

**SCHEDULE OF DRAWINGS:**

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

**ENGINE GENERATOR SCHEDULE**

GENSET	DESCRIPTION
GEN #1 (EXISTING)	ENGINE - 99 HP, 65 EKW PRIME, JOHN DEERE 4045TFM75, TIER 2 MARINE, 12 VDC, S/N PE4045T901273. GENERATOR - MINIMUM 90 KW CONTINUOUS AT 105°C RISE, MARATHON MAGNAPLUS 363PSL1607.
GEN #2 (EXISTING)	ENGINE - 99 HP, 65 EKW PRIME, JOHN DEERE 4045TFM85, TIER 3 MARINE, 12 VDC, S/N PE4045N038847. GENERATOR - MINIMUM 90 KW CONTINUOUS AT 105°C RISE, MARATHON MAGNAPLUS 362PSL1604.
GEN #3 (NEW)	ENGINE - 148 HP, 100 EKW PRIME, JOHN DEERE 4045AFM85, TIER 3 MARINE. 12 VDC STARTING & CONTROL. GENERATOR - MINIMUM 125 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UC1274E.

**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
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**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

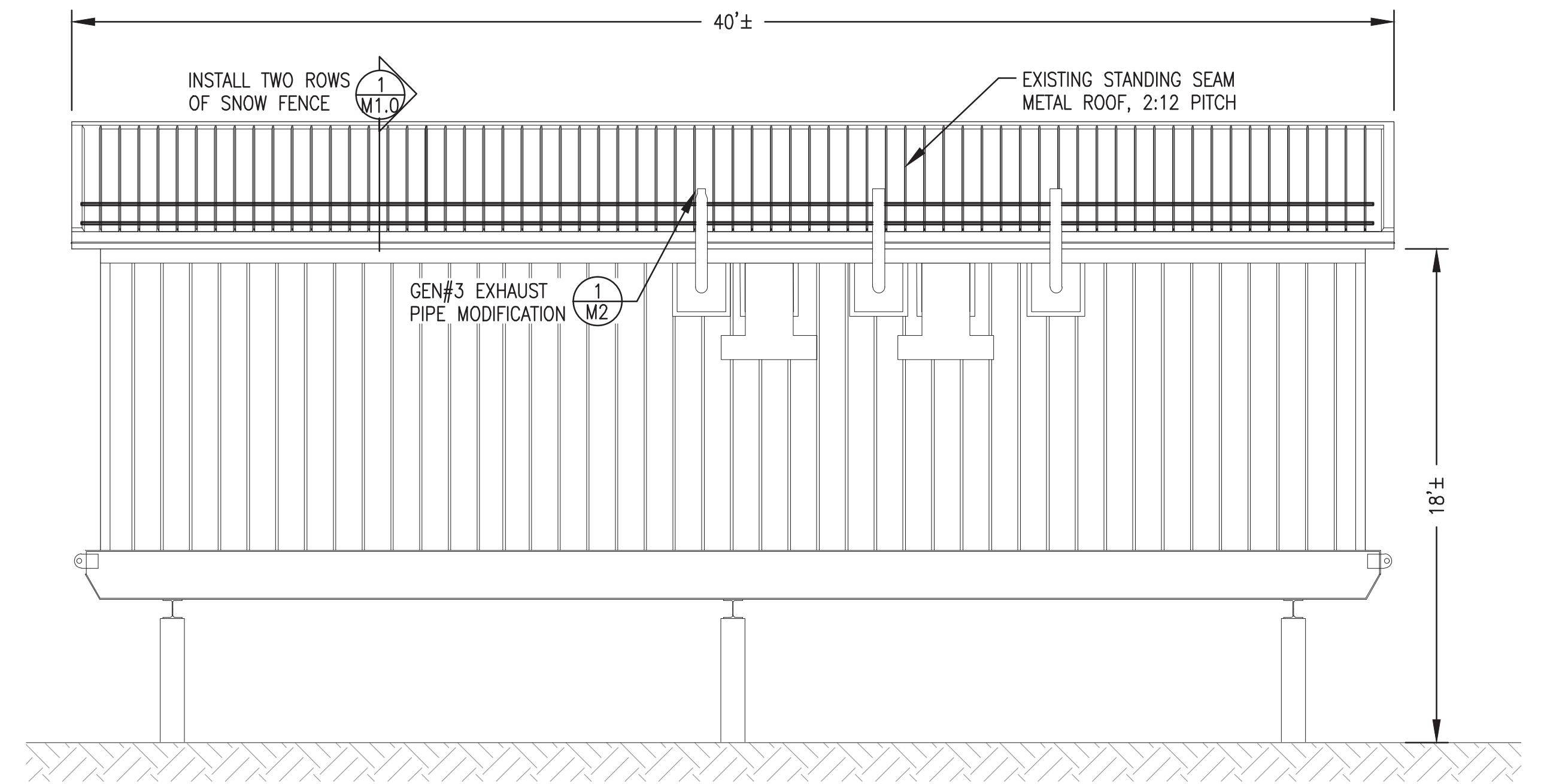
**FUEL SYSTEM EQUIPMENT SCHEDULE**

F-DI	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

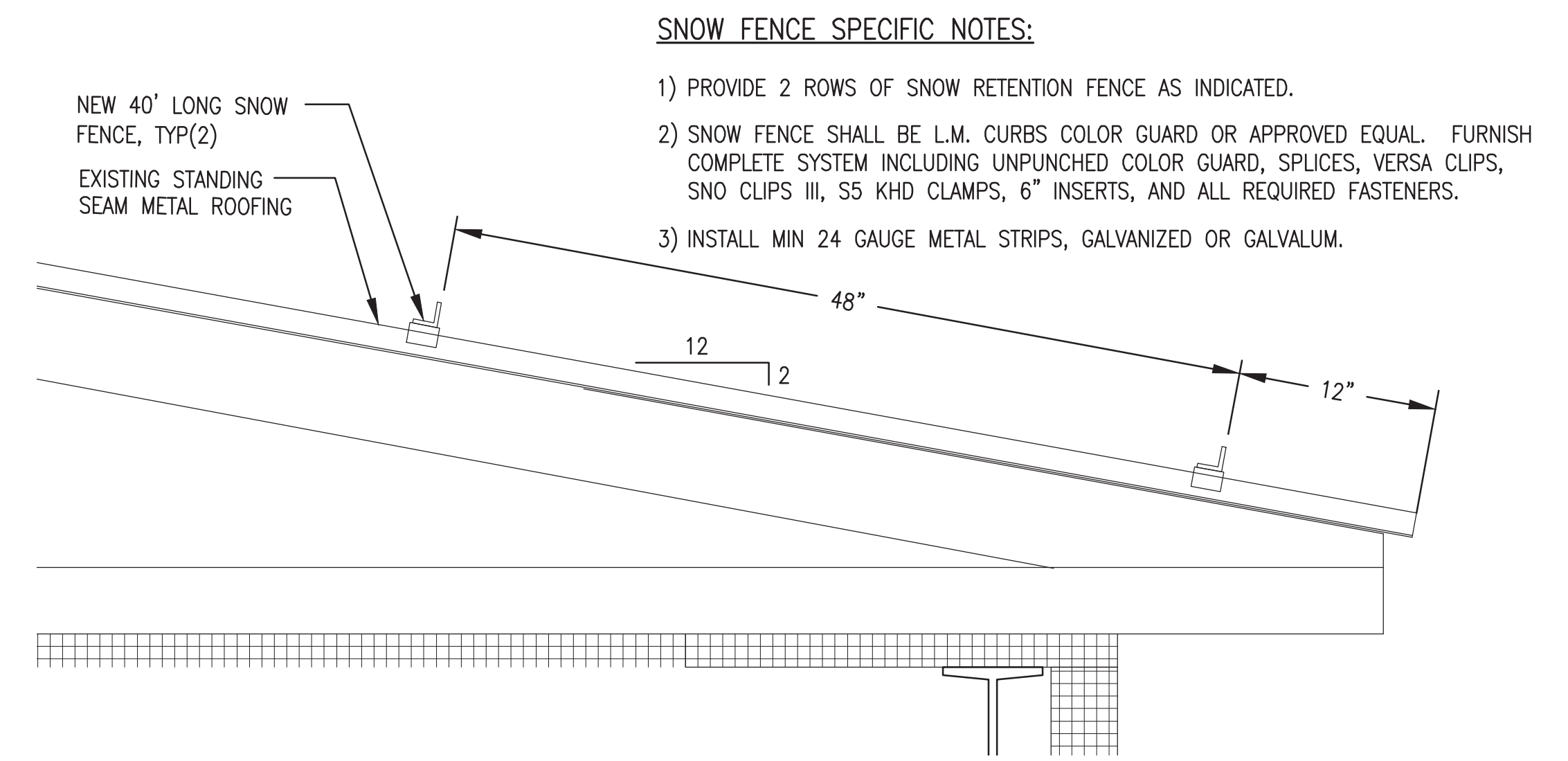
**DECAL SCHEDULE:**

(01) "GEN#1 65KW", 3"x5"
(02) "GEN#2 65KW", 3"x5"
(03) "GEN#3 100KW", 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 POWER PLANT BACK WALL EXTERIOR ELEVATION**  
M1.0 NO SCALE



**2 ROOF SNOW FENCE INSTALLATION DETAIL**  
M1.0 NO SCALE

**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.

**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**

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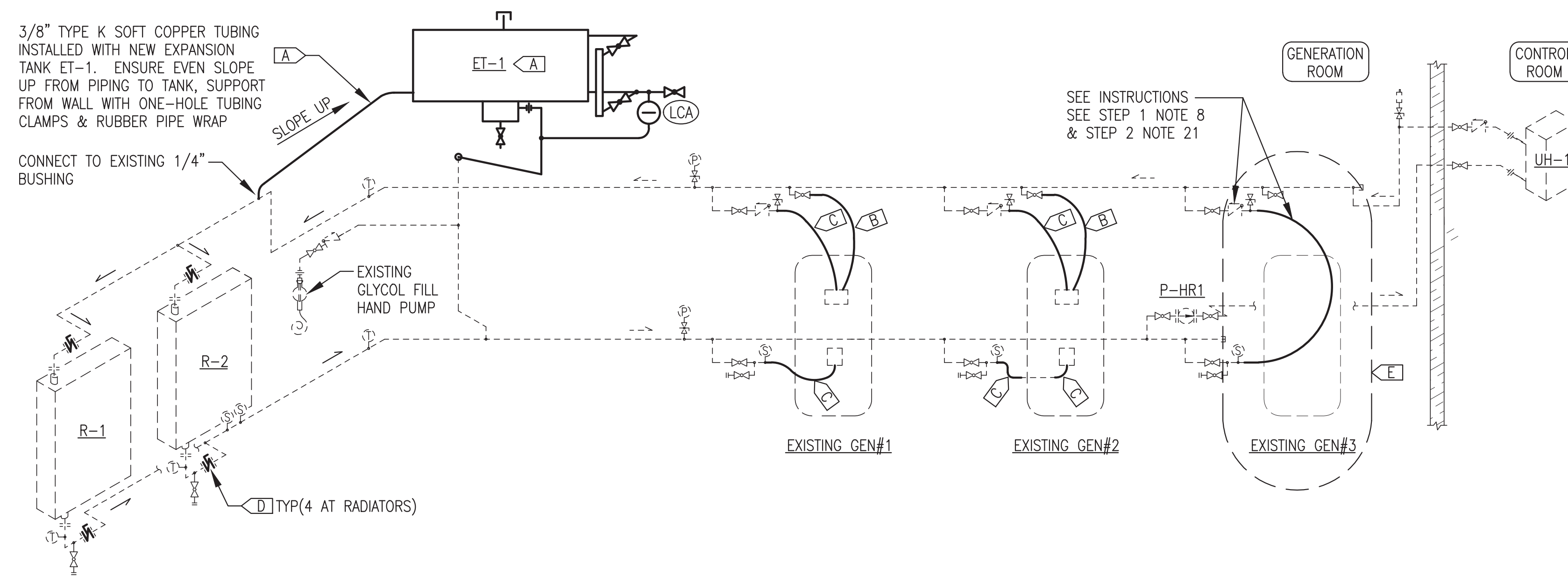
<p>ALASKA ENERGY AUTHORITY</p>		
PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADES		
TITLE: MECHANICAL SCHEDULES AND EXTERIOR NEW WORK		
<p>Gray Stassel Engineering, Inc.</p>	DRAWN BY: JTD	SCALE: AS NOTED
	DESIGNED BY: BCG	DATE: 5/5/26
P.O. 111405, Anchorage, AK 99511 (907)349-0100	FILE NAME: CHBLKB 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. REMOVE ALL CLUTTER FROM THE POWER AND TURN OVER TO THE LOCAL OPERATOR FOR FINAL DISPOSAL.



**COOLING SYSTEM UPGRADES GENERAL NOTES:**

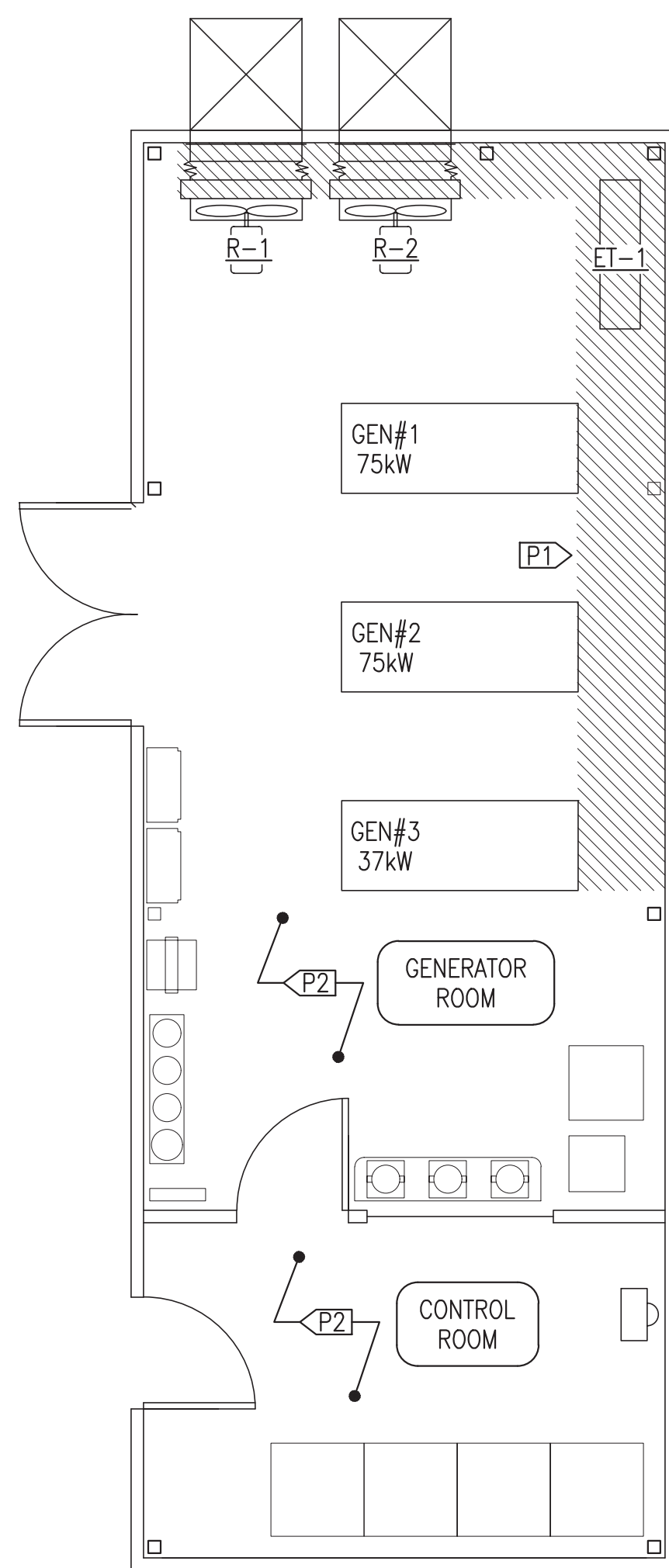
1. PERFORM STEPS 1 & 2 (NOTES 1-22) OF THE ENGINE COOLING SYSTEM FLUSH & GLYCOL REPLACEMENT INSTRUCTIONS BELOW PRIOR TO PERFORMING THESE COOLANT SYSTEM UPGRADES UNLESS SPECIFICALLY INDICATED OTHERWISE.
2. EXISTING ENGINE COOLING SYSTEM PIPING AND DEVICES SHOWN WITH LIGHT DASHED LINES.
3. PIPING MODIFICATIONS 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 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] SEE DEMOLITION AND NEW WORK PLANS AND ELEVATION FOR GEN#3 REPLACEMENT INCLUDING REQUIRED PIPING MODIFICATIONS AND NEW HOSE INSTALLATIONS.

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



**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#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.
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 CLEANED, FLUSHED AND DRAINED.
9. 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 ALKYLENE-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**

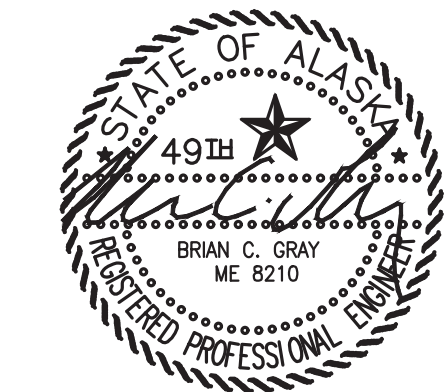
16. IMMEDIATELY DRAIN THE USED CLEANING SOLUTION FROM THE SYSTEM TO AVOID SETTLING OUT SOLIDS. DRAIN INTO DRUMS AND TURN OVER TO UTILITY.
17. FILL SYSTEM WITH FRESH WATER.
18. MANUALLY PARALLEL GEN#1 WITH GEN#2. TURN ON PUMP P-HR1. BRING SYSTEM UP TO OPERATING TEMPERATURE AND OPERATE FOR 2 HOURS MINIMUM. 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 4045TFM75 S/N PE4045T901273  
 EXISTING GEN#2: JOHN DEERE 4045TFM85 S/N PE4045N038847
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.

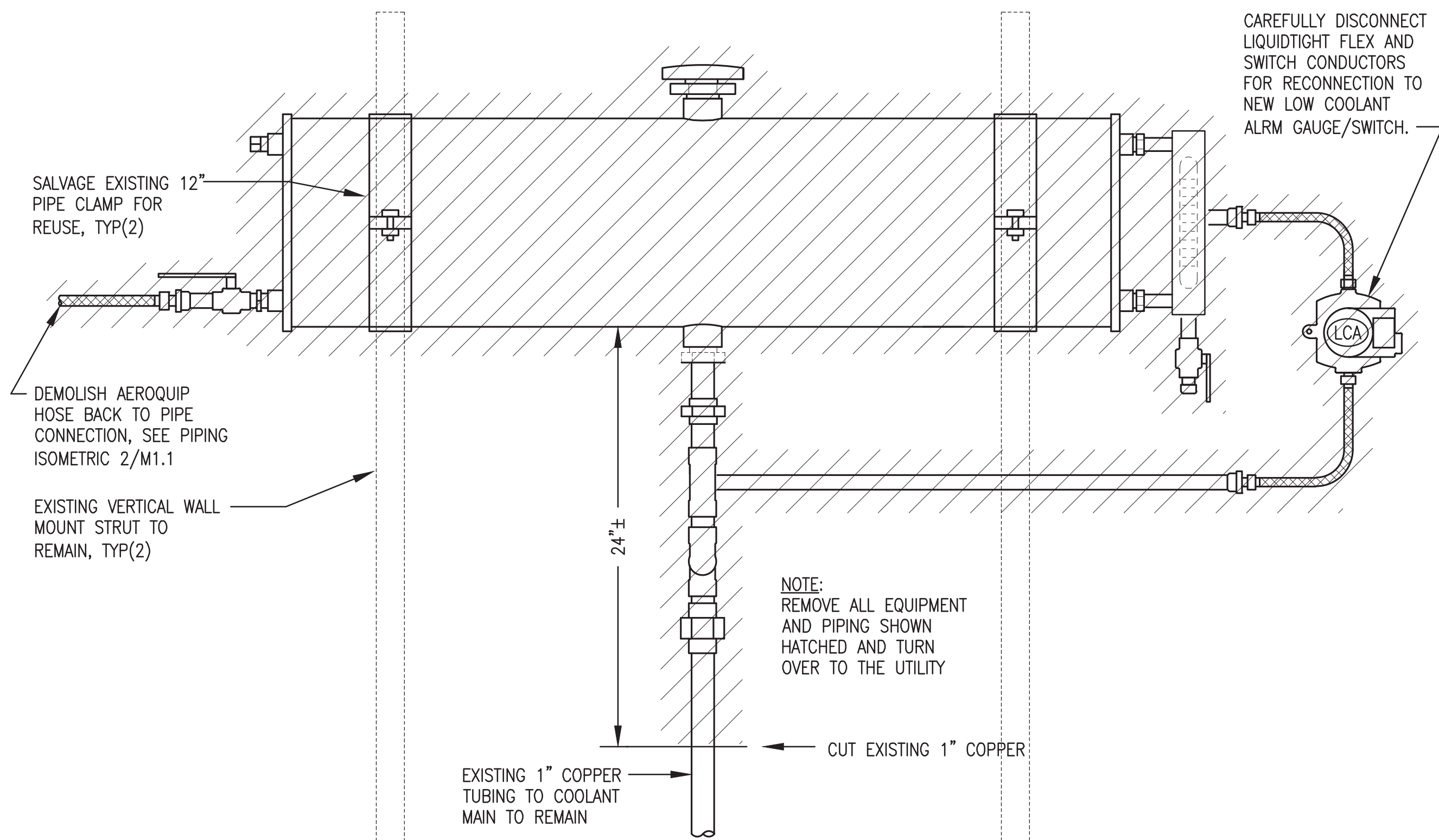
**1** PRELIMINARY WORK PLAN & NOTES  
 M1.1 1/4"=1'-0"

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 CONSTRUCTION  
 MAY 2026

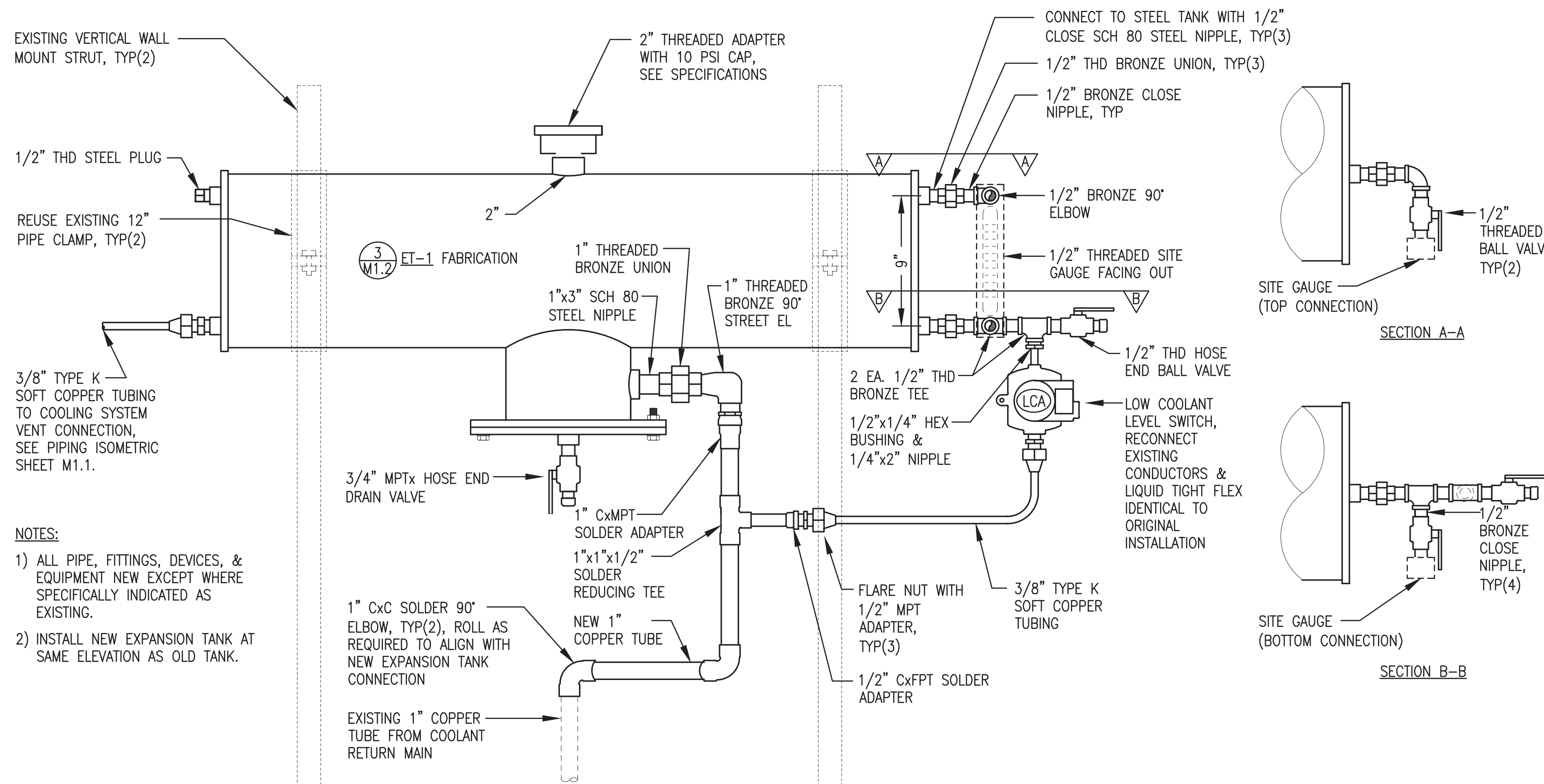


PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADES	
TITLE: ENGINE COOLING SYSTEM PRELIMINARY WORK PLAN & DETAILS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 5/5/26
FILE NAME: CHBLKB DERA M	SHEET: M1.1
PROJECT NUMBER:	

P.O. 111405, Anchorage, AK 99511 (907)349-0100



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

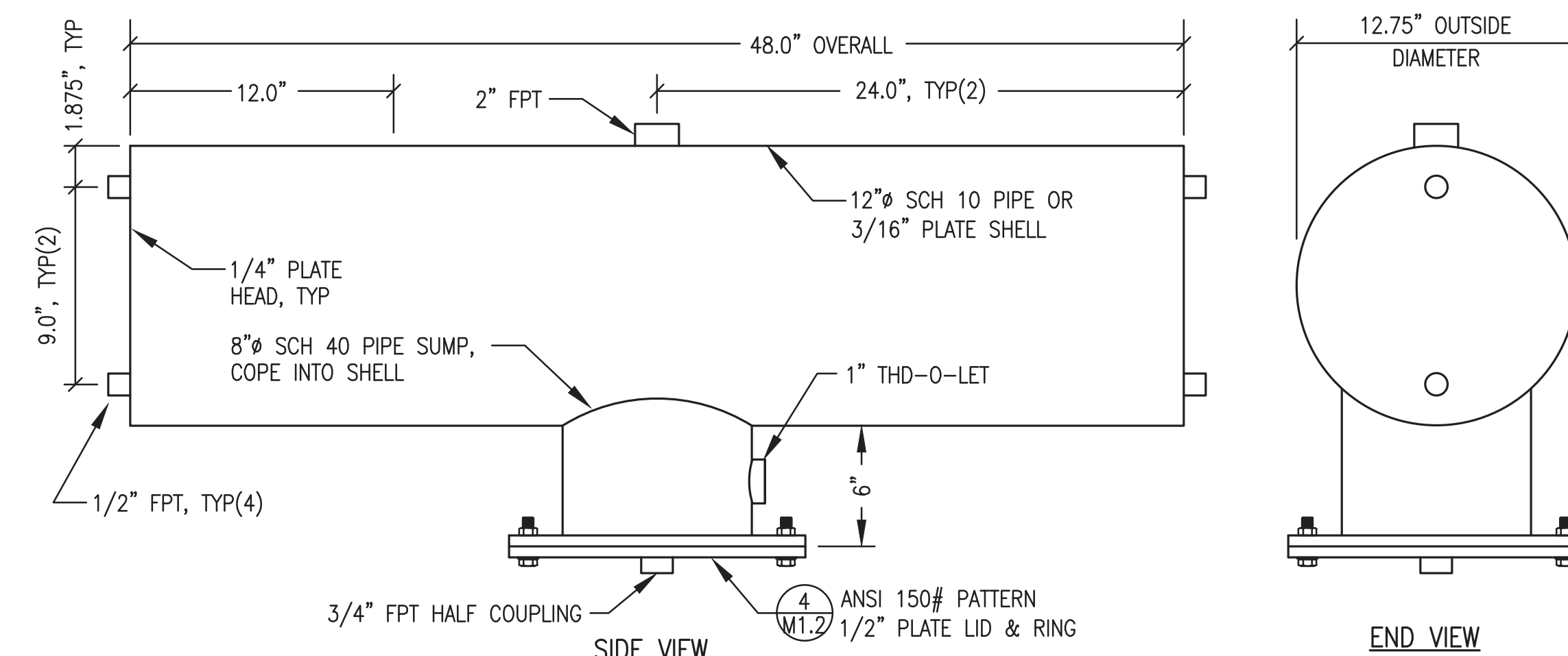


- NOTES:**
- 1) ALL PIPE, FITTINGS, DEVICES, & EQUIPMENT NEW EXCEPT WHERE SPECIFICALLY INDICATED AS EXISTING.
  - 2) INSTALL NEW EXPANSION TANK AT SAME ELEVATION AS OLD TANK.

