO THE ENLARGED PLANS TO INDICATE ALL DEVIATIONS, AND UPDATES TO ALL GPS COORDINATES.
3. THE 'AS BUILT' / 'RECORD' DRAWINGS SHALL INCLUDE GPS COORDINATES AND ELEVATIONS (WHERE APPROPRIATE) OF ALL PAD MOUNTED EQUIPMENT, MANHOLES, HANDHOLES, DUCT BANKS, AND PEDESTAL MOUNTED EQUIPMENT.
4. THE 'AS BUILT' / 'RECORD' DRAWINGS SHALL BE SUBMITTED IN HARD COPY FORMAT AND DIGITAL/ELECTRICAL FORMAT.
5. THE 'AS BUILT' / 'RECORD' DRAWINGS MUST BE CERTIFIED (REFER TO SPECIFICATION SECTION 01000 FOR DETAILS).

ELECTRICAL SYMBOLS (ONE LINE DIAGRAM)

	TRANSFORMER
	SWITCH, AIR INSULATED UNLESS NOTED OTHERWISE
	FUSED CUTOUT
	FUSE
	SURGE ARRESTER
3 600:5A	CURRENT TRANSFORMER; 3 INDICATES QUANTITY; 600:5A INDICATES PRIMARY/SECONDARY RATINGS
1 7E2:120V	POTENTIAL TRANSFORMER; 2 INDICATES QUANTITY; 13,200:120V INDICATES PRIMARY/SECONDARY RATINGS
LL	LIVE LINE INDICATOR
M	METER OR MOTOR OPERATOR
	GROUND
	DELTA –CONNECTED WINDING
	WYE–CONNECTED WINDING
	GROUNDED WYE–CONNECTED WINDING
	DEAD FRONT CABLE TERMINATION/CONNECTION
	PREPARED DEAD FRONT CONNECTION
	LIVE FRONT CABLE TERMINATION/CONNECTION
	PREPARED LIVE FRONT CONNECTION
A	ELECTRICAL EQUIPMENT TAG. IDENTIFIED ON EQUIPMENT SCHEDULE
	RACEWAY TAG FOR MEDIUM VOLTAGE FEEDER; IDENTIFIED ON MEDIUM VOLTAGE RACEWAY SCHEDULE
	COLD SHRINK MEDIUM VOLTAGE SPLICE
	GROUNDED DELTA–CONNECTED WINDING
VFI	VACUUM FAULT INTERRUPTER

SYMBOLS

P–3	HOMERUN TO PANELBOARD: "P" INDICATES PANEL # AND "3" INDICATES CIRCUIT #.
	BRANCH CIRCUIT OR FEEDER WIRING CONSISTING OF THHN COPPER CONDUCTORS RUN IN CONDUIT
	BRANCH CIRCUIT OR FEEDER WIRING CONSISTING OF THHN COPPER CONDUCTORS RUN UNDERGROUND IN PVC
	DUPLEX RECEPTACLE NEMA 5–20R; IN SINGLE GANG BOX
GFI	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE, NEMA 5–20R; IN SINGLE GANG BOX.
GFI WP	WEATHER PROOF G.F.I. DUPLEX RECEPTACLE, NEMA 5–20R, HUBBELL #GF5362I, WITH CLEAR COVER PLATE
J	JUNCTION BOX
	PANELBOARD – RATING AS DESIGNATED ON DRAWINGS
FACP	FIRE ALARM CONTROL PANEL.
F	FIRE ALARM SYSTEM MANUAL PULL STATION DOUBLE ACTION
F	FIRE ALARM SYSTEM HORN/STROBE AUDIO/VISUAL INDICATING APPLIANCE DEVICE, SELECTABLE OUTPUT, FLUSH MOUNTED IN WALLS
F WP	WEATHER PROOF FIRE ALARM SYSTEM HORN/STROBE AUDIO/VISUAL INDICATING APPLIANCE DEVICE, SELECTABLE OUTPUT, FLUSH MOUNTED IN WALLS
	ADDRESSABLE FIRE ALARM SYSTEM SMOKE DETECTOR
	ADDRESSABLE HEAT DETECTOR
WP	WEATHER PROOF OUTDOOR BULLET SECURITY CAMERA, WALL/FENCE MOUNTED, SAMSUNG XNO–8020R
WP	WEATHER PROOF OUTDOOR DOME CAMERA, WALL/FENCE MOUNTED, SAMSUNG XND–8080RV
	INDOOR BULLET SECURITY CAMERA, WALL/CEILING MOUNTED, SAMSUNG XNO–8020R
	INDOOR DOME SECURITY CAMERA, WALL/CEILING MOUNTED, SAMSUNG XND–8080RV



TYPICAL NAMEPLATE DETAIL

SCALE: NONE

NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. NAMEPLATE TO BE 1/16" THICK WHITE PLASTIC WITH BLACK CENTER LAMINATION. FACE SHALL BE BLACK, ENGRAVED LETTERS SHALL BE WHITE.
3. SECURE NAMEPLATE TO SURFACES WITH (4) FLAT HEAD BRASS SCREWS. ADHESIVE CEMENT SHALL NOT BE ALLOWED.
4. THIS NAMEPLATE DETAIL IS FOR FACILITIES THAT DO NOT ALREADY HAVE EXISTING PANEL NAMEPLATE NOMENCLATURE & CONTENT REQUIREMENTS; VERIFY NOMENCLATURE REQUIREMENTS WITH AUTHORIZED OWNER REPRESENTATIVE PRIOR TO PURCHASE & CONSTRUCTION.

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Engineering Excellence Since 1968

Seal:

PROFESSIONAL ENGINEER
U.S. VIRGIN ISLANDS
PETER J. BONNES
0-8087-1B
(06.18.2026)

Client:

Virgin Islands Water and Power Authority
St. ThomaS
U.S. Virgin Islands

Project Name:

Frank Bay
Substation "E"
Emergency Generator
(Phase 1)
St. John, USVI

Issue / Revisions:

#	Date	Description
A	06.12.26	Issue for 80% Review
B	06.18.26	Issue for FEMA/EHP Review

Drawn By:	PJB / BN
Chkd By:	PJB
Date:	06.18.2026
Scale:	As Noted
Project Number:	VIT 20131

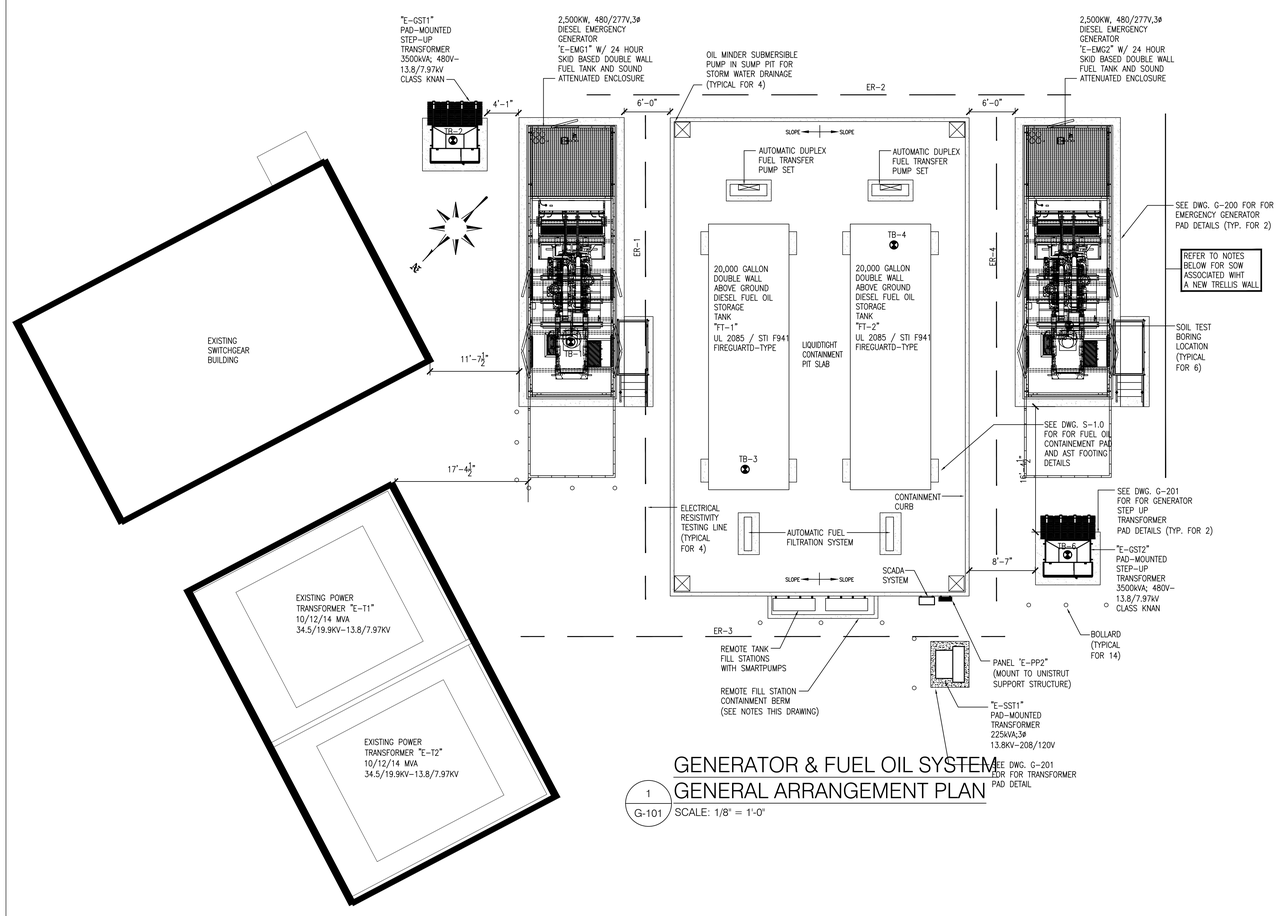
Drawing Title:

GENERAL NOTES, ABBREVIATIONS, & SYMBOLS

Drawing Number:

STJ-E1-G-100

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GENERATOR & FUEL OIL SYSTEM GENERAL ARRANGEMENT PLAN

1 / G-101 SCALE: 1/8" = 1'-0"

FUEL OIL SYSTEM NOTES

General Fuel Oil System Notes

1. Each aboveground storage tank shall be suitable for ULSD diesel fuel and shall include double-wall construction, interstitial leak monitoring, emergency venting, normal venting, overfill prevention, local and remote level monitoring, high-level alarm, high-high-level alarm, and provisions for fuel sampling and water draw-off.
2. The fuel oil system is intended to support operation of two 2,500 kW diesel generators at full load for five continuous days, with the generator skid-baseD fuel tanks included as part of the total available fuel inventory.
3. The Contractor shall coordinate final tank dimensions, tank weights, saddle locations, anchorage locations, vent locations, fill locations, gauge locations, lifting points, and maintenance clearances with the final approved tank manufacturer's certified drawings prior to construction of tank foundations or containment areas.
4. All fuel oil system work shall comply with applicable requirements of the approved project documents, VIWAPA requirements, FEMA/EHP requirements, USVI DPNR requirements, local fire marshall/AHJ requirements, NFPA 30, NFPA 37, NFPA 110 where applicable, UL 2085, STI F941, SPCC requirements, and all other applicable local and federal requirements.
5. Final construction shall not proceed until all required FEMA, DPNR, CZM, EHP, fire marshall/AHJ, and other applicable approvals have been obtained.

Secondary Containment Notes

1. Provide external reinforced concrete secondary containment around the aboveground storage tanks in addition to the double-wall tank construction. The external containment is intended to provide an added layer of spill protection and shall be designed as liquid-tight diesel fuel containment.
2. Secondary containment shall be sized to contain, at a minimum, the entire capacity of the largest single tank within the containment area plus sufficient freeboard for precipitation. EPA SPCC requirements shall be incorporated into the final design.
3. Final containment volume calculations will be provided by FXB Engineering, and will account for tank displacement below the containment curb height, pump pads, pipe supports, housekeeping pads, sump volume, unusable volume, freeboard, rainfall, and any other volume-reducing features.
4. Concrete containment slabs, curbs, construction joints, control joints, pipe penetrations, conduit penetrations, and embedded items shall be detailed to remain liquid-tight. Provide diesel-compatible joint sealants, waterstops, coatings, liners, or other containment systems as required.
5. Containment surfaces shall receive a diesel-resistant coating or liner system suitable for outdoor exposure, UV exposure, standing water, and petroleum contact. Coating system shall be compatible with concrete substrate and shall be installed in accordance with manufacturer's written instructions.
6. Slope containment floor to sumps. Do not slope the structural tank support pads beneath tank saddles unless specifically approved by the tank manufacturer and structural engineer.
7. Retained stormwater in containment areas shall be visually inspected for oil sheen or contamination before any controlled discharge. Records of containment inspection and drainage events shall be maintained as part of the site SPCC program.
8. Locate electrical/control panels outside the containment area where practical/possible. Where equipment is installed within containment, provide equipment ratings and mounting heights suitable for the installed environment and containment configuration.

Monitoring, Alarms, and Controls Notes

1. Provide local and remote monitoring of AST level, skid-tank level, pump status, pump failure, leak detection, interstitial leak alarm, low level, high level, high-high level, overfill alarm, and fuel system trouble alarm.
2. Fuel oil system alarms shall be transmitted to generator controls, SCADA, BMS, or other VIWAPA-designated monitoring systems were specifically indicated.
3. Provide local alarm panel at each fuel storage area. Alarm panel shall be weatherproof and suitable for outdoor corrosive coastal environment.
4. All level sensors, leak sensors, switches, and alarm devices shall be accessible for inspection, testing, calibration, and replacement.
5. Liquid level sensing devices used for tank overfill protection shall be tested regularly and records shall be maintained as required by the SPCC program and the AHJ.

Environmental / EHP / SPCC Notes

1. This project is federally funded and subject to FEMA/EHP review. The Contractor shall not begin ground-disturbing fuel oil system work until all required environmental, historical, local, territorial, and federal approvals have been obtained.
2. The Contractor shall limit disturbance to the approved limits of work shown on the drawings. No expansion of the work area, staging area, laydown area, crane pad, access route, or excavation limits shall occur without approval.
3. Prepare and maintain spill prevention and response materials on site during construction, fuel system installation, testing, and commissioning.
4. Provide spill kits, absorbent materials, drain protection, and emergency response equipment at the fuel storage area and at fuel transfer/fill locations during construction and commissioning.
5. Any spill, sheen, release, contaminated stormwater, contaminated soil, or damaged containment feature shall be reported immediately in accordance with the project SPCC plan, VIWAPA procedures, DPNR requirements, and applicable federal requirements.
6. DPNR Terminal Facility Licensing applicability shall be confirmed where fuel storage, handling, transfer, or related terminal-facility requirements apply.
7. The final SPCC plan and fuel oil system operating procedures shall be coordinated with the final tank layout, containment volume calculations, drainage procedures, inspection requirements, alarm testing, and emergency response procedures.

Reference Codes and Standards

- 40 CFR Part 112, Spill Prevention, Control, and Countermeasure (SPCC) requirements, including secondary containment and drainage control provisions.
- USVI DPNR Environmental Protection Division requirements, including fuel storage, terminal facility licensing applicability, and other applicable territorial environmental requirements.
- NFPA 30, Flammable and Combustible Liquids Code.
- NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines.
- NFPA 110, Standard for Emergency and Standby Power Systems, where applicable.
- UL 2085 / STI F941 requirements for protected aboveground storage tanks.

Fuel Transfer Pump and Piping Notes

1. Provide one independent duplex fuel oil transfer pump package for each AST/generator pair. Pump packages shall be by Simplex or approved equal.
2. Each duplex pump package shall include lead/lag controls, hand-off-auto controls, local disconnecting means, suction and discharge isolation valves, check valves, strainers/filters, pressure gauges, leak containment, and alarm contacts for remote monitoring.
3. Fuel transfer piping shall be arranged so that each AST normally serves one generator skid-base tank. Provide a normally closed, locked, and supervised cross-tie between the two tank/transfer systems at each site to allow manual operational flexibility.
4. Cross-tie valves shall be lockable and supervised. Cross-tie operation shall be by authorized personnel only.
5. Provide automatic transfer controls to refill each generator skid-base tank from its associated AST based on skid-tank low and high level signals. Provide hardwired high-high shutdown of fuel transfer pump operation.
6. Provide leak detection shutdown of affected transfer pump package upon detection of leak, interstitial alarm, pump containment alarm, or other fuel system alarm condition.
7. All aboveground fuel piping shall be properly supported, protected from mechanical damage, and arranged to minimize abrasion, corrosion, thermal expansion stress, vibration damage, and differential movement.
8. Provide flexible fuel connections where required at tanks, pumps, generator skid tanks, and other equipment subject to vibration or differential movement.
9. Fuel piping shall not be routed through electrical equipment clear spaces unless specifically coordinated and approved.
10. Provide isolation valves at each tank outlet, each pump suction, each pump discharge, each generator skid tank connection, and each cross-tie connection.
11. Provide capped or blind-flanged terminal connections where fuel piping is not in service or is reserved for future use.
12. Fuel transfer piping between the diked tank containment area and the connections to the generator skid-based tanks shall be double walled containment piping with interstitial space monitored for primary piping leaks.

Fill Station Notes

1. Provide remote fill connection or fill station. Locate fill points to permit safe fuel truck access while minimizing truck movement inside energized utility areas.
2. Fill stations shall include spill containment, overfill prevention, high-level alarm indication, high-high-level alarm indication, tank identification, emergency shutoff, grounding/bonding provisions, and signage.
3. Fill connections shall be clearly labeled with tank number, fuel type, nominal tank capacity, normal maximum fill level, and emergency contact information.
4. Tank filling shall be attended by qualified personnel. The fuel supplier/operator shall verify available tank volume before beginning fuel transfer.
5. Provide truck grounding/bonding connection at fuel fill area.
6. Provide bollards, barriers, or other physical protection for fill piping, pumps, exposed valves, vents, control panels, and other fuel oil appurtenances subject to vehicle impact.

Structural Notes

1. Tank foundations, containment slabs, curbs, pump pads, anchor bolts, and supports shall be designed by the structural engineer for all applicable loads, including tank empty weight, full fuel weight, hydrostatic containment load, wind, seismic, flood/buoyancy where applicable, impact, thermal movement, and construction loads.
2. Do not construct tank foundations or containment pads based on catalog tank dimensions only. Use final certified manufacturer drawings.
3. Tank anchor bolts shall be located using manufacturer-certified templates. Field drilling or relocation of anchor bolts shall not be permitted without Engineer of Record approval.
4. Provide hurricane-rated anchorage for all ASTs, pump packages, pipe supports, fill stations, panels, vents, and appurtenances.
5. Concrete containment areas shall be detailed to prevent uncontrolled cracking that would compromise containment. Provide control joints, construction joints, sealants, reinforcing, and coating details as required.
6. Pipe and conduit penetrations through containment walls or slabs shall be sleeved and sealed with diesel-compatible liquid-tight penetration seals.
7. Provide corrosion-resistant materials and coatings suitable for St. John coastal/tropical exposure. Exposed steel, fasteners, supports, anchor hardware, and appurtenances shall be hot-dip galvanized, stainless steel, coated, or otherwise corrosion-protected as approved.
8. Finished grades shall direct stormwater away from the exterior of fuel containment areas and shall not direct off-site stormwater into fuel containment areas.

Construction Notes

1. The Contractor shall submit final shop drawings for tanks, pumps, valves, piping, controls, containment coating, leak detection, overfill prevention, fill stations, vents, supports, and anchors before fabrication or installation.
2. The Contractor shall submit containment volume calculations for each fuel containment area before construction.
3. The Contractor shall submit tank transport, offloading, rigging, and setting procedures before delivery to site.
4. The Contractor shall protect tank coatings, containment coatings, piping, vents, sensors, and appurtenances from damage during transport, rigging, installation, and construction.
5. Repair damaged coatings, sealants, liners, concrete, curbs, or containment features before system commissioning.
6. Perform required tank tests, interstitial monitoring tests, piping pressure/leak tests, alarm tests, overfill prevention tests, pump functional tests, and controls integration tests before placing the fuel system in service.
7. Provide as-built drawings showing final tank locations, piping routes, valve numbers, instrument locations, wiring routes, containment limits, sump locations, and fill station locations.
8. Provide O&M manuals, testing records, calibration records, warranty documents, inspection forms, and training for VIWAPA operations personnel before project closeout.

DEMOLITON NOTES

1. Demolition activities shall include the removal of abandoned water-service buildings, trailer, guard shack, shed, walkways, curbs, railings, foundations, and associated utilities as indicated on the contract drawings.
2. Prior to demolition, a hazardous materials survey shall be completed to identify asbestos, lead-based paint, petroleum contamination, mold, PCB-containing equipment, and other regulated materials.
3. Demolition operations shall be coordinated with VIWAPA to protect active substation facilities, grounding systems, utilities, transformers, and switchgear.
4. All demolition debris shall be properly removed and disposed of, and affected areas shall be restored and prepared for construction of the emergency generator facilities.
5. Refer to the Basis of Design narrative for this project for additional information.

REMOTE FUEL FILL SPILL CONTAINMENT/BERM

A. PROVIDE A LOCALIZED SPILL-CONTAINMENT BERM AT THE REMOTE FUEL FILL STATION LOCATED OUTSIDE THE MAIN AST CONTAINMENT BERM. THE BERM SHALL BE ARRANGED TO CONTAIN INCIDENTAL SPILLS, HOSE DRAIN-BACK, CONNECTION LEAKAGE, AND MINOR OVERFILL EVENTS DURING FUEL DELIVERY OPERATIONS.

B. THE REMOTE FILL AREA SHALL INCLUDE A REINFORCED CONCRETE SPILL PAD WITH RAISED PERIMETER CURB OR BERM. THE PAD SHALL BE SLOPED TO A LOW POINT OR SUMP WITHIN THE BERMED AREA. THE SUMP/DRAIN SHALL REMAIN NORMALLY CLOSED AND SHALL BE MANUALLY INSPECTED AND DRAINED ONLY AFTER CONFIRMING NO VISIBLE FUEL OR SHEEN IS PRESENT. DISCHARGE FROM THE BERMED AREA SHALL NOT BE ROUTED DIRECTLY TO STORM DRAINAGE.

