

ABBREVIATION

AC	AIR CONDITIONING	H	HEIGHT
ACU	AIR CONDITIONING UNIT	HD	HEAD
AD	ACCESS DOOR	HR	HOUR
ADJ	ADJUSTABLE	HZ	FREQUENCY
AFF	ABOVE FINISHED FLOOR	IN	INCH OR INCHES
AP	ACCESS PANEL	KW	KILOWATT
ATC	AUTOMATIC TEMPERATURE CONTROL	L	LENGTH
BHP	BRAKE HORSEPOWER	LAT	LEAVING AIR TEMPERATURE
BTU	BRITISH THERMAL UNIT	LBS	POUNDS
BTUH	BTU PER HOUR	LWT	LEAVING WATER TEMPERATURE
CFM	CUBIC FEET PER MINUTE	MAX	MAXIMUM
COND	CONDENSATE	MBH	THOUSAND BTU PER HOUR
CU FT	CUBIC FEET	MD	MOTORIZED DAMPER
D	DROP	MER	MECHANICAL EQUIPMENT ROOM
DIA	DIAMETER	MHP	MOTOR HORSEPOWER
DWG	DRAWING	MIN	MINIMUM
EA.	EACH	MOT	MOTOR
EA	EXHAUST AIR	N.C.	NORMALLY CLOSED
EAT	ENTERING AIR TEMPERATURE	N.I.C	NOT IN CONTRACT
EF	EXHAUST FAN	N.O.	NORMALLY OPEN
EL	ELEVATION	NO.	NUMBER
ELEEC	ELECTRIC	NPSH	NET POSITIVE SUCTION HEAD
EQ	EQUAL	NTS	NOT TO SCALE
EXH	EXHAUST	OA	OUTSIDE AIR
F	FILTER	OAI	OUTSIDE AIR INTAKE
°F	DEGREES FAHRENHEIT	OD	OUTSIDE DIAMETER
FA	FREE AREA (SQ.FT.)	PD	PRESSURE DROP
FC	FLEXIBLE CONNECTION	PSI	POUNDS PER SQUARE INCH
FLA	FULL LOAD AMPERES	R	RISE
FOR	FUEL OIL RETURN	RM	ROOM
FOS	FUEL OIL SUPPLY	RPM	REVOLUTIONS PER MINUTE
FOT	FUEL OIL TANK	SA	SUPPLY AIR
FOV	FUEL OIL VENT	SP	STATIC PRESSURE
FPI	FINS PER INCH	SPEC	SPECIFICATION
FPM	FEET PER MINUTE	SS	STAINLESS STEEL
FT	FEET	TEMP	TEMPERATURE
FV	FACE VELOCITY	TYP	TYPICAL
G	GAUGE	UON	UNLESS OTHERWISE NOTED
GAL	GALLON	V	VOLTS
GC	GENERAL CONTRACTOR	VENT	VENTILATION AIR
GPM	GALLONS PER HOUR	W	WIDTH
GPH	GALLONS PER MINUTE	W/	WITH
		W/O	WITHOUT
		WC	WATER COLUMN
		WG	WATER GAUGE
		WMS	WIRE MESH SCREEN

LINE REPRESENTATION

	NEW PIPING OR EQUIPMENT
	NEW PIPING WITH CONTAINMENT SHELL (DOUBLE WALL)
	EXISTING PIPING
	EXISTING PIPING OR EQUIPMENT TO BE REMOVED
	THERMOSTAT/SENSOR WIRING FROM SENSING DEVICE TO CONTROLLED DEVICE
	NEW EQUIPMENT
	EXISTING EQUIPMENT TO REMAIN
	EXISTING EQUIPMENT TO BE RELOCATED
	RELOCATED POSITION OF EXISTING EQUIPMENT
	EXISTING EQUIPMENT TO BE REMOVED

DRAWING NOTATIONS

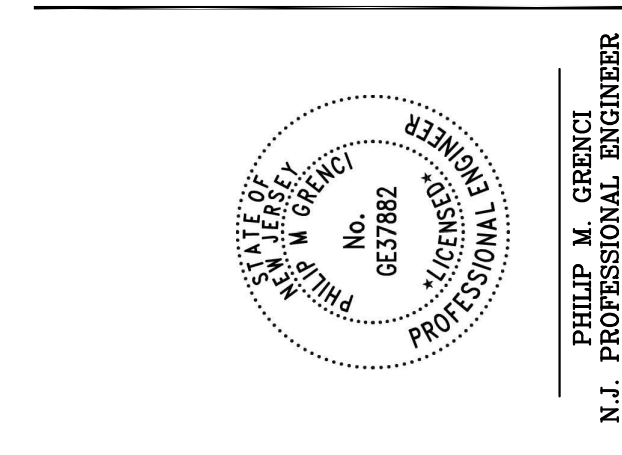
	DRAWING NOTE TAG
	SECTION DESIGNATION ON DRAWING WHERE SECTION IS CUT A-SECTION DESIGNATION B-DRAWING NO.
	DETAIL/SECTION NO.
	SECTIONS SYMBOL
	POINT OF NEW CONNECTION TO EXISTING WORK
	REMOVE AND PATCH EXISTING WORK
	SEE NOTE #...
	EXISTING EQUIPMENT & PIPING TO REMAIN
	NEW EQUIPMENT,
	CENTER LINE
	DIAMETER
	SQUARE FEET

CONTROLS SYMBOLS

	THERMOSTAT
	HEAT DETECTOR
	SMOKE DETECTOR
	PRESSURE SENSOR
	DIFFERENTIAL PRESSURE SWITCH
	DIFFERENTIAL PRESSURE VALVE
	PRESSURE CONTROL VALVE

PIPING SYMBOLS

	PIPE DROP
	PIPE RISE
	PITCH UP IN DIRECTION OF FLOW
	PITCH DOWN IN DIRECTION OF FLOW
	UNION
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER - FLAT BOTTOM
	ECCENTRIC REDUCER - FLAT TOP
	FLANGED CONNECTION
	FLANGED END
	DEAD END - SCREWED CAP
	GATE VALVE
	AUTOMATED BALL VALVE
	DRAIN VALVE
	BUTTERFLY VALVE
	ELECTRIC MOTORIZED VALVE OPERATOR
	THERMOMETER WELL
	THERMOMETER AND WELL
	PRESSURE GAUGE
	FUEL PUMP
	FLOW SWITCH
	TEMPERATURE TRANSMITTER
	FUEL OIL RETUR
	FUEL OIL SUPPLY
	FUEL OIL VENT
	SOLENOID VALVE
	"Y" TYPE STRAINER
	CONCENTRIC REDUCER
	FLANGED CONNECTION



NJ SPORTS & EXPOSITION
AUTHORITY
PUMP STATION GENERATOR
INSTALLATION

50 STATE ROUTE 120
EAST RUTHERFORD, NEW JERSEY
07073

Digitally signed
by PHILIP M
GRENCI
Date: 2022.06.24
12:31:37 -04'00'

6-2-22 ISSUED FOR REVIEW

6-15-22 ISSUED FOR DCA APPROVAL

Date Issued Revision No.



Drawing Title:
MECHANICAL
ABBREVIATIONS AND
SYMBOLS

Scale N.T.S.	Issue Date: 4/18/22
Proj. Manager:	Proj. Engineer:

AMA Project No.:
CEI215080

M-001

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MECHANICAL SPECIFICATIONS
PART 1- GENERAL

- 1.01 GENERAL
- A. THE LATEST EDITION OF GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, OR AS REQUIRED BY THE CONSTRUCTION DOCUMENTS AND/OR THE OTHER ENGINEERS DOCUMENTS WHICH ARE PART OF THE CONTRACT.
- B. BIDDERS SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THIS WORK BEFORE SUBMITTING PROPOSALS. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BID; IF DISCREPANCIES ARE NOT RESOLVED TO CONTRACTORS' SATISFACTION, THEY SHALL BE QUALIFIED IN THEIR BID SUBMISSION.
- C. THIS CONTRACTOR SHALL REVIEW ALL CONSTRUCTION DOCUMENTS ASSOCIATED WITH THIS PROJECT INCLUDING GENERAL CONSTRUCTION, DEMOLITION, ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND SPRINKLER PLANS AND SPECIFICATIONS. ALL WORK REQUIRED IN THE BID WHICH IS INDICATED OR IMPLIED TO BE PERFORMED BY THIS TRADE IN OTHER SECTIONS OF THE WORK SHALL BE INCLUDED IN THEIR BID. IF A CONFLICT OCCURS IN THE BID SPECIFICATIONS AND/OR ON THE DRAWINGS, THE MORE STRINGENT SITUATION SHALL APPLY.
- D. COORDINATE ALL WORK OF THE SECTION WITH EXISTING CONDITIONS AND THE WORK OF OTHER TRADES. THE CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE WORK INVOLVED AND SHALL VERIFY AT THE BUILDING ALL MEASUREMENTS NECESSARY FOR THE PROPER INSTALLATION OF THE WORK, OBTAINING THE SAME WHEN NECESSARY. FROM THE OTHER CONTRACTORS AND SECTIONS. CONTRACTOR SHALL ALSO BE COMPAED TO PROMPTLY FURNISH TO OTHER CONTRACTORS ANY INFORMATION RELATING TO THE WORK OF THIS SECTION NECESSARY FOR THE PROPER INSTALLATION OF OTHER CONTRACTS AND SHALL COOPERATE TO SECURE THE BEST PROGRESS OF, AND HARMONY BETWEEN, THE WORK OF THE DIFFERENT CONTRACTS AND SECTIONS IN THE INTERESTS OF THE INSTALLATION AS A WHOLE. CONFERENCE WITH OTHER CONTRACTORS AND ENGINEER FOR ADJACENT WORK TO THIS SECTION AND ARRANGE TO HAVE VISIBLE PORTIONS OF WORK FIT AND HARMONIZE IN A MANNER SATISFACTORY TO THE OWNER'S REPRESENTATIVE.
- E. THE SPECIFICATIONS ARE ACCOMPANIED BY DRAWINGS INDICATING THE GENERAL LOCATION OF EQUIPMENT AND CONNECTIONS THERETO. UNLESS SPECIFICALLY DIMENSIONED, LOCATIONS OF EQUIPMENT AND ROUTINGS ARE APPROXIMATE. SCALES ON DRAWINGS ARE INDICATED FOR BIDDING PURPOSES ONLY. DRAWINGS SHALL NOT BE SCALED FOR CONSTRUCTION AND MANUFACTURING DETAILS. CERTAIN SYSTEMS ARE DIAGRAMMATIC AND GIVE THE GENERAL ARRANGEMENT ONLY. NO ADDED COMPENSATION WILL BE PERMITTED FOR VARIATIONS DUE TO FIELD CONDITIONS. EXACT LOCATIONS AND ARRANGEMENTS SHALL BE DETERMINED IN THE FIELD ON THE BASIS OF DETAILS INDICATED ON APPROVED SHOP DRAWINGS, AND SUPPLEMENTARY INFORMATION ISSUED BY THE ENGINEER, AND SHALL PROVIDE FOR OPERATING EFFICIENCY, NEATNESS OF APPEARANCE, AND EASE OF MAINTENANCE.
- F. GUARANTEE:
- THE CONTRACTOR SHALL GUARANTEE AND SERVICE THE ENTIRE INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE FINAL ACCEPTANCE. THE INSTALLATION, THE CONTRACTOR SHALL, DURING THE PERIOD OF THE GUARANTEE, REPLACE OR REPAIR AT HIS OWN EXPENSE ANY PIECE OF EQUIPMENT AND/OR MATERIAL WHICH IS FOUND TO BE DEFECTIVE. THE REPLACEMENT OR REPAIR SHALL BE PERFORMED THE SAME DAY OF NOTIFICATION IN AN EMERGENCY FASHION WHEN NOTIFIED BY THE OWNER OR AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ALSO REPAIR ALL DAMAGE TO SURROUNDING WORK CAUSED BY THE FAILURE TO REPAIR OR REPLACEMENT OF DEFECTIVE EQUIPMENT. ALL REFRIGERATION COMPRESSORS SHALL HAVE A FACTORY GUARANTEE INCLUDING PARTS AND LABOR FOR FIVE YEARS TOTAL. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS, AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVALS.
- G. EQUIPMENT AND MATERIALS: MOST ITEMS OF MECHANICAL AND ELECTRICAL EQUIPMENT AND MATERIAL ARE NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS WITH A MANUFACTURER'S NAME AND CATALOG NUMBER. THIS DESIGNATION IS USED TO SET THE STANDARD FOR CONSTRUCTION, PERFORMANCE, OPERATION AND APPEARANCE. PRODUCTS OF OTHER MANUFACTURERS WILL BE CONSIDERED AND RULED UPON BY THE ENGINEER. THE SUBMISSION OF A SUBSTITUTION IMPLIES THAT THE ITEM HAS ALL NECESSARY UNDERWRITERS' LABORATORIES, BOARD OF STANDARDS AND APPEALS, NATIONAL ELECTRICAL CODE, ETC. APPROVALS. SHOULD THE ITEM BE FOUND NOT TO HAVE SUCH APPROVAL, IT SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER
- H. SUBSTITUTIONS: DEVIATIONS FROM CONTRACT DOCUMENTS AND SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED SHALL BE REQUESTED INDIVIDUALLY IN WRITING. FURNISH INFORMATION AS REQUIRED TO DEMONSTRATE THAT THE ARTICLE, MATERIAL, APPARATUS, PRODUCT OR PROCESS TO BE USED IS ADEQUATELY COMPARABLE TO THAT SPECIFIED IN QUALITY, FINISH, DESIGN, EFFICIENCY, DURABILITY AND GENERAL APPEARANCE, AND HAS BEEN ELSEWHERE DEMONSTRATED TO BE SERVICEABLE FOR THE PURPOSES FOR WHICH IT IS INTENDED. IF TESTS OR DEMONSTRATIONS ARE REQUIRED BY THE OWNER'S REPRESENTATIVES, THE COST OF SUCH TESTS OR DEMONSTRATIONS SHALL BE BORNE BY THE CONTRACTOR. DESCRIBE REASON FOR CHANGE, CONNECTIONS TO ADJACENT MATERIALS, ELECTRICAL SERVICES, SERVICE ACCESS REQUIREMENTS, DIFFERENCES IN OPERATING CHARACTERISTICS OR CYCLES AND ALL OTHER POINTS OF DEVIATION. CONTRACTOR TO ASSUME FULL RESPONSIBILITY FOR SAFETY, COORDINATION WITH OTHER TRADES, OPERATION AND PERFORMANCE OF ALTERED SYSTEM.
- I. THIS CONTRACTOR, WHERE APPLICABLE, IS TO OBTAIN A COPY OF THE SITE RULES AND REGULATIONS PRIOR TO BID SUBMISSION. ALL WORK MUST BE INSTALLED IN ACCORDANCE WITH THE BUILDING RULES AND REGULATIONS. DETERMINE REQUIREMENTS AND THE EXTENT OF PREMIUM TIME WORK REQUIRED BY THE SITE, FOR THE PURPOSE OF THE BID ASSUME CRITICAL WORK (E.G., WELDING, BRAISING, SOLDERING, GENERATOR TRANSFER, ETC.) AND CRITICAL SERVICES INTERRUPTIONS ARE TO BE PERFORMED OUTSIDE NORMAL BUSINESS HOURS.
- J. REMOVAL, TEMPORARY CONNECTIONS AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE INSTALLATION OF THE NEW SYSTEMS. ANY EXISTING WORK CONDITIONS ARE NOT COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND MAKE ALL NECESSARY CHANGES REQUIRED BASED ON EXISTING CONDITIONS FOR PROPER INSTALLATION OF NEW WORK.
- K. ALL NECESSARY CUTTING AND PATCHING IN FLOOR SLABS AND WALLS FOR THE NEW FUEL OIL PIPING AND EQUIPMENT WORK SHALL BE PERFORMED BY THIS CONTRACTOR. PERFORM WORK TO MATCH EXISTING CONDITIONS.
- L. WHERE PIPE AND/OR CONTROLS CONDUITS PENETRATE RATED WALLS, THE SPACE BETWEEN THE INSULATION AND THE WALL SHALL BE CAULKED WITH NON-COMBUSTIBLE MATERIAL IN AN APPROVED MANNER. THE CONTRACTOR SHALL COORDINATE ELEVATIONS WITH EXISTING REMAINING INSTALLATIONS.
- M. ACCESS DOORS IN FINISHED CONSTRUCTION: THE CONTRACTOR SHALL PREPARE A LIST OF ALL ACCESS DOORS (MINIMUM 18"x18") REQUIRED FOR OPERATION AND MAINTENANCE OF ALL CONCEALED EQUIPMENT AND OTHER DEVICES, WHICH SHALL BE SUPPLIED TO THE GENERAL CONTRACTOR FOR INSTALLATION. THE COST TO FURNISH AND INSTALL ACCESS DOORS SHALL BE INCLUDED IN THIS CONTRACTOR'S BID.
- N. NEW DISCHARGE AIR PLENUM SHALL ARRIVE ON THE CONSTRUCTION SITE SEALED AND REMAIN PROTECTED FROM DEBRIS THROUGHOUT CONSTRUCTION PRIOR TO FINAL INSTALLATION. ALL VOLATILE ORGANIC COMPOUND (VOC) LIMITS OF ADHESIVES, SEALANTS AND SEALANT PRIMERS MUST COMPLY WITH CURRENT AIR QUALITY OSHA REQUIREMENTS.
- 1.02 SCOPE OF WORK
- A. PROJECT OBJECTIVES:
1. WORK BY E.C., M.C., GC, ETC.:
- DISCONNECT AND REMOVE THE EXISTING GENERATORS. THIS WORK SHALL INCLUDE REMOVING EXISTING EXHAUST AIR LOUVERS AND SHUTTERS ASSOCIATED WITH THE EXISTING GENERATORS AND SEALING THE WALL EXHAUST OPENINGS THAT ARE NOT TO BE RE-USED DURING CONSTRUCTION PHASE.
 - THE GENERAL CONTRACTOR SHALL FURNISH AND INSTALL THE NEW POWER GENERATOR IN THE EXISTING SPACE. THE NEW GENERATOR SHALL BE SUPPLIED WITH A NEW DAY TANK BY THE GENERATOR'S VENDOR. REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR MORE DAY TANK INFORMATION.
2. WORK BY MECHANICAL CONTRACTOR:
- MECHANICAL CONTRACTOR SHALL REMOVE THE EXISTING OA INTAKE DAMPERS, EXISTING SUPPLY AIR FAN (SF-1), EXISTING GENERATOR EXHAUST PIPING, EXISTING SILENCERS, SECTIONS OF EXISTING FUEL PIPING, EXISTING DAY TANKS AND THE ASSOCIATED AUXILIARY SYSTEMS.
 - MECHANICAL CONTRACTOR SHALL INSTALL THE NEW DAY TANK (FURNISHED BY THE GENERAL CONTRACTOR AS PART OF THE NEW GENERATOR PACKAGE), DAY TANK CONTROLS, THE NECESSARY SECTIONS OF NEW FUEL OIL PIPING DISTRIBUTION AND AUXILIARY EQUIPMENT. THE NEW WORK SHALL ALSO INCLUDE THE NEW DISCHARGE AIR PLENUM, NEW EXHAUST PIPING WITH A SILENCER, INSULATION, AND CONTROLS, ACCESSORIES AND THE ASSOCIATED AUXILIARY INSTALLATIONS.
 - MECHANICAL CONTRACTOR SHALL INSTALL ALL NECESSARY NEW PIPING CONNECTIONS BETWEEN THE NEW GENERATOR, THE NEW DAY TANK AND THE MAIN FUEL STORAGE TANK TO CONSTRUCT A COMPLETE FUNCTIONAL FUEL SUPPLY SYSTEM FOR THE NEW GENERATOR. REFER TO "PURCHASE AND INSTALLATION SPECIFICATIONS FOR A NEW INDOOR STANDBY ENGINE/GENERATOR SYSTEM" DOCUMENT FOR MORE INFORMATION. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NEW JERSEY BUILDING CODE, AND REGULATIONS BY ALL NATIONAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION, BUILDING MANAGEMENT REQUIREMENTS, CONSTRUCTION ETC. DOCUMENTATION DRAWINGS AND THESE SPECIFICATIONS.
- B. THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, HOISTING AND RIGGING, BREAKDOWN AND SETUP OF EQUIPMENT FOR INSTALLATION, SCAFFOLDING, AND SERVICES TO COMPLETE THE INSTALLATION AND PROVIDE THE OWNER WITH A FULLY OPERATIONAL SYSTEM. ANY EQUIPMENT, PARTS, MATERIALS, ACCESSORIES, OR LABOR THAT IS NECESSARY FOR PROPER PERFORMANCE OF THE MECHANICAL WORK, ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS, SHALL BE FURNISHED AND INSTALLED WITHOUT ADDITIONAL COSTS. WHEN INSTALLATION OF A PART OF ANY SYSTEM (FUEL DISTRIBUTION, ELECTRICAL OR OTHERWISE) REQUIRES A SHUTDOWN OF ANY OPERATING SYSTEM, CONNECT THE PARTIAL SYSTEM ONLY AFTER NOTIFICATION TO AND WITH APPROVAL OF THE OWNER. COORDINATE ACTIVITIES CLOSELY WITH THOSE OF SUBCONTRACTOR'S SO THE OPERATION IS RESTRICTED TO AS SHORT AN INTERVAL AS POSSIBLE AND "OUT OF SERVICE" TIME OF THESE FACILITIES IS KEPT TO A MINIMUM. ANY SHUTDOWN OF THE ELECTRICAL SYSTEM AFFECTING THE SITE SHALL BE DONE OUTSIDE OF THE SITE OPERATING HOURS AS APPROVED BY OWNER.
- C. THE SITE MANAGEMENT REQUIRES NOT LESS THAN SEVEN DAYS NOTICE FOR SHUTDOWN OF ANY CRITICAL SITE SYSTEMS.
- D. MAKE AN ACCURATE TAKE-OFF ALL EXISTING EQUIPMENT, AIR PLENUMS, PIPING, LOUVERS, DAMPERS, CONDUITS, PANELBOARDS, WIRING DEVICES, AND OTHER ACCESSORIES BEING REMOVED DURING DEMOLITION AND INCLUDE THE COST FOR DISCONNECTING AND REMOVAL OF STATED EQUIPMENT, ETC. INTO THE BASE BID. REMOVALS SHALL BE AS SPECIFIED AND/OR NOTED AS INDICATED ON THE DRAWINGS. IN CERTAIN CASES, EQUIPMENT OR MATERIALS DESIGNATED FOR REMOVAL SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE TURNED OVER AT LOCATIONS ON THE SITE AS DIRECTED BY THE OWNER.

- E. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING INSTALLATIONS TO ENSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH PROJECT MANAGEMENT.
- F. THIS OWNER SHALL PROCURE THE SERVICES OF A THIRD-PARTY INSPECTION COMPANY TO PERFORM ALL SPECIAL INSPECTIONS IN ACCORDANCE WITH THE SITE REQUIREMENTS. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO THE OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.
- G. THIS CONTRACTOR SHALL INCLUDE AS PART OF THE CONTRACT DEMOLITION, REMOVAL OR RELOCATION OF EXISTING EQUIPMENT, MATERIALS, APPURTENANCES, ETC. AS INDICATED ON THE DRAWINGS OR AS HEREIN SPECIFIED OR REQUIRED. WHERE ALL PIPING, DUCTS, AND OUTLETS ARE REMOVED, INTERRUPTED OR BROKEN, PROVIDE THE REQUIRED RELOCATION, RECONNECTION OR REPLACEMENT TO RESTORE SERVICE TO ALL ITEMS NOT MADE OBSOLETE BY THIS WORK.
- H. ALL EQUIPMENT, MATERIAL, ETC. REMOVED UNDER THIS CONTRACT AND NOT INTENDED FOR FINAL USE IN THE FINAL INSTALLATION SHALL BE IMMEDIATELY REMOVED FROM THE PREMISES AND TURNED OVER TO OR DISPOSED OF, AS DIRECTED BY THE OWNER.
- I. ANY DEMOLITION OR MODIFICATION WORK, AS INDICATED ON THE DRAWINGS AND NOT HEREIN SPECIFIED, OR VICE-VERSA, SHALL BE COMPLETED BY THIS CONTRACTOR AND SHALL BE INCLUDED AS PART OF THE CONTRACT.
- J. THE CONTRACTOR SHALL RELOCATE AND RECONNECT ALL NEW AND EXISTING LINES AND EQUIPMENT INTERFERING WITH NEW INSTALLATION. VERIFY ALL EXISTING CONDUITS AND RELATED APPURTENANCE INSTALLATION HEIGHTS WITH THAT OF THE NEW INSTALLATION, MAINTAINING ACCESS TO ALL EXISTING POINTS OF ACCESS.

