

WESTBROOK SCHOOL DEPARTMENT CONGIN, CANAL AND VOCATIONAL CENTER BOILER ROOM REPLACEMENT

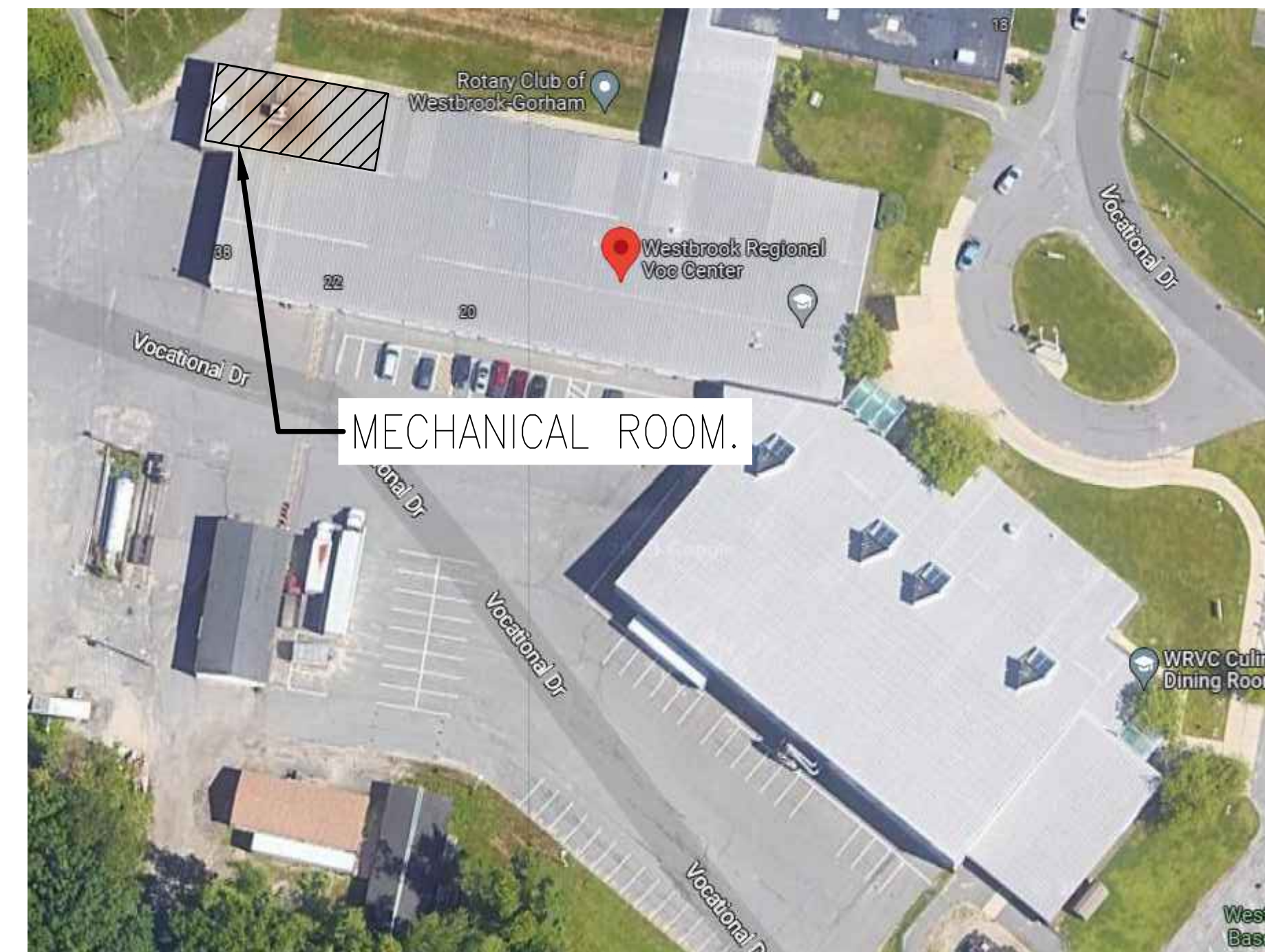
**CONGIN: 410 BRIDGE STREET
CANAL: 102 GLENWOOD AVENUE
VOCATIONAL CENTER: 125 STROUDWATER STEET
WESTBROOK, ME 04092**



CONGIN ELEMENTARY SCHOOL

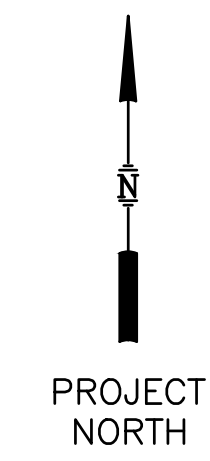


CANAL ELEMENTARY SCHOOL

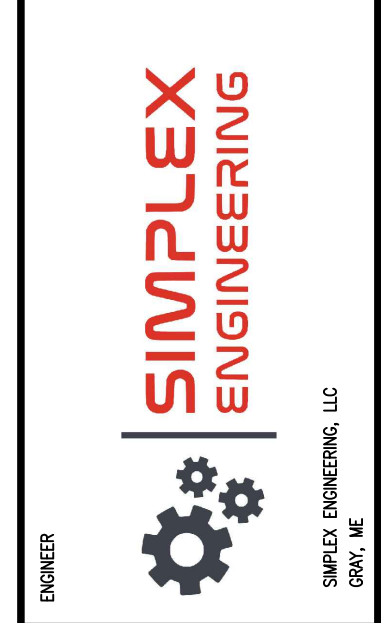


VOCATIONAL CENTER

DRAWING LIST		
DRAWING #	TITLE	REVISION
G-001	COVER SHEET	
G-002	PROJECT SPECIFICATIONS 1 OF 2	
G-003	PROJECT SPECIFICATIONS 2 OF 2	
MD-401A	CONGIN ELEMENTARY - LARGE SCALE MECHANICAL ROOM DEMO PLAN	
MD-401B	VOCATIONAL CENTER - LARGE SCALE MECHANICAL ROOM DEMO PLAN	
MD-401C	CANAL ELEMENTARY - LARGE SCALE MECHANICAL ROOM NO 1 DEMO PLAN	
MD-401D	CANAL ELEMENTARY - LARGE SCALE MECHANICAL ROOM NO 2 DEMO PLAN	
M-001	MECHANICAL SYMBOLS, LEGEND & ABBREVIATIONS	
M-401A	CONGIN ELEMENTARY - LARGE SCALE MECHANICAL ROOM PLAN	
M-401B	VOCATIONAL CENTER - LARGE SCALE MECHANICAL ROOM PLAN	
M-401C	CANAL ELEMENTARY - LARGE SCALE MECHANICAL ROOM NO 1 PLAN	
M-401D	CANAL ELEMENTARY - LARGE SCALE MECHANICAL ROOM NO 2 PLAN	
M-501	MECHANICAL DETAILS	
M-601	MECHANICAL SCHEDULES	
M-701A	CONGIN ELEMENTARY - MECHANICAL ROOM P&ID	
M-701B	VOCATIONAL CENTER - MECHANICAL ROOM P&ID	
M-701C	CANAL ELEMENTARY - MECHANICAL ROOM NO 1 P&ID	
M-701D	CANAL ELEMENTARY - MECHANICAL ROOM NO 2 P&ID	



CLIENT
WESTBROOK SCHOOL DEPARTMENT
CONGIN, CANAL AND VOCATIONAL CENTER
BOILER ROOM REPLACEMENT
WESTBROOK, ME 04092



DRAWN BY: AMS
CHECKED BY: AMS
DESIGNED BY: AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ NO. 23-105 DATE: 3/2/23
TITLE: COVER SHEET
DWG NO. G-001
SIZE: ARCH D SCALE: NONE

SCOPE OF WORK:

- 1. THE SCOPE OF WORK IS GENERALLY DESCRIBED AS:
 - 1.1. FURNISH, INSTALL AND STARTUP BOILER ROOM EQUIPMENT AS INDICATED IN DRAWING AND SCHEDULES.
 - 1.2. FURNISH AND INSTALL ALL MATERIALS AND EQUIPMENT FOR A TURN KEY INSTALLATION INCLUDING BUT NOT LIMITED TO ALL BOILERS, WATER HEATERS, PUMPS, VENTING, PIPING, INSULATION, ELECTRICAL WORK, BUILDING PENETRATIONS/FLASHING AND CONTROLS.
 - 1.3. THE EXISTING BUILDING MANAGEMENT SYSTEM WAS PROVIDED BY SIEMENS. THE CONTRACTOR SHALL HIRE SIEMENS TO PERFORM CONTROLS WORK.
 - 1.4. PROVIDE DEMOLITION AS INDICATED ON DRAWINGS/SPECIFICATIONS.

BOILER INSTALLATION:

- 1. BOILERS SHALL BE STARTED UP BY A FACTORY AUTHORIZED TECHNICIAN.
- 2. BOILER AND HYDRONIC SYSTEM FLUSHING:
 - 2.1. THE BOILERS WILL BE CONNECTED TO AN EXISTING HYDRONIC SYSTEM.
 - 2.2. THE CONTRACTOR SHALL DRAIN AND FLUSH THE ENTIRE HYDRONIC SYSTEM, INCLUDING EXISTING SYSTEMS WITH CLEAN WATER UNTIL IT RUNS CLEAR, FOLLOWED BY A TRI-SODIUM PHOSPHATE OR EQUAL SOLUTION. VERIFY COMPATIBILITY OF SOLUTION WITH SYSTEM PRIOR TO APPLICATION. THE SOLUTION SHALL BE CIRCULATED FOR MINIMUM 24 HOURS, DRAINED AND FLUSHED WITH CLEAR WATER PRIOR TO FILLING/OPERATING THE BOILER.

GENERAL:

- 1. PERFORM ALL WORK IN A NEAT WORKMANLIKE MANNER. ALL DEMOLITION, RELOCATION AND CONSTRUCTION ACTIVITIES SHALL BE COORDINATED WITH THE OWNER/ENGINEER INCLUDING OUTAGE SCHEDULE REQUIREMENTS.
- 2. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION, SUBJECT, HOWEVER, TO THE OWNERS/ENGINEERS RIGHT TO PROHIBIT MEANS AND METHODS PROPOSED BY CONTRACTOR THAT IN THE OWNER/ENGINEERS JUDGEMENT POSE A SAFETY HAZARD, ARE INCOMPATIBLE WITH THE OWNERS ONGOING OPERATIONS, OR PRODUCE AN UNDESIRABLE OUTCOME.
- 3. IT IS THE CONTRACTORS RESPONSIBILITY TO INQUIRE DIRECTLY WITH THE OWNER ABOUT THE POTENTIAL PRESENCE OF ASBESTOS, LEAD PAINT AND OTHER HAZARDOUS MATERIALS THAT MAY IMPACT THE COST OF THE WORK PRIOR TO SUBMITTING A BID FOR THE WORK.
- 4. ALL SUBSTITUTIONS SHALL BE SUBMITTED IN WRITING TO THE OWNER/ENGINEER FOR APPROVAL PRIOR TO BIDDING. AFTER BIDDING, NO SUBSTITUTIONS WILL BE ALLOWED.
- 5. CONTRACTORS ARE REQUIRED TO VISIT THE SITE BEFORE BIDDING.
- 6. THE CONSTRUCTION AREA SHALL BE KEPT CLEAN.
- 7. INSTALL EQUIPMENT AND MATERIALS TO PROVIDE THE REQUIRED ACCESS FOR SERVICE AND MAINTENANCE.
- 8. ENSURE NEC CLEARANCE IS MAINTAINED.
- 9. ALL PIPING AND WIRING SHALL BE ROUTED PARALLEL TO WALLS FOR A NEAT INSTALLATION, DIAGONAL RUNS ARE NOT ACCEPTABLE.
- 10. EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER REQUIREMENTS BY INSTALLER MEETING ALL CERTIFICATIONS AND REQUIREMENTS OF MANUFACTURER.

SUBMITTALS:

- 1. EACH SHEET INDICATING PERFORMANCE DATA SHALL BE CLEARLY HIGHLIGHTED INDICATING APPROPRIATE MODEL OR TYPE OF EQUIPMENT TO BE REVIEWED. CLEARLY INDICATE EQUIPMENT NAME/NUMBER OR OTHER UNIQUE IDENTIFIER SPECIFIC TO THE PROJECT.
- 2. INCOMPLETE OR UNMARKED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
- 3. IN GENERAL, THE CONTRACTOR SHALL PLAN FOR NO LESS THAN 2 WEEK REVIEW PERIOD, ALTHOUGH AN EFFORT TO RETURN SUBMITTALS AS QUICKLY AS POSSIBLE WILL BE MADE. EXPEDITED REVIEWS MUST BE CLEARLY REQUESTED.
- 4. PRIOR TO COMMENCING WORK THE CONTRACTOR SHALL PROVIDE SUBMITTALS FOR APPROVAL FOR THE FOLLOWING:
 - 4.1. PIPING AND FITTING MATERIALS AND JOINING METHODS.
 - 4.2. HYDRONIC SPECIALTIES INCLUDING STRAINERS, GAUGES, FLEXIBLE CONNECTIONS ETC.
 - 4.3. HYDRONIC VALVES.
 - 4.4. EQUIPMENT INDICATED IN SCHEDULES.
 - 4.5. PIPING INSULATION AND JACKETING: SPECIFY MATERIAL, THICKNESS, AND JACKETING (IF ANY) BY EACH PIPING SERVICE AND APPLICATION.
 - 4.6. CONTROL COMPONENTS INCLUDING CONTROLLERS AND INSTRUMENTATION.

QUALITY ASSURANCE:

- 1. INSTALLERS: ALL WORK SHALL BE PERFORMED BY QUALIFIED JOURNEYMEN AND SUPERVISED BY A MASTER OF THEIR RESPECTIVE TRADES WHO ARE EMPLOYED BY A FIRM THAT CAN DEMONSTRATE SUCCESSFUL EXPERIENCE WITH WORK OF SIMILAR TYPE, QUALITY, EXTENT AND COMPLEXITY TO THE WORK REQUIRED BY THE PROJECT.
- 2. MATERIALS AND EQUIPMENT: STANDARD PRODUCTS FROM MANUFACTURERS REGULARLY ENGAGED IN MANUFACTURE OF SUCH PRODUCTS. PRODUCTS MUST HAVE A PROVEN TRACK RECORD OF AT LEAST 3 YEARS PRIOR TO BIDDING THE WORK.
- 3. SERVICE SUPPORT: EQUIPMENT SHALL BE SUPPORTED BY SERVICE ORGANIZATIONS WHICH ARE REASONABLY CONVENIENT TO THE EQUIPMENT INSTALLATION AND ABLE TO RENDER SATISFACTORY SERVICE ON A REGULAR AND EMERGENCY BASIS.

DELIVERY, STORAGE AND HANDLING:

- 1. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, DELIVERY, UNLOADING, RIGGING AND STORAGE OF ALL EQUIPMENT AND MATERIALS REQUIRED FOR THE PROJECT, UNLESS NOTED OTHERWISE. THE CONTRACTOR IS RESPONSIBLE FOR RIGGING, TRANSPORTATION, UNLOADING AND SETTING F THE OFCI CHILLER.
- 2. PRODUCTS DELIVERED TO THE PROJECT SITE SHALL BE PROPERLY IDENTIFIED WITH NAMES, MODEL NUMBERS, TYPES, GRADES, COMPLIANCE LABELS, AND SIMILAR INFORMATION NEEDED FOR DISTINCT IDENTIFICATION, ADEQUATELY PACKAGED AND PROTECTED TO PREVENT DAMAGE DURING SHIPMENT, STORAGE, AND HANDLING.
- 3. STORE EQUIPMENT AND MATERIALS AT THE SITE, UNLESS OFFSITE STORAGE IS AUTHORIZED IN WRITING. PROTECT STORED EQUIPMENT AND MATERIALS FROM DAMAGE.
- 4. COORDINATE DELIVERIES OF MECHANICAL MATERIALS AND EQUIPMENT TO MINIMIZE CONSTRUCTION SITE CONGESTION. LIMIT EACH SHIPMENT OF MATERIALS AND EQUIPMENT TO THE ITEMS AND QUANTITIES NEEDED FOR THE SMOOTH AND EFFICIENT FLOW OF INSTALLATIONS.

DRAWINGS AND SPECIFICATIONS:

- 1. THE DRAWINGS AND SPECIFICATIONS ARE COMPLIMENTARY. WHAT IS SHOWN OR NOTED ON THE DRAWINGS, BUT NOT MENTIONED IN THE SPECIFICATIONS, AUTOMATICALLY BECOMES A PART OF THE SPECIFICATIONS. WHAT IS NOTED IN THE SPECIFICATIONS, BUT NOT SHOWN ON THE DRAWINGS, AUTOMATICALLY BECOMES A PART OF THE DRAWINGS. CONFLICTS BETWEEN THE REQUIREMENTS OF THE DRAWINGS AND THE SPECIFICATIONS MUST BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. THE MORE STRINGENT REQUIREMENT WILL APPLY, UNLESS RULED OTHERWISE BY THE ENGINEER. WHEN CONFLICTS OR DISCREPANCIES ARE NOTED, NO WORK SHALL PROCEED UNTIL THE CONFLICT OR DISCREPANCY HAS BEEN RESOLVED BY THE ENGINEER.
- 2. THE DRAWINGS MAY NOT SHOW EVERY DETAIL OF THE DUCTING, PIPING AND EQUIPMENT. WHETHER SPECIFICALLY SHOWN OR NOT, ALL EQUIPMENT/PIPING/DUCTING SHALL BE CONNECTED IN ACCORDANCE WITH THE MANUFACTURERS STANDARD DETAILS, ACCEPTED TRADE PRACTICE, AND THE INTENT OF THE CONTRACT DOCUMENTS. COORDINATE WITH ALL OTHER TRADES.
- 3. WHERE EXISTING SYSTEMS ARE ADDED TO OR MODIFIED AS PART OF THE WORK, ONLY LIMITED INFORMATION MAY HAVE BEEN AVAILABLE DURING DESIGN. THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY RELEVANT DIMENSIONS, OPERATING CONDITIONS, ELECTRICAL AND MECHANICAL CHARACTERISTICS PRIOR TO BIDDING AND/OR ORDERING MATERIALS.

CODES AND STANDARDS:

- 1. THE WORK SHALL COMPLY WITH LOCAL, STATE AND FEDERAL ADOPTED STANDARDS AND CODES, INCLUDING BUT NOT LIMITED TO:
 - 1.1. NFPA STANDARDS
 - 1.2. MUBEC
 - 1.3. MAINE STATE INTERNAL PLUMBING CODE (UPC).
 - 1.4. MAINE FUEL BOARD RULES.
 - 1.5. ASME - IN PARTICULAR 31.9.
- 2. ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 70.

SEALING AND FIRE-STOPPING:

- 1. SEALING AND FIRE STOPPING OF SLEEVES/OPENINGS BETWEEN DUCTWORK, PIPING, ETC. AND THE SLEEVE, STRUCTURAL OR PARTITION OPENING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR WHOSE WORK PENETRATES THE OPENING.
- 2. FIRE AND SMOKE BARRIER INFORMATION PRESENTED ON DRAWINGS MAY NOT BE COMPLETE, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY THE FIRE/SMOKE RATING OF ANY AND ALL WALL PENETRATIONS.
- 3. PROVIDE ALL FIRE STOPPING OF FIRE RATED PENETRATIONS AND SEALING OF SMOKE RATED PENETRATIONS IN ACCORDANCE WITH NFPA AND IBC STANDARDS.

DEMOLITION:

- 1. PERFORM ALL DEMOLITION AS INDICATED ON THE DRAWINGS TO ACCOMPLISH WORK.
- 2. WHERE DEMOLITION WORK IS TO BE PERFORMED ADJACENT TO EXISTING WORK THAT REMAINS IN AN OCCUPIED AREA, CONSTRUCT TEMPORARY DUST PARTITION TO MINIMIZE THE AMOUNT OF CONTAMINATION OF THE OCCUPIED SPACE.
- 3. WHERE PIPE OR DUCT IS REMOVED AND ABANDONED IN PLACE, CAP ENDS OF EXISTING SERVICES.
- 4. THE CONTRACTOR IS RESPONSIBLE FOR LAWFUL DISPOSAL OF ALL PIPE, DUCTWORK, INSULATION, WIRING AND ASSOCIATED CONDUIT, EQUIPMENT AND SIMILAR MATERIALS WHICH ARE DEMOLISHED.