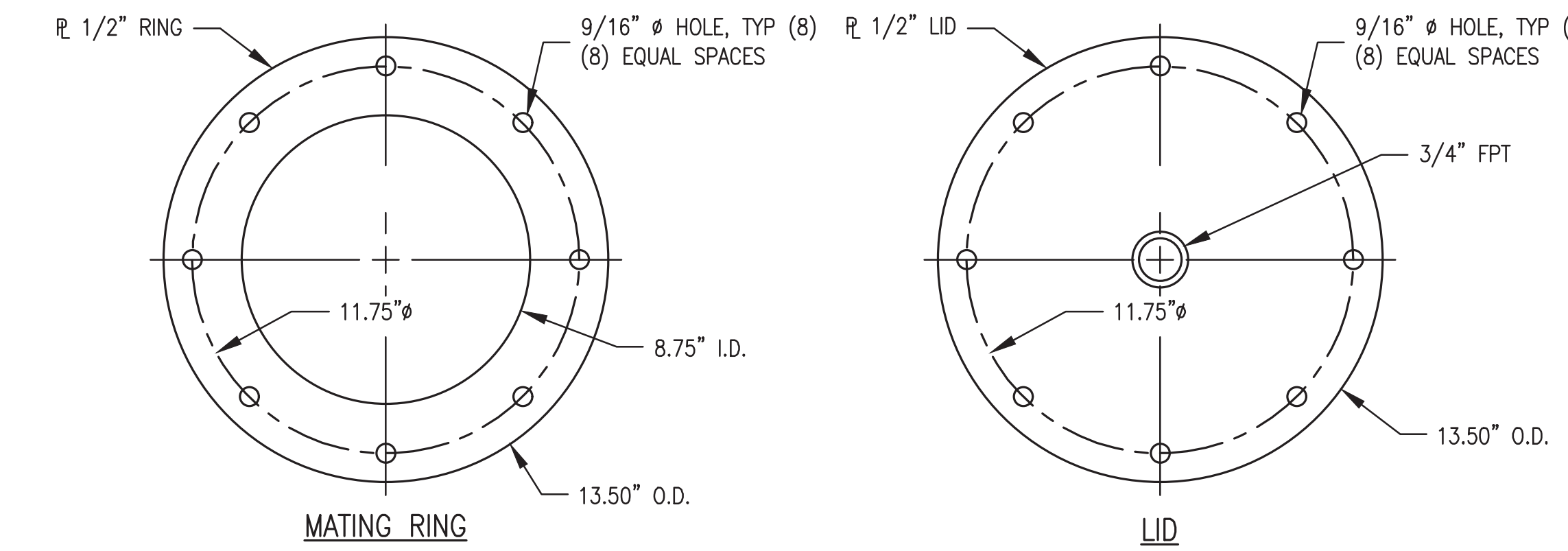
**2** NEW 24 GALLON EXPANSION TANK ET-1 INSTALLATION  
 M1.2 NO SCALE

**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.

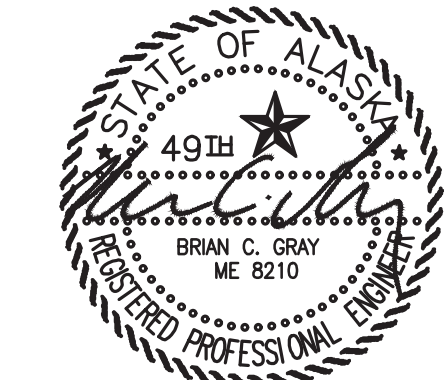


**3** NEW 24 GALLON GLYCOL EXPANSION TANK ET-1 FABRICATION  
 M1.2 1"=6"



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

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 MAY 2026



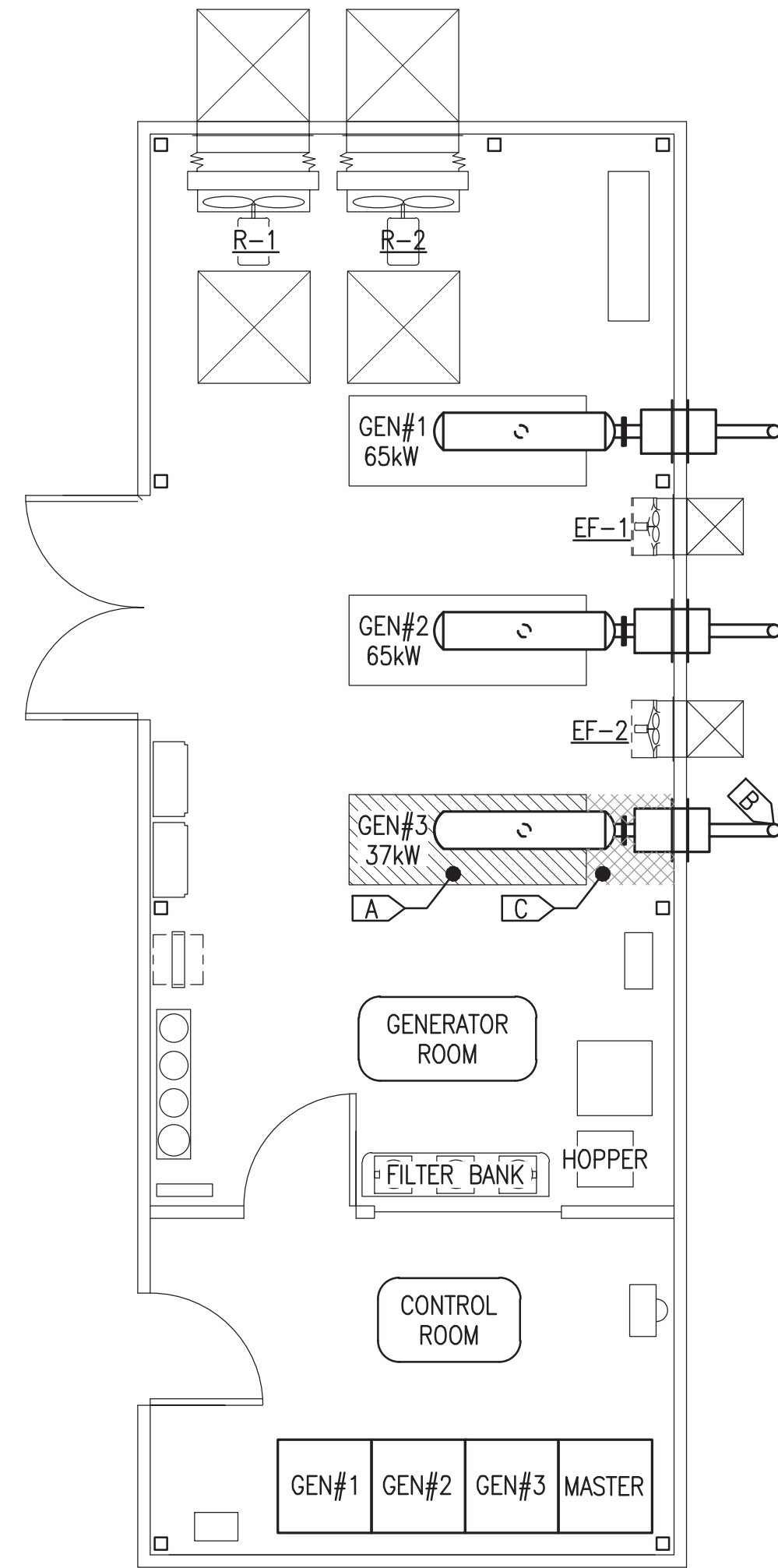
ALASKA ENERGY AUTHORITY	
PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADES	
TITLE: EXPANSION TANK ET-1 FABRICATION & INSTALLATION DETAILS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 5/5/26
FILE NAME: CHBLKB DERA M	SHEET: M1.2
PROJECT NUMBER:	
P.O. 111405, Anchorage, AK 99511 (907)349-0100	

**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 #3 ENGINE BLOCK 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 GEN#3 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#3.



**1 DEMOLITION PLAN & NOTES**

M1.3 1/4"=1'-0"

**NEW WORK GENERAL NOTES:**

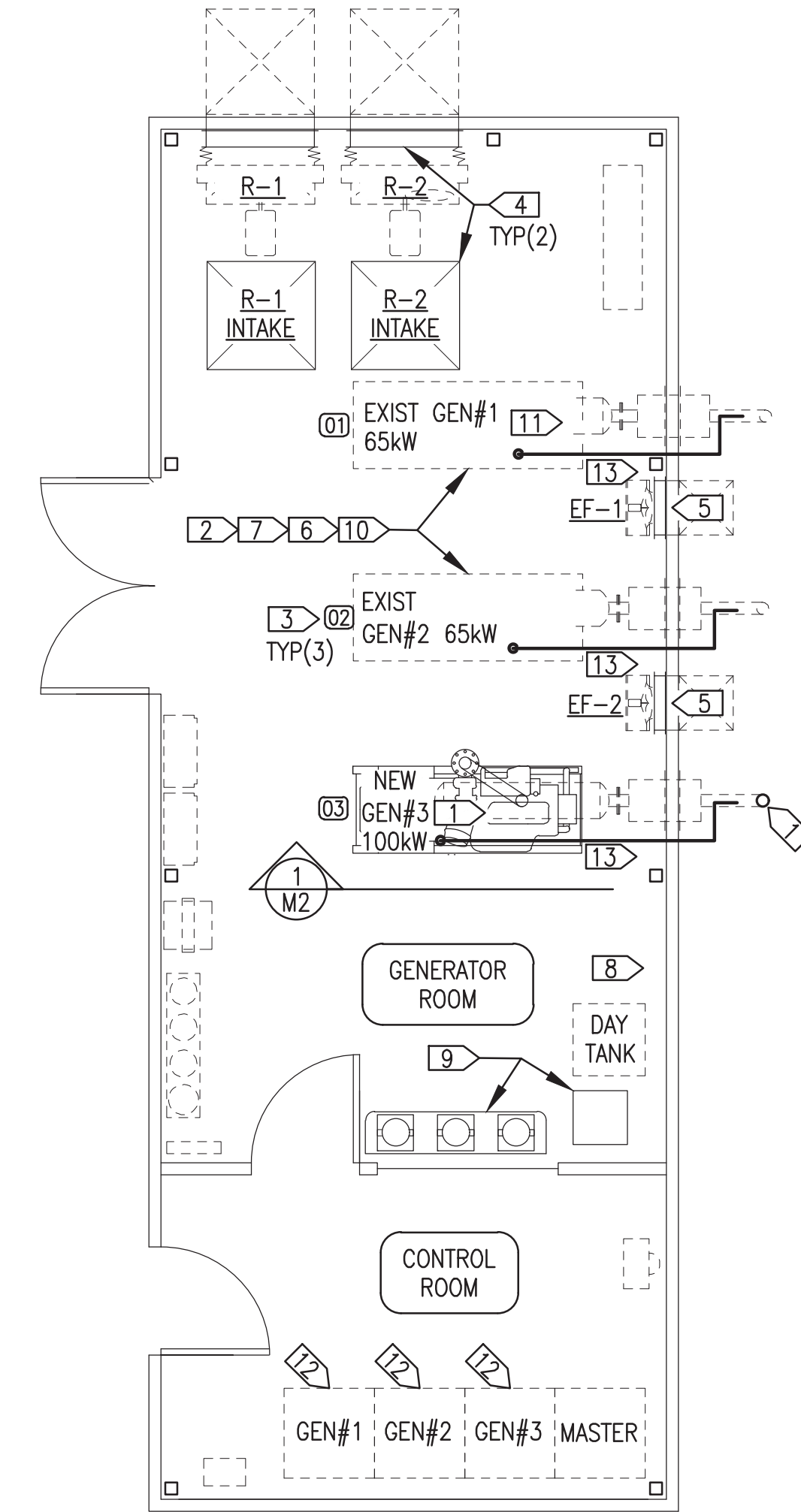
1. PRIOR TO BEGINNING NEW WORK, PERFORM ALL ENGINE COOLING SYSTEM PRELIMINARY WORK. SEE SHEET M1.
2. EXISTING EQUIPMENT AND PIPING TO REMAIN IN SERVICE SHOWN WITH LIGHT DASHED LINES.
3. NEW EQUIPMENT AND PIPING TO BE INSTALLED SHOWN WITH DARK SOLID LINES.

**NEW WORK SPECIFIC NOTES:**

- 1 INSTALL COMPLETE NEW GEN#3 INCLUDING NEW COOLANT, FUEL, EXHAUST AND CRANKCASE VENTILATION CONNECTIONS. SEE ELEVATION SHEET M2.
- 2 INSTALL NEW OR MODIFY EXISTING CRANKCASE VENTILATION ON EXISTING GEN#1 & GEN#2 TO MATCH NEW GEN#3. 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#1 AND GEN#2 TO MATCH NEW GEN#3. SEE GEN#3 PURCHASE SPECIFICATIONS.
- 7 INSTALL INSULATION BLANKETS ON EXISTING GEN#1 & GEN#2 EXHAUST FLEXES AND RISER PIPES TO MATCH NEW GEN#3. 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 REPLACE EXISTING GEN#1 4" ANSI 150# EXHAUST FLANGE GASKET AND INSTALL NEW FLANGE BOLTS.
- 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 NEW WORK PLAN & NOTES**

M1.3 1/4"=1'-0"



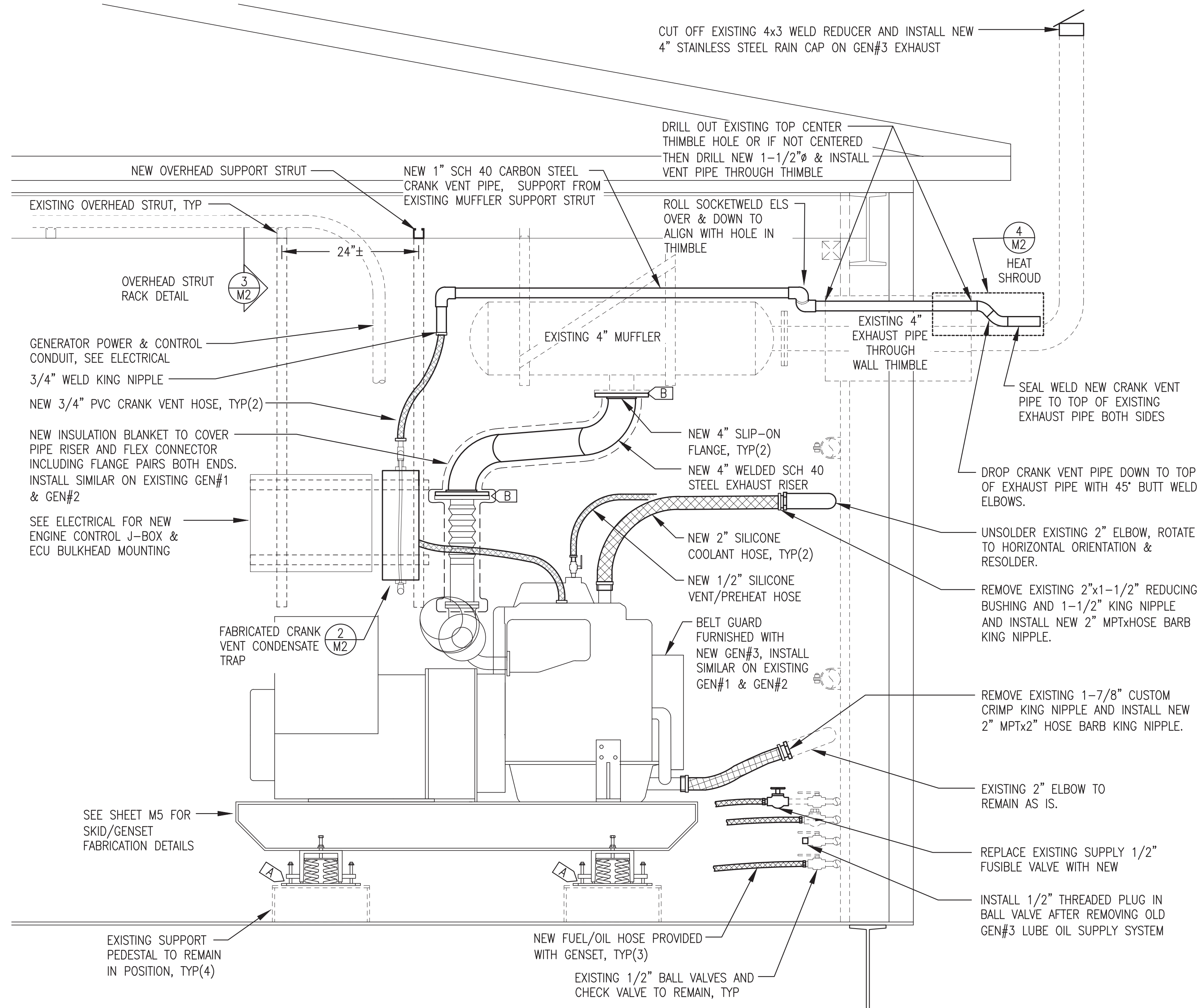
THE VENTILATION WORK SHOWN THIS SHEET INCLUDING RADIATOR DAMPERS, INTAKE DAMPERS, AND EXHAUST FAN ASSEMBLIES IS TO BE PROVIDED UNDER ADDITIVE ALTERNATE #1

ISSUED FOR CONSTRUCTION  
MAY 2026



PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADES		
TITLE: MECHANICAL DEMOLITION & NEW WORK PLANS		
DRAWN BY: JTD	SCALE: AS NOTED	
DESIGNED BY: BCG	DATE: 5/5/26	
FILE NAME: CHBLKB DERA M	SHEET:	M1.3
PROJECT NUMBER:		





**GEN#3 INSTALLATION GENERAL NOTES:**

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

**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.

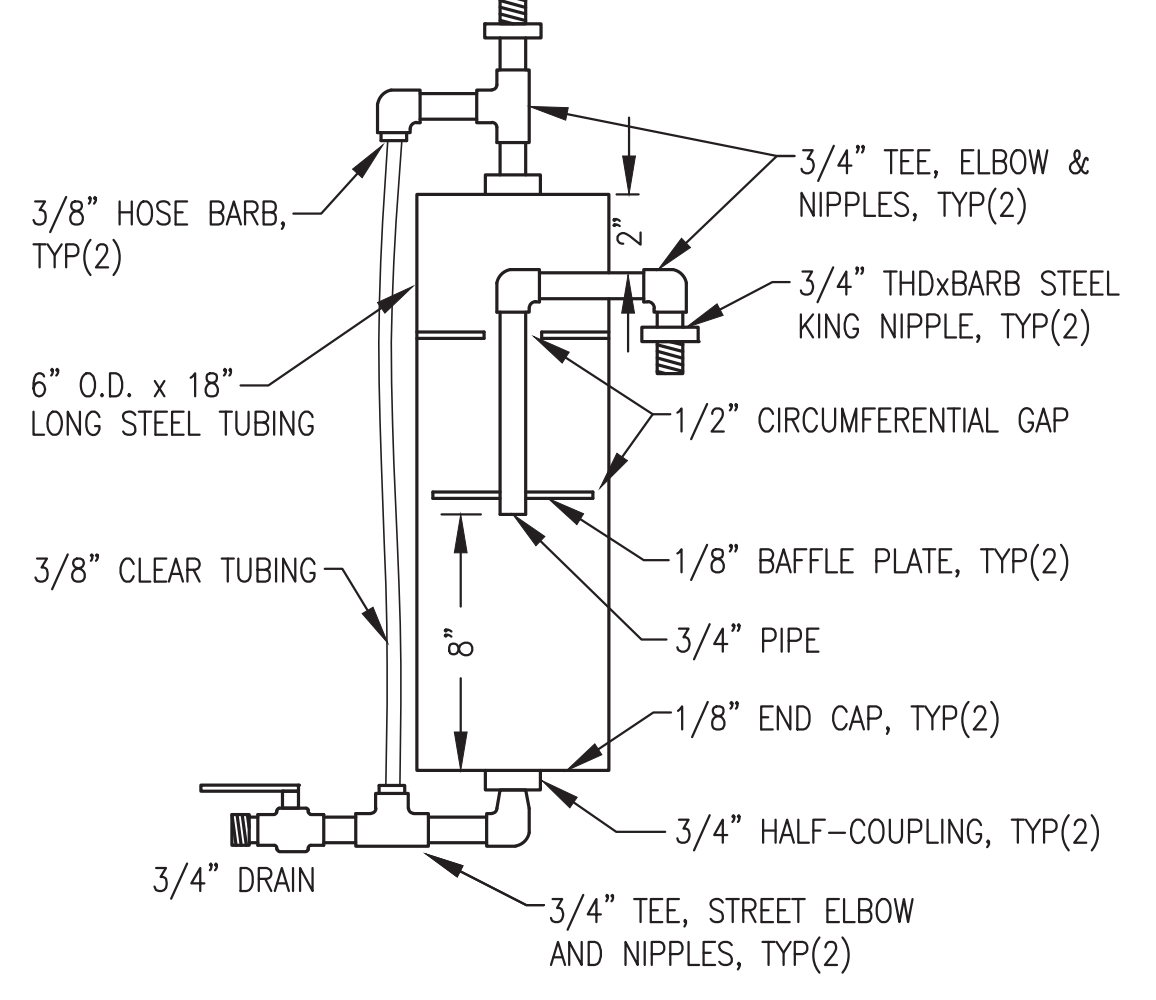
**GEN#1&#2 MODIFICATION NOTES:**

- ON GEN #1 & GEN#2 FURNISH AND INSTALL NEW EXHAUST INSULATION SIMILAR TO GEN#3 AND NEW 1/2" FUSIBLE VALVES.
- ON GEN #1 REMOVE EXISTING CRANK VENT FILTER, INSTALL NEW CONDENSATE TRAP, AND INSTALL NEW CRANK VENT PIPING EQUIVALENT TO NEW SYSTEM SHOWN FOR GEN#3.
- ON GEN #2 INSTALL NEW CONDENSATE TRAP AND MODIFY EXISTING CRANK VENT PIPING INCLUDING ROUTING THROUGH THIMBLE AND TERMINATING ON PIPE WITH HEAT SHIELD.
- ON GEN #1 & GEN#2 INSTALL NEW OWNER FURNISHED BELT GUARDS.

**1 GEN#3 INSTALLATION ELEVATION**  
1"=1'-0"

**NOTES:**

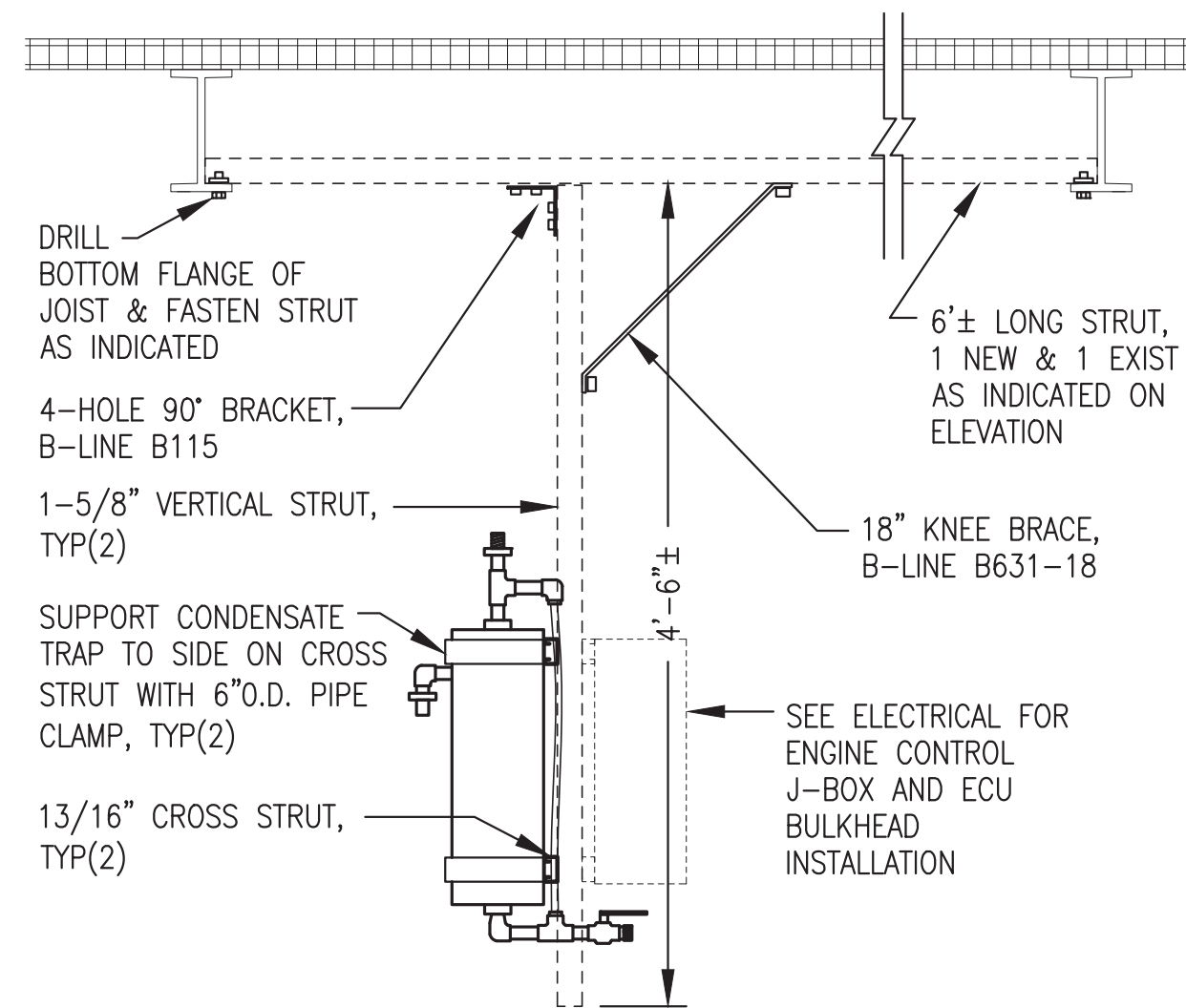
- ALL PIPE & FITTINGS 3/4" THREADED UNLESS INDICATED OTHERWISE.
- UPON COMPLETION OF FABRICATION, ROUND ALL CORNERS AND SHARP EDGES. SANDBLAST OR WIRE BRUSH EXTERIOR TO REMOVE ALL SCALE, SLAG, RUST, ETC. PRIME AND TOP COAT WITH TWO COATS EPOXY, PPG AMERLOC 2 VOC OR APPROVED EQUAL, COLOR ANSI 61 GRAY.



