	DRAWING INDEX
M700	MECHANICAL GENERATOR FUEL LEGEND AND ABBREVIATIONS
M701	MECHANICAL GENERATOR FUEL GENERAL NOTES AND SCHEDULES
M702	MECHANICAL GENERATOR FUEL SITE PLAN
M703	GENERATOR FUEL MECHANICAL ENLARGED PLAN NORTH YARD
M704	GENERATOR FUEL PIPING DIAGRAM NORTH YARD
M705	GENERATOR FUEL CONTROL DIAGRAM - TANKS
M706	GENERATOR FUEL CONTROL DIAGRAM - GENERATORS

PUMP

AIR VALVE

DUCT SMOKE DETECTOR

DUCT SMOKE DETECTOR

DDC_XXX

DDC PANEL

FIRE PROTECTION PLUMBING SYSTEMS F(AF)———— FIRE - ANTIFREEZE F(CA)———— FIRE - CLEAN AGENT PIPING ROUTED BELOW SLAB OR GRADE F(DEL) FIRE - DELUGE AV———— ACID VENT F(D) FIRE - DRAIN AW———— ACID WASTE ______F(DRY)——— FIRE - DRY BBD———— BOILER BLOWDOWN F(PA)———FIRE - PRE-ACTION CA(##)———— COMPRESSED AIR (NOMINAL PRESSURE) F-----FIRE - WET CD(P) CONDENSATE DISCHARGE PUMPED SPRINKLER GUARD FOR UPTICHT, PENDANT OR SIDEWALL SPRINKLER CD———— CONDENSATE DRAIN ABBREVIATION FOR ANTICORROSION DIONIZED WATER ABBREVIATION FOR HIGH TEMPERATURE DIR—DIONIZED WATER RECIRCULATING DISTILLED WATER SPARE CABINET FOR 12 SPRINKLERS DRAINAGE PIPING DCW— – — DOMESTIC COLD WATER FIRE EXTINGUISHER DCW(S)—DOMESTIC COLD WATER SOFTENED SIAMESE FIRE DEPARTMENT CONNECTION DHW— – – DOMESTIC HOT WATER PRIVATE HYDRANT - ONE HOSE OUTLET DHWR- - - - DOMESTIC HOT WATER RECIRCULATION PUBLIC HYDRANT - TWO HOSE OUTLETS _____D-____ DRAIN PUBLIC HYDRANT - TWO HOSE OUTLETSAND PUMPER CONNECTION GREASE WASTE UPRIGHT SPRINKLER H———— HUMIDIFICATION PENDANT SPRINKLER LABORATORY VENT SIDEWALL SPRINKLER LABORATORY WASTE DRY PENDANT SPRINKLER _____G_____ NATURAL GAS (LOW PRESSURE) DRY SIDEWALL SPRINKLER GARAGE DRAINAGE FCP FIRE ALARM CONTROL PANEL GV———— NATURAL GAS VENT FVC FIRE VALVE CABINET MPG MEDIUM PRESSURE GAS SPCAB SPRINKLER CABINET NPCW—NON-POTABLE COLD WATER FIRE HOSE VALVE ASSEMBLY NPCW(S)—NON-POTABLE COLD WATER SOFTENED FIRE DAMPER NPHW—NON-POTABLE HOT WATER SMOKE DAMPER NPHW(S)—NON-POTABLE HOT WATER SOFTENED FIRE SMOKE DAMPER PTS——PNEUMATIC TRANSPORT DUCT MOUNTED SMOKE SENSOR PG—PROPANE GAS SUPERVISED BUTTERFLY VALVE RO—REVERSE OSMOSIS SUPERVISED BUTTERFLY VALVE NORMALLY CLOSED ROR—REVERSE OSMOSIS RECIRCULATION SUPERVISED GATE VALVE SL—SAMPLING LINE SUPERVISED OUSIDE SCREW AND YORK (OS&Y) VALVE SAN—SANITARY DRAIN SUPERVISED OS&Y VALVE SAN(O)———— SANITARY DRAIN (OIL) SUPERVISED WATERFLOW SWITCH SAN(P)———— SANITARY PUMPED SUPERVISED BACKFLOW PREVENTER SAN(RAD)——— SANITARY RADIOACTIVE WET ALARM CHECK VALVE WITH TRIMING ST—STORM DRAIN ST(O)———— STORM DRAIN OVERFLOW DELUGE ALARM CHECK WITH TRIMING ST(P)———— STORM DRAIN PUMPED AIR MENTENANCE DEVICE VAC VACUUM (AIR) FLOOR AIR COMPRESSOR TANK VAC(EX)——— VACUUM PUMP EXHAUST MOUNTED AIR COMPRESSOR ASSEMBLY ______V------ VENT DRY ALARM CHCEK VALVE WITH TRIMING ______V(O)—_________VENT (OIL) PREACTION ALARM CHECK VALVE WITH TRIMING V(SE) VENT (SEWAGE EJECTOR) FIXTURE TRAP TEST AND DRAIN VALVE CB \bigcirc PRESSURE REDUCING VALVE CATCH BASIN 1-1/2 FIRE CONNECTION ANGLE VALVE MAN HOLE RD 🕢 2-1/2 FIRE CONNECTION ANGLE VALVE ROOF DRAIN FLOOR CONTROL VALVE ASSEMBLY FLOOR DRAIN CHECK VALVE FFD ⊘ FUNNEL FLOOR DRAIN TREADED BALL VALVE TRAP PRIMER GROOVED BALL VALVE HOSE BIBB HYDRAULIC GONG PLUMBING FIXTURES ELECTRIC BELL LAB & MEDICAL GAS ELBOW WITH DRAIN 1 IN. WAGD——— ANESTHETIC EVACUATION **GROOVE ELBOW** CO2——— CARBON DIOXIDE FIRE DEPARTMENT CONNECTION AND BACKFLOW PREVENTER DA———— DENTAL COMPRESSED AIR SIAMESE PROJECTING CONNECTION «Y» DENTAL VACUUM SIAMESE CONNECTION «Y» FREE STANDING ————He——— HELIUM BODY FOR FIRE DEPARTMENT CONNECTION AND BACKFLOW PREVENTER H2—HYDROGEN CONCENTRIC GROOVED MECHANICAL REDUCER INSTRUMENT AIR GROOVED MECHANICAL TEE OR CAP LCA—— LABORATORY COMPRESSED AIR REDUCING COUPLING LVCA——— LABORATORY VACUUM THREADED MECHANICAL TEE OR CAP MA——— MEDICAL AIR THREADED MECHANICAL CROSS MV——— MEDICAL VACUUM THREADED MECHANICAL TEE N2—NITROGEN HORIZONTAL SPLIT CASE FIRE PUMP N2O NITROUS OXIDE END SUCTION FIRE PUMP O2—OXYGEN MEDICAL AIR OUTLET VERTICAL INLINE FIRE PUMP MEDICAL VACUUM OUTLET FIRE PUMP ANGLE BODY 4 WAY MEDICAL NITROGEN OUTLET MEDICAL NITROUS OXIDE OUTLET JOCKEY PUMP MEDICAL OXYGEN OUTLET LAB AIR SINGLE BENCH OUTLET PREACTION CABINET LAB VACUUM SINGLE BENCH OUTLET LAB NITROGEN SINGLE BENCH OUTLET FIRE HOSE RACK LAB NITROUS OXIDE SINGLE BENCH OUTLET LAB OXYGEN SINGLE BENCH OUTLET SEISMIC EXPANSION LOOP LAB DOUBLE 45 DEGREE BENCH OUTLET LAB DOUBLE BENCH OUTLET WALL POST INDICATOR VALVE (PIV) LAB QUAD 45 DEGREE BECNH OUTLET MEDICAL GAS MASTER ALARM PANEL HANGER MEDICAL GAS AREA ALARM PANEL HYDRANT VALVE CONTROL MEDICAL GAS ZONE VALVE P BALL VALVE WALL HYDRANT ☐ ☐ Ó N CHECK VALVE WALL MOUNTED PORTABLE FIRE EXTINGUISHER SEMI RECESSED CABINET FOR PORTABLE EXTINGUISHER

PIPING SYSTEMS (HVAC) BBD———BOILER BLOWDOWN BFW———BOILER FEED WATER BR—BRINE RETURN BS—BRINE SUPPLY CHWR——— CHILLED WATER RETURN CHWR(G)———— CHILLED WATER RETURN - GLYCOL CHWR(P)——— CHILLED WATER RETURN - PROCESS CHWS——— CHILLED WATER SUPPLY CHWS(G)———— CHILLED WATER SUPPLY - GLYCOL CHWS(P)——— CHILLED WATER SUPPLY - PROCESS CWR—CONDENSER WATER RETURN CWR(CT)—CONDENSER WATER RETURN - COOLING TOWER CSW—CONDENSER WATER SUPPLY CWS(CT)——— CONDENSER WATER SUPPLY - COOLING TOWER DTR—DUAL TEMPERATURE RETURN (HOT OR CHILLED) DUAL TEMPERATURE SUPPLY (HOT OR CHILLED) FCFS—— FLUID COOLER FILTRATION SUPPY FCFR—— FLUID COOLER FILTRATION RETURN 18"x12" FOF—FUEL OIL FILL 18"x12" FOR—FUEL OIL RETURN FOS—FUEL OIL SUPPLY FOV—FUEL OIL VENT HPWR—HEAT RECOVERY LOOP RETURN HPWS—HEAT PUMP WATER SUPPLY HRR—HEAT RECOVERY LOOP RETURN HRS—HEAT RECOVERY LOOP SUPPLY HWR—HEATING WATER RETURN HWR(G)—HEATING WATER RETURN - GLYCOL HEATING WATER SUPPLY - UP HEATING WATER SUPPLY - GLYCOL - DN G———— NATURAL GAS GV———— NATURAL GAS VENT RAD RADON GAS REF(HG)——— REFRIGERANT HOT GAS REF(L)—REFRIGERANT LIQUID REF(S) REFRIGERANT SUCTION REF(V)—REFRIGERANT VENT RV—RELIEF VENT S(##) STEAM (NOMINAL PRESSURE) CS(##) STEAM - CLEAN (NOMINAL PRESSURE) C(##) STEAM CONDENSATE (NOMINAL PRESSURE) PC(##)———— STEAM PUMPED CONDENSATE (NOMINAL PRESSURE) STEAM VENT PIPE INSULATION SYMBOL PIPING COMPONENTS ── ISOLATION VALVE (GENERIC) → GATE VALVE — GLOBE VALVE The butterfly valve NPS 6 and less ───────── BUTTERFLY VALVE NPS 8 AND MORE er ⊪ ⁵ ——Ф— BALL VALVE —