C. THE BERMED FILL AREA SHALL BE SIZED BY THE CIVIL/MECHANICAL ENGINEER BASED ON THE FINAL FILL PIPING ARRANGEMENT, TANKER HOSE CONNECTION LOCATION, TRUCK ACCESS, AND VIWAPA/DPNR REQUIREMENTS. AS A PRELIMINARY BASIS, PROVIDE A MINIMUM 6-INCH HIGH CONCRETE CURB/BERM AROUND THE FILL CONNECTION AREA, WITH REMOVABLE OR DRIVE-OVER ACCESS PROVISIONS WHERE REQUIRED FOR FUEL TRUCK OPERATIONS.

D. THE FILL STATION SHALL INCLUDE SPILL CONTAINMENT, BOLLARDS, GROUNDING/BONDING PROVISIONS, LOCKABLE FILL CONNECTIONS, SIGNAGE, EMERGENCY SHUTOFF PROVISIONS WHERE APPLICABLE, AND CLEAR OPERATING INSTRUCTIONS FOR FUEL DELIVERY PERSONNEL. FINAL DETAILS SHALL BE COORDINATED WITH SPCC REQUIREMENTS, DPNR/AHJ REVIEW COMMENTS, SITE GRADING, AND STORM WATER MANAGEMENT DESIGN.

VISUAL / ACOUTIC SCREENING TRELLIS WALL

A. PROVIDE A FREESTANDING STRUCTURAL TRELLIS WALL NEAR THE GENERATOR E-EMG2 ENCLOSURE TO SUPPPORT LANSCAPE SCREENING USING INDIAN RUBBER VINE. THE TRELLIS IS INTENDED TO PROVIDE VISUAL SCREENING OF TRHE GENERATOR INSTALLATION FROM THE NEIGHBORING PROPERTY AND WILL PROVIDE A LIMITED AMOUNT OF ADDTIONAL ACOUSTIC ATTENUATION.

B. TRELLIS SHALL BE DESIGNED AS AN EXTERIOR STRUCTURAL ELEMENT FOR THE SITE-SPECIFIC ASCE7 WIND AND SEISMIC CRITERIA, INCLUDING HURRICANE WIND LOADS, VINE/VEGETATION LOADING, CORROSION EXPOSURE, HURRICANE-RATED, AND CORROSION RESISTANT.

C. MAINTAIN REQUIRED GENERATOR AIRFLOW AND SERVICE CLEARANCES AROUND ENCLOSURE.

D. TRELLIS MATERIALS, FASTENERS, ANCHORS, AND COATINGS SHALL BE SUITABLE FOR THE COASTAL/ TROPICAL ENVIRONMENT OF ST. JOHN.

E. FINAL LOCATION, HEIGHT, LENGTH, FOUNDATION DESIGN, AND OFFSET FROM THE GENERATOR ENCLOSURE, SHALL BE COORDINATED WITH GENERATOR CLEARANCE REQUIREMENTS, CIVIL GRADING, AND LANDSCAPE REQUIRMENTS.

GEOTECHNICAL TESTING NOTES:

SPECIFICATIONS FOR SUB-SURFACE INVESTIGATION

1.0 GENERAL

A. PROVIDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES TO PERFORM A COMPLETE GEOTECHNICAL INVESTIGATION, INCLUDING TEST BORINGS, LABORATORY TESTING, ANALYSIS, RECOMMENDATIONS, AND REPORT FOR THIS PROJECT.

B. OBTAIN ALL NECESSARY PERMITS PRIOR TO STARTING WORK.

C. BORING SHALL BE MADE AT LOCATIONS SHOWN ON THIS DRAWING. THE ENGINEER RESERVES THE RIGHT TO ORDER ADDITIONAL BORINGS OR ADDITIONAL DEPTH OF BORINGS SUBJECT TO PAYMENT FOR THE ADDITIONAL SERVICES SET FORTH IN THE CONTRACT.

D. THE GEOTECHNICAL ENGINEER SHALL COORDINATE WITH THE SUE AND/OR CIVIL ENGINEER REGARDING THE LOCATION OF ANY OTHER UTILITIES WITHIN THE PROJECT AREA PRIOR TO BEGINNING EXPLORATION.

E. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH ALL CURRENTLY APPLICABLE SAFETY STANDARDS.

F. ALL GEOTECHNICAL WORK SHALL BE CONDUCTED UNDER THE SUPERVISION OF, AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE UNITES STATES VIRGIN ISLANDS.

2.0 LOCATION

A. SUGGESTED BORING LOCATIONS ARE INDICATED ON THE DRAWING. ACTUAL LENGTHS SHALL BE AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER.

B. IF CLEARING IS NECESSARY FOR ACCESS TO TESTING OPERATIONS, THE CIVIL ENGINEER SHALL PROVIDE DIRECTION.

3.0 METHODS OF OPERATION

A. DRILLING AND SAMPLING SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT APPLICABLE ASTM STANDARDS, INCLUDING BUT NOT LIMITED TO ASTM D1586 AND D2113. CONTINUOUS SAMPLING FOR FIRST 15 FEET; AND AT 3-FOOT INTERVALS THEREAFTER TO REFUSAL OR TO A MINIMUM OF 50 FEET BELOW FINISH GRADE SHALL BE PERFORMED.

B. AT LEAST ONE BORING SHALL BE DRILLED TO REFUSAL UNLESS REFUSAL IS NOT ENCOUNTERED BEFORE REACHING A 100 FOOT DEPTH.

C. IF ROCK IS ENCOUNTERED, CORE EACH BORING USING NX CORE 5'-0" INTO ROCK TO CONFIRM ROCK CONSISTENCY. IF VOIDS ARE ENCOUNTERED, CORE 10'-0" INTO ROCK. CORE ROCK A MINIMUM OF 5 FEET AT EACH BORING LOCATION.

D. GROUND WATER OBSERVATIONS TO BE MADE FOR ALL HOLES; AT COMPLETION OF HOLES; 12 HOURS AFTER COMPLETION OF HOLE, IF PRACTICABLE. AND IF WATER IS LOST, THE DEPTH OF THE BORING AT THE TIME OF LOSS SHALL BE RECORDED.

E. BACKFILL TEST BORING HOLES AS NECESSARY TO AVOID SUBSEQUENT DEPRESSIONS.

F. CARE SHALL BE EXERCISED TO OPERATE EQUIPMENT AT SPEEDS AND PRESSURES THAT WILL ASSURE SATISFACTORY CORE RECOVERIES, AND TO MAINTAIN THE CORE BARREL IN A THOROUGHLY LUBRICATED CONDITION AT ALL TIMES. SAMPLES SHALL BE TIGHTLY SEALED IMMEDIATELY AND MARKED WITH HOLE NUMBER, SAMPLE NUMBER, DEPTH OF SAMPLE, AND BLOW COUNT AND SHALL BE DELIVERED TO THE GEOTECHNICAL ENGINEER'S LABORATORY OR OTHER LOCATION ACCEPTABLE TO THE OWNER. CORES RECOVERED SHALL BE PRESERVED IN SUITABLE CORE BOXES, PROPERLY LABELED SO THAT THE TOP AND BOTTOM OF THE CORE FROM EACH HOLE IS PROPERLY MARKED.

G. COMPLETE LOGS OF TEST BORINGS, INCLUDING THEIR ACTUAL PLAN LOCATIONS SHALL BE INCLUDED AS PART OF THE GEOTECHNICAL ENGINEERING REPORT.

H. THE BOXED OF SOIL AND ROCK SAMPLES SHALL BE STORED BY THE GEOTECHNICAL ENGINEER FOR A PERIOD OF 120 DAYS AFTER INITAL SUBMITTAL OF THE GEOTECHNICAL REPORT.

I. UPON COMPLETION OF ANY BORING AND GROUND WATER OBSERVATION, THE BORING CONTRACTOR SHALL FILL AND CAP THE HOLE WITH THE APPROPRIATE MATERIAL. AT THE END OF THE WORK, THE AREA OF THE WORK SHALL BE CLEANED AND LEFT IN A CONDITION AT LEAST EQUAL TO ITS PRIOR CONDITION AND SATISFACTORY TO THE OWNER.

4.0 FIELD REPORTS

A. A LOG OF EACH BORING, RECORDING CHANGES IN THE CHARACTER OF THE SOIL, GROUND WATER ELEVATIONS, PENETRATION TEST RESULTS (BLOW COUNTS) FOR EARTH BORINGS AND PERCENT CORE RECOVERIES FOR ROCK, AND DATED SHALL BE PROVIDED IN TRIPLICATE TO THE OWNER. THIS LOG SHALL BE IN THE FORM OF A PLOT WITH A VERTICAL SCALE OF TEN FEET PER INCH RESULTS OR ALL HOLES PLOTTED IN PROPER ELEVATION RELATIONSHIP WITH EACH OTHER.

5.0 GEOTECHNICAL ENGINEER' SPECIFIC ACTIVITIES

A. PRELIMINARY ENGINEERING:
- REVIEW PLANS PREPARED FOR THE SITE AND PLANNED CONSTRUCTION ALONG WITH PUBLISHED GEOLOGIC AN AND HYDROGEOLOGIC DATA RELEVANT TO THE SITE.
- UNDERTAKE AN INITIAL SITE VISIT IF NECESSARY.
- COORDINATE MEETINGS WITH VIWAPA AND PROEJCT CONTRACTOR.

B. FIELD ACTIVITIES;
- LAYOUT BORING LOCATIONS.
- PERFORM DRILLING PROGRAM UNDER SUPERVISION OF GEOTECHNICAL ENGINEER.
- PERFORM ELECTRICAL RESISTIVITY TESTING IN ACCORDANCE WITH STANDARDS ASTM G57; IEEE 81, AND IEEE 442.

C. LABORATORY TESTING:
- PERFORM TESTING OF REPRESENTATIVE SAMPLES AS BASIS FOR ESTABLISHING ENGINEERING PARAMETERS IN ACCORDANCE TO THE FOLLOWING STANDARDS:
  - ENGINEERING PROPERTIES TESTS ASTM D-422, ASTM D-4318.
  - SOIL CLASSIFICATION ASTM D-2488 AND ASTM D-2487 ON SELECTED SAMPLES.

D. GEOTECHNICAL ANALYSIS AND REPORT:

THE GEOTECHNICAL ENGINEER SHALL ASSESS THE INFORMATION OBTAINED FROM THE FIELD INVESTIGATION AND LABORATORY TESTING AND SHALL PREPARE A REPORT INDICATING THE WORK PERFORMED AND PREVAILING GEOTECHNICAL CONDITION IN THE SITE AREA, INCLUDING AT LEAST THE FOLLOWING:

- GENERAL DESCRIPTION OF SOILS AND GEOLOGICAL CONDITIONS INCLUDING INTEGRITY, RELIABILITY, AND RESISTIVITY. RESULTS SHALL BE TABULATED AND INCLUDED IN THE FINAL REPORT.
- GENERAL DESCRIPTION AND CLASSIFICATION OF SOILS ENCOUNTERED.
- SUITABILITY OF SOILS BY CLASSIFICATION FOR PLANNED CONSTRUCTION.
- SITE GRADING AND RECOMMENDATIONS INCLUDING CUT AND FILL SLOPES, EROSION CONTROL AND PROTECTION MEASURES, ETC.
- EMBANKMENT CONSTRUCTION INCLUDING COMPACTION REQUIREMENTS, MAXIMUM LIFT THICKNESS, AND STABILITY OF FILLS, ETC.
- GEOTEXTILE MATERIALS FOR DRAINAGE AND STABILIZATION.
- TEMPORARY PAVEMENT (BITUMINOUS AND AGGREGATE) CROSS SECTION(S) DURING CONSTRUCTION.
- FINAL PAVEMENT DESIGN (BITUMINOUS AND AGGREGATE) CROSS SECTION(S) FOLLOWING CONSTRUCTION.
- REQUIREMENTS FOR PAVEMENT BASE AND DRAINAGE SUBSOIL MODIFICATION/STABILIZATION INCLUDING RECOMMENDATIONS FOR GEOTEXTILE STABILIZATION (IF APPROPRIATE).
- RECOMMENDATIONS FOR:
  - FOUNDATION SYSTEM TYPE(S).
  - ALLOWABLE BEARING CAPACITY(IES).
  - SLABS ON GRADE, CROSS SECTIONS, AND REINFORCING.
  - SITE SPECIFIC CONSTRUCTION CONSIDERATIONS, SUCH AS TREATMENT OF HIGHLY PLASTIC SOILS, HIGH GROUND WATER LEVELS, ETC.
  - EQUIVALENT FLUID PRESSURE FOR BRACED AND UN-BRACED SOIL RETAINING STRUCTURES INCLUDING GROUND WATER EFFECTS, AND OTHER INFORMATION THE GEOTECHNICAL ENGINEER MAY DEEM NECESSARY TO PRESENT A COMPREHENSIVE GEOTECHNICAL REPORT.

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(06.18.2026)

Client:

Virgin Islands Water and Power Authority
St. ThomaS
U.S. Virgin Islands

Project Name:

Frank Bay
Substation "E"
Emergency Generator
(Phase 1)
St. John, USVI

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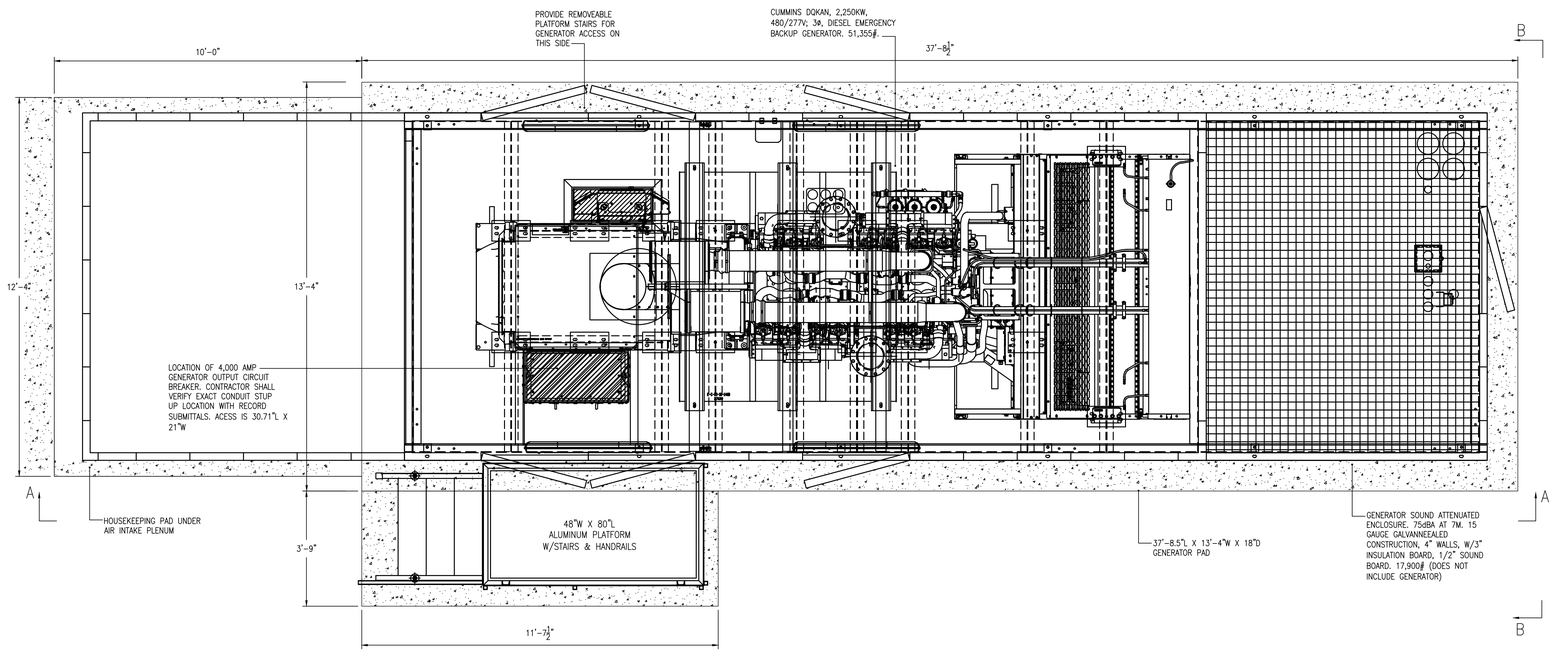
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SUBSTATION "E"
GENERATOR & FUEL OIL
SYSTEM GENERAL
ARRANGEMENT PLAN

Drawing Number:

STJ-E1-G-101

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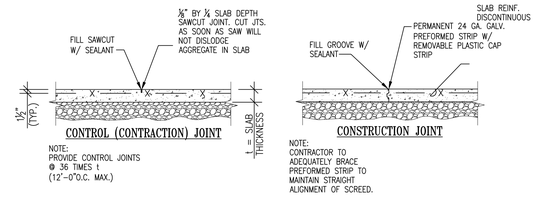


DIESEL EMERGENCY BACKUP GENERATOR & PAD: PLAN VIEW

1 / G-200 SCALE: 1/2" = 1'-0"

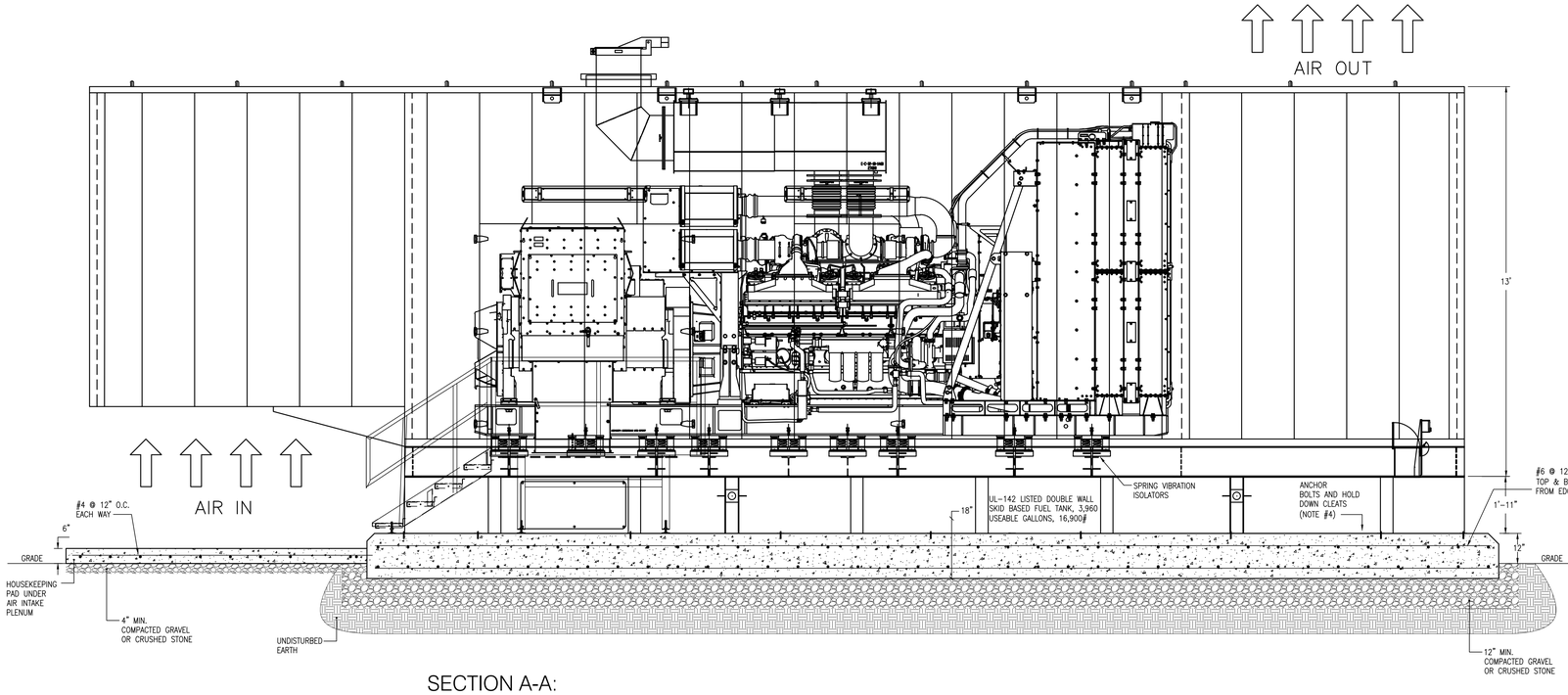
CONCRETE PAD NOTES

1. CONTRACTOR TO VERIFY ALL CONDITIONS AND DIMENSIONS BEFORE STARTING WORK.
2. CONTRACTOR SHALL VERIFY SUB-SURFACE CONDITIONS BEFORE ANY FOUNDATIONS ARE PLACED. ASSUMED SOIL BEARING CAPACITY 3000 P.S.F.
3. FOR ALL CONCRETE WORK A.C.I. STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (A.C.I. 318-) WILL BE APPLICABLE UNLESS NOTED.
4. ALL CONCRETE SHALL BE POURED IN FORMS CONFORMING TO THE DIMENSIONS INDICATED ON THE DRAWINGS (AFTER CONFIRMING DIMENSIONS WITH MANUFACTURERS APPROVED EQUIPMENT SUBMITTALS).
5. NO CONCRETE SHALL BE POURED UNTIL ALL REINFORCING STEEL IS IN PLACE.
6. ALL CONCRETE TO DEVELOP 4,000 P.S.I. IN 28 DAYS.
7. ALL DETAILING, FABRICATION & PLACEMENT OF REINFORCING BARS SHALL FOLLOW THE A.C.I. MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES A.C.I. 315. HIGH CHAIRS WILL BE REQUIRED UNDER ALL TOP REINFORCING.
8. REINFORCING BARS TO BE GRADE 60 DEFORMED NEW BILLET STEEL MEETING ASTM SPECS A-615 AND HAVING DEFORMATION MEETING ASTM A-305.
9. PROVIDE 3/4" CHAMFER ON EXPOSED EDGES OF ALL CONCRETE PADS.
10. CONTRACTOR SHALL PROVIDE SUBMITTALS FOR CONCRETE MIX DESIGN FOR REVIEW AND APPROVAL.
11. FORMWORK SHALL REMAIN IN PLACE UNTIL CONCRETE HAS OBTAINED AT LEAST 90% OF ITS 28 DAY COMPRESSIVE STRENGTH.
12. THE FINISH TOLERANCE OF ALL SLABS SHALL BE IN ACCORDANCE WITH ACI 301, TYPE A.