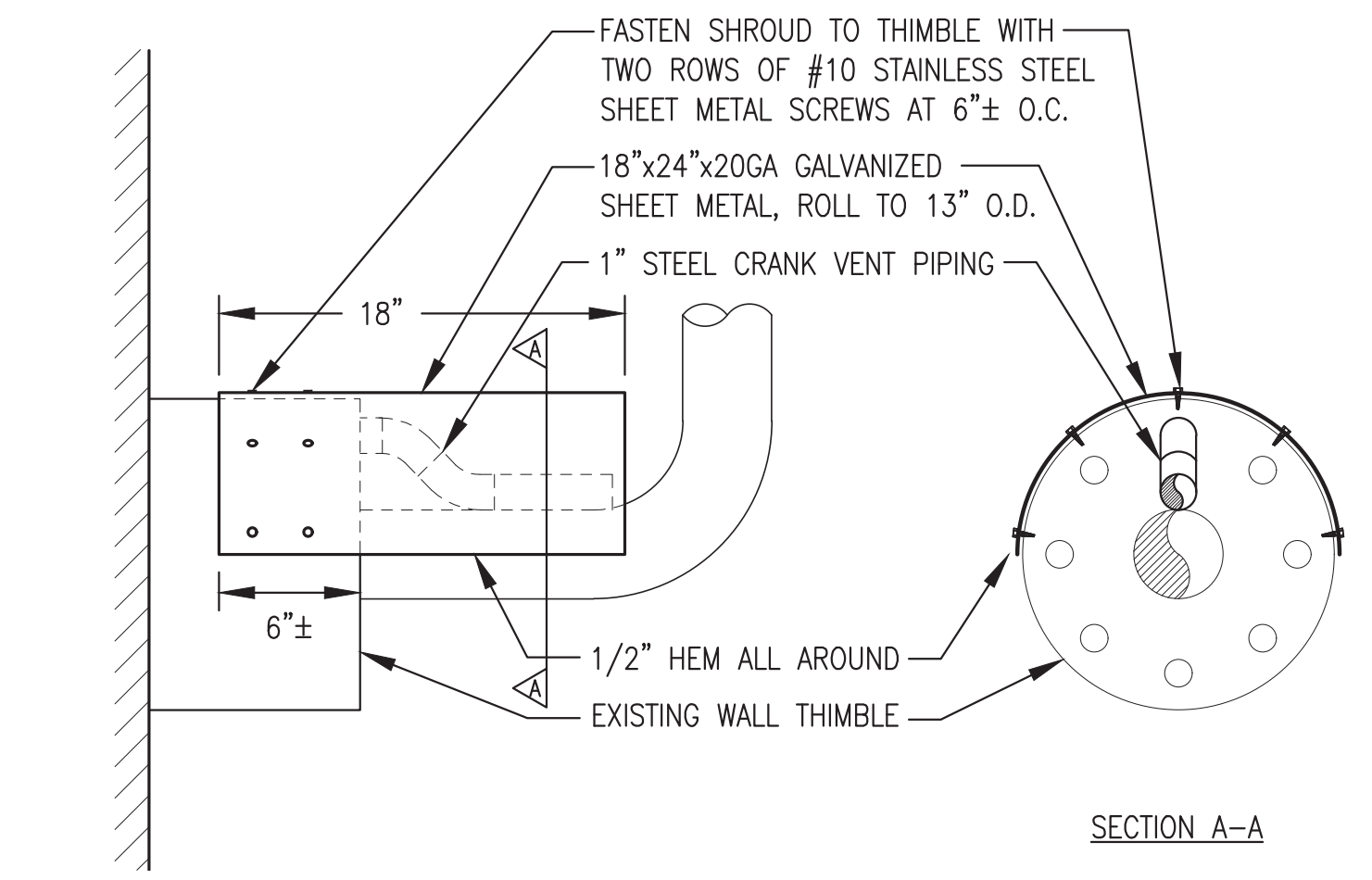
**2 CONDENSATE TRAP FABRICATION**  
NO SCALE

**NOTES:**

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



**3 OVERHEAD STRUT RACK DETAIL**  
NO SCALE

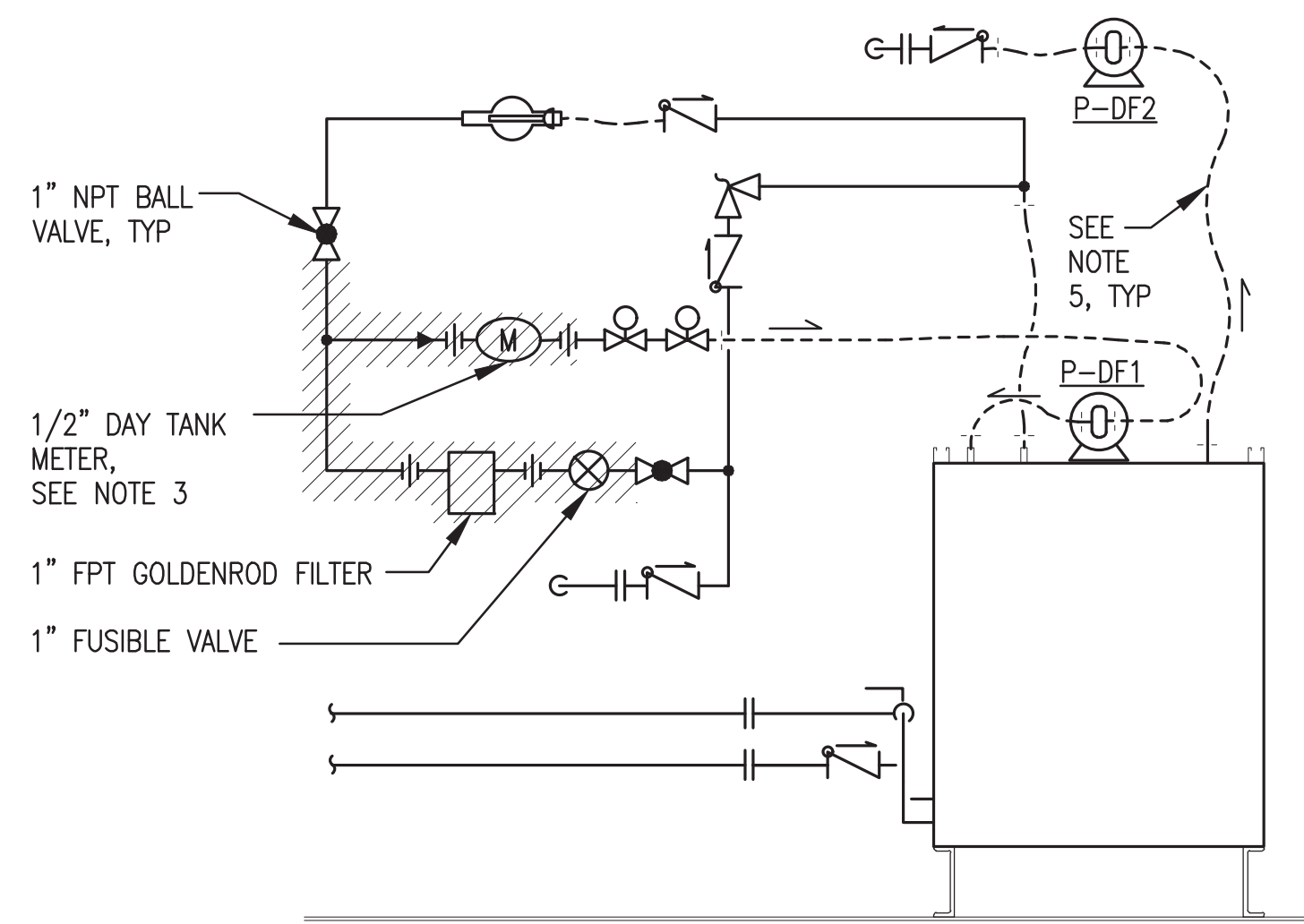


**4 CRANK VENT HEAT SHROUD**  
NO SCALE

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MAY 2026



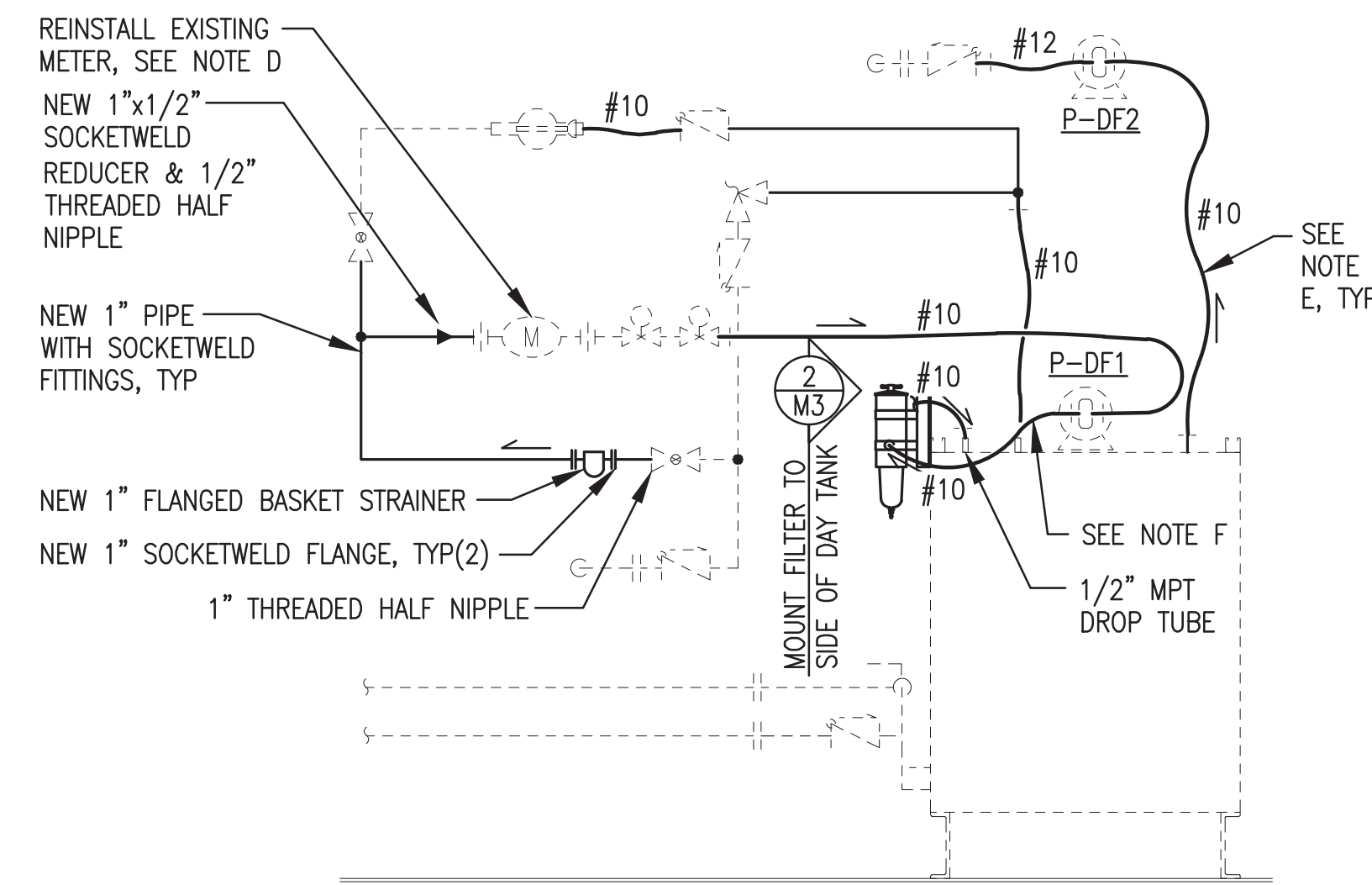
ALASKA ENERGY AUTHORITY	
PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADE	
TITLE: TYPICAL GENERATOR INSTALLATION & DETAILS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 5/5/26
FILE NAME: CHBLKB DERA M	SHEET: M2
PROJECT NUMBER:	
Gray Stassel Engineering, Inc. P.O. 111405, Anchorage, AK 99511 (907)349-0100	



DEMOLITION

**DAY TANK PIPING DEMOLITION NOTES:**

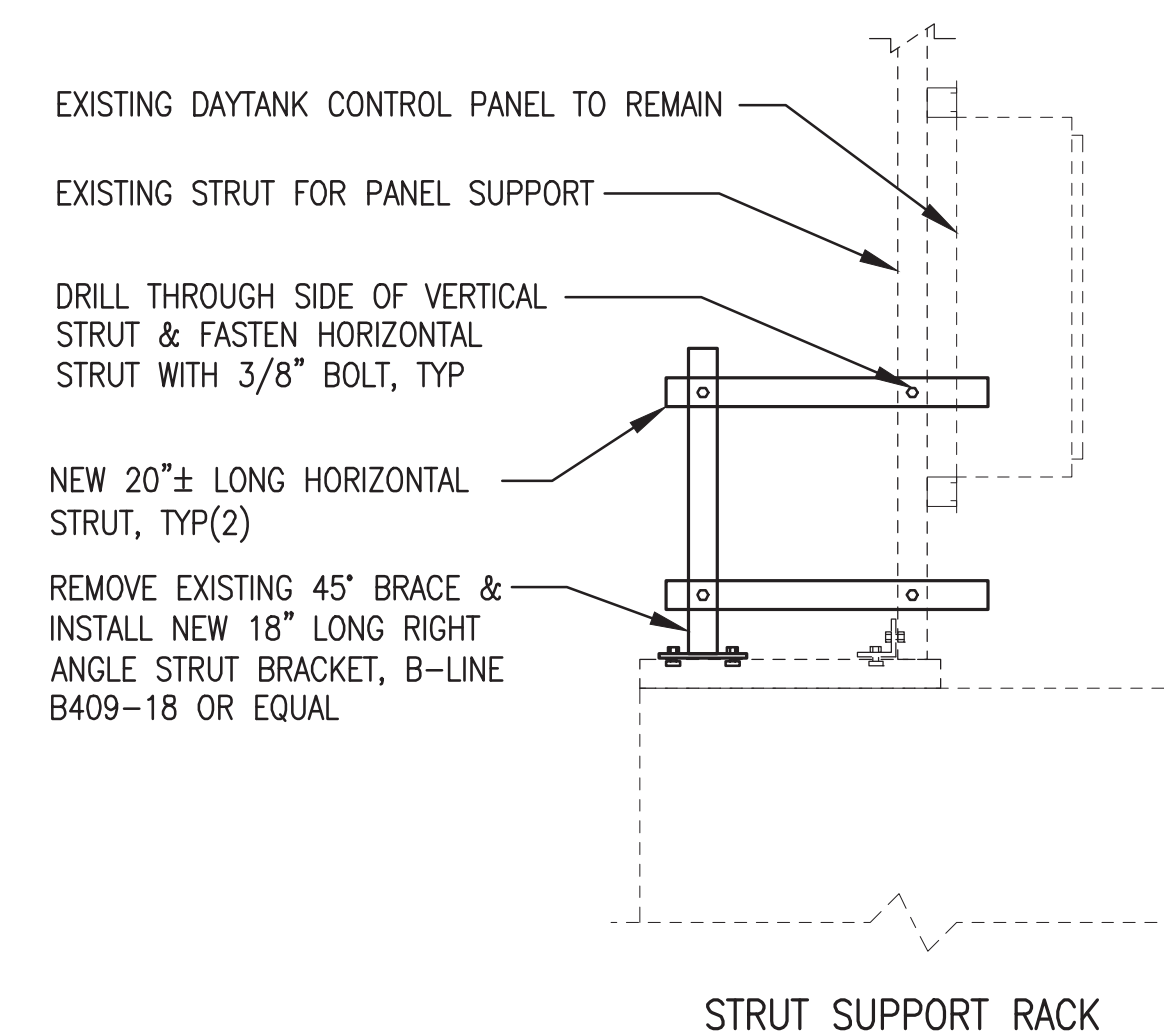
1. ALL DAY TANK PIPING NOT SHOWN FOR CLARITY. SEE 2007 RECORD DRAWINGS FOR COMPLETE INSTALLATION
2. ALL EXISTING FUEL SYSTEM EQUIPMENT AND PIPING TO BE REMOVED SHOWN HATCHED.
3. CAREFULLY REMOVE DAY TANK METER WITH INTEGRAL 1/2" THREADED UNIONS, PROTECT FROM DAMAGE, AND SAVE FOR REINSTALLATION.
4. PIPING 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.



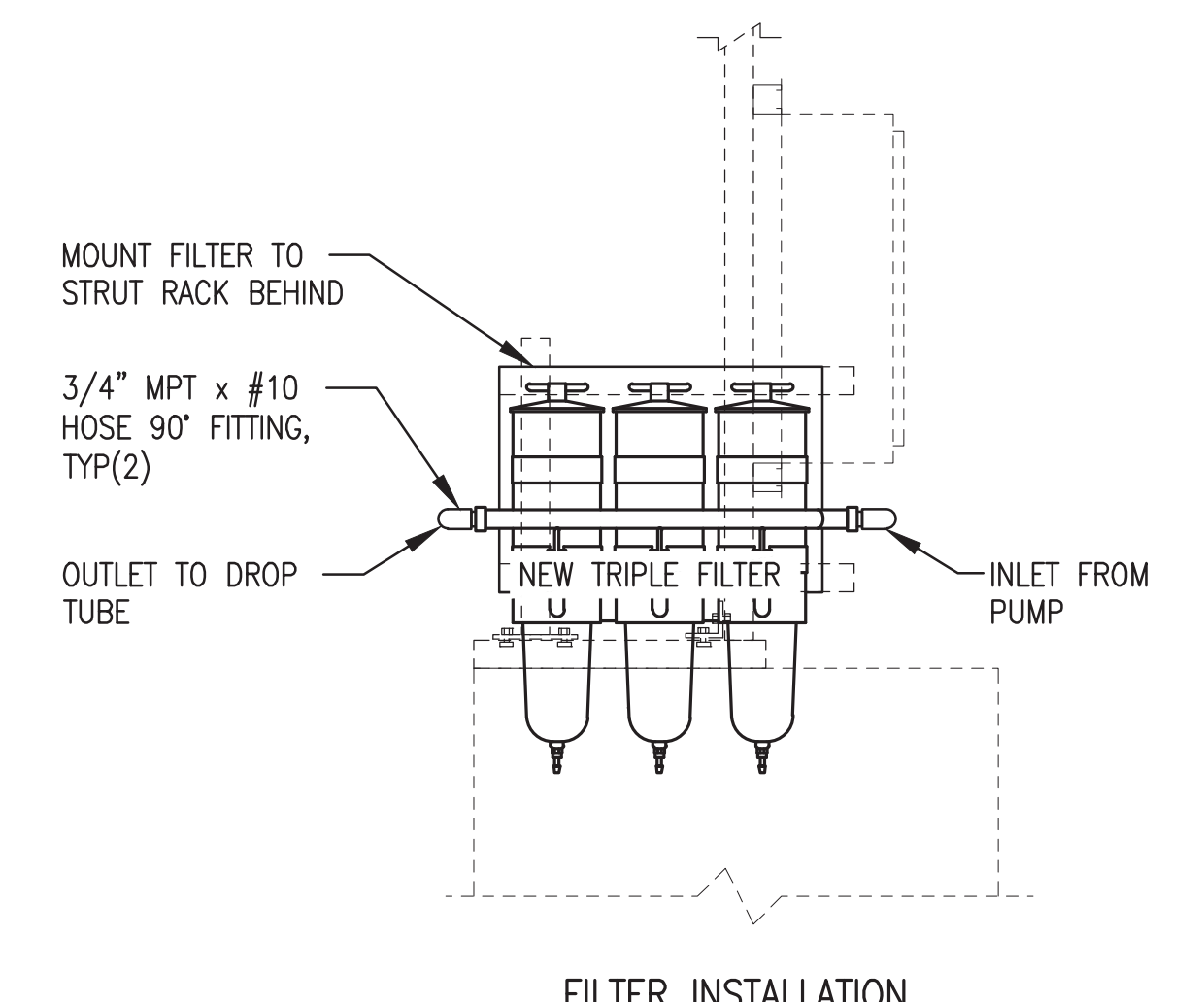
NEW WORK

**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 SHOWN 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.



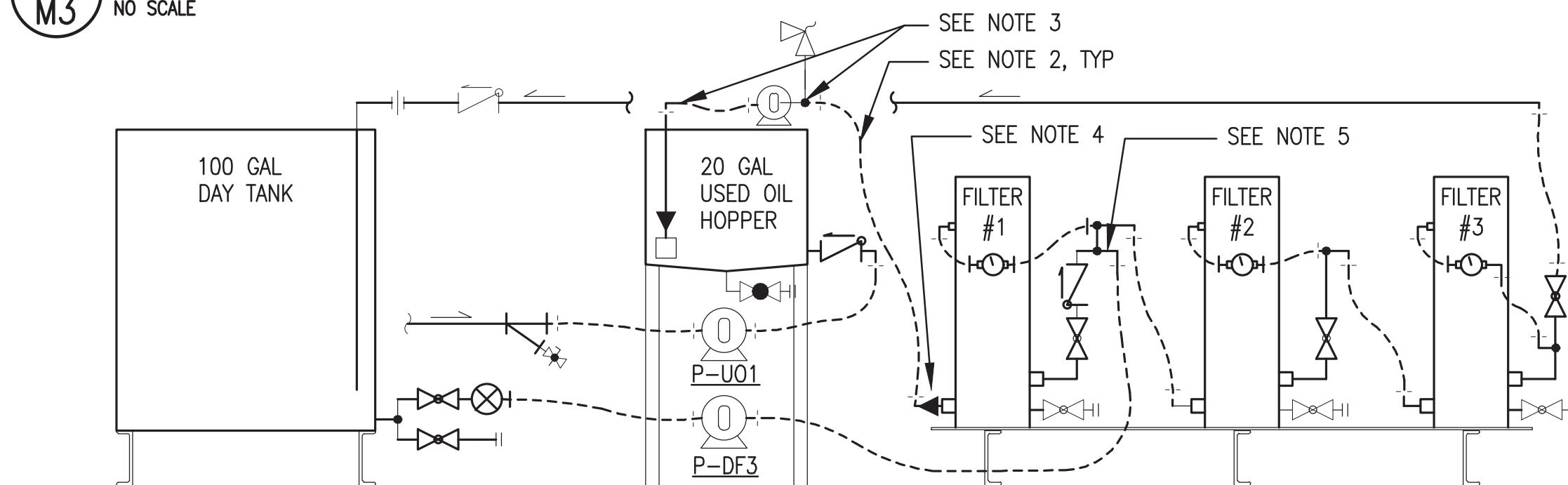
STRUT SUPPORT RACK



FILTER INSTALLATION

**2** NEW TRIPLE FILTER INSTALLATION ON DAY TANK LEFT SIDE  
**M3** NO SCALE

**1** DAY TANK PIPING MODIFICATIONS  
**M3** NO SCALE



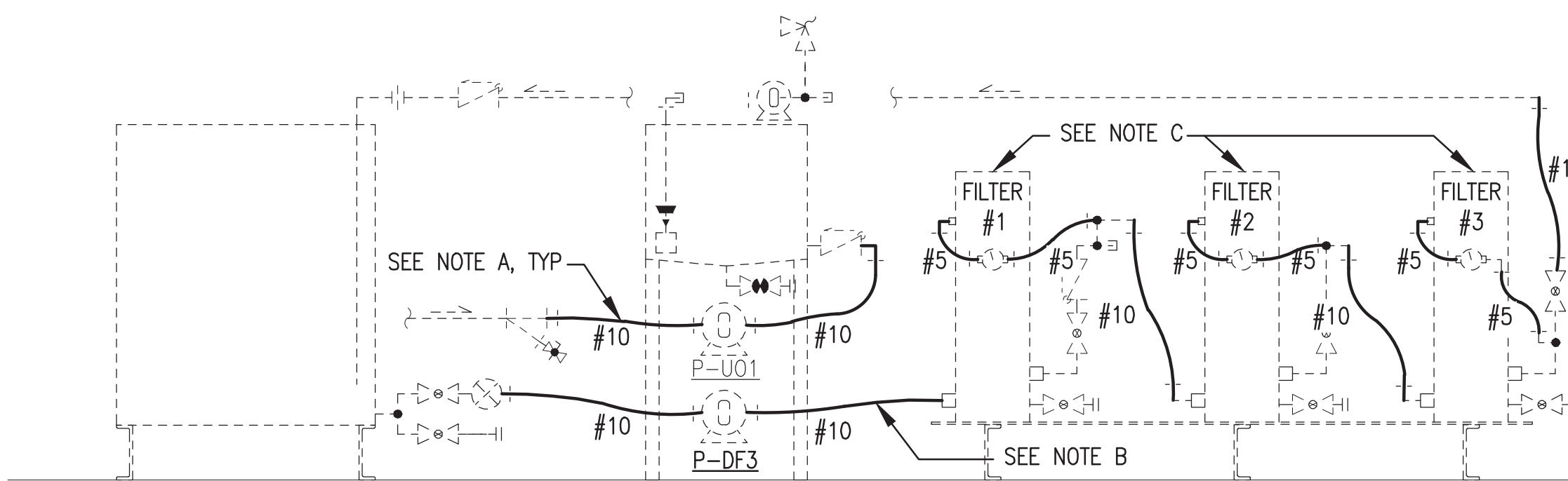
USED OIL BLENDER DEMOLITION

**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 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 #12 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.




FUEL POLISHER NEW WORK

**3** USED OIL BLENDER PIPING MODIFICATIONS FOR CONVERSION TO FUEL POLISHER  
**M3** NO SCALE

DAY TANK & FUEL POLISHER HOSE & FITTINGS SCHEDULE:		
<b>FUEL HOSE</b> - 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.
<b>STEEL HOSE SWIVEL ENDS</b> - 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.
<b>STEEL FITTING ADAPTERS</b> - 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.

