SCHEDULE OF DRAWINGS:

M1.0	MECHANICAL SCHEDULES AND EXTERIOR NEW WORK	E0	POWER PLANT ELECTRICAL SITE PLAN
M1.1	ENGINE COOLING SYSTEM PRELIMINARY WORK PLAN & DETAILS	E1	ELECTRICAL DEMOLITION & NEW WORK PLANS
M1.2	EXPANSION TANK ET-1 FABRICATION & INSTALLATION & DETAILS	E2	TYPICAL GENERATOR INSTALLATION & DETAILS
M1.3	MECHANICAL DEMOLITION & NEW WORK PLANS	E3	12V ENGINE CONTROL WIRING JUNCTION BOX
M2	TYPICAL GENERATOR INSTALLATION & DETAILS	E4	SWITCHGEAR MODIFICATIONS
M3	DAY TANK & USED OIL BLENDER PIPING MODIFICATIONS	E5	SWITCHGEAR MODIFICATIONS
M4	VENTILATION SYSTEM UPGRADE PLANS & DETAILS	E6	SWITCHGEAR MODIFICATIONS
M5	GENERATOR FABRICATION DETAILS		

ENGINE GENERATOR SCHEDULE

GENSET	DESCRIPTION
GEN #1 (NEW)	ENGINE – 99 HP, 65 EKW PRIME, JOHN DEERE 4045TFM85, TIER 3 MARINE. 12 VDC STARTING & CONTROL. GENERATOR – MINIMUM 90 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UCI274C.
GEN #2 (EXISTING)	ENGINE – 99 HP, 65 EKW PRIME (DE-RATED TO 55kW), JOHN DEERE 4045TFM75, TIER 2 MARINE, 12 VDC, S/N SE4045Z006612. GENERATOR – MINIMUM 55 KW CONTINUOUS AT 105°C RISE, MARATHON MAGNAPLUS 362PSL1604 S/N MT-0205504-1123
GEN #3 (NEW)	ENGINE – 99 HP, 65 EKW PRIME, JOHN DEERE 4045TFM85, TIER 3 MARINE. 12 VDC STARTING & CONTROL. GENERATOR – MINIMUM 90 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UCI274C.

INSTRUMENTATION SCHEDULE

SYMBOL	SERVICE	DESCRIPTION	MANUFACTURER/MODEL
(LCA)	GLYCOL TANK LOW COOLANT ALARM	LOW COOLANT LEVEL ALARM FLOAT SWITCH	MURPHY EL-150-K1

ENGINE COOLING SYSTEM EQUIPMENT SCHEDULE

ET-1	ENGINE COOLANT EXP. TANK	24 GALLON CAPACITY TANK, 12.75" O.D x 48" LONG FABRICATED STEEL TANK, SEE FABRICATION DETAIL	CUSTOM FABRICATION
P-HR1	CONTROL ROOM HYDRONIC PUMP	2 GPM AT 15' TDH, 1/25HP, 115V, 1ø. PROVIDE WITH NEW GASKETS AND BOLTS.	GRUNDFOS UPS15-58F, SPD 3 NO SUBSTITUTES

VENTILATION EQUIPMENT SCHEDULE:

EF-1 EF-2	GENERATION ROOM EXHAUST FANS	DIRECT DRIVE 14"ø PROPELLER SIDEWALL EXHAUST FAN, 2,100 CFM AT 0.375" SP, 1,750 RPM. SPECIAL 1/2 HP, 115 V, 1PH VARIGREEN MOTOR WITH OPTIONAL 0-10V LEADS AND OPTIONAL 24V TRANSFORMER	GREENHECK SE1-14-436-VG (1/2 HP)
(MD)	INTAKE, RADIATOR, & FAN DAMPERS	OPPOSED BLADE LOW-LEAKAGE CONTROL DAMPER, AIRFOIL BLADES, GALV STEEL CONSTRUCTION, ACETAL BEARINGS, STAINLESS STEEL JAMB SEALS, TPE BLADE SEALS.	GREENHECK VCD-33
(MD)	MOTORIZED DAMPER ACTUATOR	MULTI-VOLTAGE SPRING RETURN ACTUATOR	BELIMO AF-BUP

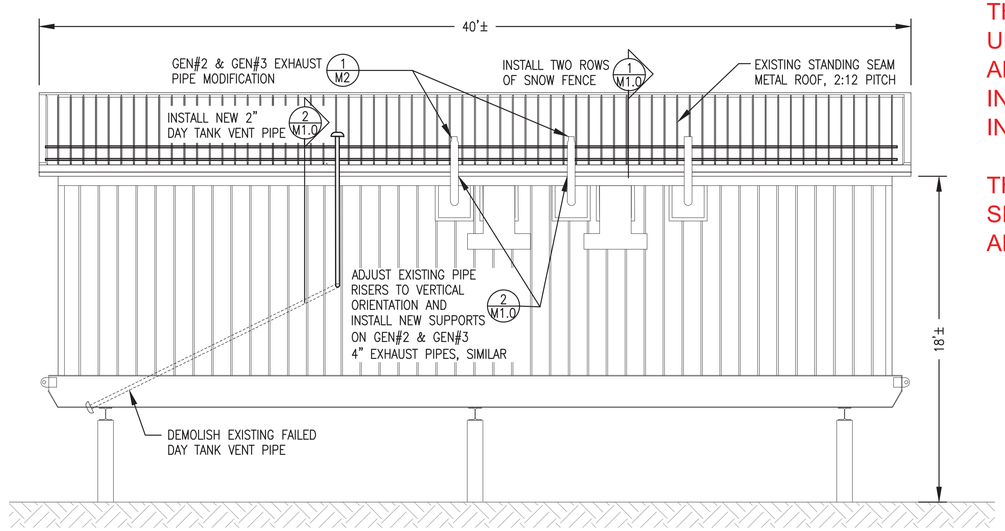
FUEL SYSTEM EQUIPMENT SCHEDULE

F-DT	DAY TANK FILTER	THREE FILTER BANK WITH INDIVIDUAL FILTER ISOLATION VALVES, 3/4" NPT FEMALE INLET & OUTLET CONNECTION ADAPTERS, IMPACT RESISTANT "SEE-THRU" BOWLS, 15 PSIG WORKING PRESSURE. INSTALL 3 EACH 10 MICRON AQUABLOC FILTER ELEMENTS & FURNISH 3 SPARES.	RACOR TURBINE 791000FV10 WATER-IN-FUEL RR30880E ELEMENTS 2020V10
F-FP	FUEL POLISHER FILTER ELEMENTS	FILTER #1 & #2: 10 MICRON HYDROSORB II FILTER PROVIDE 4 TOTAL (2 SPARES) FILTER #3: 2 MICRON PARTICULATE FILTER PROVIDE 2 TOTAL (1 SPARE)	CIM-TEK #30034 (HYDROSORB) CIM-TEK #30066 (2 MICRON)
DAY TANK METER	FIBER WASHERS	FIBER WASHERS FOR 3/4" AMCO ELSTER 20 FUEL METER UNIVERSAL THREADED CONNECTIONS	ELSTER PART #2175Q0001 ACE SUPPLY (907) 277-4113

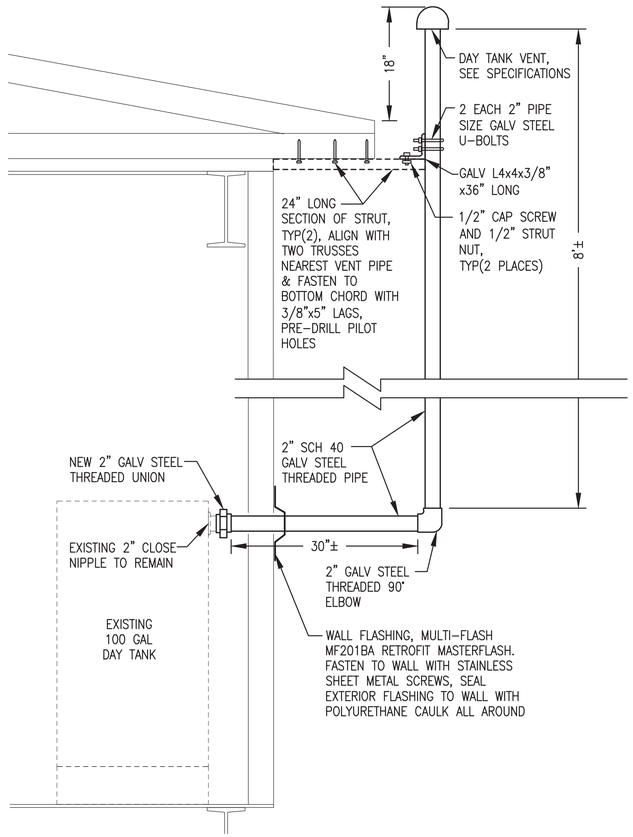
DECAL SCHEDULE:

(01) "GEN#1 65KW", 3"x5"
(02) "GEN#2 55KW", 3"x5"
(03) "GEN#3 65KW", 3"x5"

DECALS TO BE WHITE NON-REFLECTIVE VINYL BACKGROUND, 3M 3650-10, WITH 3M SERIES 225 HIGH PERFORMANCE VINYL LETTERS, ONE SIDE ONLY, SELF ADHESIVE BACK. SIZE AS INDICATED WITH LETTER SIZE ADJUSTED TO FILL DECAL. WARNING LITES OR EQUAL. APPLY DECALS TO SMOOTH SURFACES OF DOORS, EQUIPMENT, OR ON ADJACENT WALL. ENSURE SURFACE IS CLEAN AND DRY PRIOR TO APPLICATION. USE HEAT GUN AS REQUIRED.



1 M1.0 POWR PLANT EXTERIOR BACK WALL ELEVATION
NO SCALE



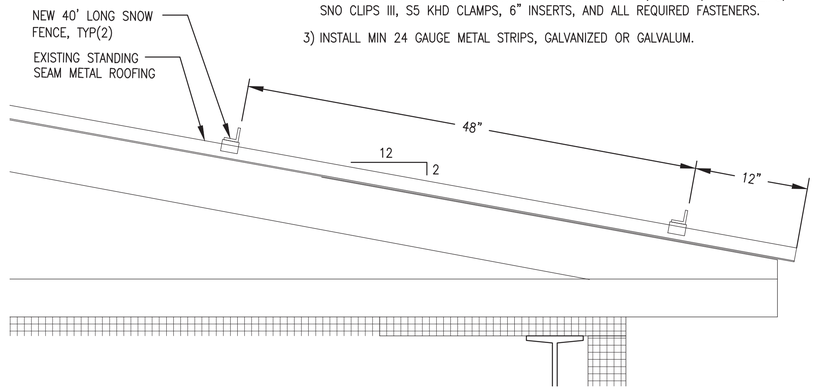
2 M1.0 NEW DAY TANK VENT PIPE INSTALLATION
NO SCALE

THIS DRAWING SET SHOWS WORK THAT IS UNDER THE BASE BID AND ADDITIVE ALTERNATES. ALL WORK SHOWN IS INCLUDED IN THE BASE BID UNLESS SPECIFICALLY INDICATED AS ADDITIVE ALTERNATE

THE VENTILATION EQUIPMENT SHOWN THIS SHEET IS TO BE FURNISHED UNDER ADDITIVE ALTERNATE #1

SNOW FENCE SPECIFIC NOTES:

1) PROVIDE 2 ROWS OF SNOW RETENTION FENCE AS INDICATED.
2) SNOW FENCE SHALL BE L.M. CURBS COLOR GUARD OR APPROVED EQUAL. FURNISH COMPLETE SYSTEM INCLUDING UNPUNCHED COLOR GUARD, SPLICES, VERSA CLIPS, SNO CLIPS III, S5 KHD CLAMPS, 6" INSERTS, AND ALL REQUIRED FASTENERS.
3) INSTALL MIN 24 GAUGE METAL STRIPS, GALVANIZED OR GALVALUM.



3 M1.0 ROOF SNOW FENCDE INSTALLATION DETAIL
NO SCALE

ISSUED FOR CONSTRUCTION MAY 2026

STATE OF ALASKA 49TH BRIAN C. GRAY ME 8210 REGISTERED PROFESSIONAL ENGINEER

ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADES

TITLE: MECHANICAL SCHEDULES AND EXTERIOR NEW WORK

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 5/5/26
FILE NAME: STRVR DERA M	SHEET: M1.0
PROJECT NUMBER:	

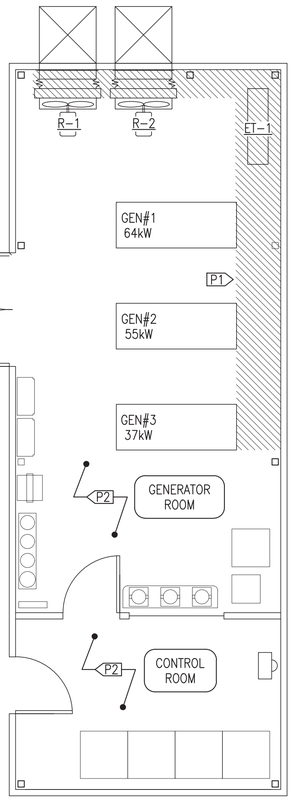
PRELIMINARY WORK GENERAL NOTES:

1. ALL PRELIMINARY WORK SHOWN THIS SHEET MUST BE PERFORMED PRIOR TO BEGINNING DEMOLITION OR NEW WORK UNLESS SPECIFICALLY INDICATED OTHERWISE.

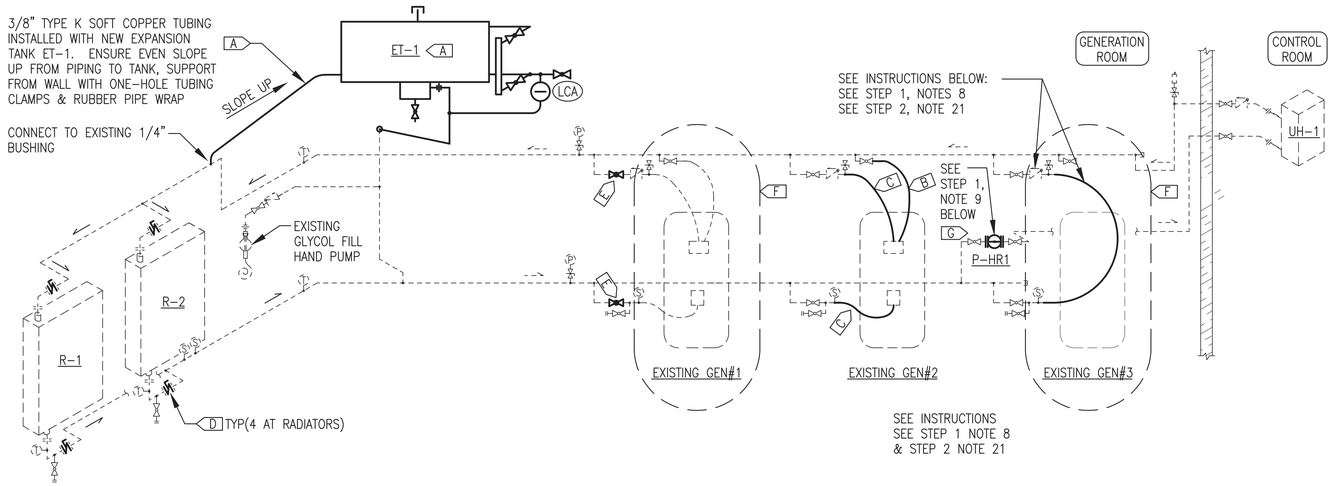
PRELIMINARY WORK SPECIFIC NOTES:

P1 CLEAN AND FLUSH THE ENTIRE EXISTING ENGINE COOLING SYSTEM, DEGREASE AND PRESSURE WASH RADIATOR CORES AND PERFORM MINOR MODIFICATIONS. SEE COOLING SYSTEM FLUSH AND GLYCOL REPLACEMENT INSTRUCTIONS AND PIPING ISOMETRIC THIS SHEET.

P2 THE POWER PLANT IS CLUTTERED, WITH OLD PARTS, USED OIL BUCKETS, ETC., AND IS IN NEED OF CLEANING. PRIOR TO BEGINNING WORK REMOVE ALL CLUTTER FROM THE POWER AND TURN OVER TO THE LOCAL OPERATOR FOR FINAL DISPOSAL.



1 M1.1 PRELIMINARY WORK PLAN & NOTES
1/4"=1'-0"



2 M1.1 COOLING SYSTEM PIPING FLUSH & MODIFICATION ISOMETRIC P1
NO SCALE

COOLING SYSTEM UPGRADES GENERAL NOTES:

1. PERFORM STEPS 1 & 2 (NOTES 1-22) OF THE ENGINE COOLING SYSTEM FLUSH & GLYCOL REPLACEMENT INSTRUCTIONS BELOW PRIOR TO PERFORMING THESE COOLANT SYSTEM UPGRADES UNLESS SPECIFICALLY INDICATED OTHERWISE.
2. EXISTING ENGINE COOLING SYSTEM PIPING AND DEVICES SHOWN WITH LIGHT DASHED LINES.
3. PIPING MODIFICATIONS TO BE PERFORMED DURING SYSTEM FLUSH OPERATION SHOWN WITH DARK SOLID LINES.
4. THIS WORK WILL LIKELY REQUIRE AT LEAST THREE POWER OUTAGES. PLAN WORK TO MINIMIZE OUTAGES AND SCHEDULE ALL OUTAGES IN ADVANCE WITH THE UTILITY.

COOLING SYSTEM UPGRADES SPECIFIC NOTES:

NOTE: PERFORM THESE TASKS WHILE COOLING SYSTEM IS DRAINED DOWN AFTER STEP 2 (DRAIN/FLUSH) OF FLUSHING PROCEDURE.

A REPLACE EXISTING EXPANSION TANK AND ACCESSORIES WITH COMPLETE NEW NEW EXPANSION TANK ASSEMBLY, SEE SHEET M1.2.

B REPLACE ENGINE VENT/PREHEAT HOSE WITH NEW 1/2" SILICONE HOSE AND CLAMPS. CONNECT ONE END TO EXISTING 3/4" BALL VALVE ON COOLING MANIFOLD WITH 3/4" MPT x 1/2" BARB BRASS KING NIPPLE. CONNECT OTHER END TO 1/2" BARB KING NIPPLE ON GEN #2 & GEN#3 ENGINES. PROVIDE 3/8" MPT x 1/2" BARB BRASS KING NIPPLE ON GEN #1 ENGINE.

C REPLACE ENGINE COOLANT HOSE WITH NEW 2" SILICONE HOSE WITH NEW CLAMPS.

D REPLACE EXISTING 3" BUTTERFLY VALVE, 4 TOTAL. SEE SPECIFICATIONS FOR NEW HIGH PERFORMANCE ETHYLENE GLYCOL SERVICE BUTTERFLY VALVES.

E UNSOLDER EXISTING LEAKING 2" BRONZE BALL VALVES AND REPLACE WITH NEW.

