

RADIANT TUBE HEATER SCHEDULE						
MARK	TUBE LENGTH (FT)	OPERATING WEIGHT (LBS.)	NATURAL GAS HEATING	ELECTRICAL		BASIS OF DESIGN (MANUFACTURER,MODEL#)
			HEATING INPUT (MBH)	V / PH	AMPS	
IH-1	30	150	100/70	120 / 1	1.0	GORDONRAY/ ROBERTS GORDON DUAL STAGE INFRARED TUBE HEATER MODEL DF-100
IH-2	10	150	40	120 / 1	1.0	GORDONRAY/ ROBERTS GORDON SINGLE STAGE INFRARED TUBE HEATER MODEL BH-40

NOTES:

- PROVIDE IH-1 WITH TWO STAGES OF HEAT.
- PROVIDE EACH IH-1 HEATER WITH A WALL MOUNTED TWO STAGE PROGRAMMABLE THERMOSTAT WITH ON/OFF AND SCHEDULING ABILITY.
- PROVIDE IH-2 WITH ONE STAGE OF HEAT.
- PROVIDE EACH IH-2 HEATER WITH A WALL MOUNTED SINGLE STAGE PROGRAMMABLE THERMOSTAT WITH ON/OFF AND SCHEDULING ABILITY.
- PROVIDE EACH HEATER WITH VENT ADAPTOR TO ALLOW CONNECTION TO 4" VENT PIPING AT EXHAUST END OF HEATER.

ELECTRIC UNIT HEATER SCHEDULE					
MARK	HEATING CAPACITY		ELECTRICAL		BASIS OF DESIGN
	KW	MBH	V / PH	AMPS	
UH-1	7.5	25.6	208 / 1	36.1	MARKEL, MODEL # F2F5107CA1L, HORIZONTAL FORCED FAN UNIT HEATER
UH-2	3.3	11.2	208 / 1	14.4	MARKEL, MODEL # F1F5103N, HORIZONTAL FORCED FAN UNIT HEATER

NOTES:

- PROVIDE WITH STANDARD LOUVER DIFFUSER.
- PROVIDE UH-1 WITH LOW VOLTAGE REMOTE MOUNTED THERMOSTAT.
- PROVIDE UH-2 WITH UNIT MOUNTED CONTROLS.

HVAC LEGEND	
DUCTWORK	
	SUPPLY AIR DUCT, (RECTANGULAR)
	RETURN AIR DUCT, (RECTANGULAR)
	TEMPERATURE SENSOR
	RECTANGULAR DUCTWORK (1ST FIG. SIDE SHOWN, 2ND SIDE NOT SHOWN)
	ROUND DUCTWORK
	FLEXIBLE DUCT, (ROUND)
	SUPPLY DIFFUSER
	EXHAUST GRILLE
	RETURN GRILLE
	AIR DEVICE TAG
	AIRFLOW (CFM) INLET SIZE - TAG - # OF THROW DIRECTIONS
	DUCT TRANSITION, RECTANGULAR OR ROUND
	EQUIPMENT TAG
	EQUIPMENT TYPE ABBREVIATION UNIT MARK #
	MVD, MANUAL VOLUME DAMPER
	MOTORIZED CONTROL DAMPER
	CONNECT TO EXISTING
	LIMITS OF DEMOLITION
	EXISTING (EQUIPMENT OR DUCTWORK/PIPING)
	DEMOLITION (EQUIPMENT, PIPING, DUCTWORK, ETC.)
	DIRECTION OF AIRFLOW



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SALEM VA



SALEM FIRE STATION #2 - NEW SERVICE BAYS

NEW CONSTRUCTION

MECHANICAL LEGEND AND SCHEDULES

415 ELECTRIC ROAD
SALEM, VIRGINIA 24163

DRAWN BY JNB

DESIGNED BY JNB

CHECKED BY JNB

DATE 2024-08-30

SCALE AS NOTED

REVISIONS

MG1.01

PROJECT NO 03220052.01

GENERAL MECHANICAL SPECIFICATIONS

1. SCOPE:
PROVIDE ALL MATERIALS, LABOR, TOOLS AND INCIDENTALS NECESSARY TO INSTALL AND MAKE READY FOR OWNER'S USE COMPLETE SYSTEMS OF HEATING, VENTILATION, AIR CONDITIONING (HVAC), PLUMBING, FOR THE PROPOSED WORK AND BUILDING RENOVATIONS AS SHOWN ON THE DRAWINGS AND CALLED FOR IN THESE SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION WITH OTHER DIVISIONS OF WORK FOR THE FULL EXTENT OF THE SCOPE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL ASPECTS, COMPONENTS, SYSTEMS, ETC. AND ACCOMMODATE THE PERFORMANCE INTENT OF THE CONSTRUCTION DOCUMENTS THROUGHOUT THE PROJECT SCOPE.