- 1.03 SHOP DRAWINGS, EQUIPMENT SUBMISSION, MAINTENANCE MANUALS
- A. SUBMIT ONE (1) REPRODUCIBLE AND ONE (1) PRINT OF THE SHEET METAL AND PIPING SHOP DRAWINGS. 1/4"=1'-0" OR 3/8"=1'-0" SCALE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED.
- B. SUBMIT THREE (3) COPIES OF ALL SHEET METAL AND PIPING SHOP STANDARDS LEAKAGE TEST CERTIFICATIONS AND CERTIFIED EQUIPMENT CUTS WITH CONSTRUCTION WIRING DIAGRAMS, AND AUTOMATIC TEMPERATURE CONTROL SHOP DRAWINGS INCLUDING CONTROL AND POWER WIRING DIAGRAMS, SEQUENCE OF OPERATIONS AND ALL CUTS OF EQUIPMENT AND DEVICES.
- C. SUBMIT FOUR (4) BOOK BOUND INSTALLATION, OPERATION AND MAINTENANCE (IOM) MANUALS WHICH SHALL INCLUDE COPIES OF ALL AS-BUILT SHOP DRAWINGS FOLDED AND PLACED INTO BINDER POCKETS, AS-BUILT DRAWINGS IN ELECTRONIC FORMAT, COPIES OF REVIEWED EQUIPMENT CUTS FOR INSTALLED EQUIPMENT, COPIES OF EQUIPMENT START-UP CHECKLISTS, LEAK TESTS, FUEL LINES HYDROSTATIC TESTS AND FUEL TREATMENT CERTIFICATION. CONTRACTOR SHALL INSTRUCT OWNERS PERSONNEL ON THE OPERATION OF ALL NEWLY INSTALLED FUEL SUPPLY SYSTEMS.

- D. AS WORK PROGRESSES AND FOR DURATION OF THE CONTRACTOR, MAINTAIN A COMPLETE SEPARATE SET OF PRINTS OF CONTRACT DRAWINGS AT THE JOB SITE. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY, INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN. RECORD VALVE TAGS AS THEY ARE INSTALLED. FINAL SUBMISSION OF REPRODUCIBLE AS-BUILT DRAWINGS ARE TO BE SIGNED AND CERTIFIED BY INSTALLING CONTRACTOR CONFIRMING THE AS-BUILT CONDITION OF THE WORK. AS-BUILT SHOP DRAWINGS SHALL BE SUBMITTED IN DRAWING AND ELECTRONIC FORMAT (AUTOCAD 2007 MINIMUM).

PART 2- PRODUCT/APPLICATION

- 2.01 DISCHARGE AIR PLENUM
- A. PROVIDE A NEW DISCHARGE AIR PLENUM TO CONNECT THE NEW GENERATOR RADIATOR DISCHARGE SIDE TO THE OUTDOOR EXHAUST LOUVER WITH ASSOCIATED SERVICE ACCESS DOORS AND SUPPORTS AND PERFORM LEAK TEST PER LATEST SMACNA STANDARDS AND NFPA 37 REQUIREMENTS. ALL DISCHARGE AIR PLENUM JOINTS SHALL BE SEALED AIRTIGHT WITH APPROVED DUCT SEALANT, SIMILAR TO 3M-900, OR BETTER.
- B. CONTRACTOR SHALL ADHERE TO THE FULL INSIDE CROSS SECTIONAL DISCHARGE AIR PLENUM AREAS SHOWN ON THE DRAWINGS AND PROVIDE ALL TRANSITIONS AS REQUIRED TO MEET FIELD CONDITIONS, ACCOMMODATE EQUIPMENT MAINTENANCE REQUIREMENTS AND COORDINATE WITH ALL TRADES. ALL FIELD CONDITIONS WHICH REQUIRE MODIFIED TRANSITIONS SHALL NOT BE APPROVED WITHOUT PRIOR ENGINEERING REVIEW AND APPROVAL THROUGH SHOP DRAWING SUBMITTAL OR RFI.
- C. NEW DISCHARGE AIR PLENUM SHALL MEET PRESSURE CLASSIFICATION, SEALING REQUIREMENTS AND LEAKAGE TESTING AS LISTED BELOW UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS:
1. 4" CLASS: ALL AIR PLENUMS FROM DISCHARGE OF GENERATOR'S RADIATOR TO OUTDOOR EXHAUST LOUVERS. SEAL CLASS A, LEAKAGE CLASS 6. PROVIDE TDF FLANGE CONNECTIONS FOR ALL SYSTEM 4" PRESSURE CLASS AND ABOVE.
- F. MATERIALS:
1. SHEETMETAL: HOT-DIPPED GALVANIZED SHEETMETAL WITH G90 COMMERCIAL COATING ACCORDING TO ASTM A653 & A924 FOR ALL DUCTWORK UNLESS OTHERWISE SPECIFIED.
2. FLEXIBLE CONNECTIONS AT FANS SHALL BE NEOPRENE COATED, FLAME RETARDANT GLASS FABRIC (COMPLYING WITH NFPA 90), 30 OZ./SQ. YD. WITH SEWED AND CEMENTED SEAMS.
3. MOTORIZED DAMPERS LOCATED IN OUTDOOR AIR INTAKES OR EXPOSED TO MOISTURE SHALL CONFORM TO THE FOLLOWING:
1. EXTRUDED ALUMINUM DAMPER FRAME SHALL NOT BE LESS THAN 0.080" (2.03 MM) IN THICKNESS. DAMPER FRAME SHALL BE MIN. 4", WITH DUCT MOUNTING FLANGES ON BOTH SIDES OF FRAME. DAMPER FRAME SHALL HAVE A MIN. 2" (50.8 MM) MOUNTING FLANGE ON THE REAR OF
- THE DAMPER, WHEN INSTALLED AS EXTENDED REAR FRAME INSTALL TYPE. FRAME TO BE ASSEMBLED USING ZINC-PLATED STEEL MOUNTING FASTENERS. WELDED FRAMES SHALL NOT BE ACCEPTABLE.
2. BLADES SHALL BE MAXIMUM 6.4" DEEP EXTRUDED ALUMINUM AIR-FOIL PROFILES WITH A MINIMUM WALL THICKNESS OF 0.06". ALL BLADES SHALL BE SYMMETRICALLY PIVOTED.
3. BLADE SEALS SHALL BE EXTRUDED EPDM, SECURED IN AN INTEGRAL SLOT WITHIN THE ALUMINUM BLADE EXTRUSIONS AND SHALL BE MECHANICALLY FASTENED TO PREVENT SHRINKAGE AND MOVEMENT OVER THE LIFE OF THE DAMPER. ADHESIVE OR CLIP-ON TYPE BLADE SEALS WILL NOT BE APPROVED.
4. FRAME SEALS SHALL BE EXTRUDED SILICONE, SECURED IN AN INTEGRAL SLOT WITHIN THE ALUMINUM FRAME EXTRUSIONS AND SHALL BE MECHANICALLY FASTENED TO PREVENT SHRINKAGE AND MOVEMENT OVER THE LIFE OF THE DAMPER. METAL COMPRESSION TYPE JAMB SEALS WILL NOT BE APPROVED.
5. LINKAGE HARDWARE SHALL BE CORROSION-RESISTANT ZINC-PLATED STEEL, INSTALLED TO BE EASILY ACCESSIBLE AFTER INSTALLATION.
- REFER TO MECHANICAL EQUIPMENT SCHEDULES FOR THE PROPOSED MOTORIZED DAMPER MANUFACTURER AND MODEL NUMBER SELECTIONS AND FOR ADDITIONAL INFORMATION.

2.03 PIPING

- A. PROVIDE PIPING WHICH IS SCHEMATICALLY INDICATED AND SIZED ON DRAWINGS. PIPING TO BE INSTALLED TO MEET SPECIFIED HEADROOM OR FIELD CONDITIONS AND SHALL CONFORM TO LATEST ASME CODES FOR FUEL OIL PIPING. PIPE MATERIALS AND FITTING MATERIALS SHALL BE AS PER THE PIPE AND FITTING SCHEDULES SHOWN ON DRAWINGS. ALL NEW INDOOR FUEL PIPING INSTALLATIONS SHALL COMPLY WITH NFPA 37 REQUIREMENTS.
- B. PIPING, FITTINGS, AND ALL PIPE APPURTENANCES SHALL BE SUITABLE FOR THE PRESSURE AND TEMPERATURE OF SERVICE.
- C. PROVIDE DIELECTRIC FITTINGS TO CONNECT DIFFERENT PIPING MATERIALS.
- D. PROVIDE AIR VENTS WITH CAPS AT EACH HIGH POINT AND DRAIN VALVES WITH CAPS AT EACH LOW POINT TO ALLOW FOR FUEL LINES PRIMING AND DRAINING.
- E. SUPPORT PIPING WITH HANGERS EQUIPPED WITH INSULATION SADDLES FROM APPROVED CONCRETE INSERTS, EXPANSION SHIELDS, BEAM CLAMPS, AND/OR SUPPLEMENTARY STEEL ANGLES, PLATES, AND CHANNELS. CONTRACTOR SHALL SUBMIT METHOD OF PIPING SUPPORT SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR REVIEW.
- F. UNIONS WITH REMOVABLE SECTIONS OF PIPING SHALL BE INSTALLED AT ALL EQUIPMENT MATERIAL CHANGE OF SIZE DISCONNECTION FOR EQUIPMENT SERVICE/REMOVALS WITHOUT DISMANTLING OF MAJOR PORTIONS OF CONNECTED PIPING.
- G. ALL PIPE SLEEVES SHALL BE SCHEDULE 40 GALVANIZED STEEL. ANNULUS BETWEEN PIPE OR PIPE INSULATION AND SLEEVE SHALL BE CAULKED WITH A NON-COMBUSTIBLE MATERIAL TO WITHIN 1/4" OF WALL FACES AND FILLED WITH CAULKING COMPOUND FOR INTERIOR SLEEVES. EXTERIOR SLEEVES OR WATERPROOF SLEEVES SHALL UTILIZE LINK SEAL (LS) TYPE TO FILL THE ANNULUS.
- H. PROVIDE SECURELY FASTENED LABELING OF ALL PIPING (BOTH EXPOSED AND CONCEALED) IN ACCORDANCE WITH ANSI STANDARDS AND COLOR-CODED AS PER BUILDING MANAGEMENT STANDARDS. LABELING SHOULD BE PROVIDED 20 FEET ON CENTERS AND/OR AT LEAST ONCE IN EACH ENCLOSED SPACE OR ROOM WHERE THE WALLS EXTEND ABOVE THE CEILING.
- I. ALL PIPING SHALL COMPLY WITH THE CURRENT INTERNATIONAL MECHANICAL CODE AND THE PROVISIONS OF THE FOLLOWING:
1. ASME B 31.9 "BUILDING SERVICES PIPING" FOR MATERIALS, PRODUCTS AND INSTALLATION. SAFETY VALVES AND PRESSURE VALVES SHALL BEAR THE APPROPRIATE ASME LABEL.
2. ASME "BOILER AND PRESSURE VESSEL CODE", SECTION IX, "WELDING AND BRAZING QUALIFICATION" FOR "QUALIFICATIONS FOR WELDING PROCESSES AND OPERATORS."
- J. FUEL OIL PIPING:
1. FUEL OIL SUPPLY & RETURN PIPING 3" AND SMALLER TO BE SCHEDULE 40, ASTM A539, BLACK STEEL, THREADED ENDS.
2. FUEL OIL PIPING FITTINGS 3" AND SMALLER TO BE 150# MALLEABLE IRON, THREADED ENDS W/1 BEAD OF WELD TO SEAL JOINT.
3. FUEL OIL UNIONS 2-1/2" AND SMALLER TO BE 150# MALLEABLE IRON GROUND JOINTS, THREADED.
4. DIELECTRIC UNIONS TO BE THREADED AND CONNECTIONS TO SUIT APPLICATION. UNIONS SHALL BE CONSTRUCTED TO ISOLATE DISSIMILAR MATERIALS, PREVENT GALVANIC ACTION, AND PREVENT CORROSION.
5. FUEL OIL PIPING ROUTED OVER AREAS NOT PROTECTED BY FUEL SPILL CONTAINMENT INSTALLATIONS SHALL BE PROTECTED BY A SECONDARY SHELL (DOUBLE WALL PIPING) CAPABLE OF CONTAINING THE LEAKING FUEL. THE SECONDARY SHELL SHALL BE CONSTRUCTED AND INSTALLED TO ALLOW FOR CONTROLLED REMOVAL OF THE COLLECTED FUEL OIL.

K. PROVIDE VALVE TAGS AND CHARTS:

1. EACH VALVE SHALL HAVE A 2 INCH DIAMETER BRASS TAG WITH 1-INCH-HIGH NUMERAL STAMPED THEREON, SECURED TO THE VALVE BY MEANS OF BRASS S HOOK OR BRASS CHAIN. EACH SYSTEM TO HAVE A LETTER DESIGNATION INDICATING SERVICE.
2. THE CONTRACTOR SHALL FURNISH AN APPROVED NEATLY DRAWN VALVE CHART, PROPERLY FRAMED, SHOWING THE USE AND LOCATION OF EACH VALVE THAT IS TAGGED.

M. VALVES AND STRAINERS:

1. VALVES, STRAINERS, ETC., SHALL NOT CONTAIN ASBESTOS AND HAVE THE NAME OF THE MANUFACTURER AND GUARANTEED WORKING PRESSURE CAST OR STAMPED ON BODIES. VALVES OF SIMILAR TYPE SHALL BE BY A SINGLE MANUFACTURER. ALL VALVES AND FITTINGS SHALL BE FIRE-TESTED TO MEET AMERICAN PETROLEUM INSTITUTE (API) STANDARDS 607 & 608, 4-TH EDITION, AND ASME STANDARD B16.34.

2. VALVES SHALL HAVE WORKING PRESSURE AND TEMPERATURE RATINGS SAME AS PIPE FITTINGS SPECIFIED FOR THE SERVICE. REGARDLESS OF SERVICE, VALVES SHALL NOT BE DESIGNED FOR LESS THAN 125 PSI WORKING PRESSURE.
3. GATE VALVES - THROUGH 2-1/2" SHALL BE BRONZE BODY AND TRIM, NON-RISING STEM, INSIDE SCREW, SCREWED BONNET, SOLID WEDGE, BACK SEATING, SCREWED OR SOLDERED ENDS AS MANUFACTURED BY CRANE, EDWARDS, NIBCO, MORRISON BROS OR APPROVED EQUAL.
4. BALL VALVES - THROUGH 2-1/2" SHALL BE BRONZE BODY, SILICONE BRONZE BALL, STEEL HANDLE, TEFLON PACKING, SCREWED OR SWEAT ENDS, 125LB. WSP, 400# WOG, AS MANUFACTURED BY MILWAUKEE, APOLLO, WATTS, NIBCO, MORRISON BROS OR APPROVED EQUAL.
5. RELIEF VALVES - PROVIDE OVER PRESSURE RELIEF VALVE AS AN INTEGRAL PART OF THE FUEL PUMP ASSEMBLY. RELIEF VALVES AS MANUFACTURED BY MORRISON BROS OR APPROVED EQUAL.
6. STRAINERS - THREADED CAST STEEL FOR 150 PSIG WORKING PRESSURE, Y-PATTERN WITH 1/32 INCH STAINLESS STEEL PERFORATED SCREEN, AS MANUFACTURED BY MORRISON BROS OR APPROVED EQUAL.
7. EMERGENCY ISOLATION VALVES - THREADED CAST STEEL FOR 150 PSIG WORKING PRESSURE, AS MANUFACTURED BY MORRISON BROS OR APPROVED EQUAL.

P. PIPING TESTING

1. PNEUMATICALLY TEST TANKS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UPON ARRIVAL AT THE PROJECT SITE AND AFTER TANK INSTALLATION TO ASSURE TANK INTEGRITY.
2. SUBJECT PIPING SYSTEM TO 1.5 TIMES THE MAX. WORKING PRESSURE FOR MIN. 2 HOURS, THE TEST PRESSURE SHALL NOT EXCEED THE MAXIMUM PRESSURE FOR ANY COMPONENT IN THE SYSTEM UNDER THE TEST. INSPECT THE SYSTEM AND TIGHTEN, REPAIR OR REPLACE LEAKING COMPONENTS AS NECESSARY, REPEAT TEST UNTIL THERE ARE NO MORE LEAKS. FLUSH SYSTEM THOROUGHLY WITH DIESEL FUEL UNTIL ALL MOISTURE OR DEBRIS IS REMOVED AND DIESEL IS CLEAR. FILL SYSTEM WITH CLEAN DIESEL FUEL, CLOSE END VALVES AND ALLOW SYSTEM TO REMAIN FILLED. LEGALLY DISPOSE OF FLUSH DIESEL.
3. SECONDARY CONTAINMENT PIPING TEST
- SEAL SECONDARY CONTAINMENT PIPING TO PRIMARY PIPING AT BOTH ENDS WITH CONCENTRIC TERMINATION FITTINGS AS RECOMMENDED BY THE MANUFACTURER. PROVIDE TEST GAUGE AND PIPE CONNECTION AT THIS POINT FOR PNEUMATIC TESTING. PNEUMATICALLY TEST SYSTEM AT 15 PSI FOR TEN (10) MINUTES, THEN SOAP ALL JOINTS AND CHECK FOR LEAKS. REPEAT TEST UNTIL THERE ARE NO LEAKS AND SYSTEM IS PROVEN TIGHT.
4. NO TESTING SHALL BE CONDUCTED UNTIL PIPE CLEANING AND PRETREATMENT HAS BEEN COMPLETED AND RECORDED.
5. ALL TESTING SHALL BE COORDINATED BY THE CONTRACTOR AND SHALL BE WITNESSED BY A BUILDING OWNER'S REPRESENTATIVE. ALL SYSTEMS WHICH FAIL THE PRESSURE TESTS SHALL BE FIXED AND RETESTED AT NO EXPENSE TO THE OWNER.
6. ISOLATE ALL EQUIPMENT WHICH IS TO BE EXCLUDED FROM THE PRESSURE TEST AND PROVIDE ISOLATION PIPING CONNECTIONS, FITTINGS, VALVES, EQUIPMENT, LABOR, ETC., TO PRESSURE TEST ALL SYSTEMS.

2.04 INSULATION REQUIREMENTS

- Q. INSULATION SHALL BE APPLIED TO EXHAUST PIPING AND SILENCER CONSTRUCTED OF MATERIALS AS SPECIFIED HEREIN. INSULATION SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOP. INDEX OF 50 OR LESS AND SHALL MEET THE REQUIREMENTS OF ASTM, NFPA.
- R. WHERE INSULATION IS SPECIFIED FOR PIPING, INSULATE SIMILARLY ALL CONNECTIONS, FLANGES AND FITTINGS AND OTHER PARTS OF THE SYSTEM PREVENT EXCESSIVE HEAT DISSIPATION TO SPACE.
- S. ALL EQUIPMENT, FITTINGS, DEVICES, ETC. REQUIRING SERVICING OR INSPECTION SHALL HAVE REMOVABLE INSULATION WHICH CAN BE REPLACED WITHOUT DAMAGE.
- T. ALL LEAK AND PRESSURE TESTS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY INSULATION.
- U. EXHAUST PIPE INSULATION:
1. INSULATION SHALL BE COMPOSED OF 100K TYPE "E" GLASS FIBERS NEEDED TOGETHER INTO MAT FORM, ENCAPSULATED WITH 304 SS MESH AND COVERED WITH 32 OZ./SQ. YD. SILICONE FABRIC. IT SHALL BE NON-RESPIRABLE, INCOMBUSTIBLE, ASBESTOS FREE AND SHALL CONTAIN NO RESINOUS OR INORGANIC BINDERS. INSULATION MATERIAL SHALL CONFORM TO ASTM E84, RATED FOR 1200°F TEMPERATURE AND MIN. 1/8" THICKNESS WITH THERMAL CONDUCTIVITY "K" FACTOR OF 0.60 BTU/INCH-HR./FT2/F AT 700°F. INSULATION TO BE PROVIDED WITH REINFORCED FOIL FACED, FLAME RESISTANT, ALUMINUM METAL BARRIER. ALL INSULATION SHALL BE SECURED AND SEAMS SEALED BY TWO-INCH SEALING LIP WITH ADHESIVE AND FASTENED WITH 16 GAUGE RUST RESISTANT WIRE OR FIBERGLASS CORD ON 12" CENTERS. ON VESSELS OVER 24" WIDE, WELDED PINS AND CLIPS SHALL BE USED ON THE UNDERSIDE FOR FASTENING INSULATION. THE INSULATION SHALL LIMIT THE SURFACE TEMPERATURE TO APPROXIMATELY 400°F.

F. CONNECTIONS: TACKS; TEMPERATURE RESISTANT COLOR MATCHING TAPE.

G. INSTALLATION, EXAMINATION AND PREPARATION:

- VERIFY THAT ALL PIPING HAS BEEN LEAK TESTED PER THE SPECIFICATIONS BEFORE APPLYING COVERING MATERIALS.
- VERIFY THAT ALL SURFACES ARE CLEAN, DRY AND FREE OF FOREIGN MATERIAL.
- INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, BUILDING CODES AND INDUSTRY STANDARDS.
- LOCATE COVER SEAMS IN LEAST VISIBLE LOCATIONS. NEATLY FINISH INSULATION AT SUPPORTS, PROTRUSIONS, AND INTERRUPTIONS.
- FOR PIPES (OTHER THAN EXHAUST) EXPOSED TO ABUSE IN FINISHED SPACES OR EXPOSED TO OUTDOOR SUN AND WIND ACTION, PROVIDE JOHNS MANVILLE ZESTON 2000 PVC JACKET AND FITTING COVERS OR ALUMINUM JACKET. JACKET SEAMS SHALL BE LOCATED ON SIDE OF FITTINGS AND HORIZONTAL PIPE RUNS.