F SEE DEMOLITION AND NEW WORK PLANS AND ELEVATION FOR GEN#1 & GEN#3 REPLACEMENT INCLUDING REQUIRED PIPING MODIFICATIONS AND NEW HOSE INSTALLATIONS.

G REPLACE FAILED CONTROL ROOM HEAT CIRCULATION PUMP P-HR1 PRIOR TO DRAINING SYSTEM.

ENGINE COOLING SYSTEM FLUSH & GLYCOL REPLACEMENT INSTRUCTIONS P1

ENGINE COOLING SYSTEM GLYCOL REPLACEMENT GENERAL NOTES:

1. THIS ENTIRE ENGINE COOLING SYSTEM FLUSH PROCEDURE WILL BE PERFORMED WITH EXISTING GEN#1 & GEN#2 PRIOR TO INSTALLING NEW GEN#1 & GEN#3. EXISTING GEN#3 IS INOPERABLE AND WILL BE DISCONNECTED FROM THE COOLING SYSTEM IN PREPARATION FOR DEMOLITION (SEE NOTE 8 BELOW).
2. ENGINE COOLANT SYSTEM VOLUME IS APPROXIMATELY 90 GALLONS. PROVIDE A MINIMUM OF 4 EACH EMPTY 55 GALLON DRUMS TO CONTAIN CONTAMINATED COOLANT AND CLEANING SOLUTION.
3. FURNISH 2 EACH 55 GALLON DRUMS OF NEW EXTENDED LIFE ETHYLENE GLYCOL SOLUTION PRE-MIXED TO A RATIO OF 60% GLYCOL TO 40% WATER.
4. PLAN WORK TO MINIMIZE OUTAGES AND SCHEDULE ALL OUTAGES IN ADVANCE WITH THE UTILITY.
5. WHEN DRAINING FLUID AS NOTED BELOW, DRAIN FROM ALL LOW POINTS AND USE LOW PRESSURE AIR AS REQUIRED TO CLEAR ISOLATED SECTIONS.
6. TURN OVER DRUMS OF USED GLYCOL AND CLEANING SOLUTION TO UTILITY FOR FINAL DISPOSITION.

STEP 1: ENGINE COOLING SYSTEM DRAIN/CLEAN

7. PRIOR TO DRAINING SYSTEM ENSURE HOT COOLANT IS CIRCULATED THROUGH THE ENTIRE SYSTEM BY FOLLOWING NOTES 8 AND 9 BELOW.
8. LOCK/TAG OUT EXISTING GEN#3 AND ISOLATE BY CLOSING MAIN 2" VALVES AND PREHEAT/VENT VALVE. REMOVE ALL EXISTING GEN#3 COOLANT AND VENT HOSES AND CREATE TEMPORARY BYPASS AT GEN#3 TO ALLOW CIRCULATION TO END OF MAINS FOR FLUSHING. TEMPORARILY WEDGE GEN#3 2" COOLANT DISCHARGE CHECK VALVE FLAPPER OPEN TO ALLOW BACK FLOW. INSTALL TEMPORARY 2" BYPASS HOSE BETWEEN COOLANT MAINS AS INDICATED. LEAVE BYPASS IN PLACE UNTIL SYSTEM HAS BEEN FILLED WITH NEW GLYCOL.
9. REPLACE FAILED CONTROL ROOM HEAT CIRCULATION PUMP P-HR1. TURN UP CONTROL ROOM HEAT THERMOSTAT AND VERIFY THAT PUMP P-HR1 IS CIRCULATING THROUGH THE HEATER. MANUALLY PARALLEL GEN#1 WITH GEN#2 FOR ONE HOUR MINIMUM. TAKE OUTAGE, SHUT DOWN AND LOCK/TAG OUT GEN#1 AND GEN#2. TURN OFF PUMP P-HR1.
10. DRAIN THE EXISTING COOLANT INTO DRUMS AND TURN OVER TO UTILITY.
11. TEMPORARILY REMOVE GEN#1 AND GEN#2 ENGINE THERMOSTATS TO ENSURE FULL FLOW IN PIPING FROM ENGINE WATER PUMPS.
12. FILL SYSTEM WITH FRESH WATER AND HEAVY DUTY ALKYLINE-BASED ENGINE CLEANING SOLUTION, CUMMINS FLEETGUARD RESTORE, OR EQUAL, MINIMUM 1 GALLON PER 10 GALLONS OF FRESH WATER.
13. TO PROVIDE MAXIMUM CIRCULATION OF THE CLEANING SOLUTION WHILE FLUSHING, MANUALLY PARALLEL GEN#1 WITH GEN#2. TURN ON PUMP P-HR1. BRING SYSTEM UP TO OPERATING TEMPERATURE AND OPERATE FOR 24 HOURS MINIMUM.
14. WHILE CIRCULATING COOLING SYSTEM CLEANING SOLUTION, VALVE OFF AND SHUT DOWN EACH RADIATOR ONE AT A TIME SO THAT EACH RADIATOR GETS 4 HOURS OF STAND-ALONE CIRCULATION. DURING EACH 4 HOUR RADIATOR SHUT DOWN PERIOD LOCK/TAG OUT THE MOTOR, WRAP/TAPE MOTOR WATER TIGHT IN PLASTIC SHEET, DEGREASE AND PRESSURE WASH RADIATOR AIR SURFACES TO REMOVE ALL DEBRIS. AFTER WASHING BOTH RADIATORS CONTINUE TO RUN FOR AN ADDITIONAL 2 HOURS MINIMUM WITH BOTH RADIATORS IN SERVICE.
15. TAKE OUTAGE, SHUT DOWN GEN#1 AND GEN#2 AND LOCK/TAG OUT. TURN OFF PUMP P-HR1.

STEP 2: ENGINE COOLING SYSTEM DRAIN/FLUSH/DRAIN

16. IMMEDIATELY DRAIN THE USED CLEANING SOLUTION FROM THE SYSTEM TO AVOID SETTLING OUT SOLIDS. DRAIN INTO DRUMS AND TURN OVER TO UTILITY.
17. FILL SYSTEM WITH FRESH WATER.
18. MANUALLY PARALLEL GEN#1 WITH GEN#2. TURN ON PUMP P-HR1. BRING SYSTEM UP TO OPERATING TEMPERATURE AND OPERATE FOR 2 HOURS MINIMUM. CAREFULLY INSPECT THE ENTIRE SYSTEM FOR ANY LEAKS WHILE FLUSHING. IF ANY LEAKS ARE DETECTED, SHUT OFF GENERATORS, REPAIR AS REQUIRED, AND BEGIN THIS STEP OVER.
19. SHUT DOWN GEN#1 AND GEN#2 AND LOCK/TAG OUT. TURN OFF PUMP P-HR1.
20. DRAIN THE WATER.
21. AT GEN#3 CLOSE ALL VALVES, REMOVE BYPASS HOSE AND REMOVE CHECK VALVE WEDGE IN PREPARATION FOR INSTALLATION OF NEW GEN#3
22. PERFORM ALL COOLING SYSTEM UPGRADES AS INDICATED ON ISOMETRIC.

STEP 3: ENGINE COOLING SYSTEM FILL/COMMISSION

23. REINSTALL GEN#1 AND GEN#2 ENGINE THERMOSTATS WITH NEW GASKETS. FOLLOWING ARE ENGINE SERIAL NUMBERS FOR GASKET COORDINATION:
    EXISTING GEN#1: JOHN DEERE 4045TF150 S/N SE4045Z006671
    EXISTING GEN#2: JOHN DEERE 4045TF75 S/N SE4045Z006612
24. FILL SYSTEM WITH NEW 60%/40% EXTENDED LIFE ETHYLENE GLYCOL SOLUTION.
25. MANUALLY PARALLEL GEN#1 WITH GEN#2 TO PROVIDE COOLING SYSTEM FINAL TEST. TURN ON PUMP P-HR1. BRING SYSTEM UP TO OPERATING TEMPERATURE. CAREFULLY PURGE ALL AIR FROM SYSTEM AND INSPECT THE ENTIRE SYSTEM FOR ANY LEAKS. ENSURE THAT COOLANT LEVEL IS ABOVE 50% ON EXPANSION TANK SITE GAUGE AND SYSTEM PRESSURE IS 8 PSIG MINIMUM AT CONCLUSION OF TEST.
26. MANUALLY SELECT ONE GENERATOR TO RUN AND SHUT DOWN OTHER GENERATOR.
27. AT GEN#3 REMOVE BYPASS HOSE AND CHECK VALVE WEDGE IN PREPARATION FOR CONNECTION TO NEW GEN#3.

ISSUED FOR CONSTRUCTION
MAY 2026

STATE OF ALASKA 49TH BRIAN C. GRAY ME 8210 REGISTERED PROFESSIONAL ENGINEER

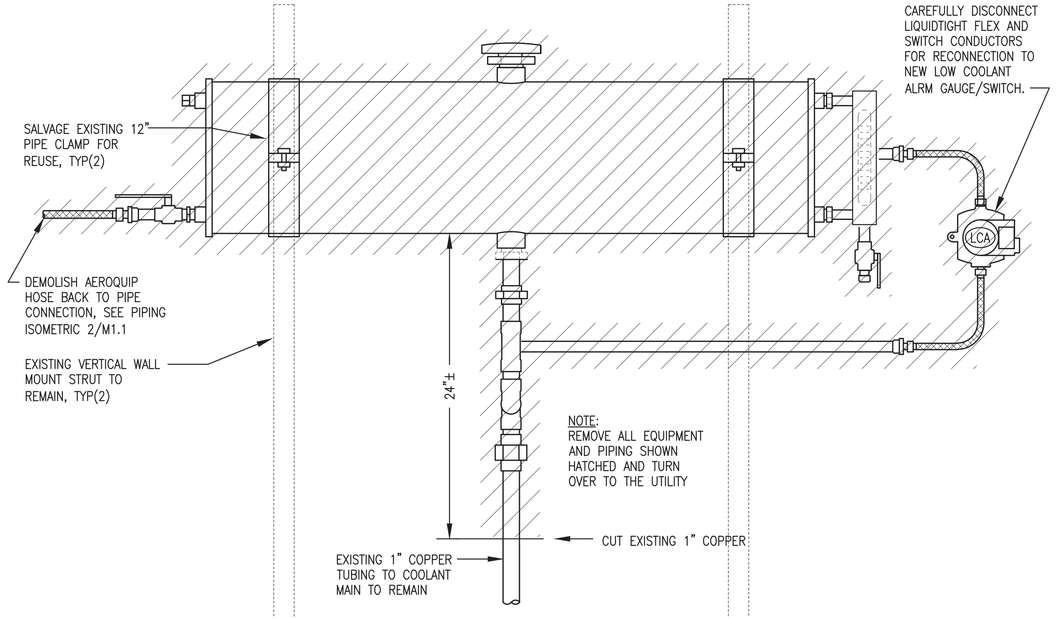
ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADES

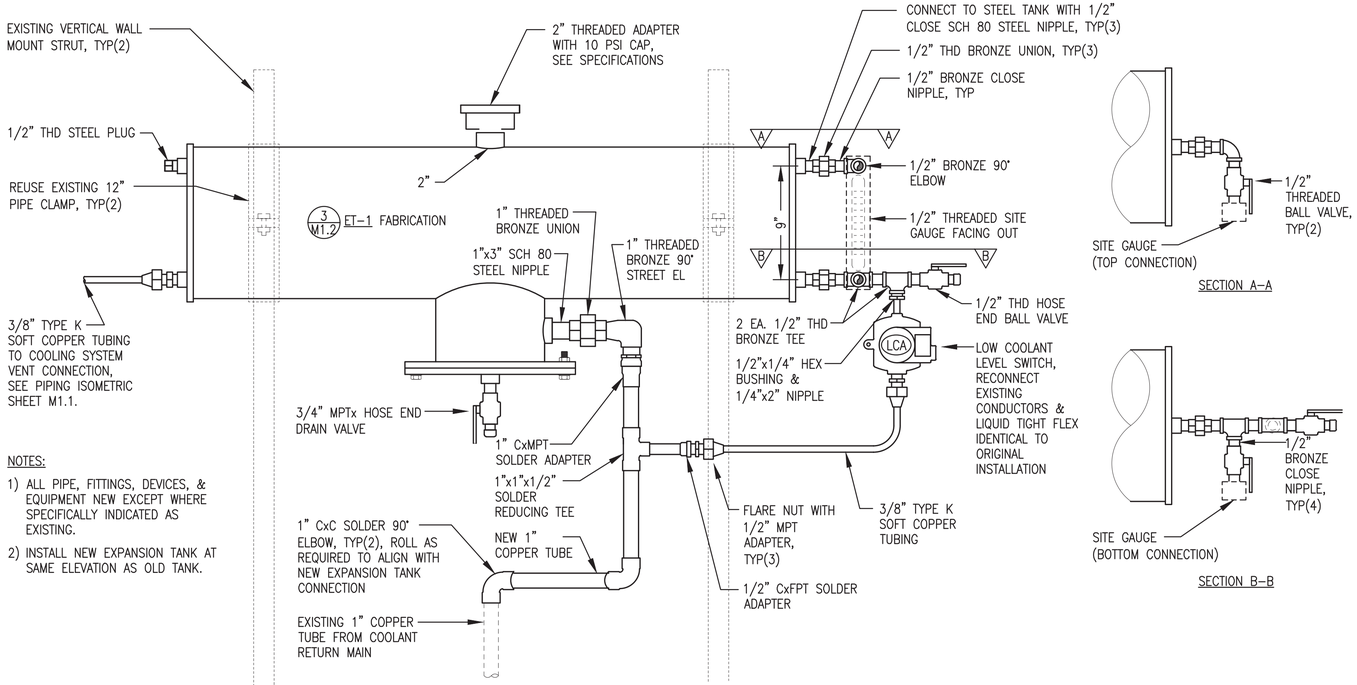
TITLE: ENGINE COOLING SYSTEM PRELIMINARY WORK PLAN & DETAILS

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

DRAWN BY: JTD | SCALE: AS NOTED
DESIGNED BY: BCG | DATE: 5/5/26
FILE NAME: STRVE DERA M | SHEET: M1.1
PROJECT NUMBER:



1 M1.2 EXISTING EXPANSION TANK & PIPING DEMOLITION
NO SCALE



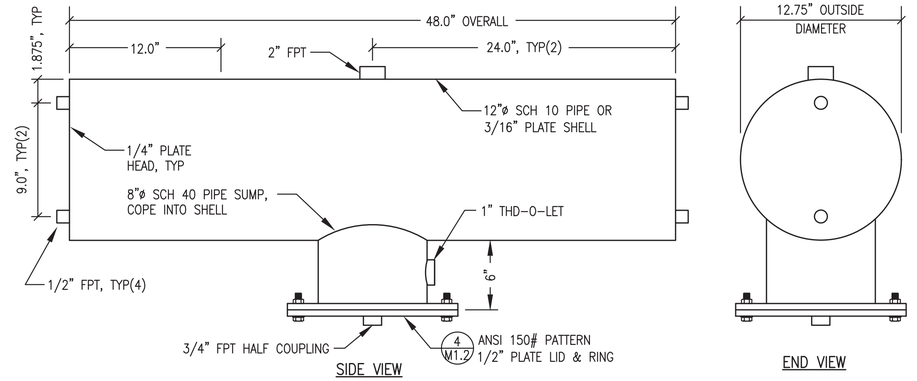
NOTES:

1) ALL PIPE, FITTINGS, DEVICES, & EQUIPMENT NEW EXCEPT WHERE SPECIFICALLY INDICATED AS EXISTING.
2) INSTALL NEW EXPANSION TANK AT SAME ELEVATION AS OLD TANK.

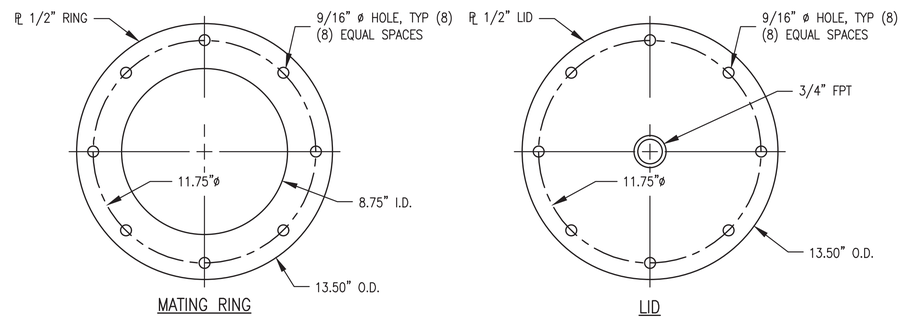
2 M1.2 NEW 24 GALLON EXPANSION TANK ET-1 INSTALLATION
NO SCALE

EXPANSION TANK GENERAL NOTES:

1) FABRICATE SINGLE WALL 24 GALLON NOMINAL CAPACITY GLYCOL EXPANSION TANK.
2) FABRICATE SHELL FROM MINIMUM 3/16" ASTM A-36 PLATE STEEL ROLLED AND WELDED OR 12"ø SCHEDULE 10 LIGHTWALL ASTM A53 STEEL PIPE. FABRICATE HEADS FROM 1/4" THICK ASTM A-36 PLATE STEEL. FABRICATE SUMP FROM 8"ø SCHEDULE 40 ASTM A53 STEEL PIPE. FABRICATE SUMP PLATE LID FROM 1/2" THICK ASTM A-36 PLATE STEEL. MAKE ALL JOINTS WITH CONTINUOUS FULL-PENETRATION WELDS.
3) PROVIDE WITH ALL OPENINGS INDICATED USING MINIMUM 3000# FORGED STEEL PIPE HALF COUPLINGS IN ACCORDANCE WITH U.L 142 FIGURE 7.1 #2.
4) PRESSURE TEST COMPLETED ASSEMBLY TO 15 PSIG MINIMUM.
5) UPON COMPLETION OF FABRICATION, ROUND ALL CORNERS AND SHARP EDGES. SANDBLAST TANK EXTERIOR AND ALL ATTACHMENTS IN ACCORDANCE WITH SSPC-SP-6. PAINT WITH TWO COATS EPOXY, SHERWIN WILLIAMS MACROPOXY 646, COLOR STRUCTURAL GRAY 4031.
6) UPON COMPLETION FLUSH INTERIOR OF TANK TO REMOVE ALL DIRT AND DEBRIS, AIR DRY INTERIOR, AND SEAL ALL TANK OPENINGS WITH PLASTIC PLUGS.