CUTTING, PATCHING, PAINTING:

- 1. WHERE PORTIONS OF EXISTING WORK IS DISRUPTED, THE CONTRACTOR SHALL REPAIR WITH SIMILAR MATERIALS, FINISH AND PAINT TO MATCH ORIGINAL CONSTRUCTION.

PIPE SLEEVES:

- 1. PROVIDE FOR ALL PIPING PASSING THROUGH WALLS, FLOORS, PARTITIONS, ROOFS AND SIMILAR ELEMENTS, EXCEPT NOT REQUIRED WHERE ELEMENT IS SOLID ENTIRE WAY THROUGH (EG, CONCRETE).
- 2. PIPE SLEEVE SHALL BE SCH 40 STEEL PIPE FOR ANY STRUCTURAL ASSEMBLY, 20 GA GALV SHEET STEEL, PVC, OR SIMILAR MAY BE USED FOR NON-STRUCTURAL ASSEMBLIES. INTERSTITIAL SPACE SHALL BE FILLED WITH SILICON CAULK. PROVIDE ESCUTCHEONS FOR PIPING EXPOSED TO OCCUPANT VIEW.
- 3. BELOW GRADE WALLS: IN EXTERIOR WALL OPENINGS BELOW GRADE, USE A MODULAR MECHANICAL TYPE SEAL CONSISTING OF INTERLOCKING SYNTHETIC RUBBER LINKS SHAPED TO CONTINUOUSLY FILL THE ANNULAR SPACE BETWEEN THE NON-INSULATED PIPE AND THE CORED OPENING. LINK SEAL OR EQUAL.

TESTING AND BALANCING:

- 1. CONTRACT WITH A THIRD PARTY INDEPENDENT TESTING AND BALANCING CONTRACTOR CERTIFIED BY AABC OR NEBB FOR ALL TESTING, ADJUSTING AND BALANCING OF ALL EQUIPMENT AND SYSTEMS.
- 2. IN ACCORDANCE WITH STANDARDS PUBLISHED BY AABC, NEBB, OR TABB.
- 3. SYSTEMS SHALL BE BALANCED TO WITHIN THE FOLLOWING TOLERANCE OF DESIGN VALUES:
 - 3.1. FLOW RATES: 0 TO +5%.
- 4. MEASURE AND RECORD THE FOLLOWING DATA POINTS AT A MINIMUM:
 - 4.1. BOILER CIRCULATORS.
 - 4.2. CIRCUIT SETTER BALANCE VALVES.

PIPE IDENTIFICATION:

- 1. LABEL PIPING IN ACCORDANCE WITH ASME 13.1.
- 2. LABELS SHALL INDICATE FLUID SERVICE AND FLOW DIRECTION.
- 3. SELF ADHESIVE STICKERS, SNAP-AROUND, OR STENCILED.
- 4. INSTALL LABELS AT INTERVALS NOT TO EXCEED 25 FEET, AND ADDITIONALLY AT EACH TURN.
- 5. REFER TO PIPE IDENTIFICATION SCHEDULE FOR SERVICE AND COLORS.

EQUIPMENT IDENTIFICATION:

- 1. PROVIDE LAMICOID NAME PLATES LISTING EQUIPMENT NAME AND IDENTIFICATION TAG.

SITE ACCEPTANCE TESTING AND DEMONSTRATION:

- 1. FOLLOWING STARTUP AND TESTING AND BALANCING, THE CONTRACTOR SHALL DEMONSTRATE TO THE SATISFACTION OF THE OWNER/ENGINEER THAT THE ENTIRE SYSTEM IS FUNCTIONAL. COORDINATE THIS ACTIVITY WITH OWNER/ENGINEER MINIMUM 2 WEEKS PRIOR TO SCHEDULED DEMONSTRATION DATE.
- 2. WHERE SPECIALTY FACTORY TRAINED PERSONNEL ARE REQUIRED, THE CONTRACTOR IS RESPONSIBLE FOR PROCURING THEIR SERVICES AND COORDINATING THE DATES.
- 3. THIS EFFORT INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
 - 3.1. START/STOP ALL EQUIPMENT.
 - 3.2. DEMONSTRATE ALL SEQUENCES OF OPERATION AND CONTROL CYCLES, ALARMS, RELAYS, INTERLOCKS AND OTHER ACTIONS.
 - 3.3. CYCLE ALL VALVES AND ACTUATORS.
 - 3.4. BUMP ALL MOTORS.
 - 3.5. FULLY PRESSURIZE/FILL SYSTEMS.
 - 3.6. ADJUST CONTROL SETPOINTS AND SYSTEM PARAMETERS.
 - 3.7. DEMONSTRATE CONTROL SYSTEMS ARE FUNCTIONAL, INCLUDING BUILDING MANAGEMENT SYSTEM (BMS) FRONT END INTEGRATION WHERE PRESENT.

TRAINING OF OWNER PERSONNEL:

- 1. FOLLOWING SITE ACCEPTANCE TESTING AND DEMONSTRATION THE CONTRACTOR SHALL INSTRUCT OWNER PERSONNEL IN THE PROPER OPERATION AND MAINTENANCE OF SYSTEMS AND EQUIPMENT PROVIDED AS PART OF THE PROJECT.
- 2. THIS ACTIVITY WILL OCCUR ON A SEPARATE DATE FROM SITE ACCEPTANCE TESTING AND DEMONSTRATION IN ORDER TO ALLOW TIME FOR NEEDED CORRECTIONS AND COORDINATION OF OWNER STAFFING. WHERE SPECIALTY FACTORY TRAINED PERSONNEL ARE REQUIRED, THE CONTRACTOR IS RESPONSIBLE FOR PROCURING THEIR SERVICES AND COORDINATING THE TRAINING TIME AND PLAN WITH THE OWNER.
 - 2.1. PROVIDE THE FOLLOWING TO OWNER/ENGINEER FOR APPROVAL PRIOR TO DATE OF TRAINING:
 - 2.1.1. A BRIEF OUTLINE OF TOPICS TO BE COVERED DURING TRAINING.
 - 2.1.2. PROVIDE SUPPLEMENTARY MATERIAL INCLUDING PROJECT DRAWINGS, SEQUENCES OF OPERATION, CONTROL DIAGRAMS AND SIMILAR THAT WILL BE USED IN THE TRAINING PROCESS. INCOMPLETE AND OUT OF DATE MATERIALS WILL BE REJECTED.
 - 2.2. WALKDOWN ENTIRE SYSTEM WITH OWNER STAFF, DESCRIBE SYSTEM COMPONENTS ETC.
 - 2.3. DEMONSTRATE STARTUP AND SHUTDOWN PROCEDURES FOR ALL EQUIPMENT.
 - 2.4. DEMONSTRATE SEQUENCES OF OPERATION FOR ALL SYSTEMS AND EQUIPMENT.
 - 2.5. INSTRUCT STAFF IN ROUTINE MAINTENANCE REQUIRED FOR EACH PIECE OF EQUIPMENT.

RECORD DOCUMENTS:

- 1. THE CONTRACTOR SHALL MAINTAIN A FULL SIZE SET OF PROJECT DRAWINGS AND SPECIFICATIONS (CONTRACT DOCUMENTS) AT THE SITE AT ALL TIMES.
- 2. THE CONTRACTOR SHALL REGULARLY UPDATE THE CONTRACT DOCUMENTS SHOWING THE AS-BUILT CONDITIONS AND ANY OWNER/ENGINEER DIRECTED CHANGES.
- 3. PROVIDE A FULL SIZE COLOR HARD COPY AND ELECTRONIC PDF COPY OF THE AS-BUILTS TO THE OWNER AT PROJECT COMPLETION.

OPERATION AND MAINTENANCE MANUAL:

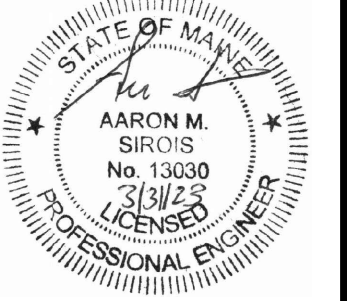
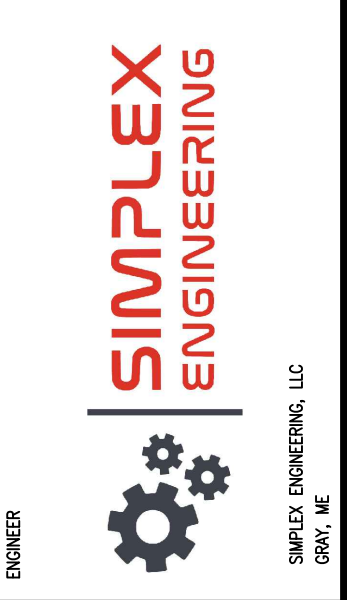
- 1. PROVIDE COMPLETE O&M MANUAL BOUND IN 3-RING BINDER CONTAINING THE FOLLOWING:
 - 1.1. PROVIDE DESCRIPTION OF FUNCTION, NORMAL OPERATING CHARACTERISTICS AND LIMITATIONS, PERFORMANCE CURVES, ENGINEERING DATA AND TESTS, AND COMPLETE NOMENCLATURE AND COMMERCIAL NUMBERS OF ALL REPLACEABLE PARTS.
 - 1.2. PROVIDE MANUFACTURER'S PRINTED OPERATING PROCEDURES TO INCLUDE START UP, BREAK IN, ROUTINE AND NORMAL OPERATING INSTRUCTIONS INCLUDING REGULATION CONTROL, STOPPING, SHUT DOWN, AND EMERGENCY INSTRUCTIONS, AS WELL AS SUMMER AND WINTER OPERATING INSTRUCTIONS.
 - 1.3. PROVIDE MAINTENANCE PROCEDURES FOR ROUTINE PREVENTIVE MAINTENANCE AND TROUBLESHOOTING: DISASSEMBLY, REPAIR, AND REASSEMBLY, AS WELL AS ALIGNING AND ADJUSTING INSTRUCTIONS.
 - 1.4. PROVIDE SERVICING INSTRUCTIONS AND LUBRICATION CHARTS AND SCHEDULES.
 - 1.5. COPY OF ALL APPROVED SUBMITTALS.
 - 1.6. COPY OF TESTING AND BALANCING REPORT.
 - 1.7. COPY OF AS-BUILT DRAWINGS
 - 1.8. COPY OF SEQUENCE OF OPERATIONS AND CONTROLS DIAGRAMS.

WARRANTIES:

- 1. WARRANTIES ARE REQUIRED FOR ALL ELECTRICALLY POWERED EQUIPMENT AND/OR OTHER MECHANICAL EQUIPMENT HAVING MOVING PARTS.
- 2. COMPILER AND ASSEMBLE THE WARRANTIES INTO A SEPARATED SET OF VINYL COVERED, THREE RING BINDERS, TABULATED AND INDEXED FOR EASY REFERENCE.
- 3. PROVIDE COMPLETE WARRANTY INFORMATION FOR EACH ITEM, TO INCLUDE DATE OF COMMENCEMENT, DURATION, AND THE NAMES, ADDRESSES, AND TELEPHONE NUMBERS AND PROCEDURES FOR FILING CLAIMS AND OBTAINING WARRANTY SERVICES.
- 4. DURATION OF WARRANTIES SHALL BE NOT LESS THAN ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE FACILITY UNLESS PRIOR APPROVAL HAS BEEN GRANTED IN WRITING BY THE OWNER. IF THE MANUFACTURER'S WARRANTY EXPIRES LESS THAN ONE YEAR FROM THE DATE OF BENEFICIAL OCCUPANCY, THAT WARRANTY SERVICE AND REPLACEMENT OF PARTS SHALL BE PROVIDED BY THE CONTRACTOR AT NO COST TO THE OWNER.



CLIENT
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 CONGIN, CANAL AND VOCATIONAL CENTER
 BOILER ROOM REPLACEMENT
 WESTBROOK, ME 04092



DESIGNED BY
 AMS
 CHECKED BY
 AMS
 APPROVED BY
 AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ NO. 23-105 DATE: 3/2/23
 TITLE: PROJECT SPECIFICATIONS 1 OF 2
 DWG NO. G-002
 SIZE: ARCH D SCALE: NONE

STD WT STEEL PIPE SUPPORT SPACING SCHEDULE			
NOMINAL PIPE OR TUBE SIZE	WATER/FLUIDS	STEAM/GAS	ROD DIAMETER
(INCHES)	(FEET)	(FEET)	(INCHES)
UP TO 1 1/4	7	9	3/8
1 1/2	9	12	3/8
2	10	13	3/8
2 1/2	11	14	1/2
3	12	15	1/2
4	14	17	5/8
5	16	19	5/8
6	17	21	3/4
8	19	24	3/4
10	22	26	7/8
12	23	30	7/8
14	25	32	1
16	27	35	1
18	28	37	1
20	30	39	1 1/4
24	32	42	1 1/4

COPPER TUBE SUPPORT SPACING SCHEDULE			
NOMINAL PIPE OR TUBE SIZE	WATER/FLUIDS	STEAM/GAS	ROD DIAMETER
(INCHES)	(FEET)	(FEET)	(INCHES)
1/4	5	5	3/8
3/8	5	6	3/8
1/2	5	6	3/8
3/4	5	7	3/8
1	6	8	3/8
1 1/4	7	9	3/8
1 1/2	8	10	3/8
2	8	11	3/8
2 1/2	9	13	1/2
3	10	14	1/2
4	12	16	1/2
5	13	18	1/2
6	14	20	5/8
8	16	23	3/4
10	18	25	3/4
12	19	28	3/4

PIPING GENERAL REQUIREMENTS:

1. THIS SPECIFICATION COVERS PIPING REQUIREMENTS APPLICABLE ACROSS ALL PIPE AND TUBE SYSTEMS.
2. QUALIFICATIONS AND PROCEDURES:
 - 2.1. WELDERS SHALL BE CERTIFIED IN ACCORDANCE WITH ANSI/AWS D1.1.
 - 2.2. BRAZING AND SOLDERING SHALL BE DONE IN ACCORDANCE WITH COPPER TUBE HANDBOOK OF THE COPPER DEVELOPMENT ASSOCIATION.
 - 2.3. QUALIFICATION/CERTIFICATIONS SHALL BE AVAILABLE UPON REQUEST FROM OWNER/ENGINEER.
3. ALL PIPING SHALL BE PRESSURE TESTING IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS. IN CERTAIN CASES, INITIAL SERVICE TESTING MAY BE ALLOWED.
4. MECHANICAL FITTINGS SUCH AS VIEGA PROGRESS/MEGAPRESS AND VICTAULIC WILL NOT BE PERMITTED.
5. ALL PIPING SYSTEMS SHALL BE PRESSURE TESTED PRIOR TO INSTALLING INSULATION AND/OR BACKFILLING.

HYDRONIC PIPING, VALVES, SPECIALTIES:

1. THIS SPECIFICATION COVERS HYDRONIC PIPING FOR CLOSED LOOP APPLICATIONS.
2. PIPING SHALL BE INSTALLED IN ACCORDANCE WITH ASME B31.9.
3. ALL PIPING, FITTINGS AND COMPONENTS SHALL BE RATED FOR A MINIMUM OF 125PSIG AT 250 DEG F.
4. PIPING:
 - 4.1. STEEL: ASTM A53 GRADE B, SCHEDULE 40, SEAMLESS OR ERW.
 - 4.1.1. FITTINGS 2" AND SMALLER: THREADED, CLASS 150 MALLEABLE IRON
 - 4.1.2. FITTINGS 2 1/2" AND LARGER: WELDED SAME THICKNESS PIPE, CLASS 150 WELD NECK OR SUP ON FLANGES.
 - 4.2. COPPER: ASTM B88 TYPE L COPPER WITH 95-5 TIN ANTIMONY SOLDERED FITTINGS.
5. SHUT-OFF VALVES:
 - 5.1. 2" AND SMALLER: BALL VALVES, MSS SP-110 CONNECTION TO MATCH PIPING, BRASS OR BRONZE BODY WITH CHROME PLATED FULL PORT BALL AND TEFLON SEAT. WORKING PRESSURE 600 PSIG.
 - 5.2. 2 1/2" AND LARGER: BUTTERFLY VALVES, FLANGED LUG TYPE, MALLEABLE IRON BODY, BRONZE OR STAINLESS STEEL TRIM, RESILIENT SEATED.
6. CHECK VALVES:
 - 6.1. 2" AND SMALLER: SPRING CHECK, BRONZE BODY, MIN 250 PSIG RATING.
 - 6.2. 2 1/2" AND LARGER: SILENT CHECK, WAFER TYPE CAST IRON BODY, STAINLESS/BRONZE TRIM, MINIMUM 200 PSIG RATING.
7. BALANCE VALVES:
 - 7.1. LINE SIZED FOR FLOW REGULATION, MANUAL METERING, AND SHUT OFF.
 - 7.2. MIN 175 PSIG BRONZE OR CAST IRON BODY WITH CALIBRATED POSITION POINTER, VALVED PRESSURE TAPS WITH INTERNAL CHECK VALVES, AND BODY DRAIN. BELL & GOSSETT CIRCUIT SETTER PLUS.
8. STRAINERS:
 - 8.1. 3" AND SMALLER: BRONZE OR IRON BODY, Y-TYPE. SCREEN STAINLESS STEEL 20 MESH. FURNISH WITH BALL TYPE BLOWDOWN VALVE WITH CAPPED HOSE CONNECTION.
 - 8.2. 4" AND LARGER: BRONZE OR IRON BODY, BASKET TYPE. SCREEN STAINLESS STEEL 1/8" PERFORATIONS. FURNISH WITH BALL TYPE BLOWDOWN VALVE WITH CAPPED HOSE CONNECTION.
9. FLEXIBLE CONNECTIONS:
 - 9.1. 300 SERIES STAINLESS STEEL CORRUGATED INNER AND BRAIDED OUTER WITH CLASS 150 CARBON STEEL FLANGES OR THREADED CONNECTIONS TO SUIT APPLICATION.
10. GAUGES:
 - 10.1. PRESSURE: 4-1/2" DIAL SIZE, CAST ALUMINUM CASE, GLASS WINDOW, +/-1.0% FULL SCALE ACCURACY. SELECT RANGE FOR APPROXIMATELY 50% OF SCALE AT DESIGN OPERATING PRESSURE. TRERICE 600CB OR EQUAL.
 - 10.2. TEMPERATURE: 9" CAST ALUMINUM CASE, LIQUID IN GLASS TYPE, BRASS THERMOWELL, ADJUSTABLE ANGLE STEM. SELECT RANGE FOR APPROXIMATELY 50% OF SCALE AT DESIGN TEMPERATURE. TRERICE BX SERIES.
 - 10.3. PETES PLUG: 1/4" MPT X 3" LONG BRASS BODY, NORDEL VALVE, AND RETAINED SAFETY CAP.

DOMESTIC HOT/COLD WATER PIPING:

1. COPPER: ASTM B88 TYPE L COPPER WITH LEAD FREE SOLDERED FITTINGS.

FUEL GAS PIPING:

1. THIS SPECIFICATION COVERS NATURAL GAS PIPING.
2. ALL MATERIALS AND WORK SHALL MEET THE REQUIREMENTS OF THE LATEST VERSION OF NFPA 54 AND NFPA 58.
3. PIPING SYSTEMS WITHIN BUILDINGS ARE GENERALLY TO BE OPERATED LESS THAN 5PSIG. IF DRAWINGS INDICATE PRESSURE EXCEEDING 5PSI THE ENTIRE PIPE SYSTEM (INCLUDING OF VALVES AND FITTINGS) SHALL BE WELDED. THIS REQUIREMENT DOES NOT APPLY TO PIPING SYSTEMS LOCATED WITHIN MECHANICAL/BOILER ROOMS.
4. FLARED JOINTS ARE NOT ALLOWED.
5. PIPING:
 - 5.1. CAST IRON, PCV AND CPVC PIPE SHALL NOT BE USED.
 - 5.2. FURNACE BUTT WELD PIPE SHALL NOT BE USED.
 - 5.3. ABOVE GROUND/INSIDE: STEEL ASTM A53, GRADE B, SCHEDULE 40, ERW. PIPING SHALL BE PAINTED "SAFETY YELLOW" WITH 2 COATS OF SUITABLE PAINT.
6. FITTINGS:
 - 6.1. FOR STEEL PIPING:
 - 6.1.1. NFPA 54 PROHIBITS USE OF THREADED FITTINGS ON PIPING LARGER THAN 4".
 - 6.1.2. 2" AND SMALLER: USE TAPERED THREAD ANSI B16.3 & B1.20.1, CLASS 150, MALLEABLE IRON.
 - 6.1.3. 2 1/2" TO 4": ASME B16.11 SOCKET WELDED.
 - 6.1.4. 5" AND LARGER: ASME B16.9 BUTT WELDED.
 - 6.1.5. FLANGES: CLASS 150 WELD NECK STEEL FLANGES WITH LISTED GASKETING VALVES.
 - 6.2. BALL VALVES: BRONZE BODY, 150 WOG RATING, REINFORCE TFE SEAT, UL LISTED FOR NATURAL AND LP GAS.
 - 6.3. GAS COCKS 1 1/2" AND SMALLER: 150 PSI WOG, BRONZE BODY, STRAIGHTAWAY PATTERN, SQUARE HEAD, THREADED ENDS.
 - 6.4. GAS COCKS 2" AND LARGER: MSS SP-78, 175 PSI, LUBRICATED PLUG TYPE, SEMI-STEEL BODY, SINGLE GLAND, WRENCH OPERATED, FLANGED ENDS.
7. ALL SYSTEMS SHALL BE LEAK TESTED PER NFPA 54 BEFORE PLACING IN OPERATION. TEST PRESSURE OF 1.5 TIMES THE OPERATING PRESSURE AND NOT LESS THAN 3PSIG. TEST MEDIUM OF AIR, NITROGEN, CO2 OR INERT GAS. MINIMUM 30 MINUTE TEST TIME OR GREATER WHERE REQUIRED BY NFPA 54.