2.05 SEISMIC RESTRAINTS

- A. GENERAL: ALL EQUIPMENT, AND PIPING SHALL BE ADEQUATELY RESTRAINED TO RESIST SEISMIC FORCES. THIS SPECIFICATION IS IN ADDITION TO THE SPECIFIED VIBRATION

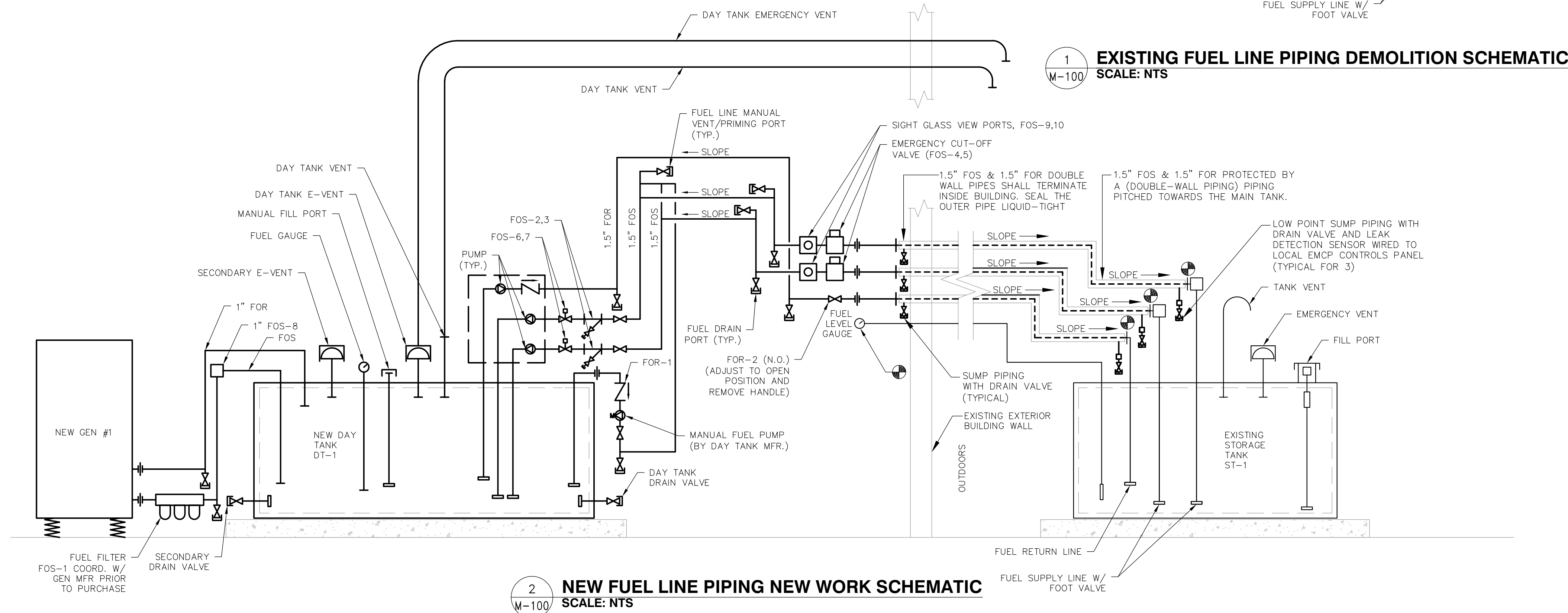
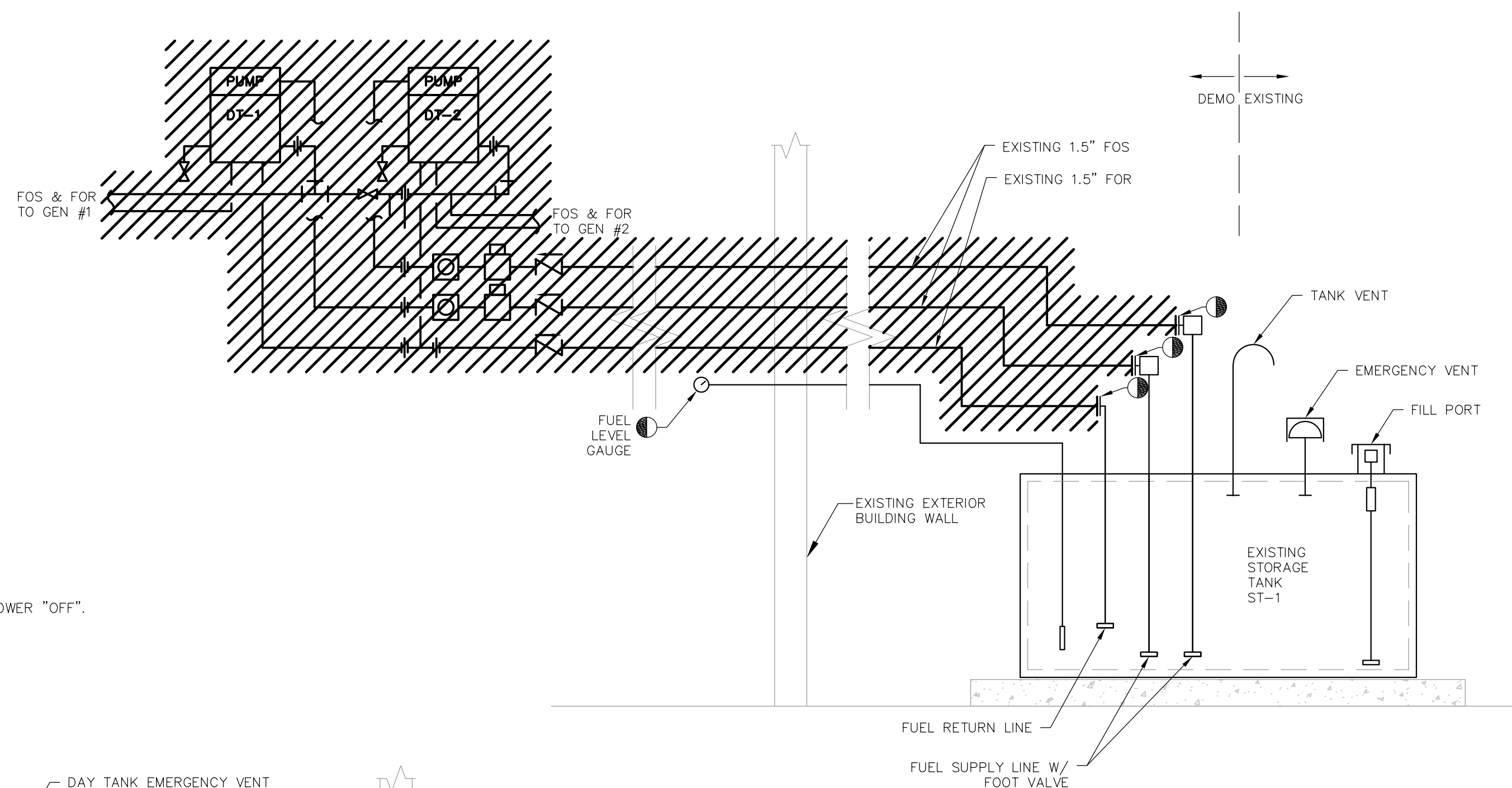
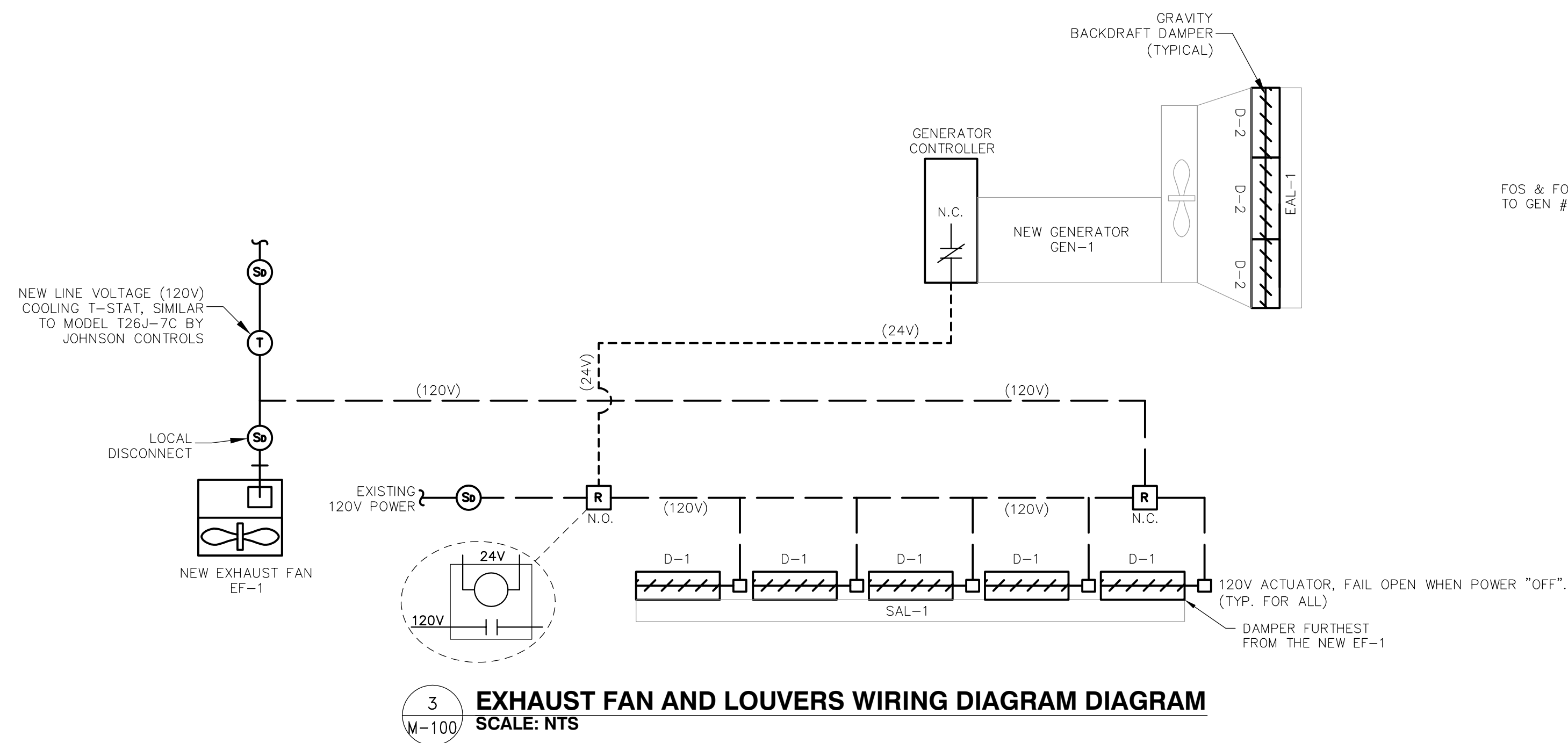
ISOLATION FOR THIS PROJECT. RESTRAINT DEVICES SHALL BE DESIGNED AND SELECTED TO MEET SEISMIC REQUIREMENTS AS DEFINED IN THE LATEST ISSUE OF THE STATE AND LOCAL CODE HAVING JURISDICTION.

B. SEISMIC-RESTRAINT PERFORMANCE CRITERIA:

1. PIPING:
- PIPING 1" IN DIAMETER EXPOSED IN GENERATOR ROOMS DO NOT REQUIRE SEISMIC RESTRAINT.
 - PIPING 2 1/2" AND LESS IN ALL OTHER AREAS DO NOT REQUIRE SEISMIC RESTRAINT.
 - PIPING WITH HANGERS LESS THAN 12" LONG DO NOT REQUIRE SEISMIC RESTRAINT.
2. NON-STANDARD PIPING: ALL OTHER PIPING, OTHER THAN LISTED ABOVE, REQUIRES SEISMIC RESTRAINT TO BE SELECTED BASED ON THE FOLLOWING REQUIREMENTS:
- COMPONENT SEISMIC COEFFICIENT: 0.67.
 - ATTACHED AMPLIFICATION FACTOR: 1.0.
 - WC = WEIGHT DISTRIBUTED TO EACH HANGER.

2.06 VIBRATION ISOLATION SYSTEMS


- A. ALL ROTATING, REVOLVING OR RECIPROCATING EQUIPMENT, INCLUDING PIPING CONNECTIONS TO THIS EQUIPMENT SHALL BE ACOUSTICALLY ISOLATED TO PREVENT THE TRANSMISSION OF OBJECTIONABLE NOISES, SOUND OR VIBRATIONS TO THE OCCUPIED SPACES AND TO THE BUILDING STRUCTURES. ALL VIBRATION ISOLATION PRODUCTS SHALL BE SPECIFICALLY DESIGNED FOR THEIR INTENDED USE.
- B. STATIC DEFLECTION OF ISOLATORS SHALL BE A MINIMUM OF 90% EFFICIENT.
- C. MANUFACTURER OF VIBRATION ISOLATION EQUIPMENT SHALL DETERMINE VIBRATION ISOLATOR SIZES AND LOCATIONS, PROVIDE SUITABLE PIPING AND EQUIPMENT VIBRATION ISOLATION SYSTEMS, GUARANTEE SPECIFIED ISOLATION SYSTEM ATTENUATION AND DEFLECTION, AND PROVIDE INSTALLATION INSTRUCTIONS, DRAWINGS AND FIELD SUPERVISION TO ASSURE PROPER INSTALLATION AND PERFORMANCE.
- D. MOUNTING TYPES:
1. FLOOR SUPPORTED PIPING ISOLATORS (TYPE SLR).
2. VERTICAL RISER PIPING ANCHOR AND GUIDES (TYPE ADA).
3. CEILING SUPPORTED PIPING ISOLATORS (TYPE 30N).
- E. PROVIDE FLEXIBLE CONNECTIONS BETWEEN FAN OUTLET AND DISCHARGE AIR PLENUM INLET AS PER AIR PLENUM SPECIFICATION SECTION.
- F. FLEXIBLE HOSE CONNECTORS SHALL BE INSTALLED AT INLET AND DISCHARGE CONNECTIONS TO ALL POWERED EQUIPMENT.
- G. SPRING TYPE 30N HANGERS SHALL BE PROVIDED FOR PIPING FOR A DISTANCE OF 50 FEET OR 50 PIPE DIAMETERS, WHICHEVER IS GREATER, UP AND DOWNSTREAM OF ALL POWER-DRIVEN EQUIPMENT. THE HANGER SHALL PROVIDE 1" OF STATIC DEFLECTION FOR PIPES 4" OF OUTSIDE DIAMETER AND LARGER AND 1/2" STATIC DEFLECTION FOR PIPES SMALLER THAN 4" w/ OUTSIDE DIAMETER.
- H. VIBRATION ISOLATORS FOR FLOOR OR CEILING SUPPORTED EQUIPMENT SHALL HAVE A MAXIMUM LATERAL MOTION UNDER EQUIPMENT START-UP OR SHUT-DOWN CONDITIONS OF 1/4" AND MOTIONS IN EXCESS SHALL BE RESTRAINED BY SPRING TYPE MOUNTINGS.
- I. VIBRATION ISOLATOR SHALL BE PROVIDED BY MASON INDUSTRIES, VIBRATION ELIMINATOR CO., CONSOLIDATED KINETICS CO., OR APPROVED EQUAL.



FUEL OIL PIPING COMPONENTS SCHEDULE															
UNIT NO.	DESCRIPTION	SERVICE	LOCATION	SERVICE				ACTUATOR DATA				MANUFACTURER MODEL (OR APPROVED EQUAL)	REMARKS		
				MEDIUM	FLOW (GPM)	HEAD (FT. W.C.)	TEMP. (DEG. F)	ACTUATOR TYPE	FAILURE POSITION	TYPE	POWER			RANGE	
FOS-1	1" FUEL OIL WATER SEPARATOR FILTER	NEW GENERATOR	GENERATOR ROOM	FUEL OIL	5.5	2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RACOR-PARKER INC. / 79100U FHV32410	10 MICRO FILTER
FOS-2	1-1/2" LINE STRAINER (100 MESH)	NEW DAY TANK	GENERATOR ROOM	FUEL OIL	7.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SIMPLEX (BY DAY TANK MFR.)	N/A
FOS-4	1-1/2" EMERGENCY SHUTOFF VALVE	SUPPLY FUEL LINE	GENERATOR ROOM	FUEL OIL	7.5	N/A	165	LEVER	N/A	FUSIBLE LINK	N/A	N/A	N/A	MORRISON BRO'S, INC. / 346SS-0100AV	N/A
FOS-6	1-1/2" SOLENOID VALVE	NEW DAY TANK	GENERATOR ROOM	FUEL OIL	7.5	4.5	N/A	SOLENOID	N.C.	POWERED	24 AC	ON/OFF	N/A	SIMPLEX (BY DAY TANK MFR.)	NOTE 2
FOS-8	1" PRIMING TEE	NEW GENERATOR	GENERATOR ROOM	FUEL OIL	5.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MORRISON BRO'S, INC. / 912-100S10AT	N/A
FOS-9	SIGHT GLASS VIEW PORT	SUPPLY FUEL LINE	GENERATOR ROOM	FUEL OIL	7.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MC MASTER CARR / 3277K	N/A
FOR-1	1-1/2" IN-LINE CHECK VALVE	NEW DAY TANK	GENERATOR ROOM	FUEL OIL	7.5	5.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SIMPLEX (BY DAY TANK MFR.)	N/A
FOR-2	1-1/2" ISOLATION VALVE	RETURN FUEL LINE	GENERATOR ROOM	FUEL OIL	7.5	N/A	N/A	HANDWHEEL	LAST POSITION	MANUAL	N/A	ON/OFF	N/A	MORRISON BRO'S, INC. / 235BD1-0700AV	NOTE 1

NOTE:

1. PROVIDE ISOLATION VALVE WITH HANDWHEEL FOR MANUAL OPERATION.
2. PROVIDE SOLENOID VALVE WITH POWER CONFORM FOR ACTUATOR. CONFORM POWER AVAILABILITY AND COORDINATE POWER REQUIREMENTS W/ CONTROLS VENDOR PRIOR TO PURCHASE.



**NJ SPORTS & EXPOSITION
 AUTHORITY**
**PUMP STATION GENERATOR
 INSTALLATION**
 50 STATE ROUTE 520
 EAST RUTHERFORD, NEW JERSEY
 07073

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by PHILIP M
GRENCI
Date: 2022.06.24
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 **triad**
engineers

122 Main Street | Madison, NJ 07940
973.984.1919 | triadcei.com

Drawing Title: MECHANICAL EQUIPMENT WIRING DIAGRAM AND SCHEMATICS	
Scale: AS NOTED	Issue Date: 4/15/22
Proj. Manager: ANC	Proj. Engineer: PMG
AMA Project No.: CEI215080	

NJ SPORTS & EXPOSITION
AUTHORITY
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INSTALLATION

50 STATE ROUTE 120
EAST RUTHERFORD, NEW JERSEY
07073

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by PHILIP M
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Date: 2022.06.24
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6-2-22 ISSUED FOR REVIEW

6-15-22 ISSUED FOR DCA APPROVAL

Date Issued Revision No.

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Drawing Title:
MECHANICAL
EQUIPMENT DEMOLITION AND
NEW WORK PART PLANS

Scale Issue Date:
AS NOTED 4/15/22

Proj. Manager: ANC
Proj. Engineer: PMG

AMA Project No.:
CEI215080

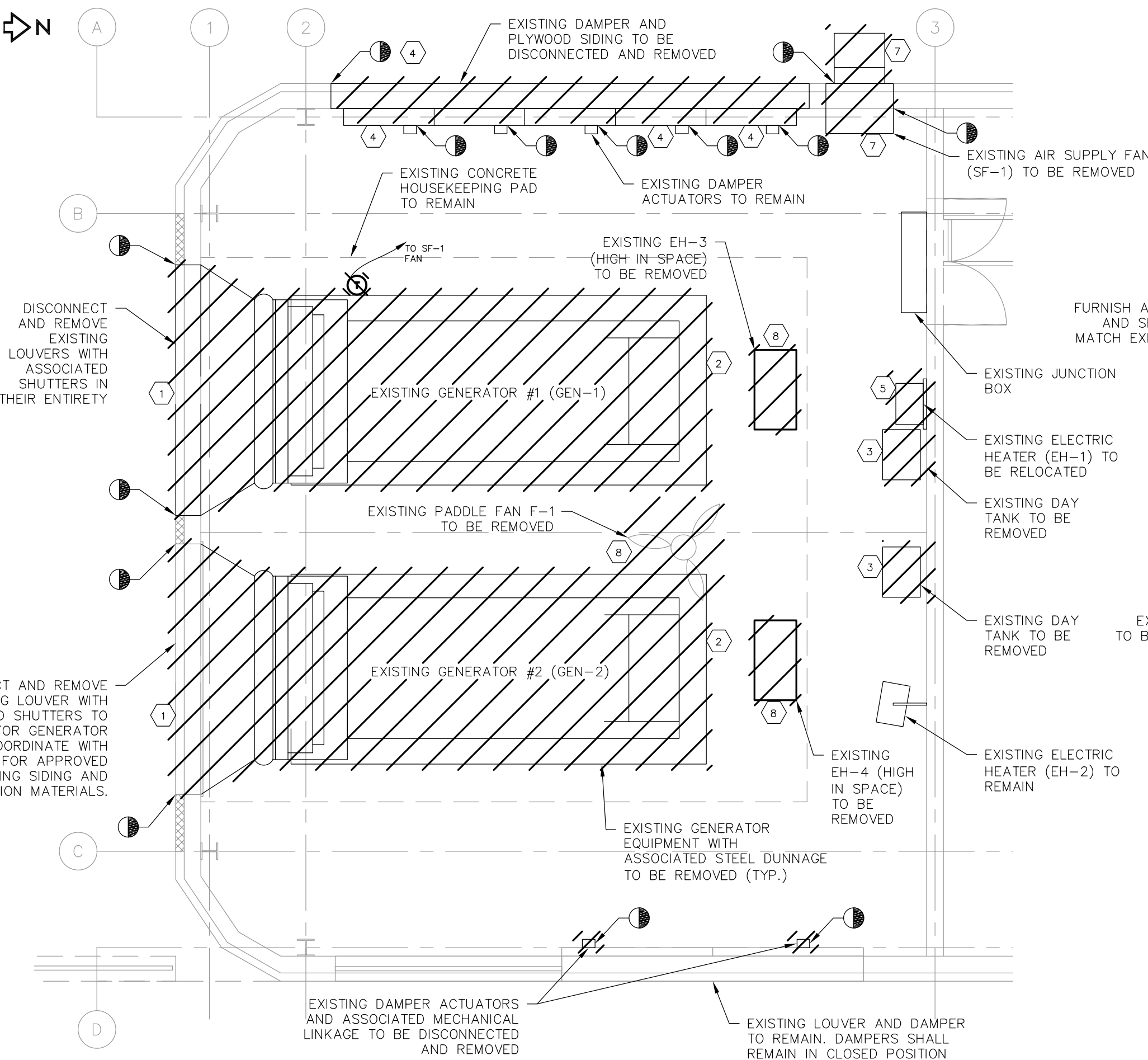
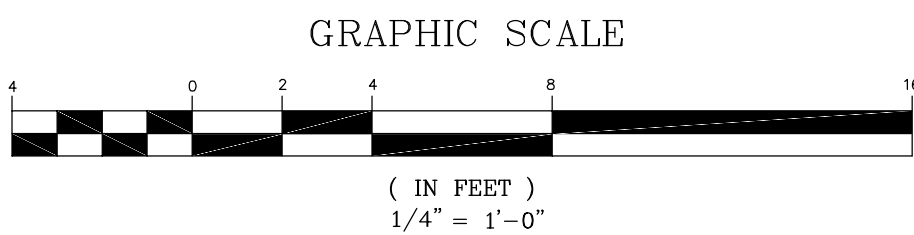
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DEMOLITION NOTES (MECHANICAL CONTRACTOR):