3 M1.2 NEW 24 GALLON GLYCOL EXPANSION TANK ET-1 FABRICATION
1"=6"



4 M1.2 LID & MATING RING - PLAN VIEW
1/4" = 1"

ISSUED FOR CONSTRUCTION
MAY 2026

STATE OF ALASKA 49TH
BRIAN C. GRAY
ME 8210
REGISTERED PROFESSIONAL ENGINEER

ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADES

TITLE: EXPANSION TANK ET-1
FABRICATION & INSTALLATION DETAILS

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

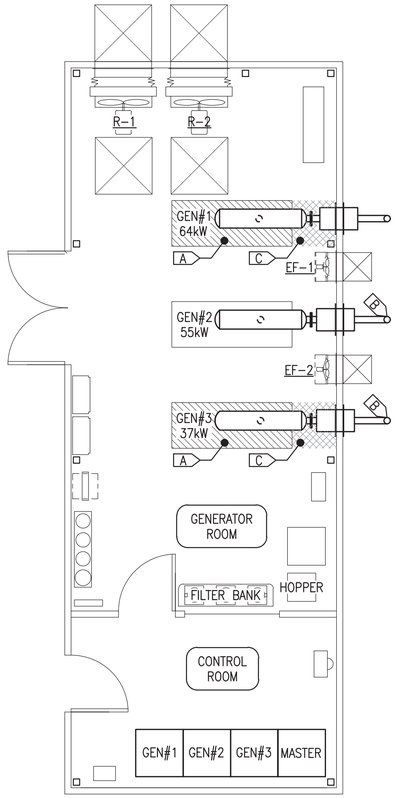
DRAWN BY: JTD | SCALE: AS NOTED
DESIGNED BY: BCG | DATE: 5/5/26
FILE NAME: STRVR DERA M | SHEET: M1.2
PROJECT NUMBER:

MECHANICAL DEMOLITION GENERAL NOTES:

1. PRIOR TO BEGINNING DEMOLITION WORK, PERFORM ALL ENGINE COOLING SYSTEM PRELIMINARY WORK. SEE SHEET M1.1.
2. THIS PLANT PROVIDES PRIME POWER TO THE COMMUNITY. KEEP OUTAGES TO A MINIMUM AND COORDINATE ALL REQUIRED OUTAGES WITH THE UTILITY.
3. ALL ITEMS TO REMAIN UNLESS SPECIFICALLY INDICATED FOR REMOVAL. AREAS CONTAINING EXISTING EQUIPMENT AND PIPING TO BE REMOVED INDICATED BY HATCHING.
4. ONLY MAJOR DEMOLITION TASKS AND AREAS SHOWN THIS SHEET. REMOVAL OF MINOR MECHANICAL COMPONENTS AND PIPING AS REQUIRED FOR MISCELLANEOUS MODIFICATIONS & UPGRADES SHOWN WITH NEW WORK.
5. ISOLATE AND DRAIN ALL PIPING CONNECTIONS TO DEMOLITION. DRAIN ENGINE BLOCK PRIOR TO REMOVAL. TURN USED OIL AND GLYCOL OVER TO THE UTILITY FOR FINAL DISPOSITION.
6. TAKE ALL PRECAUTIONS TO MINIMIZE DAMAGE TO GENERATION EQUIPMENT BEING REMOVED DURING DEMOLITION EXCEPT ENGINE BLOCKS, SEE GENERAL NOTE 7. TARP GENERATORS AND SEAL ALL EXPOSED CONNECTIONS PRIOR TO REMOVING FROM PLANT. TURN ALL REMOVED EQUIPMENT OVER TO THE UTILITY FOR FINAL DISPOSITION.
7. RENDER EXISTING GEN#1 AND GEN #3 ENGINE BLOCKS UNUSABLE BY CUTTING A MINIMUM 3"x3" HOLE IN ENGINE CRANK CASE. FILL OUT A CERTIFICATE OF DESTRUCTION FOR EACH ENGINE AND INCLUDE PHOTOGRAPHIC DOCUMENTATION OF THE HOLE AND THE ASSOCIATED ENGINE NAMEPLATE.

MECHANICAL DEMOLITION SPECIFIC NOTES:

- A: REMOVE EXISTING GENSET IN ITS ENTIRETY ALONG WITH EXHAUST FLEX AND RISER PIPE FROM ENGINE TO MUFFLER AND TURN OVER TO UTILITY. MUFFLER AND OUTLET EXHAUST PIPING TO REMAIN IN PLACE.
- B: REMOVE 3" RAIN CAP AND CUT OFF 4x3 WELD REDUCER AT TOP OF EXHAUST RISER.
- C: REMOVE ALL EXISTING ENGINE MAIN COOLANT HOSES AND VENT/PREHEAT HOSE AT GEN#1 AND GEN#3.



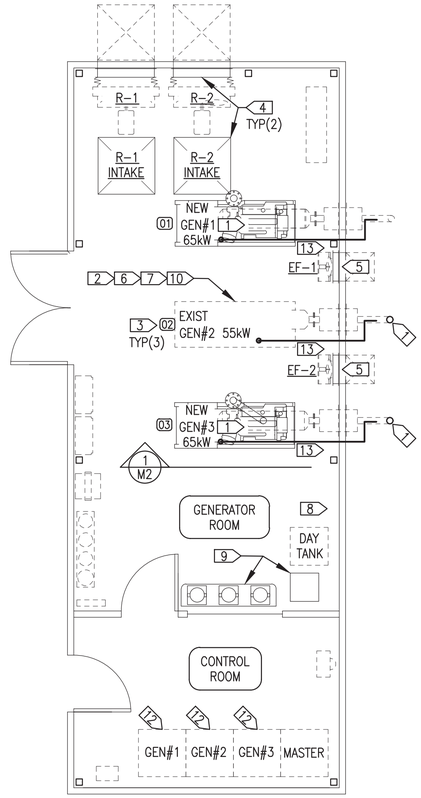
1 M1.3 DEMOLITION PLAN & NOTES
1/4"=1'-0"

NEW WORK GENERAL NOTES:

1. PRIOR TO BEGINNING NEW WORK, PERFORM ALL ENGINE COOLING SYSTEM PRELIMINARY WORK. SEE SHEET M1.
2. EXISTING EQUIPMENT AND PIPING TO REMAIN IN SERVICE SHOWN WITH LIGHT DASHED LINES.
3. NEW EQUIPMENT AND PIPING TO BE INSTALLED SHOWN WITH DARK SOLID LINES.

NEW WORK SPECIFIC NOTES:

- 1: INSTALL COMPLETE NEW GENSET INCLUDING NEW COOLANT, FUEL, EXHAUST AND CRANKCASE VENTILATION CONNECTIONS. SEE ELEVATION SHEET M2.
- 2: INSTALL NEW CRANKCASE VENTILATION ON EXISTING GEN#2 TO MATCH NEW GENSETS. SEE ELEVATION SHEET M2.
- 3: INSTALL DECALS AS INDICATED, SEE DECAL SCHEDULE SHEET M1.0. THOROUGHLY CLEAN AND DEGREASE PRIOR TO INSTALLATION.
- 4: REPLACE 2 EACH EXISTING 36"x36" RADIATOR DAMPER ASSEMBLIES AND 2 EACH EXISTING 36"x36" AIR INTAKE DAMPER ASSEMBLIES. SEE SHEET M4.
- 5: REPLACE 2 EACH EXISTING EXHAUST FAN ASSEMBLIES. SEE SHEET M4.
- 6: INSTALL OWNER FURNISHED BELT GUARD ON GEN#2.
- 7: INSTALL INSULATION BLANKETS ON EXISTING GEN#2 EXHAUST FLEXES AND RISER PIPES TO MATCH NEW GENSETS. SEE ELEVATION SHEET M2.
- 8: REPLACE EXISTING DAY TANK SUPPLY FILTER WITH NEW TRIPLE FILTER. SEE SHEET M3
- 9: MODIFY EXISTING FILTER BANK AND USED OIL HOPPER PIPING FOR FUEL POLISHING. REPLACE ALL FUEL SYSTEM HOSES AT DAY TANK AND FUEL POLISHER. SEE SHEET M3.
- 10: PROGRAM EXISTING GENSET ECU's WITH CURRENT AEA STANDARD PAYLOAD SETTINGS AND CONFIRM COORDINATION WITH EASYGEN. SEE SPECIFICATIONS.
- 11: NOT USED
- 12: REPROGRAM EASYGEN PER WSET FILE (SEE SPECIFICATIONS) AND NEW BREAKER TRIP SETTINGS (SEE SHEET E4). CONFIRM PROPER INTERACTION WITH ENGINE ECU AFTER PAYLOAD UPDATE.
- 13: REPLACE EXISTING 1/2" FUEL SUPPLY FUEL OIL SAFETY VALVE WITH NEW ON ALL THREE ENGINES.



2 M1.3 NEW WORK PLAN & NOTES
1/4"=1'-0"

THE VENTILATION WORK SHOWN THIS SHEET INCLUDING RADIATOR DAMPERS, INTAKE DAMPERS, AND EXHAUST FAN ASSEMBLIES IS TO BE PROVIDED UNDER ADDITIVE ALTERNATE #1.

ISSUED FOR CONSTRUCTION
MAY 2026

STATE OF ALASKA 49TH BRIAN C. GRAY ME 8210 REGISTERED PROFESSIONAL ENGINEER

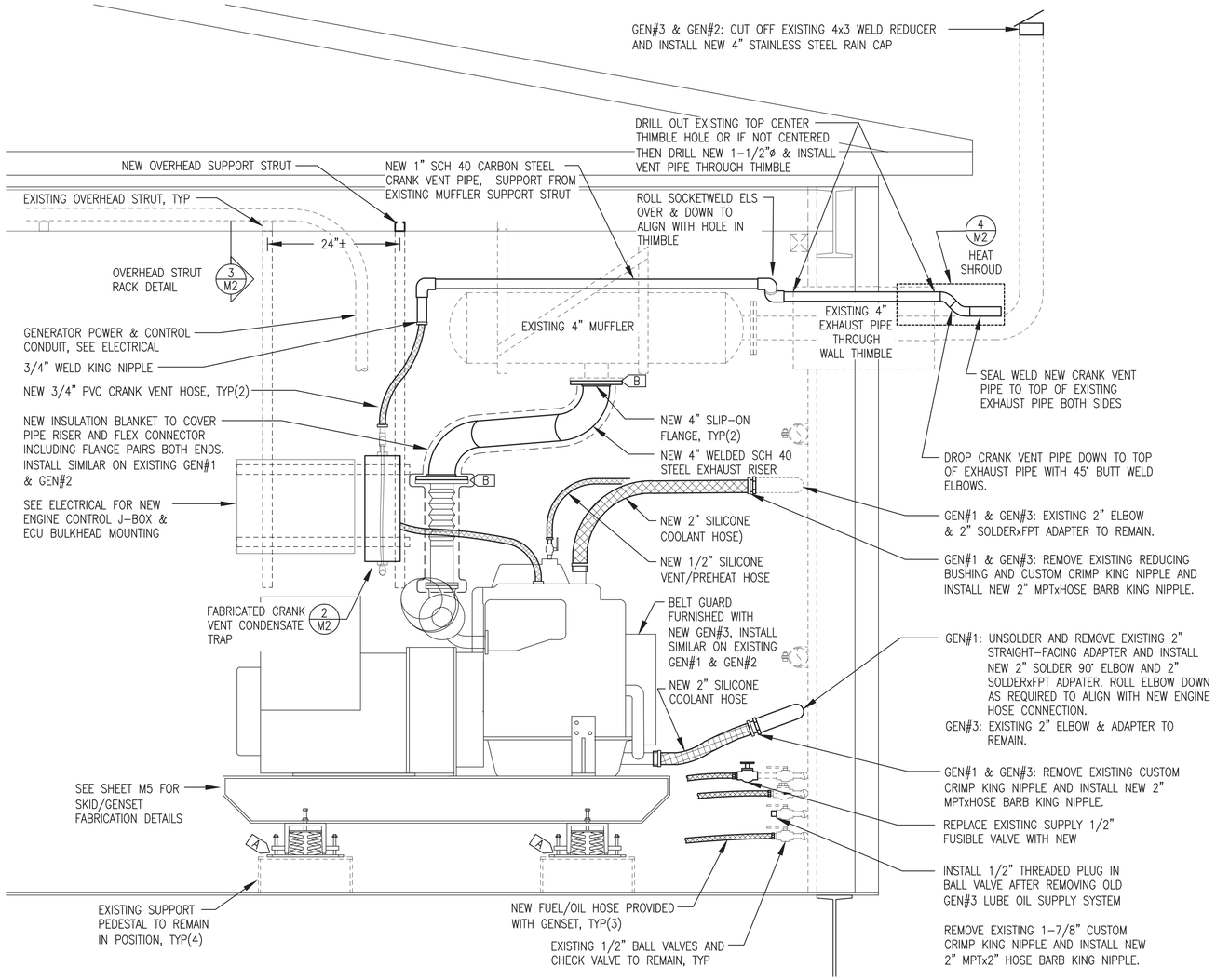
ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADES

TITLE: MECHANICAL DEMOLITION & NEW WORK PLANS

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 5/5/26
FILE NAME:STRVR DERA M	SHEET: M1.3
PROJECT NUMBER:	



1 M2 GEN#1 & GEN#3 INSTALLATION ELEVATION
1"=1'-0"

GEN#1 & GEN#3 INSTALLATION GENERAL NOTES:

1. EXISTING EQUIPMENT AND PIPING TO REMAIN IN SERVICE SHOWN WITH LIGHT DASHED LINES.
2. NEW EQUIPMENT AND PIPING TO BE INSTALLED SHOWN WITH DARK SOLID LINES UNLESS SPECIFICALLY INDICATED OTHERWISE.
3. ALL EXHAUST AND CRANK VENT PIPING SCHEDULE 40 STEEL WITH BUTT WELD JOINTS, SIZE AS INDICATED.
4. NOT ALL COOLANT PIPE, HOSE AND FITTINGS SHOWN FOR CLARITY, SEE PIPING MODIFICATION ISOMETRIC 2/M1.1 FOR ADDITIONAL DETAILS.

GEN#1 & GEN#3 INSTALLATION SPECIFIC NOTES:

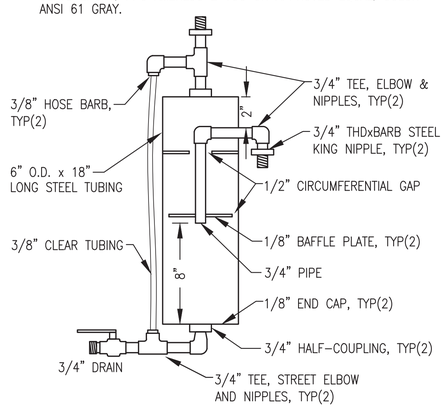
A PLACE GENERATOR ON EXISTING SUPPORT PEDESTALS AND CENTER VIBRATION ISOLATORS. DRILL NEW HOLES IN PEDESTALS AS REQUIRED. INSTALL NEW 1/2"x2" BOLTS WITH HEAVY FLAT WASHERS AND LOCK WASHERS. ADJUST SPRING VIBRATION ISOLATOR LEVELING BOLTS TO ACHIEVE A UNIFORM INSTALLATION HEIGHT OF APPROXIMATELY 5-3/4" THEN TIGHTEN LOCKING NUTS. ADJUST NUTS ON STABILIZER BOLTS TO ACHIEVE A UNIFORM CLEARANCE OF APPROXIMATELY 1/8" THEN TIGHTEN LOCKING NUTS. VERIFY UNIT MOVES FREELY ON ISOLATORS.

B AFTER ADJUSTING ISOLATORS, FABRICATE EXHAUST RISER FROM NEW FLEX TO EXISTING MUFFLER. LEAVE APPROXIMATE 1/8" GAP PRIOR TO FLANGE BOLT UP FOR THERMAL EXPANSION. INSTALL WITH NEW HIGH TEMP FLANGE GASKETS, NEW BOLT SETS, AND NEW INSULATION BLANKET AS INDICATED.

GEN#2 MODIFICATION NOTES:

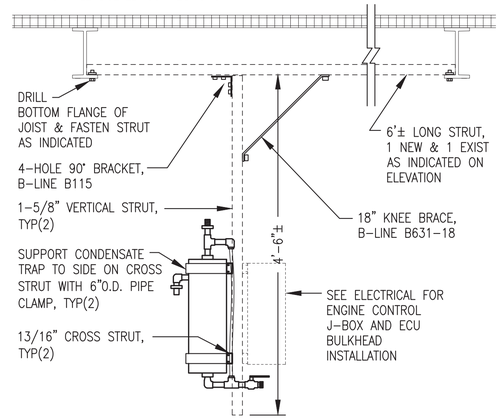
1. ON GEN #2 FURNISH AND INSTALL NEW EXHAUST INSULATION SIMILAR TO GEN#1 & GEN#3 AND NEW 1/2" FUSIBLE VALVES.
2. ON GEN #2 INSTALL NEW CONDENSATE TRAP AND MODIFY EXISTING CRANK VENT PIPING INCLUDING ROUTING THROUGH THIMBLE AND TERMINATING ON PIPE WITH HEAT SHIELD.
3. ON GEN#2 INSTALL NEW OWNER FURNISHED BELT GUARD.

NOTES:
1. ALL PIPE & FITTINGS 3/4" THREADED UNLESS INDICATED OTHERWISE.
2. UPON COMPLETION OF FABRICATION, ROUND ALL CORNERS AND SHARP EDGES. SANDBLAST OR WIRE BRUSH EXTERIOR TO REMOVE ALL SCALE, SLAG, RUST, ETC. PRIME AND TOP COAT WITH TWO COATS EPOXY, PPG AMERLOC 2 VOC OR APPROVED EQUAL, COLOR ANSI 61 GRAY.

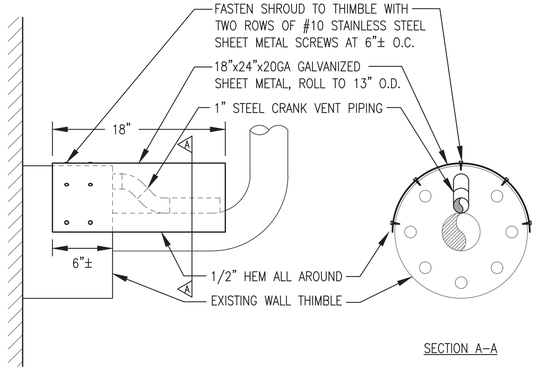


2 M2 CONDENSATE TRAP FABRICATION
NO SCALE

NOTES:
1. ONE SUPPORT SHOWN. PROVIDE TWO IDENTICAL SUPPORTS FOR EACH STRUT RACK.
2. USE 1/2" OR 3/8" HEX HEAD BOLTS, STRUT NUTS, AND LOCK WASHERS FOR ALL BOLTED CONNECTIONS.