2. BIDDERS RESPONSIBILITY:
EXAMINE THE DRAWINGS AND SPECIFICATIONS AND VISIT THE WORK SITE. BECOME FAMILIAR WITH THE CHARACTER OF THE WORK, THE COORDINATION WITH OTHER TRADES REQUIRED, AND ANY OTHER CONDITIONS THAT AFFECT THE COMPLETION OF THIS WORK. GENERAL CONTRACTOR SHALL BE REQUIRED TO COORDINATE WORK WITH TENANT FINISH CONTRACTOR IN A SIDE BY SIDE SCENARIO.

3. PERMITS, CODES AND LAWS:
APPLY FOR ALL PERMITS AND PAY ALL FEES.
ALL WORK SHALL BE IN ACCORDANCE WITH LATEST EDITIONS OF THE FOLLOWING RULES AND REGULATIONS, HEREIN REFERRED TO AS "CODES":
THE LATEST OR ADOPTED EDITION OF THE APPLICABLE LOCAL, STATE, AND FEDERAL BUILDING, MECHANICAL, SANITATION, PLUMBING, ETC. CODES.
UNDERWRITER'S LABORATORIES, INC. (U.L) NATIONAL FIRE PROTECTION ASSOCIATION (N.F.P.A.) OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (O.S.H.A)
WHERE ANY OF THESE CODES ARE AT VARIANCE WITH THE DRAWINGS AND SPECIFICATIONS, THEIR REQUIREMENTS SHALL TAKE PRECEDENCE, UNLESS THE DRAWINGS AND SPECIFICATIONS REQUIREMENTS EXCEED THESE CODES. INCLUDE ANY COST NECESSARY TO MEET THESE CODES IN THE BID PRICE.

4. MECHANICAL PLANS:
THE MECHANICAL PLANS ARE DIAGRAMMATIC AND BASED ON ONE MANUFACTURER'S EQUIPMENT.
THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL THE DETAILS OF THE EQUIPMENT. VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO BE USED. INSTALLATION SHALL BE WITHIN THE LIMITATIONS IMPOSED BY THE ARCHITECTURAL, STRUCTURAL, HVAC, ELECTRICAL, AND PLUMBING REQUIREMENTS WITH ADEQUATE SPACE FOR MAINTENANCE.

5. QUESTIONS AND CLARIFICATIONS OF BID DOCUMENTS:
BIDDERS SHALL NOT RELY ON ANY ORAL CLARIFICATION OF THE DRAWINGS OR SPECIFICATIONS. ANY QUESTIONS OR CLARIFICATIONS SHALL BE REFERRED IN WRITING TO THE ARCHITECT.

6. GUARANTEES:
ALL EQUIPMENT, MATERIALS, AND WORKMANSHIP SHALL BE GUARANTEED IN WRITING FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE. WARRANTIES SHALL BE IN WRITING AND SHALL INCLUDE FACTORY WARRANTIES FOR EACH PIECE OF EQUIPMENT. PROVIDE A CERTIFICATE FOR EACH PIECE OF EQUIPMENT. CLEARLY INDICATE ON EACH WARRANTY CERTIFICATE THE MODEL NO., SERIAL NO., LOCATION, AND OWNER'S NAME.

7. COMPLETE SYSTEM:
ALL PRODUCTS, MATERIALS AND ACCESSORIES SHALL BE FURNISHED AND INSTALLED AS REQUIRED FOR A COMPLETE SYSTEM READY FOR OWNER'S BENEFICIAL USE.

8. WORKMANSHIP:
ALL WORK SHALL BE PERFORMED BY COMPETENT MECHANICS USING PROPER TOOLS AND EQUIPMENT TO PRODUCE FIRST QUALITY WORK. ALL WORK SHALL BE NEATLY INSTALLED, ACCESSIBLE FOR MAINTENANCE, AND COMPLETE WITH ALL ACCESSORIES REQUIRED.