PIPE HANGERS AND SUPPORTS:

1. THIS SPECIFICATION COVERS HANGERS AND SUPPORTS FOR ALL PIPING ON THE PROJECT.
2. ALL MATERIALS AND WORK SHALL BE IN ACCORDANCE WITH MSS SP-69.
3. ALL MODEL DESIGNATIONS LISTED ARE COOPER B-LINE. EQUIVALENT MANUFACTURERS WILL BE ALLOWED.
4. REFER TO SUPPORT SPACING SCHEDULES FOR MAXIMUM HORIZONTAL SPAN BETWEEN SUPPORTS. SCHEDULE BASED ON MANUFACTURER RECOMMENDATIONS AND DOES NOT ACCOUNT FOR CONCENTRATED LOADS SUCH AS FLANGES, VALVES, SPECIALTIES OR CHANGES IN DIRECTIONS, PROVIDE ADDITIONAL SUPPORTS AT THESE LOCATIONS.
5. HANGERS:
 - 5.1. UNINSULATED 2" AND SMALLER: ADJUSTABLE SWIVEL RING FIGURE 20, ADJUSTABLE CLEVIS SERIES B3100.
 - 5.2. UNINSULATED 2 1/2" AND LARGER: ADJUSTABLE CLEVIS SERIES B3100.
 - 5.3. HOT/INSULATED 2" AND SMALLER: ADJUSTABLE CLEVIS SERIES B3100 WITH GALVANIZED METAL SHIELD B3151.
 - 5.4. HOT/INSULATED 2 1/2" AND LARGER: ADJUSTABLE STEEL YOKE B3110 WITH INSULATED CALCIUM SILICATE GALVANIZED SHIELD B3880.
 - 5.5. COLD/INSULATED: 5" AND SMALLER: ADJUSTABLE CLEVIS SERIES B3100 WITH GALVANIZED METAL SHIELD B3151.
 - 5.6. COLD/INSULATED: 6" AND LARGER: ADJUSTABLE STEEL YOKE B3110 WITH INSULATED CALCIUM SILICATE GALVANIZED SHIELD B3860CW.
6. CLAMPS:
 - 6.1. WHEN FLEXIBILITY IN HANGER ASSEMBLY IS REQUIRED DUE TO HORIZONTAL MOVEMENT, USE PIPE CLAMPS B3140 WITH EYE NUTS B3200. FOR INSULATED PIPE USE DOUBLE BOLTED CLAMPS B3144.
7. TRAPEZE HANGERS:
 - 7.1. 12 GA ROLL FORMED STEEL CHANNEL, 1 5/8" X 1 5/8" MINIMUM, B22 STRUT OR STRONGER. MOUNT WITH 2-PIECE PIPE STRAP.
 - 7.2. FOR PIPE WITH AXIAL MOVEMENT USE STRUT MOUNTED ROLLER SUPPORT B3126 WITH PROTECTION SHIELD OR PIPE GUIDE B2417.
8. FLOOR SUPPORTS:
 - 8.1. 5" AND UNDER: STEEL ADJUSTABLE PIPE SADDLE AND NIPPLE ATTACHED TO STEEL BASE B3093 AND B3088T.
 - 8.2. 6" AND OVER: ADJUSTABLE ROLLER SUPPORT WITH BASE PLATE B3117SL (NEAR GROUND), OR B3124 FOR MODERATELY ELEVATED APPLICATIONS.
9. UPPER ATTACHMENTS:
 - 9.1. BEAM CLAMPS:
 - 9.1.1. SELECT ON THE BASES OF LOAD SUPPORTING. C-CLAMPS SHALL HAVE LOCKNUTS AND CUP POINT SET SCREWS, B3511L, B3036L OR FIG. 65XT TOP FLANGE C-CLAMPS SHALL BE USED WHEN ATTACHING A HANGER ROD TO THE TOP FLANGE OF STRUCTURAL SHAPES, B-LINE SERIES B3034 OR B3033. REFER TO MANUFACTURERS RECOMMENDATION FOR SETSCREW TORQUE. RETAINING STRAPS SHALL BE USED TO MAINTAIN THE CLAMP'S POSITION ON THE BEAM WHERE REQUIRED (FIG. 69, FIG. 69R).
 - 9.1.2. CENTER LOADED BEAM CLAMPS SHALL BE USED WHERE SPECIFIED. STEEL CLAMPS SHALL BE B3050 OR B3055. MALLEABLE IRON OR FORGED STEEL BEAM CLAMPS WITH CROSS BOLT SHALL BE B-LINE SERIES B3054 OR B3291 - B3297 SERIES AS REQUIRED TO FIT BEAMS.
 - 9.2. CONCRETE INSERTS
 - 9.2.1. CAST IN PLACE SPOT CONCRETE INSERTS SHALL BE USED WHERE APPLICABLE, EITHER STEEL OR MALLEABLE IRON BODY, B2500 OR B3014. SPOT INSERTS SHALL ALLOW FOR LATERAL ADJUSTMENT AND HAVE MEANS FOR ATTACHMENT TO FORMS. SELECT INSERT NUTS TO SUIT THREADED HANGER ROD SIZES, N2500 OR B3014N SERIES.
 - 9.2.2. CONTINUOUS CONCRETE INSERTS SHALL BE USED WHERE APPLICABLE. CHANNELS SHALL BE 12 GAUGE, ASTM A 1011 SS GRADE 33 STRUCTURAL QUALITY CARBON STEEL, COMPLETE WITH STYROFOAM INSERTS AND END CAPS WITH NAIL HOLES FOR ATTACHMENT TO FORMS. THE CONTINUOUS CONCRETE INSERT SHALL HAVE A LOAD RATING OF 2,000 LBS/FT. IN CONCRETE, B-LINE SERIES B221, B321, OR B521 (B521 IS LIMITED TO 1,500 LBS/FT.). SELECT CHANNEL NUTS SUITABLE FOR STRUT AND ROD SIZES.
10. ACCESSORIES:
 - 10.1. HANGER RODS SHALL BE THREADED BOTH ENDS, B-LINE SERIES B3205, OR CONTINUOUS THREADED RODS OF CIRCULAR CROSS SECTION. USE ADJUSTING LOCKNUTS AT UPPER ATTACHMENTS AND HANGERS. NO WIRE, CHAIN, OR PERFORATED STRAPS ARE ALLOWED.
 - 10.2. SHIELDS SHALL BE 180° GALVANIZED SHEET METAL, 12 INCH MINIMUM LENGTH, 18 GAUGE MINIMUM THICKNESS, DESIGNED TO MATCH OUTSIDE DIAMETER OF THE INSULATED PIPE, B-LINE SERIES B3151.
 - 10.3. PIPE PROTECTION SADDLES SHALL BE FORMED FROM CARBON STEEL, 1/8 INCH MINIMUM THICKNESS, SIZED FOR INSULATION THICKNESS. SADDLES FOR PIPE SIZES GREATER THAN 12 INCH SHALL HAVE A CENTER SUPPORT RIB.
11. FINISHES:
 - 11.1. INDOOR:
 - 11.1.1. COPPER PIPE/TUBE HANGERS SHALL HAVE PLASTIC COATING OR FELT LINING TO PREVENT GALVANIC CORROSION.
 - 11.1.2. HANGER SHALL BE ZINC PLATED PER ASTM B633-SC3
 - 11.1.3. STRUT GALVANIZED IN ACCORDANCE WITH ASTM A653 G90

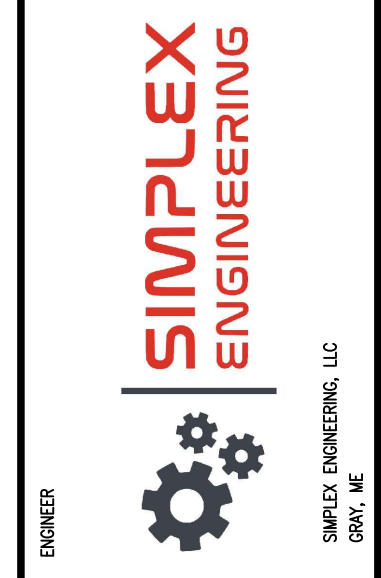
PIPE INSULATION MATERIALS SCHEDULE			
SERVICE	MATERIAL	JACKET	
		INDOOR	VAPOR BARRIER
HEATING HOT WATER	MINERAL FIBER	ASJ	YES
DOMESTIC COLD WATER	MINERAL FIBER	ASJ	YES
DOMESTIC HOT WATER	MINERAL FIBER	ASJ	YES

PIPE IDENTIFICATION SCHEDULE -- ASME 13.1		
FLUID SERVICE	BACKGROUND COLOR	TEXT COLOR
NATURAL GAS	YELLOW	BLACK
LP GAS	YELLOW	BLACK
HOT WATER SUPPLY/RETURN	GREEN	WHITE
DOMESTIC COLD/HOT WATER	GREEN	WHITE

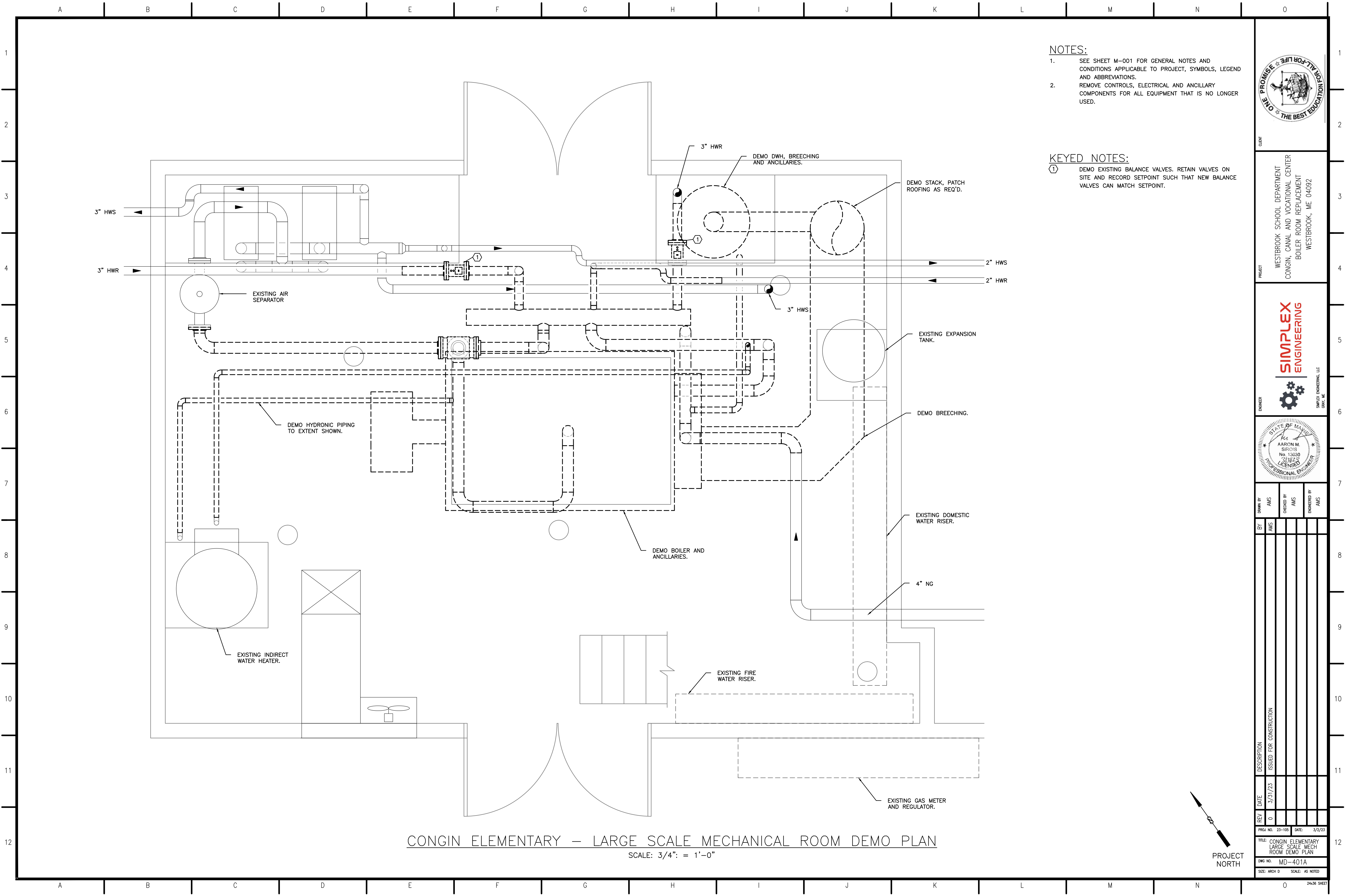
PIPE INSULATION THICKNESS SCHEDULE						
SERVICE	CONDUCTIVITY RANGE (BTU-IN/HR-FT ² -F)	NOMINAL PIPE OR TUBE SIZE (INCHES)				
		<1	1 TO <1 1/2	1 1/2 TO <4	4 TO <8	>8
HEATING HOT WATER	0.25 TO 0.29	1.5	1.5	2.0	2.0	2.0
DOMESTIC COLD WATER	0.21 TO 0.27	0.5	0.5	1.0	1.0	1.0
DOMESTIC HOT WATER	0.22 TO 0.28	1.0	1.0	1.5	1.5	1.5



WESTBROOK SCHOOL DEPARTMENT
CONGIN, CANAL AND VOCATIONAL CENTER
BOILER ROOM REPLACEMENT
WESTBROOK, ME 04092



DESIGNED BY	AMS	CHECKED BY	AMS	ENGINEERED BY	AMS
DATE	3/31/23				
REV	0	DESCRIPTION	ISSUED FOR CONSTRUCTION		
PROJ NO.	23-109	DATE	3/2/23		
TITLE	PROJECT SPECIFICATIONS 2 OF 2				
DWG NO.	G-003				
SIZE	ARCH D	SCALE	NONE		

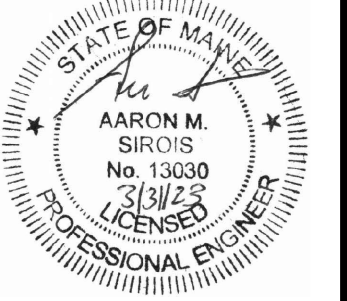
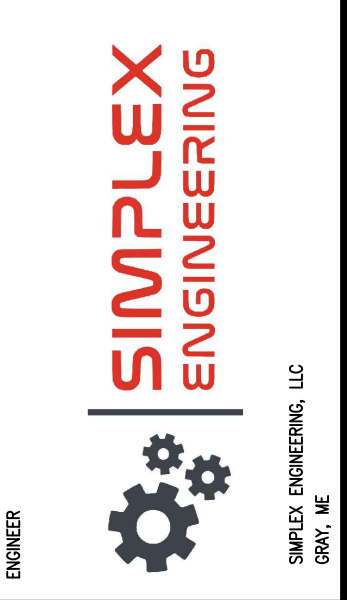


- NOTES:**
- SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.
 - REMOVE CONTROLS, ELECTRICAL AND ANCILLARY COMPONENTS FOR ALL EQUIPMENT THAT IS NO LONGER USED.

- KEYED NOTES:**
- ① DEMO EXISTING BALANCE VALVES. RETAIN VALVES ON SITE AND RECORD SETPOINT SUCH THAT NEW BALANCE VALVES CAN MATCH SETPOINT.



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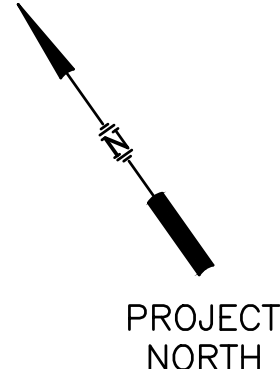


DESIGNED BY: AMS
 CHECKED BY: AMS
 DRAWN BY: AMS

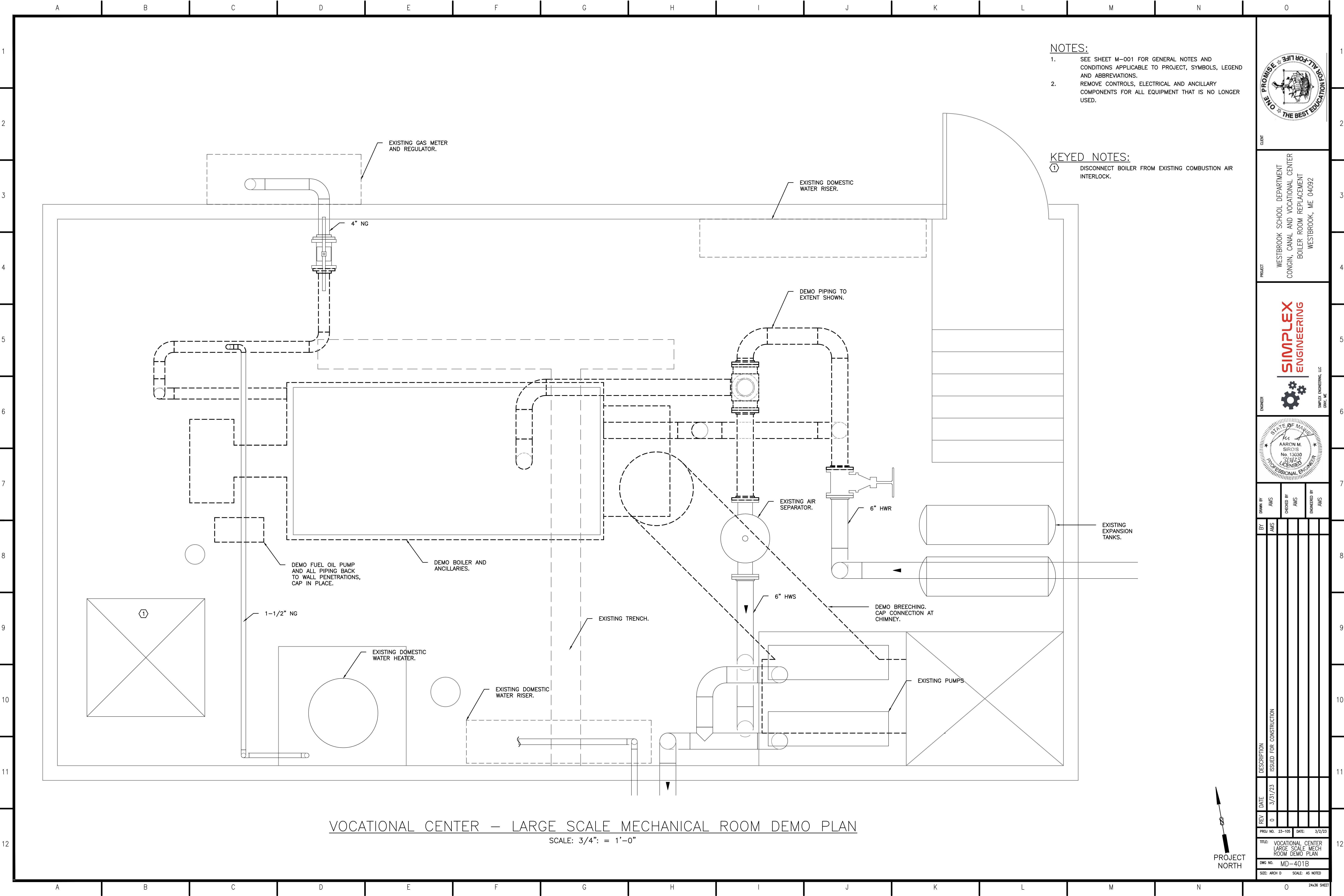
REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ NO: 23-105 DATE: 3/2/23
 TITLE: CONGIN ELEMENTARY
 LARGE SCALE MECH
 ROOM DEMO PLAN
 DWG NO: MD-401A
 SIZE: ARCH D SCALE: AS NOTED

CONGIN ELEMENTARY – LARGE SCALE MECHANICAL ROOM DEMO PLAN
 SCALE: 3/4" = 1'-0"



PROJECT
 NORTH



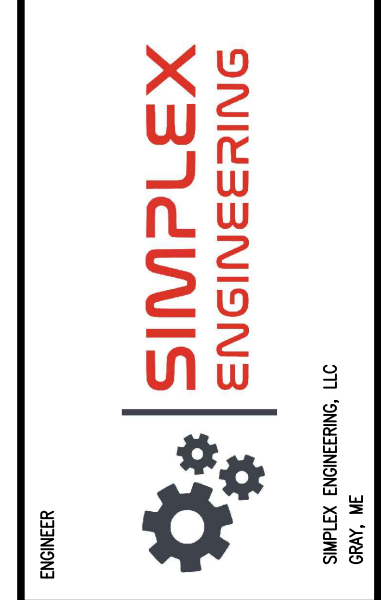
- NOTES:**
- SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.
 - REMOVE CONTROLS, ELECTRICAL AND ANCILLARY COMPONENTS FOR ALL EQUIPMENT THAT IS NO LONGER USED.