NEEDLE VALVE Ö ☐ ☐ CHECK VALVE (GENERIC) H⊒A BALANCING VALVE —— FLOW LIMITING VALVE ® ♥ ♣ ₽ PRESSURE REDUCING VALVE 2-WAY CONTROL VALVE (GENERIC) TWO-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE □ 🖾 🖟 🖟 → 3-WAY CONTROL VALVE (GENERIC) THREE-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE ③ SOLENOID 2-WAY CONTROL VALVE ——───── SOLENOID 3-WAY CONTROL VALVE FLOAT OPERATED VALVE ACTUATOR ∞ ANGLE VALVE DOUBLE CHECK VALVE ASSEMBLY ©

MULTI-PURPOSE VALVE (SHUT-OFF, BALANCING AND CHECK) REDUCE PRESSURE BACKFLOW PREVENTER ■ □ ▼ — SUCTION DIFFUSER PUMP (GENERIC) ⊗ 🗓 🗒 ——⊗—— STEAM TRAP (GENERIC) 스 ㅎ ㅎ ~ 주 AUTOMATIC AIR VENT MANUAL AIR VENT ——

✓

VACUUM BREAKER ——— SHOCK ABSORBER TEMPERATURE GAUGE ◆ → ———— PRESSURE GAUGE TEMPERATURE AND PRESSURE TRAP —⊚— SIGHT FLOW GLASS ☐ ☐ ○ — EXX FLEXIBLE CONNECTOR EXPANSION JOINT —= GUIDE → ANCHOR → FLOW ARROW → PIPING SLOPE ————— PIPE CAP ———→ PIPE BREAK \Longrightarrow → PIPE CROSS O——— PIPING ELBOW UP C PIPING ELBOW DOWN ——— PIPING TEE UP — J PIPING TEE DOWN □ □ UNION CONNECTION D © —— CONCENTRIC REDUCER □ □ □ ■ ECCENTRIC REDUCER STANDARD CLEAN-OUT IN LINE END OF RUN STANDARD CLEAN-OUT THROUGH FLOOR END OF RUN ———— STANDARD CLEAN-OUT THROUGH FLOOR IN LINE _____DIFFERENTIAL PRESSURE CONTROL VALVE ——

Y-PATTERN MANUAL BALANCING/SHUT-OFF VALVE PRESSURE INDEPENDENT CONTROL VALVE

ANTI-SIPHON VALVE

ORIFICE RESTRICTOR

PRMH20240831 - Revision #2 Combined Fuel Oil Piping **WORK DEFINITION ABBREVIATIONS EQUIPMENT IDENTIFICATION** NEW WORK (N) A/C AIR CONDITIONING UNIT AB-# AIR BLENDER EXISTING (E) AUTOMATIC AIR VENT AC-# AIR COMPRESSOR ---- REMOVE EXISTING (D) AMERICANS WITH DISABILITIES ACT ACU-# AIR CONDITIONING UNIT ADS-# AIR AND DIRT SEPARATOR ADJUSTABLE REMOVE EXISTING EQUIPMENT (D) AF-# AIR FILTER ABOVE FINISHED CEILING --- FUTURE ABOVE FINISHED FLOOR AHU-# AIR HANDLING UNIT — - - — TEMPORARY, AS NOTED ABOVE FINISHED GRADE AS-# AIR SEPARATOR ATU-# AIR TERMINAL UNIT ABOVE FINISH ROOF RELOCATE (R) AUTHORITY HAVING JURISDICTION KEY NOTE ACCESS PANEL BCU-# BLOWER COIL UNIT BT-# BATH TUB AIR PRESSURE DROP **EQUIPMENT IDENTIFICATION** CHILLED BEAM CONNECTION TO EXISTING BUILDING AUTOMATION SYSTEM CC-# COOLING COIL DISCONNECT (CUT AND CAP) BACKDRAFT DAMPER CH-# CHILLER CONV-# CONVECTOR BRAKE HORSEPOWER (HVAC) BUILDING MANAGEMENT SYSTEM CRU-# CONDENSATE RETURN UNIT BOTTOM OF DUCT CT-# COOLING TOWER *NOTE: ALL DUCT SIZES ARE INTERIOR, FREE DIMENSIONS BOTTOM OF PIPE CU-# CONDENSING UNIT ALWAYS WIDTH (HORIZONTAL DIM.) x HEIGHT (VERTICAL DIM.) BRITISH THERMAL UNIT CUH-# CABINET UNIT HEATER BTUH BRITISH THERMAL UNIT PER HOUR CV-# CONTROL VALVE → AIR FLOW ARROW COMPLETE WITH DAC-# DOOR AIR CURTAIN \rightarrow 18"x12" \rightarrow 18"x12" RECTANGULAR DUCT AND SIZE* CONSTANT AIR VOLUME DC-# DUST COLLECTOR CIRCUIT BALANCING VALVE DCT-# DECONTAMINATION TANK ——18"ø—— 18"ø—— ROUND DUCT AND SIZE* **CUBIC FEET PER MINUTE** DCVA-# DOUBLE CHECK VALVE ASSEMBLY 18"x12"ø $\xrightarrow{0}$ 18"x12"ø → FLAT OVAL DUCT AND SIZE* DRY BULB TEMEPRATURE DF-# DRINKING FOUNTAIN DG-# DOOR GRILLE EXTERIOR DUCT TREATMENT* A-WEIGHTED DECIBLES DS-# DUCT SILENCER —18"x12"—→ RECTANGULAR DUCT WITH ACOUSTIC LINING* DIRECT DIGITAL CONTROL DU-# DEHUMIDIFICATION UNIT DUCT SECTION, SUPPLY AIR. APPLIES TO RECT., ROUND AND OVAL DWH-# DOMESTIC WATER HEATER E-# EXHAUST GRILLE / REGISTER / DIFFUSER DIA./Ø DIAMETER DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL DIFFERENTIAL EL-# EXPANSION LOOP DUCT SECTION, RETURN AIR. APPLIES TO RECT., ROUND AND OVAL DIVISION ERC-# ENERGY RECOVERY COIL DUCT SECTION, EXHAUST AIR. APPLIES TO RECT., ROUND AND OVAL DOWN ERU-# ENERGY RECOVERY UNIT DRAWING ES-# EMERGENCY SHOWER FLEXIBLE DUCT EXHAUST AIR ETU-# EXHAUST TERMINAL UNIT ELBOW TURN, SUPPLY DOWN. APPLIES TO RECT., ROUND AND OVAL EA (D) EXHAUST AIR, DISHWASH EWC-# ELECTRIC WATER COOLER DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL EA (G) EXHAUST AIR, GENERAL EWS-# EYE WASH STATION F(C)-# FAN CEILING EA (K) EXHAUST AIR, KITCHEN DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL EA (LAB) EXHAUST AIR, LABORATORY F(E)-# FAN EXHAUST DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL EA (LD) EXHAUST AIR, LAUNDRY/DRYER F(LE)-# FAN LABORATORY EXHAUST EA (W) EXHAUST AIR, WASHROOM F(R)-# FAN RETURN CHANGE IN DUCT ELEVATION RISING IN DIRECTION INDICATED EAT ENTERING AIR TEMPERATURE F(S)-# FAN SUPPLY CHANGE IN DUCT ELEVATION DROPPING IN DIRECTION INDICATED EAV EXHAUST AIR VALVE F(T)-# FAN TRANSFER ── END CAP ECM ELECTRONICALLY COMMUNICATED ELBOW, RECTANGULAR, SMOOTH RADIUS WITH SPLITTER VANES FCU-# FAN COIL UNIT (0.25 R/W DEFAULT) EXISTING TO BE DEMOLISHED FLOOR DRAIN (DEMOLITION PLANS) FFU-# FAN FILTER UNIT ELBOW, RECTANGULAR, SMOOTH RADIUS WITHOUT VANES ENERGY EFFICIENCY RATIO FPP-# FIRE PROTECTION PUMP (1.5 R/W DEFAULT) ETHELYENE GLYCOL FPTU-# FAN POWERED TERMINAL UNIT EMCS ENERGY MANAGMENT CONTROL FTR-# FINNED TUBE RADIATOR ELBOW, ROUND, SMOOTH RADIUS SYSTEM FUR-# FURNACE (1.5 R/W DEFAULT) EXISTING RELOCATED (NEW GFS-# GLYCOL FEED SYSTEM CONSTRUCTION PLANS) GSG-# GAS-FIRED STEAM GENERATOR(*) EXISTING TO BE RELOCATED MITERED ELBOW, RECTANGULAR, WITHOUT VANES H(C)-# HOOD (CANOPY) (DEMOLITION PLANS) H(HC)-# HOOD (HEAT AND CONDENSATE) EXTERNAL STATIC PRESSURE H(I)-# HOOD (INTAKE) EWT ENTERING WATER TEMPERATURE MITERED ELBOW, RECTANGULAR, WITH TURNING VANES H(K)-# HOOD (KITCHEN) EXIST / E EXISTING (DEMOLITION PLANS) H(R)-# HOOD (RELIEF) FC FAIL CLOSED H(RH)-# HOOD (RANGE) RECTANGULAR TO ROUND TRANSITION FULL LOAD AMPERAGE H-# HUMIDIFIER FAIL OPEN HC-# HEATING COIL FP FIRE PROTECTION DUCT ACCESS DOOR (TOP, SIDE, BOTTOM) HP-# HEAT PUMP FPM FEET PER MINUTE HRU-# HEAT RECOVERY UNIT FEET PER SECOND HT-# HYDROPNEUMATIC TANK FOOT/FEET FLEXIBLE CONNECTION HX-# HEAT EXCHANGER GAUGE LATU-# LAB AIR TERMINAL UNIT GAL GALLON (US) LAV-# LAVATORY BACKDRAFT DAMPER GC GENERAL CONTRACTOR MAC-# MEDICAL AIR COMPRESSOR GEO GEODETIC MAU-# MAKEUP AIR UNIT GPM GALLONS PER MINUTE CABLE OPERATED DAMPER MD-# MOTORIZED DAMPER HEPA HIGH EFFICIENCY PARTICULATE AIF MSK-# MOP SINK HORSEPOWER MV-# MIXING VALVE MANUAL DAMPER MVP-# MEDICAL VACUUM PUMP HOUR HEATING / VENTILATING / AIR CONDITIONING PDU-# POOL DEHUMIDIFICATION UNIT MOTORIZED DAMPER PRV-# PRESSURE REDUCING VALVE INVERT ELEVATION PTAC-# PACKAGED TERMINAL AIR CONDITIONER INTEGRATED ENERGY EFFECIENCY R-# RETURN AIR GRILLE / REGISTER / DIFFUSER PRESSURE INDEPENDENT REGULATOR RD-# ROOF DRAIN INCHES RH-# RANGE HOOD IN WG INCHES WATER GAUGE FIRE DAMPER RP-# RADIANT PANEL IPLV INTEGRATED PART LOAD VALUE RPBP-# REDUCED PRESSURE BACKFLOW PREVENTER kW KILOWATT RTU-# ROOFTOP UNIT SMOKE DAMPER kWh KILOWATT HOUR S-# SUPPLY GRILLE / REGISTER / DIFFUSER LEAVING AIR TEMPERATURE SH-# SHOWER POUNDS SK-# SINK SMOKE AND FIRE DAMPER LINEAR FEET SPC-# SOLAR PANEL COLLECTOR LEAVING WATER TEMPERATURE SSF-# SIDE STREAM FILTER METER T(B)-# TANK (BUFFER TANK) DUCT SILENCER/TRANSFER ELBOW MAXIMUM T(E)-# TANK (EXPANSION TANK) CONTROL DEVICE (REFER TO CONTROLS LEGEND) THOUSAND OF BTUH T(H)-# TANK (HYDRO PNEUMATIC TANK) MCA MINIMUM CIRCUIT AMPS AIR FLOW MEASURING STATION (REFER TO CONTROLS LEGEND) T(S)-# TANK (STORAGE TANK) MERV MINIMUM EFFECIENCY REPORTING T-# TRANSFER AIR GRILLE VALUES UH-# UNIT HEATER MFR MANUFACTURER UR-# URINAL USG-# UNFIRED STEAM GENERATOR AIR OUTLET OR INLET TAG)REFER TO SCHEDULE) — SIZE (IN.) MOP MAXIMUM OVERCURREN UV-# UNIT VENTILATOR VOLUME (CFM) PROTECTION VA-# VALVE MWT MEAN WATER TEMPERATURE VFD-# VARIABLE FREQUENCY DRIVE NOT APPLICABLE RECTANGULAR DIFFUSER, SUPPLY. WC-# WATER CLOSET NOISE CRITERIA OPTIONAL ARROWS SHOW THE FLOW DIRECTION. WS-# WATER SOFTENER NORMALLY CLOSED L-# LOUVER NIC NOT IN CONTRACT RECTANGULAR REGISTER OR GRILLE, RETURN NO NORMALLY OPEN NOMINAL PIPE SIZE NTS NOT TO SCALE RECTANGULAR REGISTER OR GRILLE, EXHAUST OUTSIDE AIR OFCI OWNER FURNISHED, CONTRACTOR INSTALLED ROUND DIFFUSER, SUPPLY OWNER FURNISHED EQUIPMENT LINEAR DIFFUSER OWNER FURNISHED / OWNER SIDEWALL REGISTER OR GRILLE, SUPPLY PROPYLENE GLYCOL SIDEWALL GRILLE, RETURN OR EXHAUST POINT OF ENTRANCE UNDERCUT DOOR POINT OF SERVICE PPM PARTS PER MILLION DOOR GRILLE OR LOUVER POUNDS PER SQUARE INCH TRANSFER GRILLE OR LOUVER POUNDS PER SQUARE INCH. COIL (REFER TO CONTROLS LEGEND) ABSOLUTE PSIG POUNDS PER SQUARE INCH, GAGE — QUANTITY PNEUMATIC TUBE STATION POLYVINYL CHLORIDE RETURN AIR LENGTH (FT.) RADIATION HEATING TAG (REFER TO SCHEDULE) RELA RELIEF AIR ____ CAPACITY (MBH) REQD REQUIRED RH RELATIVE HUMIDITY RPM REVOLUTIONS PER MINUTE SUPPLY AIR SEER SEASONAL ENERGY EFFICIENCY SP STATIC PRESSURE