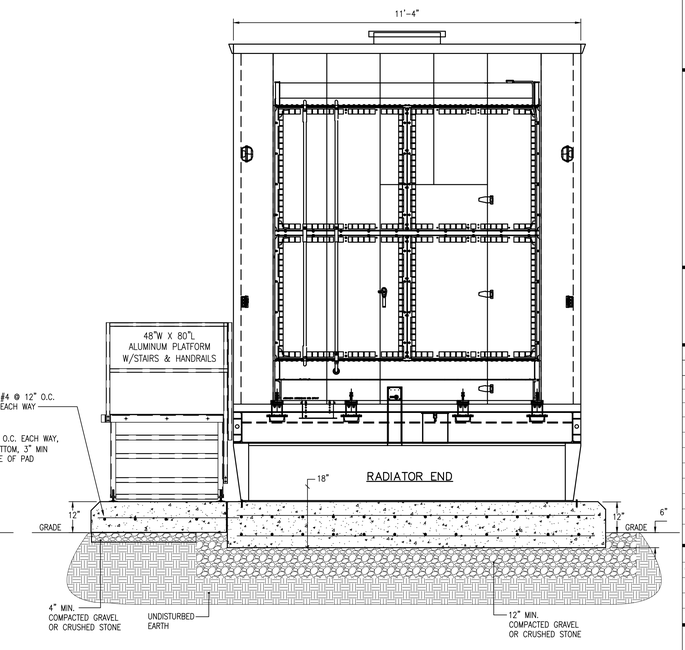
TYPICAL SLAB ON GRADE CONTROL AND CONSTRUCTION JOINT DETAIL

4 / G-200 SCALE: NTS



SECTION A-A: GENERATOR ELEVATION AND PAD DETAIL

2 / G-200 SCALE: 1/2" = 1'-0"



SECTION B-B: RADIATOR END ELEVATION AND PAD DETAIL

3 / G-200 SCALE: 1/2" = 1'-0"

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Seal:

PROFESSIONAL ENGINEER — PETER J. BONNES — 0-8087-1B — U.S. VIRGIN ISLANDS

(06.18.2026)

Client:

WATER AND POWER AUTHORITY — VIRGIN ISLANDS

Virgin Islands Water and Power Authority St. ThomaS U.S. Virgin Islands

Project Name:

Frank Bay Substation "E" Emergency Generator (Phase 1) St. John, USVI

Issue / Revisions:

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Chkd By:	PJB
Date:	06.18.2026
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Project Number:	VIT 20131

Drawing Title:

EMERGENCY GENERATOR DETAILS

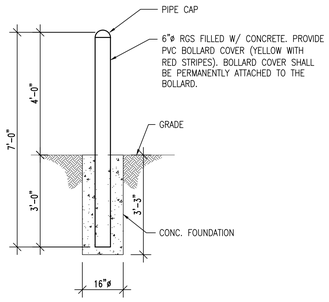
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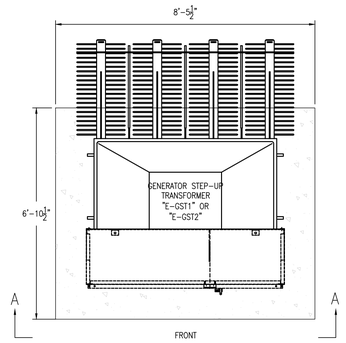
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CONCRETE PAD NOTES

1. CONTRACTOR TO VERIFY ALL CONDITIONS AND DIMENSIONS BEFORE STARTING WORK.
2. CONTRACTOR SHALL VERIFY SUB-SURFACE CONDITIONS BEFORE ANY FOUNDATIONS ARE PLACED. ASSUMED SOIL BEARING CAPACITY 3000 P.S.F.
3. FOR ALL CONCRETE WORK A.C.I. STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (A.C.I. 318-) WILL BE APPLICABLE UNLESS NOTED.
4. ALL CONCRETE SHALL BE POURED IN FORMS CONFORMING TO THE DIMENSIONS INDICATED ON THE DRAWINGS (AFTER CONFIRMING DIMENSIONS WITH MANUFACTURERS APPROVED EQUIPMENT SUBMITTALS).
5. NO CONCRETE SHALL BE POURED UNTIL ALL REINFORCING STEEL IS IN PLACE.
6. ALL CONCRETE TO DEVELOP 4,000 P.S.I. IN 28 DAYS.
7. ALL DETAILING, FABRICATION & PLACEMENT OF REINFORCING BARS SHALL FOLLOW THE A.C.I. MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES A.C.I. 315. HIGH CHAIRS WILL BE REQUIRED UNDER ALL TOP REINFORCING.
8. REINFORCING BARS TO BE GRADE 60 DEFORMED NEW BILLET STEEL MEETING ASTM SPECS A-615 AND HAVING DEFORMATION MEETING ASTM A-305.
9. PROVIDE 3/4" CHAMFER ON EXPOSED EDGES OF ALL CONCRETE PADS.
10. CONTRACTOR SHALL PROVIDE SUBMITTALS FOR CONCRETE MIX DESIGN FOR REVIEW AND APPROVAL.
11. FORMWORK SHALL REMAIN IN PLACE UNTIL CONCRETE HAS OBTAINED AT LEAST 90% OF ITS 28 DAY COMPRESSIVE STRENGTH.
12. THE FINISH TOLERANCE OF ALL SLABS SHALL BE IN ACCORDANCE WITH ACI 301, TYPE A.



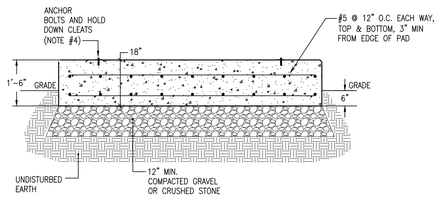
BOLLARD DETAIL
SCALE: 1/2"=1'-0"



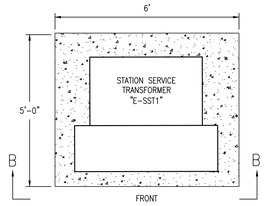
GENERATOR STEP-UP TRANSFORMER PAD: PLAN VIEW
1 / G-201
SCALE: 1/2" = 1'-0"

NOTES:

1. TAMP DIRT BEFORE POURING CONCRETE.
2. CHAMFER ALL EDGES OF EXPOSED CONCRETE.
3. PROVIDE END CAPS FOR ALL SPARE CONDUITS.
4. BOLT TRANSFORMER TO CONCRETE PAD WITH 'HOLD DOWN' CLEATS IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
5. VERIFY EQUIPMENT DIMENSIONS WITH APPROVED EQUIPMENT SUBMITTALS FROM EQUIPMENT SUPPLIER PRIOR TO FORMING PAD, PLACING REBAR AND INSTALLING CONDUITS AND POURING CONCRETE.
6. ALL PRIMARY AND SECONDARY CONDUITS SHALL BE SEALED WITH "DUCT SEAL" OR "SPRAY FOAM" AFTER CABLES ARE PULLED AND TERMINATED.
7. CONNECT #4/0 BARE COPPER WIRE TO H0, AND GROUND PAD OF TRANSFORMER & TO CONCENTRIC NEUTRAL CABLES.
8. CONDUIT STUB UP LOCATIONS TO BE COORDINATED WITH APPROVED SUBMITTALS.



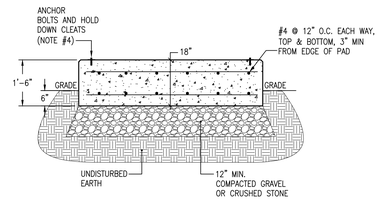
SECTION A-A: GENERATOR STEP-UP TRANSFORMER PAD DETAIL
2 / G-201
SCALE: 1/2" = 1'-0"



STATION SERVICE TRANSFORMER PAD: PLAN VIEW
3 / G-201
SCALE: 1/2" = 1'-0"

NOTES:

1. TAMP DIRT BEFORE POURING CONCRETE.
2. CHAMFER ALL EDGES OF EXPOSED CONCRETE.
3. PROVIDE END CAPS FOR ALL SPARE CONDUITS.
4. BOLT TRANSFORMER TO CONCRETE PAD WITH 'HOLD DOWN' CLEATS IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
5. VERIFY EQUIPMENT DIMENSIONS WITH APPROVED EQUIPMENT SUBMITTALS FROM EQUIPMENT SUPPLIER PRIOR TO FORMING PAD, PLACING REBAR AND INSTALLING CONDUITS AND POURING CONCRETE.
6. ALL PRIMARY AND SECONDARY CONDUITS SHALL BE SEALED WITH "DUCT SEAL" OR "SPRAY FOAM" AFTER CABLES ARE PULLED AND TERMINATED.
7. CONNECT #1/0 BARE COPPER WIRE TO X0, AND GROUND PAD OF TRANSFORMER & TO CONCENTRIC NEUTRAL CABLES.
8. CONDUIT STUB UP LOCATIONS TO BE COORDINATED WITH APPROVED SUBMITTALS.



SECTION B-B: STATION SERVICE TRANSFORMER PAD DETAIL
4 / G-201
SCALE: 1/2" = 1'-0"

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U.S. VIRGIN ISLANDS
(06.18.2026)

Client:

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St. ThomaS
U.S. Virgin Islands

Project Name:

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Substation "E"
Emergency Generator
(Phase 1)
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Project Number:	VIT 20131

Drawing Title:

STEP-UP TRANSFORMER PAD DETAILS

Drawing Number:

STJ-E-G-201

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1 / D-100 SUBSTATION "E" SITE DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

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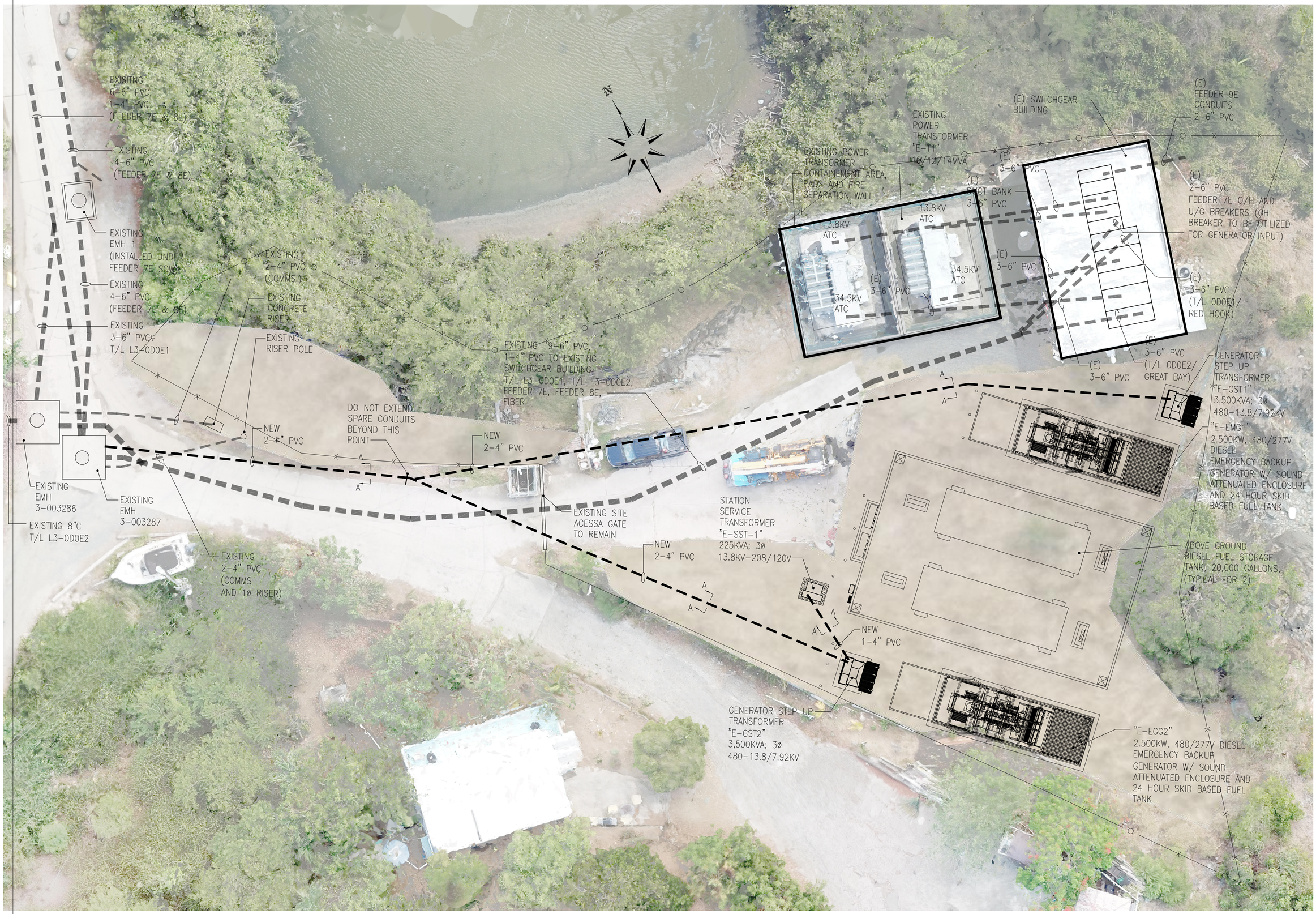
Drawing Title:

SUBSTATION "E"
SITE DEMOLITION
PLAN

Drawing Number:

STJ-E1-D-100

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1 / E-100 SUBSTATION "E" UNDERGROUND DUCT BANK PLAN

SCALE: 1/8" = 1'-0"

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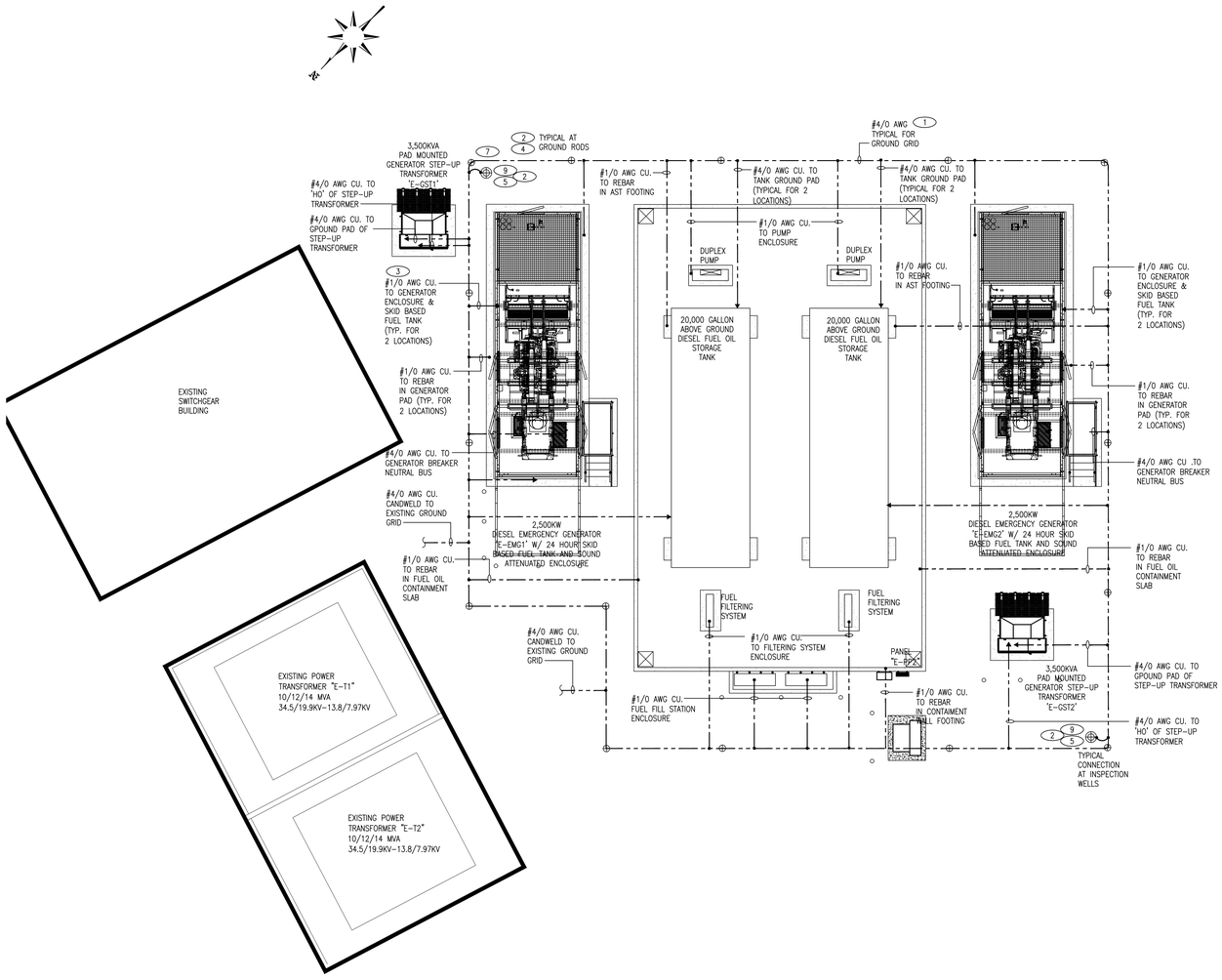
Drawing Title:

SUBSTATION "E"
UNDERGROUND DUCT
BANK PLAN

Drawing Number:

STJ-E1-E-100

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1 / E-101 SUBSTATION "E" PARTIAL GROUNDING PLAN

SCALE: 1/8" = 1' - 0"

GROUNDING NOTES

1. ALL BURIED GROUNDING CONDUCTORS AND CONNECTED RISERS SHALL HAVE A MINIMUM BURIAL DEPTH OF 12" BELOW GRADE AND SHALL BE TINNED, BARE, STRANDED COPPER UNLESS OTHERWISE NOTED.
2. ALL UNDERGROUND GROUNDING SYSTEM CONNECTIONS SHALL BE EXOTHERMICALLY WELDED, INCLUDING ALL CABLE CONNECTIONS, GROUND ROD CONNECTIONS AND SPLICES AND CABLE TO STEEL CONNECTIONS. ALL WELDING MATERIALS USED SHALL BE CADWELD MATERIALS AS MANUFACTURED BY ERICO PRODUCTS, INC.
3. ALL ABOVE GROUND CONNECTIONS SHALL BE BOLTED CONNECTORS. (BURNDY OR APPROVED EQUAL)
4. TOP OF GROUND RODS SHALL BE 12" BELOW GRADE AND RODS SHALL BE DRIVEN A MINIMUM OF 24" FROM FOOTINGS AND FOUNDATION WALLS.
5. ALL BURIED CONDUCTORS SHALL BE LAID SLACK IN TRENCHES TO PREVENT STRESS AND BREAKAGE.
6. ALL GROUND CONNECTION AREAS SHALL BE PREPARED BY GRINDING OR WIRE BRUSH CLEANING. ALL SURFACES AFFECTED SHALL BE PAINTED WITH RUST INHIBITING PAINT, AFTER WELDING IS COMPLETED.
7. ALL METALLIC ELECTRICAL RACEWAYS, TRAYS, BUS ENCLOSURES, ETC.. SHALL BE MADE ELECTRICALLY CONTINUOUS THROUGHOUT THEIR ENTIRE LENGTH AND AT BOX AND ENCLOSURE TERMINATIONS. PROPER FITTINGS AND JUMPERS SHALL BE INSTALLED AS DETAILED (AND/OR AS REQUIRED BY THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE.)
8. ALL SYSTEM GROUNDING SHALL BE COMPLETED AS SHOWN ON DETAILS AND IN COMPLIANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND THE VIRGIN ISLANDS WATER AND POWER AUTHORITY TECHNICAL SPECIFICATIONS 3.10.
9. GROUND BED RESISTANCE TO EARTH SHALL BE TESTED UNDER DRY SOIL CONDITIONS AT GROUND TEST WELL. THE THREE-POINT FALL METHOD SHALL BE USED FOR TESTING TO BE DONE USING A BIDDLE "MEGGER" EARTH RESISTANCE TESTER (OR EQUIVALENT) IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. PROVIDE WRITTEN TEST REPORT TO ENGINEER.

GROUNDING BILL OF MATERIALS

ITEM NO.	QUANTITY	DESCRIPTION
1	TBD	#4/0 7 STRAND BARE SOFT DRAWN COPPER, CLASS B STRANDING, ASTM88
2	TBD	GROUND RODS, 3/4" DIA. X 10'-0" LONG, COPPERWELD.
3	TBD	#1/0 X STRAND BARE SOFT DRAWN COPPER, CLASS B STRANDING, ASTM88
4	TBD	CONNECTOR, 3/4" DIA. COPPER OR COPPER CLAD GROUND ROD TO #4/0 BARE COPPER, THERMOWELD CADWELD MOLD #GTC-182Q WITH WELD METAL #115
5	TBD	CONNECTOR, 2 #4/0 COPPER CABLES TO 3/4"ø GROUND ROD, BURNDY # GP6429, OR EQUAL.
6	TBD	TEE CONNECTOR, THERMOWELD, #4/0 COPPER CABLE RUN TO #4/0 COPPER CABLE TAP, CADWELD MOLD #TAC-202Q WITH WELD METAL #150.
7	TBD	TEE CONNECTOR, THERMOWELD, #4/0 COPPER CABLE RUN TO #1/0 COPPER CABLE TAP, CADWELD MOLD #TAC-202C WITH WELD METAL 90
8	TBD	TEE CONNECTOR, THERMOWELD, #4/0 COPPER CABLE RUN TO #2 COPPER CABLE TAP, CADWELD MOLD #TAC-201V WITH WELD METAL 90
9	TBD	GROUND INSPECTION WELL, HIGH DENSITY POLYETHYLENE ERITECH #T416B
10	TBD	HORIZONTAL X CONNECTOR, THERMOWELD, #4/0 COPPER CABLE RUN TO #4/0 COPPER CABLE TAP, CADWELD MOLD #XBQ-202Q WITH WELD METAL #250.
11	TBD	#2 X STRAND BARE SOFT DRAWN COPPER, CLASS B STRANDING
12	TBD	FENCE GROUND. (3) BURNDY TYPE #GAR2026 CONNECTORS, AND (3) BURNDY SPLIT BOLT CONNECTORS TYPE KS25 FOR #2 COPPER
13	TBD	GATE GROUND. BURNDY TYPE #GAR2026 CONNECTOR. TYPE GG17-15 CONNECTOR AND TYPE 'B' FLEXIBLE BRAID JUMPER FOR #2 COPPER
14	TBD	EXOTHERMAL WELD MOLD ACCESSORIES; 1 - FLINT IGNITER, CADWELD CAT. NO. T320. 1 - CLEANING BRUSH, CADWELD CAT. NO. T304.

NOTES:
1. CONTRACTOR SHALL FURNISH THE QUANTITY OF GROUNDING MATERIALS REQUIRED, PLUS 10%.