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MAY 2026





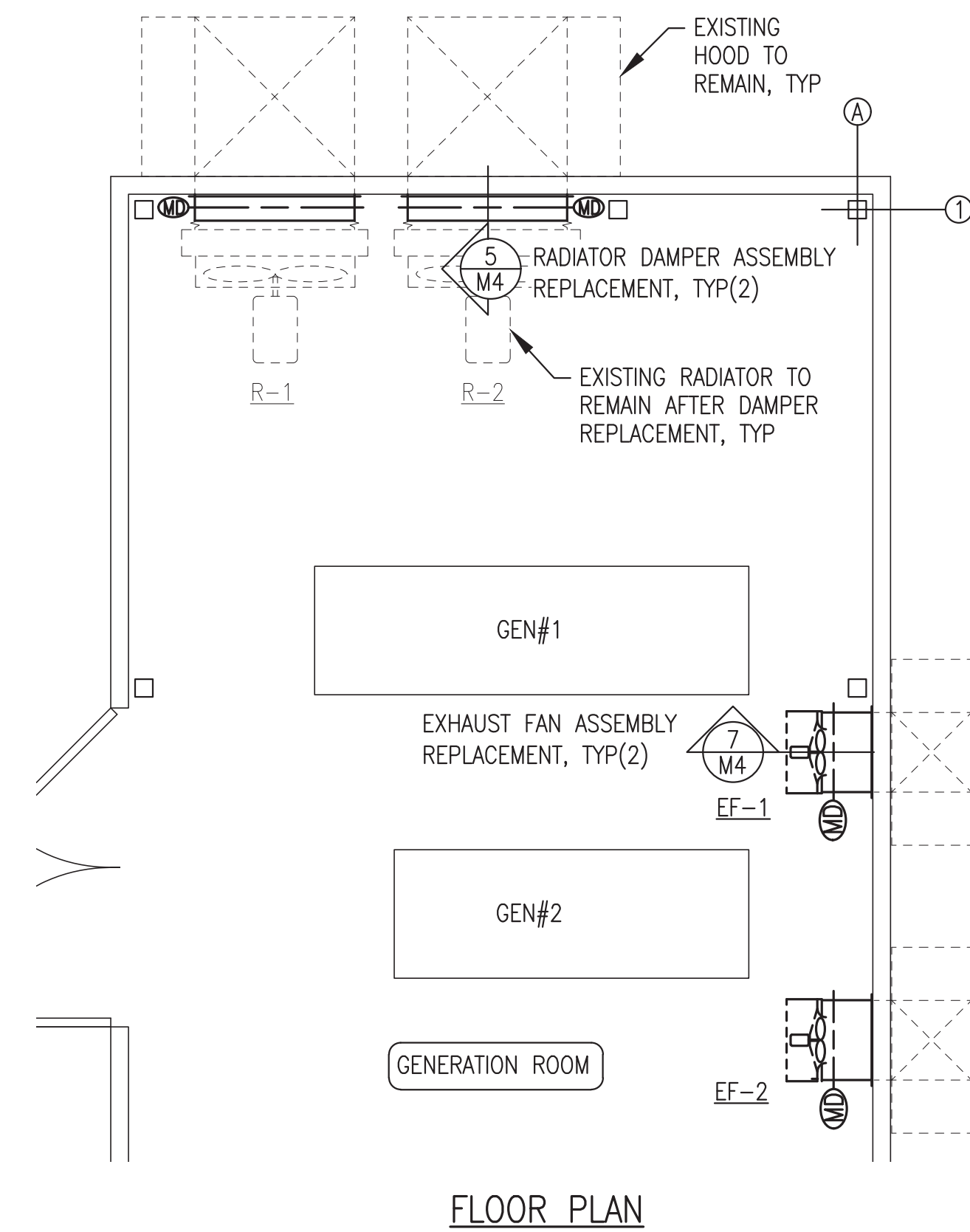
**ALASKA ENERGY AUTHORITY**

PROJECT: **MKEC 2026 DERA PROJECT  
CHUATHBALUK POWER PLANT UPGRADES**

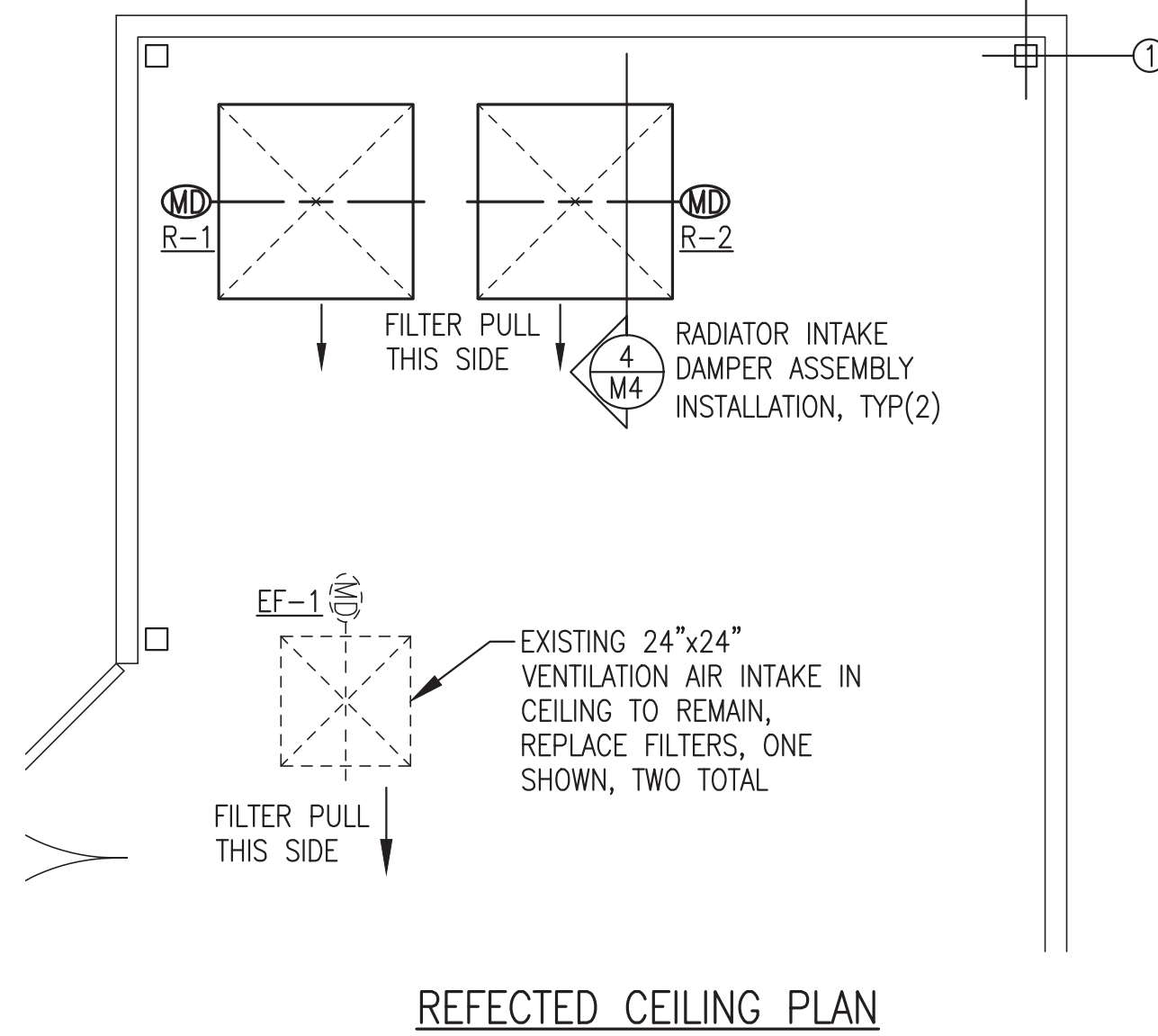
TITLE: **DAY TANK & USED OIL BLENDER PIPING MODIFICATIONS**

DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 5/5/26
FILE NAME: CHBLKB DERA M	SHEET: <b>M3</b>
PROJECT NUMBER:	

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



FLOOR PLAN

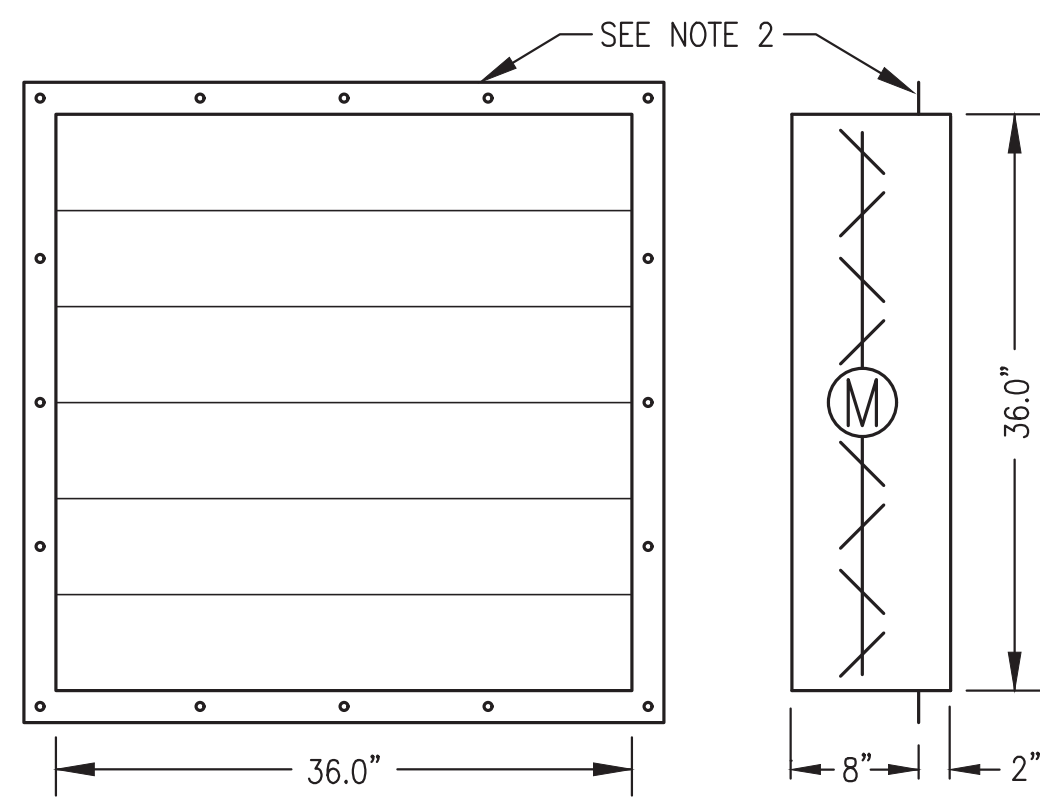


REFLECTED CEILING PLAN

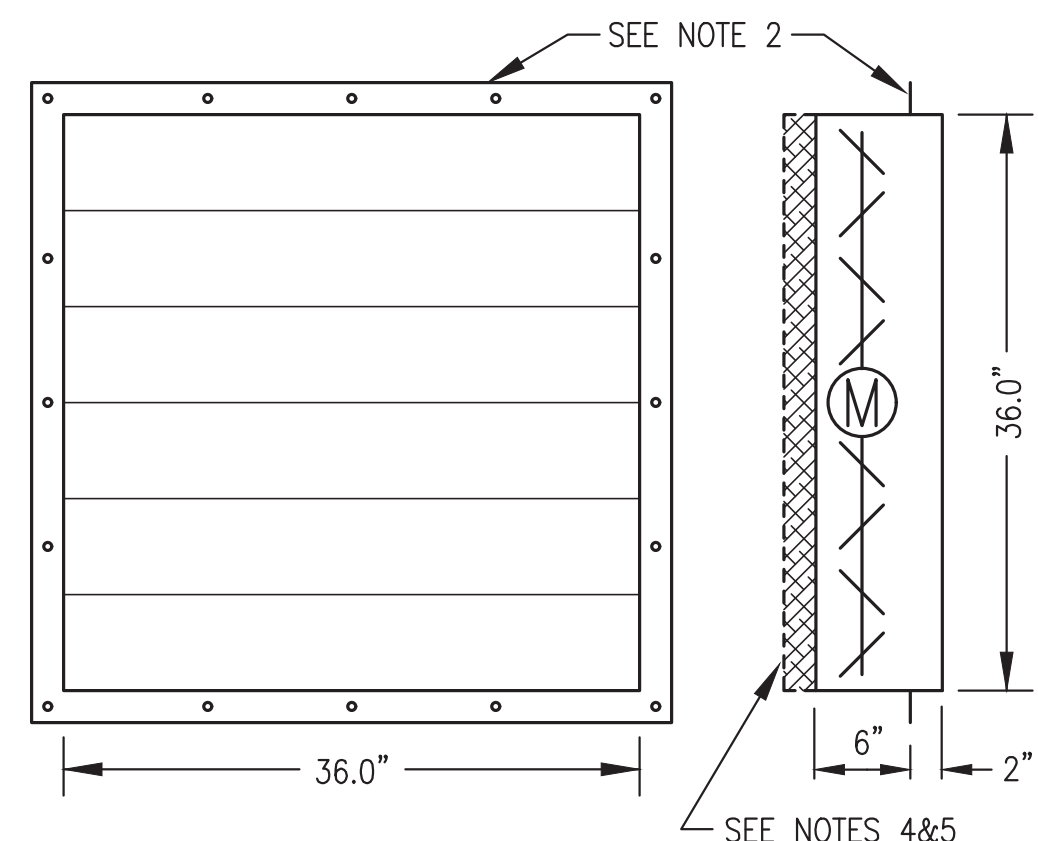
**INTAKE AIR FILTER ELEMENT REPLACEMENT NOTES:**

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



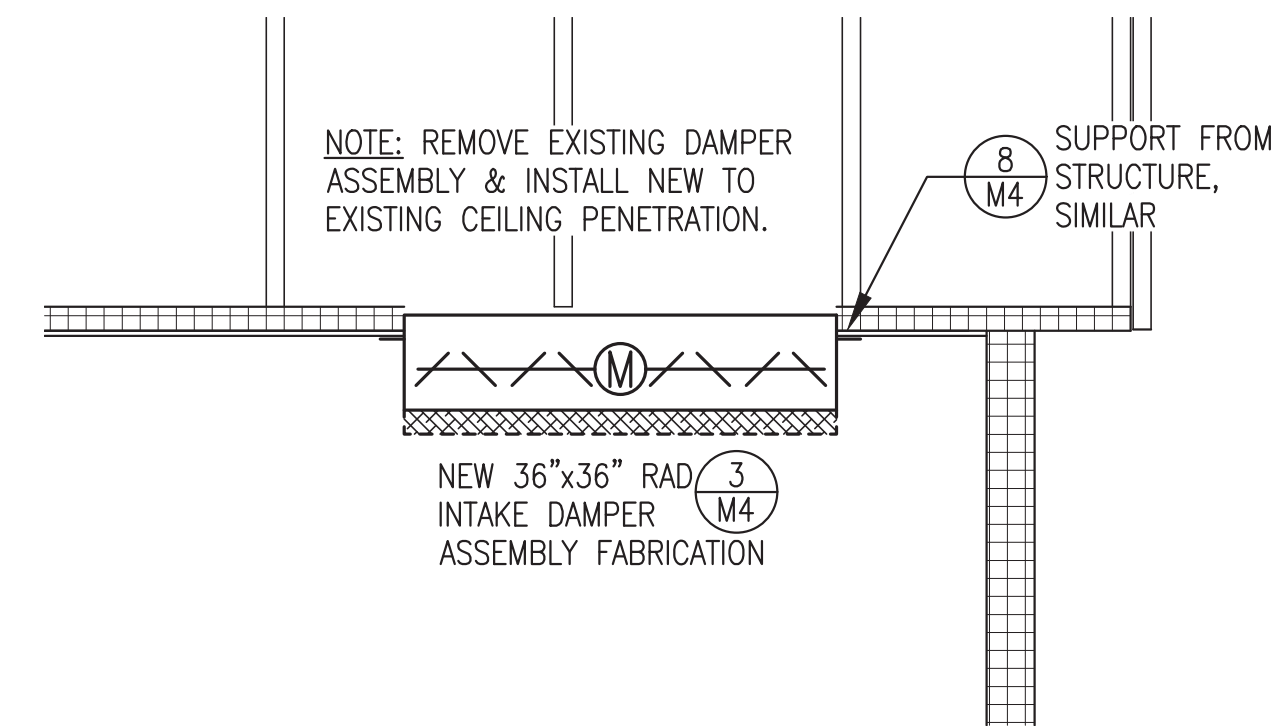
- NOTES:
1. FABRICATE TWO 36"x36" RADIATOR DAMPER ASSEMBLIES.
  2. PROVIDE 2" WIDE MOUNTING FLANGE ALL AROUND WITH 5/16" HOLES AT 9" O.C.
  3. PROVIDE MIN 3" DAMPER ROD EXTENSION ON ONE SIDE OF EACH OF THE TWO ASSEMBLIES, ONE FACING RIGHT AND ONE FACING LEFT. FABRICATE SHEET METAL STAND-OFF BRACKET TO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



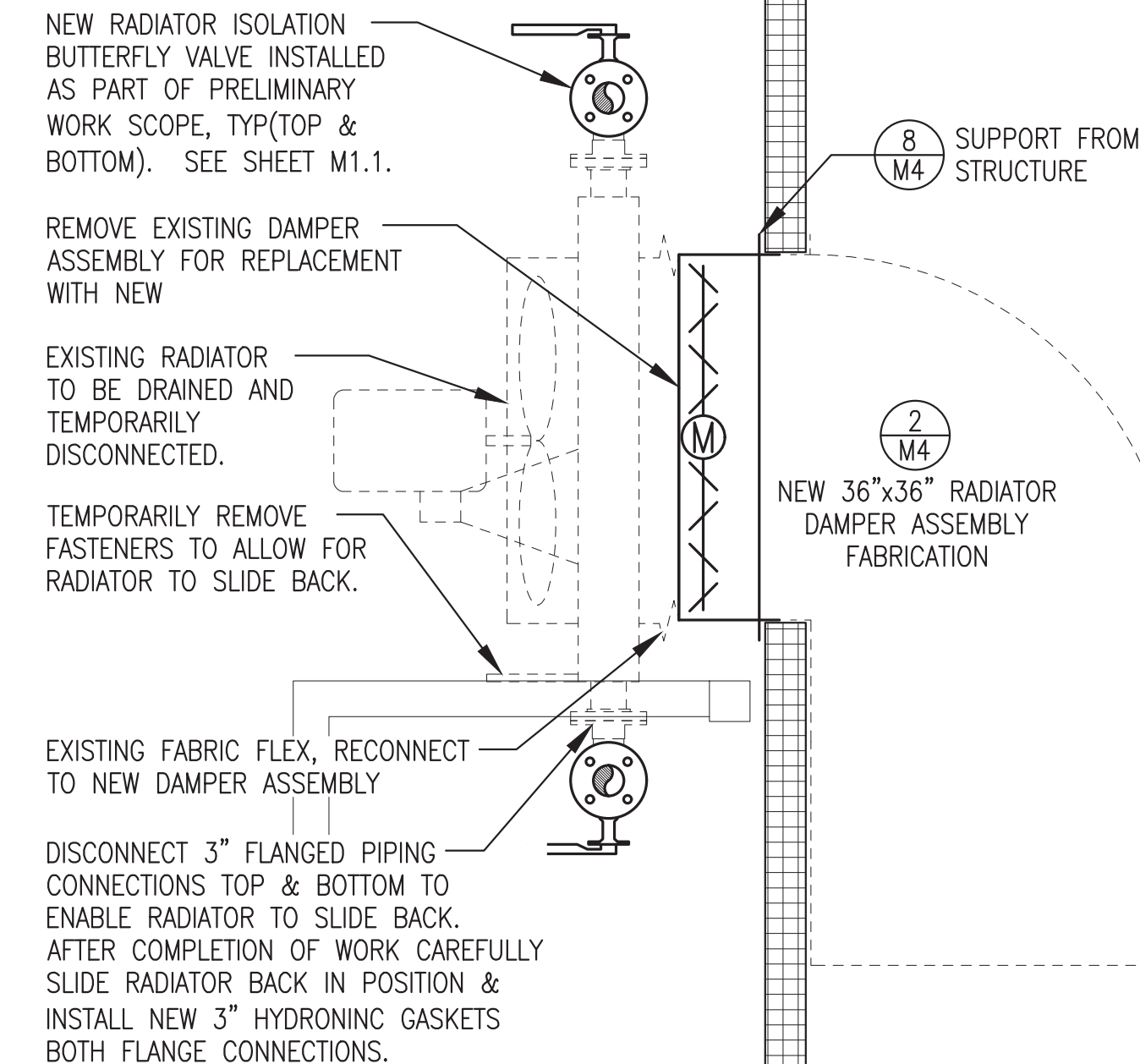
- NOTES:
1. FABRICATE TWO 36"x36" RADIATOR INTAKE DAMPER ASSEMBLIES.
  2. PROVIDE 2" WIDE MOUNTING FLANGE ALL AROUND WITH 5/16" HOLES AT 9" O.C.
  3. PROVIDE MIN 3" DAMPER ROD EXTENSION ON ONE SIDE OF EACH OF THE TWO ASSEMBLIES, ONE FACING RIGHT AND ONE FACING LEFT. FABRICATE SHEET METAL STAND-OFF BRACKET 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.

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

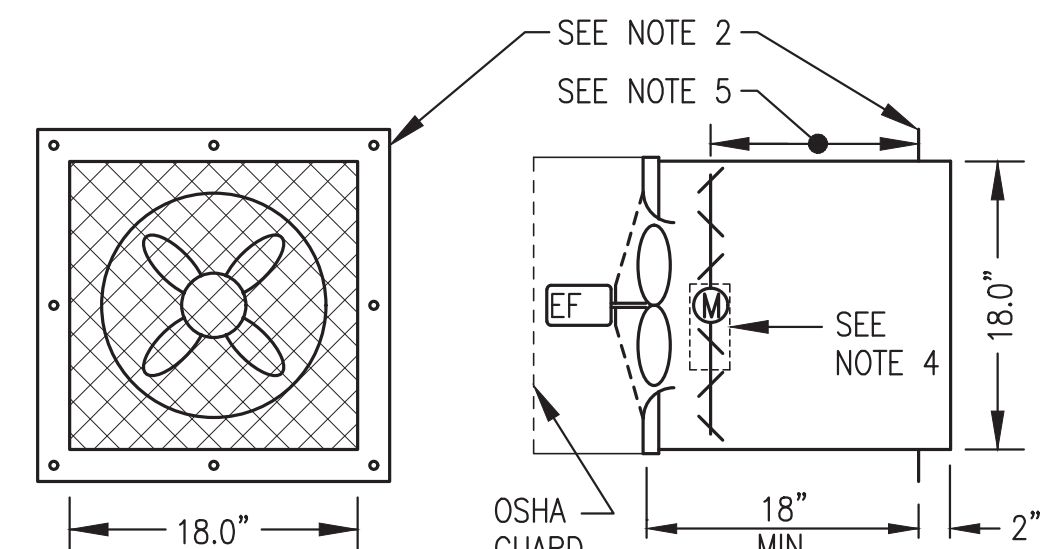
**3 RADIATOR INTAKE DAMPER ASSEMBLY FABRICATION**  
1"=1'-0"



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

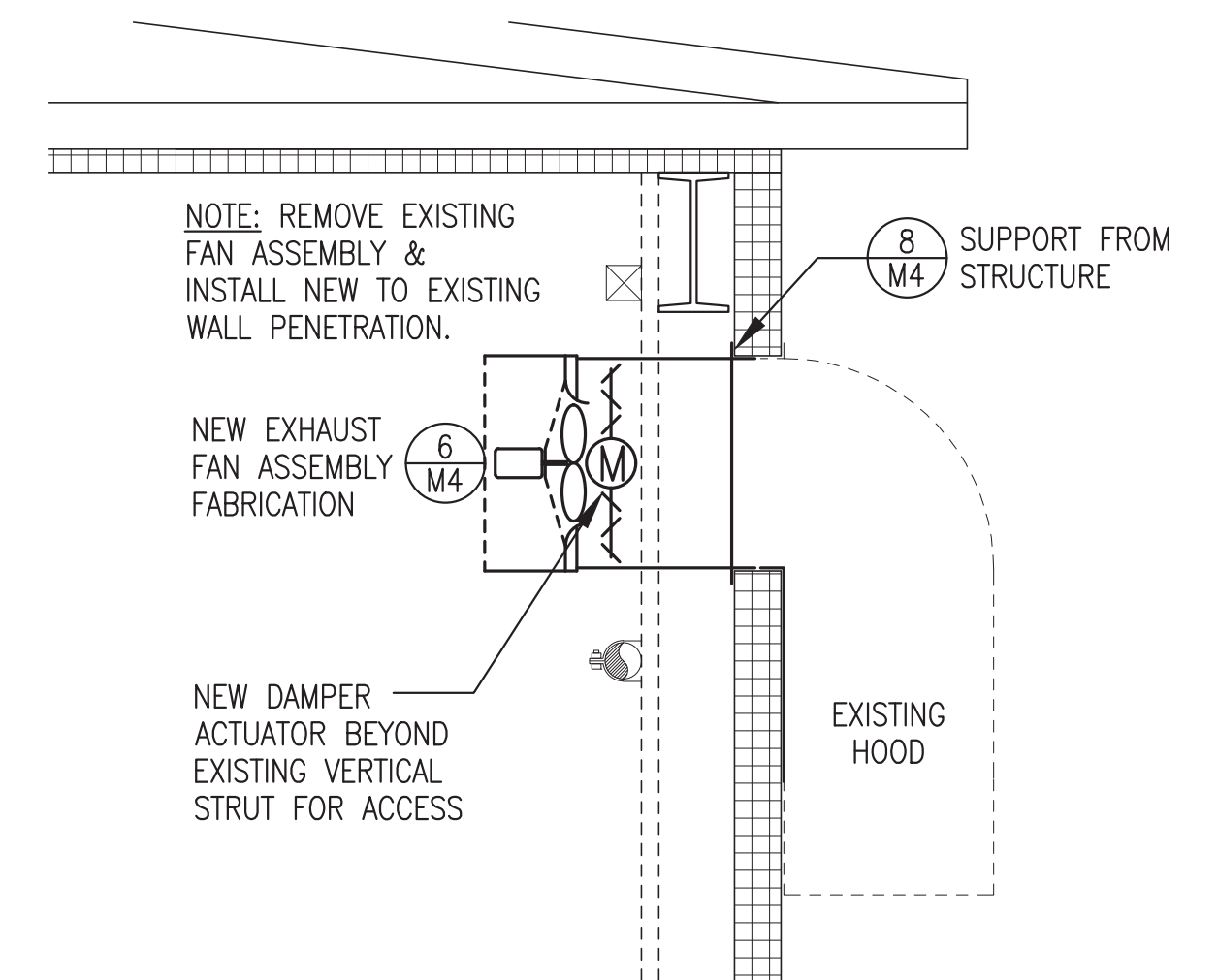


**5 RADIATOR DAMPER ASSEMBLY REPLACEMENT**  
3/4"=1'-0"

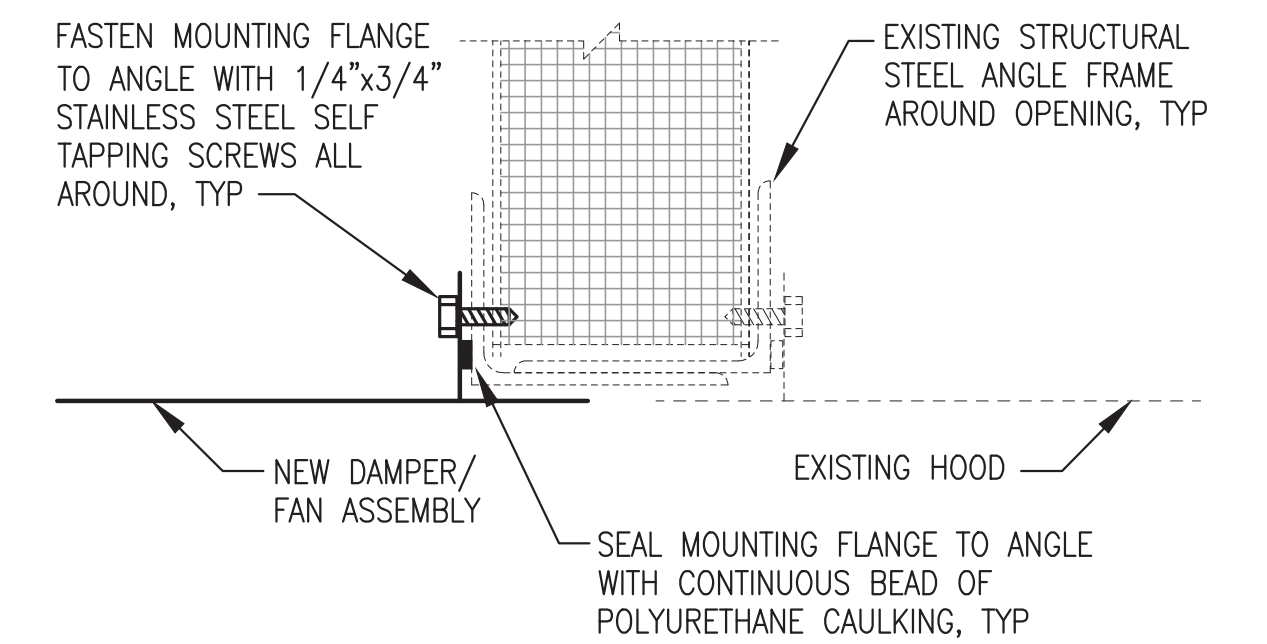


- NOTES:
1. FABRICATE TWO IDENTICAL ASSEMBLIES. ASSEMBLE COMPLETE WITH FAN AND DAMPER MOUNTED AND SEALED TO DUCT.
  2. PROVIDE 2" WIDE MOUNTING FLANGE ALL AROUND WITH 5/16" HOLES AT 10" O.C.
  3. PROVIDE MIN 3" DAMPER ROD EXTENSION ON THE SAME SIDE FOR BOTH ASSEMBLIES.
  4. FABRICATE SHEET METAL STAND-OFF 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 EXHAUST FAN ASSEMBLY FABRICATION**  
1"=1'-0"



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

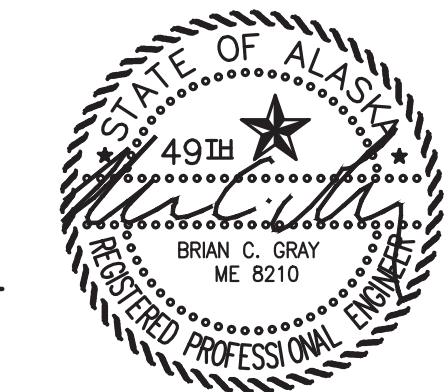


NOTE: WALL PENETRATION SHOWN, CEILING SIMILAR EXCEPT NO HOOD.