SP STAIR PRESSURIZATION AIR (*)

SRV SAFETY RELIEF VALVE

TSP TOTAL STATIC PRESSURE

UNDER CUT (DOOR) UNDERGROUND

VARIABLE AIR VOLUME

VERIFY IN FIELD

WATER GAUGE

WITH

ZONE

CELSIUS

FAHRENHEIT

WITHOUT

VENT-THRU-ROOF

WET BULB TEMPERATURE

VARIABLE FREQUENCY DRIVE

The approved construction plans, documents, and all

visible and readily accessible location.

the permitee on site for inspection.

engineering must be posted on the job at all inspections in a

Full sized legible color plans are required to be provided by

Approval of submitted plans is not an approval of omissions or oversights by this office or non compliance with any applicable

egulations of local government. The contractor is responsible

for making sure that the building complies with all applicable

codes and regulations of the local government.

TA TRANSFER AIR

TEMP TEMPERATURE

TSTAT THERMOSTAT

TYP TYPICAL

UC

VIF

VTR

W/O

WG

ZN-#

WB

centeris



MECHANICAL



COMBINED FUEL OIL PIPING 03/07/25

City of Puyallup opment & Permitting Servi ISSUED PERMIT Building Engineering | Public Works Fire

City of Puyallup Building **REVIEWED FOR COMPLIANCE** BSnowden 03/20/2025

MECHANICAL GENERATOR FUEL LEGEND AND 9:46:32 AM **ABBREVIATIONS**

} [TRANSFER	FUEL OIL PUMP CO	NTROLLER SCHEDUL	E								
	MARK	SYSTEM SERVED	MANUFACTURER	UL LISTING	NEMA RATING	POWER	CONTROL POWER	CONTROL LOGIC	BUILDING MANAGEMENT SYSTEM INTEGRATION	CONTROL POSITION SWITCH	GTLC GENERAL ALARM INPUTS [QTY]		GTLC CALL FOR FUEL INPUTS [QTY]	FLOW SENSOR INPUTS [QTY]	LEAK SENSOR INPUTS [QTY]	DUPLEX FUEL FILTER DELTA P SENSOR INPUT [QTY]	PUMP RUN-TIME HOURS OUTPUT TO BMS [QTY]	PUMP COMMAND CIRCUITS (QTY)	PUMP MOTOR CIRCUIT BREAKERS (QTY)	INDICATOR LIGHTS (QTY)	NOTES
{	FOPC-1	TRANSFER FUEL OIL PUMP SYSTEM - LEAD	OMNTEC	UL 508, UL 508A	4	208V/1P	24VDC - INTEGRAL TRANSFORMER	PLC	MODBUS / BACNET	OFF/AUTO/LOCAL	17	17	17	1	5	1	5	110V (5)	208V/1P (5)	PUMP ON (5)	1,2,3
\$ [FOPC-2	TRANSFER FUEL OIL PUMP SYSTEM - LAG	OMNTEC	UL 508, UL 508A	4	208V/1P	24VDC - INTEGRAL TRANSFORMER	PLC	MODBUS / BACNET	OFF/AUTO/LOCAL	17	17	17	1	5	1	5	110V (5)	208V/1P (5)	PUMP ON (5)	1,2,3
NO 1	OTES:	FOPC-2 SHALL HAVE CAPABILITY TO COMMUNICA	ATE RETWEEN EACH OTHER	FOR LEAD-LAG CONT	TROL (SEE SEOLIE	NCE OF OPER	ATIONS FOR MORE INFORMATION)														

FLOW SENSOR INPUTS SHALL BE WIRED IN FIVE (5) SEPARATE PARALLEL CIRCUITS TO RELAY; SINGLE OUTPUT SIGNAL FROM RELAY TO FOPC.