3 M2 OVERHEAD STRUT RACK DETAIL
NO SCALE



4 M2 CRANK VENT HEAT SHROUD
NO SCALE

ISSUED FOR CONSTRUCTION
MAY 2026

STATE OF ALASKA 49TH
BRIAN C. GRAY
ME 8210
REGISTERED PROFESSIONAL ENGINEER

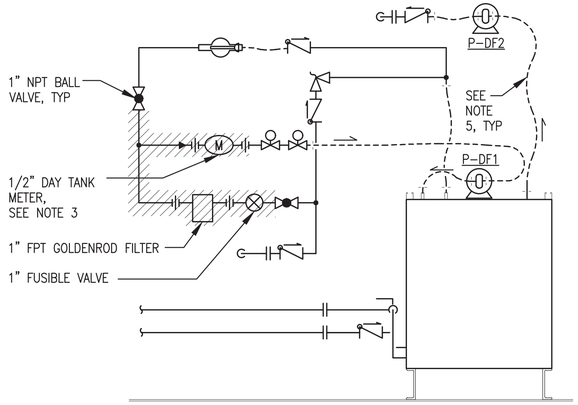
ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADE

TITLE: TYPICAL GENERATOR INSTALLATION & DETAILS

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

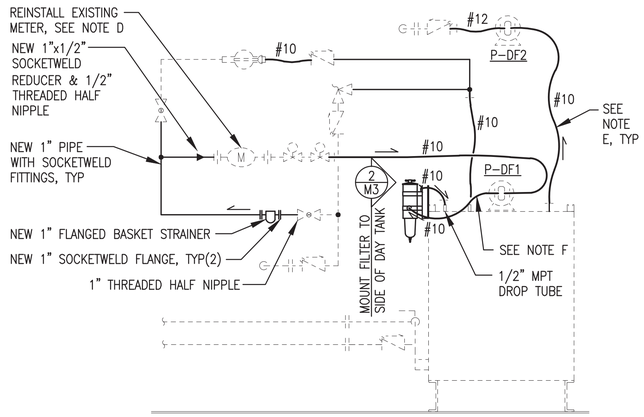
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 5/5/26
FILE NAME: STRVR DERA M	SHEET: M2
PROJECT NUMBER:	



DEMOLITION

DAY TANK PIPING DEMOLITION NOTES:

1. ALL DAY TANK PIPING NOT SHOWN FOR CLARITY. SEE 2007 RECORD DRAWINGS FOR COMPLETE INSTALLATION
2. ALL EXISTING FUEL SYSTEM EQUIPMENT AND PIPING TO BE REMOVED SHOWN HATCHED.
3. CAREFULLY REMOVE DAY TANK METER WITH INTEGRAL 1/2" THREADED UNIONS, PROTECT FROM DAMAGE, AND SAVE FOR REINSTALLATION.
4. PIPING MODIFICATIONS WILL TEMPORARILY DISRUPT FUEL SUPPLY TO THE POWER PLANT. PRIOR TO DEMOLITION COORDINATE WITH THE PLANT OPERATOR TO ENSURE ADEQUATE FUEL SUPPLY TO KEEP POWER ON.
5. REPLACE ALL EXISTING HOSES (SHOWN DASHED) WITH NEW. SAVE ALL JIC HOSE END FITTINGS AND THREADED ADAPTERS FOR REUSE UNLESS DAMAGED.



NEW WORK

DAY TANK PIPING NEW WORK NOTES

A. ALL DAY TANK PIPING NOT SHOWN FOR CLARITY. SEE 2007 RECORD DRAWINGS FOR COMPLETE INSTALLATION.

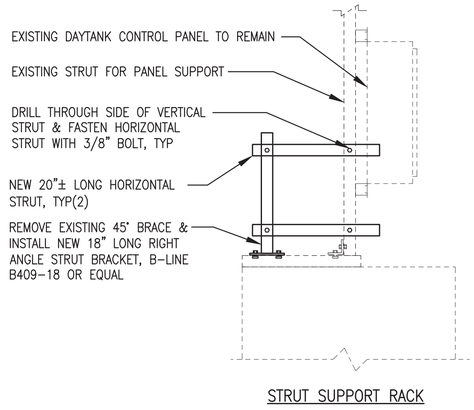
B. ALL EXISTING STEEL FUEL PIPING AND EQUIPMENT SHOWN WITH LIGHT-DASHED LINES. ALL NEW FUEL SYSTEM PIPING & EQUIPMENT SHWON WITH DARK-SOLID LINES.

C. ALL NEW PIPING 1" SCH 80 STEEL. INSTALL WITH SOCKET WELD CONNECTIONS EXCEPT FOR THREADED CONNECTIONS TO VALVES AND EQUIPMENT AS INDICATED. CAREFULLY INSPECT ALL NEW AND EXISTING THREADED ENDS. CLEAN AND RECONDITION THREADS AS REQUIRED. THOROUGHLY COAT MALE PIPE ENDS WITH TEFLON TAPE AND TEFLON PIPE JOINT COMPOUND PRIOR TO ASSEMBLING.

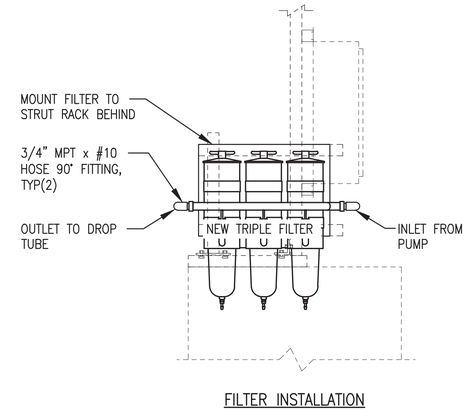
D. THOROUGHLY INSPECT AND CLEAN METER CONNECTION UNIONS AND CAREFULLY REINSTALL EXISTING 3/4" ELSTER MODEL 20 METER WITH NEW FIBER WASHERS IN THREADED CONNECTIONS TO ELIMINATE FUEL DRIPS.

E. ALL NEW FUEL HOSES SHOWN WITH DARK-SOLID LINES, HOSE SIZE AS INDICATED. REUSE EXISTING JIC HOSE END FITTINGS AND THREADED ADAPTERS UNLESS DAMAGED OR SPECIFICALLY INDICATED OTHERWISE. PROVIDE THE ASSORTMENT OF SPARE JIC HOSE END FITTINGS AND THREADED ADAPTERS AS INDICATED IN FUEL HOSE FITTINGS SCHEDULE THIS SHEET. NOTE: THE HOSE & FITTINGS QUANTITIES ON THE SCHEDULE ARE THE ESTIMATED TOTAL REQUIRED FOR ALL FOUR MKEC DERA SITES.

F. NEW #10 HOSE, TYP(2), 3/4" MPT ENDS AT FILTER & 1/2" FPT ENDS AT DROP TUBE & PUMP.



STRUT SUPPORT RACK



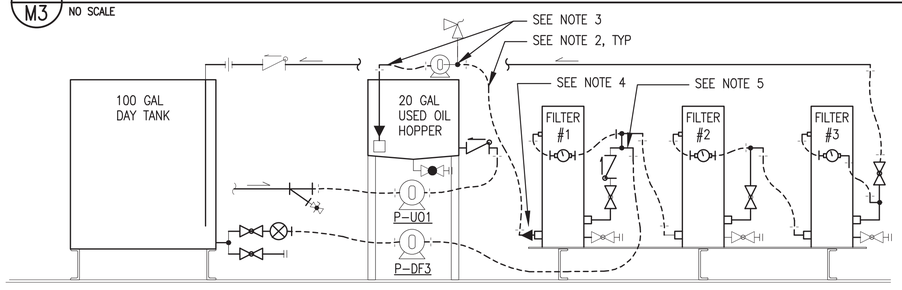
FILTER INSTALLATION

2 M3 NEW TRIPLE FILTER INSTALLATION ON DAY TANK LEFT SIDE

NO SCALE

1 M3 DAY TANK PIPING MODIFICATIONS

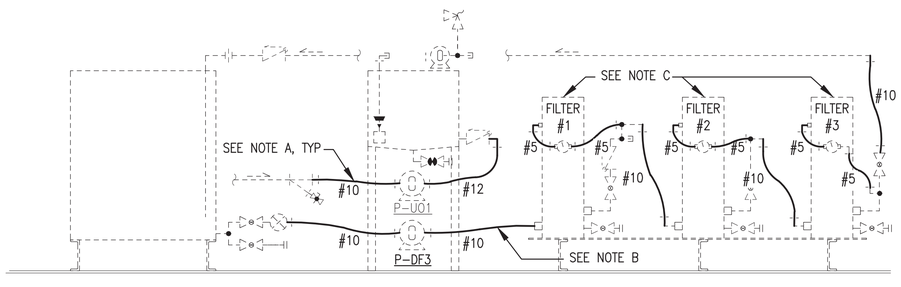
NO SCALE



USED OIL BLENDER DEMOLITION

USED OIL BLENDER PIPING DEMOLITION NOTES:

1. ALL PIPING NOT SHOWN FOR CLARITY. SEE 2007 RECORD DRAWINGS FOR COMPLETE INSTALLATION
2. REMOVE ALL EXISTING HOSES (SHOWN DASHED). SAVE ALL JIC HOSE END FITTINGS AND THREADED ADAPTERS FOR REUSE UNLESS DAMAGED OR SPECIFICALLY INDICATED OTHERWISE.
3. INSTALL 1/8" OR 1/4" NPT PIPE PLUG AFTER REMOVING HOSE. PROVIDE BOTH SIZE PLUGS AND FIELD VERIFY.
4. REMOVE 3/4" HEX BUSHING AFTER REMOVING HOSE
5. INSTALL 3/4" NPT PIPE PLUG AFTER REMOVING HOSE.



FUEL POLISHER NEW WORK

FUEL POLISHER NEW WORK NOTES

A. ALL EXISTING STEEL FUEL PIPING AND EQUIPMENT SHOWN WITH LIGHT-DASHED LINES. ALL NEW HOSES SHOWN WITH DARK-SOLID LINES, HOSE SIZE AS INDICATED. REUSE EXISTING JIC HOSE END FITTINGS AND THREADED ADAPTERS UNLESS DAMAGED OR SPECIFICALLY INDICATED OTHERWISE. PROVIDE THE ASSORTMENT OF SPARE JIC HOSE END FITTINGS AND THREADED ADAPTERS AS INDICATED IN FUEL HOSE FITTINGS SCHEDULE THIS SHEET. NOTE: THE HOSE & FITTINGS QUANTITIES ON THE SCHEDULE ARE THE ESTIMATED TOTAL REQUIRED FOR ALL FOUR MKEC DERA SITES.

B. NEW #10 FUEL HOSE TO CONNECT PUMP P-DF3 DISCHARGE DIRECTLY TO FILTER #1 INLET. PROVIDE NPT SWIVEL ENDS, 1/2" MALE THREAD AT PUMP P-DF3 CONNECTION AND 3/4" MALE THREAD AT FILTER #1 CONNECTION.

C. REPLACE ALL THREE FILTER ELEMENTS AND PROVIDE ONE SET OF SPARES. SEE EQUIPMENT SCHEDULE FOR DESIGNATED REPLACEMENT FILTER ELEMENT MODEL NUMBERS. INSTALL NEW GASKET ON EACH FILTER HOUSING LID AFTER ELEMENT REPLACEMENT, 13.5" O.D. FULL-FACED 1/4" BUNA-N RUBBER GASKET (ALASKA RUBBER OR EQUAL) ON 8" 150# ANSI FLAT-FACED FLANGE PATTERN FILTER LIDS.

3 M3 USED OIL BLENDER PIPING MODIFICATIONS FOR CONVERSION TO FUEL POLISHER

NO SCALE

DAY TANK & FUEL POLISHER HOSE & FITTINGS SCHEDULE:		
FUEL HOSE - SPECIFIED PART NUMBERS ARE WEATHERHEAD H569, EQUIVALENT EQUALS ACCEPTABLE. ALL QUANTITIES LINEAL FEET.		
H56905 1/4 " I.D. (#5) Hose	30	ft.
H56910 1/2" I.D. (#10) Hose	70	ft.
STEEL HOSE SWIVEL ENDS - SPECIFIED PART NUMBERS ARE WEATHERHEAD 247 'N' SERIES FIELD ATTACHABLE TO MATCH HOSE ABOVE, EQUIVALENT EQUALS ACCEPTABLE.		
24705N-605 JIC 37° Female Swivel 1/4" x 5/16"	4	ea.
24710N-608 JIC 37° Female Swivel 1/2" x 1/2"	4	ea.
24712N-610 JIC 37° Female Swivel 1/2" x 5/8"	4	ea.
24705N-665 JIC 37° Female Swivel 90° elbow 1/4" x 5/16"	4	ea.
24710N-668 JIC 37° Female Swivel 90° elbow 1/2" x 1/2"	8	ea.
24710N-670 JIC 37° Female Swivel 90°elbow 1/2" x 5/8"	16	ea.
24705N-685 JIC 37° Female Swivel 45° elbow 1/4" x 5/16"	4	ea.
24710N-690 JIC 37° Female Swivel 45° elbow 1/2" x 5/8"	4	ea.
STEEL FITTING ADAPTERS - SPECIFIED PART NUMBERS ARE WEATHERHEAD, EQUIVALENT EQUALS ACCEPTABLE. ELECTROPLATED ZINC FINISH UNLESS NOTED OTHERWISE.		
C5205x5x4 JIC 37° Flare Male Connector 5/16" x 1/4"	4	ea.
C5205x10x6 JIC 37° Flare Male Connector 5/8" x 3/8"	4	ea.
C5205x10 JIC 37° Flare Male Connector 5/8" x 1/2"	8	ea.
C5205x10x12 JIC 37° Flare Male Connector 5/8" x 3/4"	16	ea.

ISSUED FOR CONSTRUCTION MAY 2026

STATE OF ALASKA 49TH BRIAN C. GRAY ME 8210 REGISTERED PROFESSIONAL ENGINEER

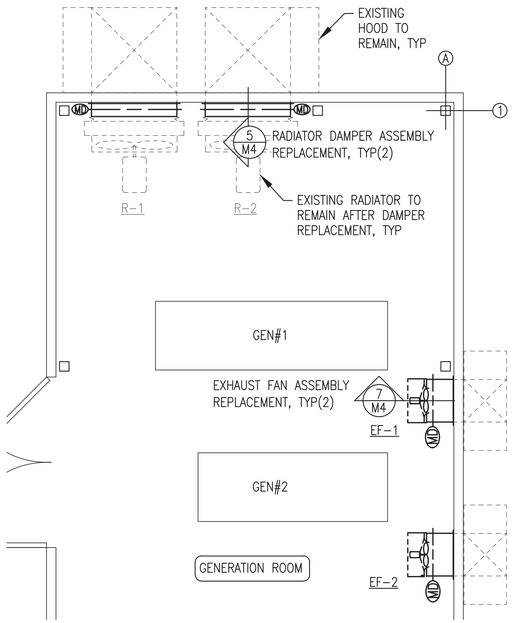
ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADES

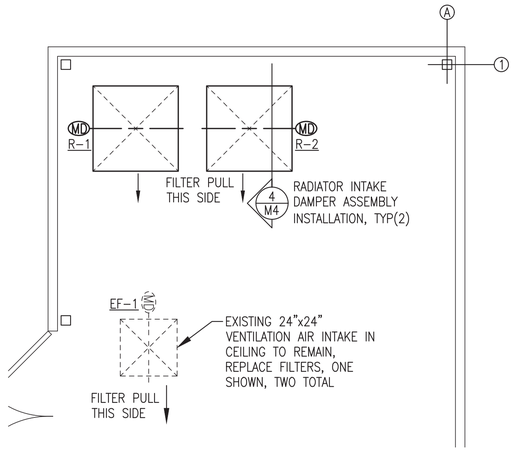
TITLE: DAY TANK & USED OIL BLENDER PIPING MODIFICATIONS

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

DRAWN BY: JTD | SCALE: AS NOTED
DESIGNED BY: BCG | DATE: 5/5/26
FILE NAME: STRVR DERA M | SHEET: M3
PROJECT NUMBER:



FLOOR PLAN

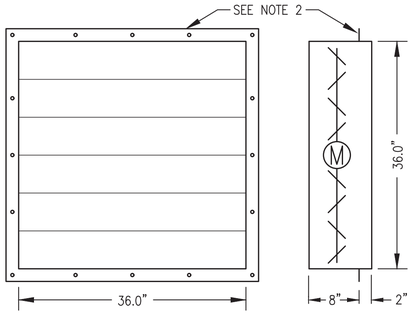


REFECTED CEILING PLAN

INTAKE AIR FILTER ELEMENT REPLACEMENT NOTES:

1. PROVIDE ONE COMPLETE SET OF FILTERS FOR INSTALLATION IN THE NEW RADIATOR INTAKES, A TOTAL OF 8 EACH 18"x18"x2" MERV 8 FILTERS.
2. PROVIDE ONE COMPLETE SET OF FILTERS FOR INSTALLATION IN THE EXISTING VENTILATION INTAKES, A TOTAL OF 2 EACH 24"x24"x1" MERV 8 FILTERS.

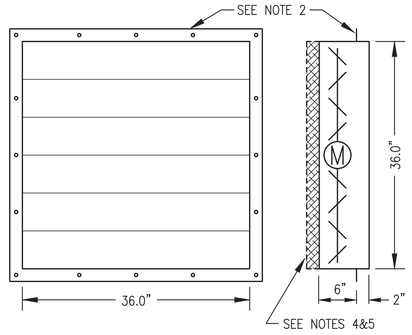
1 M4 VENTILATION SYSTEM UPGRADE PLANS
3/8"=1'-0"



NOTES:

1. FABRICATE TWO 36"x36" RADIATOR DAMPER ASSEMBLIES.
2. PROVIDE 2" WIDE MOUNTING FLANGE ALL AROUND WITH 5/16" HOLES AT 9" O.C.
3. PROVIDE MIN 3" DAMPER ROD EXTENSION ON ONE SIDE OF EACH OF THE TWO ASSEMBLIES, ONE FACING RIGHT AND ONE FACING LEFT. FABRICATE SHEET METAL STAND-OFF BRACKET TO FULLY SUPPORT THE ACTUATOR FROM THE DAMPER FRAME.
4. SEE PLAN VIEW FOR DAMPER ACTUATOR ORIENTATION.