**8 DAMPER/FAN SUPPORT FROM STRUCTURE**  
NO SCALE

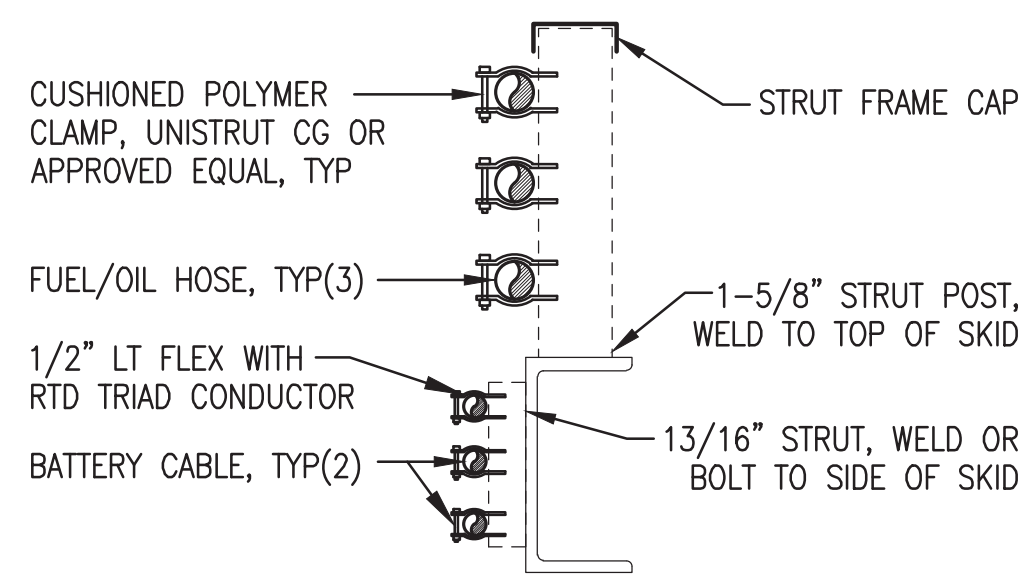
ALL WORK SHOWN THIS SHEET IS TO BE PROVIDED UNDER ADDITIVE ALTERNATE #1.

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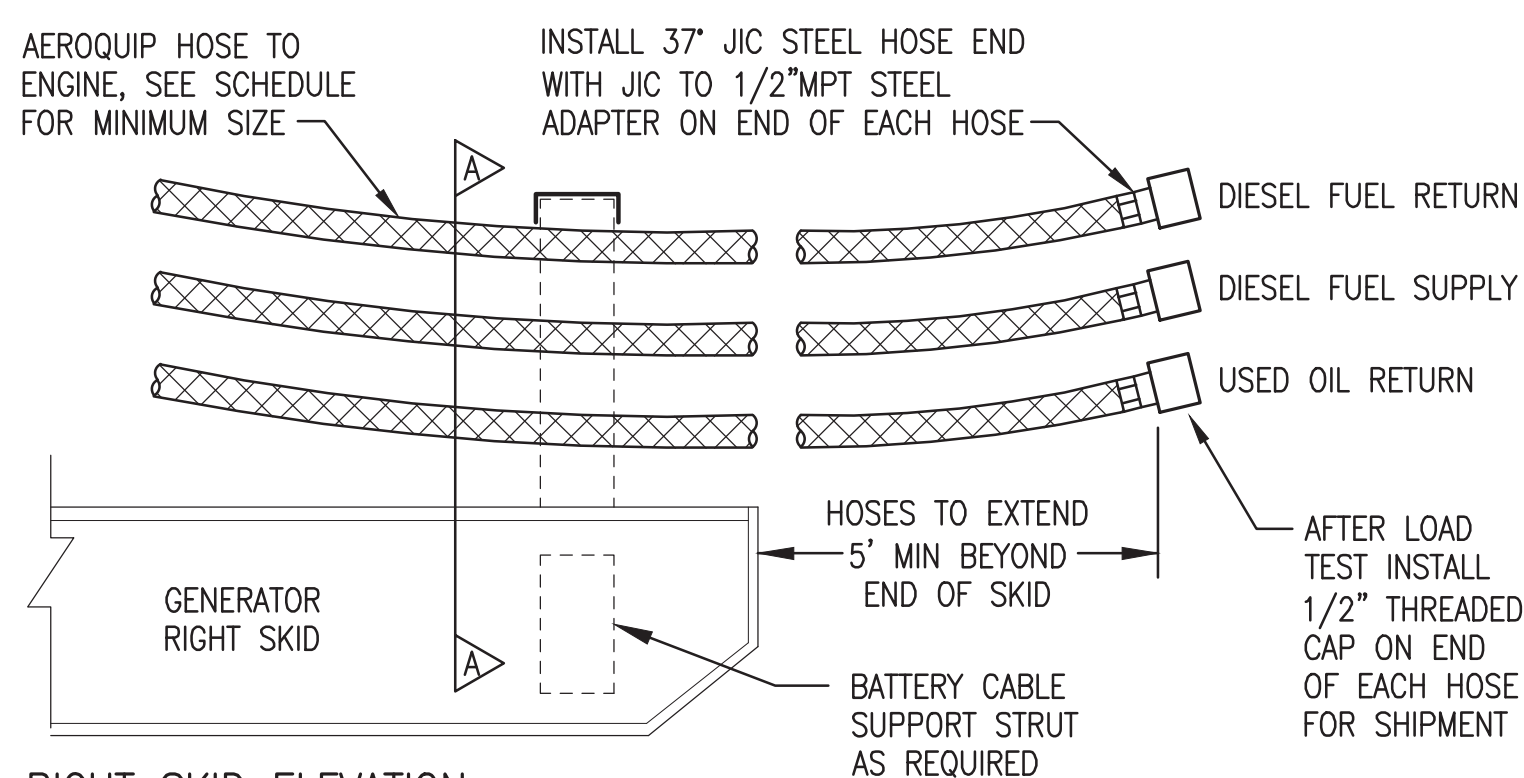


PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADES	
TITLE: VENTILATION SYSTEM UPGRADE PLANS & DETAILS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 5/5/26
FILE NAME: CHBLKB DERA M	SHEET: M4
PROJECT NUMBER:	

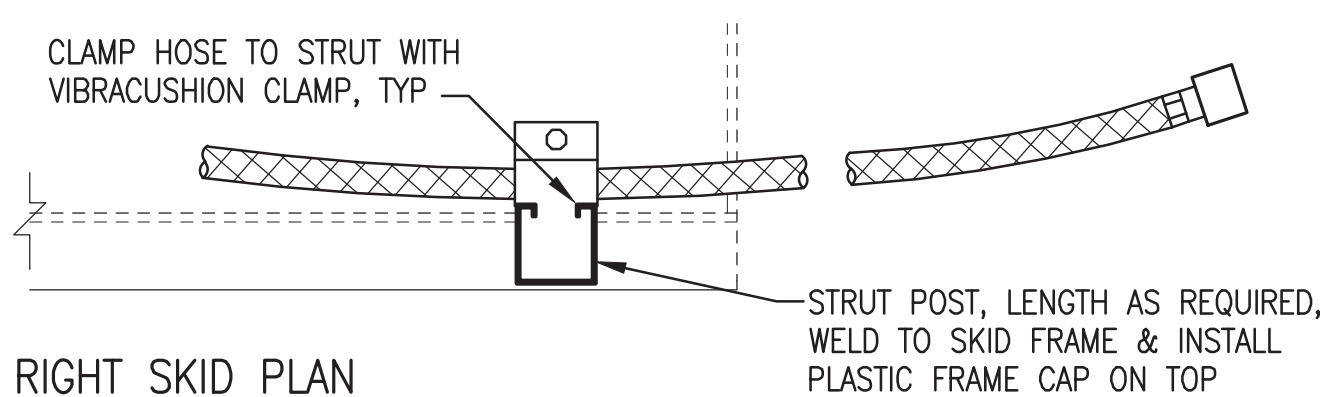




RIGHT SKID SECTION A-A

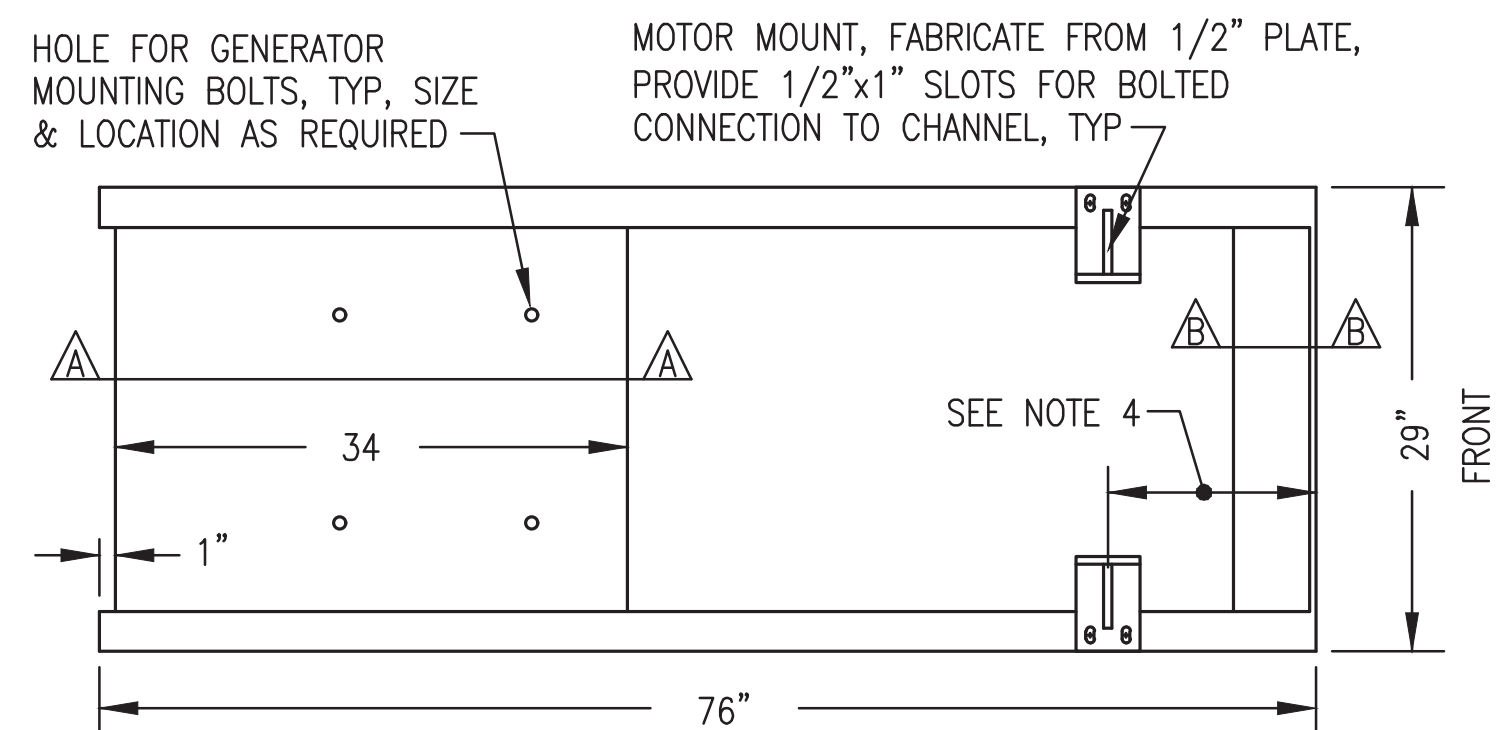


RIGHT SKID ELEVATION

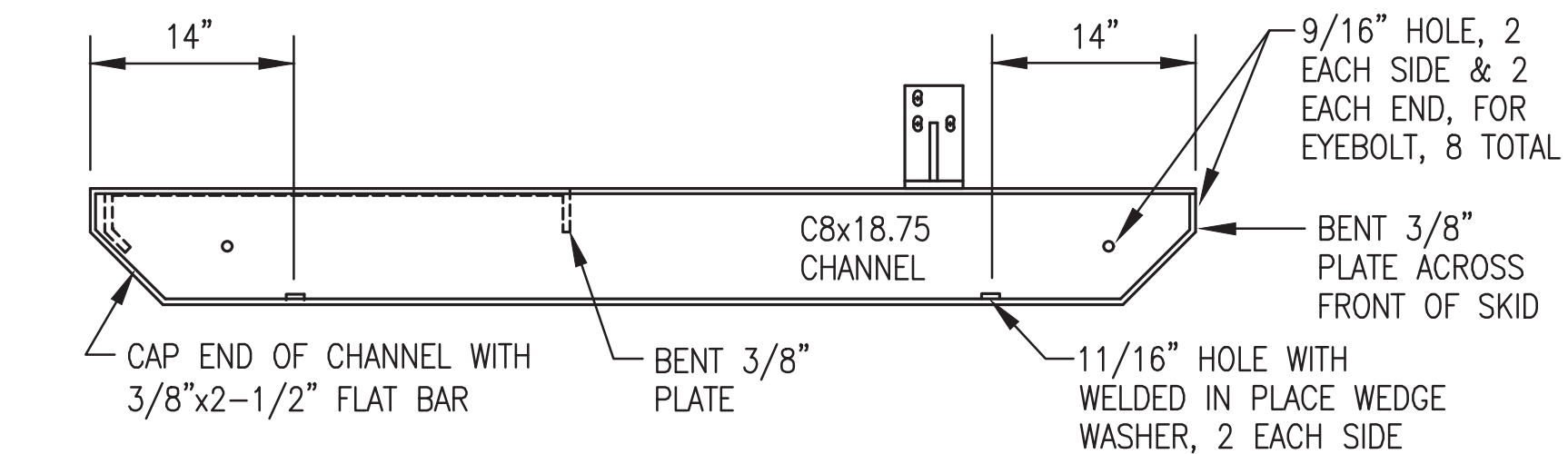


RIGHT SKID PLAN

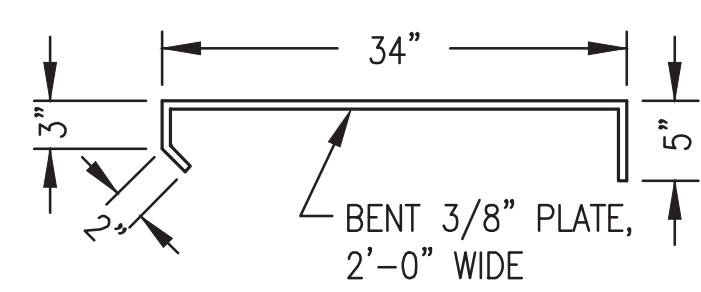
**1** FUEL & OIL HOSE TERMINATIONS  
M5 NO SCALE



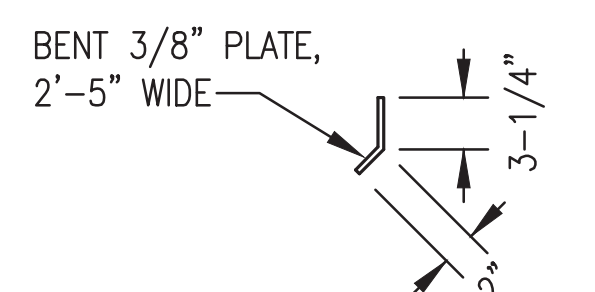
PLAN (TOP) VIEW



ELEVATION (SIDE) VIEW



SECTION A-A

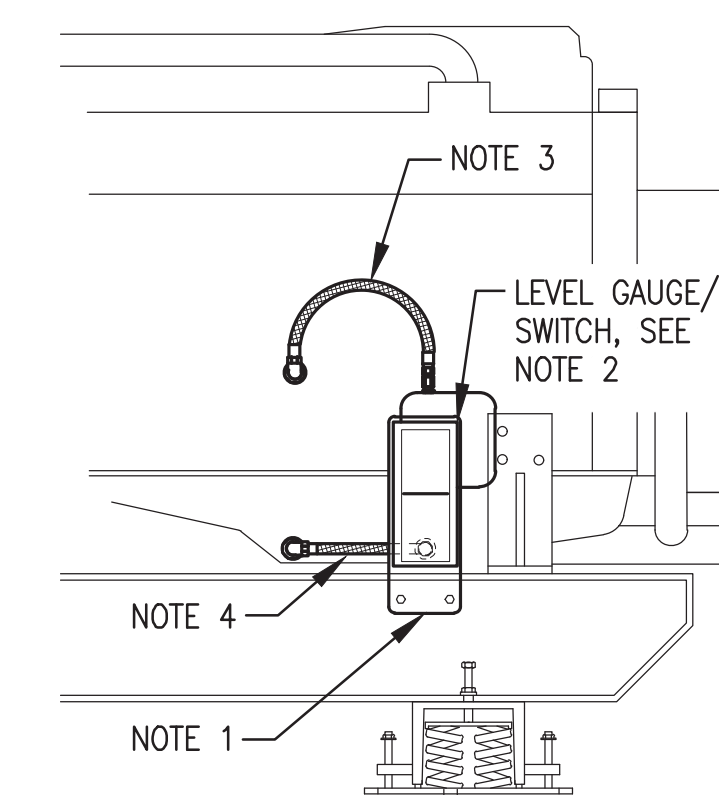


SECTION B-B

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** GEN#3 (JOHN DEERE 4045) SKID DESIGN  
M5 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** OIL LEVEL GAUGE/SWITCH INSTALLATION  
M5 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



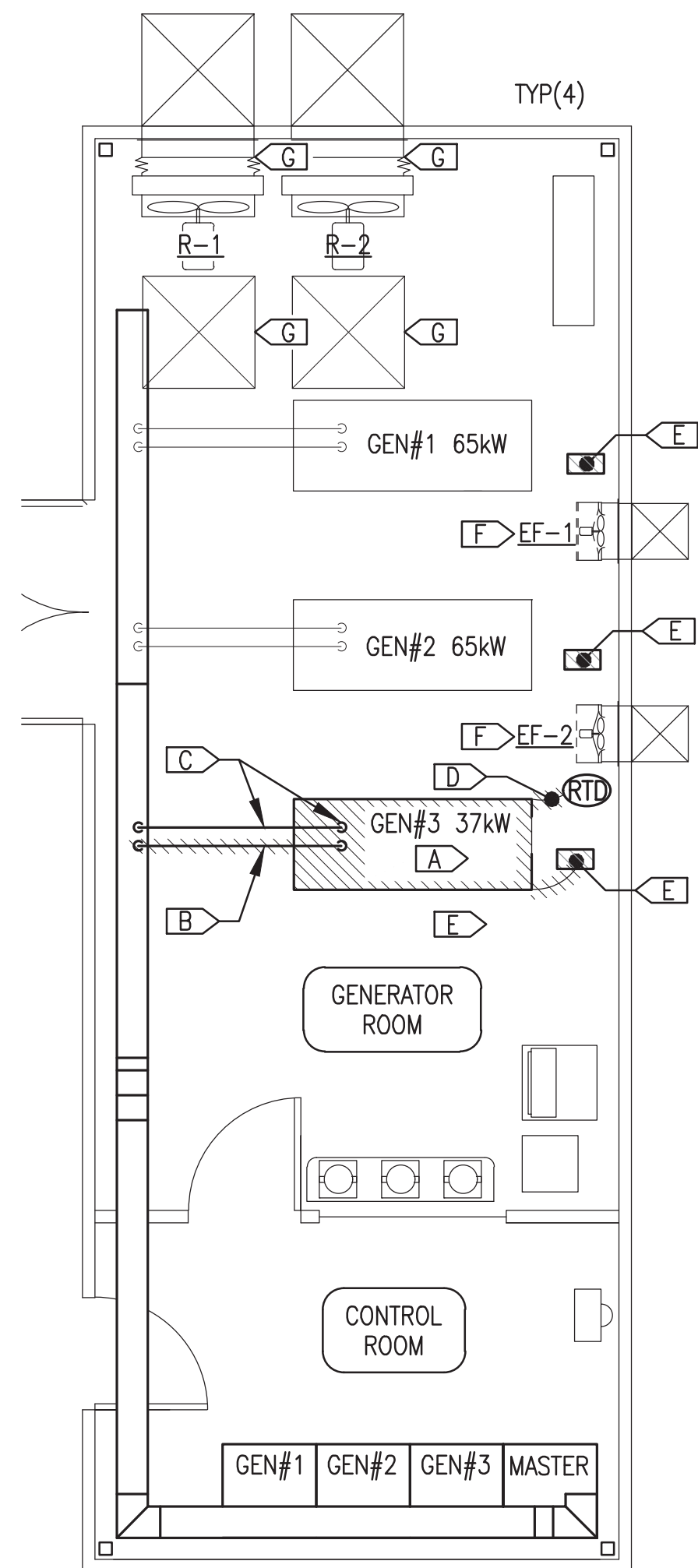
PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADES		
TITLE: GENERATOR FABRICATION DETAILS		
DRAWN BY: JTD	SCALE: AS NOTED	
DESIGNED BY: BCG	DATE: 5/5/26	
FILE NAME: CHBLKB DERA M	SHEET: M5	
PROJECT NUMBER:		
P.O. 111405, Anchorage, AK 99511 (907)349-0100		

**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.
- B REMOVE EXISTING GEN#3 POWER CONDUCTORS BETWEEN GENSET AND SWITCHGEAR IN THEIR ENTIRETY AND TURN OVER TO UTILITY. DEMOLISH EXISTING 2" CONDUIT BETWEEN GEN#3 AND WIREWAY IN ITS ENTIRETY.
- C PRIOR TO BEGINNING DEMOLITION CAREFULLY DISCONNECT CONTROL CONDUCTORS FROM TERMINALS IN GENERATOR ENCLOSURE. PULL CONTROL CONDUCTORS BACK THROUGH EXISTING 1-1/2" CONDUIT INTO WIREWAY, INSPECT FOR WEAR OR DAMAGE, TAPE ENDS, AND TEMPORARILY COIL IN WIREWAY. DEMOLISH EXISTING 1-1/2" MOGUL LB AND LT FLEX RISER AND SAVE FOR POSSIBLE REUSE. EXISTING 1-1/2" EMT TO REMAIN IN PLACE.
- 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.

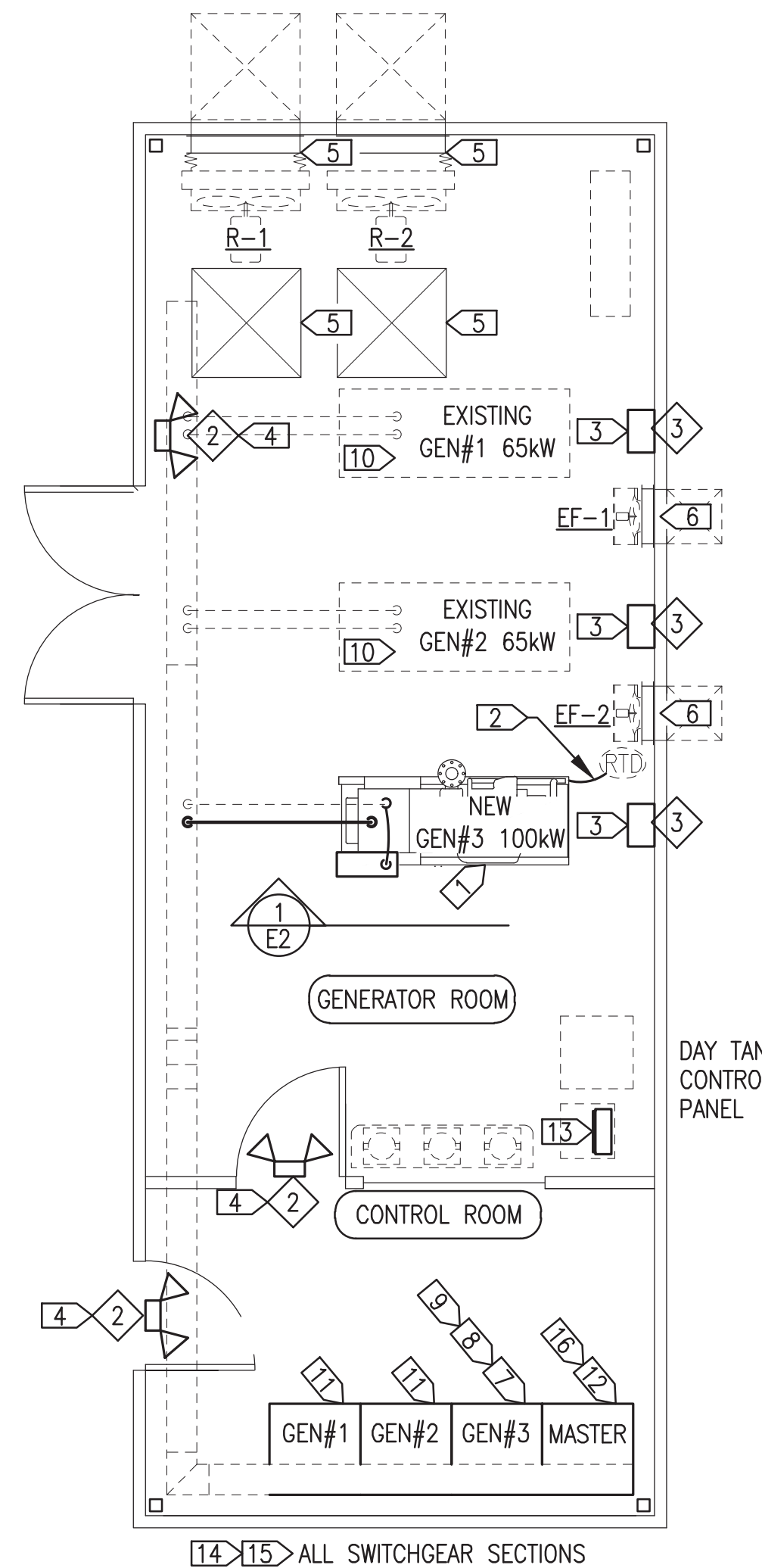


**NEW WORK GENERAL NOTES:**

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 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#3 SWITCHGEAR SECTION TO ACCOMMODATE NEW ELECTRONIC ENGINE. REPLACE 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.
- 16 REPLACE FAILED STATION SERVICE METER WITH NEW. SEE SHEET E4 AND SPECIFICATIONS.



**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 (EXISTING)	ENGINE - 99 HP, 65 EKW PRIME, JOHN DEERE 4045TFM75, TIER 2 MARINE. 12 VDC STARTING & CONTROL. GENERATOR - MINIMUM 90 KW CONTINUOUS AT 105°C RISE, MARATHON MAGNAPLUS 363PSL1607.
GEN #2 (EXISTING)	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, MARATHON MAGNAPLUS 362PSL1604.
GEN #3 (NEW)	ENGINE - 148 HP, 100 EKW PRIME, JOHN DEERE 4045AFM85, TIER 3 MARINE. 12 VDC STARTING & CONTROL. GENERATOR - MINIMUM 125 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UCI274E.