8. BUILDING MANAGEMENT SYSTEM INTEGRATION SHALL BE MATCHED TO EXISTING FUEL OIL CONTROLS (CONTRACTOR TO CONFIRM).

						GEN	IERATOR TANK LEV	VEL CONTROLLER SCHEDULE						
MARK	SYSTEM SERVED	MANUFACTURER	UL LISTING	NEMA RATING	POWER	CONTROL POWER	CONTROL LOGIC	BUILDING MANAGEMENT SYSTEM INTEGRATION	CONTROL POSITION SWITCH	TANK LEVEL INDICATOR INPUTS (QTY)	PUMP STARTER (QTY)	PUMP MOTOR CIRCUIT BREAKERS (QTY)	INDICATOR LIGHTS (QTY)	NOTES
GTLC-1-GEN	1-GEN	OMNTEC	UL 508, UL 508A	4	208V/3P	120VAC - INTEGRAL TRANSFORMER	PLC	N/A	OFF/AUTO/LOCAL	40%, 50%, 90%, 95% (4)	MAGNETIC STARTER - 1.5 HP (1)	TBD (1)	PUMP ON (1)	1
GTLC-2-GEN	2-GEN	OMNTEC	UL 508, UL 508A	4	208V/3P	120VAC - INTEGRAL TRANSFORMER	PLC	N/A	OFF/AUTO/LOCAL	40%, 50%, 90%, 95% (4)	MAGNETIC STARTER - 1.5 HP (1)	TBD (1)	PUMP ON (1)	1
GTLC-3-GEN	3-GEN	OMNTEC	UL 508, UL 508A	4	208V/3P	120VAC - INTEGRAL TRANSFORMER	PLC	N/A	OFF/AUTO/LOCAL	40%, 50%, 90%, 95% (4)	MAGNETIC STARTER - 1.5 HP (1)	TBD (1)	PUMP ON (1)	1
GTLC-4-GEN	4-GEN	OMNTEC	UL 508, UL 508A	4	208V/3P	120VAC - INTEGRAL TRANSFORMER	PLC	N/A	OFF/AUTO/LOCAL	40%, 50%, 90%, 95% (4)	MAGNETIC STARTER - 1.5 HP (1)	TBD (1)	PUMP ON (1)	1
GTLC-5-GEN	5-GEN	OMNTEC	UL 508, UL 508A	4	208V/3P	120VAC - INTEGRAL TRANSFORMER	PLC	N/A	OFF/AUTO/LOCAL	40%, 50%, 90%, 95% (4)	MAGNETIC STARTER - 1.5 HP (1)	TBD (1)	PUMP ON (1)	1
GTLC-6-GEN	6-GEN	OMNTEC	UL 508, UL 508A	4	208V/3P	120VAC - INTEGRAL TRANSFORMER	PLC	N/A	OFF/AUTO/LOCAL	40%, 50%, 90%, 95% (4)	MAGNETIC STARTER - 1.5 HP (1)	TBD (1)	PUMP ON (1)	1
GTLC-7-GEN	7-GEN	OMNTEC	UL 508, UL 508A	4	208V/3P	120VAC - INTEGRAL TRANSFORMER	PLC	N/A	OFF/AUTO/LOCAL	40%, 50%, 90%, 95% (4)	MAGNETIC STARTER - 1.5 HP (1)	TBD (1)	PUMP ON (1)	1
GTLC-8-GEN	8-GEN	OMNTEC	UL 508, UL 508A	4	208V/3P	120VAC - INTEGRAL TRANSFORMER	PLC	N/A	OFF/AUTO/LOCAL	40%, 50%, 90%, 95% (4)	MAGNETIC STARTER - 1.5 HP (1)	TBD (1)	PUMP ON (1)	1

HARDWIRED TO TRANSFER FUEL OIL PUMP CONTROLLER (FOPC)

	FUEL OIL OVERFLOW/RETURN PUMP SCHEDULE																	
	UNIT IDENTIFICATION					PERFORMANCE						ELECTRIC	AL		000047010			
MARK	SYSTEM SERVED RI		PUMP TYPE	COUPLING TYPE	CONTROL	FLUID TYPE	FLUID TEMP (F)	FLOW (GPM)	PUMP HEAD (FT)	HP	SPEED (RPM)	VOLTS	PHASE	EMERGENCY POWER?	OPERATING WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER	NOTES
FOP-A-GEN-1	A-GEN-1	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	1,2,3
FOP-A-GEN-2	A-GEN-2	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	1,2,3
FOP-A-GEN-3	A-GEN-3	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	2,3,4,5
FOP-1-GEN	1-GEN	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	1,2,3
FOP-2-GEN	2-GEN	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	2,3,4,5
FOP-3-GEN	3-GEN	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	2,3,4,5
FOP-4-GEN	4-GEN	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	2,3,4,5
FOP-5-GEN	5-GEN	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	2,3,4,5
FOP-6-GEN	6-GEN	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	2,3,4,5
FOP-7-GEN	7-GEN	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	2,3,4,5
FOP-8-GEN	8-GEN	N	POSITIVE DISPLACEMENT - GEAR	SPLIT	FIXED SPEED	FUEL OIL #2	60	31.0	55	1.5	1,750	208	3	YES	60	GORMAN RUPP	GHC 1-1/2 GH 3-B	2,3,4,5
IOTEC:																		

EXISTING; TO BE REUSED. CONTRACTOR SHALL TEST PUMP AND PERFORM MANUFACTURER RECOMMENDED MAINTENANCE BASED ON AGE OF PUMP.

MINIMUM EFFICIENCY OF ALL MOTORS SHALL BE IN ACCORDANCE WITH WSEC 2021, SECTION C405.8. MAGNETIC STARTER IN GENERATOR TANK LEVEL CONTROLLER (GTLC-#)

PROVIDE WITH BALDOR RELIANCE XT30154T 3-PHASE MOTOR (1750 RPM), STANDARD MOUNTING FEET OPTION, AND DRIVE ASSEMBLY #90351-162 (CONTRACTOR TO CONFIRM ALL ACCESSORIES BASED ON FINAL MOTOR SELECTION) PROVIDE ALL NECESSARY APPURTENANCES NECESSARY FOR A FULLY OPERATIONAL SYSTEM.

DESCRIPTION OF OPERATIONS

- THIS SEQUENCE OF OPERATION IS WRITTEN FOR CONTROLLING THE CENTERIS FUEL YARD FUELING SYSTEMS ON THE BUILDING EXTERIOR AT 1019 39TH AVE, PUYALLUP, WA. A. THE EXISTING FUELING SYSTEM SHALL BE EXPANDED UPON FOR THE ADDITION OF EIGHT (8) GENERATORS AND ASSOCIATED BELLY TANKS. THE CONTROL SYSTEM SHALL BE PROGRAMMED TO SEQUENCE THE OPERATION DESCRIBED WITHIN THE CONTRACT DOCUMENTS. CONTROLS CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY COMPONENTS AND ACCESSORIES FOR A COMPLETE AND OPERATIONAL SYSTEM INCLUDING, BUT NOT LIMITED TO SENSORS, RELAYS, GATEWAYS, COMMUNICATION WIRING AND CONDUIT, AND ALL
 - NECESSARY ELECTRICAL DEVICES, WIRING, CONTROL PANELS, AND CONDUIT. B. ALARMS AND OTHER SYSTEM NOTIFICATIONS REPORT AS CURRENT SYSTEM IS CONFIGURED (CONTRACTOR TO CONFIRM PRIOR TO CONSTRUCTION). EXISTING MODBUS CONNECTIONS TO BMS SYSTEM SHALL BE MAINTAINED AND PRESERVED.