- KEYED NOTES:**
- ① DISCONNECT BOILER FROM EXISTING COMBUSTION AIR INTERLOCK.

VOCATIONAL CENTER – LARGE SCALE MECHANICAL ROOM DEMO PLAN
 SCALE: 3/4" = 1'-0"



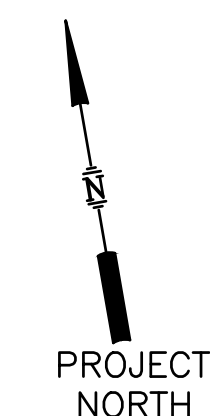
CLIENT
 WESTBROOK SCHOOL DEPARTMENT
 CONGIN, CANAL AND VOCATIONAL CENTER
 BOILER ROOM REPLACEMENT
 WESTBROOK, ME 04092

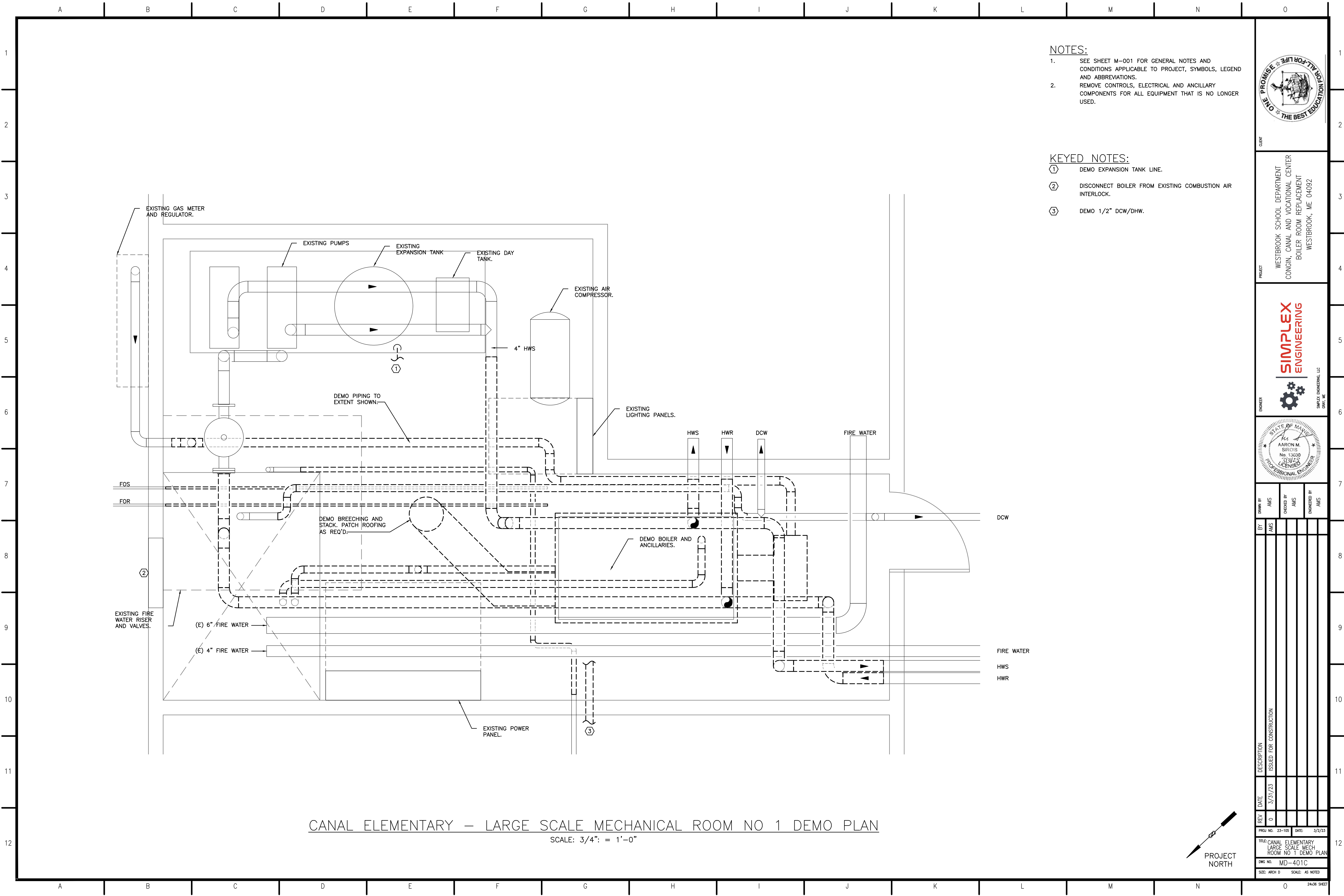


DESIGNED BY: AMS
 CHECKED BY: AMS
 DRAWN BY: AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ NO. 23-105 DATE: 3/2/23
 TITLE: VOCATIONAL CENTER LARGE SCALE MECH ROOM DEMO PLAN
 DWG NO. MD-401B
 SIZE: ARCH D SCALE: AS NOTED



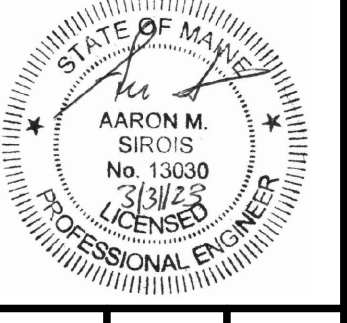
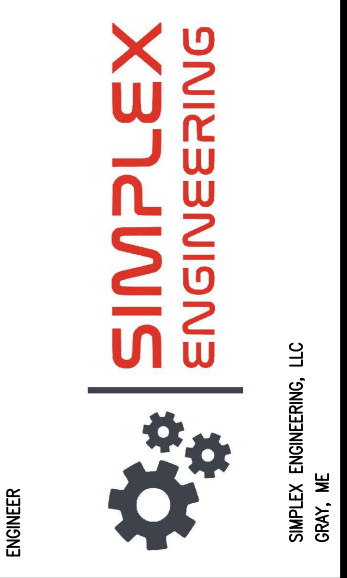


- NOTES:**
- SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.
 - REMOVE CONTROLS, ELECTRICAL AND ANCILLARY COMPONENTS FOR ALL EQUIPMENT THAT IS NO LONGER USED.

- KEYED NOTES:**
- DEMO EXPANSION TANK LINE.
 - DISCONNECT BOILER FROM EXISTING COMBUSTION AIR INTERLOCK.
 - DEMO 1/2" DCW/DHW.



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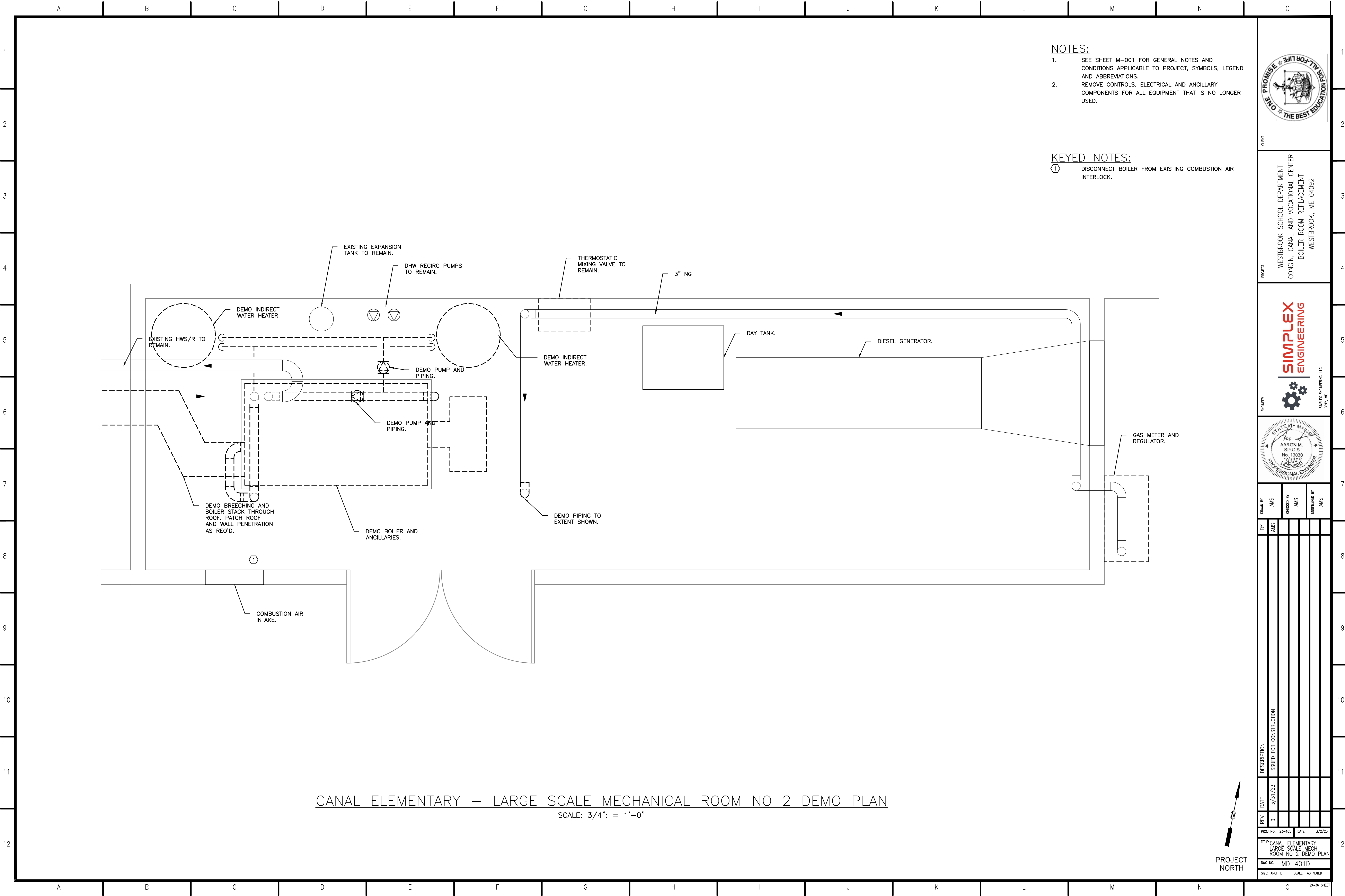
DESIGNED BY: AMS
 CHECKED BY: AMS
 APPROVED BY: AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ. NO. 23-105 DATE: 3/2/23
 TITLE: CANAL ELEMENTARY LARGE SCALE MECH ROOM NO 1 DEMO PLAN
 DWG. NO. MD-401C
 SIZE: ARCH D SCALE: AS NOTED

CANAL ELEMENTARY – LARGE SCALE MECHANICAL ROOM NO 1 DEMO PLAN
 SCALE: 3/4" = 1'-0"



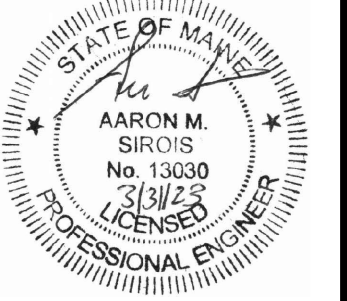
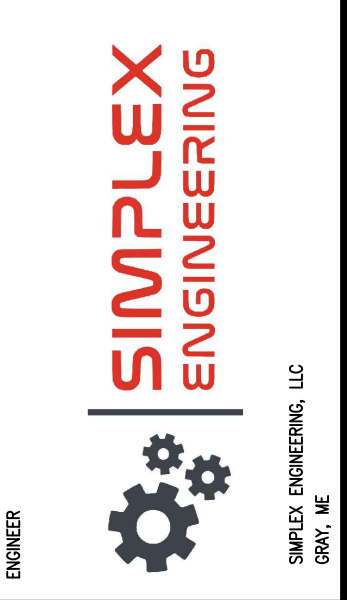


- NOTES:**
- SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.
 - REMOVE CONTROLS, ELECTRICAL AND ANCILLARY COMPONENTS FOR ALL EQUIPMENT THAT IS NO LONGER USED.

- KEYED NOTES:**
- DISCONNECT BOILER FROM EXISTING COMBUSTION AIR INTERLOCK.



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 BOILER ROOM REPLACEMENT
 WESTBROOK, ME 04092

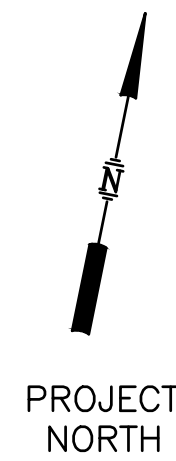


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 DRAWN BY: AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ NO. 23-105 DATE: 3/2/23
 TITLE: CANAL ELEMENTARY LARGE SCALE MECH ROOM NO 2 DEMO PLAN
 DWG NO. MD-401D
 SIZE: ARCH D SCALE: AS NOTED

CANAL ELEMENTARY – LARGE SCALE MECHANICAL ROOM NO 2 DEMO PLAN
 SCALE: 3/4" = 1'-0"



ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AG	ABOVE GRADE
AHU	AIR HANDLING UNIT
APD	AIR PRESSURE DROP
BAS	BUILDING AUTOMATION SYSTEM
BD	BALANCING DAMPER
BFW	BOILER FEED WATER
BG	BELOW GRADE
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
CA	COMPRESSED AIR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CLG	COOLING
CR	CONDENSATE RETURN
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
DC	DUST COLLECTOR
DB	DRY BULB
DEG	DEGREE
DIA. Ø	DIAMETER
DN	DOWN
(E)	EXISTING
EA	EACH, EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EG	ETHYLENE GLYCOL
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
F	FAHRENHEIT
FD	FLOOR DRAIN
FT	FEET
GA	GAUGE
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HMI	HUMAN MACHINE INTERFACE
HP	HORSEPOWER, HEAT PUMP
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM
HR	HOUR
HTG	HEATING
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
HX	HEAT EXCHANGER
HZ	HERTZ
IC	INSTRUMENTATION AND CONTROL
IN	INCHES
LAT	LEAVING AIR TEMPERATURE
LB	POUND
LEL	LOWER EXPLOSIVE LIMIT SENSOR
LPG	LIQUID PROPANE GAS
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MIN	MINIMUM
NC	NOISE CRITERIA
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
PCR	CONDENSATE RETURN (PUMPED)
PG	PROPYLENE GLYCOL
PH	PHASE
PICV	PRESSURE INDEPENDENT CONTROL VALVE
PRV	PRESSURE REDUCING VALVE
RED	REDUCER
RA	RETURN AIR
RG	REFRIGERANT, GAS PHASE
RL	REFRIGERANT, LIQUID PHASE
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SD	SMOKE DETECTOR
SS	STAINLESS STEEL
T	TEMPERATURE SENSOR, THERMOSTAT
TSP	TOTAL STATIC PRESSURE
TT	TEMPERATURE TRANSMITTER
TYP	TYPICAL
UH	UNIT HEATER
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
W/	WITH
WB	WET BULB
WC	WATER COLUMN
WG	WATER GAUGE
WPD	WATER PRESSURE DROP

DUCTWORK SYMBOLS

	RETURN DUCT UP
	RETURN DUCT DOWN
	SUPPLY DUCT UP
	SUPPLY DUCT DOWN
	EXHAUST DUCT UP
	EXHAUST DUCT DOWN
	SUPPLY AIR DIFFUSER
	RETURN AIR GRILLE
	RADIUS ELBOW
	MITRED ELBOW WITH TURNING VANES
	OFFSET
	DUCT TRANSITION FROM RECTANGULAR TO ROUND
	STANDARD BRANCH TAKEOFF
	VOLUME DAMPER
	FIRE DAMPER
	SMOKE DAMPER
	COMBINATION FIRE SMOKE DAMPER

DRAWING SYMBOLS

	SECTION NUMBER
	DRAWING WHERE SECTION IS DRAWN
	TERMINAL HYDRONIC UNIT TAG
	FLOW RATE, GPM CAPACITY, MBH OR LINEAR FEET OF ELEMENT
	EQUIPMENT TAG
	EQUIPMENT SEQUENCE NUMBER
	EQUIPMENT TAG
	CFM
	REVISION TAG
	DRAWING CONTINUATION REFERENCE

EQUIPMENT SYMBOLS

	UNIT HEATER
	MOTORIZED DAMPER (PARALLEL BLADES)
	MOTORIZED DAMPER (OPPOSED BLADES)
	BACKDRAFT DAMPER
	PNEUMATIC DAMPER
	HAND DAMPER
	CENTRIFUGAL FAN OR PUMP
	CIRCULATOR
	LOUVER
	AIR FILTER
	HEAT/COOL COIL
	H.C.C.
	PROPELLER FAN AND MOTOR
	MOTOR

PIPING SYMBOLS

	BALANCING VALVE
	COMBINATION FLOW MEASURING/BALANCING VALVE (CIRCUIT SETTER)
	GATE VALVE
	GLOBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	STOP CHECK VALVE
	MULTI-PURPOSE/TRIPLE DUTY VALVE
	TWO-WAY AUTOMATIC CONTROL VALVE
	PRESSURE INDEPENDENT CONTROL VALVE W/ PRESSURE TAPS
	THREE-WAY AUTOMATIC CONTROL VALVE
	SAFETY RELIEF VALVE
	BASKET STRAINER W/ BLOWDOWN
	STRAINER W/ BALL DRAIN VALVE, HOSE BIB & CAP
	PRESSURE INDEPENDENT FLOW LIMITING VALVE
	ORIFICE PLATE FOR BALANCING (TYP)
	UNION AS DICTATED BY PIPE SIZE
	FLANGE AS DICTATED BY PIPE SIZE
	PIPE RISE
	PIPE DROP
	DRAIN VALVE WITH CAPPED HOSE CONNECTION
	PRESSURE REGULATOR
	THERMAL EXPANSION VALVE
	SIGHT GLASS/MOISTURE INDICATOR

LINE TYPE LEGEND

	BACKGROUND
	EXISTING
	NEW WORK
	HIDDEN LINE
	OR DEMO
	CONTROL

CONTROLS SYMBOLS

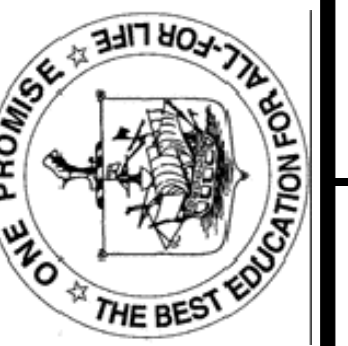
	TEMPERATURE GAUGE
	PRESSURE GAUGE W/ ISOLATION COCK
	PRESSURE GAUGE W/PIGTAIL SIPHON AND ISOLATION COCK
	P/T PORT (PRESSURE/TEMPERATURE)
	METER
	COMBINATION THERMOSTATIC AIR VENT & VACUUM BREAKER
	AUTO AIR VENT
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	RUBBER EXPANSION JOINT (2 SPHERE)
	BRAIDED EXPANSION JOINT (FLEX PIPE)
	CAP THREADED
	CAP WELDED
	FLOAT & THERMOSTATIC STEAM TRAP (W/VENT & VACUUM BREAKER)
	THERMO DYNAMIC STEAM TRAP
	INVERTED BUCKET STEAM TRAP
	THERMO STATIC STEAM TRAP (BALANCED PRESSURE TYPE)
	BALANCED FLOW RATE (GPM)
	SUCTION DIFFUSER
	VARIABLE FREQUENCY DRIVE

GENERAL SYMBOLS

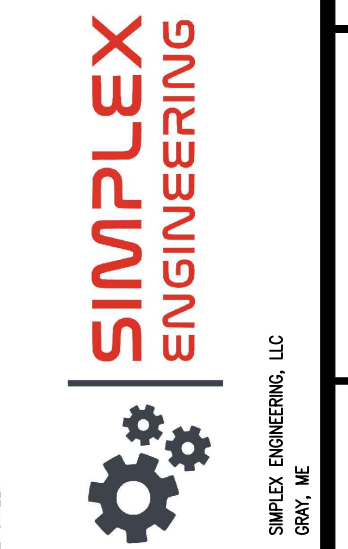
	TIE-IN POINT
	SCOPE OR SPEC BREAK
	CONTINUATION
	PIPE FLOW DIRECTION
	AIR FLOW DIRECTION
	PRESSURIZATION AIR FLOW DIRECTION
	SMACNA DUCT PRESSURE CLASS CHANGE
	SMACNA DUCT PRESSURE CLASS

GENERAL NOTES

- GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO DRAWINGS MARKED M-#
- DRAWINGS ARE DIAGRAMMATIC; DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
- THE CONTRACTOR IS RESPONSIBLE FOR FIELD MEASUREMENTS.
- COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS.
- WORK SHALL BE COORDINATED WITH TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST.
- VERIFY EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
- INSTALL EQUIPMENT, PIPING AND DUCTWORK AS REQUIRED TO PROVIDE VIBRATION FREE INSTALLATION AND TO FACILITATE EQUIPMENT ACCESS AS REQUIRED BY EQUIPMENT MANUFACTURER.
- INTERNAL AIR FLOW DIMENSIONS ARE SHOWN FOR DUCTS.
- PROVIDE VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS. THIS INCLUDES LOW POINTS IN COMPRESSED AIR SYSTEM PIPING TO ACCOMMODATE DRAINING MOISTURE IN LINES.
- PROVIDE ADEQUATE CLEARANCE FOR ACCESS TO HARDWARE AND DUCT FLANGES.