**1 DEMOLITION PLAN & NOTES**

E1 1/4"=1'-0"

**2 NEW WORK PLAN & NOTES**

E1 1/4"=1'-0"

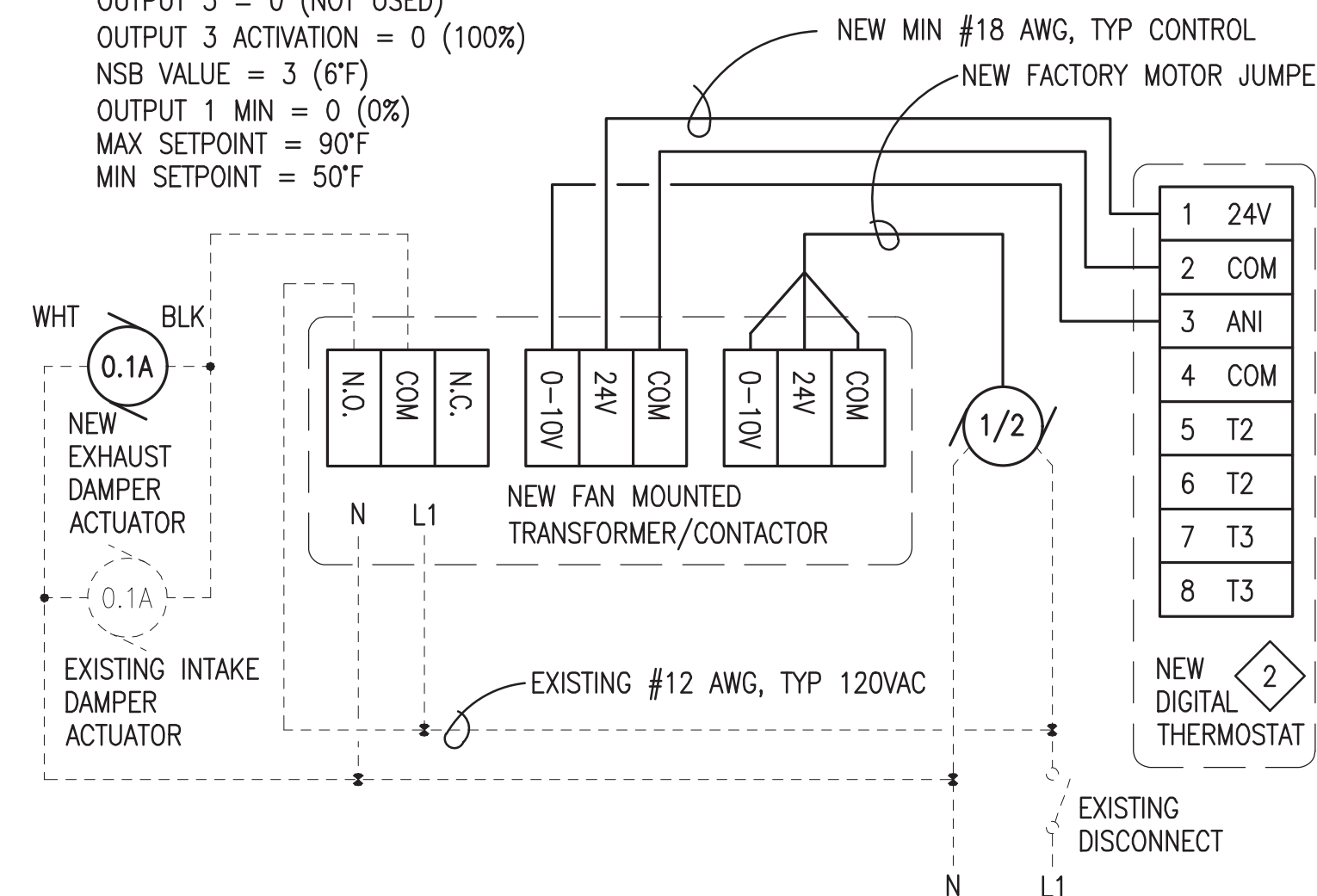
**ELECTRICAL CONDUCTOR SCHEDULE**

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	

- 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

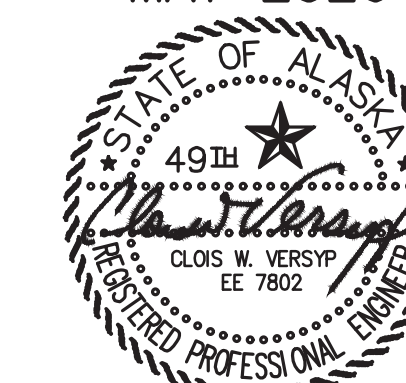


**3 EXHAUST FAN WIRING DIAGRAM**

E1 NO SCALE

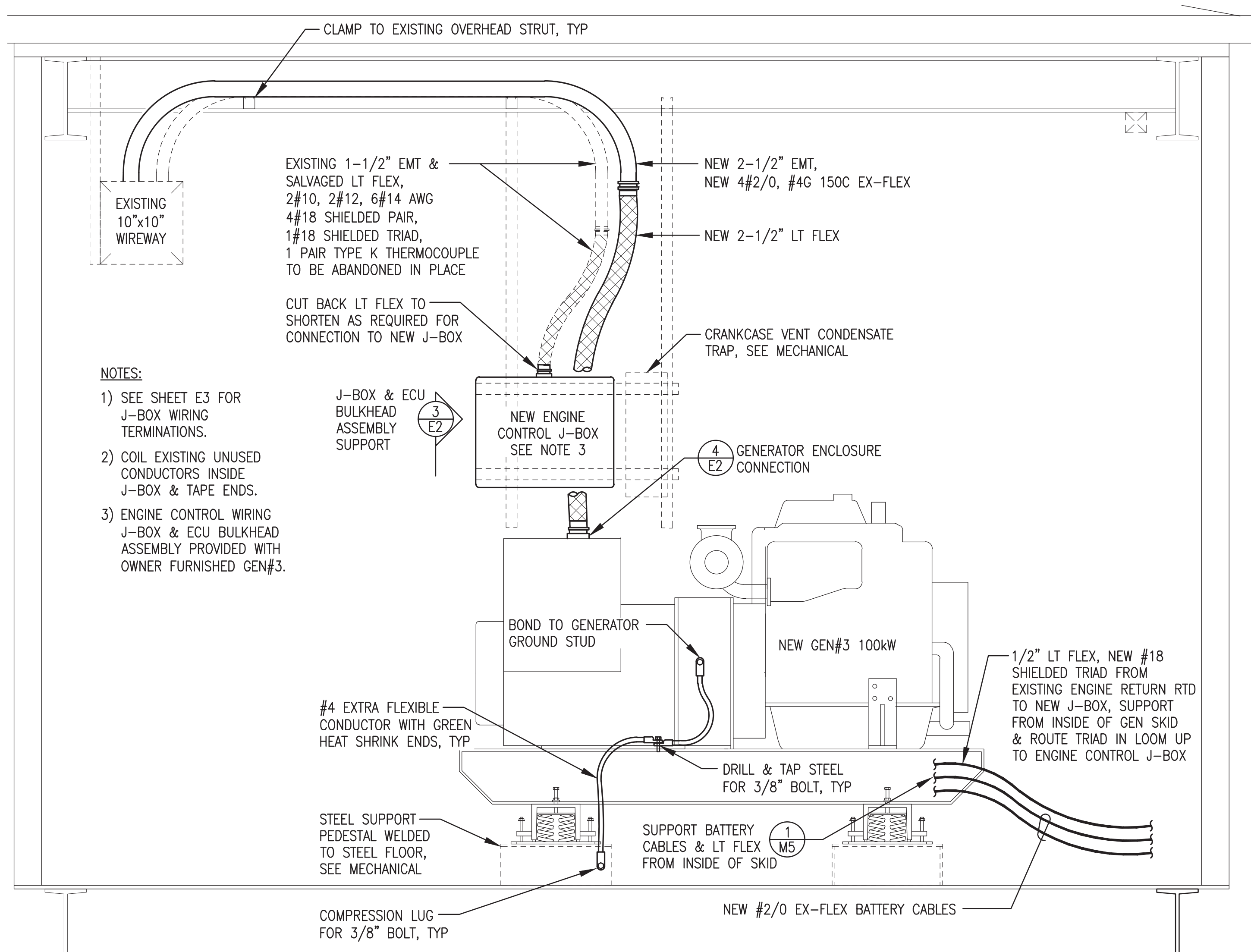
**THE VENTILATION WORK SHOWN THIS SHEET INCLUDING REMOVAL AND RE-CONNECTION TO DAMPERS AND EXHAUST FAN ASSEMBLIES IS TO BE PROVIDED UNDER ADDITIVE ALTERNATE #1.**

ISSUED FOR CONSTRUCTION  
MAY 2026

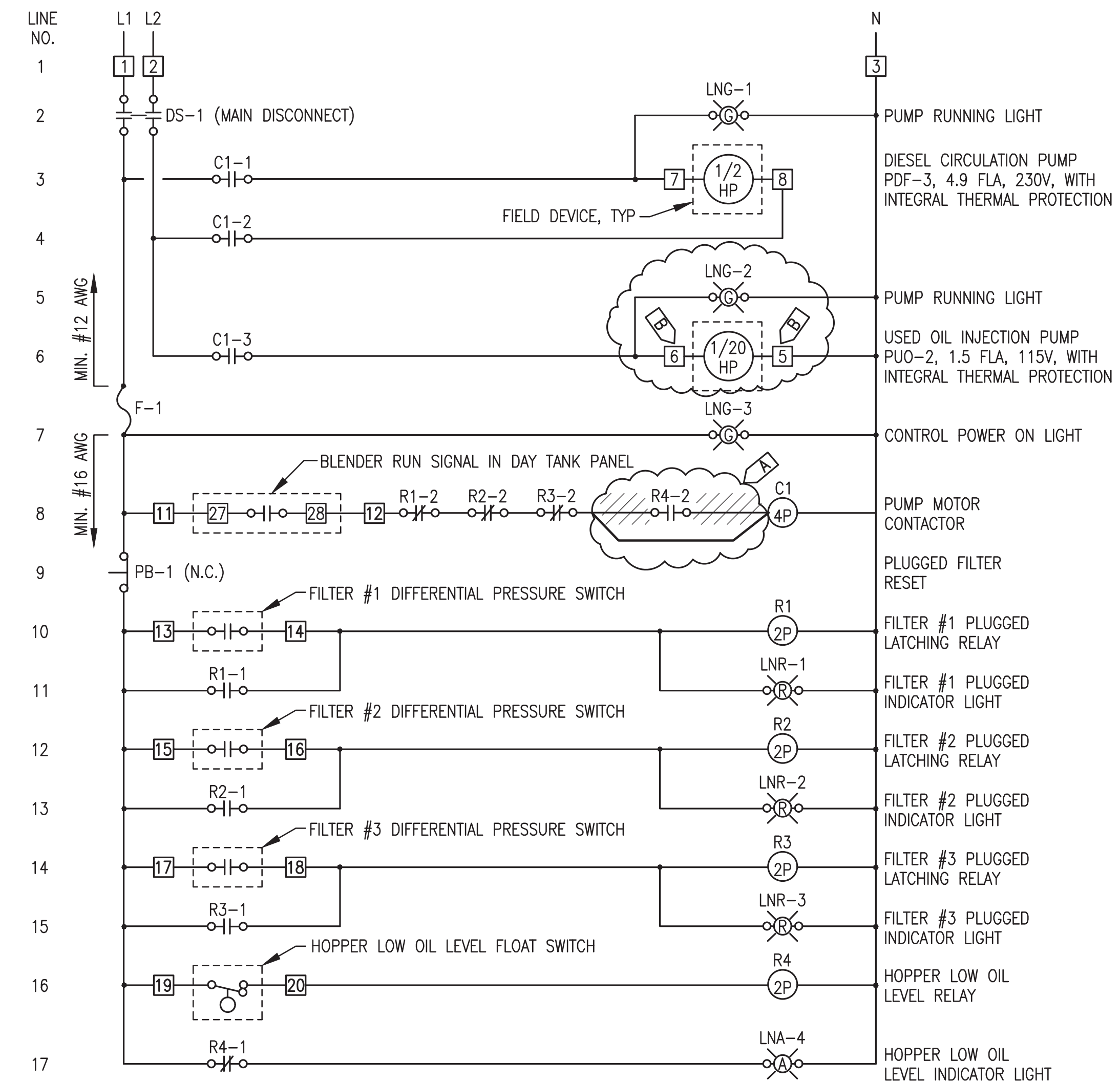


PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADE	
TITLE: ELECTRICAL DEMOLITION & NEW WORK PLANS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: CWV/BCG	DATE: 5/5/26
FILE NAME: CHBLKB DERA E	SHEET: E1
PROJECT NUMBER:	





**1** GEN#3 INSTALLATION RIGHT SIDE ELEVATION  
E2 1-1/2"=1'-0"



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

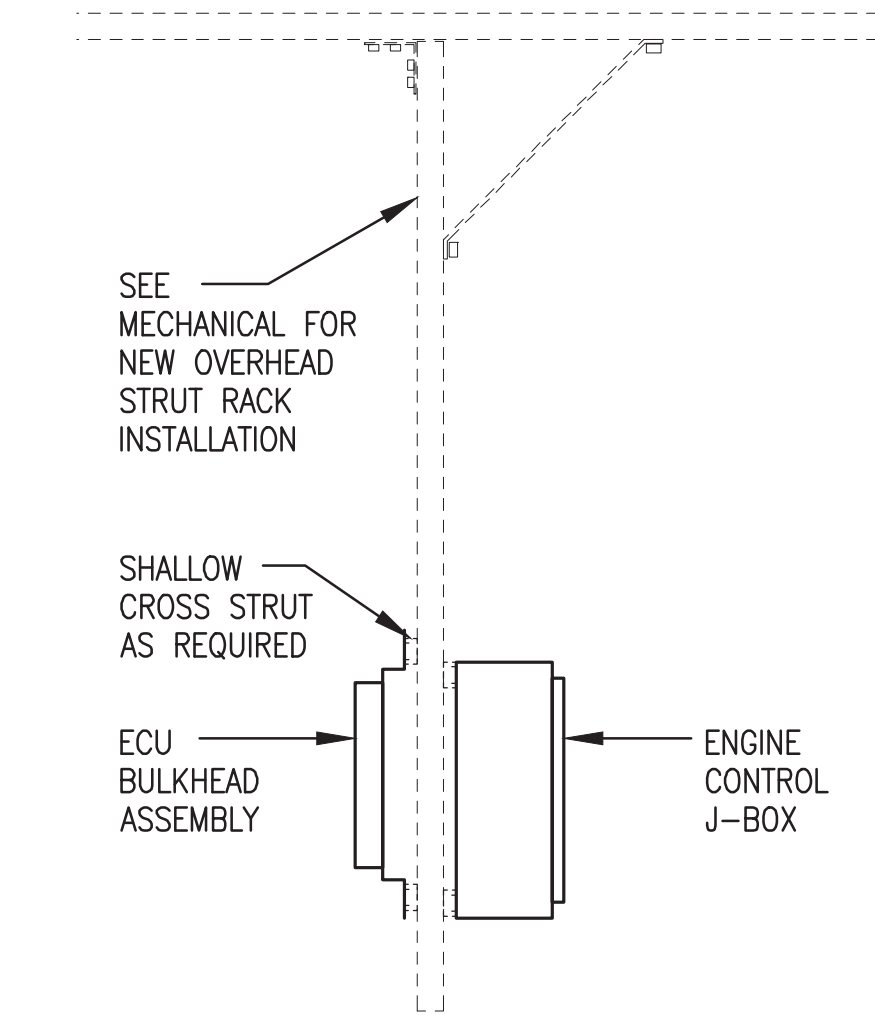
**GENERAL NOTES:**

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.

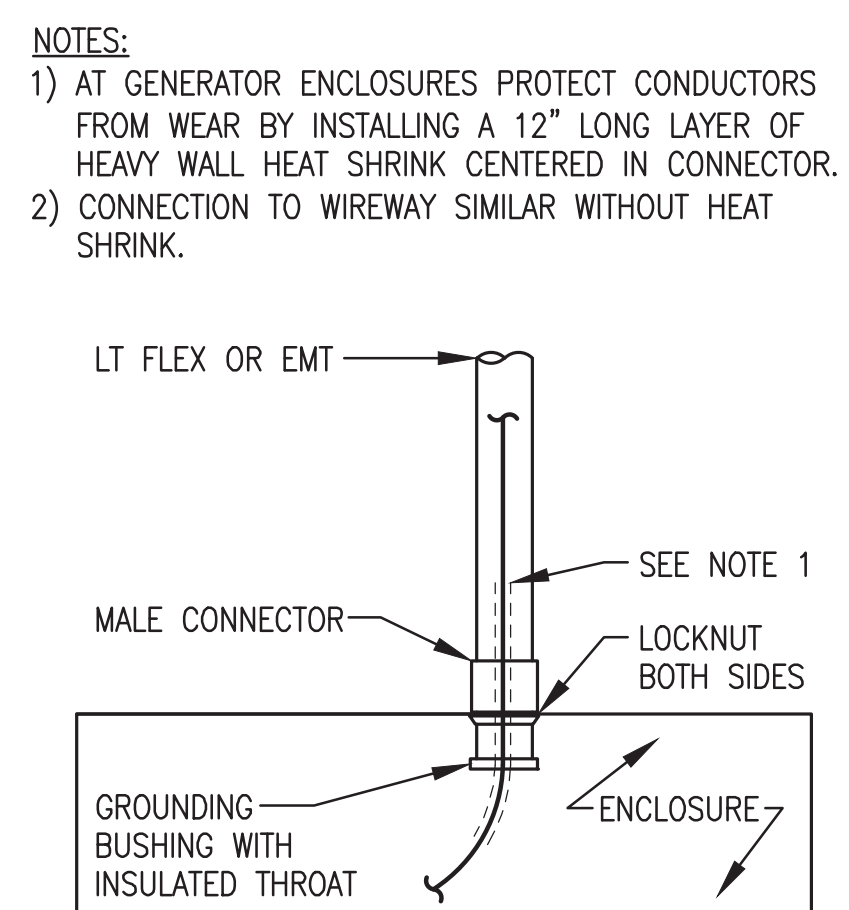
**PANEL MODIFICATION SPECIFIC NOTES:**

**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.

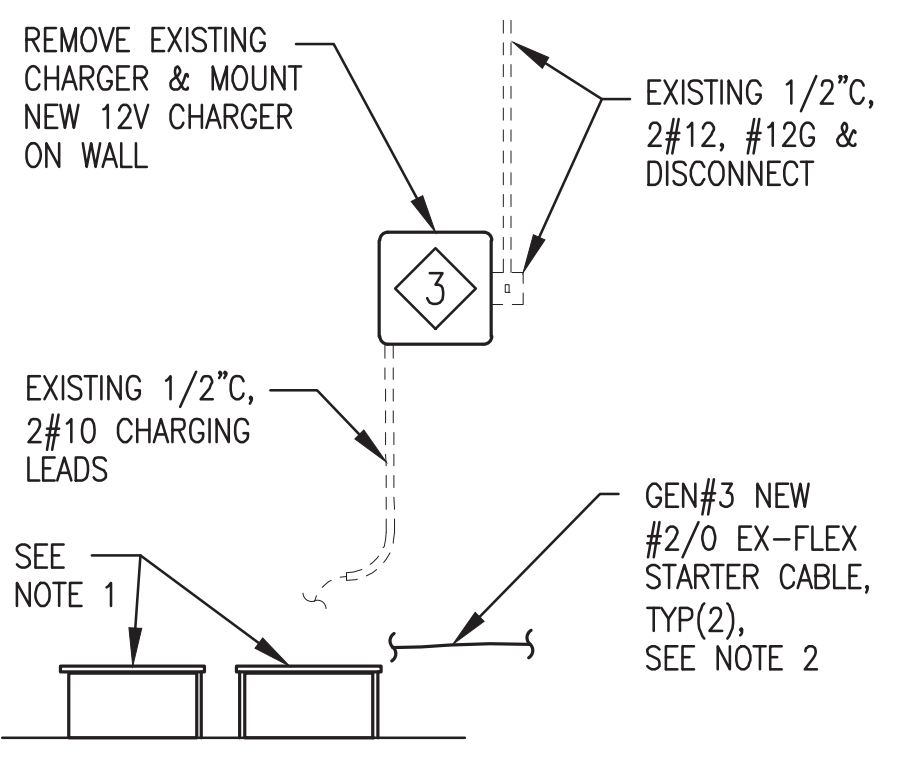
**B** DISCONNECT FIELD LEADS FROM PUMP P-U02 MOTOR, TAPE ENDS, AND TYWRAP SECURELY IN WIRE TROUGH.



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



**4** TYPICAL CONNECTION TO GENERATOR  
E2 NO SCALE

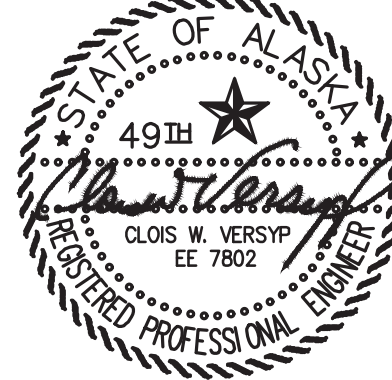


**5** BATTERY CHARGER, BATTERIES AND STARTER CABLE INSTALLATION  
E2 NO SCALE

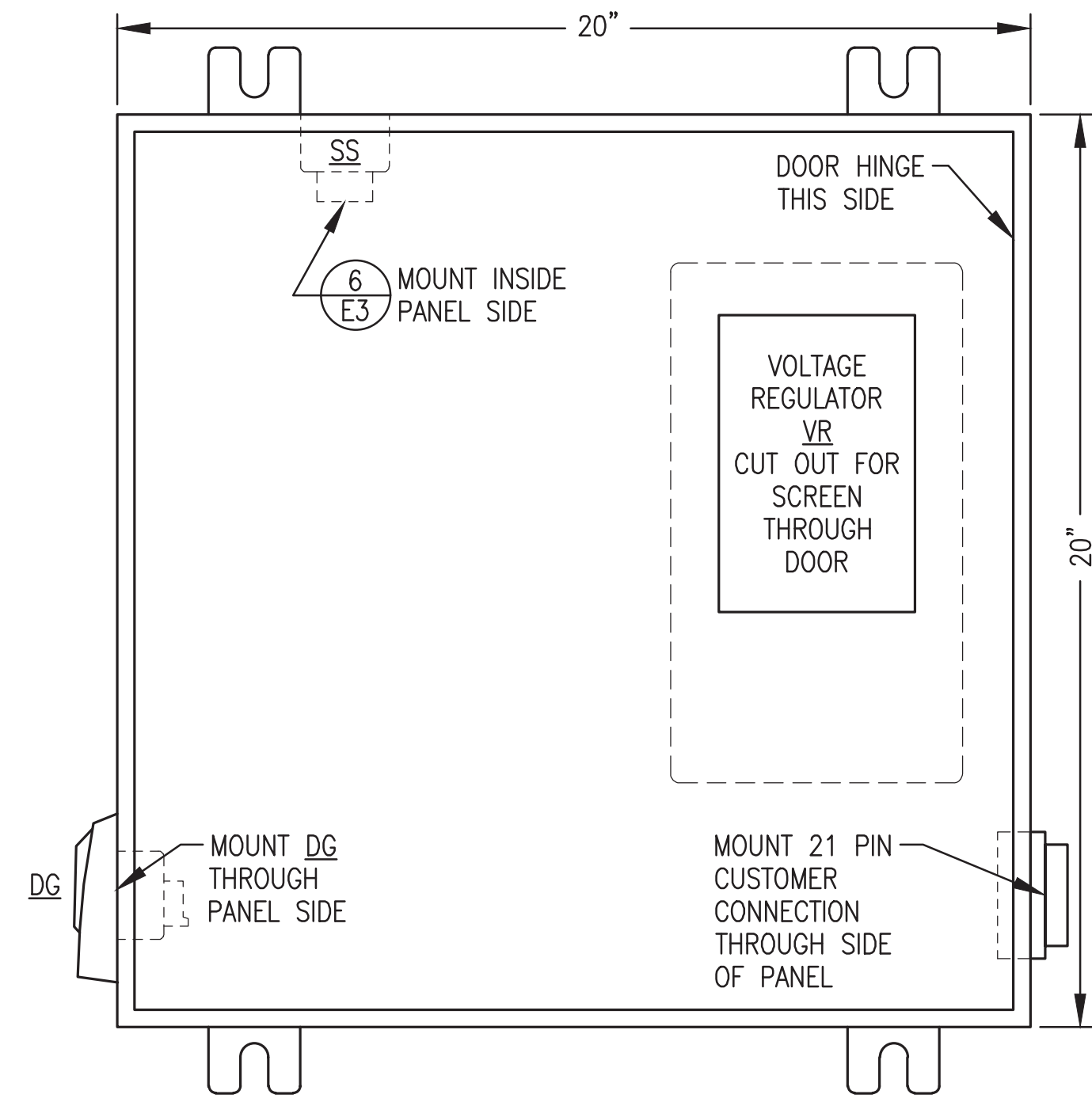
**NOTES:**

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.

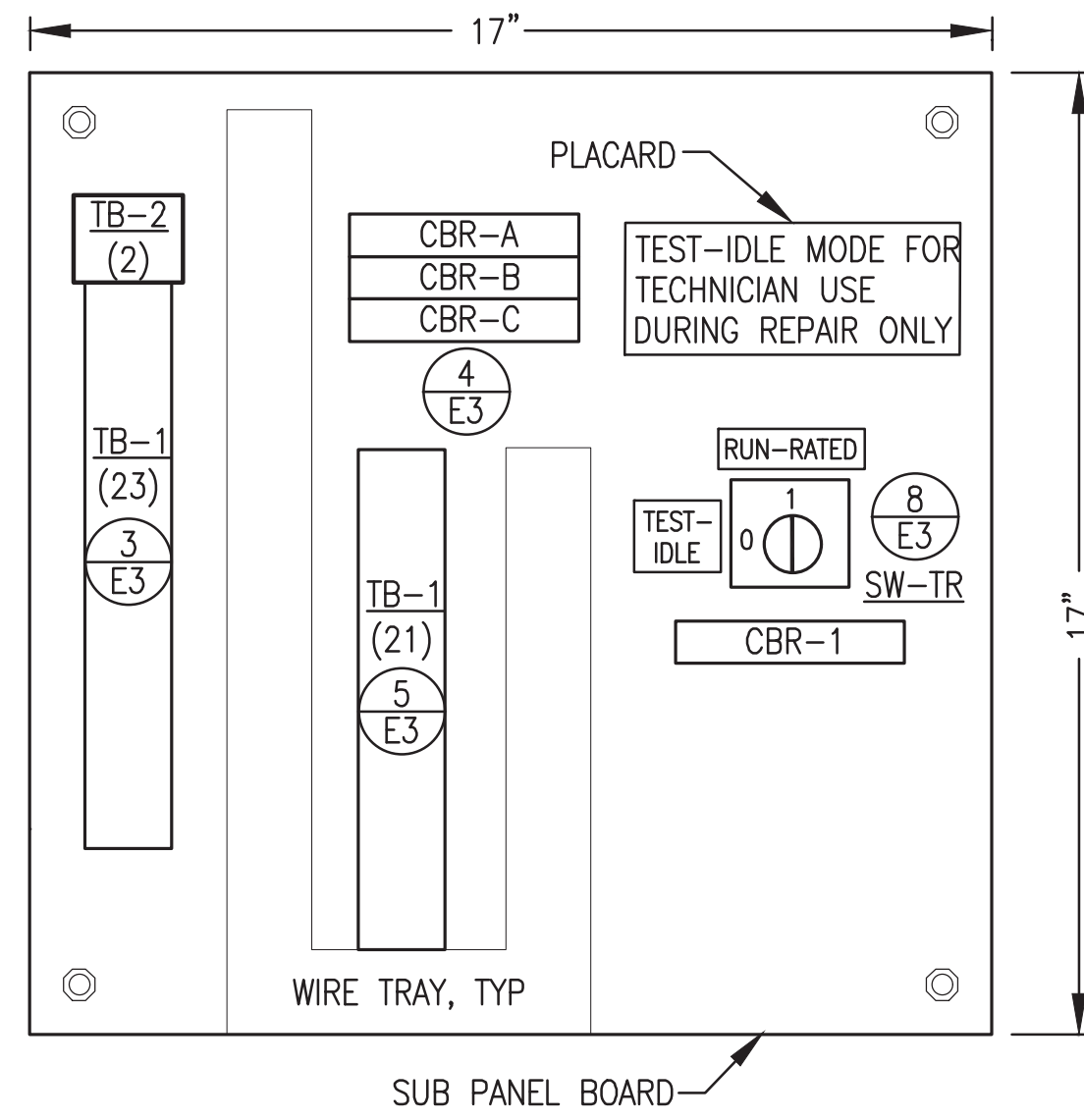
ISSUED FOR CONSTRUCTION  
MAY 2026



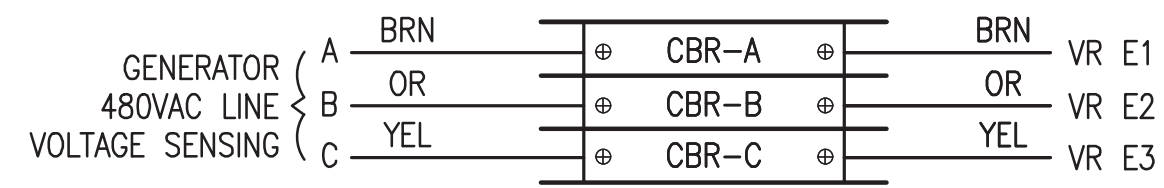
PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADE	
TITLE: TYPICAL GENERATOR INSTALLATION & DETAILS	
DESIGNED BY: CWV/BCG	SCALE: AS NOTED
FILE NAME: CHBLKB DERA E	DATE: 5/5/26
PROJECT NUMBER:	SHEET: E2
P.O. 111405, Anchorage, AK 99511 (907)349-0100	