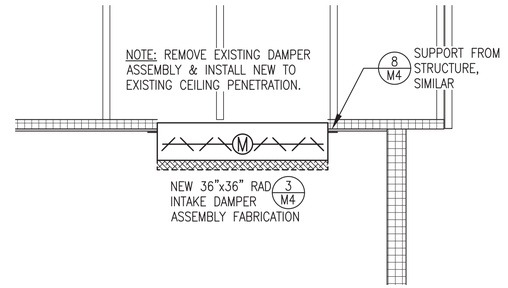
2 M4 RADIATOR DAMPER ASSEMBLY FABRICATION
1"=1'-0"



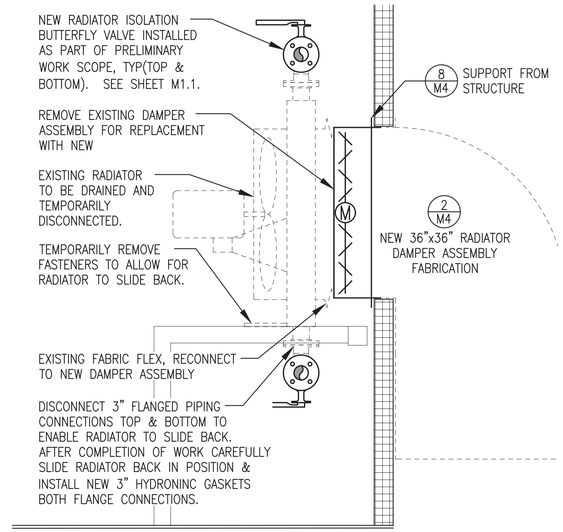
NOTES:

1. FABRICATE TWO 36"x36" RADIATOR INTAKE DAMPER ASSEMBLIES.
2. PROVIDE 2" WIDE MOUNTING FLANGE ALL AROUND WITH 5/16" HOLES AT 9" O.C.
3. PROVIDE MIN 3" DAMPER ROD EXTENSION ON ONE SIDE OF EACH OF THE TWO ASSEMBLIES, ONE FACING RIGHT AND ONE FACING LEFT. FABRICATE SHEET METAL STAND-OFF BRACKET TO FULLY SUPPORT THE ACTUATOR FROM THE DAMPER FRAME.
4. INSTALL FRAME FOR REMOVABLE 24"x24"x2" MERV 8 FILTERS. FABRICATE FROM "C" CHANNEL THREE SIDES WITH LATCHING HINGED COVER ON BOTTOM TO ALLOW FILTERS TO SLIDE OUT FOR REMOVAL.
5. SEE PLAN VIEW FOR DAMPER ACTUATOR AND FILTER PULL ORIENTATION.

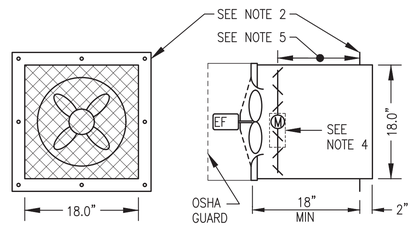
3 M4 RADIATOR INTAKE DAMPER ASSEMBLY FABRICATION
1"=1'-0"



4 M4 RADIATOR INTAKE DAMPER ASSEMBLY REPLACEMENT
3/4"=1'-0"



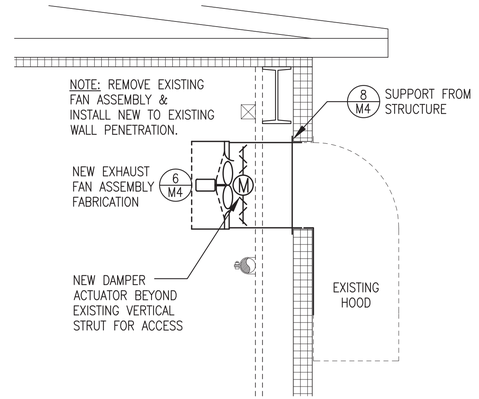
5 M4 RADIATOR DAMPER ASSEMBLY REPLACEMENT
3/4"=1'-0"



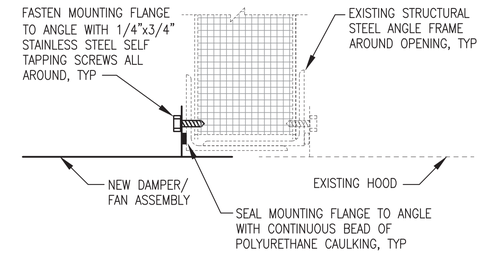
NOTES:

1. FABRICATE TWO IDENTICAL ASSEMBLIES. ASSEMBLE COMPLETE WITH FAN AND DAMPER MOUNTED AND SEALED TO DUCT.
2. PROVIDE 2" WIDE MOUNTING FLANGE ALL AROUND WITH 5/16" HOLES AT 10" O.C.
3. PROVIDE MIN 3" DAMPER ROD EXTENSION ON THE SAME SIDE FOR BOTH ASSEMBLIES.
4. FABRICATE SHEET METAL STAND-OFF BRACKET TO FULLY SUPPORT THE ACTUATOR. ORIENT ACTUATOR VERTICALLY AS INDICATED
5. PROVIDE A MINIMUM OF 12" CLEAR BETWEEN CENTER OF DAMPER ROD AND FACE OF MOUNTING FLANGE
6. SEE PLAN VIEW FOR DAMPER ACTUATOR ORIENTATION

6 M4 EXHAUST FAN ASSEMBLY FABRICATION
1"=1'-0"



7 M4 EXHAUST FAN ASSEMBLY REPLACEMENT
3/4"=1'-0"



NOTE: WALL PENETRATION SHOWN, CEILING SIMILAR EXCEPT NO HOOD.

8 M4 DAMPER/FAN SUPPORT FROM STRUCTURE
NO SCALE

ALL WORK SHOWN THIS SHEET IS TO BE PROVIDED UNDER ADDITIVE ALTERNATE #1

ISSUED FOR CONSTRUCTION MAY 2026

STATE OF ALASKA 49TH — BRIAN C. GRAY ME 8210 — REGISTERED PROFESSIONAL ENGINEER

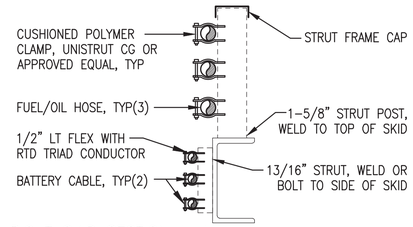
ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADES

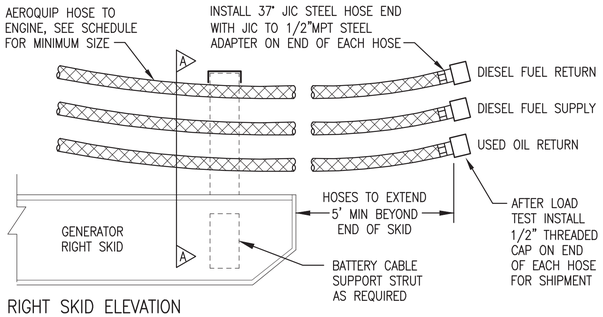
TITLE: VENTILATION SYSTEM UPGRADE PLANS & DETAILS

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

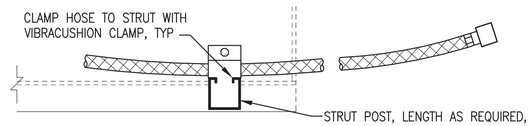
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 5/5/26
FILE NAME: STRVR DERA M	SHEET: M4
PROJECT NUMBER:	



RIGHT SKID SECTION A–A

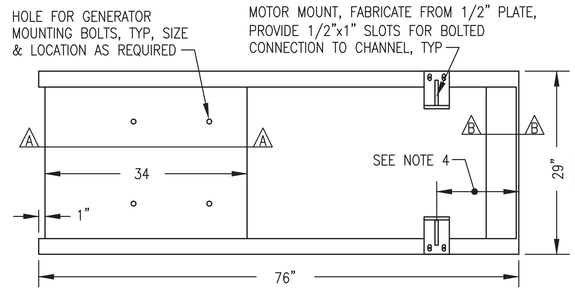


RIGHT SKID ELEVATION

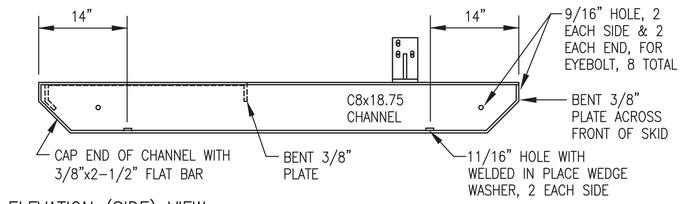


RIGHT SKID PLAN

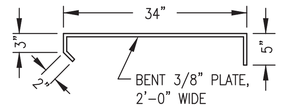
1 M5 FUEL & OIL HOSE TERMINATIONS
NO SCALE



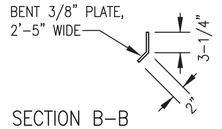
PLAN (TOP) VIEW



ELEVATION (SIDE) VIEW



SECTION A–A

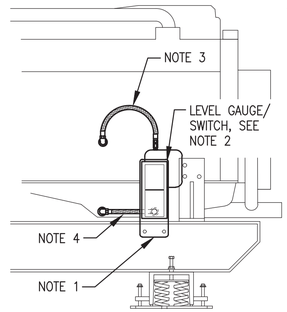


SECTION B–B

NOTES:

1) FABRICATE FROM ASTM A–36 STEEL. BEND PLATES & CUT ENDS OF CHANNELS AT 90° & 45° AS SHOWN.
2) EXCEPT WHERE INDICATED AS BOLTED MAKE ALL CONNECTIONS WITH CONTINUOUS WELDS (FILLET OR FULL–PENETRATION GROOVE AS REQUIRED) IN ACCORDANCE WITH CURRENT AWS STANDARD CODE.
3) ROUND ALL CORNERS & GRIND WELDS SMOOTH AFTER FABRICATION. PAINT TO MATCH ENGINE–GENERATOR.
4) PLACE UNIT ON SKID SO THAT THE EXHAUST RISER CENTERLINE IS 39" FROM THE FRONT OF THE SKID.

2 M5 GEN#3 (JOHN DEERE 4045) SKID DESIGN
NO SCALE



NOTES:

1) 1/4" STEEL SUPPORT PLATE PRE–DRILLED TO MATCH GAUGE/SWITCH MOUNTS AND BOTTOM HOSE ENTRANCE. BOLT TO INSIDE (BACK) OF CHANNEL SKID AT HEIGHT AS REQUIRED TO CENTER GAUGE AT NORMAL FULL OIL LEVEL.
2) MOUNT OIL LEVEL GAUGE/SWITCH TO STEEL SUPPORT PLATE WITH RUBBER SHOCK MOUNTS. ADJUST SWITCH CONTACTS TO 1/2" ABOVE AND BELOW NORMAL FULL LEVEL. PAINT MARK A RED LINE AT BOTH SWITCH LEVELS.
3) CONNECT TOP (VENT) PORT TO ENGINE CRANK CASE WITH #8 HOSE WITH 1/2" OR 3/8" NPT JIC SWIVEL ENDS. ROUTE UPPER HOSE WITH HIGH POINT 4" MIN ABOVE TOP OF GAUGE.
4) CONNECT BOTTOM PORT TO ENGINE OIL PAN WITH #8 HOSE WITH 1/2" OR 3/8" NPT JIC SWIVEL ENDS. DO NOT TEE INTO OIL DRAIN LINE. ROUTE LOWER HOSE BACK THROUGH PRE–DRILLED HOLE IN STEEL PLATE.

3 M5 OIL LEVEL GAUGE/SWITCH INSTALLATION
NO SCALE

ALL SHOP FABRICATION WORK SHOWN THIS SHEET IS INCLUDED AS PART OF THE OWNER FURNISHED ENGINE-GENERATORS AND IS NOT PART OF THIS CONTRACT.

ISSUED FOR CONSTRUCTION MAY 2026

STATE OF ALASKA 49TH
BRIAN C. GRAY ME 8210
REGISTERED PROFESSIONAL ENGINEER

ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADES

TITLE: GENERATOR FABRICATION DETAILS

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

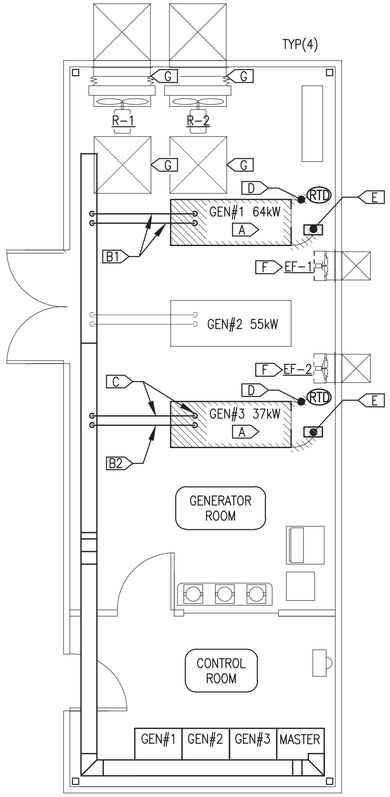
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 5/5/26
FILE NAME: STRVR DERA M	SHEET: M5
PROJECT NUMBER:	

DEMOLITION GENERAL NOTES:

1. PRIOR TO BEGINNING DEMOLITION WORK, PERFORM ALL ENGINE COOLING SYSTEM PRELIMINARY WORK. SEE SHEET M1
2. THIS PLANT PROVIDES PRIME POWER TO THE COMMUNITY. KEEP OUTAGES TO A MINIMUM AND COORDINATE ALL REQUIRED OUTAGES WITH THE UTILITY.
3. ALL ITEMS TO REMAIN UNLESS SPECIFICALLY INDICATED FOR REMOVAL. AREAS CONTAINING EXISTING EQUIPMENT TO BE REMOVED INDICATED BY HATCHING.
4. ONLY MAJOR DEMOLITION TASKS AND AREAS SHOWN THIS SHEET. REMOVAL OF OTHER ELECTRICAL OR CONTROL COMPONENTS AND DEVICES AS REQUIRED FOR MISCELLANEOUS MODIFICATIONS & UPGRADES SHOWN WITH NEW WORK.
5. ENSURE ALL EQUIPMENT & CIRCUITS TO BE REMOVED ARE DE-ENERGIZED PRIOR TO BEGINNING DEMOLITION. LOCK & TAG OUT ALL AFFECTED CIRCUIT BREAKERS & DISCONNECTS.
6. TAKE ALL PRECAUTIONS TO MINIMIZE DAMAGE TO ELECTRICAL EQUIPMENT AND CONDUCTORS BEING SALVAGED FOR REUSE. TURN ALL REMOVED MATERIALS AND EQUIPMENT OVER TO THE UTILITY FOR FINAL DISPOSITION IF NOT REUSED.

DEMOLITION SPECIFIC NOTES:

- A: GENSET TO BE REMOVED IN ITS ENTIRETY INCLUDING BATTERIES AND BATTERY CABLES.
- B1: PRIOR TO BEGINNING GEN#1 DEMOLITION CAREFULLY DISCONNECT POWER CONDUCTORS FROM TERMINALS IN GENERATOR ENCLOSURE. PULL CONDUCTORS BACK THROUGH EXISTING CONDUITS INTO WIREWAY, INSPECT FOR WEAR OR DAMAGE, TAPE ENDS, AND TEMPORARILY COIL IN WIREWAY. EXISTING 2-1/2" EMT IS TO REMAIN IN PLACE FOR USE WITH NEW GENERATOR. DEMOLISH EXISTING LIQUID TIGHT FLEX RISERS AND MOGULS BEYOND EMT.
- B2: PRIOR TO BEGINNING GEN#3 DEMOLITION REMOVE EXISTING #3 POWER CONDUCTORS BETWEEN GENSET AND SWITCHGEAR IN THEIR ENTIRETY. EXISTING 2" EMT IS TO REMAIN IN PLACE FOR USE WITH NEW GENERATOR. DEMOLISH EXISTING LIQUID TIGHT FLEX RISERS AND MOGULS BEYOND EMT.
- C: PRIOR TO BEGINNING GEN#1 AND GEN#3 DEMOLITION CAREFULLY DISCONNECT CONTROL CONDUCTORS FROM TERMINALS IN GENERATOR ENCLOSURE. PULL CONTROL CONDUCTORS BACK THROUGH EXISTING CONDUIT INTO WIREWAY, INSPECT FOR WEAR OR DAMAGE, TAPE ENDS, AND TEMPORARILY COIL IN WIREWAY. DEMOLISH EXISTING MOGUL LB AT GENERATOR AND LT FLEX RISER.
- D: DISCONNECT EXISTING TRIAD FROM COOLANT RETURN RTD TO GENERATOR ENCLOSURE TERMINAL STRIP. RTD TO REMAIN IN PLACE FOR REUSE. TRIAD FROM GENERATOR TO SWITCHGEAR TO REMAIN FOR RECONNECTION TO NEW J-BOX.
- E: DEMOLISH EXISTING BATTERY CHARGER (WIRING TO REMAIN).
- F: DISCONNECT FAN POWER CONDUCTORS, COIL IN SAFE LOCATION, LOCKOUT BREAKER, AND DEMOLISH EXISTING LINE VOLTAGE THERMOSTAT IN PREPARATION FOR REPLACEMENT OF FAN ASSEMBLY.
- G: DISCONNECT MOTORIZED DAMPER ACTUATOR POWER CONDUCTORS, COIL IN SAFE LOCATION, AND LOCKOUT BREAKER IN PREPARATION FOR REPLACEMENT OF DAMPER ASSEMBLY.



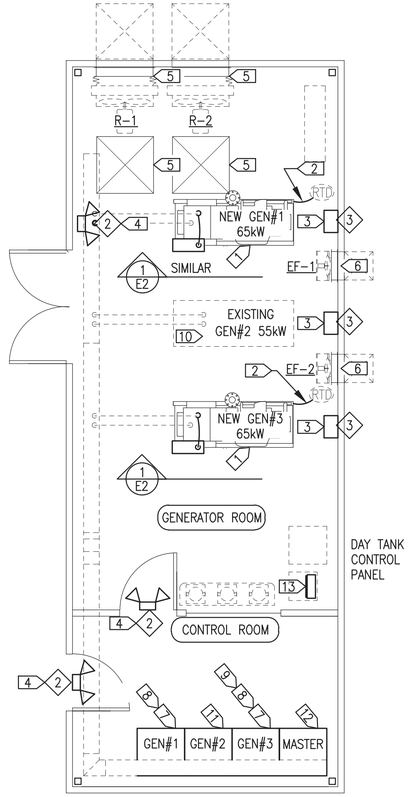
1 E1 DEMOLITION PLAN & NOTES
1/4"=1'-0"

NEW WORK GENERAL NOTES:

1. EXISTING EQUIPMENT TO REMAIN IN SERVICE SHOWN WITH LIGHT DASHED LINES.
2. NEW EQUIPMENT TO BE INSTALLED SHOWN WITH DARK SOLID LINES.
3. RECONNECT EXISTING POWER & CONTROL CONDUCTORS & ASSOCIATED CONDUIT & FITTINGS TO NEW GENSETS AS INDICATED.