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(06.18.2026)

Peter J. Bonnes

Client:

Virgin Islands Water and Power Authority
St. ThomaS
U.S. Virgin Islands

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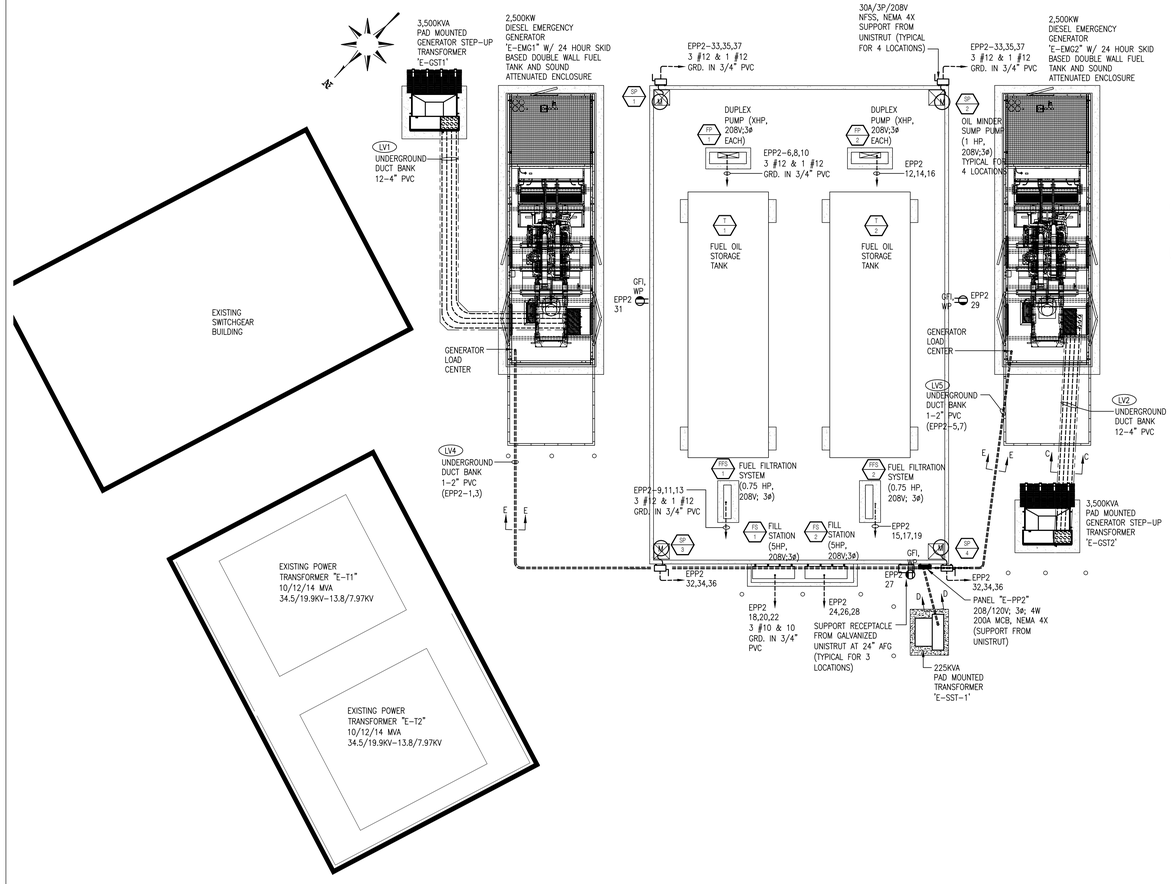
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SUB STATION "E"
PARTIAL
GROUNDING PLAN

Drawing Number:

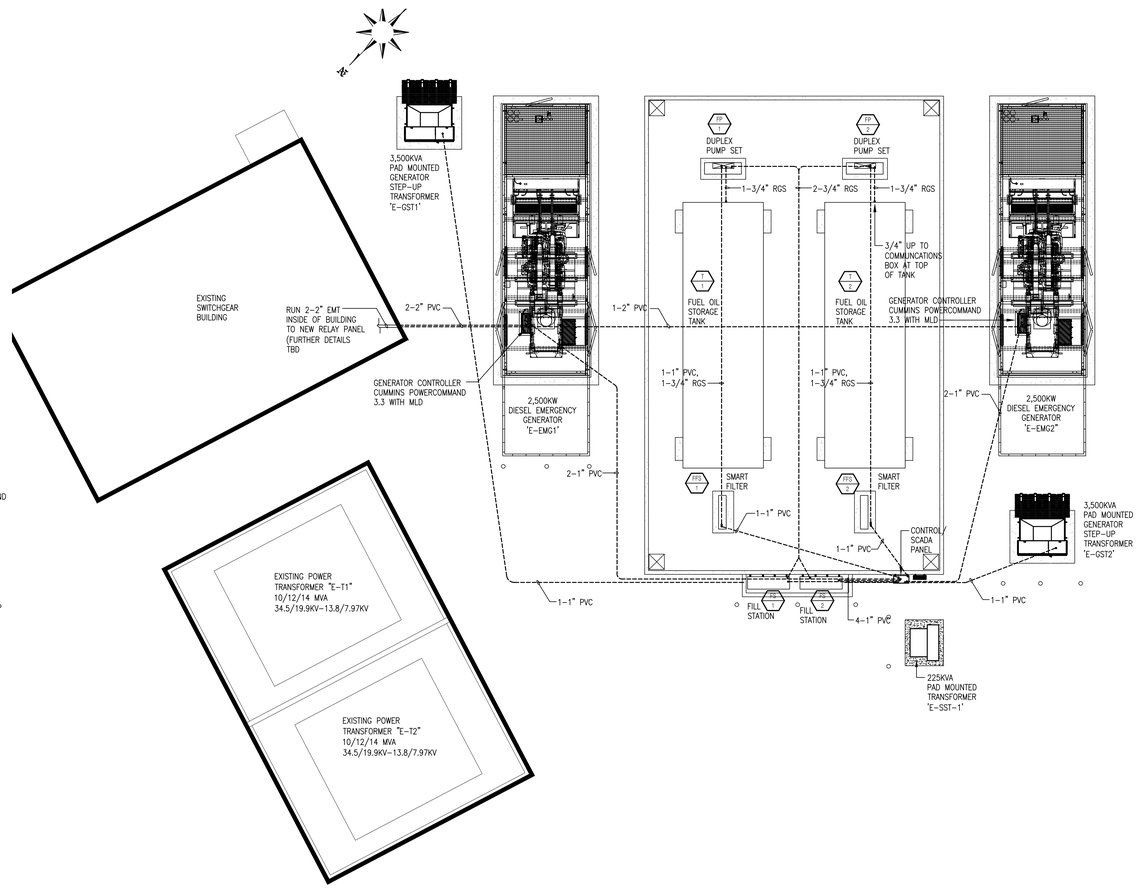
STJ-E1-E-101

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1 E-102 SUBSTATION "E" LOW VOLTAGE POWER PLAN

SCALE: 1/8" = 1' - 0"



2 E-102 SUBSTATION "E" PROTECTION & CONTROL CONDUIT PLAN

SCALE: 1/8" = 1' - 0"

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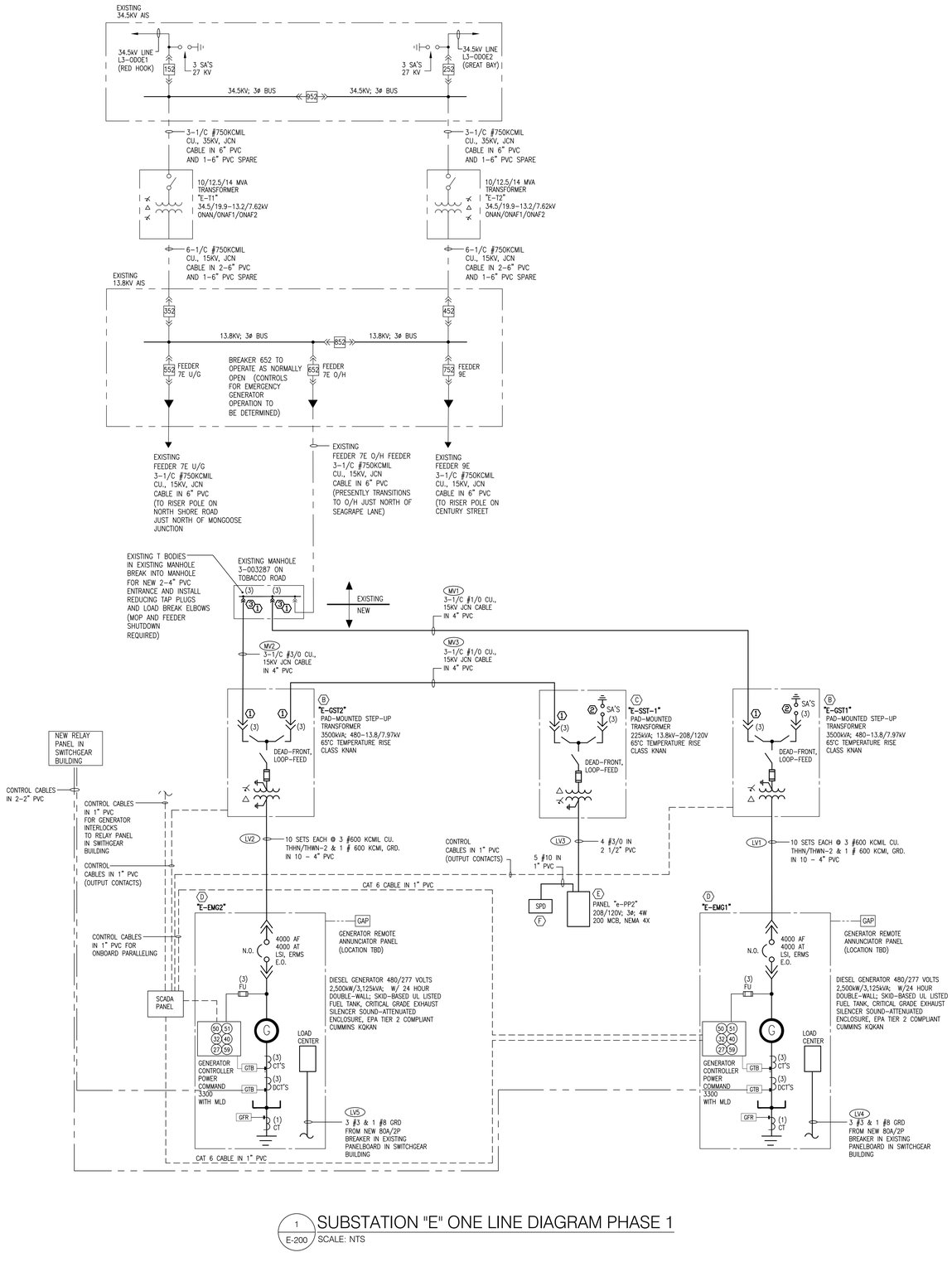
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SUBSTATION "E"
LV POWER PLAN &
PROTECTION
& CONTROL
CONDUIT PLAN

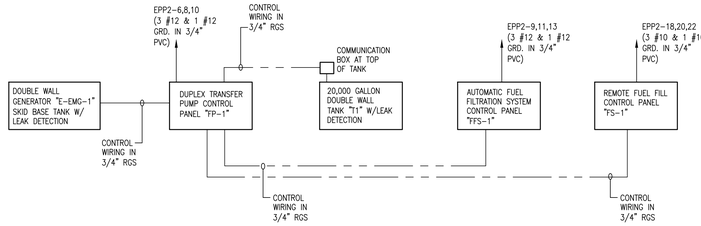
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STJ-E1-E-102

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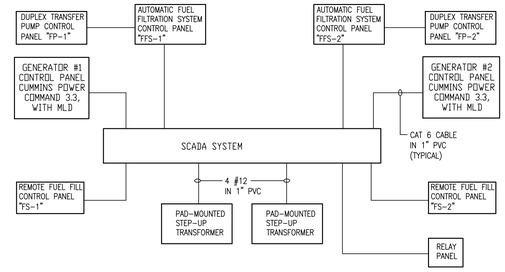


1 E-200 SUBSTATION "E" ONE LINE DIAGRAM PHASE 1
SCALE: NTS



2 E-200 FUEL OIL SYSTEM #1 ELECTRICAL BLOCK DIAGRAM
SCALE: NTS

NOTE: DIAGRAM IS SIMILIAR FOR FUEL OIL SYSTEM #2



3 E-200 SCADA SYSTEM BLOCK DIAGRAM
SCALE: NTS

NOTE: THE INTENT OF THIS DIAGRAM IS TO SHOW EQUIPMENT AND COMPONENTS TO BE TIED INTO A SITE SCADA SYSTEM FOR MONITORING PURPOSES. VIWAPA WILL PROVIDE A SCADA POINTS LIST ONCE ALL ELECTRICAL AND FUEL OIL SYSTEM EQUIPMENT AND COMPONENTS ARE SELECTED, AND SUBMITTALS ARE RECEIVED & APPROVED.

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Drawing Title:
SUBSTATION "E"
SYSTEM
ONE LINE DIAGRAM

Drawing Number:
STJ-E1-E-200

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ELECTRICAL EQUIPMENT SCHEDULE

TAG	LABEL	NAME	QUANTITY	DESCRIPTION	BASIS OF DESIGN	SC RATING	ACCESS REQUIRED	INSTALLED BY	FURNISHED BY
(B)	"E-GST1"/ "E-GST2"	GENERATOR STEP-UP TRANSFORMER	2	OIL FILLED PAD MOUNTED GENERATOR STEP UP TRANSFORMER, 3,500kVA; 3ø, 480V DELTA-13.8KVGrdy, COPPER WINDINGS, 65°C RISE, TYPE KNAN, LOOP FEED, DEAD FRONT, 4 POSITION LOAD BREAK SWITCH	EAGLERISE RENEWABLE ENERGY USA INC		6'-0" MINIMUM IN FRONT, 3'-0" MINIMUM ON SIDES AND REAR	RG ENGINEERS	RG ENGINEERS
(D)	"E-EMG1"/ "E-EMG2"	DIESEL EMERGENCY BACKUP GENERATOR	2	DIESEL EMERGENCY BACKUP GENERATOR, 2,500kW/3,125kVA 480/277VAV, 3ø, WITH CRITICAL SILENCER, 24 HOUR DOUBLE WALL UL142 SKID BASED FUEL TANK, AND SOUND ATTENUATED ENCLOSURE, EPA TIER II COMPLIANT	CUMMINS 2500 DQKAN GENERATOR/ QSK60 ENGINE		3'-0" MINIMUM AROUND ALL SIDES OF ENCLOSURE	RG ENGINEERS	RG ENGINEERS
(E)	"E-PP2"	ELECTRIC PANEL	1	PANEL, 225 AMP MCB 208/120 VOLT, 3 PHASE, 4 WIRE, WITH DOOR-IN-DOOR TRIM, NEMA 4X	SQUARE D OR APPROVED EQUAL	18 KAIC	3'-0" MINIMUM FRONT ACCESS ONLY	RG ENGINEERS	RG ENGINEERS
(G)	SPD	SURGE PROTECTION DEVICE	1	AC SURGE PROTECTION DEVICE, 208 / 120 VOLTS, 3ø, 4W RATED FOR 200KA / PHASE	ASCO MODEL 440 OR APPROVED EQUAL	200 KA /PHASE	3'-0" MINIMUM FRONT ACCESS ONLY	RG ENGINEERS	RG ENGINEERS
(H)	"E-SST1"	STATION SERVICE TRANSFORMER	1	OIL FILLED PAD MOUNTED TRANSORMER, 225kVA; 3ø, 13.8kV-208/120 VOLTS, COPPER WINDINGS, 65°C RISE, TYPE KNAN, LOOP FEED, DEAD FRONT, 4 POSITION LOAD BREAK SWITCH (SEE SPECIFICATIONS)	SEE SPECIFICATIONS		6'-0" MINIMUM IN FRONT, 2'-0" MINIMUM ON SIDES AND REAR	RG ENGINEERS	RG ENGINEERS

NOTE: ALL EQUIPMENT SHALL BE NEW AND SHALL BE FURNISHED & INSTALLED BY THE CONTRACTOR WHERE SPECIFIC MANUFACTURER & MAKE/MODEL NUMBERS ARE LISTED, APPROVED EQUAL SUBSTITUTIONS WILL BE ACCEPTED.

MEDIUM VOLTAGE TERMINATION SCHEDULE

ITEM	QUANTITY	DESCRIPTION	BASIS OF DESIGN	LOCATION	INSTALLED BY	FURNISHED BY
1	18	15KV, 200 AMP LOADBREAK ELBOW CONNECTOR, WITH JACKET SEAL AND TEST POINT FOR #1/0 AWG, AND #3/0 AWG 100% INSULATION, CONCENTRIC NEUTRAL CABLE (EXACT MODEL # TO BE SELECTED BASED ON APPROVED CABLE DATA SHEET), 10 KAIC SYMMETRICAL, WITH TEST POINT CAP	ELASTIMOLD 162LRJS-W5X W/156-7 HUBBELL 215LE35PTJ COOPER LE215 CR1 CC1 T CSX	TERMINATIONS AT TRANSFORMERS AND MANHOLE	RG ENGINEERS	RG ENGINEERS
2	6	12KV/10.2KV MCOV METAL OXIDE VARISTOR ELBOW TYPE SURGE ARRESTER	ELASTIMOLD 167ESA-12 HUBBELL 215555_LA12 COOPER 3238018C12M	AT TRANSFORMERS	RG ENGINEERS	RG ENGINEERS
3	6	15KV, REDUCING TAP PLUG WITH STUD	ELASTIMOLD K650RTP-S W/600SW HUBBELL 615LRTP	IN MANHOLE	RG ENGINEERS	RG ENGINEERS

NOTE: ALL MATERIAL SHALL BE NEW AND SHALL BE FURNISHED & INSTALLED BY THE EPC CONTRACTOR WHERE SPECIFIC MANUFACTURER & MAKE/MODEL NUMBERS ARE LISTED, APPROVED EQUAL SUBSTITUTIONS WILL BE ACCEPTED.

NOTE: CONTRACTOR SHALL PROVIDE THE QUANTITIES LISTED ABOVE, PLUS 10% SPARE (MINIMUM OF 1 SPARE).

MEDIUM VOLTAGE RACEWAY SCHEDULE

TAG	FROM	TO	CABLES / CONDUCTORS PER CONDUIT						CONDUIT				PURPOSE
			VOLTAGE	PHASE	NEUTRAL	GROUND	INSULATION	TEMP/ RATING	QUANTITY USED	QUANTITY SPARE	SIZE	TYPE	
MV1	EXISTING MANHOLE 3-003287	"E-GST1"	15kV	3-1/C #3/0 CU.	100% CONCENTRIC	N/A	100% EPR	MV105	1	1	4"	SCHEDULE 40 PVC	FEEDER FROM STEP UP TRANSFORMER TO MANHOLE
MV2	EXISTING MANHOLE 3-003287	"E-GST2"	15kV	3-1/C #1/0 CU.	100% CONCENTRIC	N/A	100% EPR	MV105	1	1	4"	SCHEDULE 40 PVC	FEEDER FROM STEP UP TRANSFORMER TO MANHOLE
MV3	"E-GST2"	"E-STT-1"	15kV	3-1/C #1/0 CU.	100% CONCENTRIC	N/A	100% EPR	MV105	1	0	4"	SCHEDULE 40 PVC	FEEDER FROM STEP UP TRANSFORMER TO MANHOLE

NOTE: MEDIUM VOLTAGE CABLE SHALL BE SUPPLIED, TESTED AND INSTALLED BY CONTRACTOR

LOW VOLTAGE POWER RACEWAY SCHEDULE

TAG	FROM	TO	CABLES / CONDUCTORS PER CONDUIT						CONDUIT				PURPOSE
			VOLTAGE	PHASE	NEUTRAL	GROUND	INSULATION	TEMP/ RATING	QUANTITY USED	QUANTITY SPARE	SIZE	TYPE	
LV1	"E-EMG1"	"E-GST1"	600V	3 #600 KCMIL CU.	N/A	#600 KCMIL	THHN/THWN-2	90°C	10	2	4"	SCHEDULE 40 PVC	FEEDER FROM GENERATOR TO STEP-UP TRANSFORMER
LV2	"E-EMG2"	"E-GST2	600V	3 #600 KCMIL CU.	N/A	#600 KCMIL	THHN/THWN-2	90°C	10	2	4"	SCHEDULE 40 PVC	FEEDER FROM GENERATOR TO STEP-UP TRANSFORMER
LV3	"E-SST-1"	PANEL "E-PP2"	600V	3 #3/0 AWG CU.	1 #3/0 AWG CU.	N/A	THHN/THWN-2	90°C	1	0	2 1/2"	SCHEDULE 40 PVC	FEEDER FROM STATION SERVICE TRANSFORMER TO PANEL
LV4	PANEL "E-PP2"	LOAD CENTER IN "E-EMG1" ENCLOSURE	600V	2 #3 AWG CU.	1 #3 AWG CU.	#8 AWG	THHN/THWN-2	90°C	1	0	2"	SCHEDULE 40 PVC	FEEDER FROM PANEL TO GENERATOR LOAD CENTER
LV5	PANEL "E-PP2"	LOAD CENTER IN "E-EMG2" ENCLOSURE	600V	2 #3 AWG CU.	1 #3 AWG CU.	#8 AWG	THHN/THWN-2	90°C	1	0	2"	SCHEDULE 40 PVC	FEEDER FROM PANEL TO GENERATOR LOAD CENTER

NOTE: 600V FEEDER CABLE SHALL BE SUPPLIED, TESTED AND INSTALLED BY CONTRACTOR

PANEL "E-PP2" SCHEDULE

VOLTS: 208/120 PHASE: 3 LOCATION: OUTDOOR (NEMA 4X) SHORT CIRCUIT RATING: 10 kAIC (MIN)
AMPS: 200A MCB WIRE: 4 MOUNTING: STRUT STRUCTURE