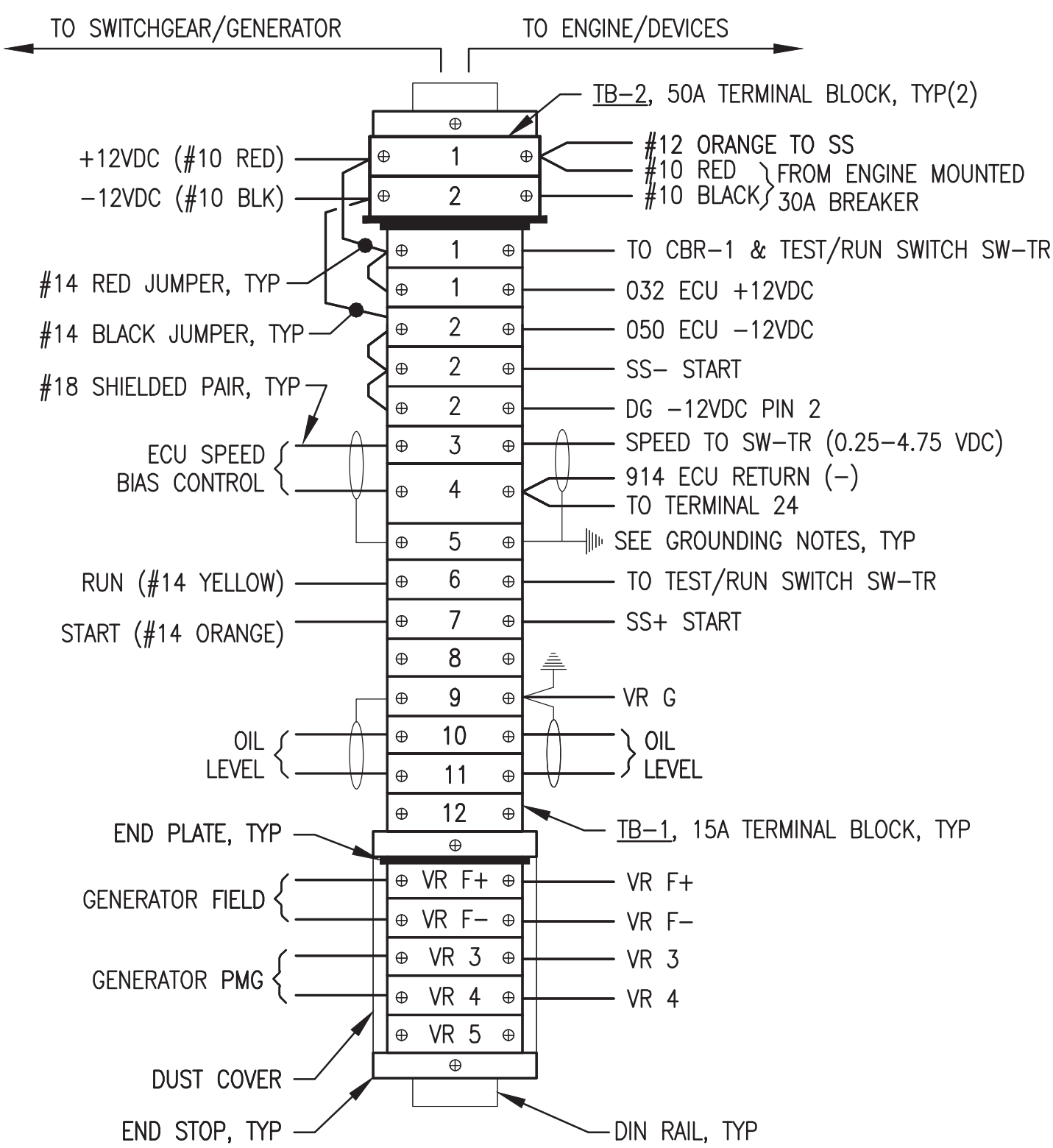
**1** JUNCTION BOX FRONT PANEL LAYOUT  
E3 NO SCALE



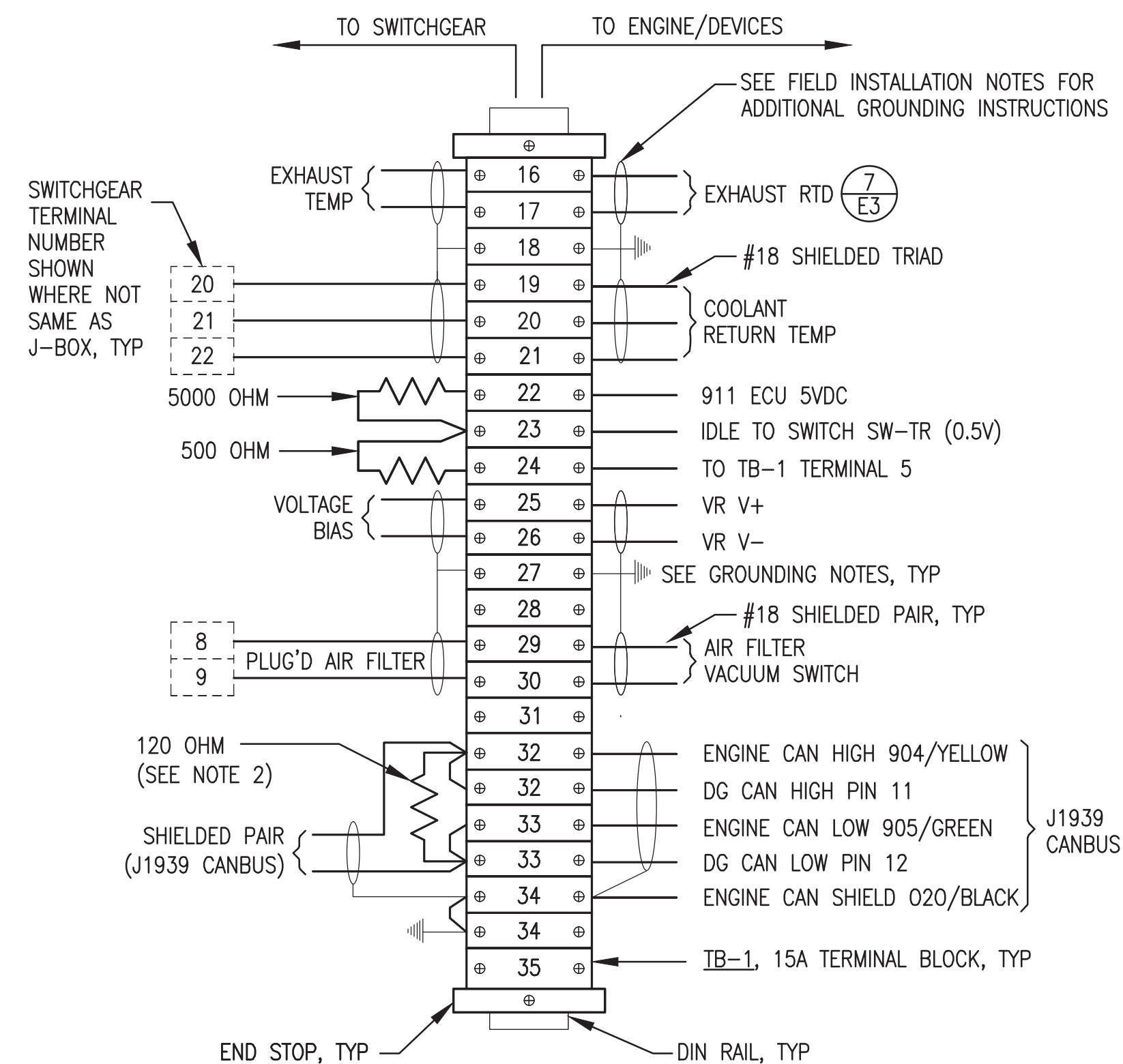
**2** JUNCTION BOX SUB PANEL LAYOUT  
E3 NO SCALE



**4** CIRCUIT BREAKER CONNECTIONS  
E3 NO SCALE



**3** TERMINAL STRIP CONNECTIONS  
E3 NO SCALE



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

**5** TERMINAL STRIP CONNECTIONS  
E3 NO SCALE

TAG	MANUFACTURER	MODEL	DESCRIPTION
21 PIN	JOHN DEERE OR ALLEN-BRADLEY	DEUTZ 1489-M1-C010	21 PIN CUSTOMER CONNECTION ASSY
CBR-A/B/C	ALLEN-BRADLEY	1489-M1-C050	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
ENCL	PROGRAMMED FOR HOFFMAN	A20H20ALP	20x20x8" NEMA 12 BACK PANEL
SS	HOFFMAN	A20P20	STARTER AUXILIARY SOLENOID, 12V
SW-TR	JOHN DEERE	AT141011	CHANGEOVER SWITCH, 12A, 2P
	ALLEN-BRADLEY	194L-A12-225-2	90 DEGREE I-O HANDLE
TB-1	ALLEN-BRADLEY	194L-HE-4A-175	15A DIN RAIL-MOUNT TERMINAL BLOCK
TB-2	ALLEN-BRADLEY	194L-HE-4A-175	50A DIN RAIL-MOUNT TERMINAL BLOCK
VR	ALLEN-BRADLEY	BE2000E	DIGITAL VOLTAGE REGULATOR

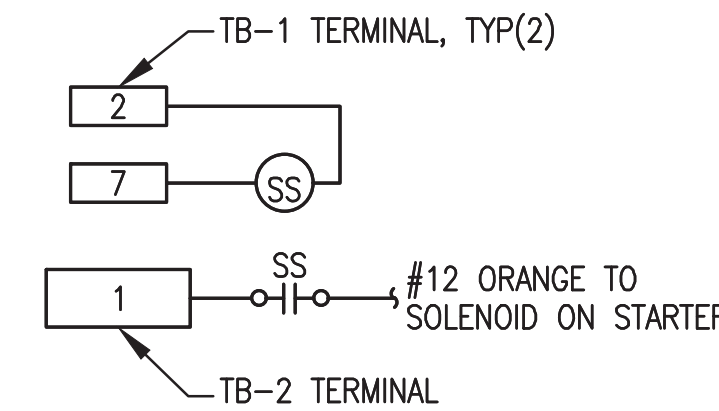
**BRAND SPECIFIC NOTE:** SPECIFIC PARTS MANUFACTURER AND MODEL SELECTED NOT ONLY TO MEET PERFORMANCE FUNCTION BUT ALSO TO COORDINATE AND INTERFACE WITH OTHER DEVICES AND SYSTEMS. APPROVED EQUAL SUBSTITUTIONS WILL BE ALLOWED ONLY BY ENGINEER'S APPROVAL. TO OBTAIN APPROVAL, SUBMITTALS MUST CLEARLY DEMONSTRATE 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:**

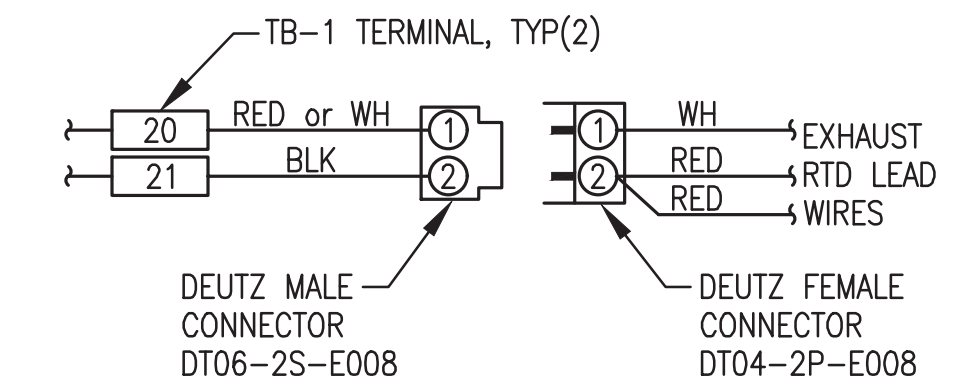
- 1) PROVIDE ASSEMBLY WITH ALL DEVICES AND WIRING INDICATED.
- 2) INSTALL IN A NEMA 12 ENCLOSURE WITH MOUNTING FLANGES AT BACK, A MIN 14 GAUGE INTERIOR BACK PANEL AND HINGED LOCKABLE DOOR. SIZE AS INDICATED.
- 3) PROVIDE DIN RAIL, TERMINAL END PLATES, TERMINAL END STOPS, TERMINAL DUST COVERS AND OTHER 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 HARNESSSES 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 HARNESSSES AND SECURE JUNCTION BOX TO GENERATOR FOR SHIPPING.

**FIELD INSTALLATION NOTES:**

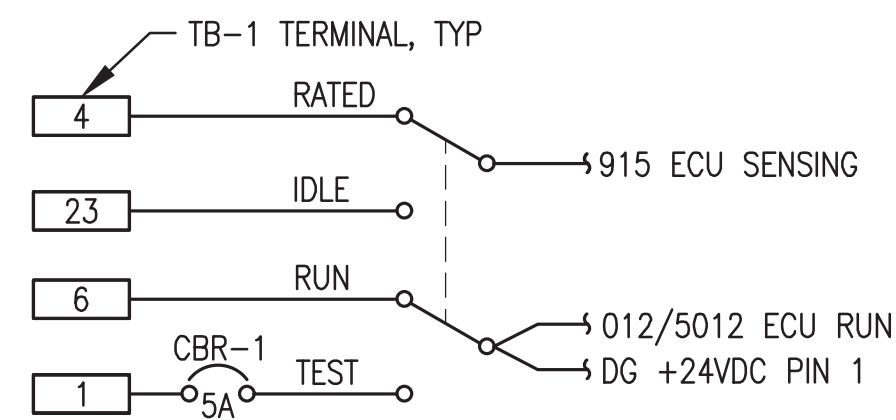
- 1) PERFORM ALL FIELD WIRING IN ACCORDANCE WITH SPECIFICATIONS. LABEL BOTH ENDS OF ALL FIELD WIRING WITH THE ENGINE PANEL TERMINAL NUMBER.
- 2) ON SHIELDED CONDUCTORS GROUND ALL SHIELD DRAIN WIRES AT ENGINE J-BOX ONLY. CLIP DRAIN WIRES AT OPPOSITE ENDS.



**6** STARTER AUX SOLENOID SS WIRING  
E3 NO SCALE



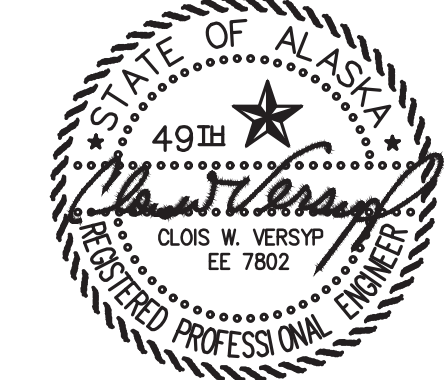
**7** EXHAUST RTD CONNECTOR  
E3 NO SCALE



**8** TEST-IDLE/RUN-RATED SWITCH SW-TR WIRING  
E3 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



**ALASKA ENERGY AUTHORITY**

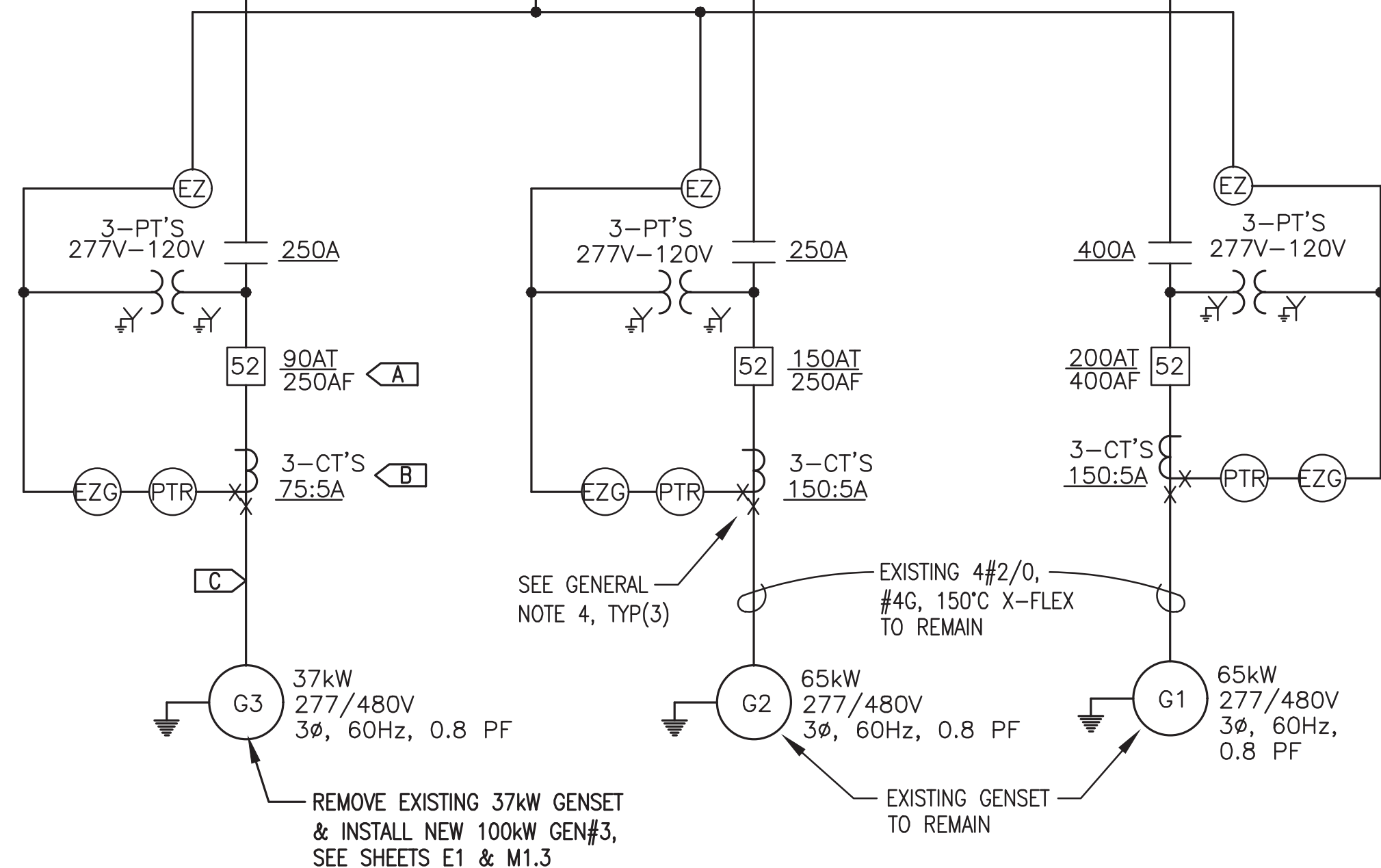
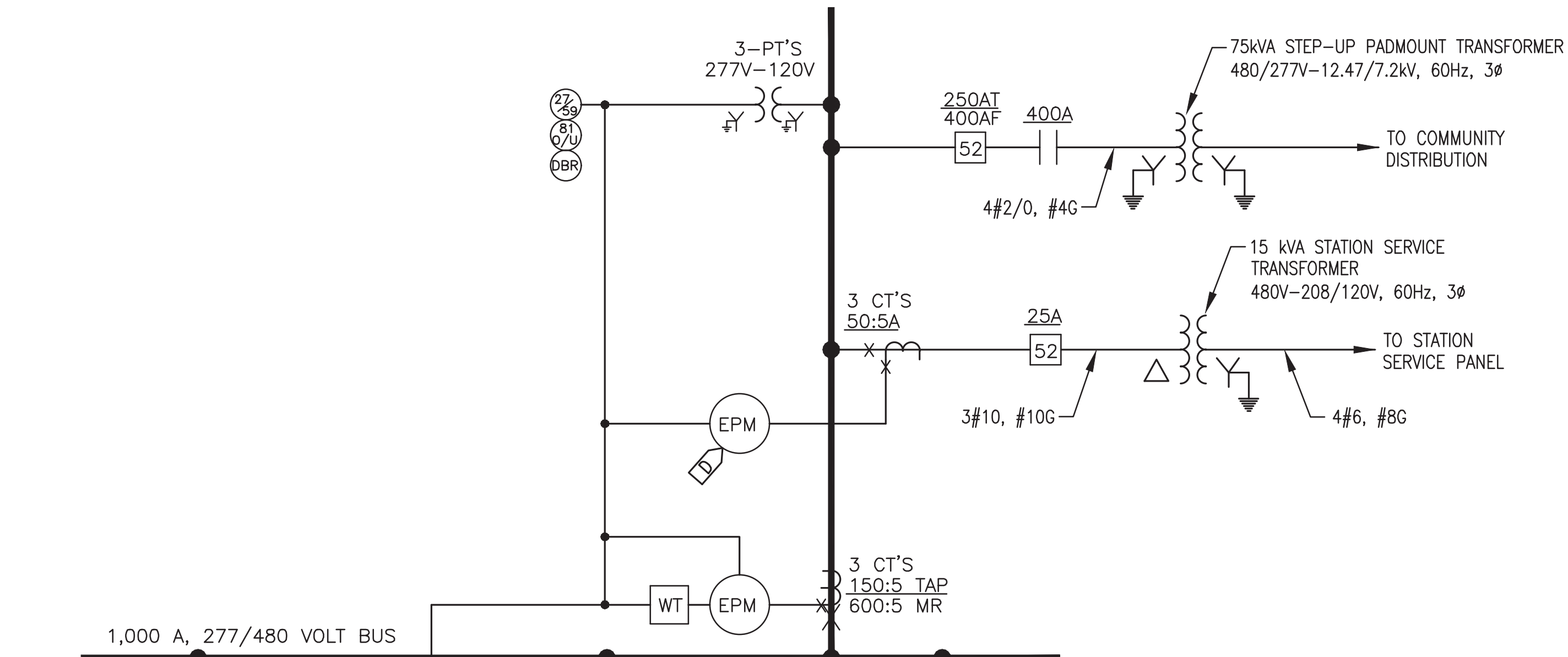
PROJECT: MKEC 2026 DERA PROJECT  
CHUATHBALUK POWER PLANT UPGRADE

TITLE: 12VDC ENGINE CONTROL WIRING JUNCTION BOX

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

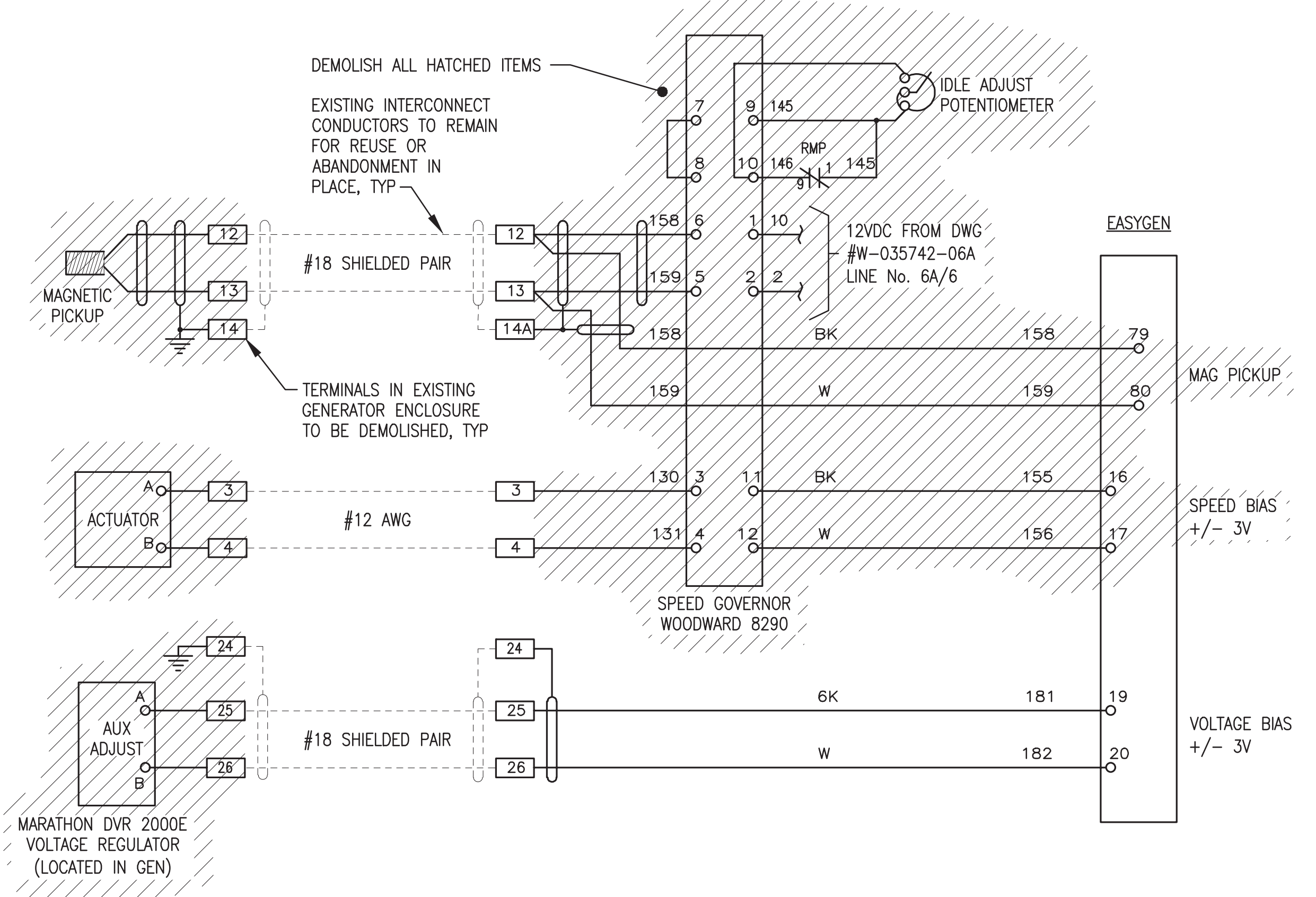
DRAWN BY: JTD  
DESIGNED BY: CWV/BCG  
FILE NAME: CHBLKB DERA E  
PROJECT NUMBER:

SCALE: AS NOTED  
DATE: 5/5/26  
SHEET: E3

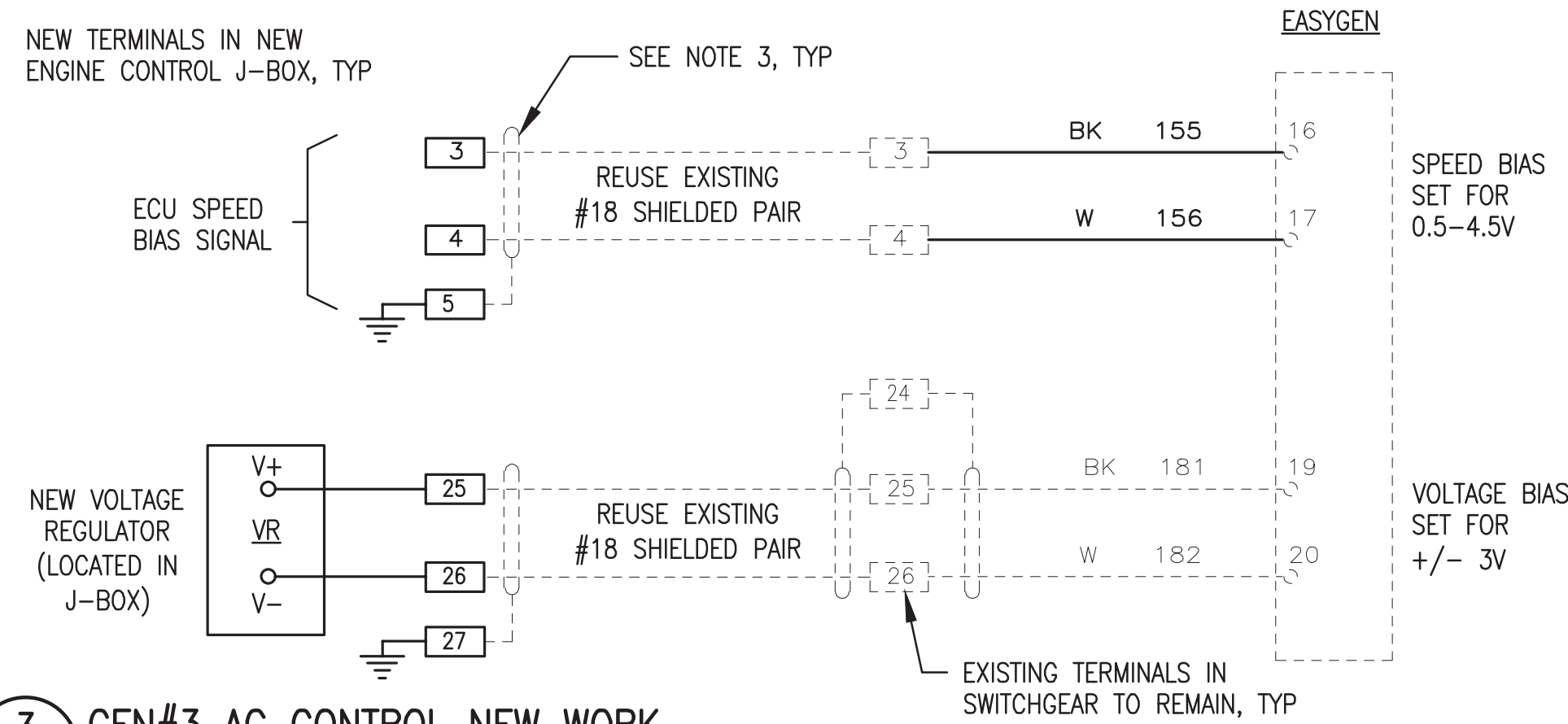


Chuathbaluk Generator Breaker Settings (Easygen)	
Function	Setting
Gen #1 Breaker Rated Current (65kW)	150 A
Gen #2 Breaker Rated Current (65kW)	150 A
Gen #3 Breaker Rated Current (100kW)	210 A
Gen Breaker Level 1 (100%) Time Over Current	60 sec.
Gen Breaker Level 2 (120%) Time Over Current	30 sec.
Gen Breaker Level 3 (250%) Time Over Current	1 sec.