- C. SYSTEMS CONTROLLED D. THE CONTROL SYSTEM SHALL EXECUTE CONTROL FUNCTIONS OVER
- THE FOLLOWING MODIFIED SYSTEMS:
- i. TRANSFER FUEL OIL PUMP CONTROLLER (FOPC-1 & FOPC-2) THE FOLLOWING NEW SYSTEMS:
- ii. GENERATOR FUEL TANK LEVEL CONTROL (GTLC-(N) GEN-2, GTLC-(N) GEN-3, GTLC-(N) GEN-4, GTLC-(N) GEN-5, GTLC-(N) GEN-6, GTLC-(N) GEN-7, GTLC-(N) GEN-8). iii. GENERATOR OVERFLOW/RETURN PUMP (FOP-(N) GEN-2, FOP-(N) GEN-3, FOP-(N) GEN-4, FOP-(N) GEN-5, FOP-(N) GEN-6, FOP-(N) GEN-7,
- 2.0 TRANSFER FUEL OIL PUMP CONTROLLER (FOPC-1 & FOPC-2)
- A. GENERAL a. TRANSFER FUEL OIL PUMP CONTROLLERS (PROVIDED BY MECH CONTRACTOR) SHALL CONTROL THE EXISTING TRANSFER FUEL OIL PUMPS (FOP-#).
 - 1. FOPC-1 SHALL BE LEAD TRANSFER OIL PUMP CONTROLLER INITIALLY. 2. FOPC-2 SHALL BE LEAD TRANSFER OIL PUMP CONTROLLER INITIALLY.
- EACH CONTROLLER SHALL BE CAPABLE OF STARTING AND STOPPING FIVE (5) TRANSFER FUEL OIL PUMPS (FOP-#). c. EACH CONTROLLER SHALL MONITOR SEVENTEEN (17) GENERATOR FUEL TANK CONTROLLERS (GTLC-#).
- d. EACH CONTROLLER SHALL UTILIZE MODBUS PROTOCOL FOR COMMUNICATION OF ALARMS AND STATUS TO EXISTING BMS SYSTEM. e. UPON LOW LEVEL ALARM FROM GENERATOR: ALARM BMS.
- f. UPON CALL FOR FUEL FROM GENERATOR: START LEAD PUMP ON LEAD TRANSFER FUEL OIL PUMP CONTROLLER. 1. IF FLOW IS NOT PROVEN AFTER 30 SECONDS (ADJ) AT THE HEADER: ALARM BMS AND START FIRST STANDBY PUMP ON LEAD
- TRANSFER FUEL OIL PUMP CONTROLLER (SECOND TANK). 2. IF FLOW IS NOT PROVEN IN THE SUCCEEDING 30 SECONDS (ADJ): ALARM BMS AND START NEXT STANDBY PUMP ON LEAD
- TRANSFER FUEL OIL PUMP CONTROLLER (THIRD TANK). A. FOLLOW ABOVE SEQUENCE UNTIL ALL STANDBY PUMPS HAVE BEEN CYCLED ON THE LEAD TRANSFER FUEL OIL PUMP
- B. IF ALL STANDBY PUMPS ON THE LEAD TRANSFER FUEL OIL PUMP CONTROLLER HAVE CYCLED AND FLOW IS NOT PROVEN: THE LEAD TRANSFER FUEL OIL PUMP CONTROLLER SHALL TRANSFER CONTROL TO THE LAG TRANSFER FUEL OIL PUMP
- CONTROLLER. LAG TRANSFER FUEL OIL PUMP CONTROLLER SHALL FOLLOW SAME SEQUENCES GIVEN ABOVE FOR THE LEAD TRANSFER FUEL OIL PUMP CONTROLLER. a. IF LEAD AND ALL STANDBY PUMPS ON LAG TRANSFER FUEL OIL PUMP CONTROLLER FAIL TO PROVE FLOW: ALARM BMS AND STOP CALL FOR PUMP (MANUAL RESET).
- g. PANEL SHALL BE CONFIGURED AND PROGRAMMED TO ALTERNATE PRIMARY AND LAG CONTROLLERS, AND ALTERNATE LEAD AND STANDBY PUMPS TO EQUALIZE RUN TIME BETWEEN ALL PUMPS AND CONTROLLERS.
- a. PANEL GENERAL ALARM GENERATOR (AUTO RESET)
- b. LOW LEVEL ALARM GENERATOR (AUTO RESET) c. PUMP FAILURE - SINGLE (MANUAL RESET)
- d. PUMP FAILURE ALL (MANUAL RESET)
- C. CONTROL PANEL CONFIGURATION: a. MAIN: AUTO-OFF
- 3.0 GENERATOR FUEL TANK LEVEL CONTROL (GTLC-(N) GEN-2, GTLC-(N) GEN-3, GTLC-(N) GEN-4, GTLC-(N) GEN-5, GTLC-(N) GEN-6, GTLC-(N) GEN-7, GTLC-(N) GEN-8) A. GENERAL
 - a. GENERATOR FUEL TANK LEVEL CONTROLLER (PROVIDED BY MECH CONTRACTOR) SHALL CONTROL THE BELLY TANK FUEL LEVEL AND BE COMPATIBLE WITH FUEL OIL PUMP CONTROLLER (FOPC-1 & FOPC-2).
 - b. PLC CONTROLLER SHALL INDEPENDENTLY MONITOR INPUTS (SEE DETAIL FOR INPUTS) AT EACH GENERATOR AND COMMUNICATE DUPLICATE STATUS AND ALARMS TO THE FUEL OIL PUMP CONTROLLER (FOPC-1 & FOPC-2) VIS ISOLATED RELAYS:
 - 1. 40% TANK LEVEL: SIGNAL LOW LEVEL ALARM 50% TANK LEVEL: OPEN N.C. TANK FILL VALVE AND INITIATE CALL FOR FUEL.
 - 3. 90% TANK LEVEL: STOP CALL FOR FUEL AND CLOSE N.C. TANK FILL VALVE. 4. 95% TANK LEVEL: SIGNAL HIGH LEVEL ALARM. END CALL FOR FUEL. CLOSE N.O. FILL VALVE AND START RETURN PUMP (AT
 - GENERATOR) UNTIL FUEL LEVEL REACHES 90%. GENERATE GENERAL ALARM. 5. UPON LEAK DETECTION: GENERATE GENERAL ALARM. 6. RECEIVE ALARM FROM FACTORY GENERATOR PANEL: GENERATE GENERAL ALARM.
- a. GENERAL ALARM (MANUAL RESET)
- b. LOW LEVEL ALARM (AUTO RESET) C. CONTROL PANEL CONFIGURATION:
- a. MAIN: AUTO-OFF b. GENERATOR RETURN PUMP (FOP-(N) GEN-#): HAND-AUTO-OFF
- 3.0 GENERATOR OVERFLOW/RETURN PUMP (FOP-(N) GEN-2, FOP-(N) GEN-3, FOP-(N) GEN-4, FOP-(N) GEN-5, FOP-(N) GEN-6, FOP-(N) GEN-7, FOP-(N)
- A. GENERAL a. GENERATOR OVERFLOW/RETURN PUMP (PROVIDED BY MECH CONTRACTOR) SHALL PROVIDE OVERFLOW PROTECTION FOR THE
- GENERATOR FUEL TANK LEVEL CONTROL SYSTEM AND BE COMPATIBLE WITH FUEL OIL PUMP CONTROLLER (FOPC-1 & FOPC-2). b. PUMP SHALL RUN CONTINUOUSLY UPON CALL FROM GTLC-# (SEE SECTION 2.0 ABOVE):
- i. UPON CALL FROM GTLC-#, N.O. CONTROL VALVE AT GENERATOR SHALL CLOSE AND CALL FOR FUEL SHALL CEASE (IF CALL EXISTS).
- ii. PUMP SHALL POWER ON AND RUN CONTINUOUSLY. iii. ONCE GENERATOR TANK LEVEL REACHES 90%, PUMP SHALL POWER OFF.
- iv. N.O. CONTROL VALVE AT GENERATOR SHALL OPEN.

GENERAL NOTES

PRMH20240831 - Revision #2 Combined Fuel Oil Piping

1. THE MECHANICAL PLANS ARE DIAGRAMMATIC IN NATURE AND ARE BASED ON ONE MANUFACTURER'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL OF THE DETAILS FOR THE EQUIPMENT. THE MECHANICAL CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT AND ENSURE THAT IT WILL FIT IN THE AVAILABLE SPACE.

- 2. MECHANICAL CONTRACTOR RESPONSIBLE FOR INSTALLATION OF COMPLETED AND OPERATIONAL SYSTEMS WITH DUE RESPECT TO ALL APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION.
- 3. IT IS THE CONTRACTOR RESPONSIBILITY TO FIELD VERIFY ALL CONNECTION POINTS PRIOR TO INSTALL. NOT ALL CONNECTION SIZES ARE SHOWN, AND THOSE THAT ARE SHOWN ARE APPROXIMATE AND ARE TAKEN FROM EXISTING AS-BUILTS AND FIELD OBSERVATIONS.
- 4. CONTRACTORS TO VERIFY ALL GRADES, DIMENSIONS AND EXISTING CONDITIONS AT THE SITE BEFORE PROCEEDING WITH WORK. NOTIFY PRIME CONSULTANT OF ANY DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL CONDITIONS BEFORE INSTALLATION.
- 5. EQUIPMENT AND SYSTEMS SHALL COMPLY WITH 2021 WASHINGTON STATE ENERGY AND MECHANICAL CODES.
- 6. COORDINATE INSTALLATION OF PIPING AND DUCTWORK WITH ELECTRICAL CONTRACTOR AND OTHER TRADES.
- 7. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS NEEDED TO CONSTRUCT
- 8. IF THERE IS A CONFLICT BETWEEN THE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS, THE MOST STRINGENT WILL APPLY.
- 9. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURERS INSTALLATION INSTRUCTIONS AND GUIDELINES. CONTRACTOR TO PROVIDE ALL FITTINGS, TRANSITIONS, DAMPERS, VALVES, AND OTHER DEVICES REQUIRED FOR A COMPLETE AND OPERATIONAL INSTALLATION.
- 10. SYSTEMS ADHERE TO C405.8 ELECTRIC MOTOR EFFICIENCY (2021 WSEC): A:ALL ELECTRIC MOTORS, FRACTIONAL OR OTHERWISE, SHALL MEET THE MINIMUM EFFICIENCY REQUIREMENTS OF TABLES C405.8(1) THOUGH C405.8(4) WHEN TESTED IN ACCORDANCE WITH DOE 10 CFR UNLESS OTHER EXCEPTIONS ARE QUALIFIED AND MET BY THIS SECTION.
- 11. PENETRATIONS OF DUCTS, PIPES, CONDUITS, ETC IN WALLS REQUIRING PROTECTED OPENINGS SHALL BE FIRE STOPPED, FIRE STOP MATERIAL, SHALL BE A UL/ULC-LISTED ASSEMBLY APPROPRIATE FOR FIRE OR SMOKE PENETRATIONS AS APPLICABLE AND AS APPROVED BY THE FIRE MARSHAL.
- 12. ALL PIPE SHALL BE SUPPORTED FROM STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE OR METAL STRAPS TO SUPPORT PIPES WILL NOT BE PERMITTED. REFER TO SPECIFICATIONS FOR MINUMUM SPACING OF PIPE SUPPORTS.
- 13. ALL EQUIPMENT TO BE INSTALLED ON MIN 6" THICK CONCRETE HOUSEKEEPING PADS.
- 14. ALL EQUIPMENT, DUCTS PIPING, AND OTHER DEVICES AND MATERIALS INSTALLED OUTSIDE OF THE BUILDING OR OTHERWISE EXPOSED TO THE WEATHER SHALL BE COMPLETELY WEATHERPROOFED.
- 15. MECHANICAL EQUIPMENT, DUCTS AND PIPING ARE TO BE COORDINATED WITH STRUCTURAL JOISTS AND CROSS BRACING.
- 16. ALL EXPOSED PIPING IN OCCUPIED SPACES SUBJECT TO ARCHITECTURAL APPROVAL PRIOR TO INSTALLATION.
- 17. ALL DUCTWORK SHALL BE CONSTRUCTED AND SEALED PER IMC.
- 18. THE HVAC SYSTEMS AND PLUMBING SYSTEMS SHALL BE TESTED AND BALANCED BY AN INDEPENDENT AGENCY, UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER PRIOR TO COMMISSIONING. A SEALED TYPE WRITTEN REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER.