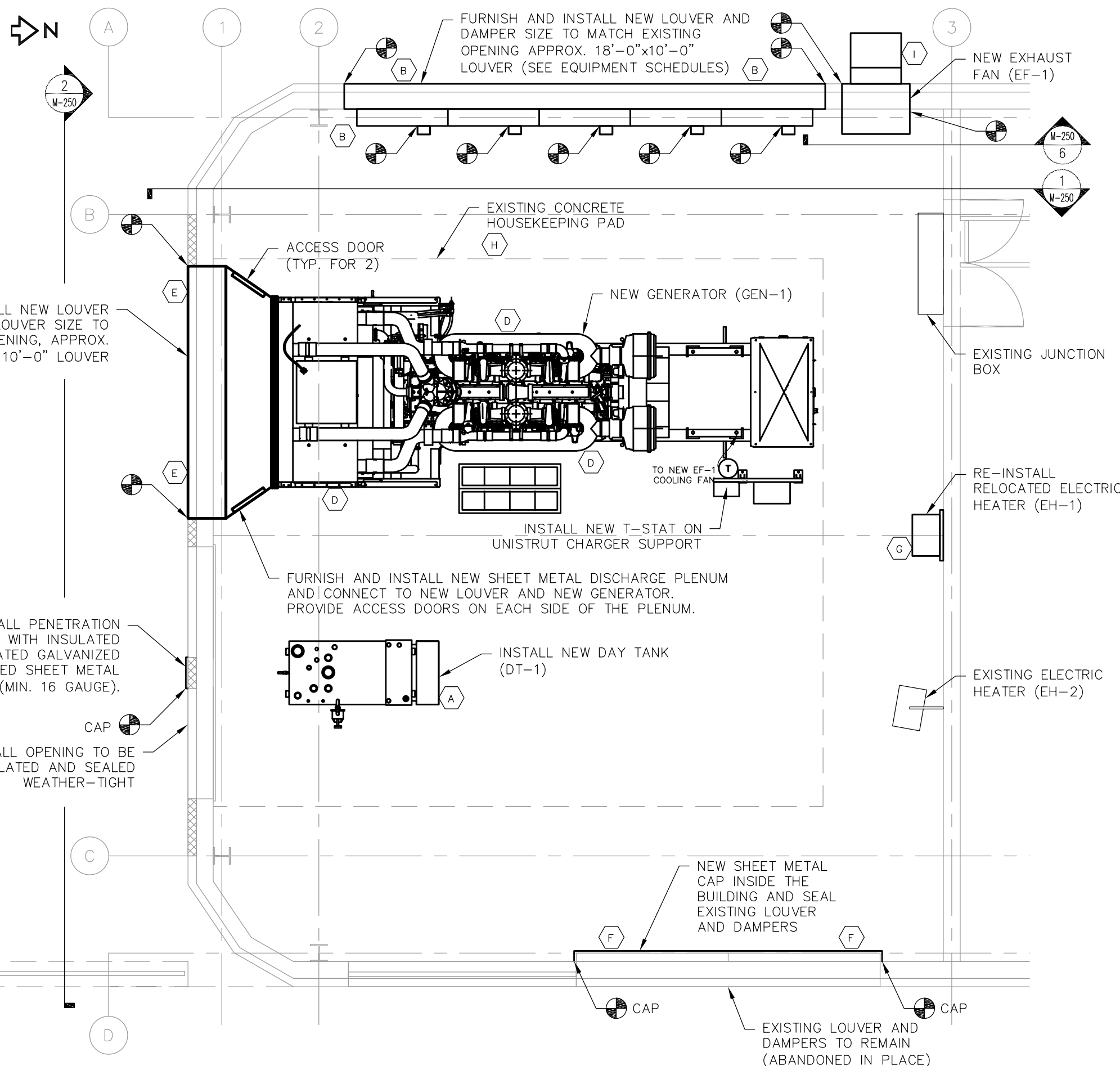
- DISCONNECT AND REMOVE TWO (2) EXISTING GENERATORS WITH ASSOCIATED EXISTING EXHAUST AIR LOUVERS AND SHUTTERS AND AIR DISCHARGE PLENUMS. INSTALL WEATHER-TIGHT SEAL FOR GENERATOR'S DISCHARGE AIR OPENING NOT USED DURING CONSTRUCTION PHASE.
- DRAIN REMAINING FUEL, DISCONNECT AND REMOVE EXISTING GENERATORS' FUEL LINES W/ ASSOCIATED AUXILIARY INSTALLATIONS IN THEIR ENTIRETY. POWER CONNECTIONS SHALL BE DISCONNECTED AND WIRING REMOVED BY THE ELECTRICAL CONTRACTOR. REMOVE ALL EQUIPMENT SCHEDULED FOR DEMOLITION IN AN ORDERLY SEQUENCE THROUGH OPENINGS CREATED DURING DEMOLITION PHASE. COORDINATE WORK IN FIELD AS REQUIRED.
- DRAIN REMAINING FUEL, DISCONNECT AND REMOVE EXISTING DAY TANKS W/ ASSOCIATED AUXILIARY INSTALLATIONS IN THEIR ENTIRETY. POWER CONNECTIONS SHALL BE DISCONNECTED AND WIRING REMOVED BY THE ELECTRICAL CONTRACTOR. COORDINATE WORK IN FIELD AS REQUIRED.
- DISCONNECT AND REMOVE EXISTING OA LOUVER W/ ASSOCIATED DAMPERS. THE EXISTING DAMPER ACTUATORS SHALL REMAIN TO BE RE-USED DURING THE NEW WORK CONSTRUCTION PHASE. PROTECT EXISTING ACTUATORS FROM DAMAGE AND EXPOSURE TO DEBRIS.
- DISCONNECT AND RELOCATE EXISTING ELECTRIC HEATER EH-1 FROM THE CURRENT LOCATION. SAVE AND PROTECT THE HEATER FOR RE-INSTALLATION DURING THE NEW WORK CONSTRUCTION PHASE. POWER CONNECTIONS SHALL BE DISCONNECTED AND REMOVED BY ELECTRICAL CONTRACTOR. COORDINATE WORK IN FIELD AS REQUIRED.
- DISCONNECT AND REMOVE EXISTING EXHAUST PIPING W/ ASSOCIATED SILENCERS AND SUPPORTS IN THEIR ENTIRETY. COORDINATE WORK IN FIELD AS REQUIRED.
- DISCONNECT AND REMOVE EXISTING WALL MOUNTED AIR SUPPLY FAN SF-1. W/ ASSOCIATED HOOD AND AUXILIARY INSTALLATIONS. POWER SHALL BE DISCONNECTED BY ELECTRICAL CONTRACTOR. COORDINATE WORK IN FIELD, AS REQUIRED.
- DISCONNECT AND REMOVE EXISTING SPACE HEATERS EH-3 AND EH-4 WITH PADDLE FAN F-1 IN THEIR ENTIRETY. POWER SHALL BE DISCONNECTED AND WIRING REMOVED AND SAVED-OFF BY ELECTRICAL CONTRACTOR. COORDINATE WORK IN FIELD AS REQUIRED.

NEW WORK NOTES (MECHANICAL CONTRACTOR):

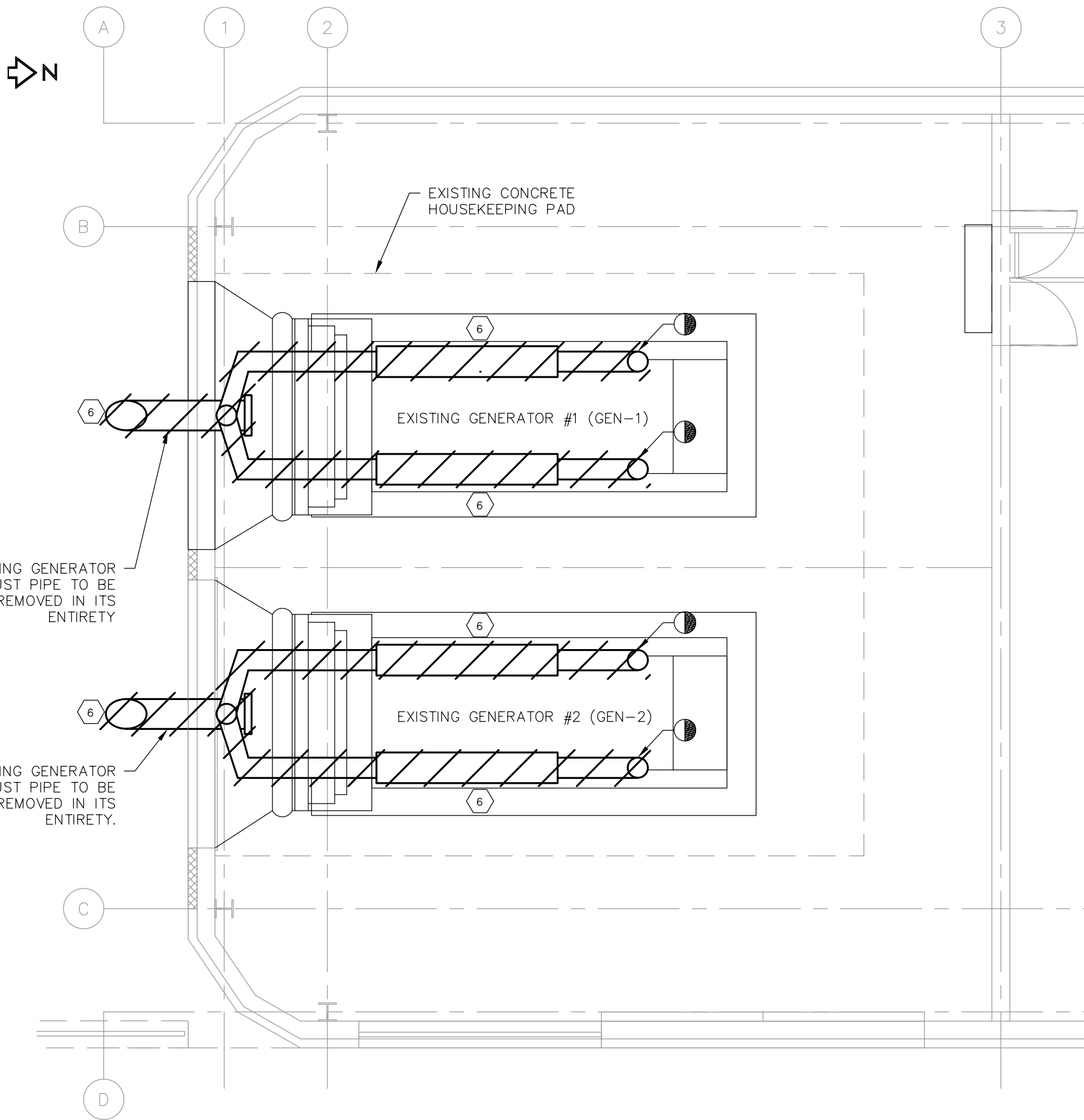
- INSTALL A NEW FUEL DAY TANK (DT-1) SUPPLIED BY GENERATOR'S VENDOR AT LOCATION SHOWN, FOLLOWING CURRENT REGULATIONS BY AUTHORITY HAVING JURISDICTION AND MANUFACTURER'S RECOMMENDATIONS. NEW POWER CONNECTIONS SHALL BE PERFORMED BY ELECTRICAL CONTRACTOR. COORDINATE WORK W/ NEW GENERATOR INSTALLATION IN FIELD AS REQUIRED. TANK SHALL BE FURNISHED BY GENERATOR VENDOR AND INSTALLED BY MECHANICAL CONTRACTOR.
- FURNISH AND INSTALL A NEW OA LOUVER W/ ASSOCIATED DAMPERS IN THE EXISTING WALL OPENING ON THE WEST SIDE OF THE BUILDING. VERIFY WALL OPENING DIMENSIONS IN FIELD PRIOR TO LOUVER PURCHASE. INVESTIGATE WALL OPENING CONDITION AND CONDUCT NECESSARY REPAIRS PRIOR TO LOUVER INSTALLATION. RE-CONNECT EXISTING ACTUATORS TO NEW OA DAMPERS. RE-POSITION ACTUATORS AND MODIFY LINKAGE AS REQUIRED TO ENSURE PROPER OPERATION AS DESCRIBED IN THE MECHANICAL SPECIFICATIONS, PART 4 - "SEQUENCE OF OPERATIONS". TEST ACTUATORS OPERATION AND REPLACE DAMAGED ACTUATORS WITH NEW UNITS AS REQUIRED, SIMILAR TO HONEYWELL MODUTROL IV SERIES. LINE VOLTAGE, SPRING RETURN, NORMALLY OPEN. MATCHING EXISTING ACTUATORS' SIZES. MODIFY ACTUATOR CONTROLS OF THE DAMPER LOCATED FURTHEST AWAY FROM THE EXHAUST FAN. THE ACTUATOR POWER SUPPLY SHALL BE MODIFIED TO OPERATE OPEN WHEN THE GENERATOR OR THE EXHAUST FAN (EF-1) ARE OPERATING. ALL POWER CONNECTIONS MODIFICATIONS SHALL BE PERFORMED BY THE ELECTRICAL CONTRACTOR. COORDINATE WORK W/ NEW GENERATOR INSTALLATION IN FIELD AS REQUIRED.
- FURNISH AND INSTALL A NEW EXHAUST SILENCER W/ ASSOCIATED EXHAUST PIPING AND FIXTURES FOLLOWING CURRENT REGULATIONS BY THE AUTHORITY HAVING JURISDICTION AND MANUFACTURER'S RECOMMENDATIONS. CONSTRUCT AND INSTALL NEW SILENCER SUPPORTS. HIRE STRUCTURAL ENGINEER'S SERVICES FOR NEW SUSPENDED LOAD ANALYSIS ON ROOF SUPPORTS PRIOR TO SILENCER'S SUPPORTS CONSTRUCTION. COORDINATE WORK W/ NEW GENERATOR INSTALLATION IN FIELD AS REQUIRED.
- ASSIST GENERAL CONTRACTOR IN THE NEW GENERATOR UNIT INSTALLATION. THE INSTALLATION SHALL FOLLOW CURRENT REGULATIONS BY THE AUTHORITY HAVING JURISDICTION AND MANUFACTURER'S RECOMMENDATIONS. THE NEW GENERATOR SHALL BE ALIGNED WITH EXISTING DISCHARGE AIR AND EXHAUST WALL OPENINGS. ALL NEW POWER CONNECTIONS SHALL BE INSTALLED BY THE ELECTRICAL CONTRACTOR. PROTECT SURROUNDING INSTALLATIONS FROM CONSTRUCTION DAMAGE. UPON NEW GENERATOR INSTALLATION COMPLETION, REMOVE THE EQUIPMENT TEMPORARY PROTECTIVE COVERS. COORDINATE WORK W/ OTHER EQUIPMENT IN FIELD AS REQUIRED.
- FURNISH AND INSTALL A NEW AIR EXHAUST LOUVER W/ ASSOCIATED BACKDRAFT DAMPERS AND A DISCHARGE AIR PLENUM AT THE NEW GENERATOR. CONSTRUCT A NEW AIR PLENUM TO CONNECT GENERATOR RADIATOR DISCHARGE TO THE NEW EXHAUST LOUVER. CONFIRM EXISTING WALL OPENING DIMENSIONS PRIOR TO THE NEW LOUVER PURCHASE. INVESTIGATE WALL OPENING CONDITION AND CONDUCT NECESSARY REPAIRS PRIOR TO LOUVER'S INSTALLATION. COORDINATE WORK W/ NEW GENERATOR INSTALLATION IN FIELD AS REQUIRED.
- SEAL WEATHER-TIGHT BACK OF THE EXISTING LOUVERS AND DAMPERS LOCATED ON THE EAST WALL WITH A GALVANIZED SHEET METAL CAP. COORDINATE WORK IN FIELD AS REQUIRED.
- RE-INSTALL EXISTING ELECTRIC HEATER (EH-1) AT NEW LOCATION. ALL POWER CONNECTION MODIFICATIONS AND RE-CONNECTION SHALL BE PERFORMED BY THE ELECTRICAL CONTRACTOR. COORDINATE WORK IN FIELD AS REQUIRED.
- ASSIST GENERAL CONTRACTOR IN PERFORMING JOB SITE REVIEW FOR DAMAGES RESULTING FROM THE NEW GENERATOR INSTALLATION AT THE COMPLETION OF THE PROJECT. CONDUCT THE NECESSARY REPAIRS. MATCH EXISTING MATERIALS AND FINISHES. COORDINATE WORK IN FIELD AS REQUIRED.
- FURNISH AND INSTALL A NEW EXHAUST FAN (EF-1) IN THE EXISTING WALL OPENING. VERIFY OPENING SIZE IN FIELD PRIOR TO EQUIPMENT PURCHASE. POWER SUPPLY CONNECTIONS SHALL BE PERFORMED BY ELECTRICAL CONTRACTOR. PROVIDE NEW EXHAUST FAN W/ EXHAUST WEATHER HOOD, BIRD SCREEN, SHUTTERS AND LINE VOLTAGE COOLING THERMOSTAT. COORDINATE WORK IN FIELD, AS REQUIRED.



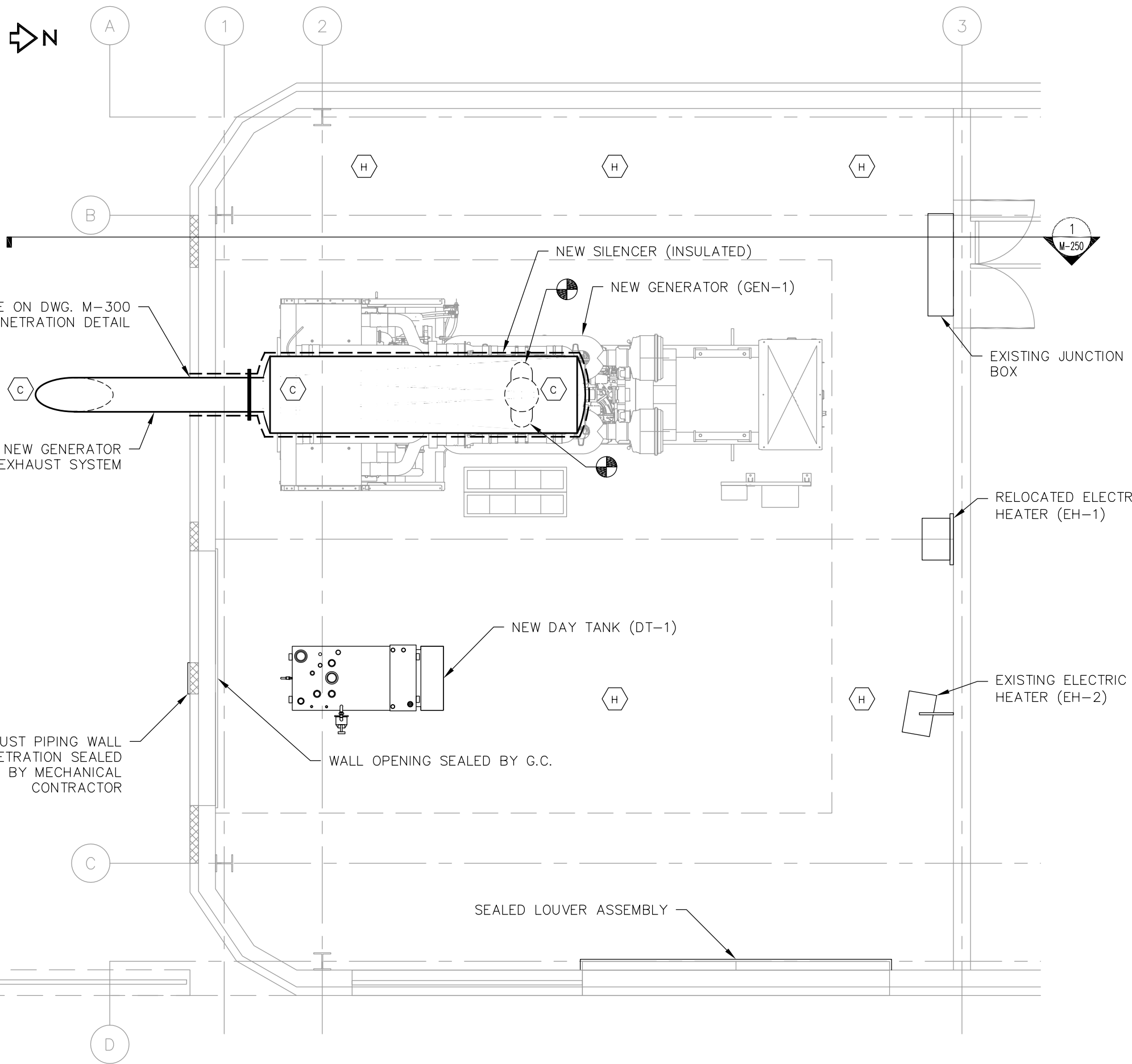
MECHANICAL EQUIPMENT DEMOLITION PART PLAN
SCALE: 1/4"=1'-0"



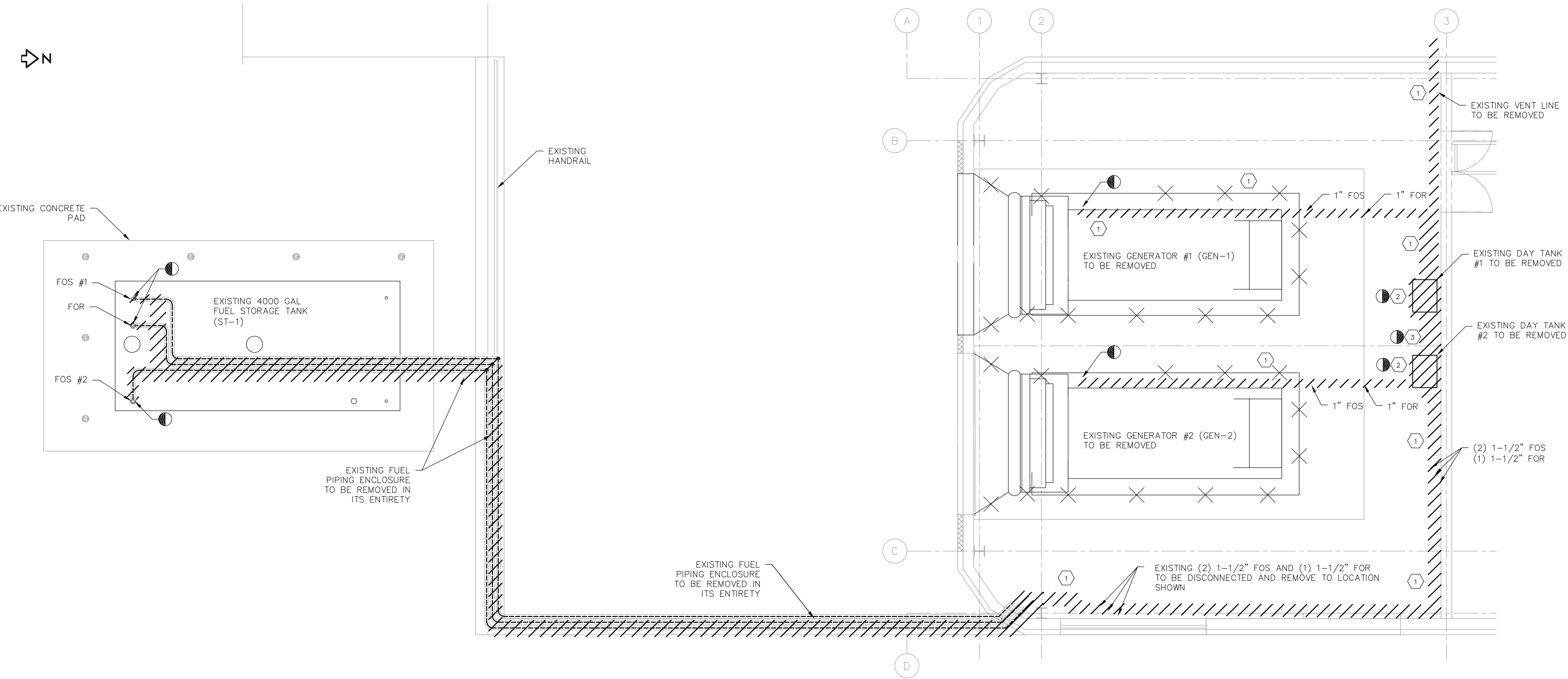
MECHANICAL EQUIPMENT NEW WORK PART PLAN
SCALE: 1/4"=1'-0"



MECHANICAL EXHAUST DEMOLITION PART PLAN
SCALE: 1/4"=1'-0"



MECHANICAL EXHAUST NEW WORK PART PLAN
SCALE: 1/4"=1'-0"



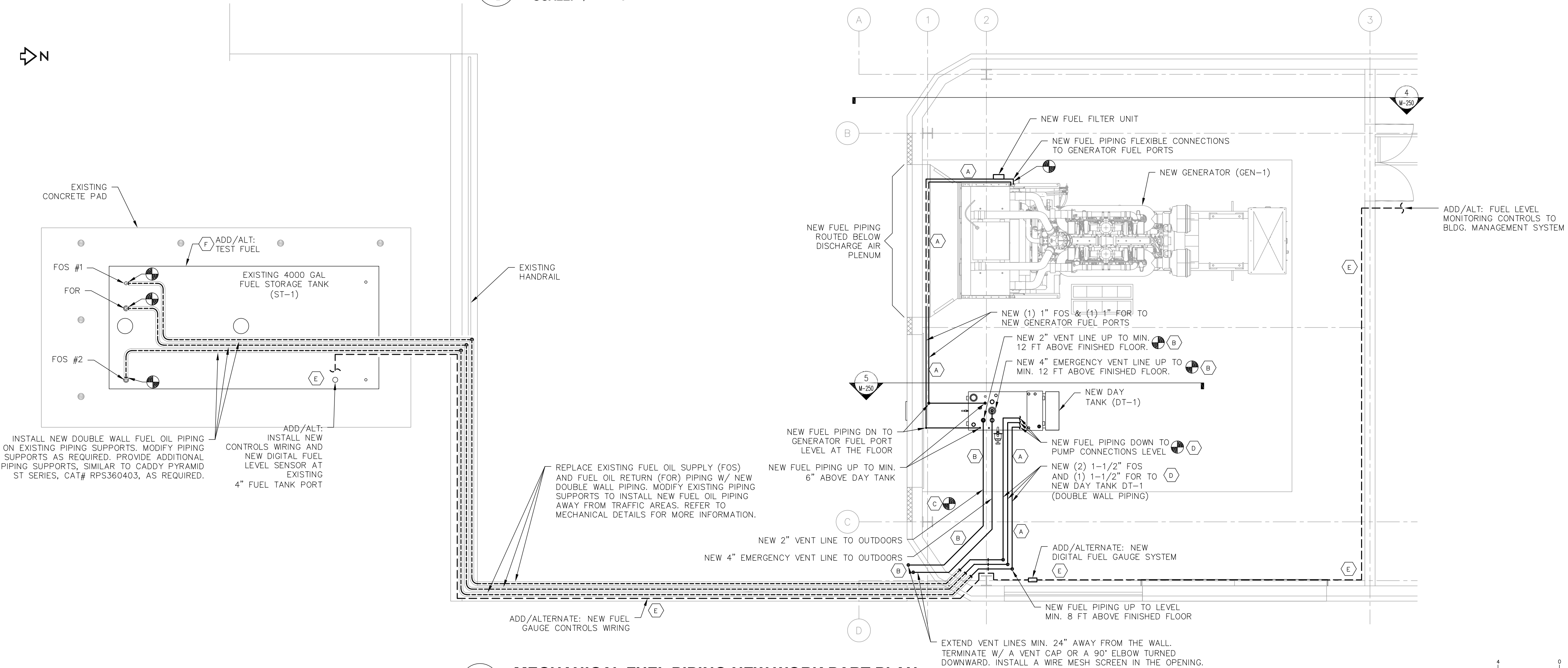
DEMOLITION NOTES:

1. DRAIN REMAINING FUEL, DISCONNECT AND REMOVE EXISTING PIPING SECTIONS TO EXTENT SHOWN.
2. DRAIN REMAINING FUEL, DISCONNECT AND REMOVE EXISTING FUEL DAY TANKS. POWER SUPPLY CONNECTIONS SHALL BE DISCONNECTED AND REMOVED BY ELECTRICAL CONTRACTOR. COORDINATE WORK IN FIELD AS REQUIRED.
3. DISCONNECT AND REMOVE EXISTING FUEL GAUGE WITH ASSOCIATED TUBING FROM THE PRESENT LOCATION. SAVE FOR RE-INSTALLATION DURING NEW WORK PROJECT PHASE.