NEW WORK SPECIFIC NOTES:

1. INSTALL NEW GENSET INCLUDING ENGINE WIRING J-BOX, BATTERIES, AND CABLES. RECONNECT EXISTING AND/OR NEW POWER & CONTROL WIRING. SEE ELEVATION 1/E2.
2. ROUTE NEW SHIELDED TRIAD FROM EXISTING COOLANT RETURN RTD TO NEW ENGINE CONTROL J-BOX. SEE ELEVATION 1/E2.
3. REPLACE OLD 12V BATTERY CHARGER WITH NEW. SEE DETAIL 5/E2.
4. REPLACE EXISTING EMERGENCY EXIT LIGHT FIXTURE WITH NEW AND RECONNECT TO EXISTING CIRCUITS.
5. RECONNECT EXISTING CONDUCTORS TO NEW MOTORIZED DAMPER ACTUATORS AND UNLOCK BREAKERS.
6. RECONNECT NEW FAN TO EXISTING CONDUCTORS. REMOVE OLD THERMOSTAT AND INSTALL NEW DIGITAL THERMOSTAT AND WIRING. SEE WIRING DIAGRAM 3/E1.
7. MODIFY GEN#1 & GEN#3 SWITCHGEAR SECTIONS TO ACCOMMODATE NEW ELECTRONIC ENGINES. REPLACE GEN#3 CT'S AND BREAKER TRIP PLUG. SEE SHEETS E4 & E5.
8. INSTALL LATEST FIRMWARE ON EXISTING EASYGEN AND REPROGRAM FOR NEW ELECTRONICALLY CONTROLLED ENGINE PER WSET FILE IN SPECIFICATIONS. CONFIRM PROPER INTERACTION WITH ENGINE ECU. REVISE BREAKER TRIP SETTINGS PER SHEET E4.
9. REMOVE EXISTING "37 KW" NAMEPLATE FROM FRONT OF DOOR AND INSTALL NEW "100 KW" ENGRAVED NAMEPLATE IN SAME LOCATION. SIZE 1"x4". BLACK FACE WITH WHITE LETTERS.
10. PROGRAM EXISTING GENSET ECU's WITH CURRENT AEA STANDARD PAYLOAD SETTINGS. SEE SPECIFICATIONS.
11. INSTALL LATEST FIRMWARE ON EXISTING EASYGEN AND CONFIRM PROPER INTERACTION WITH ENGINE ECU. REVISE BREAKER TRIP SETTINGS PER SHEET E4.
12. CONFIRM SWITCHGEAR INTERNET CONNECTIVITY UPON START OF WORK. CONTACT ENGINEER IF SWITCHGEAR NOT CONNECTED TO INTERNET.
13. MAKE MINOR MODIFICATIONS TO USED OIL BLENDER CONTROL PANEL TO CONVERT TO FUEL POLISHING FUNCTION. SEE SCHEMATIC 2/E2.
14. INSTALL NEW ENCLOSURE LIGHTS AND MISCELLANEOUS DEVICES AND REVISE SWITCHGEAR CONTROL POWER WIRING. SEE SHEET E6 AND SPECIFICATIONS.
15. UNDER ADDITIVE ALTERNATE MAKE UPGRADES TO SWITCHGEAR INCLUDING: REMOVE OBSOLETE DEVICES, INSTALL NEW DEVICES, MAKE MINOR MODIFICATIONS TO WIRING, INSTALL NEW SCADA SYSTEM, TEST AND COMMISSION SYSTEM. SEE SPECIFICATIONS.



14 15 ALL SWITCHGEAR SECTIONS

2 E1 NEW WORK PLAN & NOTES
1/4"=1'-0"

ELECTRICAL EQUIPMENT SCHEDULE

SYMBOL	SERVICE	DESCRIPTION	MANUFACTURER/MODEL
1	DIGITAL THERMOSTAT	MULTIPLE OUTPUT MODULATING DIGITAL THERMOSTAT	HONEYWELL TB7980B
2	EMERGENCY/ EXIT LIGHT COMBO	WHITE PLASTIC ENCLOSURE, RED EXIT SIGN, 277/120V INPUT, DUAL 1.5W 9.6V LED LAMPS. OPTIONAL HIGH OUTPUT NI-CAD BATTERY	LITHONIA LHQM LED R HO
3	BATTERY CHARGER	12/24-VOLT SOLID STATE 20-AMP AUTO-EQUALIZING BATTERY CHARGER FOR 120 VAC INPUT, WITH OPTIONAL HIGH/LOW VOLTAGE, AC POWER FAILURE, & REMOTE SUMMARY ALARM RELAYS	SENS NRG22-20-RCLS OR LEMARCHE ECSR-40/20-12/24V-AV1

ENGINE GENERATOR SCHEDULE

GENSET	DESCRIPTION
GEN #1 (NEW)	ENGINE – 99 HP, 65 EKW PRIME, JOHN DEERE 4045TFM85, TIER 3 MARINE. 12 VDC STARTING & CONTROL. GENERATOR – MINIMUM 90 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UCI274C.
GEN #2 (EXISTING)	ENGINE – 99 HP, 65 EKW PRIME (DE-RATED TO 55kW), JOHN DEERE 4045TFM75, TIER 2 MARINE, 12 VDC, S/N SE4045Z006612. GENERATOR – MINIMUM 55 KW CONTINUOUS AT 105°C RISE, MARATHON MAGNAPLUS 362PSL1604 S/N MT-0205504-1123
GEN #3 (NEW)	ENGINE – 99 HP, 65 EKW PRIME, JOHN DEERE 4045TFM85, TIER 3 MARINE. 12 VDC STARTING & CONTROL. GENERATOR – MINIMUM 90 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UCI274C.

ELECTRICAL CONDUCTOR SCHEDULE

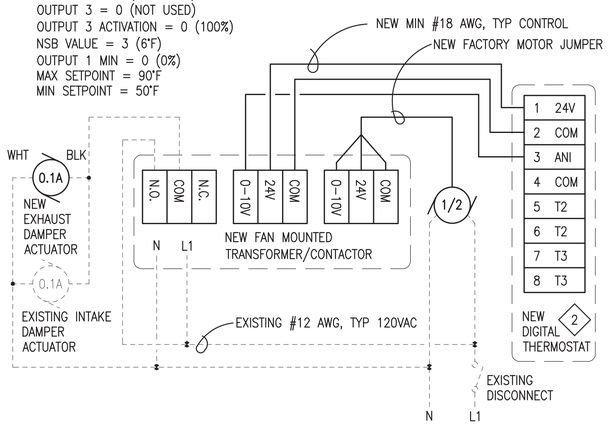
SERVICE/FUNCTION	DESCRIPTION	MFR.	NOTES:
GENERATOR 480V POWER LEADS	HIGH TEMPERATURE, EXTRA FLEXIBLE CABLE, TIN COATED COPPER CONDUCTOR. THERMOSET EPDM INSULATION, UL 3340/3374, MINIMUM 600V, LISTED 150°C FOR NON-FLEXING	COBRA	TERMINATE WITH COPPER COMPRESSION LUGS RATED FOR THE FULL AMPACITY OF THE CABLE AT 150°C.
GENERAL USE CONDUCTORS	CLASS B CONCENTRIC STRANDED, SOFT DRAWN COPPER. TYPE XHHW INSULATION, 600V AND 75C RATED.		
SHIELDED/TWISTED INSTRUMENT CONDUCTORS	SINGLE TRIAD, #18 AWG STRANDED TINNED COPPER CONDUCTORS, 300V PE INSULATION, 100% COVERAGE ALUMINUM FOIL-POLYESTER TAPE SHIELD WITH STRANDED TINNED COPPER DRAIN WIRE & PVC OUTER JACKET	BELDEN 9365	GROUND SHIELD DRAIN WIRE AT PANEL END ONLY.
SWITCHGEAR CANBUS CONDUCTOR	CLASS 2 THIN #22 & #24 PAIRED AWG STRANDED TINNED COPPER CONDUCTORS, 300V FRFPE INSULATION, 100% INDIVIDUAL PAIR ALUMINUM FOIL-POLYESTER TAPE SHIELD WITH OVERALL 65% STRANDED TINNED COPPER DRAIN WIRE & PVC OUTER JACKET	BELDEN 3084A	

COLOR CODING – UNLESS SPECIFICALLY INDICATED OTHERWISE COLOR CODE CONDUCTORS AS FOLLOWS:
- 480-VOLT POWER CONDUCTORS
  - PHASE A – BROWN
  - PHASE B – ORANGE
  - PHASE C – YELLOW
  - NEUTRAL – GRAY
- 120/208-VOLT POWER CONDUCTORS
  - PHASE A – BLACK
  - PHASE B – RED
  - PHASE C – BLUE
  - NEUTRAL – WHITE
- 24 VOLT DC CONDUCTORS
  - +24VDC – RED
  - -24VDC – BLACK

CONTROL & INSTRUMENT CONDUCTORS COLOR CODED PER MANUFACTURER'S STANDARD

NOTES:
1) GROUNDING – PROVIDE A SEPARATE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH RACEWAY. DO NOT USE THE CONDUIT AS AN EQUIPMENT GROUNDING CONDUCTOR. EQUIPMENT GROUNDING CONDUCTORS SHALL BE OF THE SAME TYPE AS THE PHASE CONDUCTORS AND SHALL BE SIZED AS INDICATED ON THE DRAWINGS. CONDUCTORS NOT INDICATED SHALL BE SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
2) COLOR CODING FOR NO. 6 AWG AND SMALLER CONDUCTORS SHALL BE BY USING CONDUCTORS WITH CONTINUOUS COLOR EMBEDDED IN THE INSULATION.
3) COLOR CODING FOR CONDUCTORS LARGER THAN NO. 6, SHALL BE BY:
   A) CONTINUOUS COLOR EMBEDDED IN THE INSULATION, OR
   B) BLACK CABLE WITH SCOTCH 35 OR APPROVED EQUAL MARKING (PHASE) TAPE. AT EVERY ACCESSIBLE LOCATION A MINIMUM 3" LONG SECTION OF CONDUCTOR SHALL BE SPIRAL WRAPPED. NOTE THAT PHASE TAPE MAY NOT BE USED ON COLORED CABLE, BLACK CABLE ONLY.

MAKE THE FOLLOWING SETTINGS ON DIGITAL THERMOSTAT:
APPLICATION = 0 (INTERNAL SENSOR)
OUTPUT 1 = 0 (COOL/0-10V)
OUTPUT 2 = 0 (NOT USED)
OUTPUT 3 = 0 (NOT USED)
OUTPUT 3 ACTIVATION = 0 (100%)
NSB VALUE = 3 (6°F)
OUTPUT 1 MIN = 0 (0%)
MAX SETPOINT = 90°F
MIN SETPOINT = 50°F



3 E1 EXHAUST FAN WIRING DIAGRAM
NO SCALE

THE VENTILATION WORK SHOWN THIS SHEET INCLUDING REMOVAL AND RE-CONNECTION TO DAMPERS AND EXHAUST FAN ASSEMBLIES IS TO BE PROVIDED UNDER ADDITIVE ALTERNATE #1.

ISSUED FOR CONSTRUCTION
MAY 2026

STATE OF ALASKA 49TH
CLOIS W. VERSYP
EE 7802
REGISTERED PROFESSIONAL ENGINEER

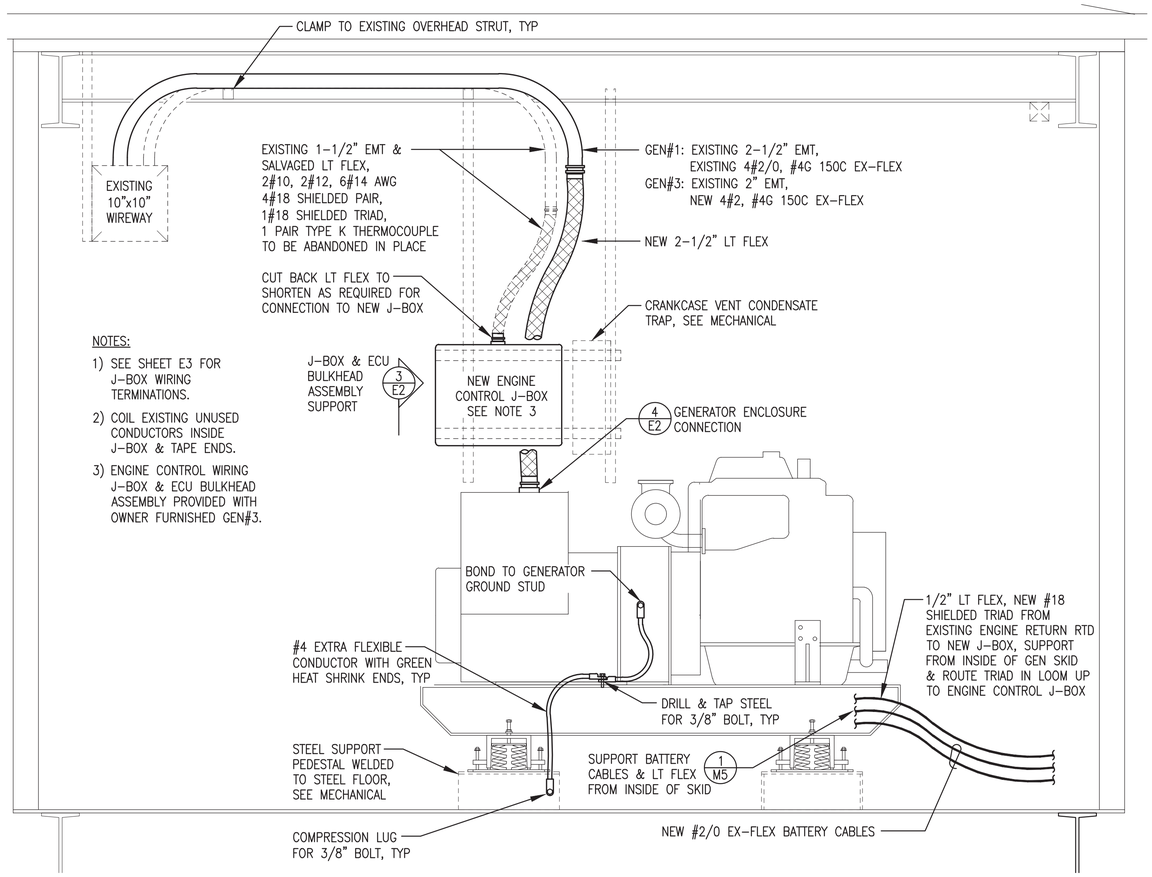
ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADE

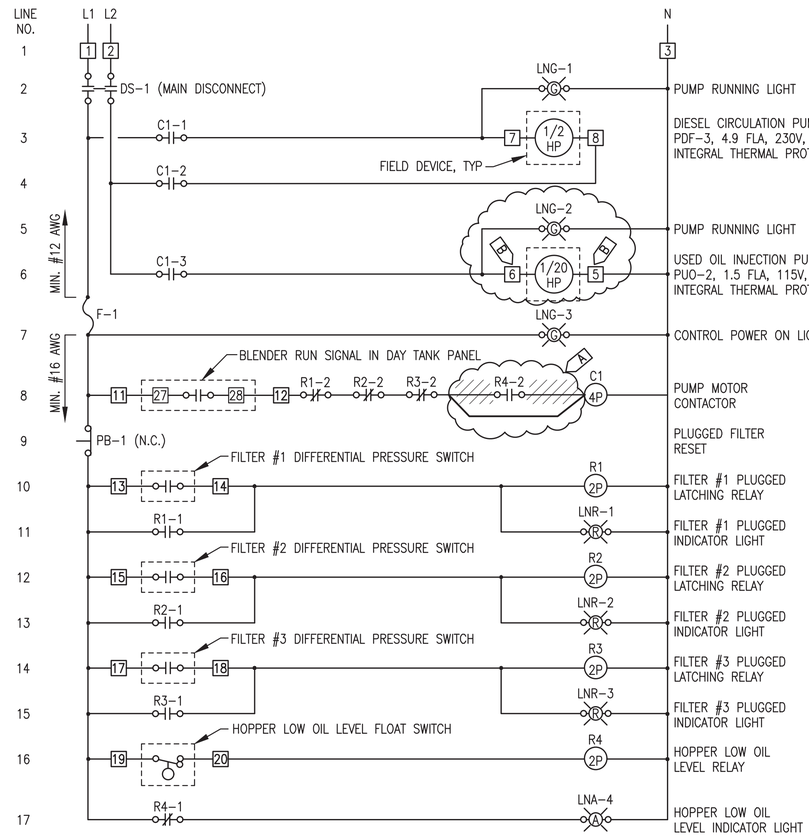
TITLE: ELECTRICAL DEMOLITION & NEW WORK PLANS

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: CWV/BCG	DATE: 5/5/26
FILE NAME: STRVR DERA E	SHEET: E1
PROJECT NUMBER:	



1 E2 TYPICAL GENSET INSTALLATION RIGHT SIDE ELEVATION
1-1/2"=1'-0"



2 E2 USED OIL BLENDER CONTROL PANEL LOGIC MODIFICATION SCHEMATIC
NO SCALE

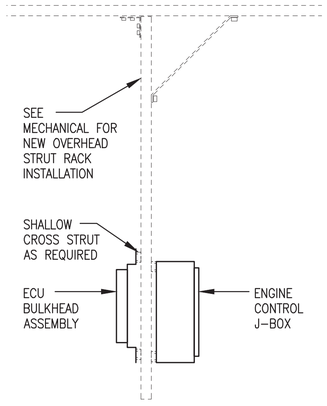
GENERAL NOTES:

1. THE PURPOSE OF THE MODIFICATIONS IS TO ENABLE THE BLENDER TO ACT AS A DAY TANK FUEL "POLISHING" FILTER RUNNING EVERY TIME THE DAY TANK FILLS. THE MODIFICATIONS WILL CHANGE THE PANEL FUNCTION TO LOCK OUT THE USED OIL INJECTION PUMP AND TO DISABLE THE LOW HOPPER LEVEL STOP.
2. THIS WORK CONSISTS OF REMOVING EXISTING WIRE JUMPERS AND INSTALLING NEW WIRE JUMPERS AS INDICATED. ALL EXISTING CONTROL DEVICES TO REMAIN.
3. MODIFICATION AREAS ARE SHOWN CLOUDED WITH SPECIFIC NOTES INDICATED.

PANEL MODIFICATION SPECIFIC NOTES:

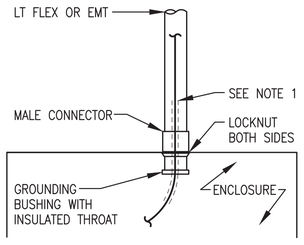
A DEMOLISH JUMPERS TO TAKE R4 N.O. CONTACT OUT OF C1 COIL CIRCUIT AND INSTALL NEW JUMPER TO CONNECT C1 COIL DIRECTLY TO R3 N.C. CONTACT.

B DISCONNECT FIELD LEADS FROM PUMP P-UO2 MOTOR, TAPE ENDS, AND TYWRAP SECURELY IN WIRE TROUGH.

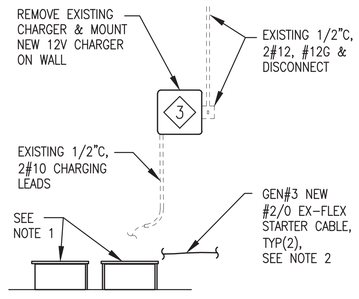


3 E2 J-BOX & ECU BULKHEAD SUPPORT
1-1/2"=1'-0"

NOTES:
1) AT GENERATOR ENCLOSURES PROTECT CONDUCTORS FROM WEAR BY INSTALLING A 12" LONG LAYER OF HEAVY WALL HEAT SHRINK CENTERED IN CONNECTOR.
2) CONNECTION TO WIREWAY SIMILAR WITHOUT HEAT SHRINK.