19. A BUILDING COMMISSIONING PROCESS AND FUNCTIONAL TESTING OF

- MECHANICAL SYSTEMS SHALL BE CARRIED OUT BY A CERTIFIED COMMISSIONING PROFESSIONAL IN ACCORDANCE WITH 2021 WSEC SECTION C408. THE MECHANICAL, ELECTRICAL, PLUMBING, AND CONTROL CONTRACTORS ARE REQUIRED TO PERFORM FUNCTIONAL PERFORMANCE TESTING OF ALL EQUIPMENT PRIOR TO TESTING BY THE COMMISSIONING AGENT. CONTRACTORS SHALL PROVIDE THE NECESSARY ASSISTANCE TO THE COMMISSIONING AGENT TO PERFORM COMMISSIONING DUTIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING CORRECTIVE ACTION IF ANY DEFICIENCIES ARE FOUND DURING COMMISSIONING.
- 20. SYSTEMS ADHERE TO 2021 WSEC SECTION C408 SYSTEM COMMISSIONING: A. A CERTIFIED COMMISSIONING PROFESSIONAL (CCP) SHALL LEAD THE COMMISSIONING PROCESS. A CCP IS AN INDIVIDUAL WHO IS CERTIFIED BY AN ANSI/ISO/IEC 17024:2012 ACCREDITED ORGANIZATION TO LEAD, PLAN, COORDINATE, AND MANAGE COMMISSIONING TEAMS AND
- IMPLEMENT THE COMMISSIONING PROCESS. B. A CERTIFIED COMMISSIONING PROFESSIONAL SHALL PERFORM THE FOLLOWING:
- a. DEVELOP A COMMISSIONING PLAN. b. REVIEW BUILDING DOCUMENTATION AND CLOSE-OUT SUBMITTALS.
- c. PROVIDE A COMMISSIONING REPORT. d. LIST SPECIFIC EQUIPMENT, APPLIANCES AND SYSTEMS COMMISSIONED.
- C. FUNCTIONAL TESTING SHALL BE COMPLETED FOR THE FOLLOWING SYSTEMS AND THEIR ASSOCIATED CONTROL SYSTEMS: a. MECHANICAL SYSTEMS
- b. SERVICE WATER HEATING SYSTEMS c. CONTROLLED RECEPTACLE AND LIGHTING SYSTEMS
- d. EQUIPMENT APPLIANCE AND SYSTEMS
- e. ENERGY METERING f. REFRIGERATION SYSTEMS
- D. A COMMISSIONING REPORT SHALL BE DELIVERED TO THE BUILDING OWNER AND INCLUDE: a. RESULTS OF THE FUNCTIONAL PERFORMANCE TESTS
- b. LIST OF DEFICIENCIES AND CORRECTIVE MEASURES IMPLEMENTED OR PROPOSED. c. FUNCTIONAL PERFORMANCE TEST PROCEDURES.
- d. COMMISSIONING PLAN.
- e. TAB REPORT.
- 21. OWNER TRAINING BY CONTRACTORS FOR EACH PIECE OF EQUIPMENT OR SYSTEM SHALL INCLUDE: SYSTEM/EQUIPMENT OVERVIEW (WHAT IT IS, WHAT IT DOES, AND WHICH OTHER SYSTEMS OR EQUIPMENT DOES IT INTERFACE WITH). REVIEW OF THE AVAILABLE O&M MATERIALS. REVIEW OF THE RECORD DRAWINGS ON THE SUBJECT SYSTEM/EQUIPMENT. HANDS-ON DEMONSTRATION OF ALL NORMAL MAINTENANCE PROCEDURES, NORMAL OPERATING MODES, AND ALL EMERGENCY SHUTDOWN AND START-UP

REVISION NOTES

1. ADDED A-GENERATORS FUEL PIPING SCOPE TO THE SET TO CREATE A SINGLE FUEL OIL SYSTEM DIAGRAM IN LIEU OF SEPARATE SCOPES $oldsymbol{\omega}$





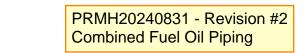
MECHANICAL



COMBINED FUEL OIL PIPING 03/07/25

City of Puyallup ISSUED PERMIT

MECHANICAL GENERATOR FUEL GENERAL NOTES AND Title SCHEDULES



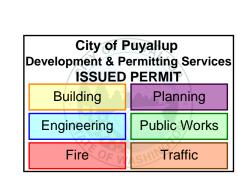




MECHANICAL DRAWINGS

CENTERIS
VOLTAGE PARK
JE YARD - FUEL OIL EXPANSION
1019 39th AVENUE SE
PUYALLUP, WA 98374



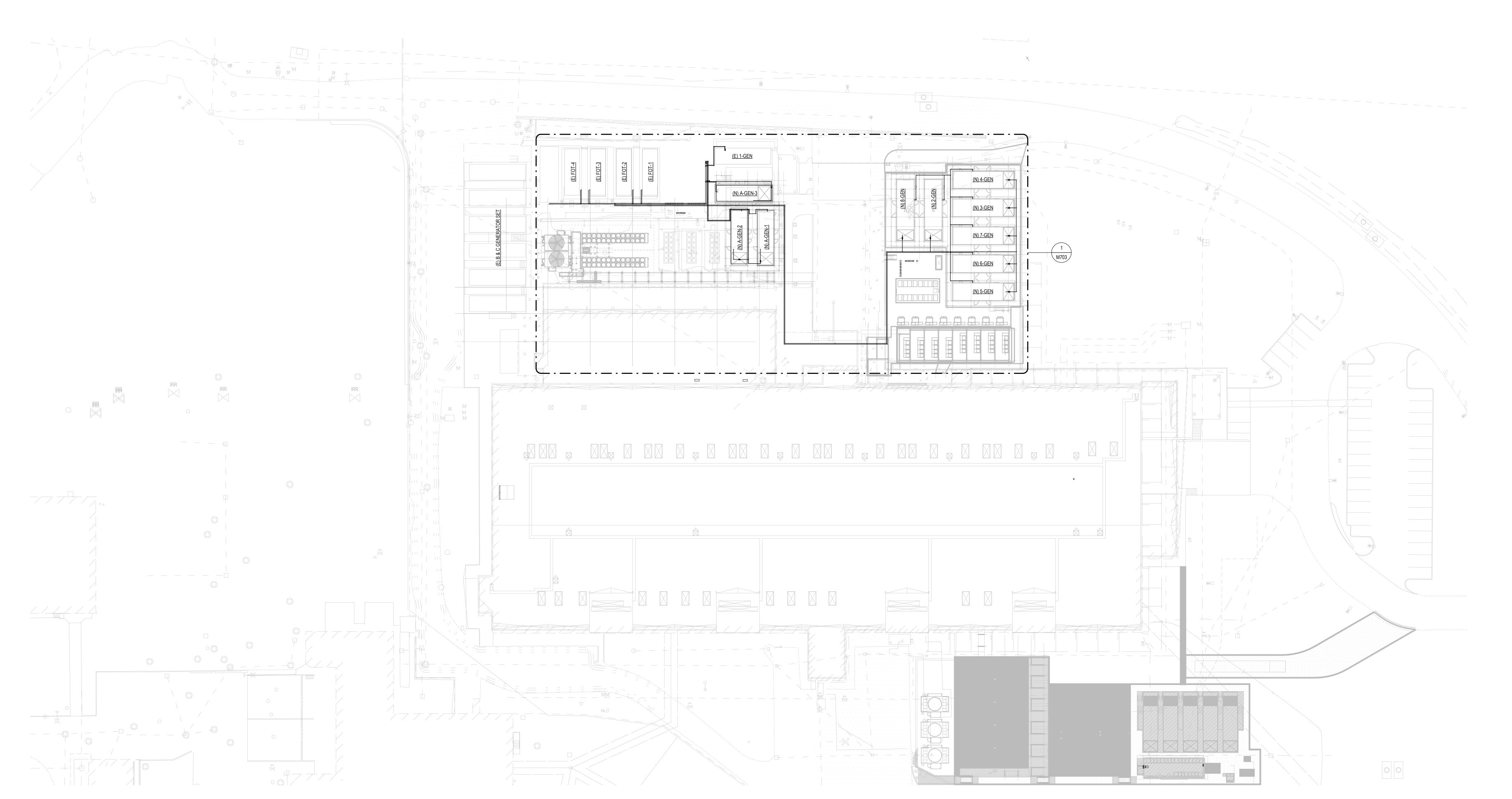


Drawn By: Checked By:

RM JL

MECHANICAL GENERATOR FUEL SITE Title PLAN

M702



MECHANICAL GENERATOR FUEL SITE PLAN



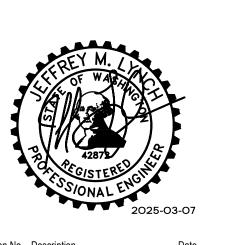
KEY NOTES

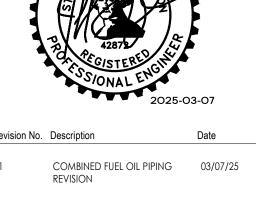
- EXISTING FUEL PUMPS AND FUEL CONTROL PANELS ALL FUEL PIPING SHALL BE ABOVE GRADE AND BELOW LOWEST FUEL LEVEL IN TANKS OR PROTECTED WITH
- ANTI SIPHON VALVE. ALL NEW FUEL PIPING TO BE SUPPORTED FROM
- PROVIDE ANTI-SIPHON VALVE AT HIGHEST POINT IN SYSTEM. CONTRACTOR TO CONFIRM LOCATION.
- PIPING SHALL NOT EXCEED 15 FT ABOVE GRADE AT ANY
- POINT IN SYSTEM. P:09 FOS VALVE ASSEMBLY (TYP). SEE DETAIL #2 ON M704.