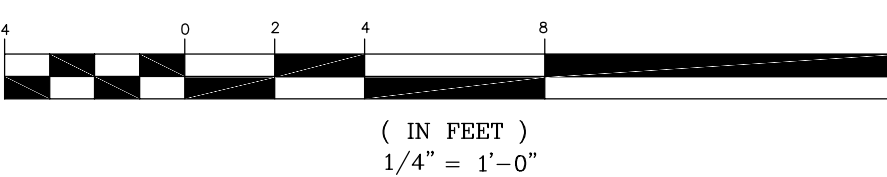
NEW WORK NOTES (MECHANICAL CONTRACTOR):

- A. INSTALL NEW FUEL PIPING SECTIONS CONNECTING FUEL STORAGE TANK WITH THE NEW GENERATOR. ENSURE THAT NEW FUEL PIPING DOES NOT IMPACT SERVICE ACCESS TO EQUIPMENT MAINTENANCE AREAS. ALL NEW PIPING INSTALLATIONS SHALL CONFORM TO REGULATIONS BY THE LOCAL AUTHORITY HAVING JURISDICTION AND THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
- B. INSTALL NEW VENT AND EMERGENCY VENT PIPING TO ROUTE FUMES TO THE OUTDOORS. VENT PIPING SHALL BE INSTALLED TO AVOID BENDS THAT COULD TRAP FUMES. DO NOT INSTALL VALVES IN THE VENT PIPING. ALL NEW VENT PIPING INSTALLATIONS SHALL CONFORM TO REGULATIONS BY THE LOCAL AUTHORITY HAVING JURISDICTION AND THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
- C. RE-INSTALL FUEL GAUGE AT THE NEW LOCATION. TEST AND REPAIR THE GAUGE AS REQUIRED TO RESTORE ITS OPERATION. THE CURRENT GAUGE IS SIMILAR TO MODEL P-14 (HAND PUMP TYPE) BY PNEUMATORIC LIQUID LEVEL CONTROL SYSTEMS. COORDINATE IN FIELD WITH THE SITE MANAGER PRIOR TO START OF WORK.
- D. PRIME NEW FUEL LINES PRIOR TO EQUIPMENT TESTING.
- E. ADD/ALTERNATE: FURNISH AND INSTALL A FUEL TANK GAUGE MONITORING SYSTEM (SIMILAR TO MODEL TG-BL-D48 BY PREFERRED UTILITIES MFG CORP.) W/ ASSOCIATED FUEL LEVEL SENSOR (SIMILAR TO MODEL TG-EL-WF-C BY PREFERRED UTILITIES MFG CORP.) POWER SUPPLY TO THE NEW SYSTEM SHALL BE PROVIDED BY ELECTRICAL TRADE. COMMUNICATIONS WIRING AND PROGRAMMING SHALL BE BY SITE CONTROLS VENDOR COORDINATE WORK WITH ELECTRICAL CONTRACTOR, COMMUNICATIONS VENDOR AND SITE OWNER PRIOR TO NEW EQUIPMENT PURCHASE.
- F. ADD/ALTERNATE: TEST REMAINING FUEL CONDITION IN THE STORAGE TANK. PROVIDE NECESSARY FUEL TREATMENT AND FILTERING OR REPLACE FUEL WITH NEW, BASED ON THEE FUEL TEST RESULTS. COORDINATE WORK WITH PROJECT MANAGER AND THE OWNER AS REQUIRED.

MECHANICAL FUEL PIPING DEMOLITION PART PLAN
SCALE: 1/4"=1'-0"



GRAPHIC SCALE



MECHANICAL FUEL PIPING NEW WORK PART PLAN
SCALE: 1/4"=1'-0"

**NJ SPORTS & EXPOSITION
AUTHORITY
PUMP STATION GENERATOR
INSTALLATION**

50 STATE ROUTE 120
EAST RUTHERFORD, NEW JERSEY
07073

Digitally signed by
PHILIP M GRENCI
Date: 2022.06.24
12:33:01 -04'00'

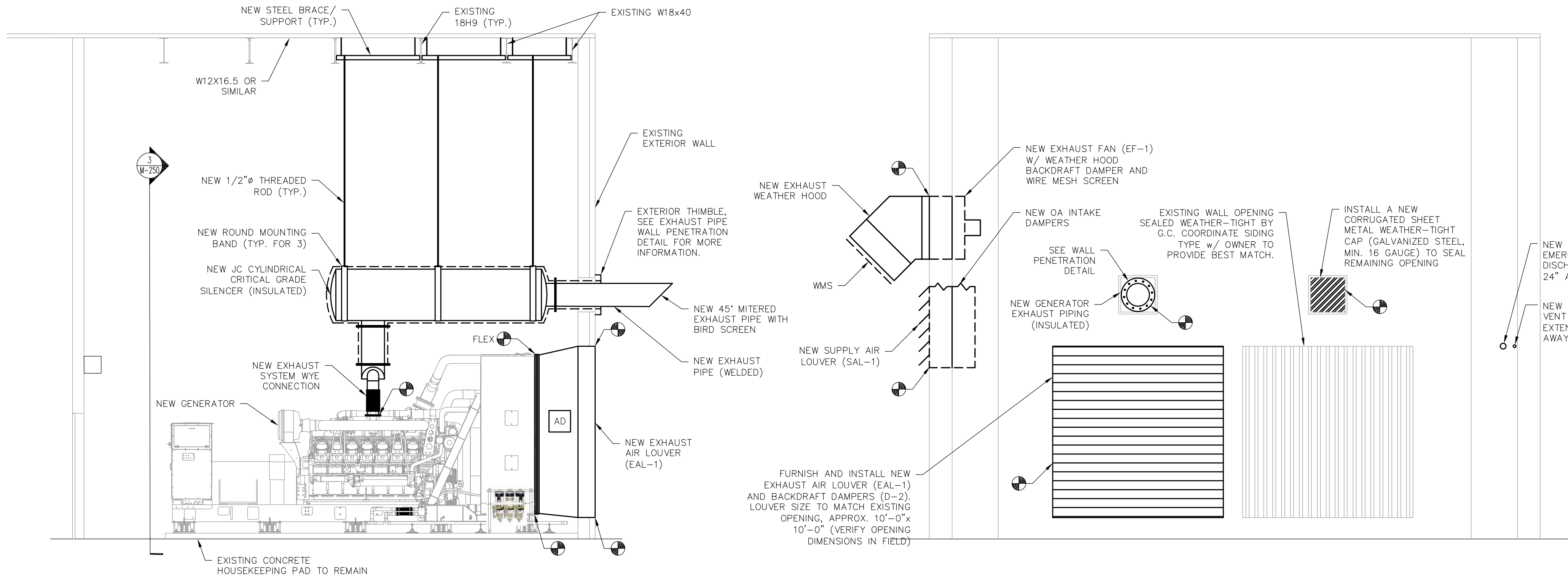
6-2-22 ISSUED FOR REVIEW
6-15-22 ISSUED FOR DCA APPROVAL

Date Issued Revision No.

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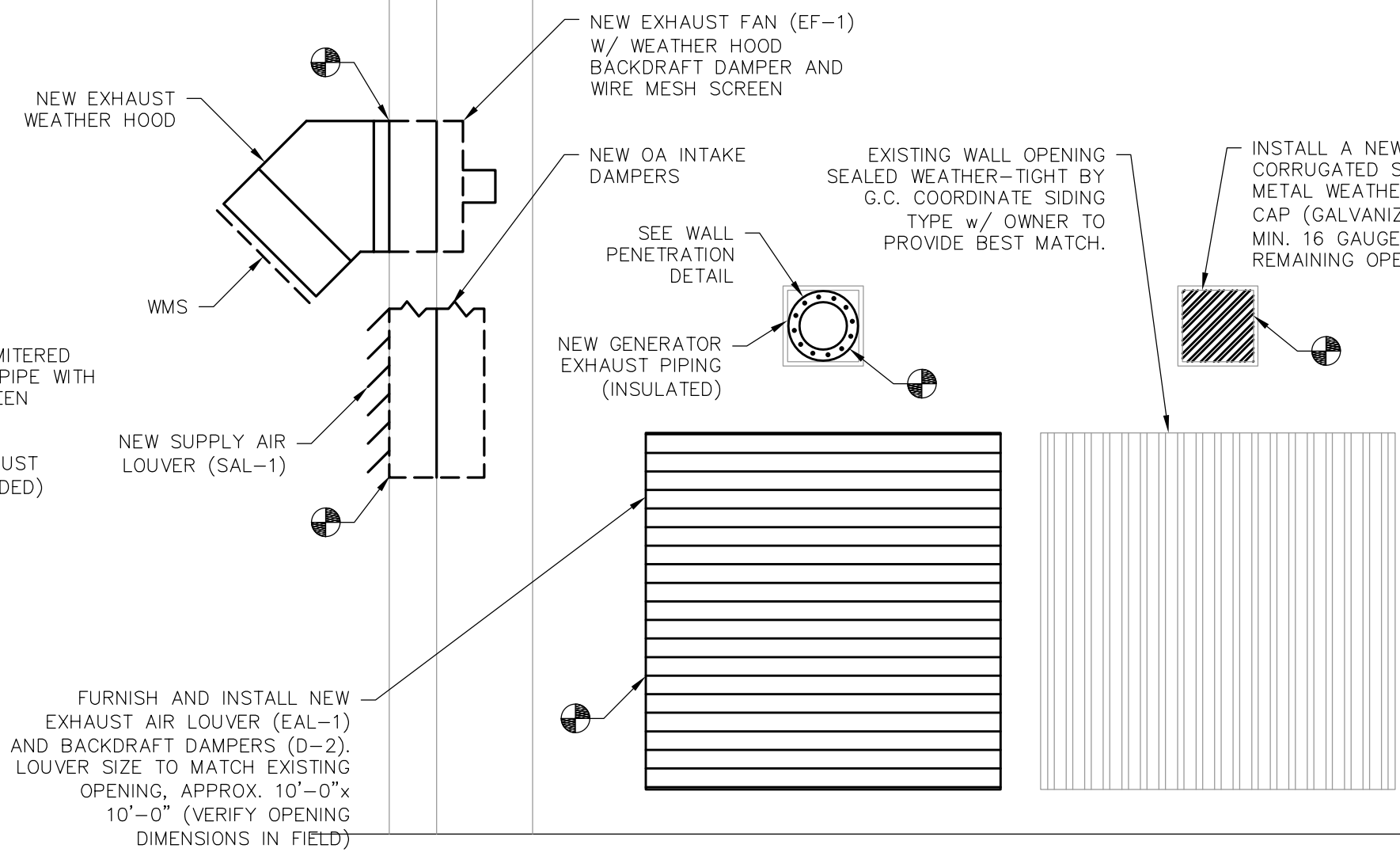
Drawing Title:
**MECHANICAL
FUEL PIPING DEMOLITION AND
NEW WORK PART PLANS**
Scale: AS NOTED Issue Date: 4/15/22
Proj. Manager: ANC Proj. Engineer: PMG
AMA Project No.: CEI215080

M-210



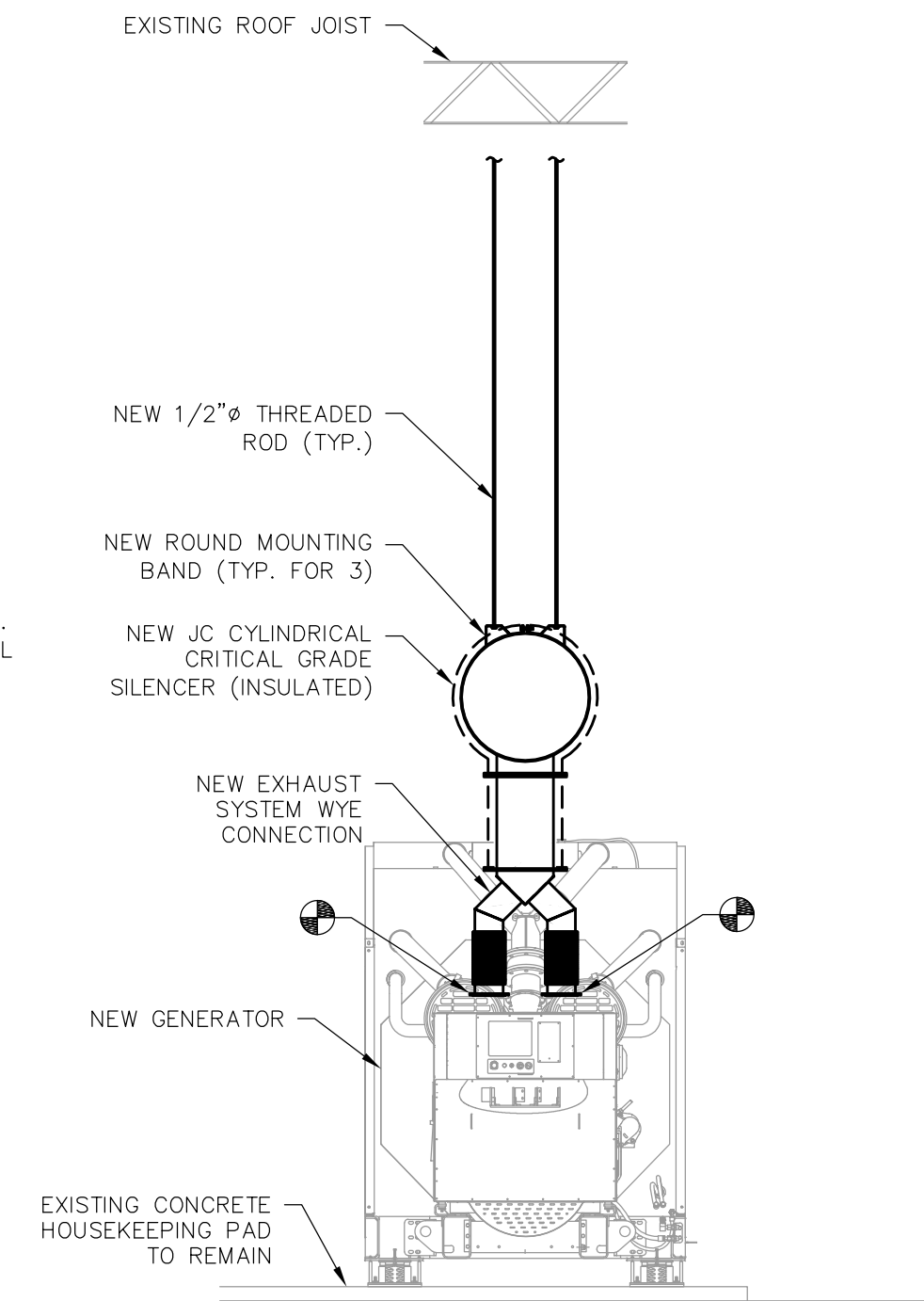
**MECHANICAL EXHAUST AND DISCHARGE AIR
PLENUM CONNECTION NEW WORK ELEVATION**

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



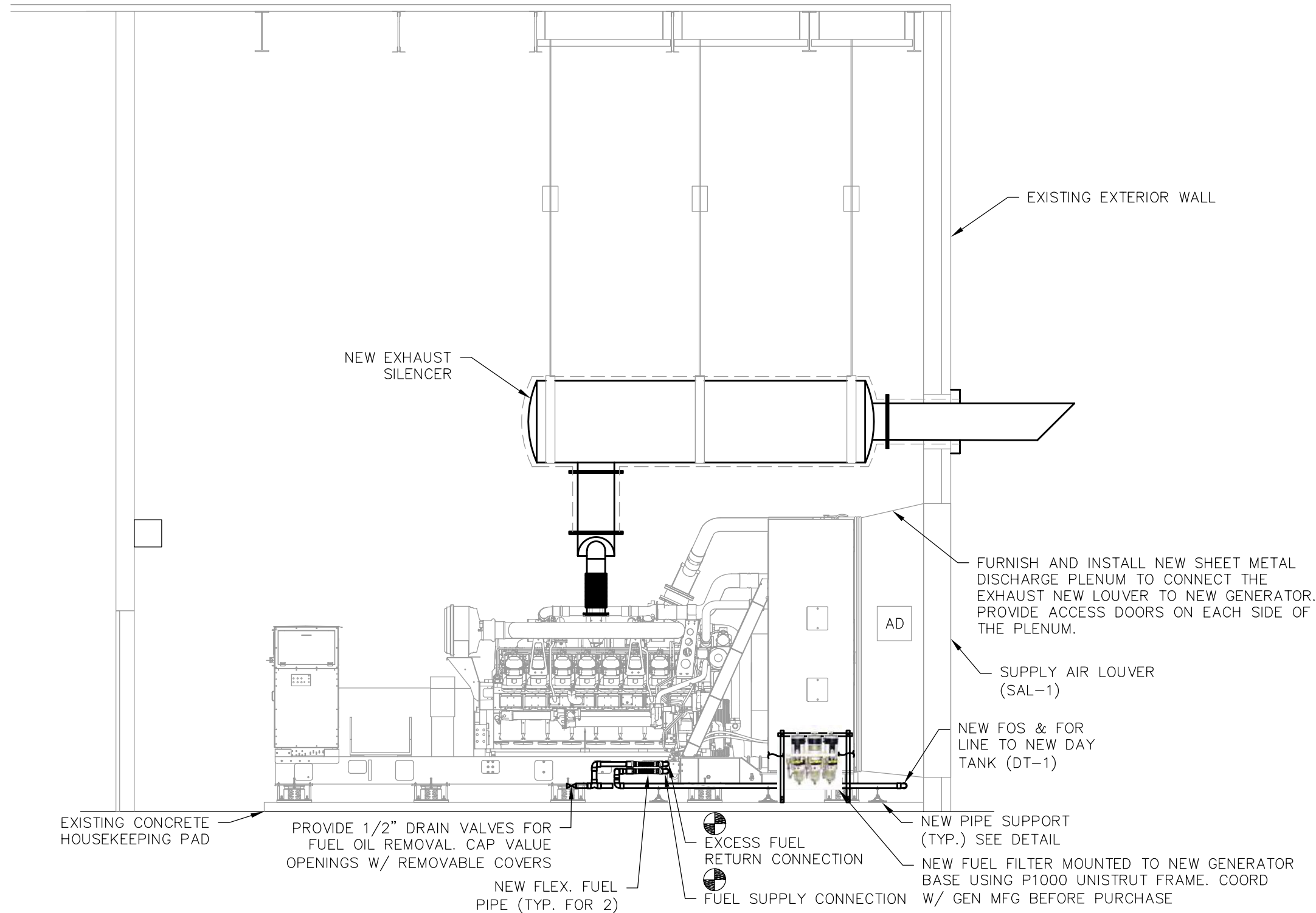
MECHANICAL EQUIPMENT EXTERIOR NEW WORK ELEVATION