CLIENT
WESTBROOK SCHOOL DEPARTMENT
CONGIN, CANAL AND VOCATIONAL CENTER
BOLLER ROOM REPLACEMENT
WESTBROOK, ME 04092



DESIGNED BY
AMS

CHECKED BY
AMS

DATE
3/31/23

DESCRIPTION
ISSUED FOR CONSTRUCTION

REV. DATE

0 3/31/23

PROJ. NO. 23-105 DATE: 3/2/23

TITLE: MECHANICAL SYMBOLS, LEGEND & ABBREVIATIONS

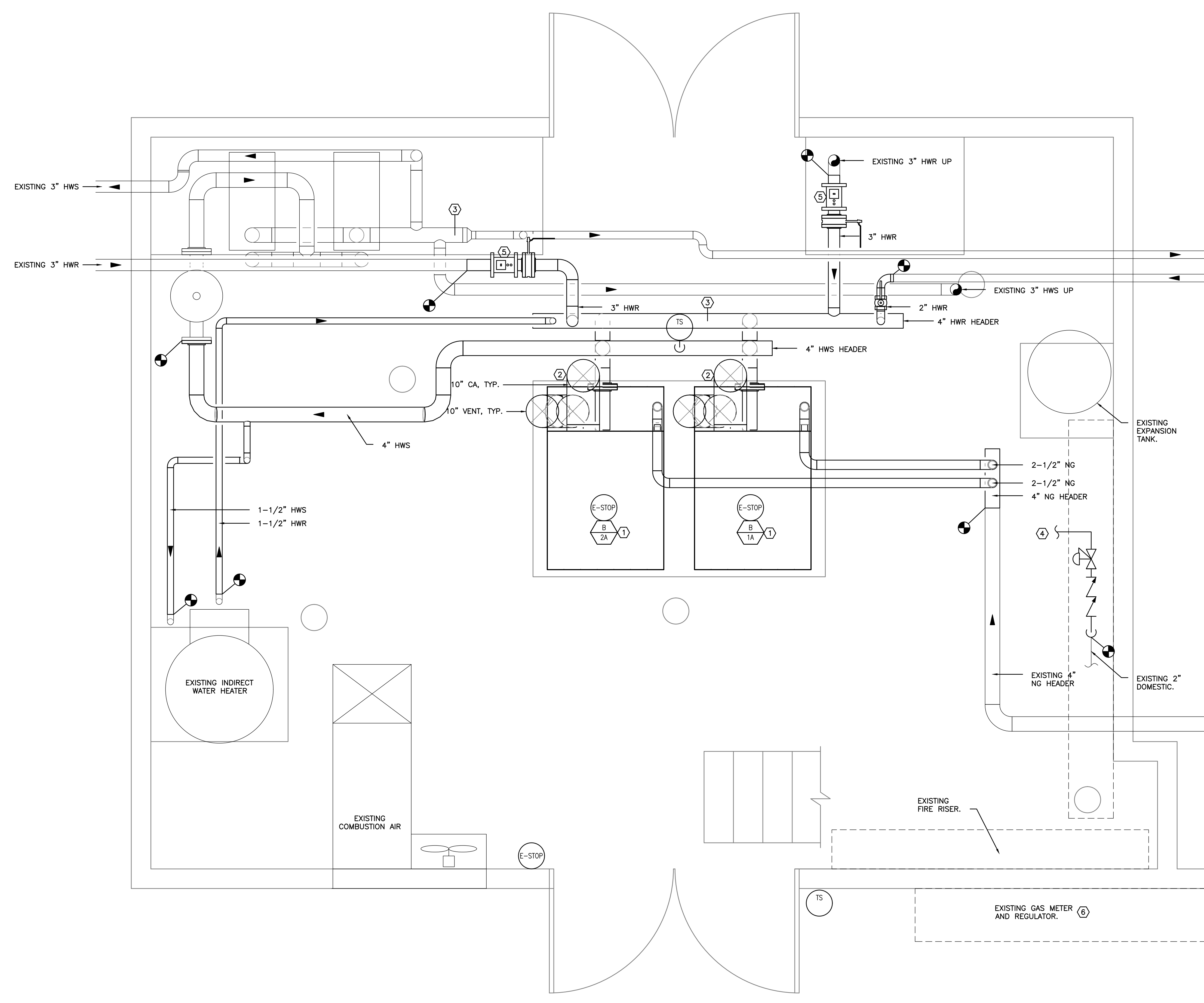
DWG. NO. M-001

SIZE: ARCH D SCALE: NONE

24/36 SHEET

A B C D E F G H I J K L M N O

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NOTES:

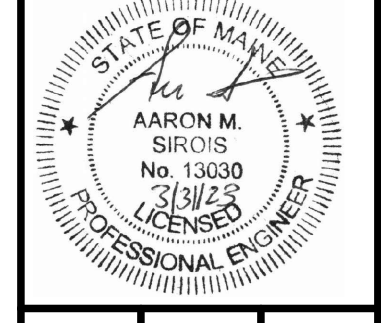
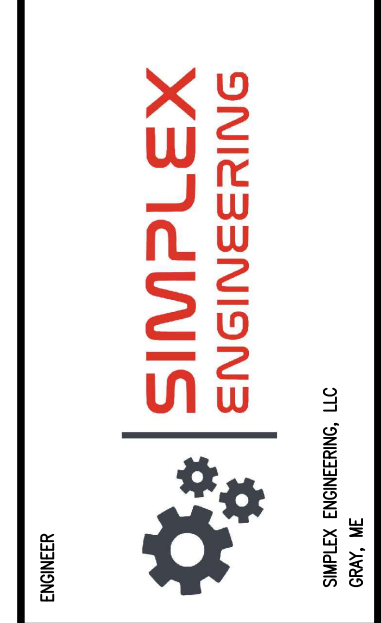
- SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.
- DIMENSIONS WHERE INDICATED ARE APPROXIMATE. CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS BASED ON FIELD CONDITIONS.
- ALL PENETRATIONS IN BOILER ROOM SHALL BE SEALED WITH AN APPROVED FIRE CAULKING.

KEYED NOTES:

- MAINTAIN REQUIRED CLEARANCE BETWEEN TOP OF BOILER AND PIPING TO ALLOW BURNER ACCESS.
- 10" COMBUSTION AIR AND VENT THRU ROOF. TRANSITION VENTING AND COMBUSTION AIR ONCE ABOVE JOIST SPACE AS REQUIRED TO MAINTAIN MANUFACTURER REQUIRED SEPARATIONS BETWEEN VENT AND COMBUSTION AIR. SEE DETAIL (M-501).
- INSTALL DIFFERENTIAL PRESSURE TRANSMITTER, REFER TO M-701A.
- 1" MAKEUP TO AIR SEPARATOR AND EXP TANK, SEE M-701A.
- REPLACE EXISTING CIRCUIT SETTER IN KIND. SET FLOW RATE TO MATCH DEMOLISHED VALVES.
- REPLACE REGULATOR SPRING WITH 14" WC PRESSURE TO BOILER ROOM.



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WESTBROOK, ME 04092

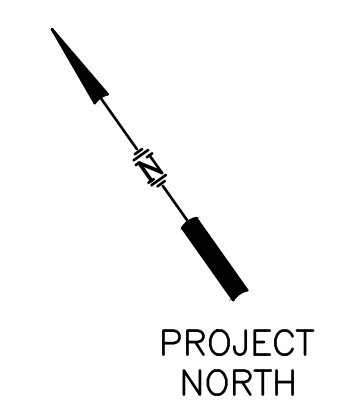


DESIGNED BY: AMS
CHECKED BY: AMS
APPROVED BY: AMS

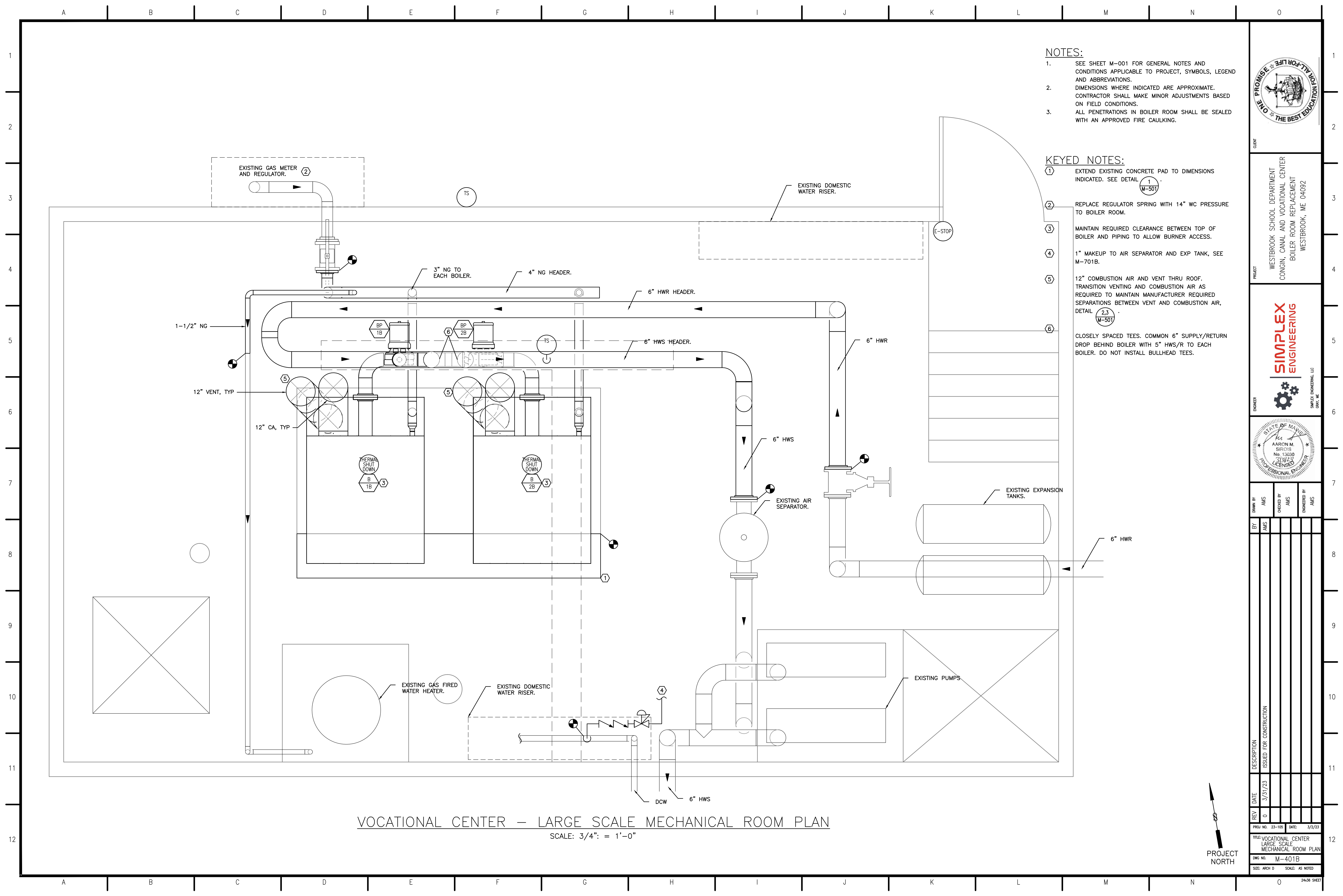
REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ NO. 23-105 DATE: 3/2/23
TITLE: CONGIN ELEMENTARY
LARGE SCALE
MECHANICAL ROOM PLAN
DWG NO. M-401A
SIZE: ARCH D SCALE: AS NOTED

CONGIN ELEMENTARY – LARGE SCALE MECHANICAL ROOM PLAN
SCALE: 3/4" = 1'-0"



A B C D E F G H I J K L M N O



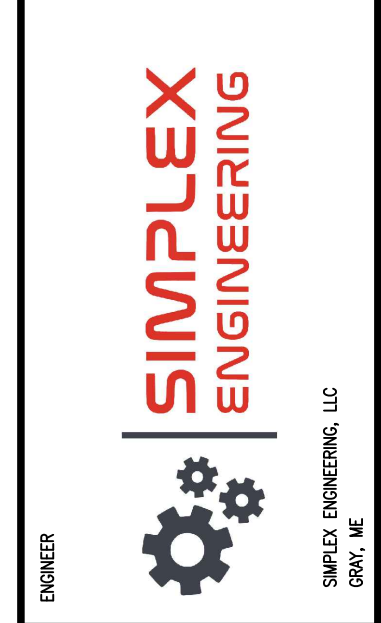
- NOTES:**
- SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.
 - DIMENSIONS WHERE INDICATED ARE APPROXIMATE. CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS BASED ON FIELD CONDITIONS.
 - ALL PENETRATIONS IN BOILER ROOM SHALL BE SEALED WITH AN APPROVED FIRE CAULKING.

- KEYED NOTES:**
- EXTEND EXISTING CONCRETE PAD TO DIMENSIONS INDICATED. SEE DETAIL **(1)** M-501.
 - REPLACE REGULATOR SPRING WITH 14" WC PRESSURE TO BOILER ROOM.
 - MAINTAIN REQUIRED CLEARANCE BETWEEN TOP OF BOILER AND PIPING TO ALLOW BURNER ACCESS.
 - 1" MAKEUP TO AIR SEPARATOR AND EXP TANK, SEE M-701B.
 - 12" COMBUSTION AIR AND VENT THRU ROOF. TRANSITION VENTING AND COMBUSTION AIR AS REQUIRED TO MAINTAIN MANUFACTURER REQUIRED SEPARATIONS BETWEEN VENT AND COMBUSTION AIR, DETAIL **(2,3)** M-501.
 - CLOSELY SPACED TEES. COMMON 6" SUPPLY/RETURN DROP BEHIND BOILER WITH 5" HWS/R TO EACH BOILER. DO NOT INSTALL BULLHEAD TEES.

VOCATIONAL CENTER – LARGE SCALE MECHANICAL ROOM PLAN
SCALE: 3/4" = 1'-0"



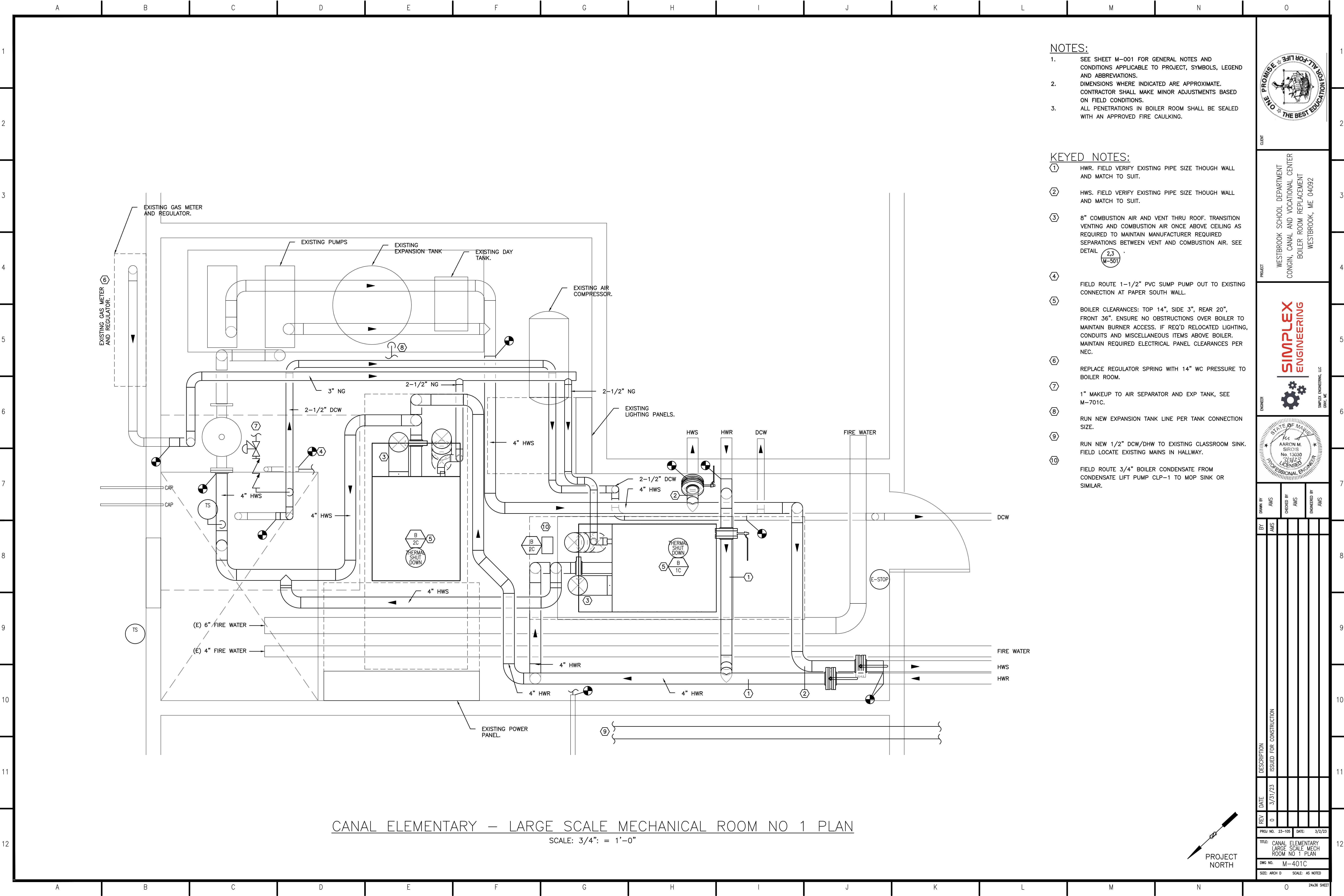
CLIENT
WESTBROOK SCHOOL DEPARTMENT
CONGIN, CANAL AND VOCATIONAL CENTER
BOILER ROOM REPLACEMENT
WESTBROOK, ME 04092



DRAWN BY: AMS
CHECKED BY: AMS
DESIGNED BY: AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ NO. 23-105 DATE: 3/2/23
TITLE: VOCATIONAL CENTER LARGE SCALE MECHANICAL ROOM PLAN
DWG NO. M-401B
SIZE: ARCH D SCALE: AS NOTED



NOTES:

- SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.
- DIMENSIONS WHERE INDICATED ARE APPROXIMATE. CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS BASED ON FIELD CONDITIONS.
- ALL PENETRATIONS IN BOILER ROOM SHALL BE SEALED WITH AN APPROVED FIRE CAULKING.