CIR. NO.	DESCRIPTION	LOAD VOLT AMP	WIRE SIZE	CIRCUIT BKR. AMPS	CIRCUIT BKR. POLES	CIRCUIT BKR. AMPS	CIRCUIT BKR. POLES	WIRE SIZE	LOAD VOLT AMP	DESCRIPTION	CIR. NO.
1	GENERATOR "E-EMG1" LOAD CENTER		#4	80	2	20	1	#12		SITE SCADA CONTROL PANEL	2
3						20	1	#12		SECURITY CONTROL PANEL	4
5	GENERATOR "E-EMG2" LOAD CENTER		#4	80	2						6
7						20	3	#12		DUPLEX FUEL OIL SYSTEM PUMP FP-1 (XX HP)	8
9											10
11	FUEL FILTER PUMP FFS-1 (0.75 HP)		#12	20	3						12
13						20	3	#12		DUPLEX FUEL OIL SYSTEM PUMP FP-2 (XX HP)	14
15											16
17	FUEL FILTER PUMP FFS-2 (0.75 HP)		#12	20	3						18
19						35	3	#10		FUEL FILL STATION PUMP FS-1 (5 HP)	20
21	SECURITY LIGHTING		#12	20	1						22
23	SPARE		#12	20	1						24
25	SPARE			20	1	35	3	#10		FUEL FILL STATION PUMP FS-2 (5 HP)	26
27	GFI/WP DUPLEX RECEPTACLES		#12	20	1						28
29	GFI/WP DUPLEX RECEPTACLES		#12	20	1	20	1			SPARE	30
31	GFI/WP DUPLEX RECEPTACLES		#12	20	1						32
33						20	3	#12		OIL MINDER SUMP PUMP SP-3/SP-4 (1 HP EACH)	34
35	OIL MINDER SUMP PUMP SP-1/SP-2 (1 HP EACH)		#12	20	3						36
37						20	1			SPARE	38
39	SPACE ONLY					20	1			SPARE	40
41	SPACE ONLY					20	1			SPARE	42

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Seal:

PROFESSIONAL ENGINEER
PETER J. BONNES
0-8087-1B
U.S. VIRGIN ISLANDS
(06.18.2026)

Client:

WATER AND POWER AUTHORITY ST. THOMAS ST. JOHN VIRGIN ISLANDS

Virgin Islands Water and Power Authority St. ThomaS U.S. Virgin Islands

Project Name:

Frank Bay Substation "E" Emergency Generator (Phase 1)
St. John, USVI

Issue / Revisions:

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B	06.18.26	Issue for FEMA/EHP Review

Drawn By:	PJB / BN
Chk'd By:	PJB
Date:	06.18.2026
Scale:	As Noted
Project Number:	VIT 20131

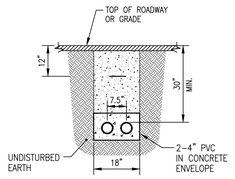
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ELECTRICAL EQUIPMENT & RACEWAY SCHEDULES

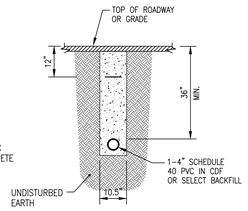
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STJ-E1-E-300

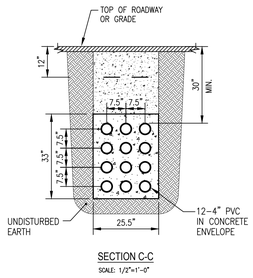
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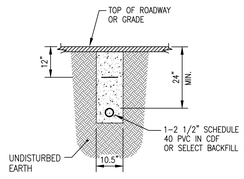
SECTION A-A
SCALE: 1/2"=1'-0"



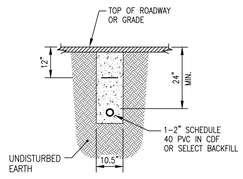
SECTION B-B
SCALE: 1/2"=1'-0"



SECTION C-C
SCALE: 1/2"=1'-0"



SECTION D-D
SCALE: 1/2"=1'-0"



SECTION E-E
SCALE: 1/2"=1'-0"

PVC CONDUIT ACCESSORIES BILL OF MATERIALS

ITEM	QUANTITY	DESCRIPTION
1	TBD	2" SNAP-LOC REDUCER, CARLON #S287J
2	TBD	HIGH IMPACT DUCT SPACERS FOR 6" DUCTS, 3" SPACING BETWEEN DUCTS, CARLON #SPBW30-2
3	TBD	HIGH IMPACT DUCT SPACERS FOR 4" DUCTS, 3" SPACING BETWEEN DUCTS, CARLON #SP4W30-2
4	TBD	GREY SOLVENT CEMENT, CARLON #VC9922
5	TBD	CLEAR PRIMER, CARLON #VC9902
6	TBD	SCHEDULE 40 PVC CONDUIT AND ELBOWS – CONTRACTOR TO DETERMINE QUANTITIES

NOTES:

1. PVC CONDUIT ACCESSORIES SHALL BE AS SPECIFIED, OR APPROVED EQUAL.
2. CONTRACTOR SHALL PROVIDE SUBMITTALS TO ENGINEER FOR APPROVAL PRIOR TO ORDERING ANY CONDUIT ACCESSORIES.
3. ALL QUANTITIES SHALL BE DETERMINED BY THE CONTRACTOR.

DUCT BANK NOTES

1. CONTRACTOR TO VERIFY ALL CONDITIONS AND DIMENSIONS BEFORE STARTING WORK. THE CONTRACTOR IS RESPONSIBLE TO CALL ALL UTILITIES BEFORE THEY DIG, AND PROVIDE WRITTEN DOCUMENTATION OF UTILITY CORRESPONDENCE.
2. UNDERGROUND DUCTS SHALL CLEAR ALL EXISTING UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE TO UTILIZE GROUND PENETRATING RADAR EQUIPMENT TO LOCATE ALL EXISTING UTILITIES IN THE VICINITY OF NEW DUCT BANKS, MANHOLES AND HANDHOLES.
3. PROVIDE TRACEABLE UNDERGROUND HAZARD TAPE, 6" WIDE CONTINUOUS BLACK WITH YELLOW BACKGROUND TO READ "CAUTION-CAUTION-CAUTION ELECTRIC LINE BURIED BELOW." TYPICAL FOR ALL NEW DUCT BANK RUNS AND AS SHOWN ON DRAWINGS.
4. THE ENTIRE PATH OF THE PROPOSED DUCT BANK ROUTING SHALL BE MARKED OUT "WITH RED PAINT", ALONG THE PUBLIC STREETS. THE CONTRACTOR SHALL INCLUDE STATION NUMBERS AT EVERY 50'-0".
5. PROVIDE HIGH IMPACT SPACES AT 5 FOOT INTERVALS (CARLON OR EQUAL). TYPICAL FOR ALL CONDUITS IN DUCT BANKS.
6. IF EXCAVATED TRENCH WALLS ARE SUITABLE TO ACCOMMODATE THE TRENCH MATERIAL (SAND, COMPACT SUBGRADE, TAMPED BACKFILL, ETC.) THAN FORMS SHALL NOT BE REQUIRED. THE CONTRACTOR SHALL UTILIZE FORMS WHERE THE TRENCH WALLS ARE UNSTABLE.
7. ALL PVC SHALL BE SCHEDULE 40 UNLESS OTHERWISE NOTED.
8. CONDUITS CONTAINING PRIMARY CABLE SHALL BE LOCATED A MINIMUM OF 36" BELOW FINISHED GRADE UNLESS NOTED OTHERWISE. CONDUITS CONTAINING SECONDARY OR COMMUNICATION CABLES SHALL BE LOCATED A MINIMUM OF 30" BELOW FINISHED GRADE UNLESS NOTED OTHERWISE.

ADDITIONAL NOTES FOR CONCRETE DUCT BANKS

A. FOR ALL CONCRETE WORK A.C.I. STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (A.C.I. 318-) WILL BE APPLICABLE UNLESS NOTED.

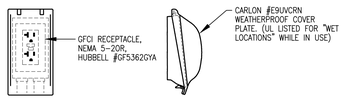
B. IF EXCAVATED TRENCH WALLS ARE SUITABLE FOR A CLEAN CONCRETE POUR, FORMS SHALL NOT BE REQUIRED. THE CONTRACTOR SHALL UTILIZE FORMS WHERE TRENCH WALLS ARE UNSTABLE.

C. WHERE REINFORCEMENT IS REQUIRED, OR SPECIFICALLY INDICATED, NO CONCRETE SHALL BE PORED UNTIL ALL REINFORCING STEEL IS IN PLACE.

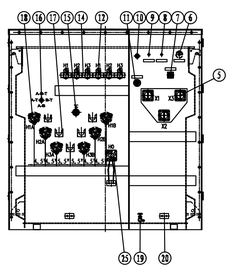
D. ALL CONCRETE TO DEVELOP 3,000 P.S.I. IN 28 DAYS, EXCEPT UNDER SPECIFIC CONDITIONS WHERE CONTROLLED DENSITY FILL (CDF) IS SPECIFIED.

E. ALL DETAILING, FABRICATION & PLACEMENT OF REINFORCING BARS SHALL FOLLOW THE A.C.I. MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES A.C.I. 315. HIGH CHAIRS WILL BE REQUIRED UNDER ALL TOP REINFORCING.

F. REINFORCING BARS TO BE GRADE 60 DEFORMED NEW BILLET STEEL MEETING ASTM SPECS A-615 AND HAVING DEFORMATION MEETING ASTM A-305.

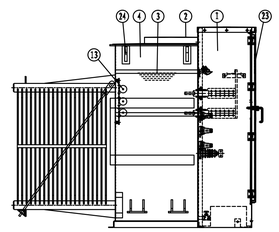


EXTERIOR RECEPTACLE DETAIL
SCALE: NONE



TRANSFORMER
FRONT ELEVATION
(COVER REMOVED)
SCALE: NONE

	ITEM	SPECIFICATIONS	QTY
25	HV BUSHING	PORCELAIN	1
24	LIFTING LUG		4
23	NAMEPLATE	304 STAINLESS STEEL	1
22	HANDHOLE		1
21	TANK COVER		1
20	GROUND TERMINAL		3
19	DRAIN AND SAMPLE VALVE	1" WITH 3/8" SAMPLER	1
18	HV BUSHING	15V,200A	6
17	PARKING STAND BRACKET		6
16	4 POSITION LBR SWITCH	BFY372-24/630-20-JV	1
15	NO LOAD TAP CHANGER	WSP1T.2 250/20-6+5	1
14	OIL DRIP PLATE		3
13	BACKUP FUSE	CBUC151I80D100	6
12	BAYONET FUSE	4035061C04CB	6
11	LIQUID TEMPERATURE GAUGE	WITH CONTACT	1
10	OIL-IN PLUG	1IN	1
9	PRESSURE RELIEF VALVE	WITH CONTACT	1
8	NITROGEN FILLING VALVE	WITHOUT CONTACT	1
7	LIQUID LEVEL GAUGE	WITHOUT CONTACT	1
6	VACUUM PRESSURE GAUGE	WITH CONTACT	1
5	LV BUSHING	5.2KV,BFG-1.2/5000,BIL-30KV	3
4	TANK	304 STAINLESS STEEL	1
3	FLUID	FR3	
2	HANDHOLE COVER		1
1	HV AND LV COMPARTMENTS	304 STAINLESS STEEL	1



TRANSFORMER SIDE ELEVATION
SCALE: NONE

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(06.18.2026)

Client:

Virgin Islands Water and Power Authority
St. ThomaS
U.S. Virgin Islands

Project Name:

Frank Bay
Substation "E"
Emergency Generator
(Phase 1)
St. John, USVI

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Drawn By:	PJB / BN
Chkd By:	PJB
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Project Number:	VIT 20131

Drawing Title:

ELECTRICAL DETAILS

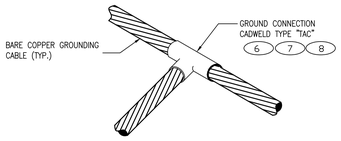
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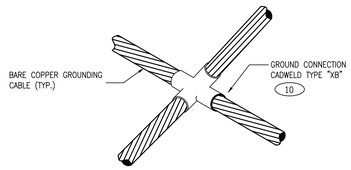
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GROUNDING NOTES

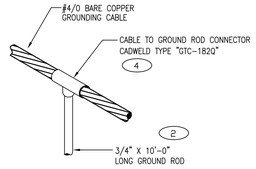
1. ALL BURIED GROUNDING CONDUCTORS AND CONNECTED RISERS SHALL HAVE A MINIMUM BURIAL DEPTH OF 12" BELOW GRADE AND SHALL BE BARE, STRANDED COPPER UNLESS OTHERWISE NOTED.
2. ALL UNDERGROUND GROUNDING SYSTEM CONNECTIONS SHALL BE EXOTHERMICALLY WELDED, INCLUDING ALL CABLE CONNECTIONS, GROUND ROD CONNECTIONS AND SPLICES AND CABLE TO STEEL CONNECTIONS. ALL WELDING MATERIALS USED SHALL BE CADWELD MATERIALS AS MANUFACTURED BY ERICO PRODUCTS, INC.
3. ALL ABOVE GROUND CONNECTIONS SHALL BE BOLTED CONNECTORS. (BURNDY OR APPROVED EQUAL)
4. TOP OF GROUND RODS SHALL BE 12" BELOW GRADE AND RODS SHALL BE DRIVEN A MINIMUM OF 24" FROM FOOTINGS AND FOUNDATION WALLS.
5. ALL BURIED CONDUCTORS SHALL BE LAID SLACK IN TRENCHES TO PREVENT STRESS AND BREAKAGE.
6. ALL GROUND CONNECTION AREAS SHALL BE PREPARED BY GRINDING OR WIRE BRUSH CLEANING. ALL SURFACES AFFECTED SHALL BE PAINTED WITH RUST INHIBITING PAINT, AFTER WELDING IS COMPLETED.
7. ALL METALLIC ELECTRICAL RACEWAYS, TRAYS, BUS ENCLOSURES, ETC.. SHALL BE MADE ELECTRICALLY CONTINUOUS THROUGHOUT THEIR ENTIRE LENGTH AND AT BOX AND ENCLOSURE TERMINATIONS. PROPER FITTINGS AND JUMPERS SHALL BE INSTALLED AS DETAILED (AND/OR AS REQUIRED BY THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE.)
8. ALL SYSTEM GROUNDING SHALL BE COMPLETED AS SHOWN ON DETAILS AND IN COMPLIANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND THE VIRGIN ISLANDS WATER AND POWER AUTHORITY TECHNICAL SPECIFICATIONS 3.10.
9. GROUND BED RESISTANCE TO EARTH SHALL BE TESTED UNDER DRY SOIL CONDITIONS AT GROUND TEST WELL. THE THREE-POINT FALL METHOD SHALL BE USED FOR TESTING TO BE DONE USING A BIDDLE "MEGGER" EARTH RESISTANCE TESTER (OR EQUIVALENT) IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. PROVIDE WRITTEN TEST REPORT TO ENGINEER.



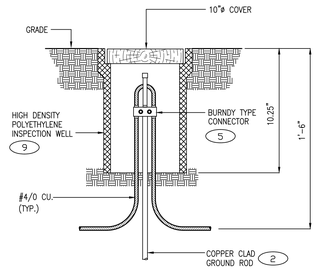
CABLE TO CABLE (TEE) GROUND CONNECTION
SCALE: NONE



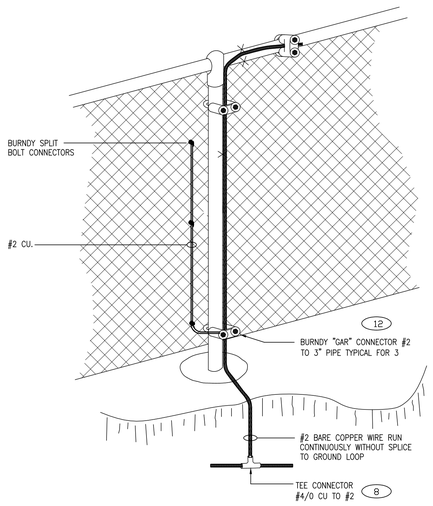
CABLE TO CABLE (X) GROUND CONNECTION
SCALE: NONE



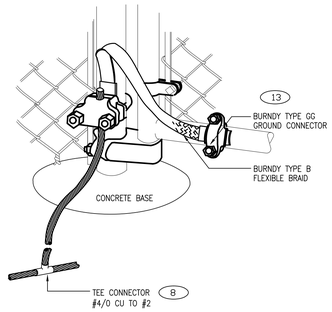
CONTINUOUS CABLE TO GROUND ROD CONNECTION
SCALE: NONE



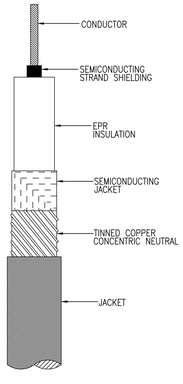
GROUND TEST WELL
SCALE: NONE



STANDARD CHAIN LINKED FENCE GROUNDING DETAIL
SCALE: NONE

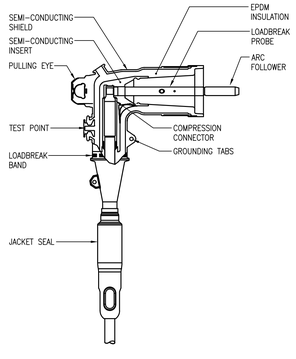


TYPICAL GATE GROUNDING DETAIL
SCALE: NONE

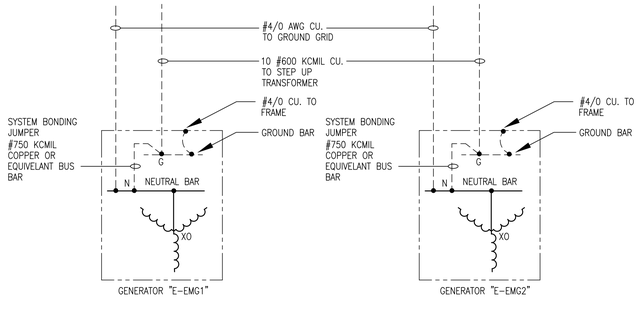


CONCENTRIC NEUTRAL CABLE DETAIL
SCALE: NONE

NOTE: CONCENTRIC NEUTRALS SHALL BE GROUNDED/BONDED AT ALL TERMINATION LOCATIONS



15kV LOADBREAK ELBOW
SCALE: NONE



GENERATOR GROUNDING SCHEMATIC
SCALE: NONE

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VIRGIN ISLANDS WATER AND POWER AUTHORITY

Virgin Islands Water and Power Authority St. ThomaS U.S. Virgin Islands

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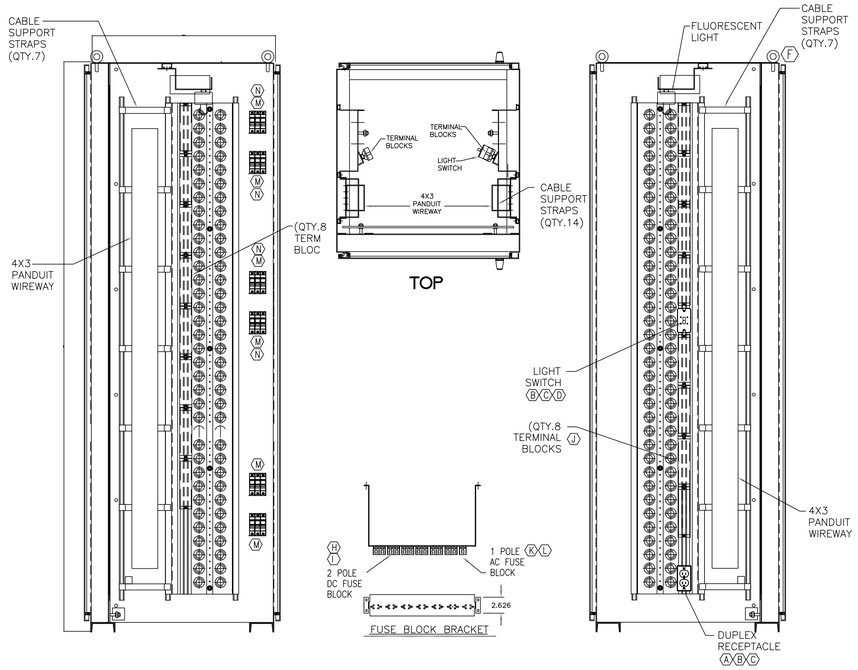
Drawing Title:

GROUNDING DETAILS

Drawing Number:

STJ-E1-E-302

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INTERIOR - LEFT SIDE

INTERIOR - RIGHT SIDE

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RELAY / SCADA / SECURITY PANEL TYPICAL BILL OF MATERIALS

DEVICE	STYLE No.	QTY	MANUFACT.	DESCRIPTION
(A)	CR15	1	HUBBELL	DUPLEX RECEPTACLE, 3-WIRE GROUNDING, 15A, 125 VOLT
(B)	QB0001	2	T&B	HANDY BOX, DRAWN, GALVANIZED, 2 X 4, 1-7/8 DEPTH, WITH 1/2" KNOCKOUTS
(C)		2	HUBBELL	SWITCH OR DUPLEX COVER PLATE
(D)	CS115	1	HUBBELL	SWITCH, SINGLE POLE, 15A, 120/277 VOLTS
(E)		1		18' FLUORESCENT OR LED LIGHT FIXTURE, WITH LAMP
(F)		4		EYE BOLTS
(G)	BTC3104	2	T&B	MECHANICAL GROUNDING LUG #4-3/0 AWG.
(H) *	F30A2S	6	MARATHON	FUSE BLK, 2-POLE, 30 AMP, 250 VOLT, CLASS H
(I)	NON10	12	BUSSMAN	FUSE, TYPE NON, ONE-TIME, CLASS H, 10A
(J)	EB25B12	16	G.E.	TERMINAL BLOCK, TYPE EB-25, 1-PIECE, 12-CIRCUIT, 600 VOLT, 30A, WITH WASHER-HEAD SCREWS AND WHITE MARKING STRIP
(K)	F30A1S	1	MARATHON	FUSE BLK, 1-POLE, 30 AMP, 250 VOLT, CLASS H
(L)	NON10	1	BUSSMAN	FUSE, TYPE NON, ONE-TIME, CLASS H, 10A
(M) *	CHM3D	6	BUSSMAN	AC FUSE HOLDER
(N)	NON05	18	BUSSMAN	FUSES, 5 AMP

NOTES:
1. ALL DIMENSIONS ARE IN INCHES.
2. PANELS SHALL BE FABRICATED FROM 11 GA CRS.
3. PANELS TO BE BRACED AS REQUIRED TO ENSURE A SMOOTH AND LEVEL SURFACE. ALL EXPOSED WELDS TO BE GROUND SMOOTH.
4. INTERIOR FINISH TO BE - HIGH GLOSS WHITE. EXTERIOR FINISH TO BE - ANSI 61 GLOSS GRAY.
5. BILL OF MATERIAL LIST IS TYPICAL FOR EACH RELAY PANEL *ADJUST FUSE HOLDERS AND FUSE QUANTITIES AS REQUIRED FOR SPECIFIC PANELS.
6. MATERIALS SHALL BE AS SPECIFIED OR APPROVED EQUAL

NOTE: THE EXACT PROTECTION SCHEME FOR PHASE 1 IS TBD. THE NEW RELAYS AND REALY PANEL SHALL BE A PLACE HOLDER ONLY AT THIS TIME.