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



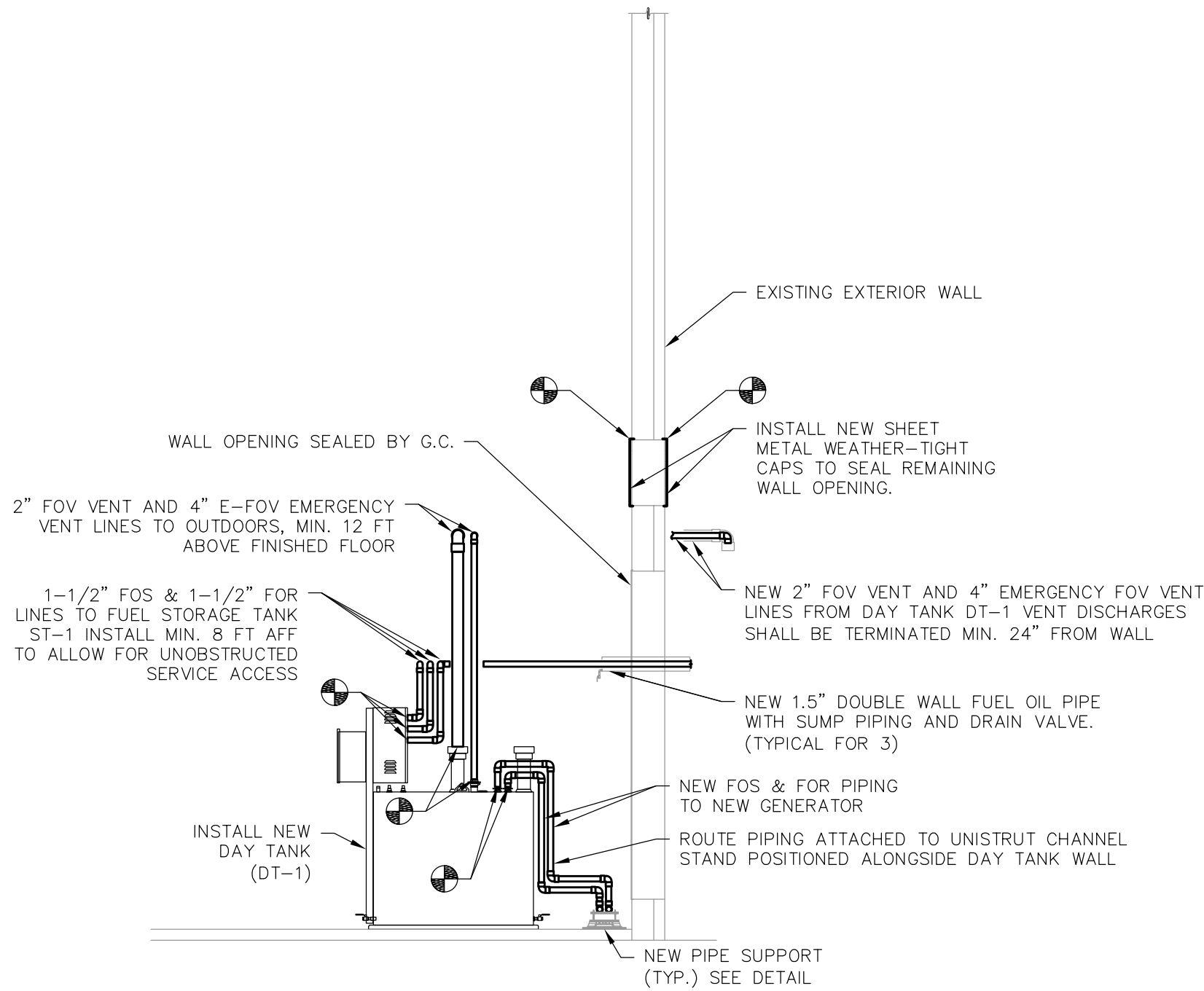
**MECHANICAL EXHAUST SYSTEM
NEW WORK SECTION**

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



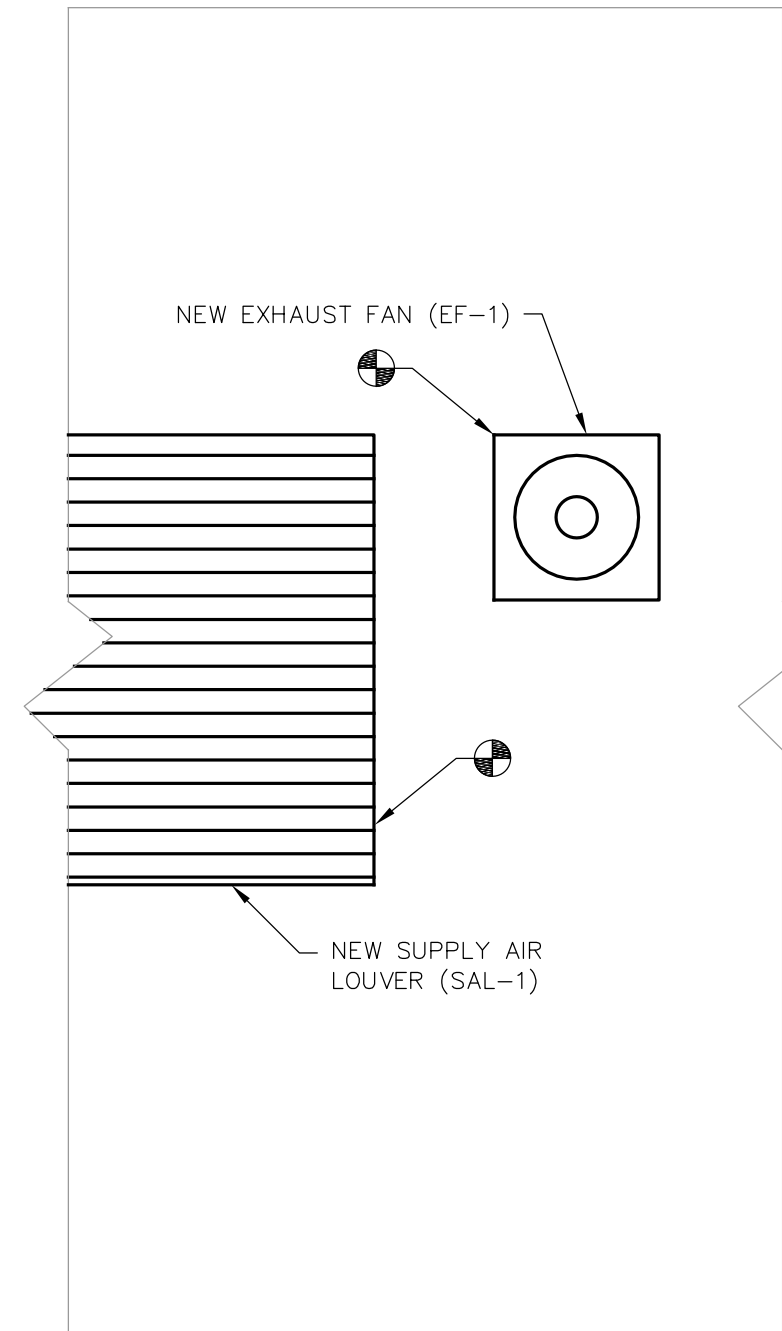
MECHANICAL FUEL PIPING CONNECTION NEW WORK SECTION

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



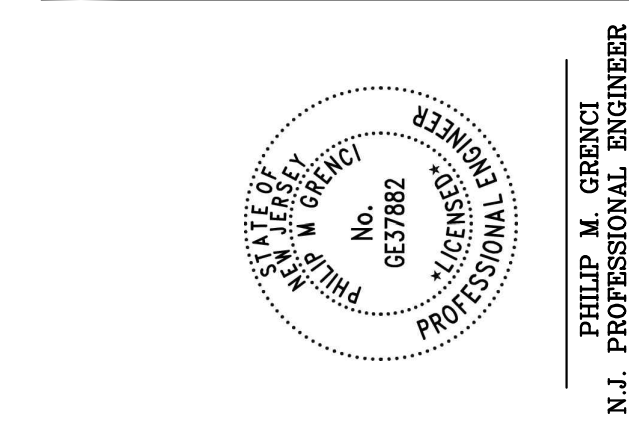
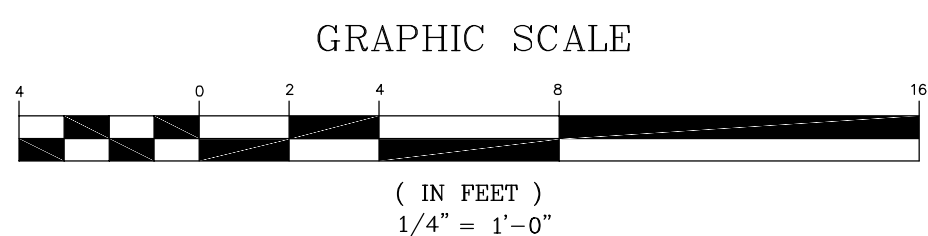
**MECHANICAL DAY TANK PIPING
NEW WORK ELEVATION**

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



MECHANICAL NEW EF-1 DETAIL

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



**NJ SPORTS & EXPOSITION
AUTHORITY
PUMP STATION GENERATOR
INSTALLATION**

50 STATE ROUTE 120
EAST RUTHERFORD, NEW JERSEY
07073

Digitally signed
by PHILIP M
GRENCI
Date: 2022.06.24
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6-2-22 ISSUED FOR REVIEW
6-15-22 ISSUED FOR DCA APPROVAL

Date Issued Revision No.

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Drawing Title:
**MECHANICAL
EQUIPMENT NEW WORK
ELEVATIONS AND SECTIONS**

Scale: AS NOTED	Issue Date: 4/15/22
Proj. Manager: ANC	Proj. Engineer: PMG

AMA Project No.:
CEI215080

M-250

NJ SPORTS & EXPOSITION
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INSTALLATION

50 STATE ROUTE 120
EAST RUTHERFORD, NEW JERSEY
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Date: 2022.06.24
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6-15-22 ISSUED FOR DCA APPROVAL

Date Issued Revision No.

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Drawing Title:
MECHANICAL
SCHEDULES AND DETAILS

Scale:
AS NOTED

Issue Date:
4/15/22

Proj. Manager:

ANC

Proj. Engineer:

PMG

AMA Project No.:

CEI215080

M-300

EXISTING ABOVE-GROUND FUEL OIL STORAGE TANK SCHEDULE (FOR RECORD ONLY)

UNIT NO.	CAPACITY (GAL)	LOCATION	SERVICE	CONSTRUCTION & MATERIALS	TANK SIZE		WEIGHT (LBS)	MANUFACTURER	REMARKS
					INNER LxWxH (IN.xIN.xIN.)	OUTER LxWxH (IN.xIN.xIN.)			
STK-1	4,000	ABOVE GROUND	LONG TERM FUEL STORAGE	DOUBLE WALL CONSTRUCTION, TANKS: MILD CARBON STEEL SHELL: BALLISTIC CONCRETE	136 x 82 x 86	211 x 96 x 84	45,000	CONVAULT INC.	EXISTING, TO BE REUSED

DAMPER SCHEDULE

UNIT NO.	QTY.	SERVICE	AIRFLOW (CFM)	MIN. FREE AREA (SQ. FT.)	SECTION QTY.	SECTION FRAME WIDTH (IN)	SECTION FRAME HEIGHT (IN)	TYPE	SP (IN WG)	MANUFACTURER & MODEL NO. (OR APPROVED EQUAL)	REMARKS
D-1	1	SA LOUVER	99,000	121.0	10	42	60	CONTROL DAMPER	0.05	DOWCO/SAFE-AIR MODEL 604	W/ MECHANICAL LINKAGE, FLANGE CONNECTIONS, FINISH: ANODIZED
D-2	1	EA LOUVER	82,500	78.0	6	40	60	CONTROL DAMPER	0.05	DOWCO/SAFE-AIR MODEL BRL	W/ COUNTERBALANCE WEIGHTS (ASSIST) FLANGE CONNECTIONS, FINISH: ANODIZED

NOTES:

1. PROVIDE SA DAMPERS (D-1) WITH MECHANICAL LINKAGE TO BE CONNECTED TO EXISTING ELECTRICAL ACTUATORS IN FIELD.
2. PROVIDE EA DAMPERS (D-2) WITH COUNTERBALANCE WEIGHT, ADJUSTED TO ASSIST DAMPER OPENING.

SUPPLY AIR LOUVER SCHEDULE

SUPPLY AIR LOUVER SCHEDULE										
UNIT NO.	AIRFLOW (CFM)	MINIMUM OPENING FREE AREA (SQ. FT.)	MIN. WALL OPENING W x H (IN X IN)	SECTIONS		TYPE	SP (IN WG)	MANUFACTURER & MODEL NO. (OR APPROVED EQUAL)	REMARKS	
				QTY.	WIDTH (IN)					HEIGHT (IN)
SAL-1	99,000	106.32	210 x 120	2	72	120	DRAINABLE	0.12	DOWCO/SAFE-AIR MODEL EA 403	w/ WIRE MESH SCREEN, DAMPER SECTION(S) (D-1) TO COVER LOUVER FACE FINISH: BAKED ENAMEL. RATED FOR MARINE DUTY
				1	66	120				

NOTE: VERIFY EXISTING WALL OPENING SIZE IN FIELD PRIOR TO EQUIPMENT PURCHASE

EXHAUST AIR LOUVER SCHEDULE

EXHAUST AIR LOUVER SCHEDULE										
UNIT NO.	AIRFLOW (CFM)	MINIMUM OPENING FREE AREA (SQ. FT.)	MIN. WALL OPENING W x H (IN X IN)	SECTIONS			TYPE	SP (IN WG)	MANUFACTURER & MODEL NO. (OR APPROVED EQUAL)	REMARKS
				QTY.	WIDTH (IN)	HEIGHT (IN)				
EAL-1	82,500	51.20	120 x 120	2	120	60	DRAINABLE	0.25	DOWCO/SAFE-AIR LEC-04	W/ WIRE MESH SCREEN, DUCT SLEEVE, INTEGRAL SHUTTER SECTION(S) TO COVER LOUVER FACE FINISH: BAKED ENAMEL

NOTE: VERIFY EXISTING WALL OPENING SIZE IN FIELD PRIOR TO EQUIPMENT PURCHASE.

EXHAUST FAN SCHEDULE

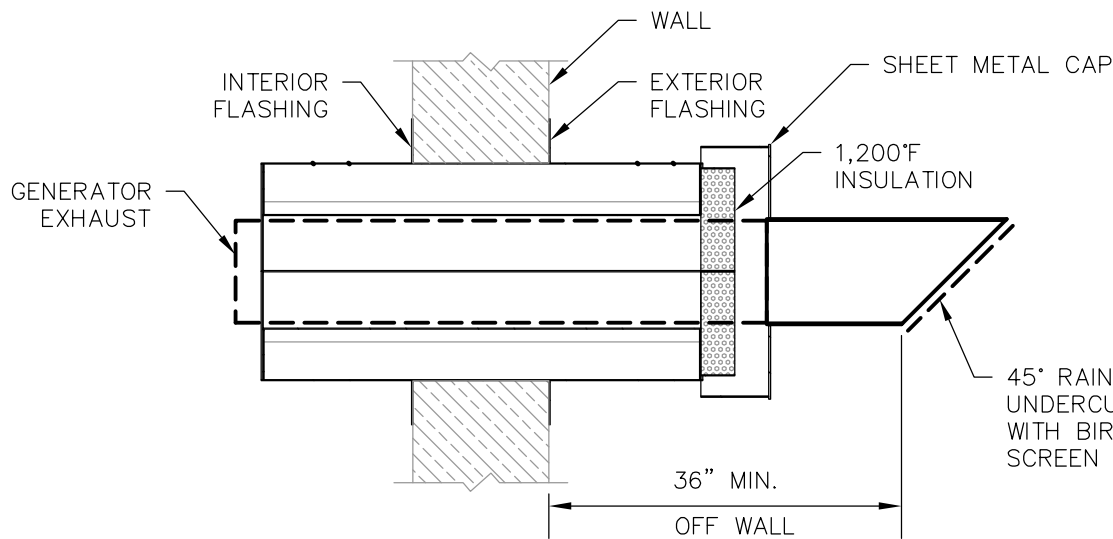
EXHAUST FAN SCHEDULE													
UNIT NO.	LOCATION	CFM	SP (IN WG)	RPM	BHP	DRIVE	MOTOR DATA			WEIGHT (LBS)	BASIS OF SELECTION (OR APPROVED EQUAL)		REMARKS
							HP	V/PH/Hz	AMPS		MANUFACTURER	MODEL	
EF-1	WALL	10,449	0.25	860	1.11	DIRECT	1.0 VG	115/1/60	12.6	130	GREENHECK	SE2-36-611-C10	W/ BACKDRAFT DAMPER, 45" WEATHER HOOD, OSHA FAN GUARD, PREWIRED DISCONNECT SWITCH, VARI-GREEN MOTOR

DAY TANK FUEL STORAGE SCHEDULE (SUPPLIED BY GENERATOR VENDOR)

DAY TANK FUEL STORAGE SCHEDULE (SUPPLIED BY GENERATOR VENDOR)																				
UNIT NO.	SERVICE	LOCATION	CAPACITY (GAL.)	FUEL SUPPLY PUMP							FUEL RETURN PUMP							DRY WEIGHT (LBS)	BASIS OF SELECTION (OR APPROVED EQUAL)	NOTES
				CONFIG.	FLOW (GPM)	MOTOR DATA			INLET (IN)	OUTLET (IN)	CONFIG.	FLOW (GPM)	MOTOR DATA			INLET (IN)	OUTLET (IN)			
						HP	V/PH/HZ	RPM					HP	V/PH/HZ	RPM					
DT-1	DAY TANK	GENERATOR ROOM	300	DUPLEX	7.5	1/3	115/1/60	1,750	0.75	0.75	SIMPLEX	7.5	1/3	115/1/60	1,750	0.75	0.75	890	SIMPLEX TECHNOLOGY SERIES STS-300	SEE NOTES BELOW

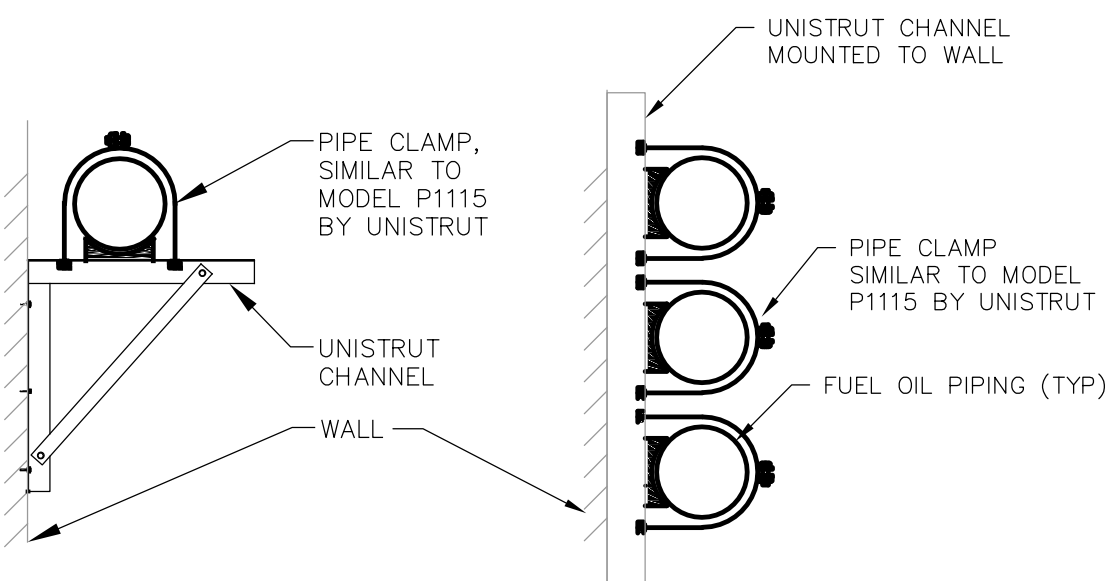
NOTES:

1. PROVIDE DAY TANK SET w/ FOLLOWING FEATURES:
 - (1x) AUXILIARY HAND PUMP
 - (1x) DUPLEX FUEL STRAINER
 - (1x) VENT CAP
 - (1x) EMERGENCY VENT w/ FLANGE + VENT CAP
 - (1x) DRAIN HAND VALVE
 - (3x) CHECK VALVE
 - (2x) SOLENOID VALVE
 - (1x) CONTAINMENT DRAIN HAND VALVE
2. PROVIDE DAY TANK w/ FOLLOWING CONTROL OPTIONS:
 - FLOAT SWITCH IN RUPTURE BASIN w/ ALARM
 - DIGITAL CONTROLLER
 - MECHANICAL DIAL LEVEL GAUGE
 - DISCONNECT SWITCH
 - CONTROLS POWER TRANSFORMER
 - "POWER AVAILABLE" GREEN LIGHT
 - OPERATION MODE SELECTOR
 - LOSS OF FLOW ALARM
 - AUXILIARY RELAY
 - CRITICAL HIGH LEVEL CUT-OUT
3. "LOW FUEL LEVEL" RED LIGHT
- "CRITICAL LOW FUEL" ALARM
- ALARM HORN
- "RUNNING PUMP" AMBER LIGHT
- MANUAL RESET NORMALLY OPEN SOLENOID VALVE
- ANTI-SIPHON VALVE
- FUEL OIL COOLER CONTROLS
- AUTOMATIC DUPLEX PUMP CONTROLLER (OPTION 345)
- AUTOMATIC PUMP-OUT CONVERSION
- FUEL RISE PUMP-OUT CONTROLS (OPTION 390)

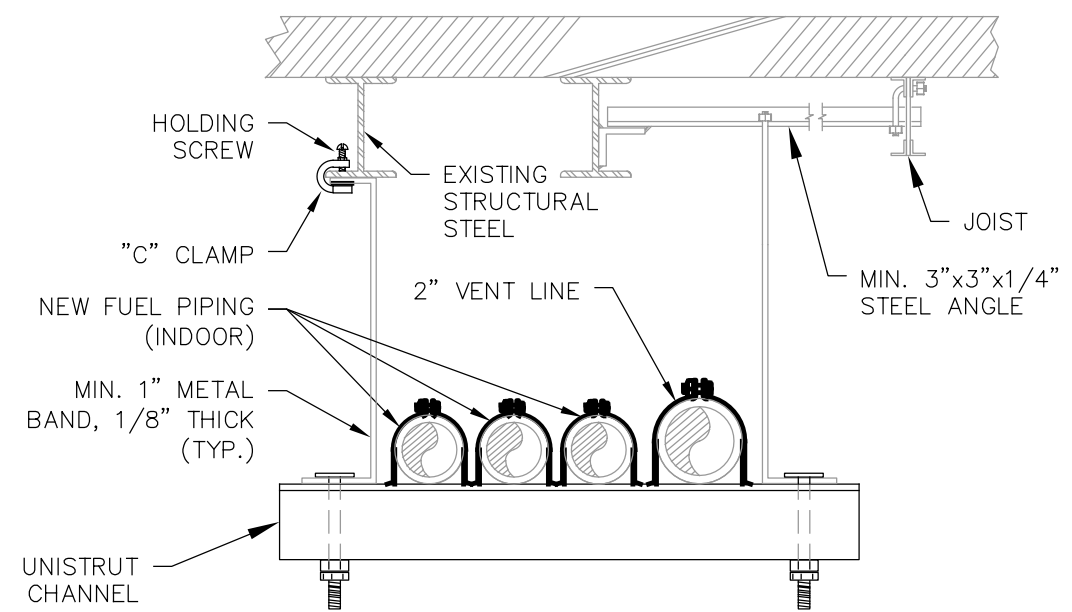


NOTE: REFER TO SPECIFICATIONS DRAWING M-575, SECTION " DIESEL ENGINE BREECHING AND STACK" FOR MORE INFORMATION

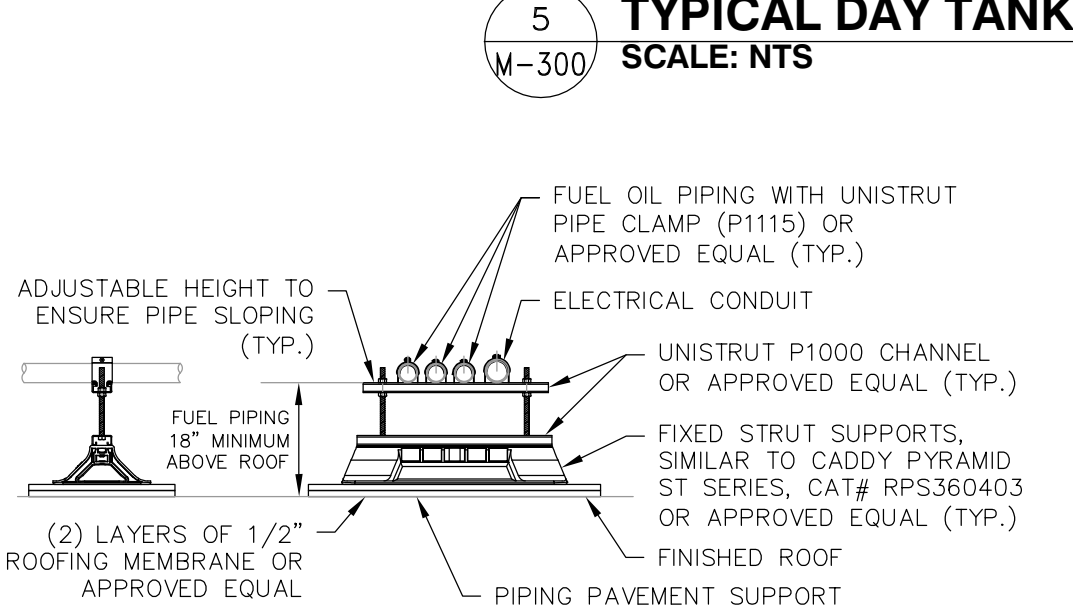
6 GENERATOR EXHAUST DETAIL
SCALE: N.T.S.