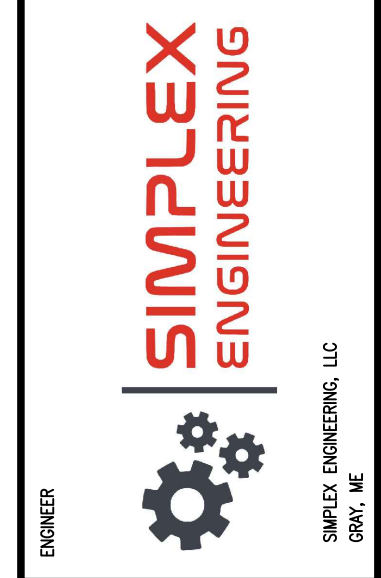
KEYED NOTES:

- HWR. FIELD VERIFY EXISTING PIPE SIZE THOUGH WALL AND MATCH TO SUIT.
- HWS. FIELD VERIFY EXISTING PIPE SIZE THOUGH WALL AND MATCH TO SUIT.
- 8" COMBUSTION AIR AND VENT THRU ROOF. TRANSITION VENTING AND COMBUSTION AIR ONCE ABOVE CEILING AS REQUIRED TO MAINTAIN MANUFACTURER REQUIRED SEPARATIONS BETWEEN VENT AND COMBUSTION AIR. SEE DETAIL 2,3
M-501
- FIELD ROUTE 1-1/2" PVC SUMP PUMP OUT TO EXISTING CONNECTION AT PAPER SOUTH WALL.
- BOILER CLEARANCES: TOP 14", SIDE 3", REAR 20", FRONT 36". ENSURE NO OBSTRUCTIONS OVER BOILER TO MAINTAIN BURNER ACCESS. IF REQ'D RELOCATED LIGHTING, CONDUITS AND MISCELLANEOUS ITEMS ABOVE BOILER. MAINTAIN REQUIRED ELECTRICAL PANEL CLEARANCES PER NEC.
- REPLACE REGULATOR SPRING WITH 14" WC PRESSURE TO BOILER ROOM.
- 1" MAKEUP TO AIR SEPARATOR AND EXP TANK, SEE M-701C.
- RUN NEW EXPANSION TANK LINE PER TANK CONNECTION SIZE.
- RUN NEW 1/2" DCW/DHW TO EXISTING CLASSROOM SINK. FIELD LOCATE EXISTING MAINS IN HALLWAY.
- FIELD ROUTE 3/4" BOILER CONDENSATE FROM CONDENSATE LIFT PUMP CLP-1 TO MOP SINK OR SIMILAR.

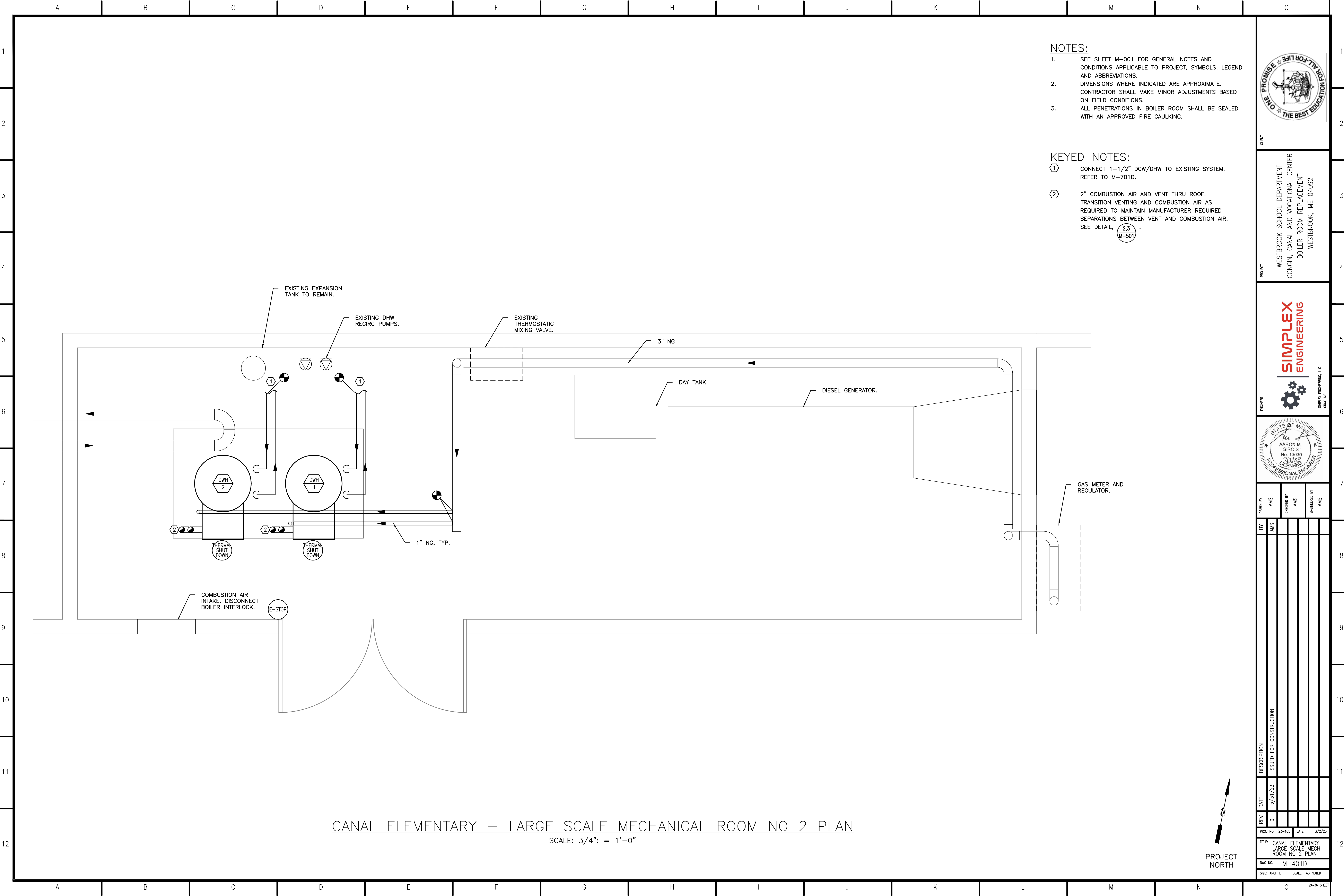
CANAL ELEMENTARY – LARGE SCALE MECHANICAL ROOM NO 1 PLAN
SCALE: 3/4" = 1'-0"



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WESTBROOK SCHOOL DEPARTMENT
CONGIN, CANAL AND VOCATIONAL CENTER
BOILER ROOM REPLACEMENT
WESTBROOK, ME 04092



BY	AMS	DECIDED BY	AMS	DESIGNED BY	AMS
DATE	3/31/23	DATE	3/2/23		
DESCRIPTION	ISSUED FOR CONSTRUCTION				
PROJ. NO.	23-105	DATE	3/2/23		
TITLE	CANAL ELEMENTARY LARGE SCALE MECH ROOM NO 1 PLAN				
DWG. NO.	M-401C				
SIZE	ARCH D SCALE: AS NOTED				

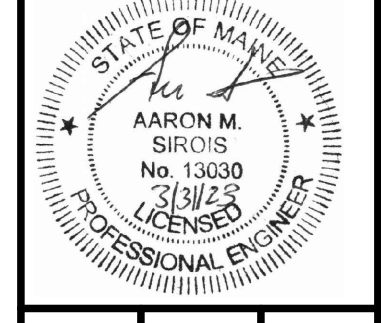
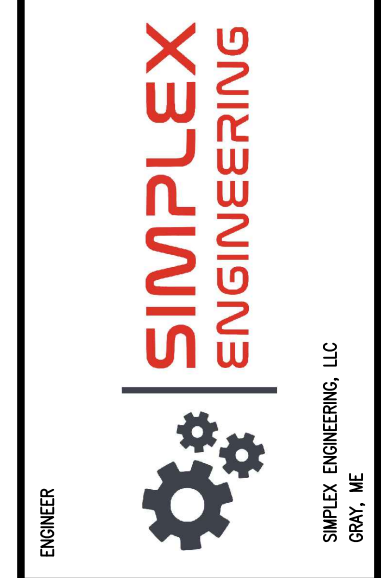


- NOTES:**
- SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.
 - DIMENSIONS WHERE INDICATED ARE APPROXIMATE. CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS BASED ON FIELD CONDITIONS.
 - ALL PENETRATIONS IN BOILER ROOM SHALL BE SEALED WITH AN APPROVED FIRE CAULKING.

- KEYED NOTES:**
- CONNECT 1-1/2" DCW/DHW TO EXISTING SYSTEM. REFER TO M-701D.
 - 2" COMBUSTION AIR AND VENT THRU ROOF. TRANSITION VENTING AND COMBUSTION AIR AS REQUIRED TO MAINTAIN MANUFACTURER REQUIRED SEPARATIONS BETWEEN VENT AND COMBUSTION AIR. SEE DETAIL, 2,3
M-501



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BOILER ROOM REPLACEMENT
WESTBROOK, ME 04092

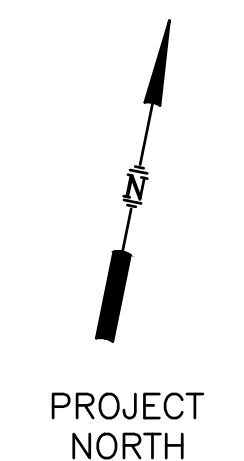


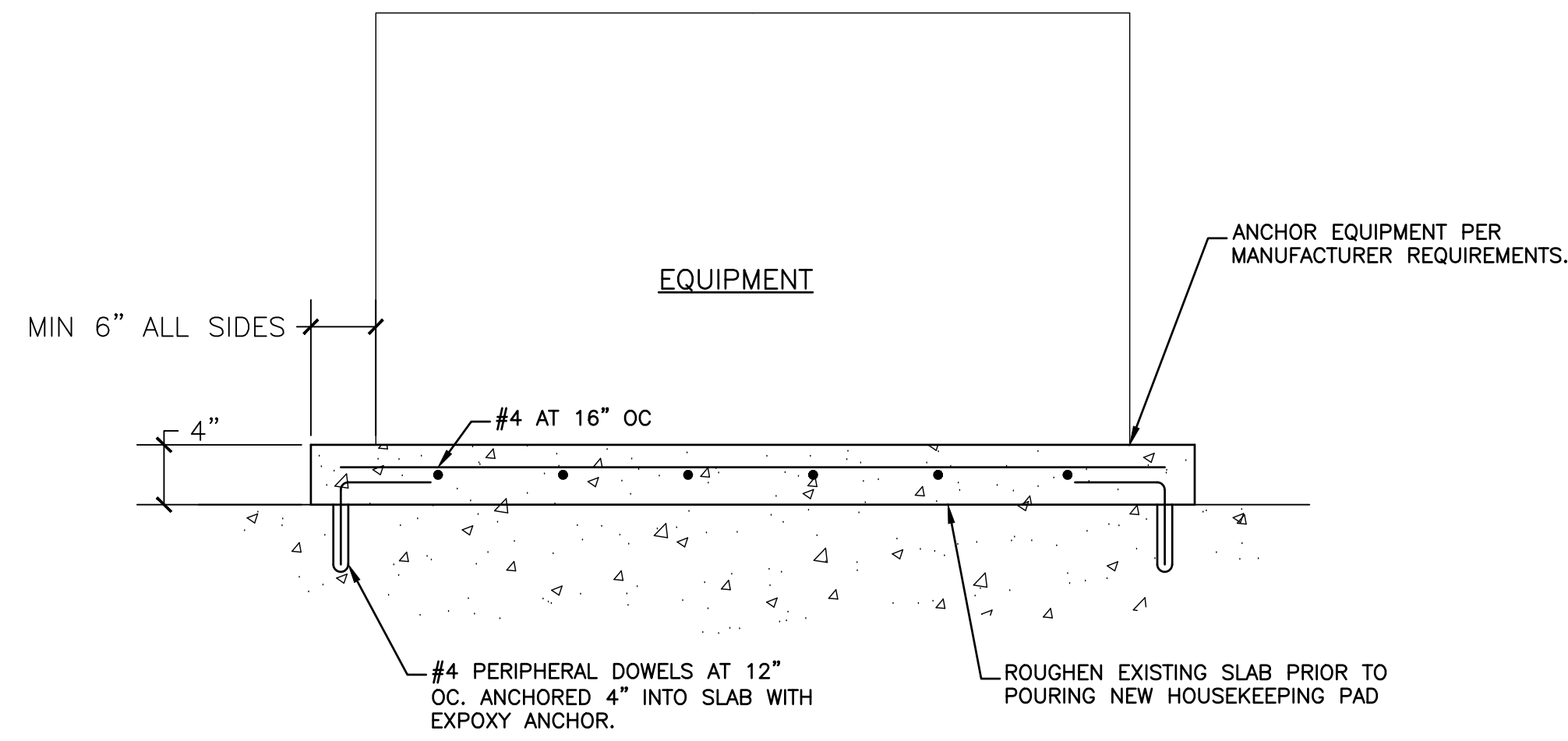
DESIGNED BY: AMS
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APPROVED BY: AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ NO. 23-105 DATE: 3/2/23
TITLE: CANAL ELEMENTARY
LARGE SCALE MECH
ROOM NO 2 PLAN
DWG NO. M-401D
SIZE: ARCH D SCALE: AS NOTED

CANAL ELEMENTARY – LARGE SCALE MECHANICAL ROOM NO 2 PLAN
SCALE: 3/4" = 1'-0"

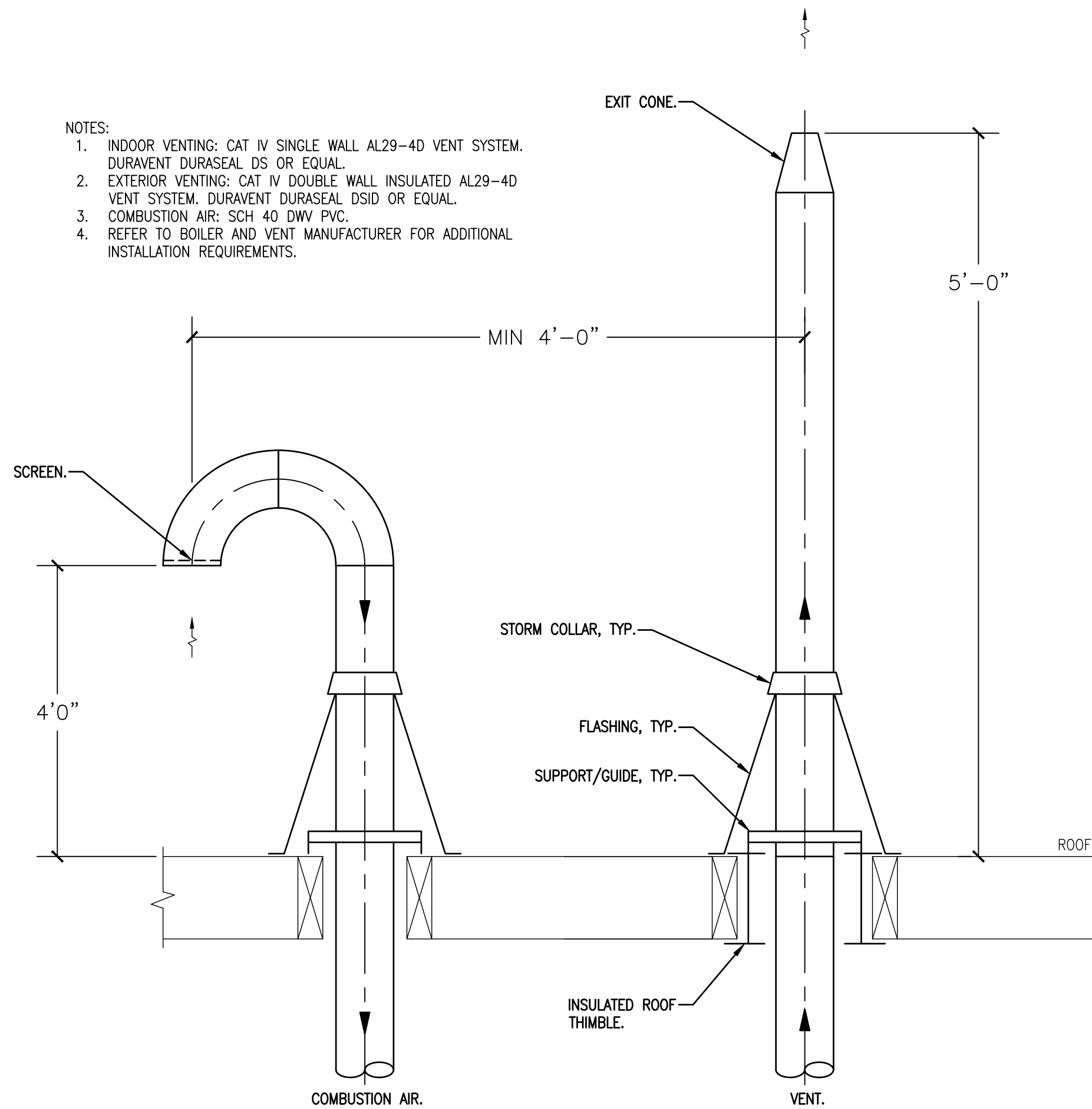




1 HOUSE KEEPING PAD DETAIL
SCALE: NTS

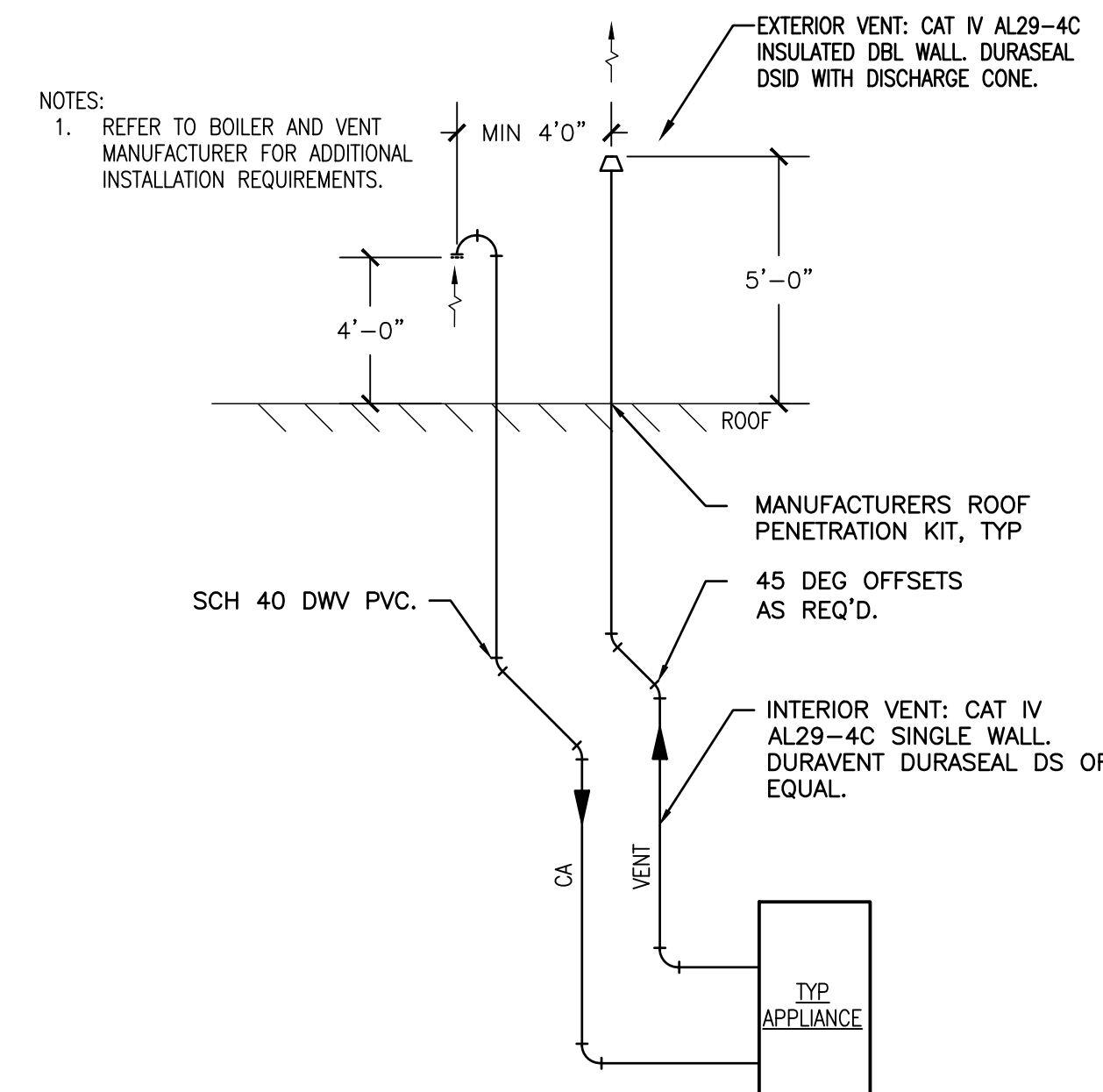
M-401A

- NOTES:
1. INDOOR VENTING: CAT IV SINGLE WALL AL29-4D VENT SYSTEM, DURAVENT DURASEAL DS OR EQUAL.
 2. EXTERIOR VENTING: CAT IV DOUBLE WALL INSULATED AL29-4D VENT SYSTEM, DURAVENT DURASEAL DSID OR EQUAL.
 3. COMBUSTION AIR: SCH 40 DWV PVC.
 4. REFER TO BOILER AND VENT MANUFACTURER FOR ADDITIONAL INSTALLATION REQUIREMENTS.