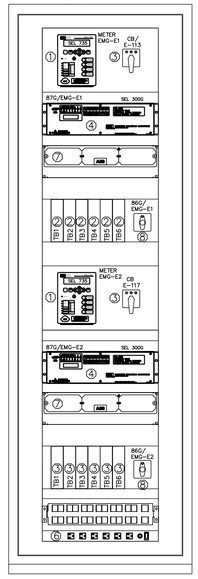
BILL OF MATERIALS: NEW RELAY PANEL

ITEM	DESCRIPTION	QTY	MANUFACT.	CATALOG No.
①	POWER METER	2	SEL	0735LX20944CFXB4XX26302EX
②	TEST BLOCK	12	GE	MMLG01 #1AA9002##
③	CB CONTROL SWITCH, 6 DECKS, TRIP/CLOSE & PULL TO LOCK, WITH TRIP COIL MONITOR	2	ELECTROSWITCH	24PD58D
④	FEEDER PROTECTION RELAY	2	SEL	0300G3YH4256X422X W/ HARNESS WA0300G#9LXD
⑤	DPAC CONTROLLER	0	SEL	24402H12A1A11631
⑥	SURGE SUPPRESSOR	1	TRIPP LITE	DRS-1215
⑦	TEST SWITCH (FT-19) NO. OF POLES 10+10+10 ARRANGEMENT POSITION A: P C-C P C-C P C-C P POSITION B: P C-C P C-C P C-C P POSITION C: P C-C P C-C P C-C P COVER: FULL CLEAR TERMINALS: SCREW TERMINALS	2	ABB	TBD
⑧	LOCKOUT RELAY (MANUAL RESET)	2	ELECTROSWITCH	78PA140-011

BILL OF MATERIALS: (SEL451)

ITEM	DESCRIPTION	QTY	MANUFACT.	CATALOG No.
①	POWER METER	1	SEL	0735LX20944CFXB4XX26302XX
②	FEEDER PROTECTION RELAY	1	SEL	04515625XC0X4H224XXX2X W/ HARNESS WA04510BC2A
③	DPAC CONTROLLER	2	SEL	24402H12A1A11631

THE ABOVE LISTED MATERIAL SHALL BE INSTALLED AT THE EXISTING AIS SWITCHGEAR.



1 / E-400 NEW RELAY PANEL IN SWITCHGEAR BUILDING
SCALE: 1"=1'-0"
NOTE: DOOR REMOVED FOR CLARITY

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Seal:
PROFESSIONAL ENGINEER U.S. VIRGIN ISLANDS
PETER J. BONNES
0-8087-1B
(06.18.2026)

Client:
Virgin Islands Water and Power Authority
St. ThomaS
U.S. Virgin Islands

Project Name:
Frank Bay
Substation "E"
Emergency Generator
(Phase 1)
St. John, USVI

Issue / Revisions:

#	Date	Description
A	06.12.26	Issue for 80% Review
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Drawn By:	PJB / BN
Chkd By:	PJB
Date:	06.18.2026
Scale:	As Noted
Project Number:	VIT 20131

Drawing Title:
NEW RELAY PANEL
BILL OF MATERIALS/
INTERIOR ELEVATIONS

Drawing Number:
STT-E1-E-400

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MECHANICAL SYMBOLS

XXX / XX — [XXX] – EQUIPMENT TYPE
[XX] – EQUIPMENT DESIGNATION
[SEE MECHANICAL SCHEDULES FOR EQUIPMENT SPECIFICATIONS]

(#) — DRAWING KEYED NOTE

POINT OF NEW CONNECTION TO EXISTING

TERMINATION OF POINT OF DEMOLITION

BREAK LINE

CONTINUATION LINE

X — REVISION CLOUD W/DELTA

XX" — XX" – PIPE SIZE

PIPE TURNING UP

PIPE TURNING DOWN

CONNECTION TOP

CONNECTION BOTTOM

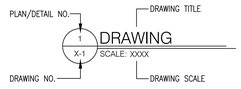
TEE, OUTLET DOWN

TEE, OUTLET UP

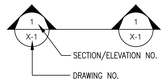
DIRECTION OF FLOW

0.01 — PIPING SLOPE

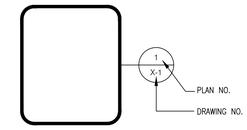
DRAWING TITLE



SECTION/ELEVATION



PARTIAL/ENLARGED PLAN



MATCHLINE

MATCHLINE SEE DWG. X-XX

MECHANICAL GENERAL NOTES

A. GENERAL

1. ALL WORK SHALL MEET THE ACCEPTED STANDARDS OF THE HVAC/PLUMBING INDUSTRIES, AND ALL STANDARDS REFERENCED IN THESE DRAWINGS.
2. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE OF THE TYPE AND CAPACITY INDICATED ON THE DRAWINGS.
3. ALL EQUIPMENT AND MATERIALS PROVIDED UNDER THESE SPECIFICATIONS SHALL BE LIMITED TO PRODUCTS REGULARLY PRODUCED AND RECOMMENDED FOR THE PROPOSED APPLICATION.
4. SUBSTITUTIONS AND/OR EQUAL PRODUCTS MUST BE APPROVED IN WRITING BY THE OWNER, PRIOR TO INSTALLATION.
5. GUARANTEE IN WRITING ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION. GUARANTEE SHALL BE UNCONDITIONAL.
6. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
7. ALL MATERIALS SHALL BE CONSIDERED NEW UNLESS OTHERWISE INDICATED.
8. ALL EQUIPMENT AND CONNECTION DIMENSIONS SHOWN ON PLAN ARE NOMINAL DIMENSIONS. CONTRACTOR SHALL VERIFY ALL CONNECTION REQUIREMENTS UPON ORDERING. PROVIDE TRANSITIONS AS REQUIRED.

B. CODES AND STANDARDS

1. ALL WORK SHALL BE PERFORMED IN STRICT COMPLIANCE WITH 2024 INTERNATIONAL MECHANICAL CODE, 2024 INTERNATIONAL FIRE CODE, NFPA 30, NFPA 31, NFPA 704, AND LOCAL CODES AND REGULATIONS GOVERNING WORK OF THIS NATURE.
2. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH THE INTERNATIONAL BUILDING CODE, INTERNATIONAL ENERGY CONSERVATION CODE, ASHRAE AND ANSI STANDARDS, AND ALL LOCAL AMENDMENTS.
3. SECURE ALL PERMITS AND APPLICATIONS AND PAY ANY AND ALL FEES AS REQUIRED BY NATIONAL AND LOCAL AUTHORITIES.

C. SUBMITTALS

1. SUBMIT MANUFACTURERS LITERATURE TO OWNERS REPRESENTATIVE PRIOR TO RELEASE FOR FABRICATION, INDICATING THAT THE EQUIPMENT MEETS REQUIREMENTS OF THESE DRAWINGS AND SPECIFICATIONS. ALL EQUIPMENT SHALL BE SUBMITTED FOR APPROVAL.
2. PROVIDE SHOP DRAWINGS TO A SCALE OF NOT LESS THAN 1/4" = 1'-0" CLEARLY INDICATING COORDINATION ITEMS INCLUDING BUT NOT LIMITED TO LIGHTING, SPRINKLERS, PLUMBING AND STRUCTURAL MEMBERS. CONTRACTOR SHALL CLEARLY INDICATE ANY DEVIATIONS FROM DESIGN DOCUMENTS. UPON REQUEST, FURNISH DETAILS OR ELEVATIONS OF SPECIFIC FITTINGS OR LOCATIONS.
3. SUBMIT "AS-BUILT" DRAWINGS UPON COMPLETION OF CONSTRUCTION. "AS-BUILT" DRAWINGS SHALL BE TO A SCALE OF NOT LESS THAN 1/4"=1'-0". CLEARLY INDICATE ALL DEVIATIONS FROM CONTRACT DOCUMENTS AND SHOP DRAWINGS.
4. MAINTAIN COPIES OF MANUFACTURER'S INSTALLATION INSTRUCTIONS ONSITE FOR BUILDING INSPECTIONS DEPARTMENT OF CODE OFFICE.
5. WHERE ITEMS ARE SPECIFIED IN SCHEDULE, SUBMITTAL DATA SHALL BE FORMATTED FOR COMPARISON TO DRAWING SCHEDULE, INCLUDING SYMBOLS. PROVIDE ALL DATA INCLUDED IN DRAWING SCHEDULE..
6. SUBMITTALS FOR HVAC EQUIPMENT SHALL INCLUDE THE PERFORMANCE AT THE SCHEDULED CONDITIONS. SUBMITTALS NOT INCLUDING SUCH INFORMATION WILL BE REJECTED.

D. COORDINATION

1. COORDINATE WITH GENERAL CONTRACTOR TO PROVIDE FOR INTERIOR WALL OPENINGS FOR PIPE PENETRATIONS.
2. COORDINATE WITH ELECTRICAL CONTRACTOR FOR LOCATION OF WIRING AND ELECTRICAL REQUIREMENTS FOR EACH SYSTEM COMPONENT.
3. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS DURING THE BIDDING PROCESS. ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THIS ENGINEER IMMEDIATELY.

E. ACCESS

1. PROVIDE ACCESS PANELS AS REQUIRED FOR SERVICE AND OPERATION OF ALL DEVICES AND EQUIPMENT.
2. PROVIDE LOCKING TAMPERPROOF ACCESS DOORS/PANELS IN PUBLIC SPACES.
3. PROVIDE ACCESS PANEL APPROPRIATE FOR CONSTRUCTION OF WALL, FLOOR, OR CEILING.
4. ACCESS PANELS SHALL BE PRIMED FOR PAINT.

F. IDENTIFICATION

1. PROVIDE EQUIPMENT MARKERS FOR EACH PIECE OF MAJOR MECHANICAL EQUIPMENT.
2. EQUIPMENT MARKERS FOR INDOOR EQUIPMENT SHALL BE LAMINATED PLASTIC W/PERMANENT ADHESIVE. LETTER SHALL BE MINIMUM 1/2" HIGH.
3. EQUIPMENT MARKERS FOR OUTDOOR EQUIPMENT SHALL BE PAINTED, STENCILED LETTERING. LETTER SHALL BE MINIMUM 6" HIGH.
4. IDENTIFY EQUIPMENT ACCORDING TO SYMBOLS INDICATED IN EQUIPMENT SCHEDULES.

G. FUEL OIL

1. SUBSTITUTIONS AND/OR EQUAL PRODUCTS MUST BE APPROVED IN WRITING BY OWNER PRIOR TO PURCHASE AND INSTALLATION.
2. NEW PIPING MUST BE PRESSURE TESTED TO MEET THE FOLLOWING REQUIREMENTS:
   a. PRIMARY PIPE – 50 PSI FOR 30 MINUTES
   b. SECONDARY CONTAINMENT PIPE – 5 PSI FOR 30 MINUTES
3. NEW UL-142 DOUBLE-WALL FUEL TANK MUST DISPLAY SIGNAGE INDICATING "FOR USE WITH #2 DIESEL FUEL OIL ONLY" ALONG WITH THE CORRESPONDING NFPA HAZARD DIAMOND FOR DIESEL FUEL.

MECHANICAL ABBR.

AC	AIR CONDITIONER
AD	AIR DEVICE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ARCH	ARCHITECT
AHU	AIR HANDLING UNIT
AMPS	AMPERES
AP	ACCESS PANEL
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BB	BASEBOARD HEAT
BDD	BACKDRAFT DAMPER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
BOS	BOTTOM OF STEEL
BOD	BASIS OF DESIGN – BOTTOM OF DUCT
BTO	BOTTOM TAKE OFF
BTU	BRITISH THERMAL UNIT
C	CHILLER
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CHWP	CHILLED WATER PUMP
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CL	CENTERLINE
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
COL	COLUMN
COND	CONDENSATE PIPING
COP	COEFFICIENT OF PERFORMANCE
CP	CONDENSATE PUMP
CRAC	COMPUTER ROOM AIR CONDITIONER
CU	CONDENSING UNIT
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB OR DECIBELS
DD	DUCT DETECTOR
DDC	DIRECT DIGITAL CONTROL
DF	DUCT FURNACE
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
E	EXISTING TO REMAIN
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
E.C.	ELECTRICAL CONTRACTOR
EDB	ENTERING DRY BULB TEMPERATURE
EDH	ELECTRIC DUCT HEATER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
ER	EXISTING TO BE RELOCATED
ERL	EXISTING RELOCATED
ERU	ENERGY RECOVERY UNIT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
EWB	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
FA	FIRE ALARM
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FLR	FLOOR
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FT	FEET
FPM	FEET PER MINUTE
G	GAS
GPM	GALLON PER MINUTE
GUH	GAS UNIT HEATER
HP	HORSE POWER
HVAC	HEATING VENTILATING & AIR-CONDITIONING
HWP	HOT WATER PUMP
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
HX	HEAT EXCHANGER
IN	INCHES
IN W.C.	INCHES IN WATER COLUMN
IN W.G.	INCHES OF WATER GAUGE
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB TEMPERATURE
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
M.C.	MECHANICAL CONTRACTOR
MOD	MOTOR OPERATED DAMPER
MUA	MAKE-UP AIR UNIT
N	NEW
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OAI	OUTSIDE AIR INTAKE
P	PUMP
P.C.	PLUMBING CONTRACTOR
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PTAC	PACKAGED TERMINAL AIR CONDITIONER
R	REMOVE
RA	RETURN AIR
RG	RETURN GRILLE
RL	REFRIGERANT LIQUID
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOF TOP UNIT
RWC	RAIN WATER CONDUCTOR
SA	SUPPLY AIR
SD	SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SF /	SUPPLY FAN
SP	STATIC PRESSURE
SQ.FT. SF	SQUARE FOOT
SS	STAINLESS STEEL
T	TEMPERATURE
TA	TRANSFER AIR
TG	TRANSFER AIR GRILLE
TOS	TOP OF STEEL
TSP	TOTAL STATIC PRESSURE
TTO	TOP TAKE OFF
TYP	TYPICAL
UC	UNDERCUT
UH	UNIT HEATER
UV	UNIT VENTILATOR
V	VOLTAGE
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VVT	VARIABLE VOLUME VARIABLE TEMPERATURE
W	WITH
W O	WITHOUT
WB	WET BULB
WL	WALL LOUVER
WMS	WIRE MESH SCREEN
WSHP	WATER SOURCE HEAT PUMP

UL 2085 DOUBLE WALL ABOVEGROUND FUEL STORAGE TANK SCHEDULE

(T / X)

SYMBOL	MFG.	MODEL	TANK SIZE (GALLONS)	OUTER TANK DIMENSIONS	TANK ORIENTATION	INTERSTITIAL SPACE MONITORING
T-1,2	HIGHLAND TANK	FIREGUARD	20,000	416"L x 126"ø	HORIZONTAL	DRY SYSTEM

NOTES:
1. PROVIDE MONITORING SYSTEM FOR LEAK DETECTION OF THE TANK AND SECONDARY CONTAINMENT PIPING.

FUEL OIL DUPLEX PUMP SCHEDULE

(FP / X)

SYMBOL	MFG.	MODEL	FLOW RATE (GPH)	PSI	HP	RPM	VOLTAGE	PHASE
FP-1,2	SIMPLEX	SPS-55-SD	1,000	50	–	–	208	3

NOTES:
1. PROVIDE WITH CORROSION RESISTANT OUTDOOR ENCLOSURE WITH INTEGRAL SPILL CONTAINMENT.
2. PROVIDE WITH INLET OIL STRAINERS AND PUMP CONTROL CABINET.
3. CONTROLS TO BE PROGRAMMED FOR PUMP ALTERNATION AND LEAD/LAG OPERATION FOR LOOP FUEL OIL SUPPLY APPLICATIONS. INTERLOCK PUMP CONTROL PANEL WITH ASSOCIATED GENERATOR SKID TANK LEVEL CONTROLS TO RECEIVE CALL FOR FUEL.
4. RELIEF VALVE FOR EACH PUMP MUST BE PIPED DIRECTLY BACK INTO FUEL RETURN LINE BACK TO MAIN TANK.
5. PROVIDE VIBRATION ISOLATORS AND FLEXIBLE CONNECTIONS.

AUTOMATIC FUEL FILTRATION SYSTEM SCHEDULE

(FFS / X)

SYMBOL	MFG.	MODEL	GPM	HP	VOLTAGE	PHASE
FFS-1,2	SIMPLEX	SFG10C-A	10.0	3/4	208	3

NOTES:
1. PROVIDE WITH CORROSION RESISTANT OUTDOOR ENCLOSURE WITH INTEGRAL PUMP & SPILL CONTAINMENT.
2. 5 MICRON FINAL FILTRATION
3. 15 PPM WATER REMOVAL
4. 5 GALLON WASTE-WATER RETENTION TANK WITH AUTOMATIC WATER DRAIN FROM SEPARATOR.
5. PROVIDE VIBRATION ISOLATORS AND FLEXIBLE CONNECTIONS.

REMOTE FUEL FILL STATION SCHEDULE

(FS / X)

SYMBOL	MFG.	MODEL	FILL PORT	GPM	HP	VOLTAGE	PHASE
FS-1,2	SIMPLEX	SMARTPUMP SP-3	3.0"	–	–	208	3

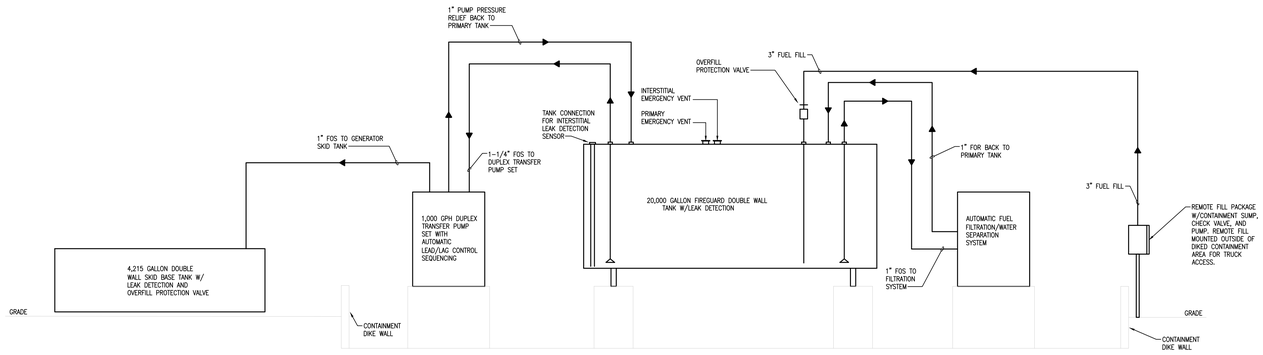
NOTES:
1. PROVIDE WITH CORROSION RESISTANT OUTDOOR ENCLOSURE WITH INTEGRAL PUMP & 7 GALLON SPILL CONTAINMENT.
2. PROVIDE EXTERNAL STAINLESS STEEL GROUND STUD FOR ATTACHMENT OF DELIVERY TRUCK GROUND CABLE.
3. 3" QUICK DISCONNECT COUPLING FOR ATTACHMENT OF USER'S DELIVERY HOSE.
4. OUTLET CHECK VALVE AND SHUT OFF VALVE.

OIL MINDER SUMP PUMP SCHEDULE

(SP / X)

SYMBOL	MFG.	MODEL	GPM	HEAD (FT)	DISCHARGE	HP	VOLTAGE	PHASE	WEIGHT (LBS)
SP-1,2,3,4	STANCOR	SS100	50.0	30.0	2.0"	1.0	208	3	40.0

NOTES:
1. PUMP MATERIAL TO BE 316 STAINLESS STEEL.
2. FURNISH PUMP CONTROLS IN CORROSION RESISTANT OUTDOOR ENCLOSURE.