4 E2 TYPICAL CONNECTION TO GENERATOR
NO SCALE



NOTES:
1. AT GEN#1 & GEN#2 REPLACE EXISTING CHARGER AND CONNECT TO EXISTING BATTERIES.
2. OWNER FURNISHED GEN#3 INCLUDES TWO NEW 12V BATTERIES AND STARTER CABLES. REPLACE EXISTING CHARGER, INSTALL NEW BATTERIES IN EXISTING RACK, AND INSTALL NEW #2/0 EX-FLEX BATTERY CABLES. MAKE BATTERY CONNECTIONS WITH STRAIGHT CRIMP BATTERY TERMINAL FITTING AND TOP MOUNT TERMINAL COVERS. ROUTE CABLES TO GENSET SKID DIRECTLY BELOW FUEL HOSE. TYWRAP CABLES TO FUEL PIPING AND HOSE AS REQUIRED. SEE SHEET M5 FOR STARTER CABLE SUPPORT FROM SKID.

5 E2 BATTERY CHARGER, BATTERIES AND STARTER CABLE INSTALLATION
NO SCALE"

ISSUED FOR CONSTRUCTION
MAY 2026

STATE OF ALASKA 49TH CLOIS W. VERSYP EE 7802 REGISTERED PROFESSIONAL ENGINEER

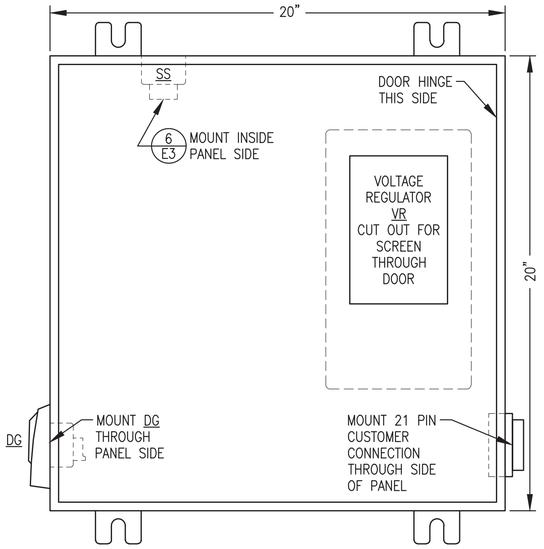
ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADE

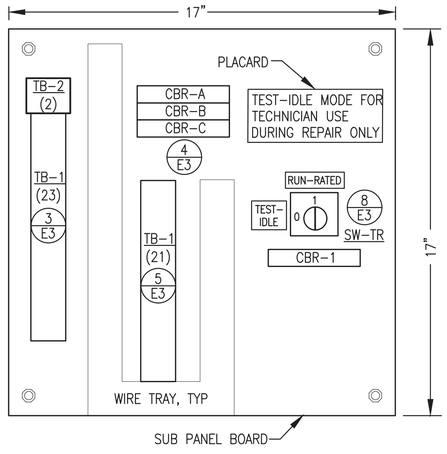
TITLE: TYPICAL GENERATOR INSTALLATION & DETAILS

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

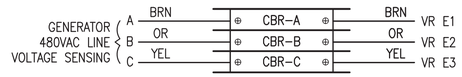
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: CWV/BCG	DATE: 5/5/26
FILE NAME: STRVR DERA E	SHEET: E2
PROJECT NUMBER:	



1 E3 JUNCTION BOX FRONT PANEL LAYOUT
NO SCALE



2 E3 JUNCTION BOX SUB PANEL LAYOUT
NO SCALE



4 E3 CIRCUIT BREAKER CONNECTIONS
NO SCALE

BILL OF MATERIALS			
TAG	MANUFACTURER	MODEL	DESCRIPTION
21 PIN	JOHN DEERE OR DEUTZ		21 PIN CUSTOMER CONNECTION ASSY
CBR-A/B/C	ALLEN-BRADLEY	1489-M1-C010	RAIL MOUNT CIRCUIT BREAKER, 1P, 1A
CBR-1	ALLEN-BRADLEY	1489-M1-C050	RAIL MOUNT CIRCUIT BREAKER, 1P, 5A
DG	JOHN DEERE	DG-14	DIAGNOSTIC GAUGE WITH HARNESS
	PROGRAMMED FOR MARINE TIER 3 WITH UNIQUE JOHN DEERE FAULT CODE		
ENCL.	HOFFMAN	A20H20ALP	20x20x8" NEMA 12
	HOFFMAN	A20P20	BACK PANEL
SS	JOHN DEERE	AT141011	STARTER AUXILIARY SOLENOID, 12V
SW-TR	ALLEN-BRADLEY	194L-A12-225-2	CHANGEOVER SWITCH, 12A, 2P
	ALLEN-BRADLEY	194L-HE-4A-175	90 DEGREE I-O HANDLE
TB-1	IDEC	BNH15LW	15A DIN RAIL-MOUNT TERMINAL BLOCK
TB-2	IDEC	BNH50W	50A DIN RAIL-MOUNT TERMINAL BLOCK
VR	BASLER	BE2000E	DIGITAL VOLTAGE REGULATOR

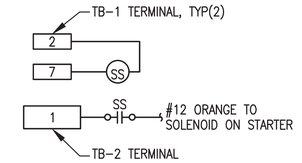
BRAND SPECIFIC NOTE: SPECIFIC PARTS MANUFACTURER AND MODEL SELECTED NOT ONLY TO MEET PERFORMANCE FUNCTION BUT ALSO TO COORDINATE AND INTERFACE WITH OTHER DEVICES AND SYSTEMS. APPROVED EQUAL SUBSTITUTIONS WILL BE ALLOWED ONLY BY ENGINEER'S APPROVAL. TO OBTAIN APPROVAL, SUBMITTALS MUST CLEARLY DEMONSTRATE HOW SUBSTITUTE ITEM MEETS OR EXCEEDS SPECIFIED ITEM QUALITY AND PERFORMANCE CHARACTERISTICS AND ALSO COMPLIES WITH MECHANICAL AND/OR ELECTRICAL CONNECTIONS AND PHYSICAL LAYOUT REQUIREMENTS.

SHOP FABRICATION NOTES:

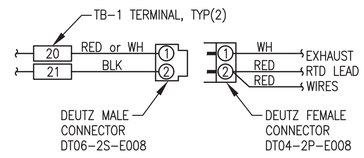
1) PROVIDE ASSEMBLY WITH ALL DEVICES AND WIRING INDICATED.
2) INSTALL IN A NEMA 12 ENCLOSURE WITH MOUNTING FLANGES AT BACK, A MIN 14 GAUGE INTERIOR BACK PANEL AND HINGED LOCKABLE DOOR. SIZE AS INDICATED.
3) PROVIDE DIN RAIL, TERMINAL END PLATES, TERMINAL END STOPS, TERMINAL DUST COVERS AND OTHER MISCELLANEOUS HARDWARE AS REQUIRED TO MATCH TERMINALS. LABEL ALL TERMINALS EXACTLY AS INDICATED ON THE DETAILS.
4) ALL WIRE #14AWG EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE. LABEL BOTH ENDS OF ALL JUMPERS WITH THE ENGINE PANEL TERMINAL NUMBER.
5) PROVIDE MECHANICAL GROUND LUGS FASTENED TO BACK PANEL AND GROUNDED TO ENGINE-GENERATOR. GROUND ALL SHIELD DRAIN WIRES TO LUGS AT BACK PANEL ONLY.
6) PROVIDE WIRING HARNESSES FOR CONNECTION TO GENERATOR AND TO ENGINE. INSTALL WIRES IN LIQUID TIGHT FLEX OR FLEXIBLE PLASTIC WIRE LOOM AND PROVIDE SERVICE LOOPS IN ACCORDANCE WITH SPECIFICATIONS.
7) SHOP TEST EACH NEW ENGINE-GENERATOR WITH ASSOCIATED JUNCTION BOX PERMANENTLY CONNECTED. UPON COMPLETION OF TESTING, COIL WIRING HARNESSES AND SECURE JUNCTION BOX TO GENERATOR FOR SHIPPING.

FIELD INSTALLATION NOTES:

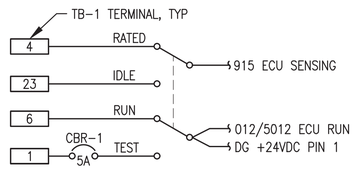
1) PERFORM ALL FIELD WIRING IN ACCORDANCE WITH SPECIFICATIONS. LABEL BOTH ENDS OF ALL FIELD WIRING WITH THE ENGINE PANEL TERMINAL NUMBER.
2) ON SHIELDED CONDUCTORS GROUND ALL SHIELD DRAIN WIRES AT ENGINE J-BOX ONLY. CLIP DRAIN WIRES AT OPPOSITE ENDS.



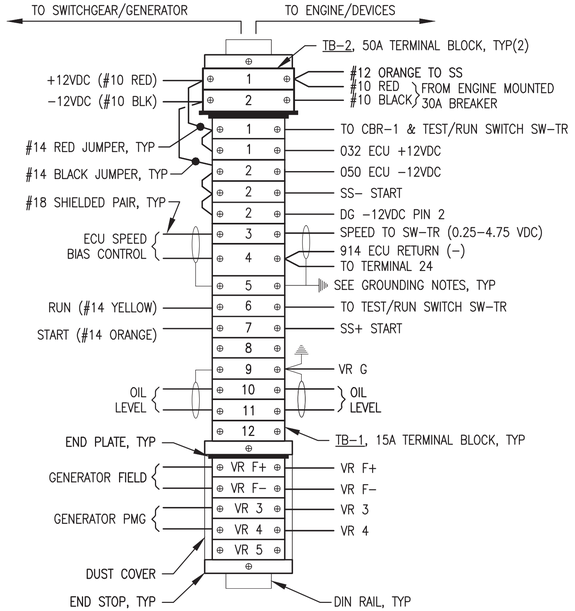
6 E3 STARTER AUX SOLENOID SS WIRING
NO SCALE



7 E3 EXHAUST RTD CONNECTOR
NO SCALE

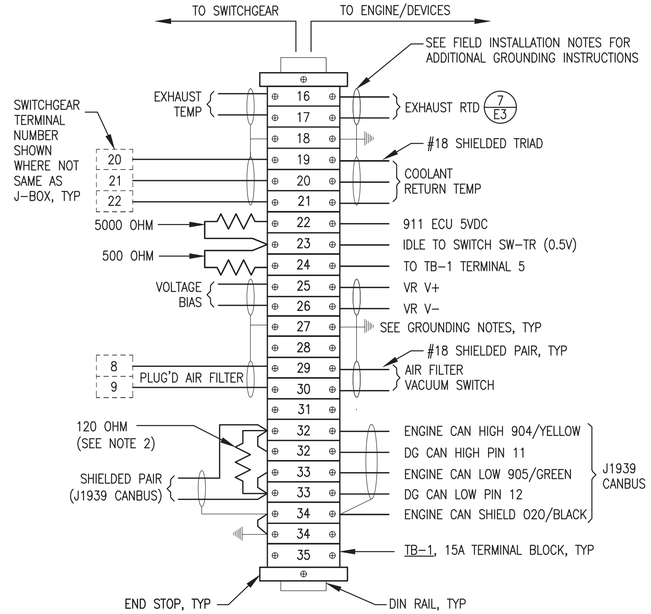


8 E3 TEST-IDLE/RUN-RATED SWITCH SW-TR WIRING
NO SCALE



NOTE: TYPICAL JOHN DEERE ECU CONNECTION NUMBERS SHOWN. SEE WIRING HARNESS FOR EACH ENGINE FOR ACTUAL ECU CONNECTIONS.

3 E3 TERMINAL STRIP CONNECTIONS
NO SCALE



NOTES: 1) ALL RESISTORS 0.25W.
2) REMOVE RESISTOR IF ENGINE WIRING HARNESS HAS 120 OHM END OF LINE RESISTOR.

5 E3 TERMINAL STRIP CONNECTIONS
NO SCALE

ALL SHOP FABRICATION WORK SHOWN THIS SHEET IS INCLUDED AS PART OF THE OWNER FURNISHED ENGINE-GENERATORS AND IS NOT PART OF THIS CONTRACT

ISSUED FOR CONSTRUCTION MAY 2026

STATE OF ALASKA 49TH CLOIS W. VERSYP EE 7802 REGISTERED PROFESSIONAL ENGINEER

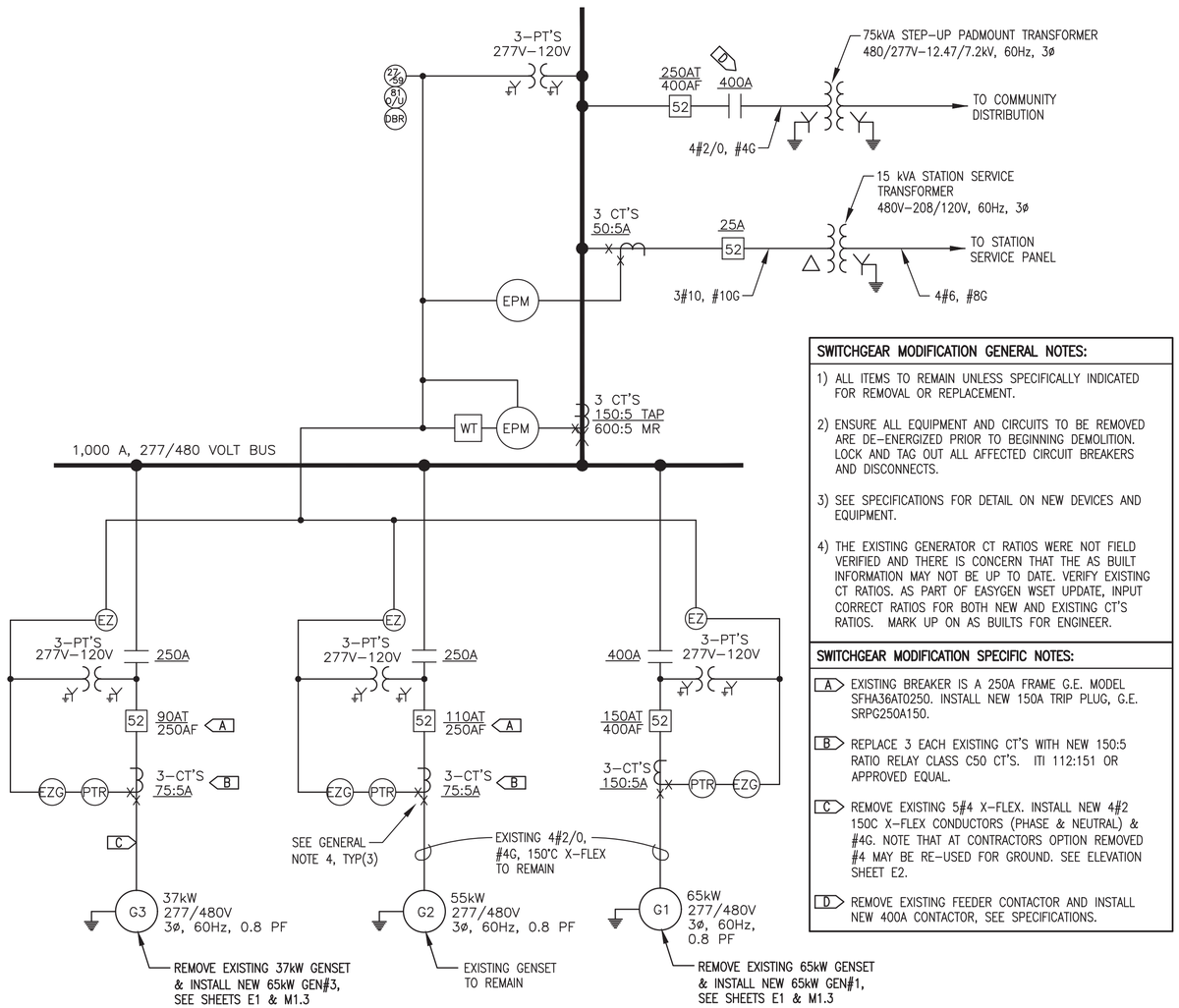
ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADE

TITLE: 12VDC ENGINE CONTROL WIRING JUNCTION BOX

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: CWV/BCG	DATE: 5/5/26
FILE NAME: STRVR DERA E	SHEET: E3
PROJECT NUMBER:	



SWITCHGEAR MODIFICATION GENERAL NOTES:

1) ALL ITEMS TO REMAIN UNLESS SPECIFICALLY INDICATED FOR REMOVAL OR REPLACEMENT.
2) ENSURE ALL EQUIPMENT AND CIRCUITS TO BE REMOVED ARE DE–ENERGIZED PRIOR TO BEGINNING DEMOLITION. LOCK AND TAG OUT ALL AFFECTED CIRCUIT BREAKERS AND DISCONNECTS.
3) SEE SPECIFICATIONS FOR DETAIL ON NEW DEVICES AND EQUIPMENT.
4) THE EXISTING GENERATOR CT RATIOS WERE NOT FIELD VERIFIED AND THERE IS CONCERN THAT THE AS BUILT INFORMATION MAY NOT BE UP TO DATE. VERIFY EXISTING CT RATIOS. AS PART OF EASYGEN WSET UPDATE, INPUT CORRECT RATIOS FOR BOTH NEW AND EXISTING CT'S RATIOS. MARK UP ON AS BUILTS FOR ENGINEER.

SWITCHGEAR MODIFICATION SPECIFIC NOTES:

A) EXISTING BREAKER IS A 250A FRAME G.E. MODEL SFHA36AT0250. INSTALL NEW 150A TRIP PLUG, G.E. SRPG250A150.

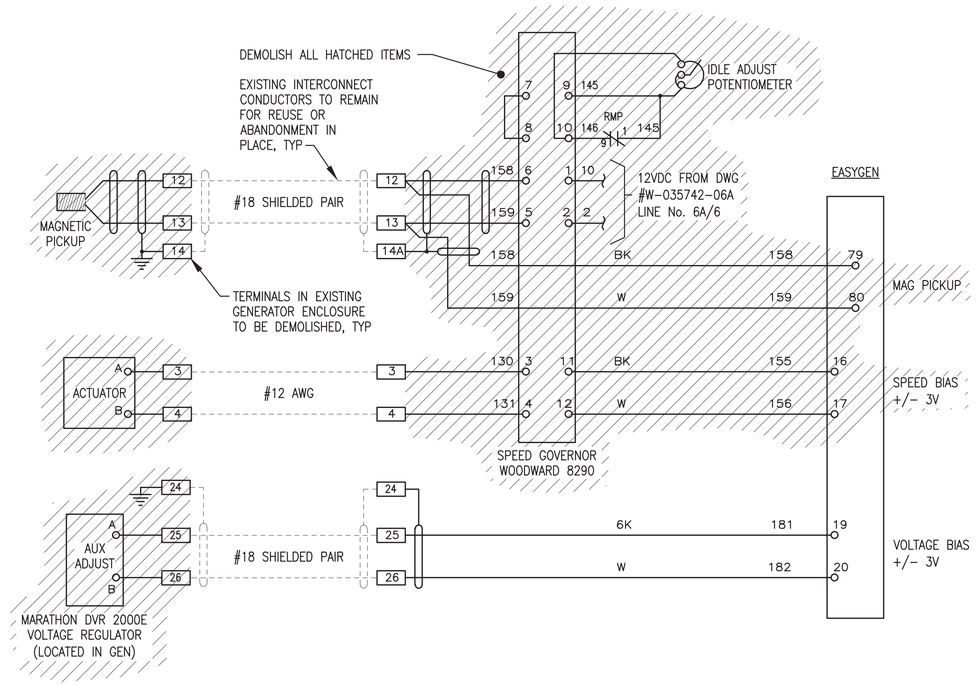
B) REPLACE 3 EACH EXISTING CT'S WITH NEW 150:5 RATIO RELAY CLASS C50 CT'S. ITI 112:151 OR APPROVED EQUAL.