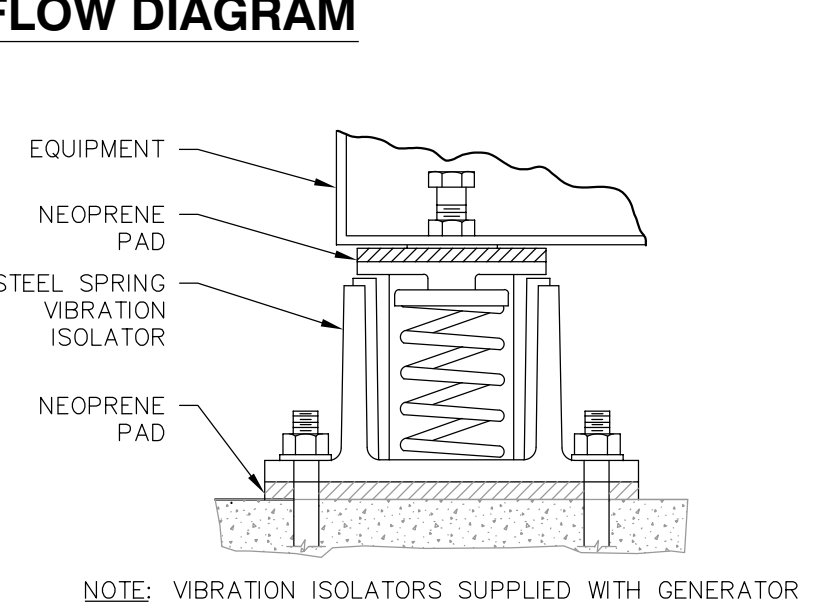
7 TYPICAL WALL PIPING SUPPORT
SCALE: NTS



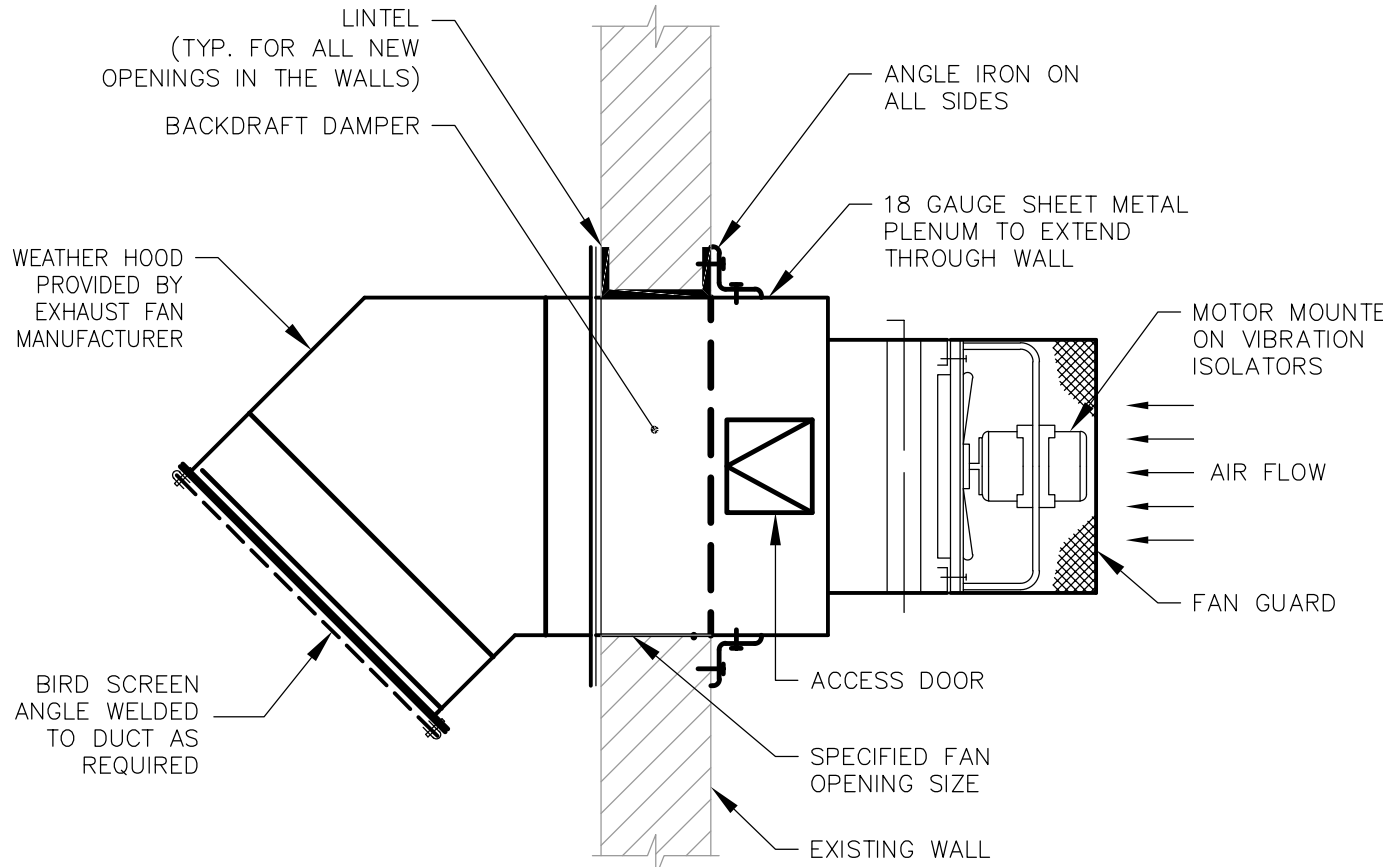
8 FUEL PIPING HANGING SUPPORT DETAIL
SCALE: NTS



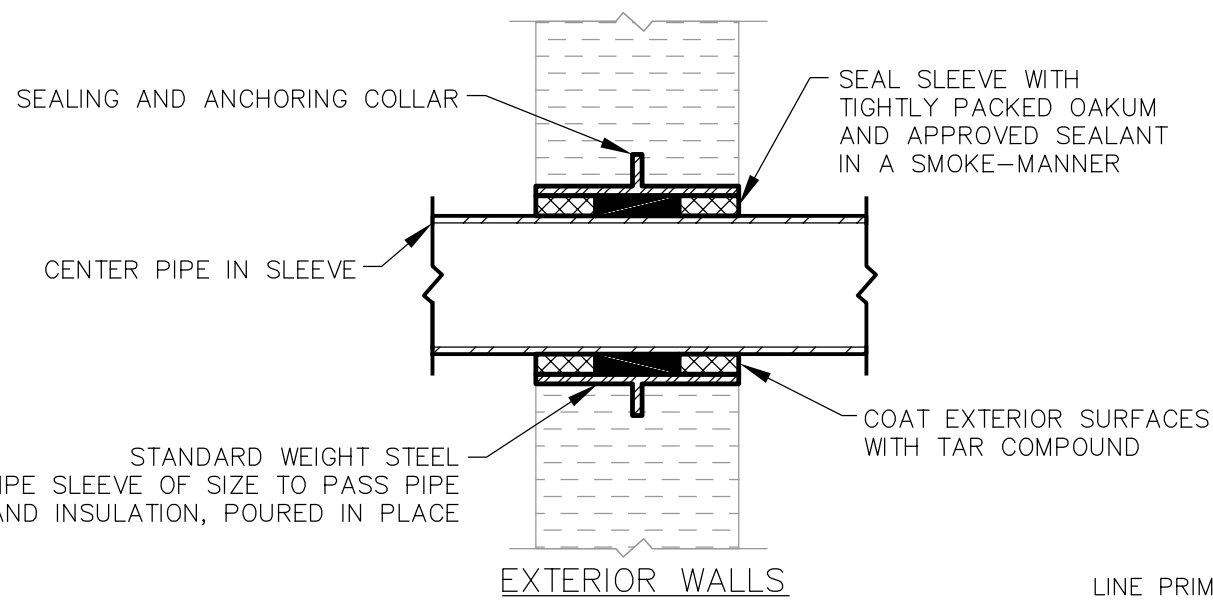
9 FUEL PIPING FLOOR PAVEMENT SUPPORT DETAIL
SCALE: NTS



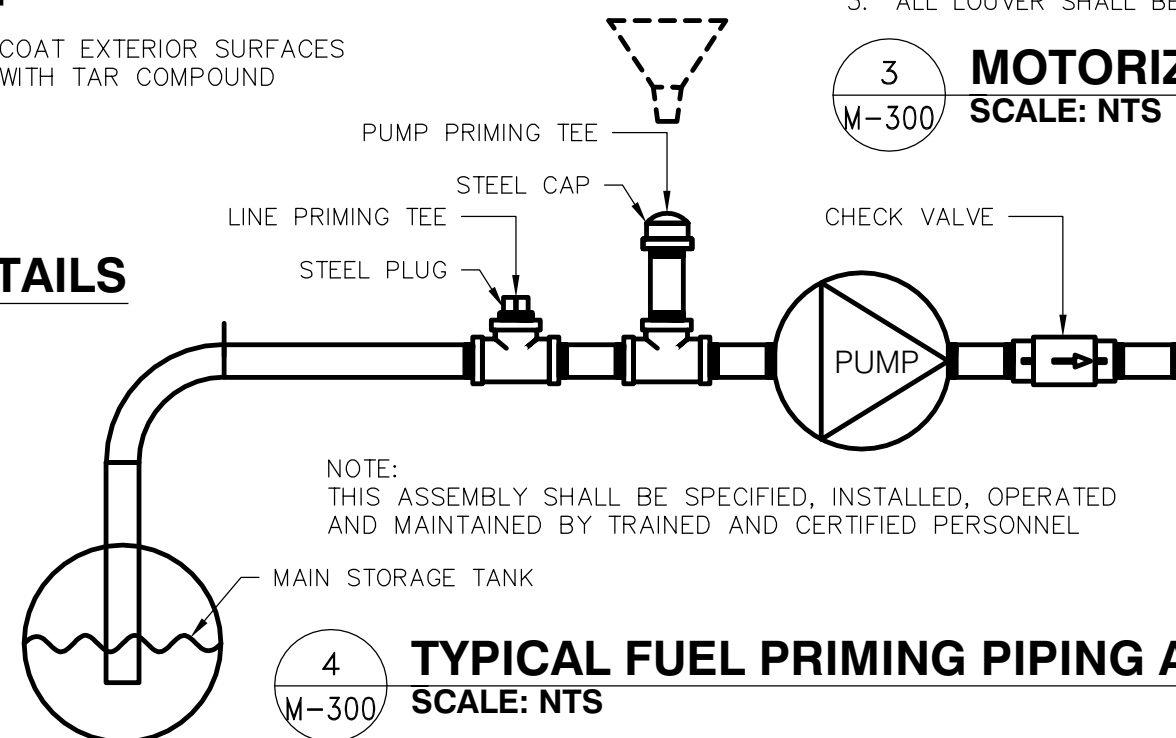
10 VIBRATION ISOLATOR DETAIL
SCALE: NTS



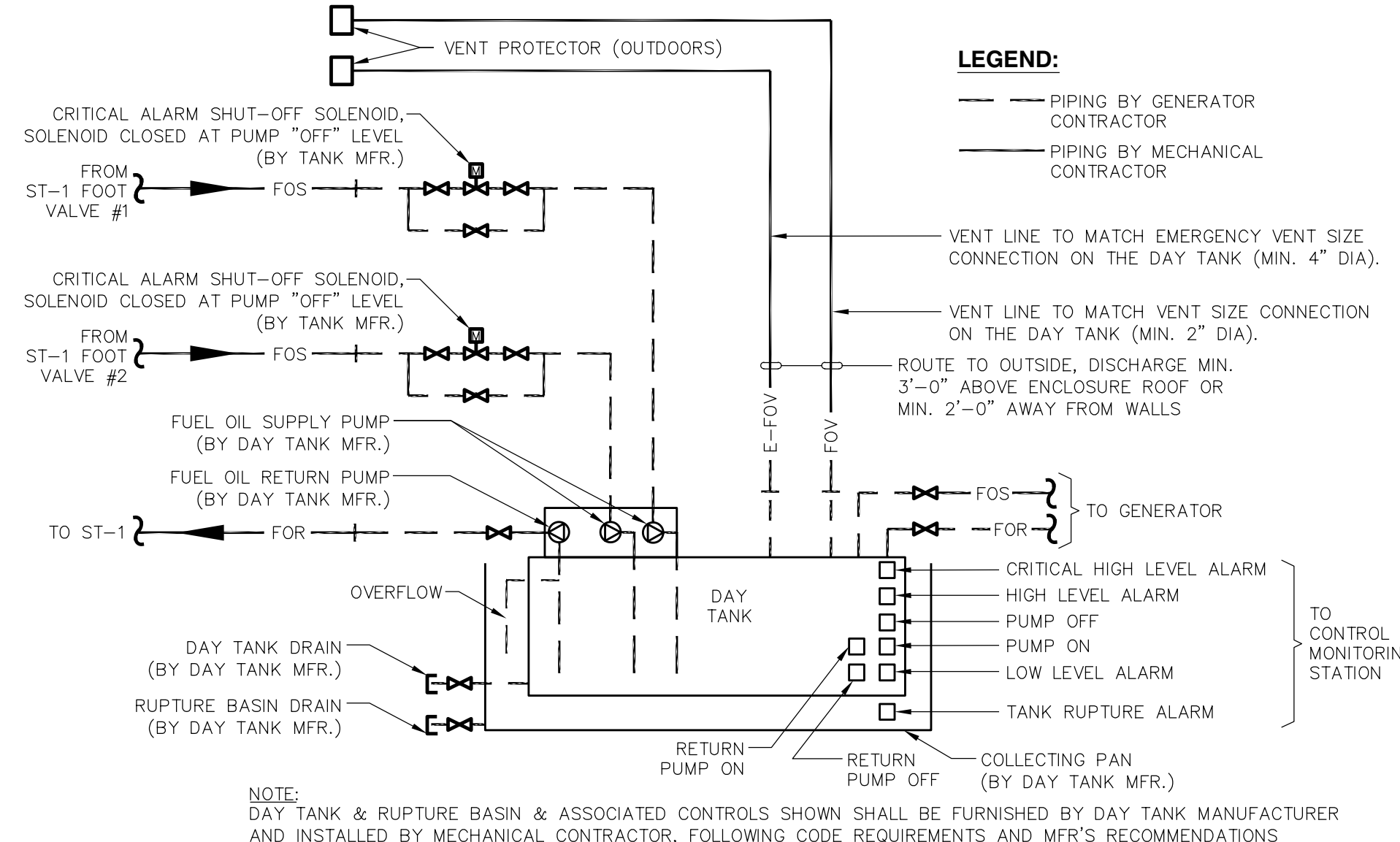
1 EXHAUST FAN w/ WEATHER HOOD DETAIL
SCALE: NTS



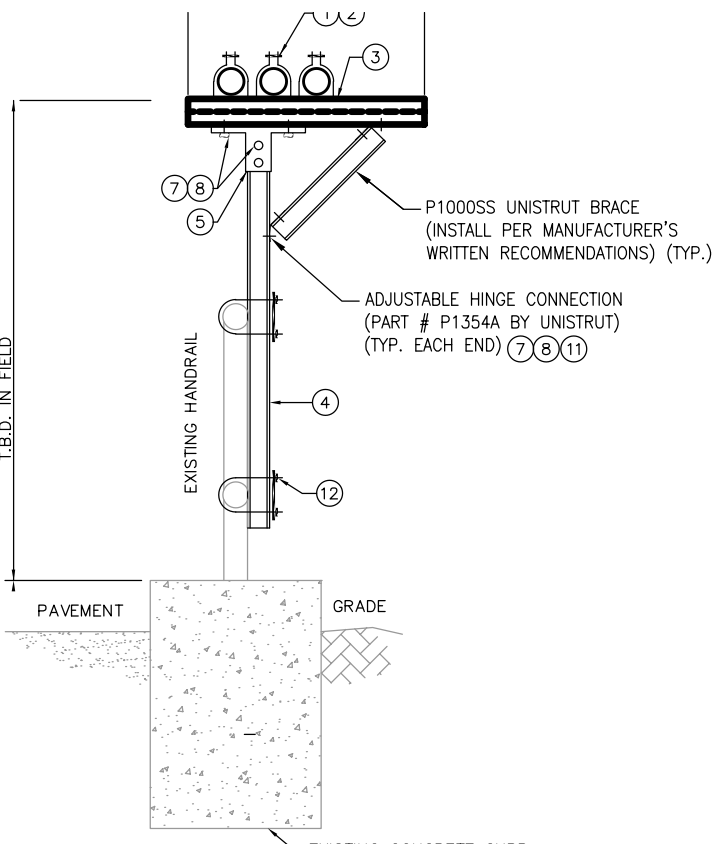
2 WALL SLEEVE DETAILS
SCALE: NTS



4 TYPICAL FUEL PRIMING PIPING ASSEMBLY
SCALE: NTS



5 TYPICAL DAY TANK FLOW DIAGRAM
SCALE: NTS



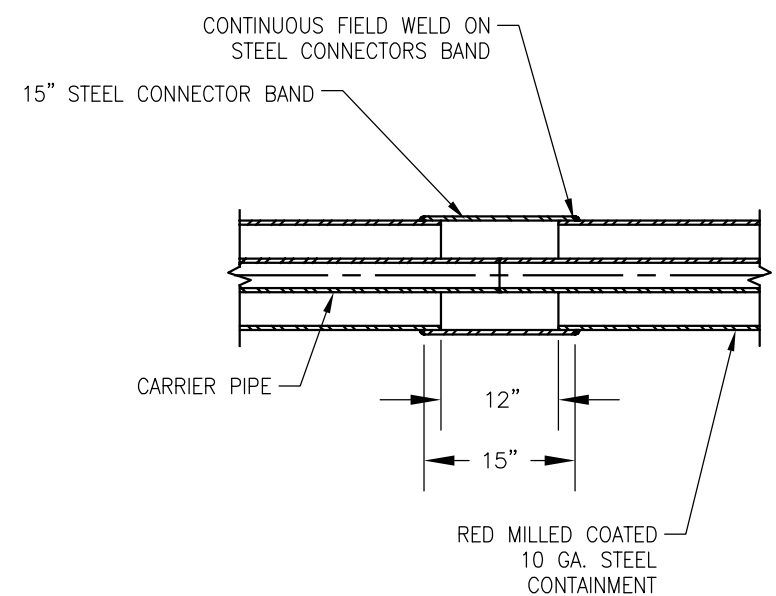
NOTE: AFTER ASSEMBLY, COMPLETE BY INSTALLING STRUT END CAPS CAT.# EC-8155-1 MM (APPLE FASTENERS, INC.)

TYPICAL MATERIAL LIST			
IT	DESCRIPTION	UNISTRUT No.	GLOBE No.
1	CARRIER PIPE		
2	4" PIPE CLAMP ASSEMBLY	P1113SS	G7004SS
3	1 5/8"x 3 1/4" CHANNEL, COMBINATION	P1001SS	G5812A5SS
4	1 5/8" X 1 5/8" CHANNEL	P1000SS	G5812SS
5	5 13/32" x 3 7/8" WING SHAPE FITT.	P2346SS	G3084SS
6	6" Ø POST BASE FITTING	P2072A5SS	G5105SS
7	1 1/2" - 13 X 1 3/16" CAP SCREW	HHCS050119SS	G1815SS
8	1 1/2" - 13 NUT WITH SPRING	P1010SS	G1035SS
9	5/8" RD. FLAT WASHER	HFLW062SS	G1878SS
10	5/8" - 11 HEX NUT	HHYN062SS	G1846SS
11	UNISTRUT ADJUSTABLE HINGE	P1354A	G3204SS
11	NATIONAL HARDWARE U-BOLT w/ PLATE	-	N222-463 2193

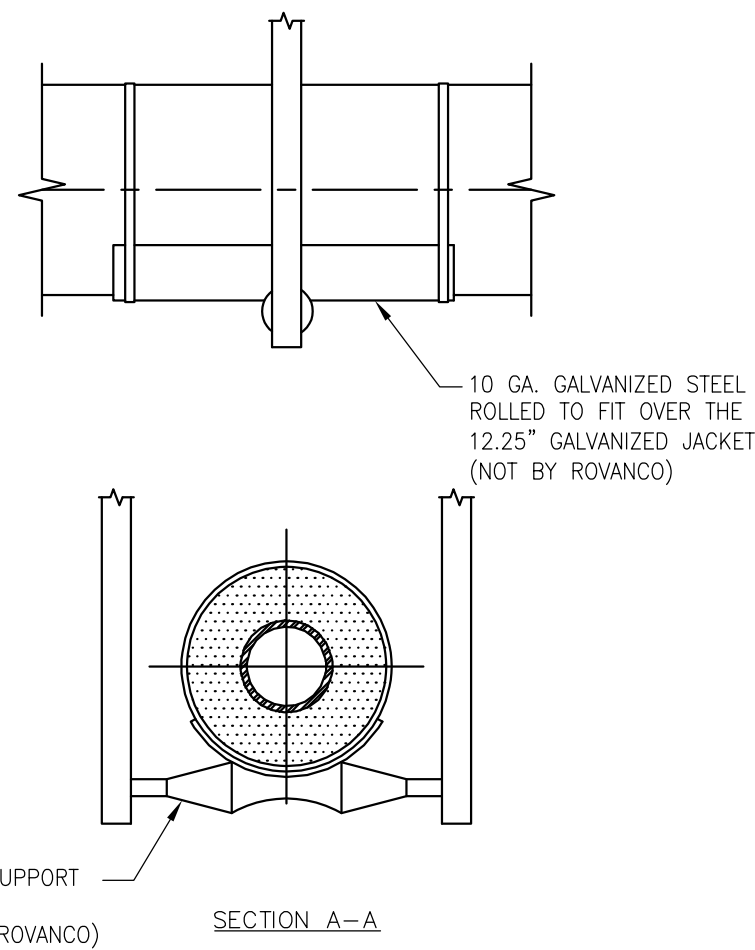
* STAINLESS STEEL

** SIZE TO MATCH EXISTING RAILS. PROVIDE WITH ADEQUATE MOUNTING HARDWARE.

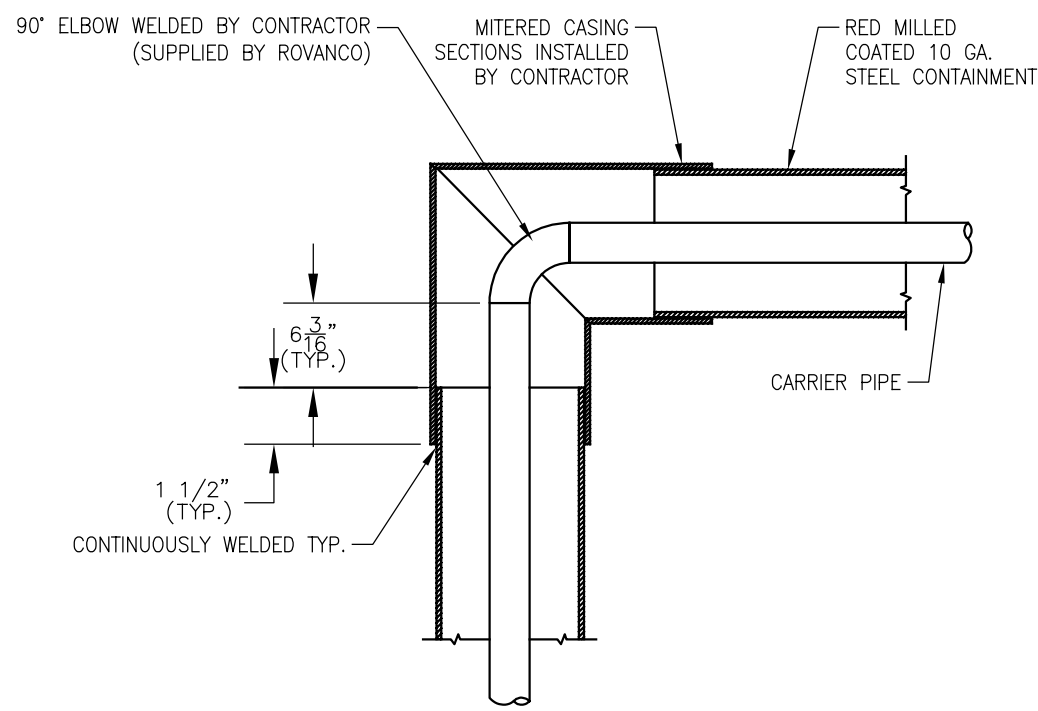
1 SUPPORTING COLUMN DETAIL SCALE: N.T.S.