- 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 250A TRIP PLUG, G.E. SRPG250A250.
  - B** REPLACE 3 EACH EXISTING CT'S WITH NEW 200:5 RATIO RELAY CLASS C50 CT'S. ITI 112:201 OR APPROVED EQUAL.
  - C** REMOVE EXISTING 5#4 X-FLEX. INSTALL NEW 4#2/0 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 FAILED STATION SERVICE METER AND INSTALL NEW, SEE SPECIFICATIONS.



**2 GEN#3 AC CONTROL DEMOLITION**  
E4 NO SCALE

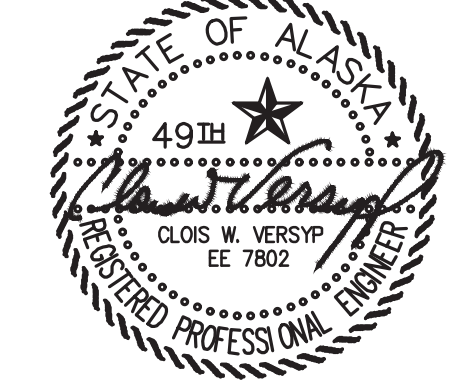


**3 GEN#3 AC CONTROL NEW WORK**  
E4 NO SCALE

- 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.

**1 CHUATHBALUK SWITCHGEAR MODIFICATION ONE-LINE DIAGRAM**  
E4 NO SCALE

ISSUED FOR CONSTRUCTION  
MAY 2026



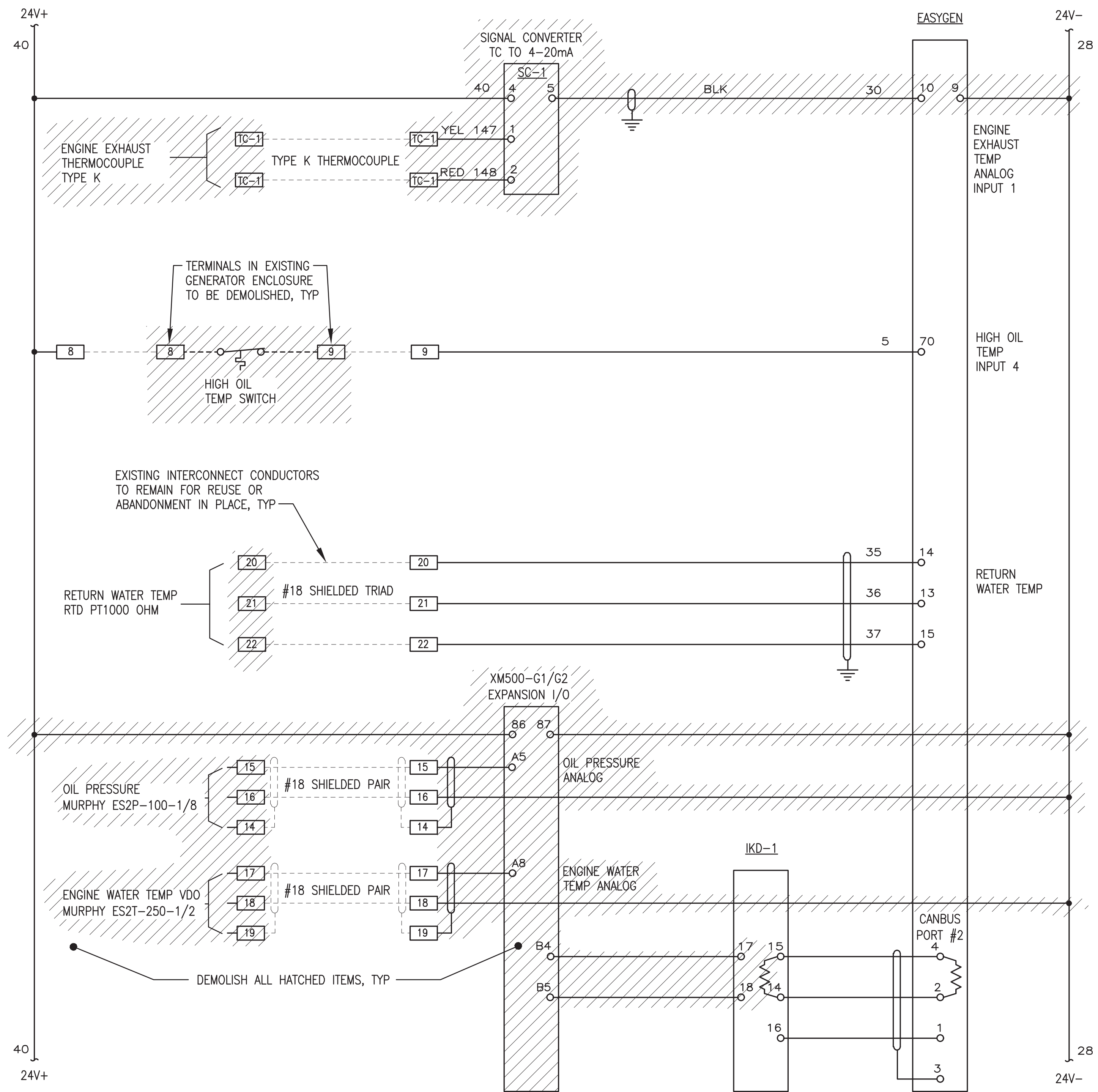
ALASKA ENERGY AUTHORITY

PROJECT: MKEC 2026 DERA PROJECT  
CHUATHBALUK POWER PLANT UPGRADE

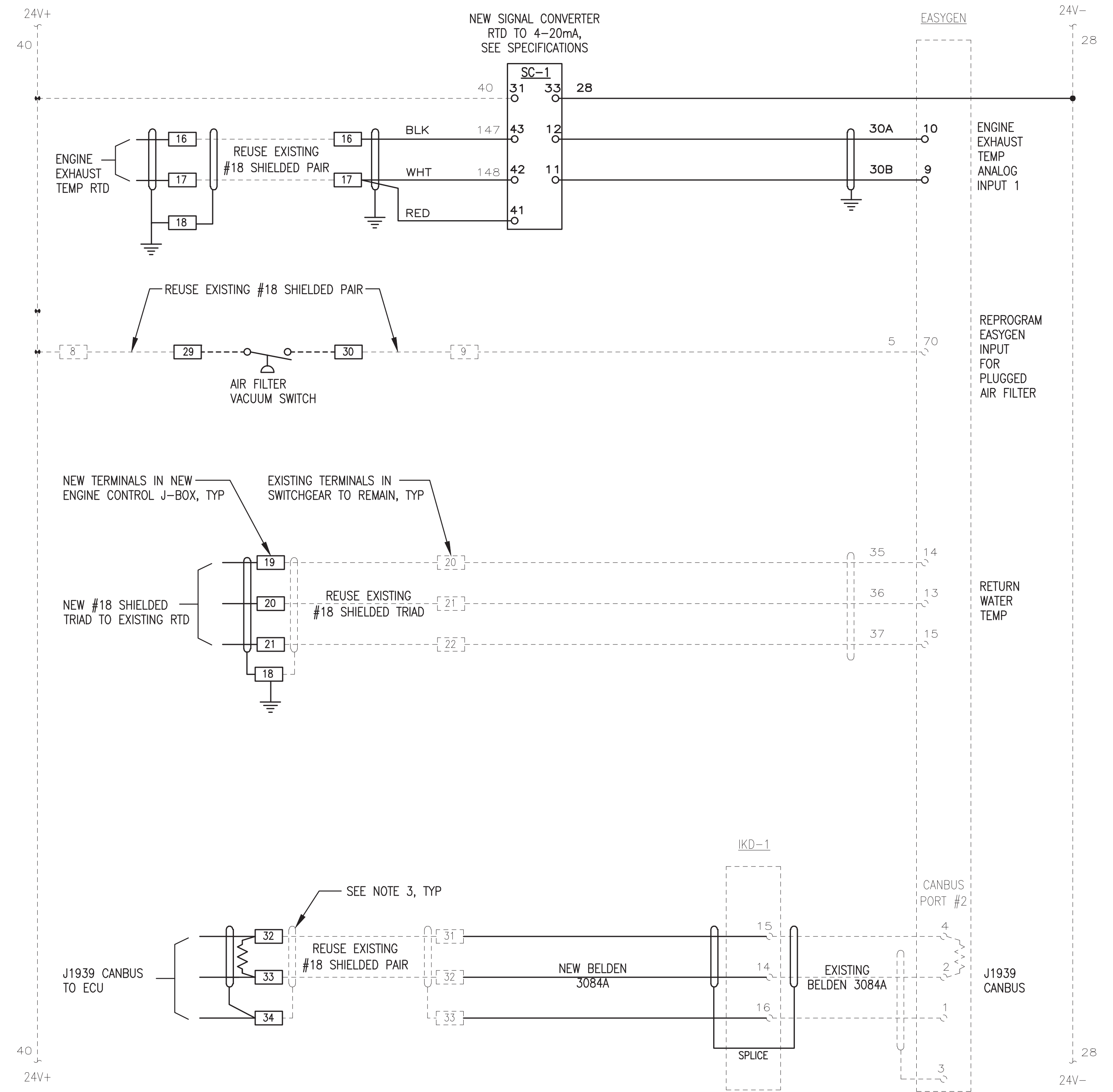
TITLE: SWITCHGEAR MODIFICATIONS

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

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



1 GEN#3 DC CONTROL DEMOLITION  
E5 NO SCALE



2 GEN#3 DC CONTROL NEW WORK  
E5 NO SCALE

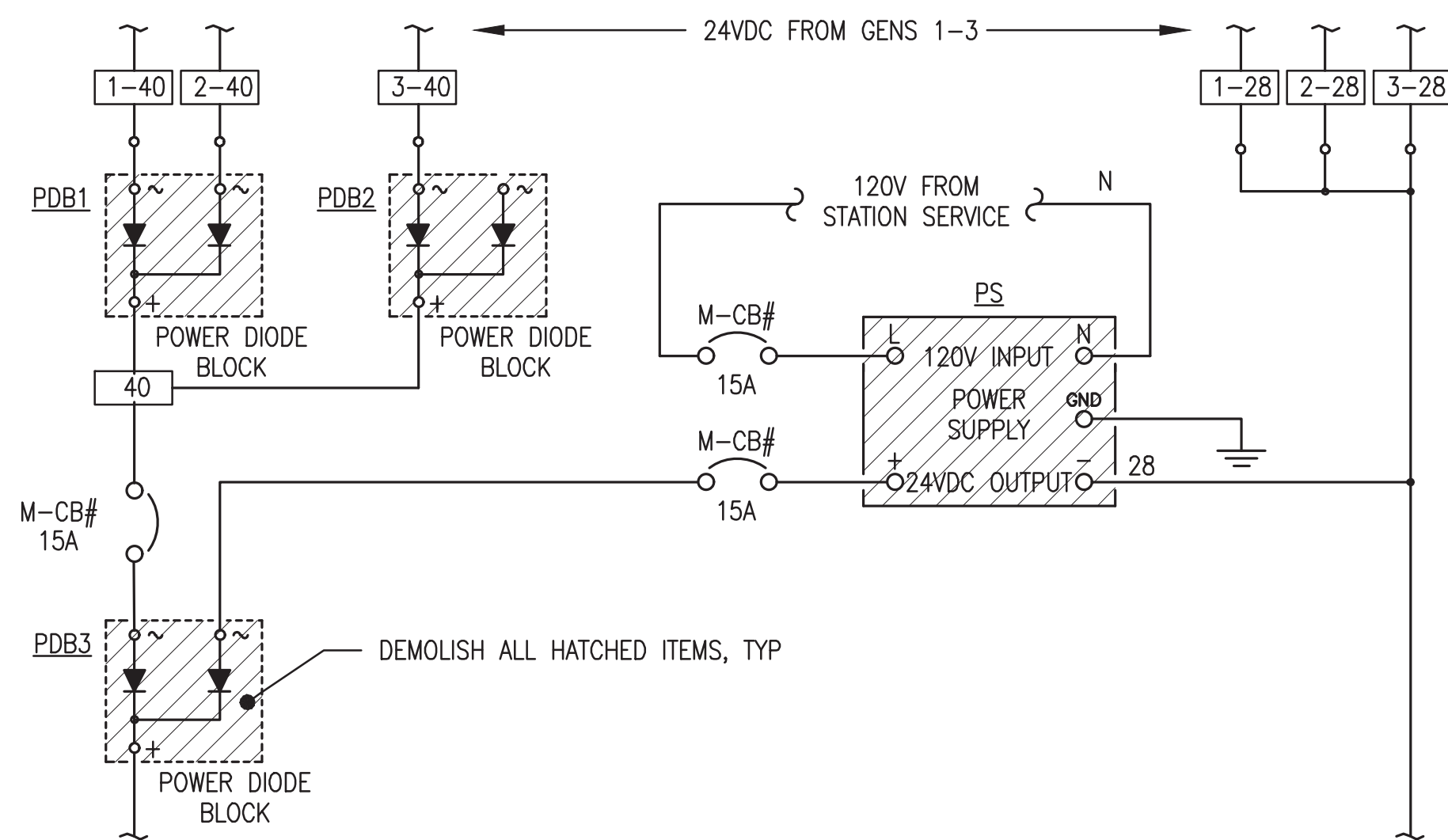
NOTES:

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

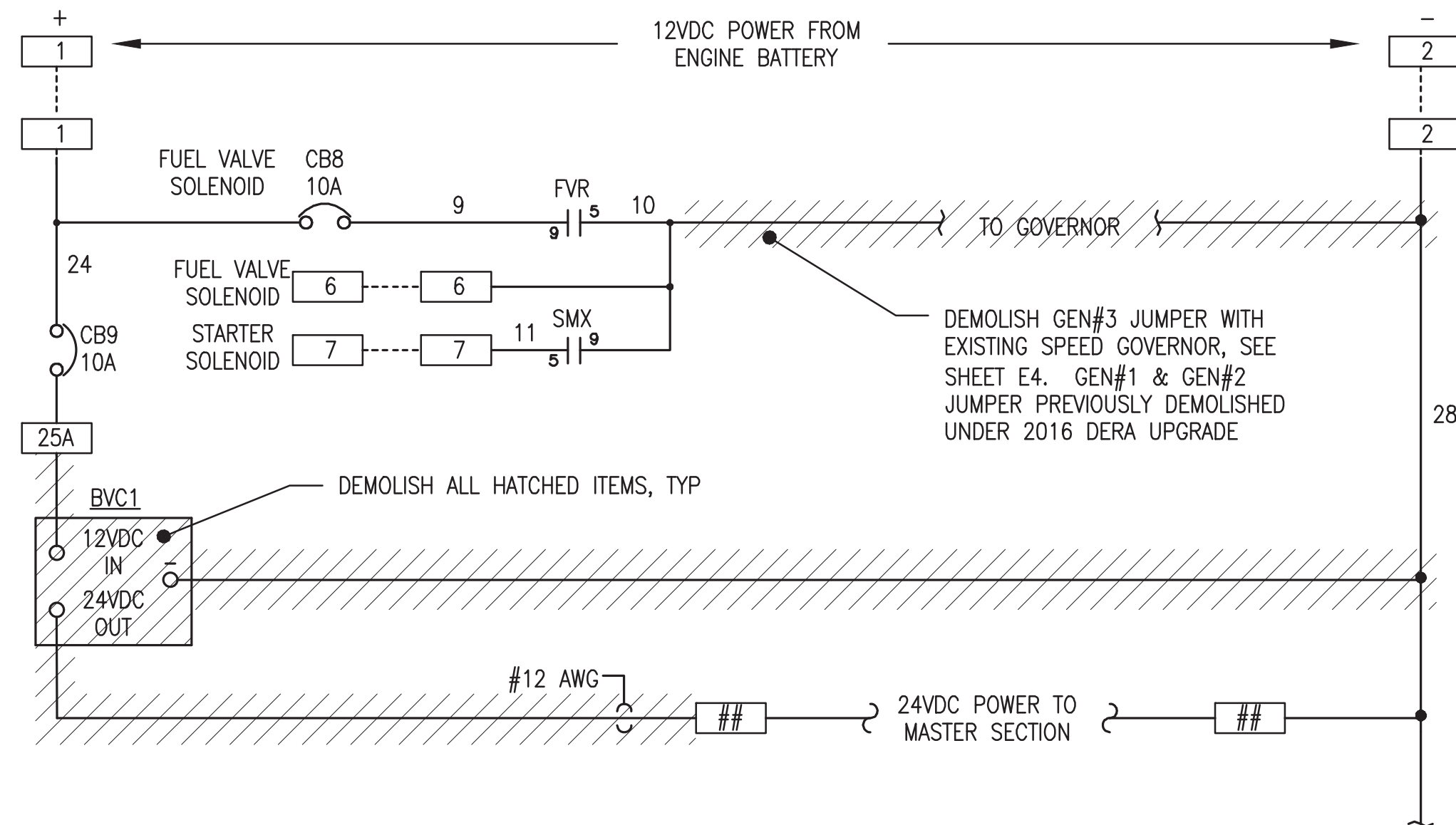
ISSUED FOR  
CONSTRUCTION  
MAY 2026



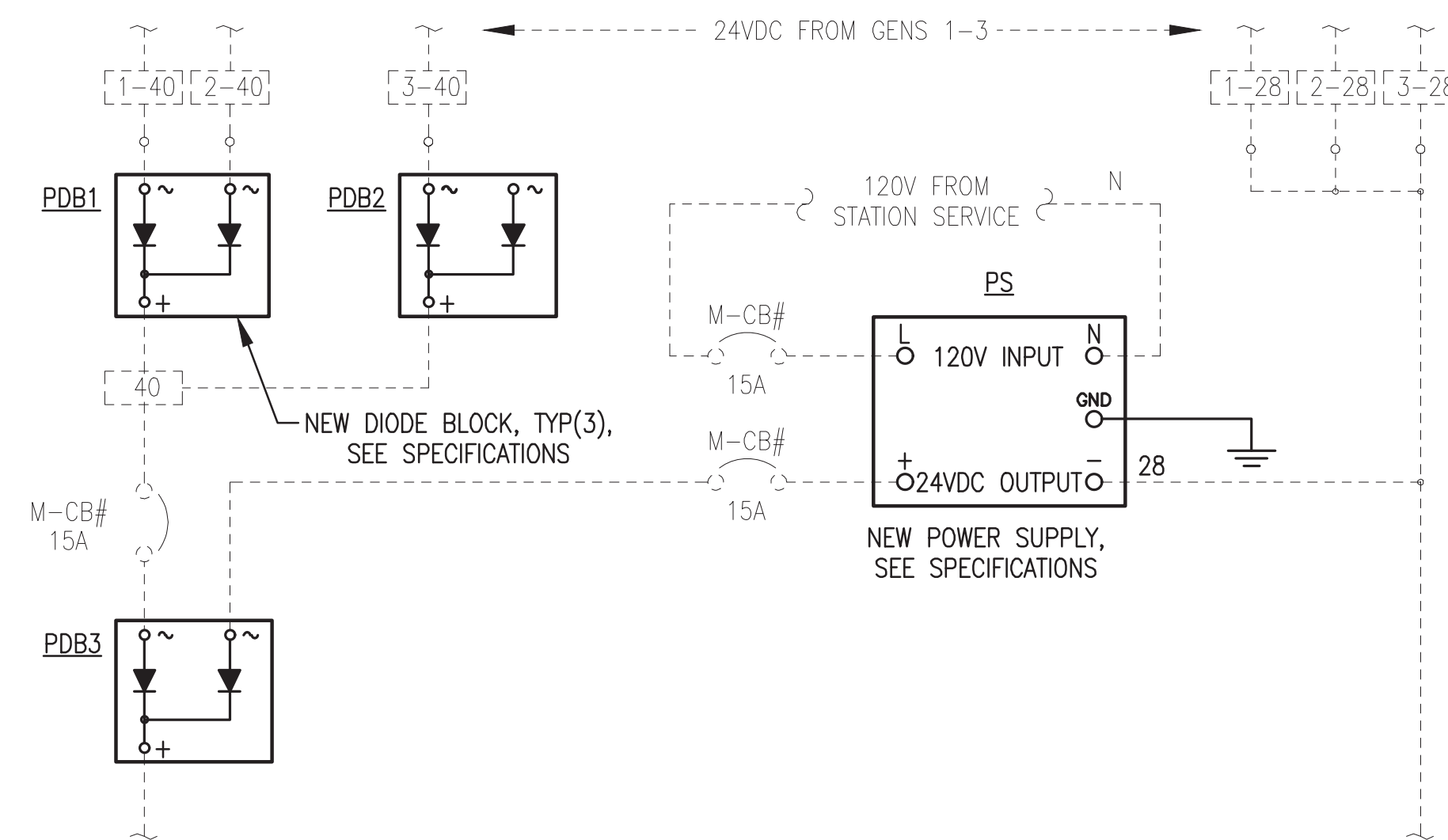
ALASKA ENERGY AUTHORITY		
PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADE		
TITLE: SWITCHGEAR MODIFICATIONS		
	DRAWN BY: JTD	SCALE: AS NOTED
	DESIGNED BY: CWV/BCG	DATE: 5/5/26
FILE NAME: CHBLKB DERA E	SHEET:	<b>E5</b>
PROJECT NUMBER:		
P.O. 111405, Anchorage, AK 99511 (907)349-0100		



1 MASTER SECTION 24VDC CONTROL POWER WIRING DEMOLITION  
E6 NO SCALE

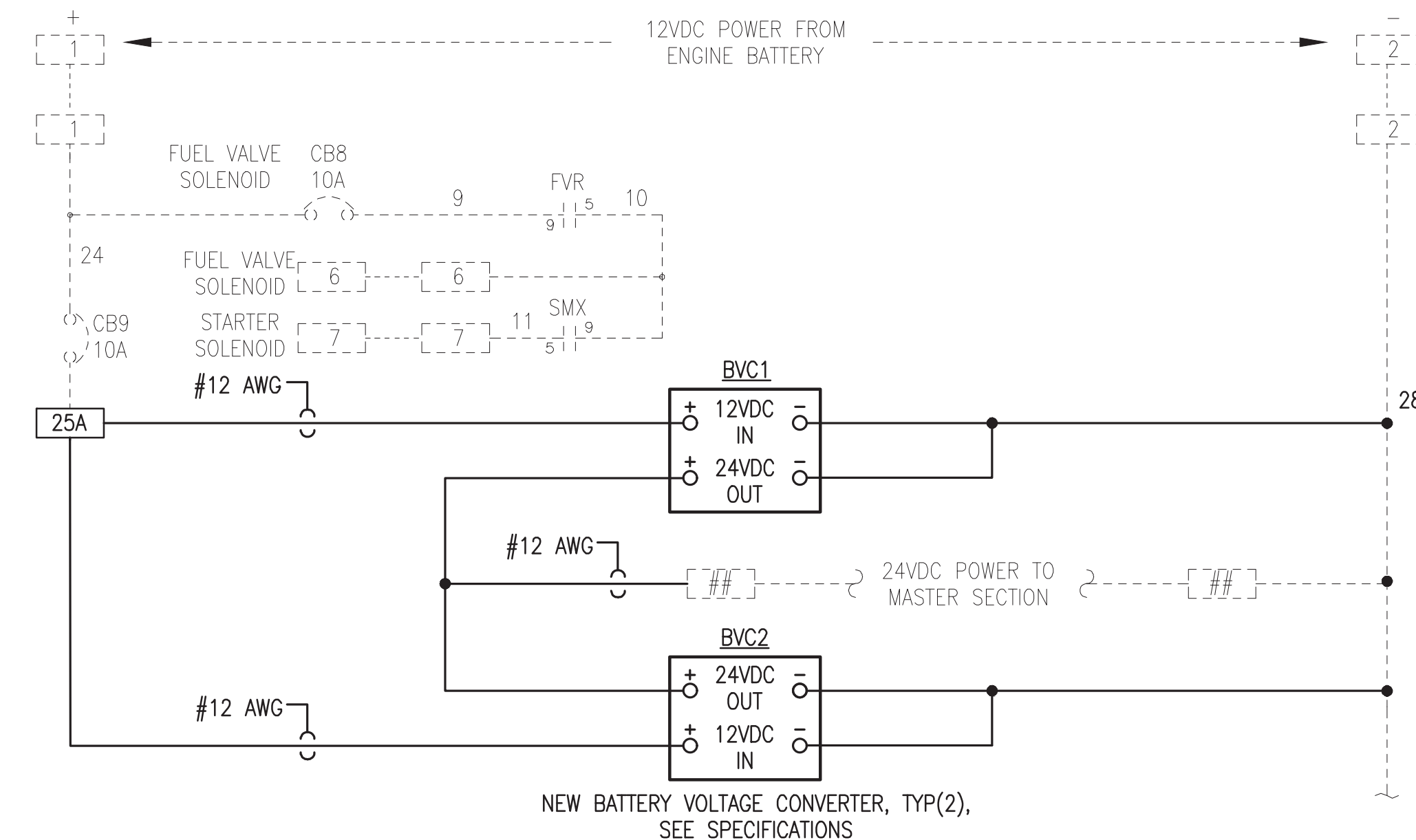


3 TYPICAL GENERATOR SECTION 12/24VDC CONTROL POWER WIRING NEW WORK  
E6 NO SCALE



2 MASTER SECTION 24VDC CONTROL POWER WIRING MEW WORK  
E6 NO SCALE

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



4 TYPICAL GENERATOR SECTION 12/24VDC CONTROL POWER WIRING NEW WORK  
E6 NO SCALE

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

ISSUED FOR  
CONSTRUCTION  
MAY 2026



ALASKA ENERGY AUTHORITY		
PROJECT: MKEC 2026 DERA PROJECT CHUATHBALUK POWER PLANT UPGRADE		
TITLE: SWITCHGEAR MODIFICATIONS		
	DRAWN BY: JTD	SCALE: AS NOTED
	DESIGNED BY: CWV/BCG	DATE: 5/5/26
FILE NAME: CHBLKB DERA E	SHEET: E6	
P.O. 111405, Anchorage, AK 99511 (907)349-0100		