C) REMOVE EXISTING 5#4 X–FLEX. INSTALL NEW 4#2 150C X–FLEX CONDUCTORS (PHASE & NEUTRAL) & #4G. NOTE THAT AT CONTRACTORS OPTION REMOVED #4 MAY BE RE–USED FOR GROUND. SEE ELEVATION SHEET E2.

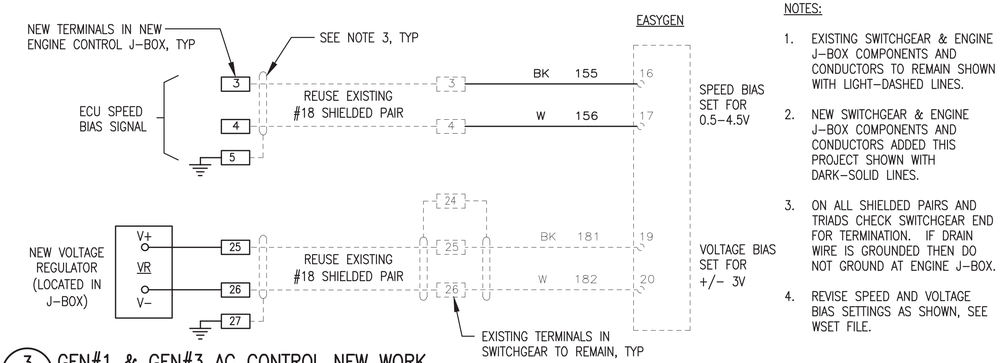
D) REMOVE EXISTING FEEDER CONTACTOR AND INSTALL NEW 400A CONTACTOR, SEE SPECIFICATIONS.

Stony River Breaker Settings (Easygen)	
Function	Setting
Gen #1 Breaker Rated Current (65kW)	150 A
Gen #2 Breaker Rated Current (55kW)	150 A
Gen #3 Breaker Rated Current (65kW)	150 A
Gen Breaker Level 1 (100%) Time Over Current	60 sec.
Gen Breaker Level 2 (120%) Time Over Current	30 sec.
Gen Breaker Level 3 (250%) Time Over Current	1 sec.

1/E4 STONY RIVER SWITCHGEAR MODIFICATION ONE–LINE DIAGRAM
NO SCALE



2/E4 GEN#1 & GEN#3 AC CONTROL DEMOLITION
NO SCALE



NOTES:

1. EXISTING SWITCHGEAR & ENGINE J–BOX COMPONENTS AND CONDUCTORS TO REMAIN SHOWN WITH LIGHT–DASHED LINES.
2. NEW SWITCHGEAR & ENGINE J–BOX COMPONENTS AND CONDUCTORS ADDED THIS PROJECT SHOWN WITH DARK–SOLID LINES.
3. ON ALL SHIELDED PAIRS AND TRIADS CHECK SWITCHGEAR END FOR TERMINATION. IF DRAIN WIRE IS GROUNDED THEN DO NOT GROUND AT ENGINE J–BOX.
4. REVISE SPEED AND VOLTAGE BIAS SETTINGS AS SHOWN, SEE WSET FILE.

3/E4 GEN#1 & GEN#3 AC CONTROL NEW WORK
NO SCALE

ISSUED FOR
CONSTRUCTION
MAY 2026

STATE OF ALASKA 49TH
CLOIS W. VERSYP
EE 7802
REGISTERED PROFESSIONAL ENGINEER

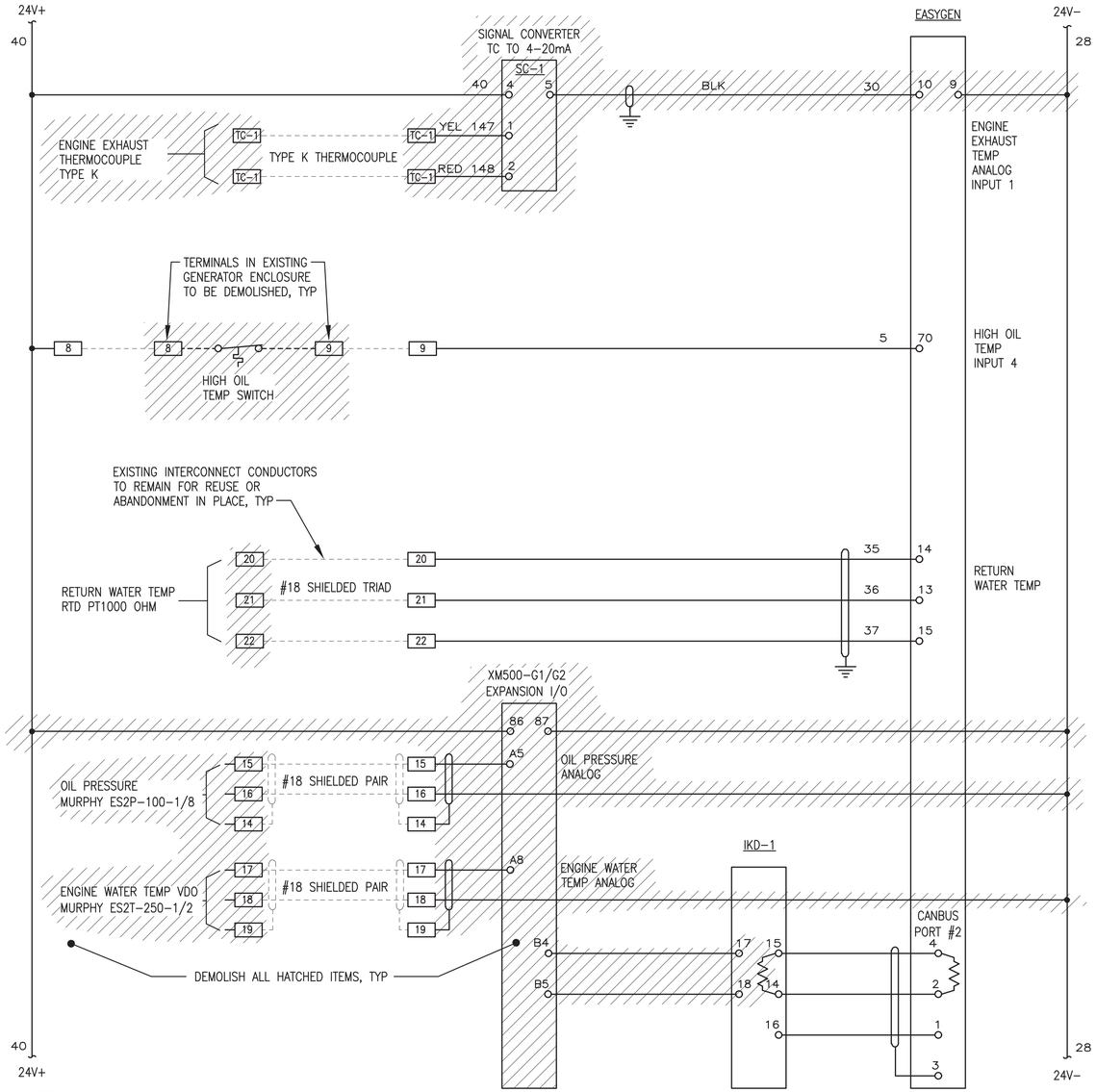
ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
STONY RIVER POWER PLANT UPGRADE

TITLE: SWITCHGEAR MODIFICATIONS

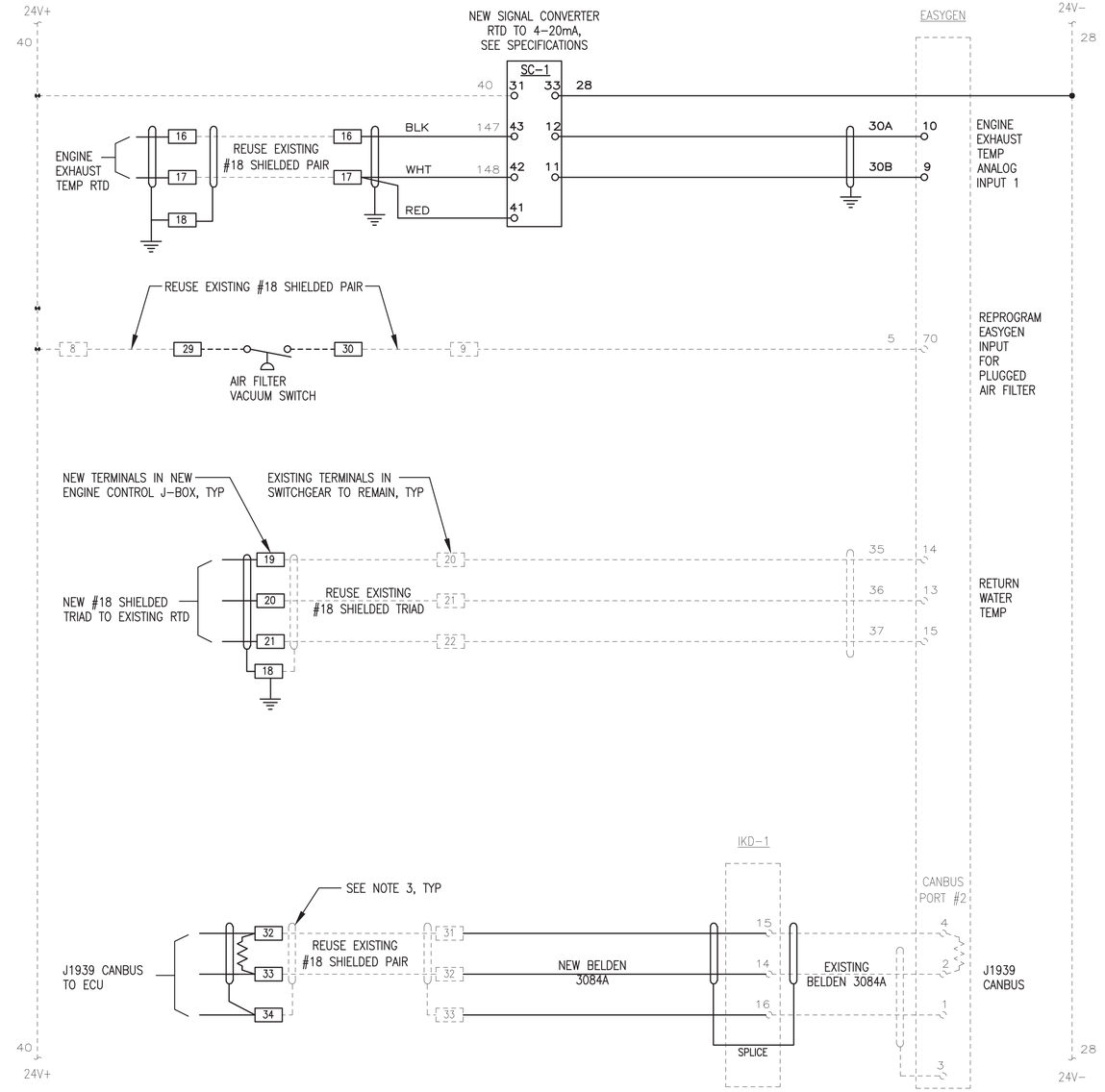
Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: CWV/BCG	DATE: 5/5/26
FILE NAME: STRVR DERA E	SHEET: E4
PROJECT NUMBER:	



1 E5 GEN#1 & GEN#3 DC CONTROL DEMOLITION

NO SCALE



2 E5 GEN#1 & GEN#3 DC CONTROL NEW WORK

NO SCALE

NOTES:

1. EXISTING SWITCHGEAR & ENGINE J–BOX COMPONENTS AND CONDUCTORS TO REMAIN SHOWN WITH LIGHT–DASHED LINES.
2. NEW SWITCHGEAR & ENGINE J–BOX COMPONENTS AND CONDUCTORS ADDED THIS PROJECT SHOWN WITH DARK–SOLID LINES.
3. ON ALL SHIELDED PAIRS AND TRIADS CHECK SWITCHGEAR END FOR TERMINATION. IF DRAIN WIRE IS GROUNDED THEN DO NOT GROUND AT ENGINE J–BOX.

ISSUED FOR CONSTRUCTION
MAY 2026

STATE OF ALASKA
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CLOIS W. VERSYP
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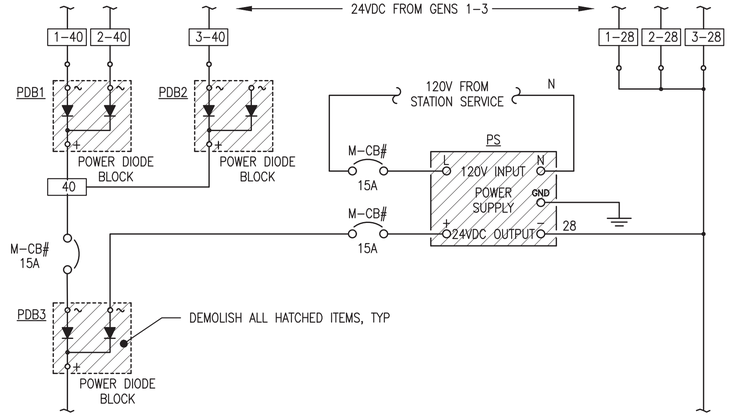
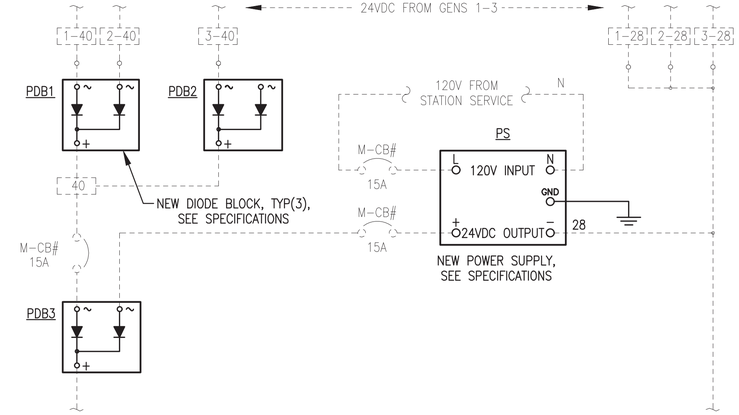
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: CWV/BCG	DATE: 5/5/26
FILE NAME: STRVR DERA E	SHEET: E5
PROJECT NUMBER:	



1 E6 MASTER SECTION 24VDC CONTROL POWER WIRING DEMOLITION

NO SCALE

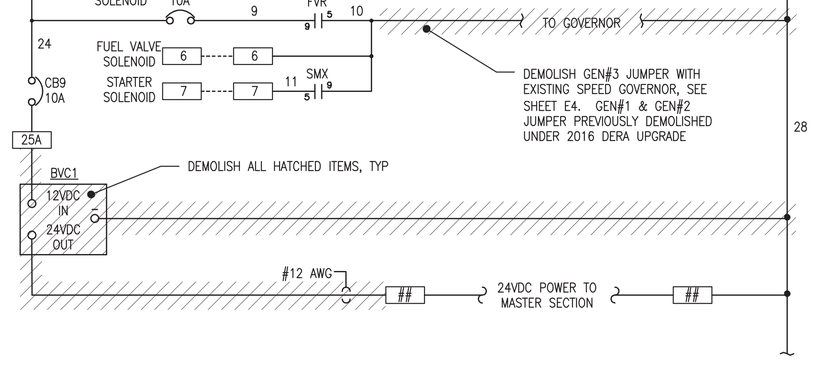


NEW WORK NOTES:

1. EXISTING SWITCHGEAR COMPONENTS AND CONDUCTORS TO REMAIN SHOWN WITH LIGHT-DASHED LINES.
2. NEW SWITCHGEAR COMPONENTS AND CONDUCTORS ADDED THIS PROJECT SHOWN WITH DARK-SOLID LINES.

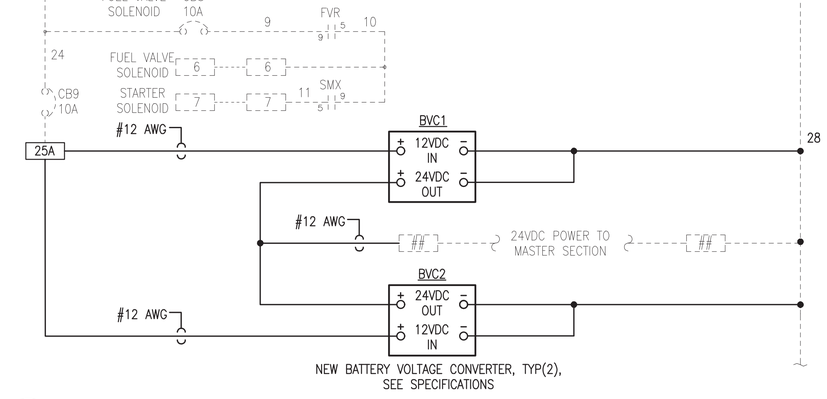
2 E6 MASTER SECTION 24VDC CONTROL POWER WIRING MEW WORK

NO SCALE



3 E6 TYPICAL GENERATOR SECTION 12/24VDC CONTROL POWER WIRING NEW WORK

NO SCALE



NEW BATTERY VOLTAGE CONVERTER, TYP(2), SEE SPECIFICATIONS

NEW WORK NOTES:

1. EXISTING SWITCHGEAR COMPONENTS AND CONDUCTORS TO REMAIN SHOWN WITH LIGHT-DASHED LINES.
2. NEW SWITCHGEAR COMPONENTS AND CONDUCTORS ADDED THIS PROJECT SHOWN WITH DARK-SOLID LINES.

4 E6 TYPICAL GENERATOR SECTION 12/24VDC CONTROL POWER WIRING NEW WORK

NO SCALE

ISSUED FOR CONSTRUCTION MAY 2026

STATE OF ALASKA 49TH CLOIS W. VERSYP EE 7802 REGISTERED PROFESSIONAL ENGINEER

ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT
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TITLE: SWITCHGEAR MODIFICATIONS

Gray Stassel Engineering, Inc.
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DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: CWV/BCG	DATE: 5/5/26
FILE NAME: STRVR DERA E	SHEET: E6
PROJECT NUMBER:	