720 3rd Avenue Suite 1500 Seattle Washington 98104-1878 (206) 667-0555

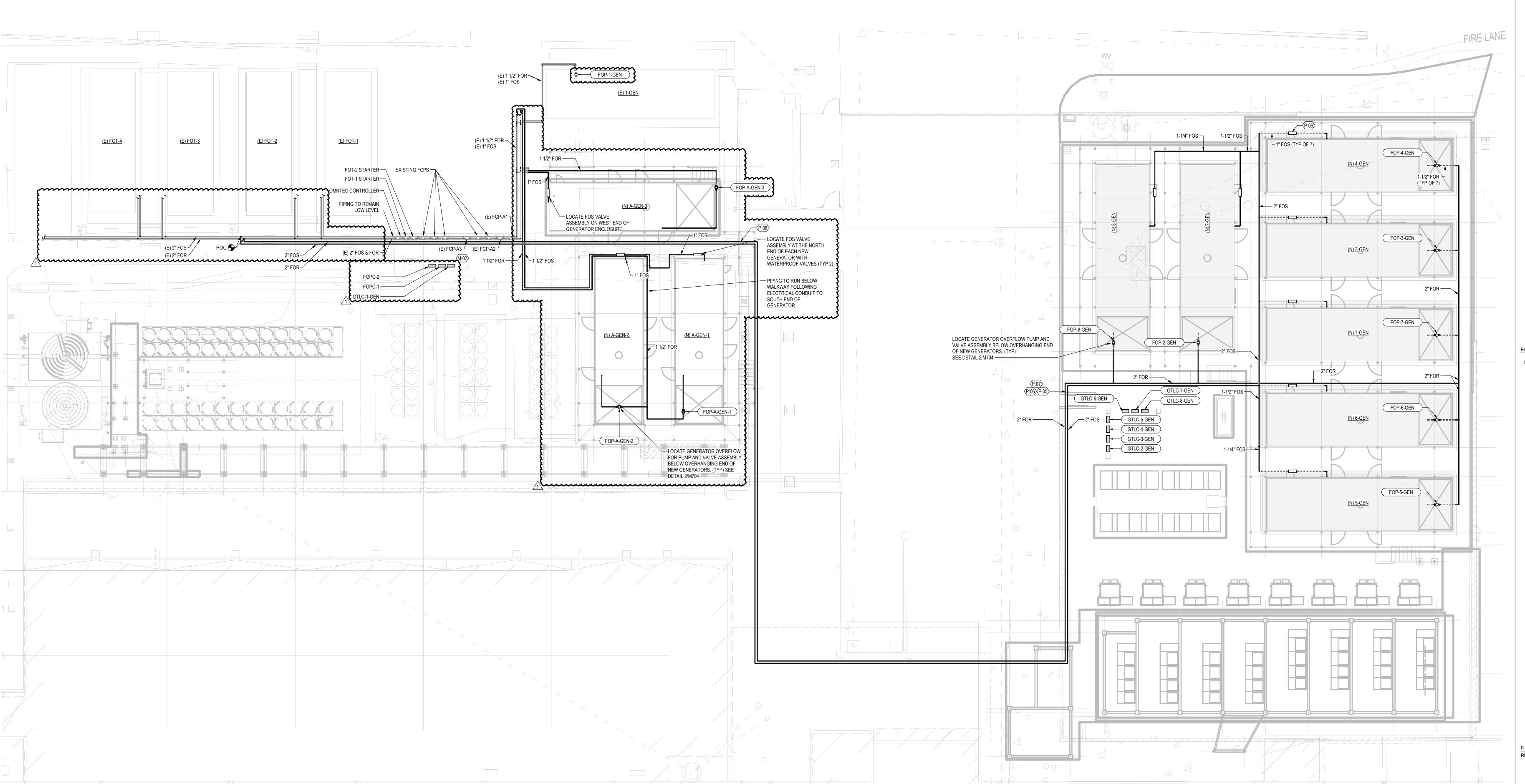
MECHANICAL DRAWINGS





City of Puyallup

GENERATOR FUEL MECHANICAL ENLARGED PLAN Title NORTH YARD



PRMH20240831 - Revision #2 Combined Fuel Oil Piping

1. OVERFILL PREVENTION: PROTECTED ABOVEGROUND TANKS SHALL NOT BE FILLED IN EXCESS OF 95 PERCENT OF THEIR CAPACITY. AN OVERFILL PREVENTION SYSTEM SHALL BE PROVIDED FOR EACH TANK. DURING TANK FILLING OPERATION, THE SYSTEM SHALL:

A. PROVIDE AN INDEPENDENT MEANS OF NOTIFYING THE PERSON FILLING THE TANK THAT THE FLUID LEVEL HAS REACHED 90 PERCENT OF TANK CAPACITY, OR OTHER APPROVED MEANS, AND B. FOR RIGID HOSE FUEL-DELIVERY SYSTEMS, PROVIDE A SPILL CONTAINMENT ENCLOSURE AT POINT OF FUELING AND AN APPROVED MEANS SHALL BE PROVIDED TO EMPTY THE FILL HOSE. (ADDITIIVE ALTERNATE) AUTOMATICALLY SHUT OFF THE FLOW OF FUEL TO THE TANK WITH IN THE QUANTITY OF LIQUID IN THE TANK REACHES 95 PERCENT OF TANK CAPACITY VIA OVERFILL P REVENTION DEVICE

INSIDE THE TANK. A PERMANENT SIGN SHALL BE PROVIDED AT THE FILL POINT FOR THE TANK DOCUMENTING THE FILLING PROCEDURE AND THE TANK CALIBRATION CHART. THE FILLING PROCEDURE SHALL REQUIRE THE PERSON FILLING THE TANK TO DETERMINE THE VOLUME REQUIRED TO FILL IT TO 95 PERCENT OF CAPACITY BEFORE COMMENCING THE FILL OPERATION.

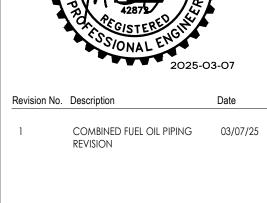
2. FILL PIPE CONNECTIONS: THE FILL PIPE SHALL BE PROVIDED WITH A MEANS FOR MAKING A DIRECT CONNECTION TO THE TANK VEHICLE'S FUEL-DELIVERY HOSE SO THAT THE DELIVERY OF FUEL IS NOT EXPOSED TO THE OPEN AIR DURING THE FILLING OPERATION. WHEN ANY PORTION OF THE FILL PIPE





MECHANICAL





City of Puyallup opment & Permitting Service ISSUED PERMIT Building Planning Public Works Engineering Fire

GENERATOR FUEL PIPING DIAGRAM Title NORTH YARD

UL 142 BASE TANK

M704

SIZED AND PROVIDED BY GENERATOR TANK MANUFACTURER, TERMINATE MINIMUM 12 FT ABOVE GRADE - NORMAL VENT W/ FLAME ARRESTOR SIZED AND PROVIDED BY GENERATOR TANK MANUFACTURER, TERMINATE MINIMUM 12 FT ABOVE TANK LEVEL INDICATORS/CONTROLLERS

FUEL OIL PIPING DIAGRAM

M704 N.T.S.

PIPING SYSTEM APPLICATION SCHEDULE MATERIAL JOINTS SYSTEM PIPE SIZE (IN) LOCATION CONCEALED X X X X | X | X | EXPOSED 2 AND LESS MECHANICAL ROOM X X Х FUEL OIL UNDERGROUND CONCEALED MECHANICAL ROOM

/-- N.O. SOL. VALVE

- N.C. SOL. VALVE

GENERATOR

EMERGENCY

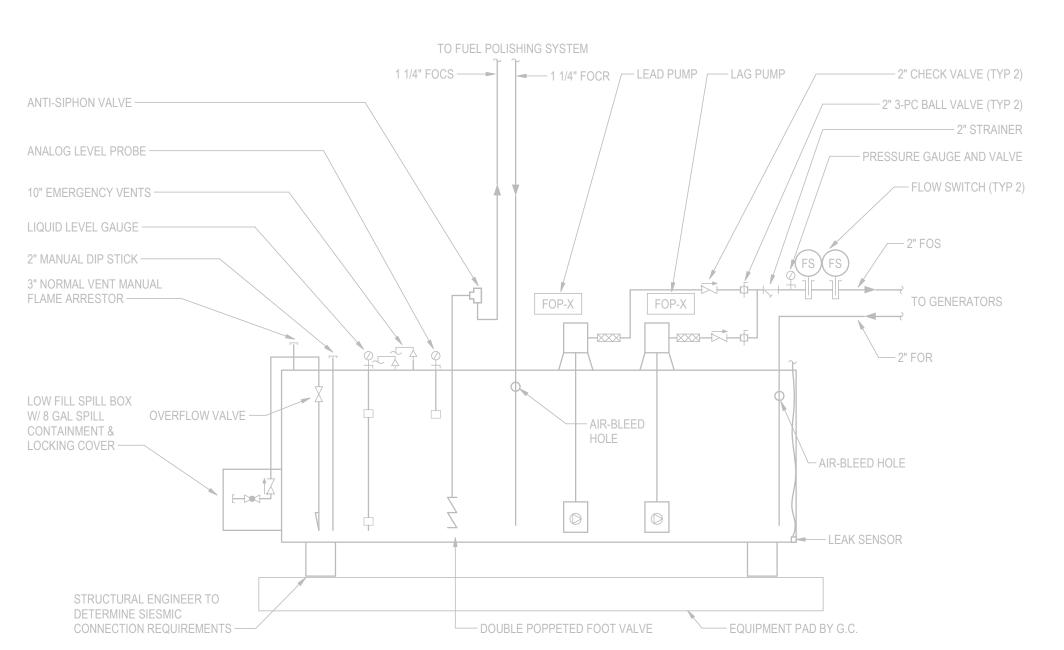
MANUAL FILL

— FOOT VALVE

- FILL FLOW LIMITER - 10 GPM

UL 142 BASE TANK

OUTPUT TO TANK CONTROLLER LEVEL





UNDERGROUND

1" STRAINER ——

1" FLEX CONNECTOR REQUIRED WHEN SPRING ISOLATION IS USED (TYP) -

PRESS GAGE & VALVE ----

→ 1 1/2" FOR—

M704 N.T.S.