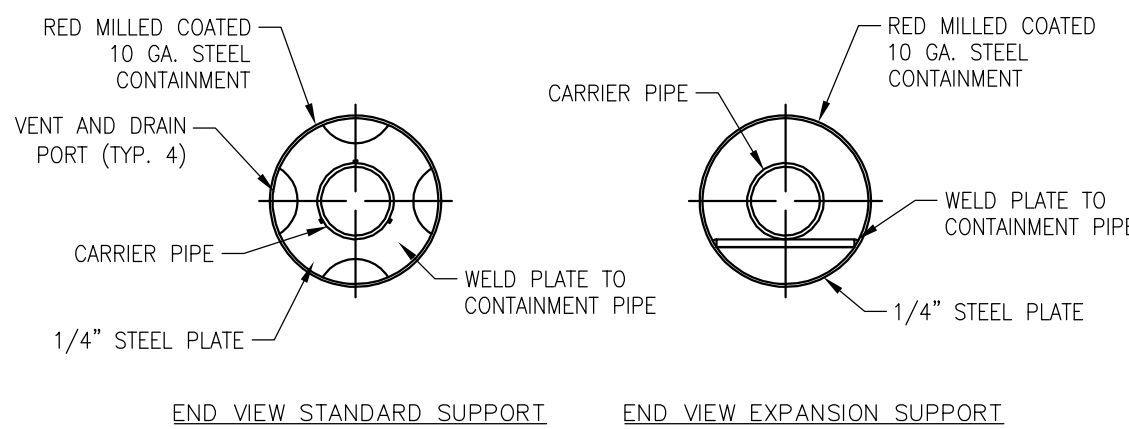
4 STEEL CONTAINMENT FIELD JOINT DETAIL SCALE: N.T.S.



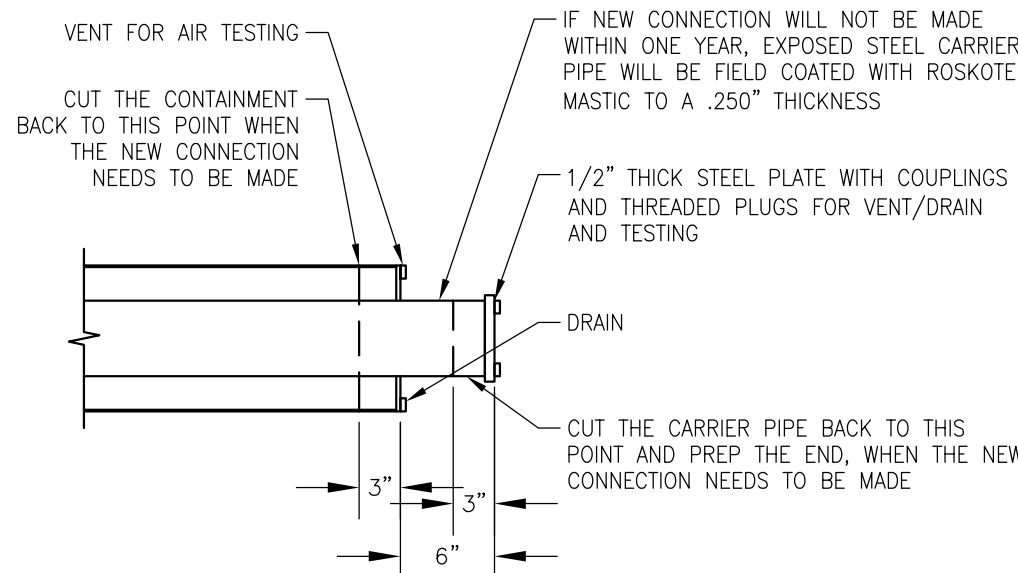
7 TYPICAL ROLLER SUPPORT DETAIL SCALE: N.T.S.



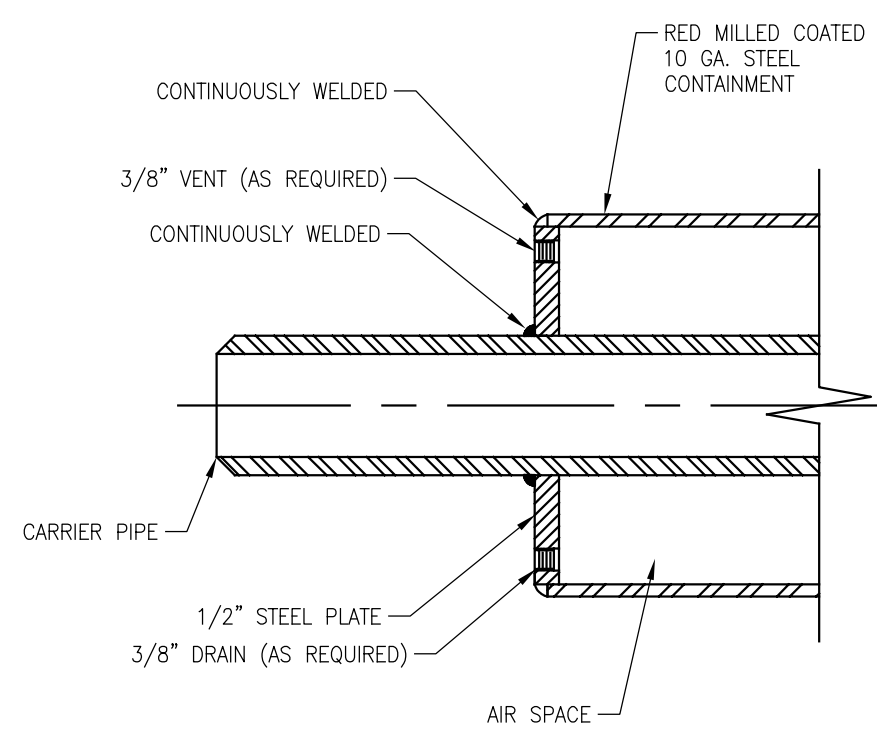
2 QUICK FIT CONTAINMENT ELBOW DETAIL SCALE: N.T.S.



5 20' STRAIGHT LENGTH DETAIL SCALE: N.T.S.

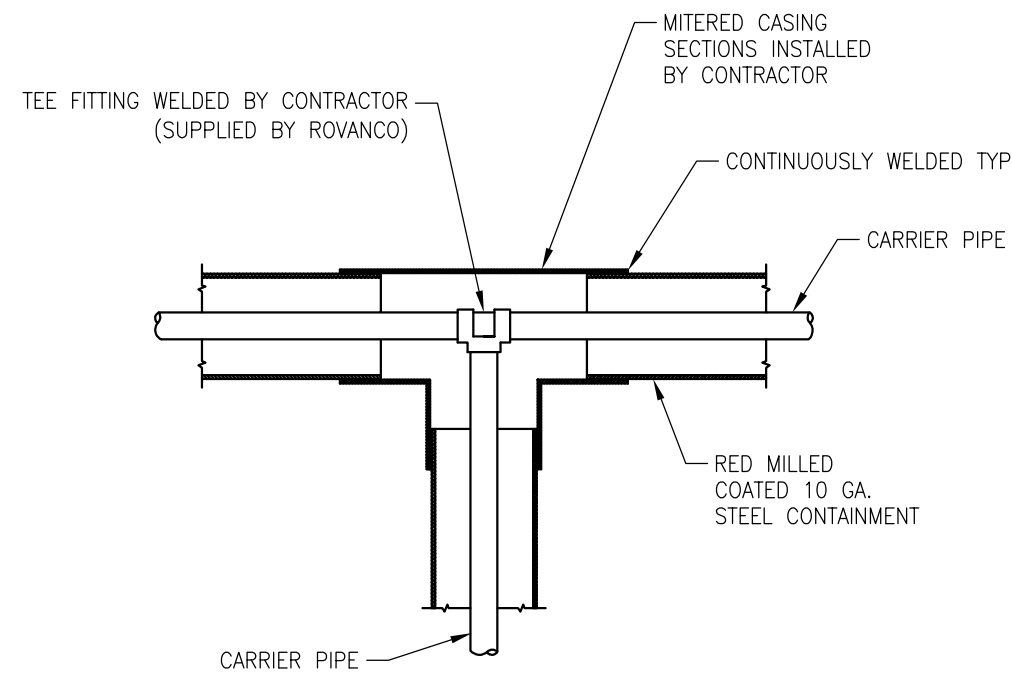


8 CONTAINMENT CAP FOR FUTURE DETAIL SCALE: N.T.S.

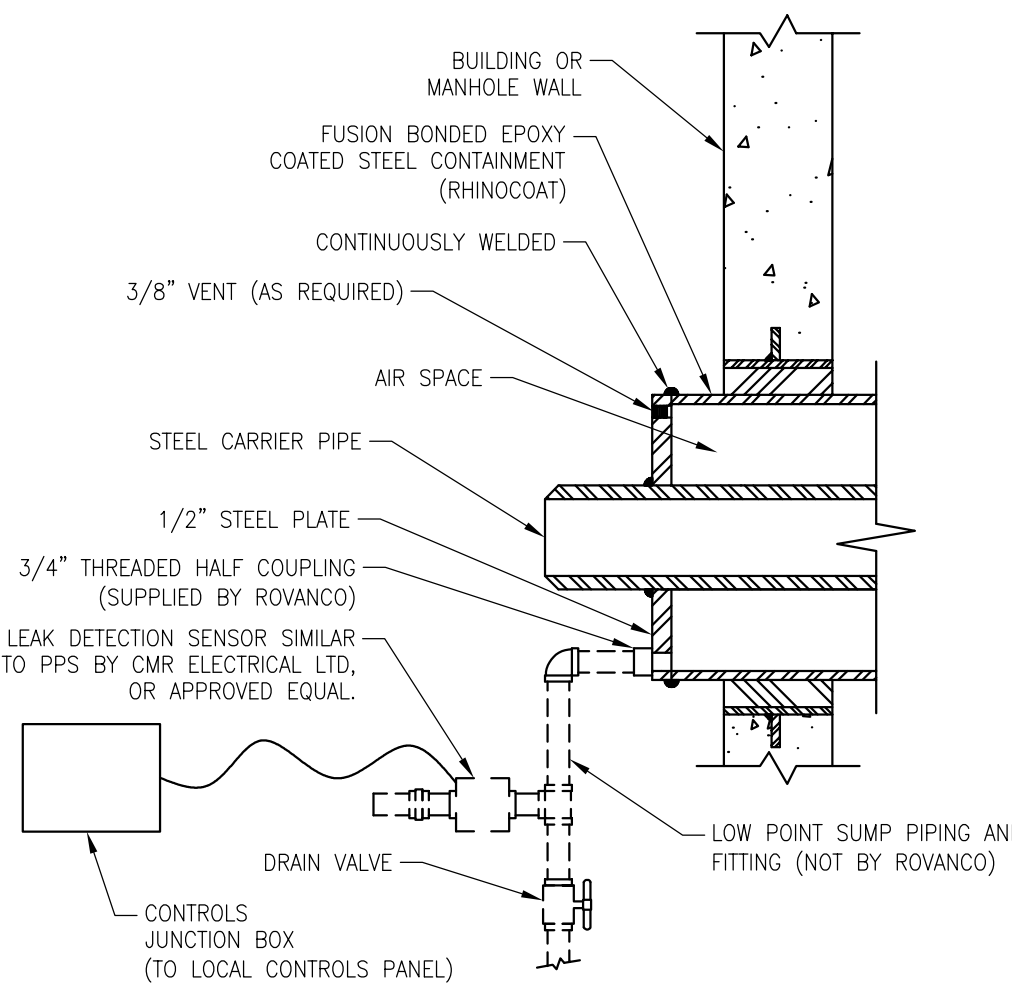


ALL OF OUR DIMENSIONS ARE TAKEN FROM END OF CARRIER PIPE AT WALL PENETRATIONS.

3 STEEL CONTAINMENT END SEAL DETAIL SCALE: N.T.S.



6 QUICK FIT CONTAINMENT TEE DETAIL SCALE: N.T.S.



9 LOW POINT SUMP DETAIL SCALE: N.T.S.

DOUBLE WALL PIPING GENERAL NOTES

CARRIER PIPE:
AS308 BLACK STEEL PIPE, SEAMLESS OR ERW, IN PRE-CUT LENGTHS. PIPE 10-INCH AND SMALLER SHALL BE SCHEDULE 40. PIPE 12-INCH AND LARGER SHALL BE .375 WALL. (SCHEDULE 80) OTHER PIPING MATERIALS AND THICKNESS ALSO AVAILABLE.

INNER PIPE SUPPORTS:
ALL PIPE SHALL BE ALIGNED AND SUPPORTED WITHIN THE CASING WITH CENTERING. SUPPORTS SPACED ON APPROXIMATELY 10'-FT. THE INNER PIPE SHALL BEAR DIRECTLY ON THE SUPPORT. THE SUPPORT SHALL BE DESIGNED AS TO PERMIT DRAINAGE AND FREE AIR PASSAGE. CONCRETE TYPE PIPE SUPPORTS WILL NOT BE ALLOWED.

OUTER CONTAINMENT CASING:
ALL PIPE SHALL BE BLACK STEEL. CASING UP THROUGH 24-INCH SHALL BE 10 GAUGE. THE INTERIOR SURFACE SHALL BE SMOOTH TO PERMIT FREE MOISTURE DRAINAGE AND REMOVABILITY OF THE INNER ASSEMBLY. THE OUTER CASING SHALL BE SIZED TO PROVIDE AN ADEQUATE ANNUAL SPACE BETWEEN THE OUTER SURFACE OF THE PIPE MATERIAL AND THE INTERIOR SURFACE OF THE CASING. THE EXTERIOR SURFACE WILL BE COATED WITH 4-6 MILS OF RED MIL PRIMER. RED MIL PRIMER MUST BE CORROSION RESISTANT AND MEET CLASS A FOR SLP COEFFICIENT. IT MUST ALSO MEET PERFORMANCE COMPARABLE TO PRODUCTS FORMULATED TO FEDERAL SPECIFICATIONS: MIL-P-23377 AND MIL-P-53022. STEEL SURFACE MUST BE CLEAN, DRY PRIMED. NO ASPHALT, COAL TAR COATING, TRP CASING OR ANY OTHER TYPE WILL BE ALLOWED. OUTER CASING CLOSURES SHALL CONSIST OF 10 GAUGE STEEL SUITABLY RUST-PROOFED AND IN CYLINDRICAL FORM WITH A SINGLE HORIZONTAL SPLIT AND SHALL BE FIELD WELDED OVER ADJACENT UNITS. AFTER TESTS ALL EXPOSED CLOSURES SHALL BE PAINTED WITH RED MIL PRIMER. FOR ABOVE GROUND APPLICATIONS, THE STEEL CASING, FITTING COVERS AND CLOSURE JOINTS CAN BE RED MIL PRIMED.

TEST NAME	TEST METHOD	RESULTS
ABRASION RESISTANCE	ASTM D4060, CS17 WHEEL, 1000 CYCLES, 1KG LOAD	200 MG LOSS
ACCELERATED WEATHERING - QUV1	ASTM D4587, QUV-A, 5,000 HRS	PASSES
ADHESION	ASTM D4541	1050 PSI
CORROSION WEATHERING D714	ASTM D5894, 13 CYCLES, 4,368 HOURS	RATING 10 PER ASTM D714
RATING 7		FOR BLISTERING; PER ASTM D610 FOR RUSTING
DIRECT IMPACT RESISTANCE	ASTM D2794	160 IN. LBS
DRY HEAT RESISTANCE	ASTM D2485	250°F (DISCOLORATION)
FLEXIBILITY	ASTM D522, 180° BEND, 1-INCH MANDREL	PASSES
MOISTURE CONDENSATION RESISTANCE	ASTM D4585, 100°F (38°C), 2000 HOURS	PASSES, NO CRACKING OR DELAMINATION
PENCIL HARDNESS	ASTM D3363	3H
SALT FOG RESISTANCE	ASTM B117, 5,600 HOURS	PASSES, NO CRACKING OR DELAMINATION
SLIP COEFFICIENT, RED OXIDE	ASCC SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR ASTM A490 BOLTS	CLASS A, 0.50

WELD FITTINGS:
ALL CHANGES IN DIRECTION SHALL BE MADE WITH BENT OR WELD FITTINGS. WHERE TEE BRANCHES ARE SMALLER THAN THE MAINS THEY JOIN, WELD-O-LETS MAY BE USED. ALL FITTINGS SHALL BE SAME WALL THICKNESS AS ADJACENT PIPING.

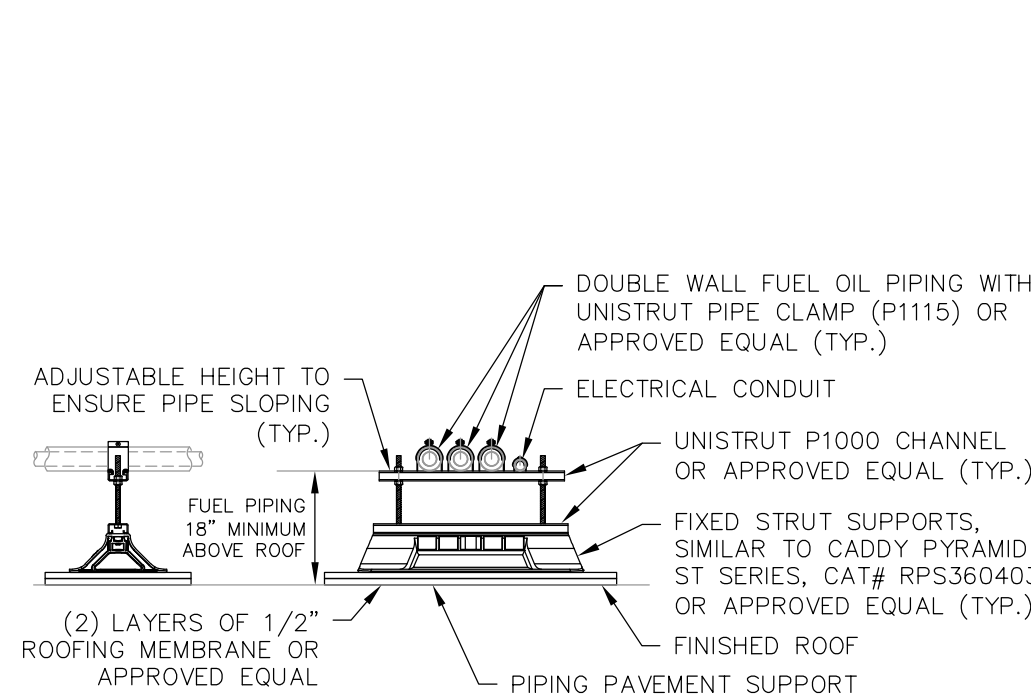
ANCHOR:
ANCHORS SHALL BE PRE-FABRICATED ONTO THE PIPING UNITS AND SHALL BE EQUIPPED WITH DRAINAGE AND VENT OPENINGS AT THE TOP AND BOTTOM OF THE ANCHOR PLATE. ANCHOR PLATES SHALL BE MADE OF 0.5-INCH STEEL PLATE. ANCHOR SHALL BE RED MIL PRIMED.

END SEAL:
TERMINAL ENDS INSIDE MANHOLES, PITS, OR BUILDING WALLS SHALL BE EQUIPPED WITH END SEALS CONSISTING OF A STEEL BULKHEAD PLATE WELDED TO THE PIPE CONDUIT. END SEALS SHALL BE MADE OF A 0.5-INCH STEEL PLATE WITH DRAIN OR VENT OPENINGS LOCATED DIAMETRICALLY OPPOSITE ON THE VERTICAL CENTER LINE OF THE MOUNTING PLATE AND SHALL BE SHIPPED TO THE JOBSITE WITH PLUGS IN PLACE. TERMINATE CONTAINMENT 2 INCHES BEYOND THE INSIDE FACE OF BUILDING WALLS TO PROTECT ANY EXPOSED PIPING FROM DAMP WALL CONDENSATION. END SEALS SHALL BE RED MIL PRIMED.

FIELD TESTS:
THE INNER PIPE OF THE SYSTEM SHALL BE TESTED HYDROSTATICALLY TO 1-1/2 TIMES THE WORKING PRESSURE OF THE LINE. IF A LEAK IS FOUND, IT SHALL BE REPAIRED AND THE TEST REPEATED. THE OUTER CASING SHALL BE TESTED WITH AIR AT 15 PSIG AND A SOAP SOLUTION SHALL BE APPLIED TO THE FIELD JOINTS TO LOCATE LEAKS. IF LEAKS OCCUR, THEY SHALL BE REPAIRED AND THE TEST REPEATED. AFTER APPROVED BY TEST ALL FIELD JOINTS SHALL BE COATED BY THE CONTRACTOR. THE CONTRACTOR SHALL TEST THE CONTAINMENT COATING WITH AN ELECTRIC HOUDAY DETECTOR. ANY BREAKS IN THE COATING SYSTEM SHALL BE REPAIRED AND THE TEST REPEATED BY THE CONTRACTOR.

INSTALLATION:
THE INSTALLATION SHALL BE MADE IN ACCORDANCE WITH PLANS AND SPECIFICATIONS, AND MANUFACTURERS INSTALLATION INSTRUCTIONS. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXTERNAL PIPING COATING WITH TOUCH-UP PAINT TO ENSURE INTEGRITY OF THE PROTECTIVE LAYER ON THE PIPING SURFACE EXPOSED TO ELEMENTS. THE TOUCH-UP PAINT PROPERTIES SHALL MATCH THE RED MIL PRIMER PROPERTIES. MANUFACTURER WILL PROVIDE A FIELD SERVICE INSTRUCTOR ON-SITE TO TRAIN THE CONTRACTOR IN ALL PHASES OF INSTALLATION AND MAINTENANCE.

APPROVED VENDORS:
RED MIL STEEL CONTAINMENT SYSTEM BY ROVANCO, JOUET, ILLINOIS OR APPROVED EQUAL. ANY ALTERNATE SUPPLIER MUST SUBMIT THEIR TECHNICAL DATA TO THE SITE ENGINEER TEN DAYS PRIOR TO BID DATE TO BE APPROVED IN WRITING AS AN EQUAL.



10 FUEL DOUBLE WALL PIPING SUPPORT DETAIL SCALE: NTS

NJ SPORTS & EXPOSITION AUTHORITY PUMP STATION GENERATOR INSTALLATION

50 STATE ROUTE 120
EAST RUTHERFORD, NEW JERSEY
07073

Digitally signed by
PHILIP M GRENCI
Date: 2022.06.24
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6-2-22 ISSUED FOR REVIEW
6-15-22 ISSUED FOR DCA APPROVAL

Date Issued Revision No.

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Drawing Title:
MECHANICAL
DETAILS

Scale	Issue Date:
AS NOTED	4/15/22
Proj. Manager:	Proj. Engineer:
ANC	PMG
AMA Project No.:	
CEI215080	

M-301