2 BOILER/DWH VENTING DETAIL
SCALE: NTS

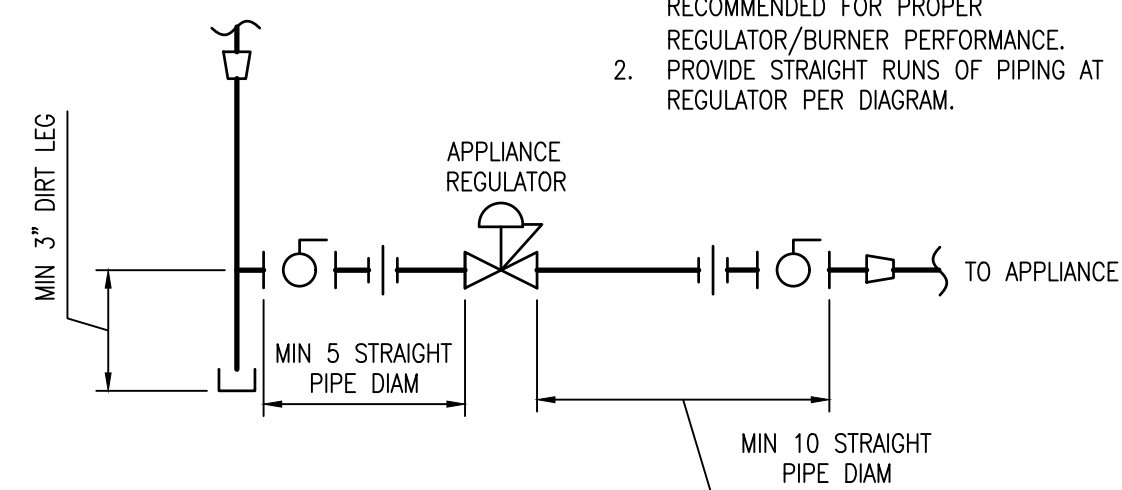
M-401A M-701A
M-401B M-701B
M-401C M-701C
M-401D M-701D



3 BOILER/DWH VENTING DIAGRAM
SCALE: NTS

M-401A M-701A
M-401B M-701B
M-401C M-701C
M-401D M-701D

- NOTE:
1. MAXIMIZE PIPE LENGTH DOWNSTREAM OF GAS REGULATOR TO BOILER, 10 FT IS RECOMMENDED FOR PROPER REGULATOR/BURNER PERFORMANCE.
 2. PROVIDE STRAIGHT RUNS OF PIPING AT REGULATOR PER DIAGRAM.



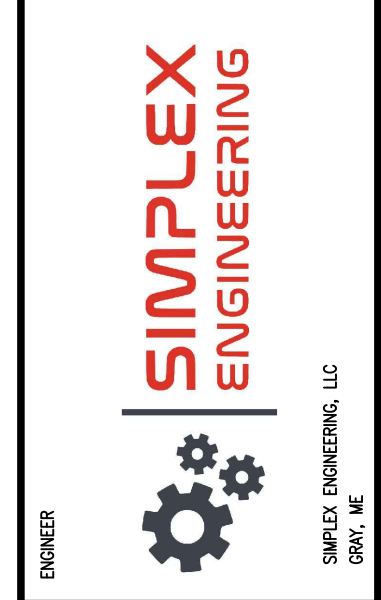
4 GAS PIPING DIAGRAM
SCALE: NTS

M-701A
M-701B
M-701C
M-701D



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CONGIN, CANAL AND VOCATIONAL CENTER
BOILER ROOM REPLACEMENT
WESTBROOK, ME 04092



DESIGNED BY: AMS
CHECKED BY: AMS
APPROVED BY: AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ. NO. 23-105 DATE: 3/2/23
TITLE: MECHANICAL DETAILS
DWG. NO. M-501
SIZE: ARCH D SCALE: NONE

BOILER SCHEDULE

TAG	SERVICE	TYPE	FUEL	GAS PRESSURE (IN WC)	MAX INPUT (MBH)	MIN INPUT (MBH)	V/PH/HZ	BASIS OF DESIGN	REMARKS
B-1A	CONGIN	CONDENSING	NAT GAS	7 TO 14	2,500	250	120/1/60	CLEAVER BROOKS CLEARFIRE CE 2500	1,2,3,4,5,6
B-2A	CONGIN	CONDENSING	NAT GAS	7 TO 14	2,500	250	120/1/60	CLEAVER BROOKS CLEARFIRE CE 2500	1,2,3,4,5,6
B-1B	VOCATIONAL	CONDENSING	NAT GAS	7 TO 14	4,000	400	120/1/60	CLEAVER BROOKS CLEARFIRE CE 4000	1,2,3,4,5,6
B-2B	VOCATIONAL	CONDENSING	NAT GAS	7 TO 14	4,000	400	120/1/60	CLEAVER BROOKS CLEARFIRE CE 4000	1,2,3,4,5,6
B-1C	CANAL	CONDENSING	NAT GAS	7 TO 14	2000	400	120/1/60	CLEAVER BROOKS CLEARFIRE CE 2000	1,2,3,4,5,6
B-2C	CANAL	CONDENSING	NAT GAS	7 TO 14	2000	400	120/1/60	CLEAVER BROOKS CLEARFIRE CE 2000	1,2,3,4,5,6

REMARKS:

- HIGH MASS, CONDENSING BOILER DESIGN.
- BOILER SHALL NOT REQUIRE A FLOW SWITCH FOR PROPER OPERATION.
- FURNISH WITH MANUFACTURERS RELIEF VALVE, MOTORIZED ISOLATION VALVE, COMBUSTION AIR FILTER, COMBO TRAP/NUETRALIZATION TANK, LWCO.
- TOUCHSCREEN CONTROLLER WITH OUTSIDE AIR RESET AND CASCADING/LEAD/LAG CONTROL OF MULTIPLE BOILERS. PROVIDE SEQUENCING CONTROLLER.
- VENTING SHALL BE AL29-4C LISTED BY MANUFACTURER. SINGLE WALL FOR INTERIOR, DOUBLE WALL INSULATED FOR EXTERIOR. PVC/CPVC WILL NOT BE ALLOWED. SEE M-501.
- COMBUSTION AIR SHALL BE SCH 40 DWV PVC.

PUMP SCHEDULE

TAG	SERVICE	TYPE	FLOW RATE (GPM)	HEAD (FT)	SIZE (IN)		ELECTRICAL		BASIS OF DESIGN	REMARKS
					SUCT.	DISCH.	HP	V/PH/HZ		
BP-1B	B-1B CIRC PUMP	INLINE	310	10	5	5	1 1/2	208/3/60	BELL & GOSSETT E-80 5X5X7B	1
BP-2B	B-2B CIRC PUMP	INLINE	310	10	5	5	1 1/2	208/3/60	BELL & GOSSETT E-80 5X5X7B	1
CLP-1	CONDENSATE LIFT	-	-	20	-	-	1.5 AMP	115/1/60	LIBERTY LCU-N20	

REMARKS:

- FIELD VERIFY AVAILABLE ELECTRICAL POWER PRIOR TO ORDERING.

DOMESTIC WATER HEATER SCHEDULE

TAG	SERVICE	TYPE	FUEL	GAS PRESSURE (IN WC)	MAX INPUT (MBH)	MIN INPUT (MBH)	FIRST HOUR RATING (GPH)	V/PH/HZ	BASIS OF DESIGN	REMARKS
DWH-1	CANAL	CONDENSING	NAT GAS	3.5 TO 14	130	35	227	120/1/60	HTP PHOENIX PH130-80	1,2,3,4,5
DWH-2	CANAL	CONDENSING	NAT GAS	3.5 TO 14	130	35	227	120/1/60	HTP PHOENIX PH130-80	1,2,3,4,5

REMARKS:

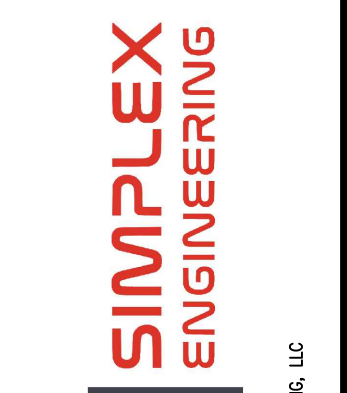
- CONDENSING, MODULATING DESIGN
- STAINLESS STEEL TANK CONSTRUCTION.
- FURNISH WITH MANUFACTURERS T&P RELIEF VALVE AND CONDENSATE KIT.
- VENTING SHALL BE AL29-4C LISTED BY MANUFACTURER. SINGLE WALL FOR INTERIOR, DOUBLE WALL INSULATED FOR EXTERIOR. PVC/CPVC WILL NOT BE ALLOWED. SEE M-501.
- COMBUSTION AIR SHALL BE SCH 40 DWV PVC.



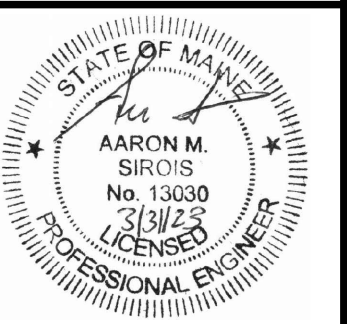
CLIENT

WESTBROOK SCHOOL DEPARTMENT
CONGIN, CANAL AND VOCATIONAL CENTER
BOILER ROOM REPLACEMENT
WESTBROOK, ME 04092

PROJECT



ENGINEER



DRAWN BY

AMS

BY

AMS

DESIGNED BY

AMS

OWNED BY

AMS

DESCRIPTION
ISSUED FOR CONSTRUCTION

REV DATE

0 3/31/23

PROJ NO. 23-105

DATE: 3/2/23

TITLE

MECHANICAL SCHEDULES

DWG NO. M-601

SIZE: ARCH D SCALE: NONE

SEQUENCE OF OPERATIONS

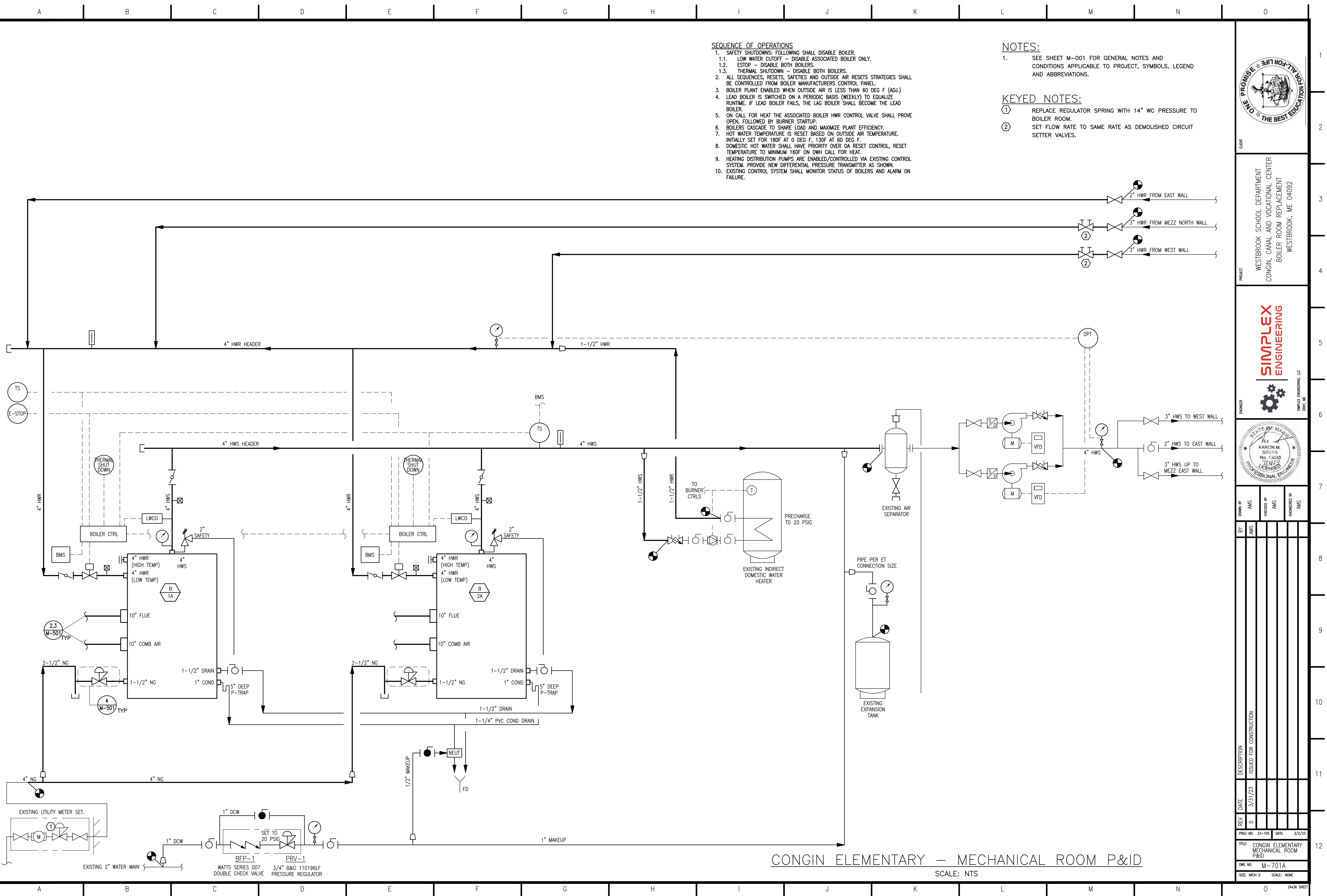
1. SAFETY SHUTDOWNS: FOLLOWING SHALL DISABLE BOILER.
 - 1.1. LOW WATER CUTOFF - DISABLE ASSOCIATED BOILER ONLY.
 - 1.2. ESTOP - DISABLE BOTH BOILERS.
 - 1.3. THERMAL SHUTDOWN - DISABLE BOTH BOILERS.
2. ALL SEQUENCES, RESETS, SAFETIES AND OUTSIDE AIR RESETS STRATEGIES SHALL BE CONTROLLED FROM BOILER MANUFACTURERS CONTROL PANEL.
3. BOILER PLANT ENABLED WHEN OUTSIDE AIR IS LESS THAN 60 DEG F (ADJ.)
4. LEAD BOILER IS SWITCHED ON A PERIODIC BASIS (WEEKLY) TO EQUALIZE RUNTIME. IF LEAD BOILER FAILS, THE LAG BOILER SHALL BECOME THE LEAD BOILER.
5. ON CALL FOR HEAT THE ASSOCIATED BOILER HWR CONTROL VALVE SHALL PROVE OPEN, FOLLOWED BY BURNER STARTUP.
6. BOILERS CASCADE TO SHARE LOAD AND MAXIMIZE PLANT EFFICIENCY.
7. HOT WATER TEMPERATURE IS RESET BASED ON OUTSIDE AIR TEMPERATURE. INITIALLY SET FOR 180F AT 0 DEG F, 130F AT 60 DEG F.
8. DOMESTIC HOT WATER SHALL HAVE PRIORITY OVER QA RESET CONTROL, RESET TEMPERATURE TO MINIMUM 160F ON DWH CALL FOR HEAT.
9. HEATING DISTRIBUTION PUMPS ARE ENABLED/CONTROLLED VIA EXISTING CONTROL SYSTEM. PROVIDE NEW DIFFERENTIAL PRESSURE TRANSMITTER AS SHOWN.
10. EXISTING CONTROL SYSTEM SHALL MONITOR STATUS OF BOILERS AND ALARM ON FAILURE.

NOTES:

1. SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.

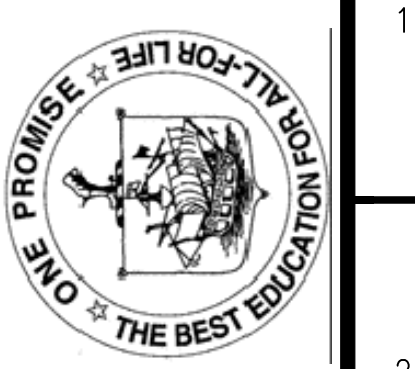
KEYED NOTES:

- ① REPLACE REGULATOR SPRING WITH 14" WC PRESSURE TO BOILER ROOM.
- ② SET FLOW RATE TO SAME RATE AS DEMOLISHED CIRCUIT SETTER VALVES.