1 1/2" BALL VALVE ——

WAFER CHECK VALVE —

NEW GENERATOR PIPING DETAIL

1" SPRING LOADED CHECK VALVE ----

1" FUSIBLE EMERGENCY VALVE ---

FOS ASSEMBLY

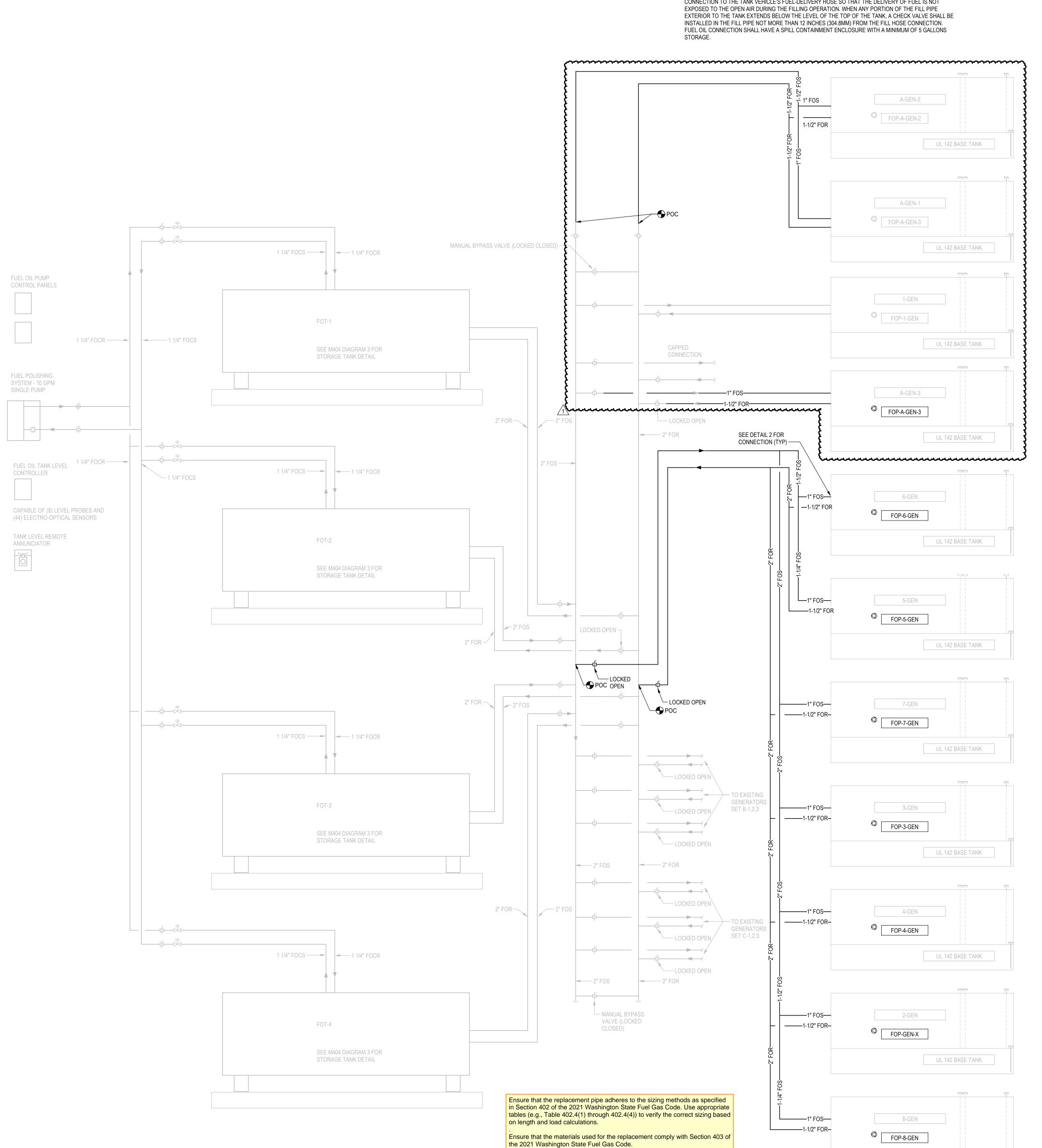
1 1/2" ANTI-SIPHON VALVE —

- GENERATOR FUEL TANK OVERFLOW PUMP (TYP)

SEE DIAGRAM M703

1 1/2" BALL VALVE

1" BALL VALVE ————



Gas piping installation must follow standards outlined in Section 404, ensuring

compliance with prohibited locations and proper installation techniques.





MECHANICAL DRAWINGS

CENTERIS VOLTAGE PARK NE YARD - FUEL OIL EXPANSION 1019 39th AVENUE SE PUYALLUP, WA 98374



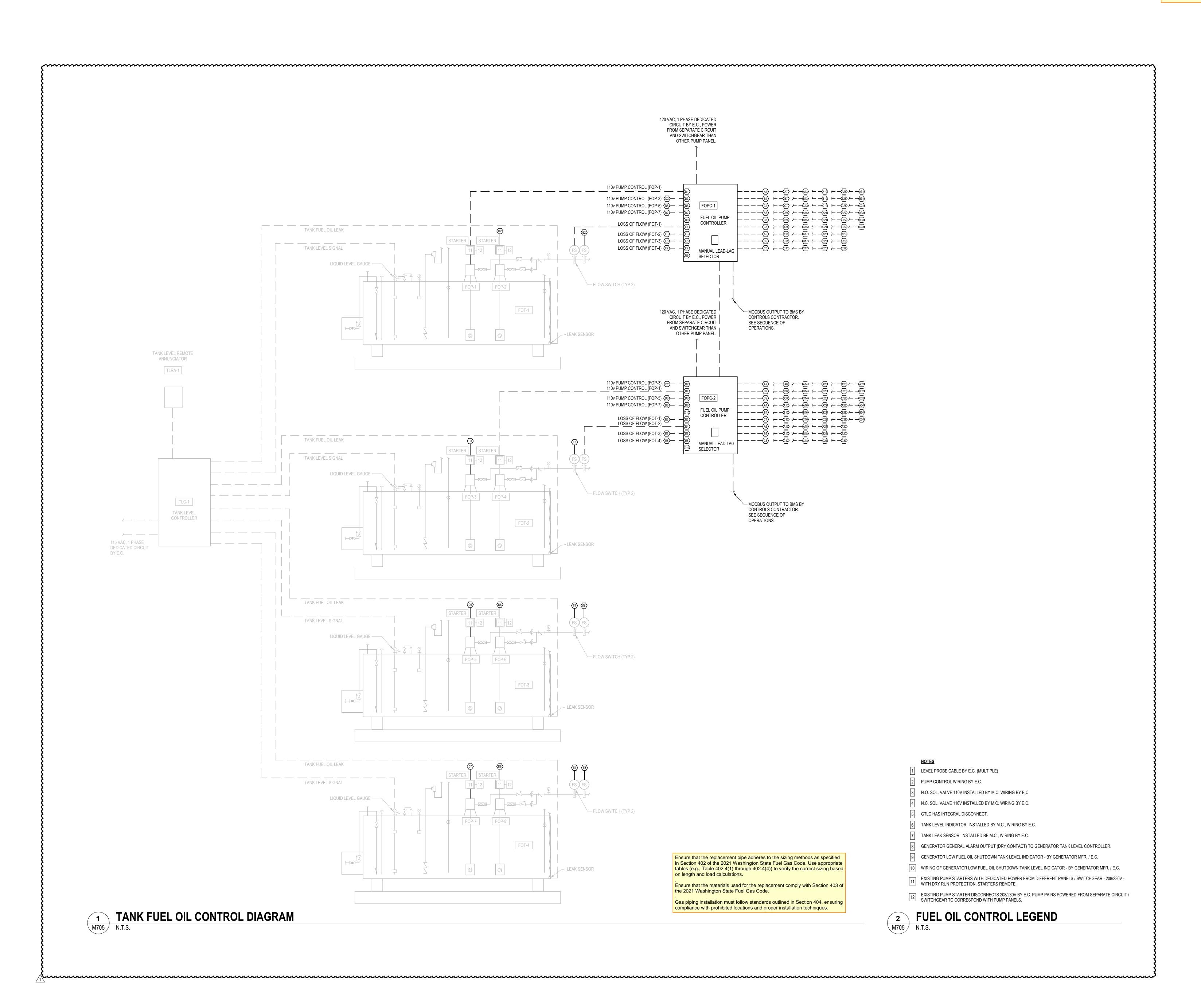
No. Description Date

COMBINED FUEL OIL PIPING 03/07/25
REVISION

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Drawn By: Checked By:

GENERATOR FUEL CONTROL DIAGRAM Title - TANKS





MECHANICAL DRAWINGS

VOLTAGE PARK NE YARD - FUEL OIL EXPANSION 1019 39th AVENUE SE PUYALLUP, WA 98374



COMBINED FUEL OIL PIPING 03/07/25
REVISION

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Drawn By: Checked By:

RM JL

GENERATOR FUEL
CONTROL DIAGRAM
- GENERATORS