9. ACCESSIBILITY:
INSTALL ALL EQUIPMENT AND THEIR APPURTENANCES SUCH AS, BUT NOT LIMITED TO, VALVES, COILS, DRAIN PANS, DRAINS, DAMPERS, CONTROLS, MOTORS, CONTROLLERS, ETC., SO THAT THEY CAN BE SERVICED, RESET, REPLACED OR RECALIBRATED, ETC. INSTALL ALL NECESSARY ACCESS PANELS AND BUILDING ACCESS DOORS, AS BELOW, WHERE REQUIRED TO ACCOMPLISH THIS. IF ANY EQUIPMENT OR COMPONENTS DO NOT FIT WHERE INTENDED, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IN WRITING, REQUESTING FURTHER GUIDANCE.
PROVIDE BUILDING ACCESS DOORS FOR ALL MECHANICAL EQUIPMENT REQUIRING SERVICE, INCLUDING BUT NOT LIMITED TO, AHU'S, FANS, DAMPERS, DUCT ACCESS PANELS, CONTROLS, PIPING, VALVES, REGULATORS, TRAPS, ETC., INSTALLED ABOVE HARD CEILINGS, BEHIND WALLS, AND BELOW FLOORS, FOR INSTALLATION BY OTHER DIVISIONS OF THE WORK. BUILDING ACCESS DOORS ARE NOT REQUIRED WHERE THE MECHANICAL EQUIPMENT IS INSTALLED ABOVE LAY-IN AND ACCESSIBLE SPLINE CEILINGS. OTHER TYPES OF SPLINE CEILINGS REQUIRE BUILDING ACCESS DOORS. SIZE THE BUILDING ACCESS DOORS FOR THE USE INTENDED, BUT NOT LESS THAN 12 INCHES BY 12 INCHES. WHERE HUMAN ACCESS IS REQUIRED, PROVIDE 24 INCHES BY 24 INCHES, OR LARGER. WHERE BUILDING ACCESS DOORS CANNOT BE INSTALLED FOR STRUCTURAL OR ARCHITECTURAL REASONS, NOTIFY THE ARCHITECT. PRIME COAT BUILDING ACCESS DOORS IN PAINTED AREAS WITH FINISH PAINTING AS SPECIFIED IN OTHER DIVISIONS. IN WET AREAS, TOILET ROOMS, OR AREAS WITH CERAMIC TILE FLOORS OR WALLS, PROVIDE STAINLESS STEEL BUILDING ACCESS DOORS. PROVIDE BUILDING ACCESS DOORS WITH A CONCEALED KEY OPERATED LOCK AND CONCEALED HINGES. ALL LOCKS SHALL BE KEYED ALIKE. PROVIDE BUILDING ACCESS DOORS AS SPECIFIED IN OTHER DIVISIONS OF THE WORK OR PROVIDE MILCOR DOORS, OR EQUIVALENT, SUITABLE FOR THE INSTALLATION INTENDED. PROVIDE FIRE RATED DOORS FOR ALL FIRE RATED WALLS, PARTITIONS, AND CEILINGS.

10. WORK BY OTHER TRADES:
FURNISH ALL SLEEVE FRAMES, BUILDING ACCESS DOORS, PREFABRICATED EQUIPMENT CURBS, ROOF CURBS, ETC. FOR INSTALLATION BY OTHER TRADES.
INSTALL ALL MOTORS AND FURNISH THE STARTING EQUIPMENT AND DISCONNECTS TO THE DIVISION 26000 SUBCONTRACTOR FOR INSTALLATION. CONTROL WIRING, INCLUDING SWITCHES, THERMOSTATS, INTERLOCKS, ETC. SHALL BE FURNISHED BY DIVISION 23000. ENSURE THAT THE ELECTRICAL EQUIPMENT MOUNTED NEAR THE MECHANICAL EQUIPMENT DOES NOT BLOCK ACCESS TO SERVICE AREAS OF THE MECHANICAL EQUIPMENT. DO NOT ALLOW ANY EQUIPMENT TO BE INSTALLED ON THE HVAC EQUIPMENT ENCLOSURES.

11. FIRE STOPPING:
ALL PENETRATIONS OF FLOORS AND OTHER FIRE-RATED ASSEMBLIES SHALL BE FIRE AND SMOKE-STOPPED IN STRICT ACCORDANCE WITH THE APPLICABLE CODES.