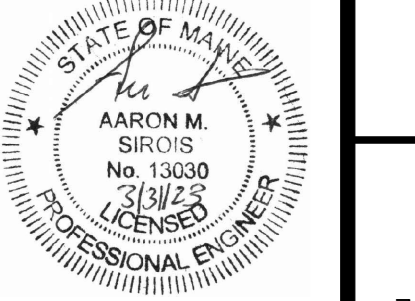
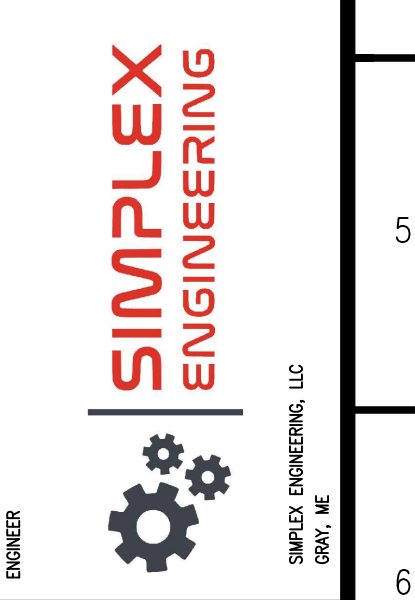


CONGIN ELEMENTARY - MECHANICAL ROOM P&ID

SCALE: NTS



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 WESTBROOK SCHOOL DEPARTMENT
 CONGIN, CANAL AND VOCATIONAL CENTER
 BOILER ROOM REPLACEMENT
 WESTBROOK, ME 04092



DESIGNED BY	AMS	DECIDED BY	AMS	ENGINEERED BY	AMS
DATE	3/31/23	DATE	3/2/23		
DESCRIPTION	ISSUED FOR CONSTRUCTION				
PROJ. NO.	23-105	DATE	3/2/23		
TITLE	CONGIN ELEMENTARY MECHANICAL ROOM P&ID				
DWG. NO.	M-701A				
SIZE	ARCH D SCALE: NONE				

SEQUENCE OF OPERATIONS

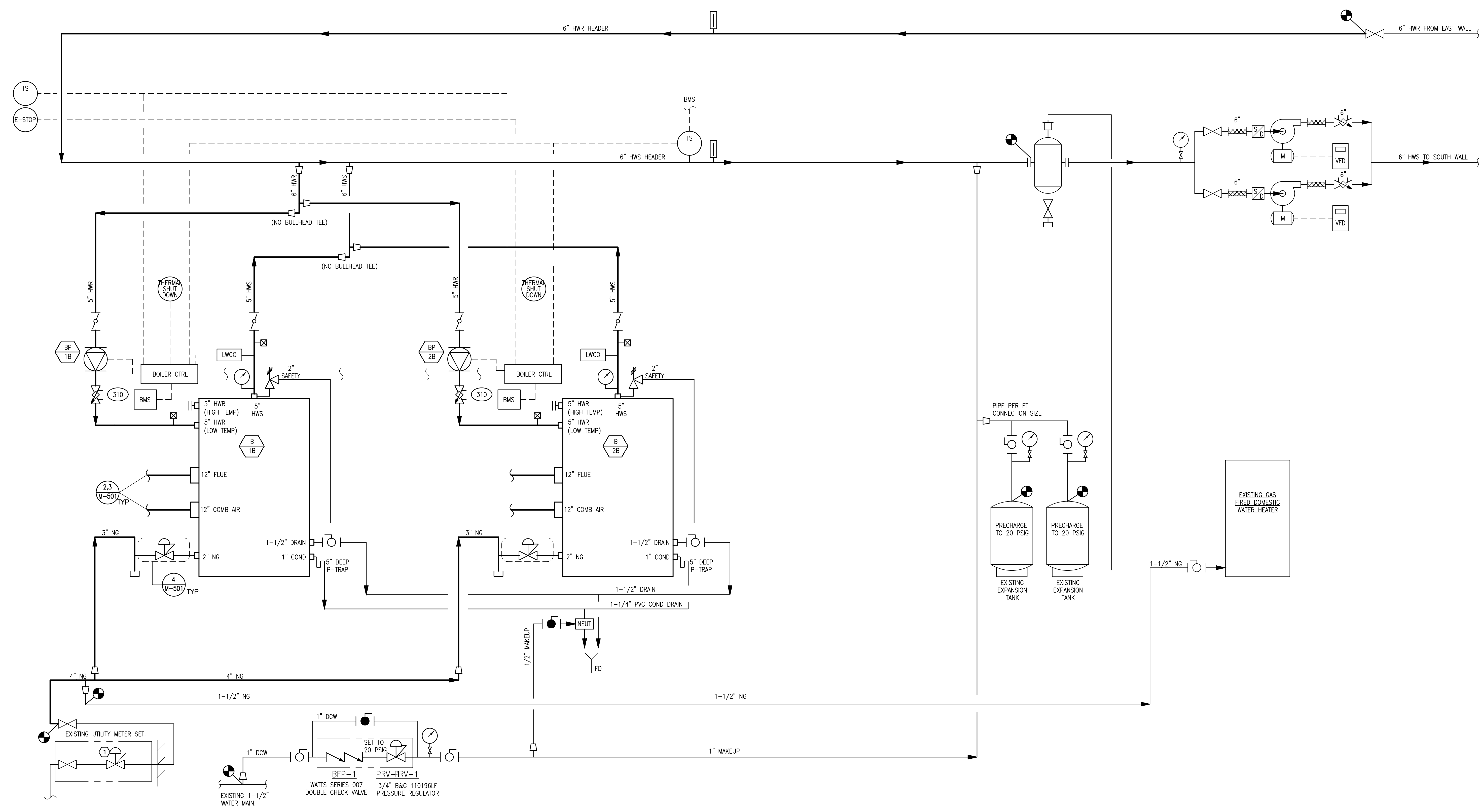
1. SAFETY SHUTDOWNS: FOLLOWING SHALL DISABLE BOILER.
 - 1.1. LOW WATER CUTOFF - DISABLE ASSOCIATED BOILER ONLY.
 - 1.2. ESTOP - DISABLE BOTH BOILERS.
 - 1.3. THERMAL SHUTDOWN - DISABLE BOTH BOILERS.
2. ALL SEQUENCES, BOILER CIRCULATOR CONTROL, RESETS, SAFETIES AND OUTSIDE AIR RESETS STRATEGIES SHALL BE CONTROLLED FROM BOILER MANUFACTURERS CONTROL PANEL.
3. BOILER PLANT ENABLED WHEN OUTSIDE AIR IS LESS THAN 60 DEG F (ADJ.)
4. LEAD BOILER IS SWITCHED ON A PERIODIC BASIS (WEEKLY) TO EQUALIZE RUNTIME. IF LEAD BOILER FAILS, THE LAG BOILER SHALL BECOME THE LEAD BOILER.
5. ON A CALL FOR HEAT THE BOILER PUMP ASSOCIATED WITH THE OPERATIONAL BOILER SHALL PROVE FLOW, FOLLOWED BY BURNER STARTUP.
6. BOILERS CASCADE TO SHARE LOAD AND MAXIMIZE PLANT EFFICIENCY.
7. HOT WATER TEMPERATURE IS RESET BASED ON OUTSIDE AIR TEMPERATURE. INITIALLY SET FOR 180F AT 0 DEG F, 130F AT 60 DEG F.
8. HEATING PUMPS ARE ENABLED/CONTROLLED VIA EXISTING CONTROL SYSTEM.
9. EXISTING CONTROL SYSTEM SHALL MONITOR STATUS OF BOILERS AND ALARMS ON FAILURE.

NOTES:

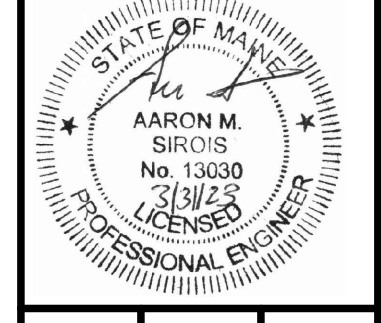
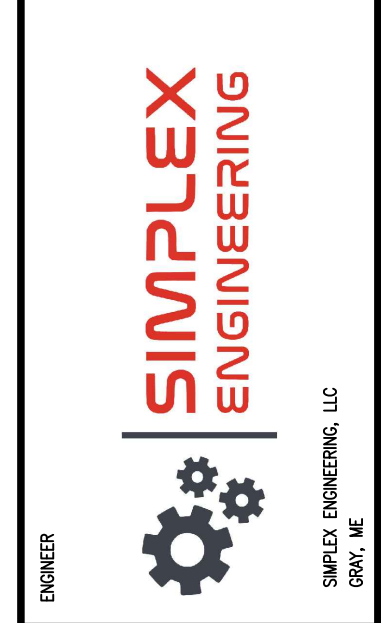
1. SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.

KEYED NOTES:

- ① REPLACE REGULATOR SPRING WITH 14" WC PRESSURE TO BOILER ROOM.



CLIENT
 WESTBROOK SCHOOL DEPARTMENT
 CONGIN, CANAL AND VOCATIONAL CENTER
 BOILER ROOM REPLACEMENT
 WESTBROOK, ME 04092



DESIGNED BY: AMS
 CHECKED BY: AMS
 ENGINEERED BY: AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ NO. 23-105 DATE: 3/2/23
 TITLE: VOCATIONAL CENTER MECHANICAL ROOM P&ID
 DWG NO. M-701B
 SIZE: ARCH D SCALE: NONE

VOCATIONAL CENTER - MECHANICAL ROOM P&ID
 SCALE: NTS

SEQUENCE OF OPERATIONS

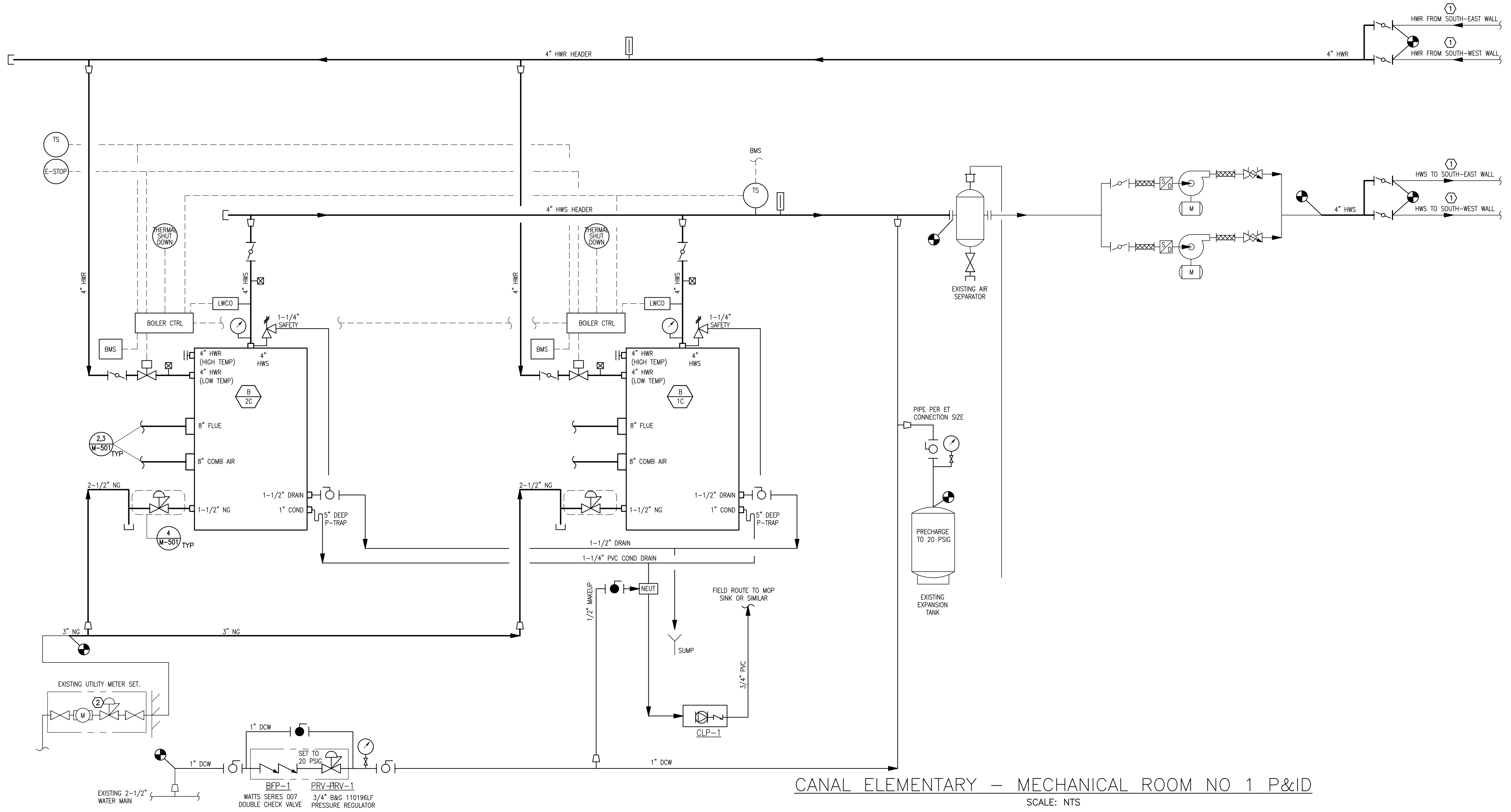
1. SAFETY SHUTDOWNS, FOLLOWING SHALL DISABLE BOILER.
 - 1.1. LOW WATER CUTOFF - DISABLE ASSOCIATED BOILER ONLY.
 - 1.2. E-STOP - DISABLE BOTH BOILERS.
 - 1.3. THERMAL SHUTDOWN - DISABLE BOTH BOILERS.
2. ALL SEQUENCES, RESETS, SAFETIES AND OUTSIDE AIR RESETS STRATEGIES SHALL BE CONTROLLED FROM BOILER MANUFACTURERS CONTROL PANEL.
3. BOILER PLANT ENABLED WHEN OUTSIDE AIR IS LESS THAN 60 DEG F (ADJ.)
4. LEAD BOILER IS SWITCHED ON A PERIODIC BASIS (WEEKLY) TO EQUALIZE RUNTIME. IF LEAD BOILER FAILS, THE LAG BOILER SHALL BECOME THE LEAD BOILER.
5. ON CALL FOR HEAT THE ASSOCIATED BOILER HWR CONTROL VALVE SHALL PROVE OPEN, FOLLOWED BY BURNER STARTUP.
6. BOILERS CASCADE TO SHARE LOAD AND MAXIMIZE PLANT EFFICIENCY.
7. HOT WATER TEMPERATURE IS RESET BASED ON OUTSIDE AIR TEMPERATURE. INITIALLY SET FOR 180F AT 0 DEG F, 130F AT 60 DEG F.
8. HEATING PUMPS ARE ENABLED/CONTROLLED VIA EXISTING CONTROL SYSTEM.
9. EXISTING CONTROL SYSTEM SHALL MONITOR STATUS OF BOILERS AND ALARMS ON FAILURE.

NOTES:

1. SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.

KEYED NOTES:

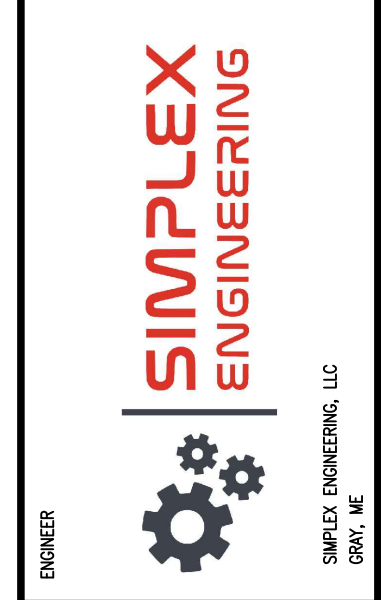
- ① FIELD VERIFY PIPE SIZES AND MATCH TO SUIT.
- ② REPLACE REGULATOR SPRING WITH 14" WC PRESSURE TO BOILER ROOM.



CANAL ELEMENTARY - MECHANICAL ROOM NO 1 P&ID
SCALE: NTS



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BOILER ROOM REPLACEMENT
WESTBROOK, ME 04092



DRAWN BY: AMS
CHECKED BY: AMS
ENGINEER BY: AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

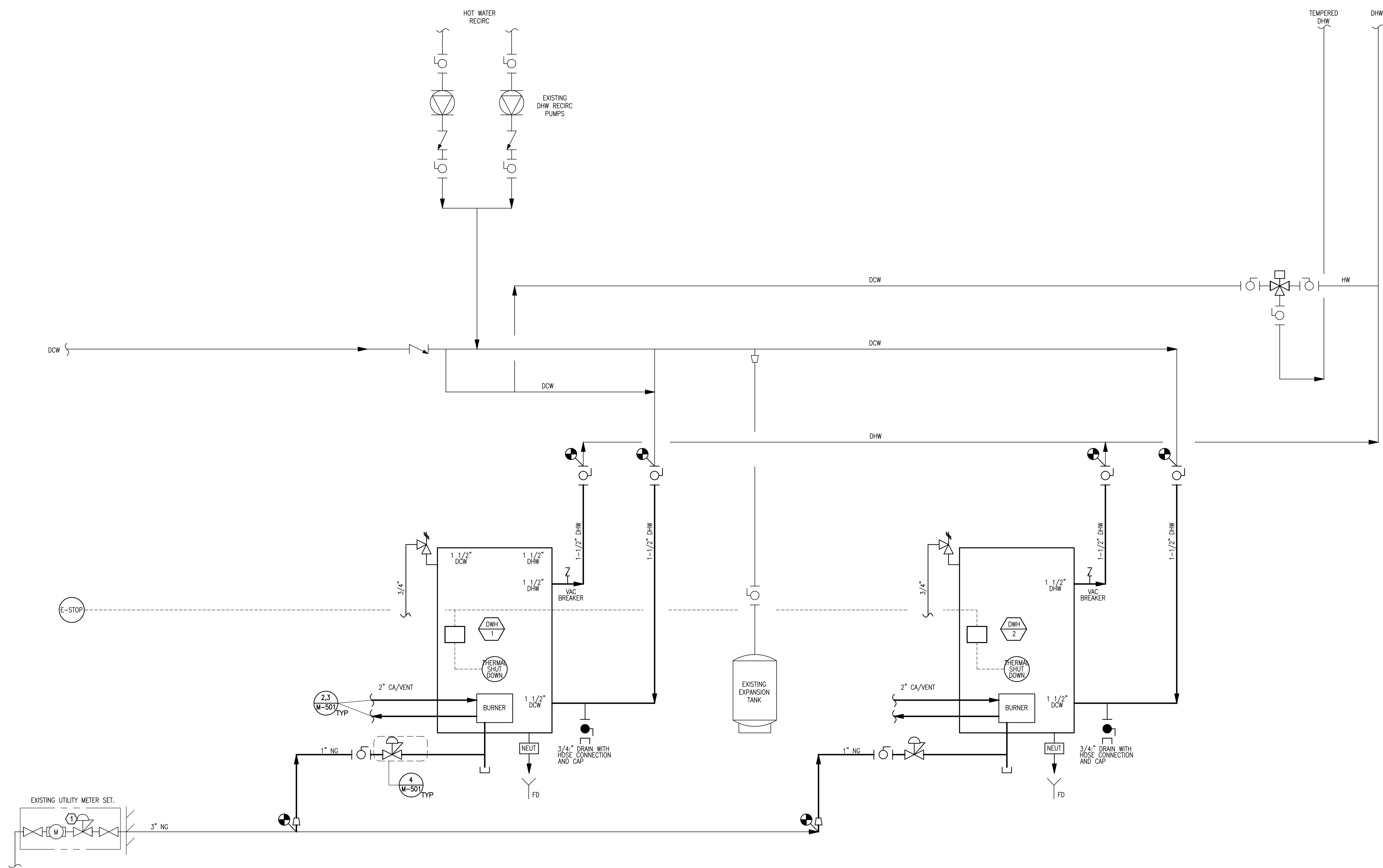
PROJ NO: 23-105 DATE: 3/2/23
TITLE: CANAL ELEMENTARY MECHANICAL ROOM NO 1 P&ID
DWG NO: M-701C
SIZE: ARCH D SCALE: NONE

SEQUENCE OF OPERATIONS

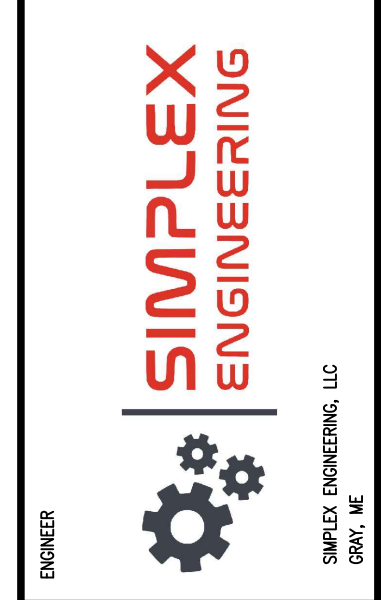
- SAFETY SHUTDOWNS: FOLLOWING SHALL DISABLE BOILER.
 - LOW WATER CUTOFF - DISABLE ASSOCIATED DWH ONLY.
 - ESTOP - DISABLE BOTH DWH.
 - THERMAL SHUTDOWN - DISABLE BOTH DWH.
- ALL SEQUENCES, RESETS, SAFETIES AND OUTSIDE AIR RESETS STRATEGIES SHALL BE CONTROLLED FROM DWH MANUFACTURERS CONTROL PANEL.
- WATER HEATER SETPOINT = 140F.

NOTES:

- SEE SHEET M-001 FOR GENERAL NOTES AND CONDITIONS APPLICABLE TO PROJECT, SYMBOLS, LEGEND AND ABBREVIATIONS.



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DRAWN BY: AMS
 CHECKED BY: AMS
 ENGINEERED BY: AMS

REV	DATE	DESCRIPTION
0	3/31/23	ISSUED FOR CONSTRUCTION

PROJ NO: 23-105 DATE: 3/2/23
 TITLE: CANAL ELEMENTARY MECHANICAL ROOM NO 2 P&ID
 DWG NO: M-701D
 SIZE: ARCH D SCALE: NONE

CANAL ELEMENTARY - MECHANICAL ROOM NO 2 P&ID
 SCALE: NTS