1 / M-100 — FUEL OIL PIPING SCHEMATIC
SCALE: NONE

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PETER J. BONNES
0-8087-1B
(06.18.2026)

Client:

WATER AND POWER AUTHORITY — VIRGIN ISLANDS
Virgin Islands Water and Power Authority St. ThomaS U.S. Virgin Islands

Project Name:

Frank Bay Substation "E" Emergency Generator (Phase 1)
St. John, USVI

Issue / Revisions:

#	Date	Description
A	06.12.26	Issue for 80% Review
B	06.18.26	Issue for FEMA/EHP Review

Drawn By:	PJB / BN
Chk'd By:	PJB
Date:	06.18.2026
Scale:	As Noted
Project Number:	VIT 20131

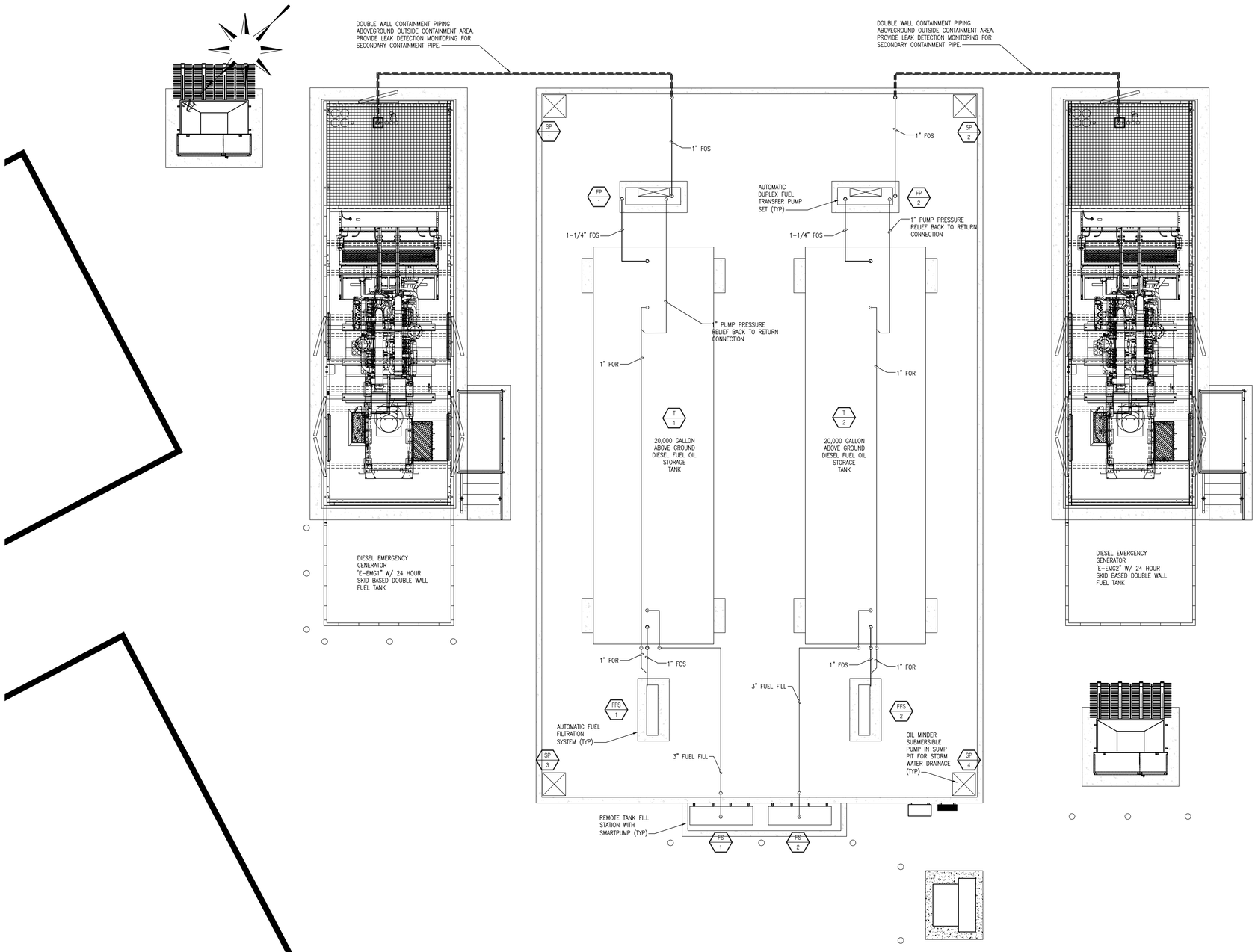
Drawing Title:

MECHANICAL SYMBOLS, NOTES & SCHEDULES

Drawing Number:

STJ-E1-M-100

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1 / M-200 SUBSTATION "E" FUEL OIL SYSTEM PLAN

SCALE: 1/4" = 1' - 0"

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St. ThomaS
U.S. Virgin Islands

Project Name:

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(Phase 1)
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Chk'd By:	PJB
Date:	06.18.2026
Scale:	As Noted
Project Number:	VIT 20131

Drawing Title:

SUBSTATION "E"
FUEL OIL SYSTEM PLAN

Drawing Number:

STJ-E1-M-200

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GENERAL STRUCTURAL NOTES

GENERAL STRUCTURAL NOTES:

1. The structural drawings shall be used in conjunction with the drawings of all other disciplines. The contractor shall verify the requirements of other trades as to sleeves, chases, hangers, inserts, anchors, holes and other items to be placed or set in the structural work.

2. The contractor shall be responsible for complying with all safety precautions and regulations during the work. The engineer will not advise on nor issue direction as to safety precautions and programs.

3. The structural drawings herein represent the finished structure. The contractor shall provide all temporary shoring, guying and bracing required to erect and hold the structure in proper alignment until all structural work and connections have been completed. The investigation, design, safety, adequacy and inspection of erection bracing, shoring, temporary supports, etc. is the sole responsibility of the contractor.

4. The engineer shall not be responsible for the methods, techniques and sequences of procedures to perform the work. The supervision of the work is the sole responsibility of the contractor.

5. Drawings indicate general and typical details of construction. Where conditions are not specifically shown, similar details of construction shall be used, subject to approval by the engineer.

6. All structural systems which are to be composed of components to be field erected shall be supervised by the supplier during manufacturing, delivery, handling, storage and erection in accordance with the supplier's instructions and requirements.

7. Contractor shall provide all temporary supports required for stability and for resistance to wind and seismic forces until the structure is capable of providing this support. Contractor to refer to the National Concrete Masonry Association technical guide #03-04C, "Bracing concrete masonry walls under construction".

8. Loading applied to the structure during the process of construction shall not exceed the safe load-carrying capacity of the structural members. The live loadings used in the design of this structure are indicated in the "Design Criteria Notes". Do not apply any construction loads until structural framing is properly connected together and until all temporary bracing is in place.

9. All ASTM and other references are per the latest editions of these standards, unless otherwise noted.

10. Unless otherwise indicated, all items noted to be demolished shall become the contractor's property and be removed from the site.

11. Contractors shall visit the site prior to bid to ascertain conditions which may adversely affect the work or cost thereof.

12. Dimensions shown on the mechanical, electrical and plumbing drawings shall govern over dimensions shown on the structural drawings. The contractor shall generate an RFI regarding discrepancies prior to construction.

SPECIAL INSPECTION NOTES:

1. In accordance with Section 1704 of IBC 2018, special inspections will be required for this project. Special inspections shall be performed in accordance with the "Schedule of Special Inspections". The contractor shall notify the special inspector at least 48 hours in advance for work that will require inspection or testing

2. The special inspector shall submit reports to JBA, FXB and the Owner that fulfill the requirements of section 1704.2.4. of IBC 2018.

SHOP DRAWING NOTES:

1. Shop drawings and other items shall be submitted to the engineer for review prior to fabrication. The engineer's review is to be for conformance with the design concept and general compliance with the relevant contract documents. The engineer's review does not relieve the contractor of the sole responsibility to review, check and coordinate the shop drawings prior to submission. The contractor remains solely responsible for errors and omissions associated with the preparation of shop drawings as they pertain to member sizes, details, dimensions, etc.

2. Submit shop drawings as per note #3 below. In no case shall reproduction of the contract drawings be used as shop drawings. As a minimum, submit the following items for review:
   A. Concrete mix design(s).
   B. Reinforcing steel shop drawings.
   C. Metal fabrications (ladders, railings, etc.) shop drawings.

Other submittals may be required per the "Schedule of Special Inspections" or the separate notes contained herein.

3. Contractor shall submit electronic shop drawings. Any additional shop drawings submitted will not be reviewed or returned.

4. Contractor shall submit a schedule indicating when each set of shop drawings will be submitted to the engineer prior to any shop drawing submission.

5. All notes or questions from the detailer to the engineer or architect shall be clouded, numbered and with the text " Engr. review." Any notes or questions from the detailer to the contractor shall be clouded, numbered and with the text "G.C. Review."

6. All shop drawings shall be reviewed by the contractor before submittal to the engineer. Shop drawings will be rejected if the contractor has not reviewed the shop drawings prior to submittal to engineer.

7. The contractor shall produce all shop drawings. Copying, scanning and/or reusing any portion of the structural drawings as part of the shop drawings submittal is not permitted. Submittals that include reproduced portions of the structural drawings will be rejected without review.

DESIGN CRITERIA NOTES:

1. The intended design standards and/or criteria are as follows:
   General: IBC 2018, Chapter 16 as amended
   Concrete: ACI 318-14
   Masonry: TMS 402/602-16
   Foundations: Geotechnical Investigation and Report completed by XXX

2. Design gravity dead loads used in the design of this structure are as follows (refer to IBC 2018 section 1606):

Roof	98 PSF	81 PSF Min.
Elevated Floors	98 PSF	
All other	Actual weight	

3. Design gravity live loads used in the design of this structure are as follows (refer to IBC 2018 section 1607):

Roof	20 PSF
Elevated Floor	250 PSF
Basement	250 PSF
Lift Truck	11,500 pounds per axle

4. The structure has been designed as Risk Category IV in accordance with IBC 2018 Table 1604.5.

5. Design lateral live loads used in the design of this structure, in accordance with Chapters 11 through 31 of ASCE 7-16, are as follows:
Wind - Ultimate, main system: 180 mph, Exposure C, Iw = 1.0
Wind - Ultimate, components: 180 mph, Exposure C, Iw = 1.0

Seismic: SDS = 0.553g, SD1 = 0.204g, Design Cat. D Ie = 1.5, Site Class D
Cs = 0.199, R = 5, Base Shear = 136 Kips

6. Design snow loads used in the design of this structure, in accordance with Chapter 7 of ASCE 7-16, are as follows:
Pg (ground snow load) = 0 PSF
Pf (flat roof) = 0 PSF

7. The lateral load resisting system of this building consists of:
Special reinforced masonry shear walls

8. This structure has been designed with "safety factors" in accordance with generally accepted principles of structural engineering. The fundamental nature of the "safety factor" is to compensate for uncertainties in the design, fabrication and erection of structural building components. It is intended that "safety factors" be used so that the load carrying capacity of the structure does not fall below the design load and that the building will perform under design load without distress. While the use of "safety factors" implies some excess capacity beyond design load, such excess capacity cannot be adequately predicted and SHALL NOT BE RELIED UPON.

SUBGRADE PREPARATION NOTES:

1. All site preparation shall conform to the requirements of IBC 2018 Chapter 18.

2. Within an area a minimum of 5 feet beyond the building limits, excavate a minimum of 4" of existing soil. Remove all organics, pavement, roots, debris and otherwise unsuitable material.

3. The surface of the exposed subgrade shall be inspected by probing or testing to check for pockets of soft or unsuitable material. Excavate unsuitable soil as directed by the geotechnical engineer/testing agency.

4. Proofroll the surface of the exposed subgrade with a loaded tandem axle dump truck. Remove all soils which pump or do not compact properly as directed by the geotechnical engineer/testing agency.

5. Fill all excavated areas with approved controlled fill. Place in 8 inch loose lifts and compact to a minimum of 95% of the maximum dry density in accordance with ASTM D-698.

6. All controlled fill material shall be a select granular material free from all organics or otherwise deleterious material with not more than 20% by weight passing a No. 200 sieve (classified as SC, SM, SP or better in accordance with the unified soil classification system) and with a plasticity index not exceeding 6%.

7. Provide field density tests for each 3,000 s.f. of building area for each lift of controlled fill.

MAT FOUNDATION NOTES:

1. All foundation construction shall conform to the requirements of IBC 2018 Chapter 18.

2. All footings have been designed based upon an assumed soil bearing pressure of 3,000 psf. All footings shall bear on undisturbed, firm natural soil or compacted fill. All foundation excavations shall be evaluated by the geotechnical engineer/testing agency prior to pouring foundation concrete.

3. Top of footing elevation shall be as shown on the foundation plan. These elevations are a maximum and shall be lowered as required to obtain the required design bearing pressure or lowered below new or existing utilities per typical details.

4. All foundation concrete shall obtain a 28 day compressive strength of 4,000 psi. All concrete to be permanently exposed to weather shall be air entrained to 5% (+-1%) with an admixture that conforms to ASTM C-260.

5. All concrete work shall conform to the requirements of ACI 301, "Specification for Structural Concrete Buildings". Hot weather concreting shall be in accordance with ACI 305. Cold weather concreting shall be in accordance with ACI 306.

6. All reinforcing steel shall conform to ASTM A-615, Grade 60. Reinforcing shall be detailed and installed per ACI 315 and CRSI Manual of Standard Practice.

7. Unless otherwise noted, the following concrete cover shall be provided for reinforcement.
   A) Concrete cast against and permanently exposed to earth: 3"
   B) Concrete exposed to earth or weather:
      #6 through #18 bars: 2"
      #5 bar, W31 or D31 wire and smaller: 1-1/2"

8. All reinforcing marked continuous (cont.) on the plans and details shall be lapped 36xbar diameters at splices unless otherwise noted.

9. No unbalanced backfilling shall be placed against foundation walls unless walls are securely braced against overturning, either by temporary bracing or by permanent construction.

10. Prior to commencing any foundation work, coordinate work with any existing utilities. Foundations shall be lowered where required to avoid utilities.

11. All footings are to be side formed. Earth forms are not permitted.

12. No salt is permitted in water used in concrete mix.

13. Mat foundation has been designed based on the following criteria:
Subgrade modulus, K=200 pci (assumed)
Uniform live loading = 250 psf

14. The finish tolerance of all slabs shall be in accordance with ACI 302, Section 8.4.

15. See the mechanical, electrical and plumbing drawings for exact locations of depressed slab areas and drains. Slope slab to drains where shown.

16. Mat foundation shall be constructed in accordance with the following flatness/levelness requirements:

Slab Category	Specified	Local Minimum
Super flat	F_F = 100	F_L = 50

Floor flatness and levelness tests shall be conducted by the owner in accordance with ASTM E 1155. Results, including acceptance or rejection of the work will be provided to the contractor within 48 hours after data collection. Remedies for out of tolerance work shall be in accordance with the specifications.

CAST-IN-PLACE CONCRETE NOTES:

1. Concrete mixes shall be designed per ACI 301, using Portland cement conforming to ASTM C-150 or C-595, aggregate conforming to ASTM C-33, and admixtures conforming to ASTM C-494, C-1017, C-618, C-989 and C-260. Concrete shall be ready-mixed in accordance with ASTM C-94.

2. Concrete shall conform to the following compressive strength, slump and water/cement ratio requirements:

Concrete	Min. f'c (28 days)	Slump*	W/C ratio
Columns	4000 psi	2" to 4"	.46
Elevated Slabs	4000 psi	2" to 4"	.46
Foundation Walls	4000 psi	2" to 4"	.50
Mat Foundation	See "Mat Foundation" Notes	2" to 4"	.50
Slabs-on-grade	See "Slab-on-Grade Notes"		.50

*At contractor's option, an approved admixture may be used to produce flowable concrete. Maximum slump shall not exceed 10 inches. The contractor shall submit test results of the proposed concrete mixes along with the manufacturer's technical data for approval prior to pouring concrete.

3. All concrete work shall conform to the requirements of ACI 301, "Specification for Structural Concrete Buildings" and IBC 2018 Chapter 19. Hot weather concreting shall be in accordance with ACI 305. Cold weather concreting shall be in accordance with ACI 306.

4. All reinforcing steel shall conform to ASTM A-615, grade 60. All welding of reinforcing steel shall be in accordance with AWS D1.4. Reinforcing shall be detailed and installed per ACI 315 and CRSI Manual of Standard Practice.

5. All welded wire fabric (W.W.F.) shall conform to ASTM A-1064.

6. All reinforcing steel shall be set and tied in place prior to pouring of concrete, except that vertical dowels for masonry wall reinforcing may be "floated" in place. Do not field bend bars partially embedded in hardened concrete unless specifically indicated or approved by the engineer.

7. Reinforcing steel, including hooks and bends, shall be detailed in accordance with ACI 315. All reinforcing steel indicated as being continuous (cont) shall be lapped with a type 2 lap splice unless otherwise noted.

8. Unless otherwise noted, the following concrete cover shall be provided for reinforcement:
   A) Concrete exposed to earth or weather:
      #6 through #18 bars : 2"
      #5 bar, W31 or D31 wire and smaller : 1-1/2"
   B) Concrete not exposed to earth or weather:
      Walls, elevated slabs (& beams) : 3/4"
      Beams and columns : 1-1/2"
   C) Foundation concrete (see "Mat Foundation Notes")

9. Bar supports and holding bars shall be provided for all reinforcing steel to insure minimum concrete cover. Bar supports shall be plastic tipped or stainless steel.

10. All edges of permanently exposed concrete surfaces shall be chamfered 3/4" unless otherwise noted.

11. The contractor shall provide the engineer with documentation that all materials conform to the quality standards specified in IBC 2018.

12. In accordance with IBC 2018, special inspections are required for the concrete work. The owner will hire the special inspector to perform all required special inspections.

13. In order to avoid concrete shrinkage cracking, the maximum length of slab cast in any one continuous pour shall be limited to 80 feet.

14. Formwork shall remain in place until concrete has obtained at least 90% of its 28 day compressive strength. The contractor shall provide all shoring and reshoring.

15. All concrete shall contain corrosion inhibiting admixture. Submit admixture for review and approval.

16. No salt is permitted in water used in concrete mix.

17. The finish tolerance of all slabs shall be in accordance with ACI 302, Section 8.4.

16. Elevated slab shall be constructed in accordance with the following flatness/levelness requirements:

Slab Category	Specified	Local Minimum
Super flat	F_F = 100	F_L = 50

Floor flatness and levelness tests shall be conducted by the owner in accordance with ASTM E 1155. Results, including acceptance or rejection of the work will be provided to the contractor within 48 hours after data collection. Remedies for out of tolerance work shall be in accordance with the specifications.

SLAB ON GRADE NOTES:

1. Slab-on-grade construction shall conform to the requirements of ACI 301, "Specification for Structural Concrete Buildings" and IBC 2018 Section 1907.

2. Provide concrete slabs as indicated on plans over a 15 mil polyethylene vapor barrier and 4" of porous fill as follows:
6" slab reinforced with 6x6- W2.9xW2.9 welded wire fabric and with 4000 psi mix concrete.
Maximum slump for all concrete slabs shall be 5 inches, using type I cement.

3. All welded wire fabric shall be in accordance with ASTM A-1064. Lap adjoining pieces at least one full mesh.

4. All porous fill material shall be a clean granular material with 100% passing a 1-1/2" sieve and no more than 5% passing a no. 4 sieve. Porous fill shall be compacted to 95% max. dry density per ASTM D-698.

5. Slab joints shall be filled with approved material. This should take place as late as possible, preferably 4 to 6 weeks after the slab has been cast. Prior to filling, remove all debris from the slab joints, then fill in accordance with the manufacturer's recommendations as follows: fill with epoxy resin.

6. Unless otherwise approved, all welded wire fabric shall be blocked into the position indicated with precast concrete blocks having a compressive strength equal to that of the slab.

7. Walkways and other exterior slabs are not indicated on the structural drawings. See the site plan and architectural drawings for locations, dimensions, elevations, jointing details and finish details. Provide 4" walks reinforced with 6x6 - W1.4xW1.4 WWF unless otherwise noted.

8. Slabs to be permanently exposed to weather shall be air entrained to 5% (+-1%) with an admixture that conforms to ASTM C-260.

9. All concrete work shall conform to the requirements of ACI 301, "Specification for Structural Concrete Buildings". Hot weather concreting shall be in accordance with ACI 305. Cold weather concreting shall be in accordance with ACI 306.

10. In order to avoid concrete shrinkage cracking, the maximum length of slab cast in any one continuous pour is recommended to be less than 100 feet. The maximum spacing of joints shall be 12'.

11. The alternate wires of the welded wire fabric must be precut at the slab contraction joint locations to create a "weakened plane". Without cutting the alternate wires, the strength of the wire will prevent the slab from cracking (separating) at the joint and the slab may begin to crack elsewhere.

12. The use of polypropylene fibers (in lieu of welded wire fabric) is prohibited without the written authorization of the engineer.

13. See the mechanical, electrical and plumbing drawings for exact locations of depressed slab areas and drains. Slope slab to drains where shown.

14. The finish tolerance of all slabs shall be in accordance with ACI 302, Section 8.4.

15. Slabs shall be constructed in accordance with the following flatness/levelness requirements:

Slab Category	Specified	Local Minimum
Super flat	F_F = 100	F_L = 50

Floor flatness and levelness tests shall be conducted by the owner in accordance with ASTM E 1155. Results, including acceptance or rejection of the work will be provided to the contractor within 48 hours after data collection. Remedies for out of tolerance work shall be in accordance with the specifications.

16. No salt is permitted in water used in concrete mix.

STEEL NOTES:

1. All steel shall conform to the AISC "Manual of Steel Construction" (15th Edition) and IBC 2018 Chapter 22.

2. Unless otherwise noted, all materials shall be in accordance with the following ASTM specifications:

Member	ASTM	Fy (Min. Strength)
HSS (Round)	A500 (Gr. C)	46 KSI
Steel pipe	A53 (Gr. B)	35 KSI
Plates/shapes	A36/A572 (Gr. 50)	36 KSI/50 KSI
Connection bolts	F3125 (Gr. A325)	90 KSI (F_{nt})
Anchor bolts	F1554 (Gr. 55, Supplement S1)	55 KSI
Threaded rods	A36	36 KSI

3. Minimum bolt diameter shall be 3/4". Unless otherwise noted all bolts shall be shear/bearing type bolts and be "snug-tight".

4. All welding shall be in accordance with AWS D1.1 using E70XX electrodes. Unless otherwise noted, provide cont. min. sized fillet welds per AISC requirements. All filler material shall have a minimum yield strength of 70 KSI.

5. Holes in steel shall be drilled or punched. All slotted holes shall be provided with smooth edges. Burning of holes and torch cutting at the site is not permitted.

6. Unless otherwise noted, all steel permanently exposed to the weather shall be hot-dipped galvanized in accordance with ASTM A153.

7. Protective coatings damaged during the transporting, erecting and field welding processes shall be repaired in the field to match the shop applied coating.

8. Finish welds shall be ground smooth and free of burrs.

9. Finished galvanized surfaces shall be smooth and free of galvanized paint bead build up from multiple layer applications.

SYMBOL KEY

CMU	STEEL
BRICK	GRATING
CONCRETE	ALUMINUM
PRECAST CONCRETE	SHEAR WALL
WOOD ELEVATION	EARTH
WOOD SECTION	CRUSHED STONE/ BUILDING STONE

STRUCTURAL DRAWING LIST

S-0.0	GENERAL STRUCTURAL NOTES
S-0.1	SCHEDULE OF SPECIAL INSPECTIONS
S-1.0	FOUNDATION PLAN & SECTIONS

ABBREVIATIONS

@	AT
ø	DIAMETER
2X	TWO BY
(4)	QUANTITY OF 4
A.B.	ANCHOR BOLT
A.P.	ANCHOR POINT
ADD'L.	ADDITIONAL
ADJ.	ADJACENT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AL.	ALUMINUM
ARCH.	ARCHITECT/ARCHITECTURAL
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS
AWS	AMERICAN WELDING SOCIETY
BCX	BOTTOM CHORD EXTENSION
BEL.	BELOW
BLKG.	BLOCKING
BM.	BEAM
BOT.	BOTTOM
B.O.	BOTTOM OF
BTWN.	BETWEEN
C	CHANNEL
CL	CENTER/COLUMN LINE
CLR.	CLEAR
C.J.	CONTROL/CONSTRUCTION JOINT
CMU	CONCRETE MASONRY UNIT
COL.	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION
CONT.	CONTINUOUS
CONTR.	CONTRACTOR
COORD.	COORDINATE
DBL.	DOUBLE
DET.	DETAIL
DN.	DOWN
DWL.	DOWEL
DWG.	DRAWING
EA.	EACH
E.F.	EACH FACE
ELEV.	ELEVATION
EQ.	EQUAL
E.S.	EACH SIDE
E.W.	EACH WAY
EX.	EXISTING
EXP.	EXPANSION
FLG.	FLANGE
FLR.	FLOOR
FDN.	FOUNDATION
F.O.	FACE OF
F.S.	FAR SIDE
FTG.	FOOTING
GALV.	GALVANIZED
G.C.	GENERAL CONTRACTOR
HK.	HOOK
HGR.	HANGER
HSS	HOLLOW STRUCTURAL SECTION
HORIZ.	HORIZONTAL
HT.	HEIGHT
INT.	INTERIOR
JST.	JOIST
JT.	JOINT
K	KIPS
L	ANGLE
LGM	LIGHT GAGE METAL
(LLH)	LONG LEG HORIZONTAL
(LLV)	LONG LEG VERTICAL
LOC.	LOCATION
LG.	LONG
L.R.F.D.	LOAD & RESISTANCE FACTOR DESIGN
LSL	LAMINATED STRAND LUMBER
LVL	LAMINATED VENEER LUMBER
M.A.	MASONRY ANCHOR
MAX.	MAXIMUM
MIN.	MINIMUM/MINIMIZE
MANF.	MANUFACTURER
MECH.	MECHANICAL
M.O.	MASONRY OPENING
MTL.	METAL
(N)	NEW
N.S.	NEAR SIDE
N.S.G.	NON-SHRINK GROUT
O.C.	ON CENTER
OPN'G.	OPENING
OPP.	OPPOSITE
P.C.	PRE-CAST
PL	PLATE
PLYWD.	PLYWOOD
PMF	PRE-MOLDED FILLER
PSL	PARALLEL STRAND LUMBER
P.T.	PRESSURE TREATED
R/C	REINFORCED CONCRETE
REINF.	REINFORCING
REQ'D.	REQUIRED
RTU	ROOF TOP UNIT
SCH.	SCHEDULE
SECT.	SECTION
SF	STRIP FOOTING
SHT'G.	SHEATHING
SIM.	SIMILAR
SL	SLOPE
S.O.G.	SLAB-ON-GRADE
S.S.	STAINLESS STEEL
STL.	STEEL
SQ.	SQUARE
T&B	TOP AND BOTTOM
TCX	TOP CHORD EXTENSION
THK.	THICK
TJI	TRUSS JOIST I-SHAPED JOISTS
T.O.	TOP OF
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
V.L.D.	VERTICAL LEG DOWN
V.I.F.	VERIFY IN FIELD
WD.	WOOD
W/	WITH
W/O	WITHOUT
W.P.	WORK POINT
W.R.T.	WITH RESPECT TO
W.W.F.	WELDED WIRE FABRIC
WF	WIDE FLANGE BEAM
W	WIDE FLANGE BEAM
X	CROSS

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(06.12.2026)

Peter J. Bonnes

Client:

VIRGIN ISLANDS WATER AND POWER AUTHORITY

Virgin Islands
Water and Power Authority
St. ThomaS
U.S. Virgin Islands

Project Name:

Frank Bay Substation "E" Emergency Generator (Phase 1) and AIS Switchgear Replacement (Phase 2) St. John, USVI

Issue / Revisions:

#	Date	Description
A	06.12.26	Issue for 80% Review

Drawn By:	PJB /BN/JH
Chkd By:	PJB
Date:	06.12.2026
Scale:	As Noted
Project Number:	VIT 20131

Drawing Title:

GENERAL STRUCTURAL NOTES

Drawing Number:

S-0.0

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30x42

X-TitleBlock30x42 Frank.dwg

GENERAL STRUCTURAL NOTES

POST-INSTALLED ANCHOR NOTES:

1. Except where indicated on the drawings, post-installed anchors shall consist of the following anchor types as provided by HILTI, Inc. Contact HILTI at (800) 879-8000 for product related questions.

A. Anchorage to concrete
  1. Adhesive anchors for cracked and uncracked concrete use:
    A. Adhesives for use:
      1. HILTI HIT-HY 200 safe set system with HILTI HIT-Z rod per ICC ESR-3187
      2. HILTI HIT-HY 200 safe set system with HILTI hollow drill bit and vacuum with has threaded rod per ICC ESR-3187
    B. Steel elements for use with adhesive:
      1. HILTI HAS-V-36 grade 36 carbon steel rod
      2. HILTI HAS-R-304 stainless steel rod
      3. HILTI HAS-R-316 stainless steel rod
      4. HILTI HIT-Z OR HIT-Z-R ROD (with HY 200 only)
  2. Basis of design includes the following design parameters:
    A. Cracked concrete
    B. Water-saturated concrete
    C. Base material temperature of 23-104 degrees Fahrenheit
    D. Allowable with hammer-drill, hollow drill bit system, and core drilling methods
  3. Medium duty mechanical anchors for cracked and uncracked concrete use:
    A. HILTI KWIK BOLT-TZ2 expansion anchor set system with hollow drill bit and vacuum and SI-AT-A22 tool with adaptive torque for applicable sizes per ICC ESR-4266

B. Rebar doweling into concrete
  1. Adhesive anchors for cracked and uncracked concrete use:
    A. HILTI HIT-HY 200 safe set system with HILTI hollow drill bit and vacuum with continuously deformed rebar per ICC ESR-318
  2. Basis of design includes the following design parameters:
    A. Cracked concrete
    B. Water-saturated concrete
    C. Base material temperature of 23-104 degrees Fahrenheit
    D. Allowable with hammer-drill, hollow drill bit system, and core drilling methods
    E. Current ICC-ES report with approval for development of bar using ACI provisions for embedment depths greater than 20 bar diameters

C. Anchorage to solid grouted masonry
  1. Adhesive anchors use:
    A. HILTI HIT-HY 270 safe set system with HILTI hollow drill bit and vacuum per ICC ESR-4143
    B. Steel anchor element shall be HILTI has continuously threaded rod or continuously deformed steel rebar
  2. Mechanical anchors use:
    A. HILTI KWIK BOLT-TZ2 expansion anchor per ICC ESR-4561

2. Anchor capacity used in design shall be based on the technical data published by HILTI or other such method as approved by the structural engineer of record. Substitution requests for alternate products must be approved in writing by the structural engineer of record prior to use. Contractor shall provide calculations that have been sealed by another licensed engineer demonstrating that the substituted product is capable of meeting the performance of the specified product. Substitutions will be evaluated by their having an ICC ESR showing compliance with the relevant building code for seismic uses, load resistance, installation category, and availability of comprehensive anchor evaluation will also consider creep, in-service temperature, installation temperature, moisture condition of concrete, and drilling methods.

3. Use of diamond core bit with roughening tool for anchor holes requires approval from engineer of record prior to drilling. Unless otherwise shown in the drawings, all holes shall be drilled perpendicular to the concrete surface.

4. Install anchors per the manufacturer's printed installation instructions, as included in the anchor packaging.

5. Overhead adhesive anchors must be installed using the HILTI Profi Piston Plug System.

6. ACI/CRSI adhesive anchor installer certification is required for all installers of adhesive anchors in horizontal or upwardly inclined orientation. The HILTI Adhesive Anchor Installer Certification Program (HAAICP) is an approved equivalent.

7. The contractor shall arrange an anchor manufacturer's representative to provide onsite installation training for all anchor products specified. The structural engineer of record must receive documented confirmation that all personnel who install anchors are trained prior to the commencement of anchor installation.

8. Anchor capacity is dependent upon spacing between adjacent anchors and proximity of anchors to edge of concrete. Install anchors in accordance with spacing and edge clearances indicated on the drawings.

9. Reinforcing bars in the concrete and masonry structure may conflict with specific anchor locations. Unless noted on the drawings that the bars can be cut, the contractor shall review the existing structural drawings and shall undertake to locate the position of the reinforcing bars at the locations of the concrete anchors by HILTI PS 1000 or other GPR, X-RAY, chipping or other approved means.

LIQUID APPLIED ROOF COATING SYSTEM

1. SUBMITTALS

A. Product Data: Manufacturer's catalog sheets, specifications, and installation instructions for each item specified.

B Quality Control Submittal:
  1. Company Field Advisor: Submit the names, address, and telephone number of the Company Field Advisor who will be assigned to this project.

C. Contract Closeout Submittals:
  1. Maintenance Data: Deliver 2 copies, covering the installed products, to the Director's Representative.
  2. Warranty: Copy of specified warranty.

2. QUALITY ASSURANCE

A. Qualifications: The persons applying roof coating system shall be personally experienced in applying this type of roofing system and shall have been regularly employed by a Company applying Liquid Applied Roof Coating Systems for a minimum of 5 years.

B. Pre-Installation Conference: Before the Work of this Section is scheduled to commence, a conference will be held by the Director's Representative at the Site for the purpose of reviewing the Contract Documents and discussing requirements for the Work. The conference shall be attended by the contractor, the supervisor of the coating system applicator, and the Company Field Advisor.

C. Company Field Advisor:
  1. The manufacturer must assign to the project a Company Field Advisor with expertise in the waterproofing field. The field advisor must also be well versed in the use and installation of the product. Personnel involved solely in sales do not qualify. The field advisor must be a full time employee of the roof coating system manufacturer. The field advisor will be required to:
    a. Attend the pre-installation conference.
    b. Instruct the contractor at the job site in the proper handling and installation procedures of the coating system prior to commencement of the Work.
    c. Immediately visit the job site if requested, to inspect the Work or to resolve questions or problems which may arise during the Work.
    d. If requested by the Director's Representative, submit all recommendations in writing.

3. DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Deliver materials to the Site in the manufacturer's unbroken containers with the manufacturer's printed labels intact and readable.

B. Storage and Handling:
  1. Store materials a minimum of 6 inches off the ground, in a dry, well-ventilated, weather-tight place at temperatures between 50 degrees and 80 degrees F.
  2. Mark for identification all materials which become wet. Remove such materials from the Site.

4. REGULATORY REQUIREMENTS

A. Factory Mutual Class "A" flame-spread rating for materials over metal substrates; FM standard 4470, ASTM E 108.

B. Underwriters Laboratories listed Class "A" flame-spread rating for construction over existing metal or other non-combustible roofing. Material containers shall bear the UL approved marking.

5. PROJECT CONDITIONS

A. Unless otherwise directed, do not execute the Work of this Section if the Director's Representative is not present.

B. Environmental Requirements:
  1. Comply with the manufacturer's printed recommendations regarding environmental conditions under which the roof coating system can be applied.
  2. Do not apply roof coating system when the deck or air temperature is below 40 degrees F or above 120 degrees F.
  3. Do not execute the Work of this Section unless the substrate is dry and free of debris and dirt.
  4. Do not begin work if rain is expected within 24 hours.

6. WARRANTY

A. Warranty Extension: A two year warranty period for the work is required.

B. Manufacturer's Warranty: In addition to the 2 year period, furnish the roofing system manufacturer's printed 10 year warranty for the Work of this Section. The warranty shall include but not be limited to, repair of leakage caused by defects in materials or workmanship. The monetary value of the warranty shall be at least equal to the original cost of the installation.

7. LIQUID APPLIED ROOF COATING SYSTEM

A. Liquid Applied Roof Coat

SCHEDULE OF SPECIAL INSPECTIONS:

SPECIAL INSPECTIONS SHALL BE PROVIDED IN ACCORDANCE WITH THE TABLE BELOW.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS: IBC 2018 TABLE 1705.6 & GEOTECHNICAL REPORT		
TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	—	X
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	—	X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	—	X
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	—
5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	—	X

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION: IBC 2018 TABLE 1705.3				
TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD	IBC REFERENCE
1. INSPECTION OF REINFORCING STEEL AND PLACEMENT.	—	X	ACI 318 CH. 20, 25.2, 25.3, 26.1-26.6.3	1908.4
2. VERIFY USE OF REQUIRED DESIGN MIX.	—	X	ACI 318: CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
3. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	—	ASTM C172 ASTM C31 ACI 318: 26.4, 26.12	1908.10
4. INSPECT CONCRETE FOR PROPER APPLICATION TECHNIQUES.	X	—	ACI 318: 26.5	1908.6, 1908.7, 1908.8
5. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	—	X	ACI 318: 26.5.3-26.5.5	1908.9
6. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	—	X	ACI 318: 26.11.1.2(b)	—

REQUIRED SPECIAL INSPECTIONS FOR MASONRY CONSTRUCTION: IBC 2018 1705.4 & TMS 402/ACI 520/ASCE5 & TMS 602/ACI 530.1/ASCE 6				
TABLE 3.1.2 – LEVEL B QUALITY ASSURANCE				
MINIMUM TESTS				
VERIFICATION OF SLUMP FLOW AND VISUAL STABILITY INDEX (VSI) AS DELIVERED TO THE PROJECT SITE IN ACCORDANCE WITH SPECIFICATION ARTICLE 1.5 B.1.b.3 FOR SELF CONSOLIDATING GROUT				
VERIFICATION OF f'_m AND f_{AAC} IN ACCORDANCE WITH SPECIFICATION ARTICLE 1.4 B PRIOR TO CONSTRUCTION, EXCEPT WHERE SPECIFICALLY EXEMPTED BY THIS CODE				
INSPECTION TASKS	MINIMUM SPECIAL INSPECTION			
	FREQUENCY (a)		REFERENCE FOR CRITERIA	
	CONTINUOUS	PERIODIC	TMS 402/ACI 530/ ASCE 5	TMS 602/ACI 530.1/ ASCE 6
1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS		X		Art. 1.5
2. AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:				
a. PROPORTIONS OF SITE-PREPARED MORTAR		X		Art. 2.1, 2.6 A
b. CONSTRUCTION OF MORTAR JOINTS		X		Art. 3.3 B
c. LOCATION OF REINFORCEMENT AND CONNECTORS		X		Art. 3.4 B, 3.6 A
3. PRIOR TO GROUTING, VERIFY THE FOLLOWING ARE IN COMPLIANCE:				
a. GROUT SPACE		X		Art. 3.2 D, 3.2 F
b. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS		X	SEC. 6.1	Art. 2.4, 3.4
c. PLACEMENT OF REINFORCEMENT AND CONNECTORS		X	SEC. 6.1, 6.2.1, 6.2.6, 6.2.7	Art. 3.2 E, 3.4, 3.6 A
d. PROPORTIONS OF SITE-PREPARED GROUT		X		Art. 2.6 B, 2.4 G.1.b
e. CONSTRUCTION OF MORTAR JOINTS		X		Art. 3.3 B
4. VERIFY DURING CONSTRUCTION				
a. SIZE AND LOCATION OF STRUCTURAL ELEMENTS		X		Art. 3.3 F
b. TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION		X	SEC. 1.2.1 (e), 6.1.4.3, 6.2.1	
c. WELDING OF REINFORCEMENT	X		SEC. 8.1.6.7.2, 9.3.3.4 (c), 11.3.3.4 (b)	
d. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F (4.4°C)) OR HOT WEATHER (TEMPERATURE ABOVE 90°F (32.2°C))		X		Art. 1.8 C, 1.8 D
e. PLACEMENT OF GROUT	X			Art. 3.5, 3.6 C
5. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS		X		Art. 1.4 B.2.a.3, 1.4 B.2.b.3, 1.4 B.2.c.3, 1.4 B.3, 1.4 B.4
(a) FREQUENCY REFERS TO THE FREQUENCY OF SPECIAL INSPECTION, WHICH MAY BE CONTINUOUS DURING THE TASK LISTED OR PERIODIC DURING THE LISTED TASK, AS DEFINED IN THE TABLE. (b) REQUIRED FOR THE FIRST 50000 SQUARE FEET (465 SQUARE METERS) OF AAC MASONRY. (c) REQUIRED AFTER THE FIRST 5000 SQUARE FEET (465 SQUARE METERS) OF AAC MASONRY.				

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PETER J. BONNES
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U.S. VIRGIN ISLANDS

(06.12.2026)

Peter J. Bonnes

Client:

VIRGIN ISLANDS WATER AND POWER AUTHORITY

Virgin Islands
Water and Power Authority
St. ThomaS
U.S. Virgin Islands

Project Name:

Frank Bay Substation "E" Emergency Generator (Phase 1) and AIS Switchgear Replacement (Phase 2) St. John, USVI

Issue / Revisions:

#	Date	Description
A	06.12.26	Issue for 80% Review

Drawn By:	PJB /BN/JH
Chkd By:	PJB
Date:	06.12.2026
Scale:	As Noted
Project Number:	VIT 20131

Drawing Title:

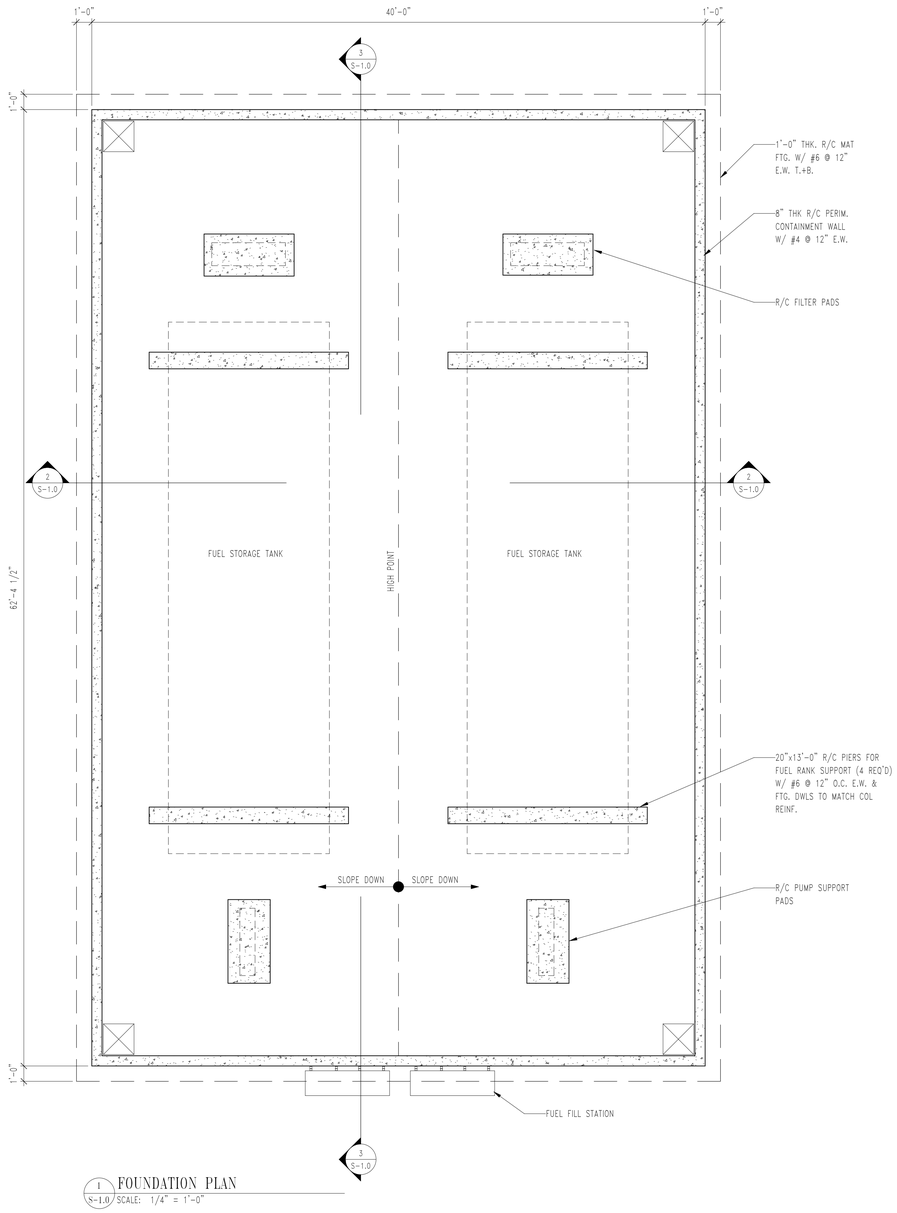
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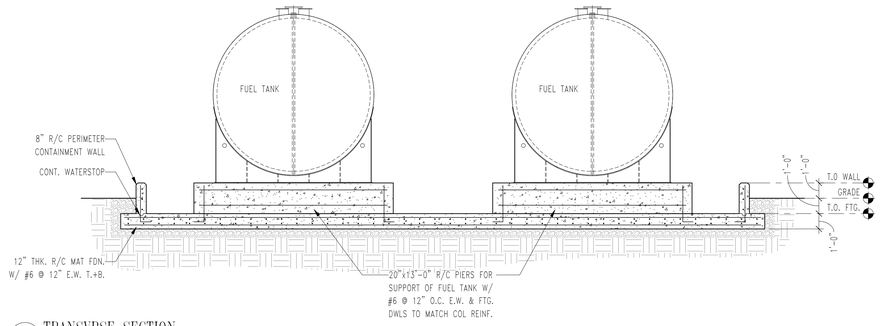
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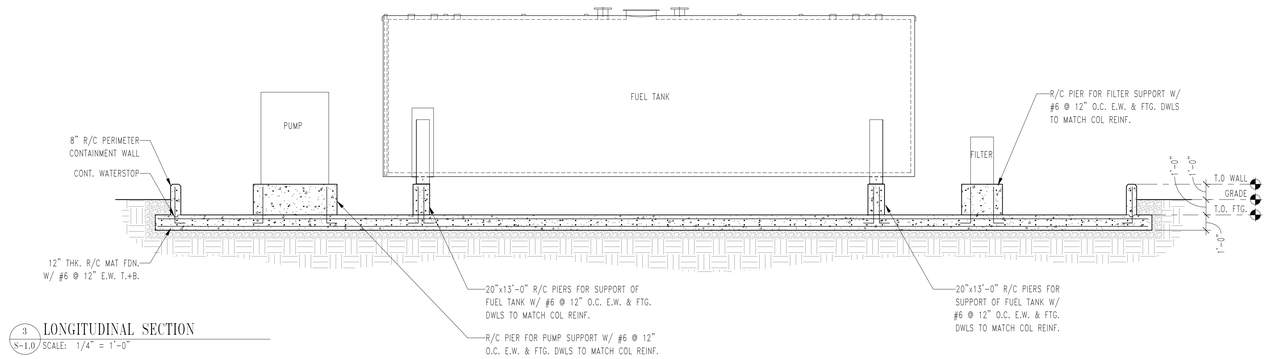
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1 FOUNDATION PLAN
S-1.0 SCALE: 1/4" = 1'-0"



2 TRANSVERSE SECTION
S-1.0 SCALE: 1/4" = 1'-0"



3 LONGITUDINAL SECTION
S-1.0 SCALE: 1/4" = 1'-0"

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Project Number:	VIT 20131

Drawing Title:

FOUNDATION PLAN & SECTIONS

Drawing Number:

S-1.0

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