12. FOUNDATIONS AND SPECIAL SUPPORTS:
FURNISH AND INSTALL ALL SPECIAL FOUNDATIONS AND SUPPORTS REQUIRED FOR EQUIPMENT INSTALLED UNDER THIS SECTION, UNLESS THEY ARE A PART OF THE BUILDING STRUCTURE AND ARE SHOWN IN OTHER SECTIONS.

13. CLEANING AND PAINTING:
THOROUGHLY CLEAN ALL EQUIPMENT AND REMOVE ALL TRASH, CARTONS, ETC. MAKE ANY NECESSARY CORRECTIONS OR REPAIR/REPLACE ANY DAMAGED MATERIALS OR EQUIPMENT. LEAVE THE ENTIRE SYSTEM IN A THOROUGHLY CLEAN AND ORDERLY MANNER.
ANY FINISHED SURFACES THAT HAVE BEEN SCRATCHED OR DISCOLORED SHALL BE TOUCHED-UP OR REPAINTED BREAK TO BREAK WITH PAINT TO MATCH THE ORIGINAL COLOR. TOUCH UP PAINTED SURFACES OR REPAINT THE ENTIRE PAINTED SURFACE IF TOUCH UP IS UNACCEPTABLE. SEE ARCHITECTURAL PAINTING SPECIFICATIONS.
ALL METAL ITEMS SUBJECT TO RUSTING, INSIDE OR EXPOSED TO WEATHER SHALL BE GIVEN ONE COAT OF PROPER TYPE RUST PREVENTATIVE PRIMER AS SOON AS INSTALLED. APPLY TWO FINISH COATS WITH COLOR TO BE SELECTED BY THE ARCHITECT.
FOR ALL INTERIOR OR EXTERIOR STRUCTURAL GALVANIZED STEEL, COLD GALVANIZE ALL EXPOSED METAL CUT ENDS, HOLES, WELDS, SCRATCHES, ETC., OR HOT DIP GALVANIZE THE ENTIRE STRUCTURE OR FRAME AFTER FABRICATION AND MOUNTING HOLES ARE CUT.
UPON COMPLETION OF THE INSTALLATION, BUT NOT BEFORE, AND BEFORE ACCEPTANCE, THOROUGHLY CLEAN ALL EXPOSED EQUIPMENT, PIPING, DUCTWORK, INSULATION JACKETS, ETC.,

REMOVING ALL STICKERS, LABELS, MARKING, WRITING, FABRICATION MARKINGS, IDENTIFICATION, ADHESIVE, SEALER, GLUE, RUST, CORROSION, ETC., FROM THEIR EXTERIOR SURFACES.
THE CLEANLINESS AND PAINTING ACCEPTABILITY IS AT THE SOLE DISCRETION OF THE ARCHITECT AND MAY REQUIRE ADDITIONAL CLEANING AND COATS OF PAINT BEFORE ANY SURFACE IS ACCEPTED.

14. SUBMITTAL AND SHOP DRAWINGS:
SUBMIT MANUFACTURER'S CERTIFIED DATA RELATIVE TO ALL EQUIPMENT, PIPING, CONTROLS, ETC. REQUIRED FOR THE INSTALLATION OF THE HVAC, PLUMBING AND FIRE PROTECTION SYSTEMS. SUBMIT FOR REVIEW ALL NECESSARY ENGINEERING, PRODUCT AND INSTALLATION DATA, SHOP DRAWINGS, SAMPLES ETC. FOR ALL EQUIPMENT, MATERIAL, AND SYSTEMS TO ASCERTAIN COMPLIANCE WITH THE TECHNICAL REQUIREMENTS OF THE CONTRACT DOCUMENTS. SUBMIT SIX (6) COPIES OF ALL NECESSARY DATA, CUTS, MANUFACTURER'S SELECTIONS, CATALOGS, BULLETINS, INSTALLATION INSTRUCTIONS, DRAWINGS, DIAGRAMS, CURVES, ETC. CLEARLY INDICATE ON THE SUBMITTED DATA, THE MANUFACTURER'S NAME, PRODUCT NUMBER(S), OPTIONS, EQUIPMENT CAPACITY, DIMENSIONAL DATA, WEIGHTS, AND OTHER APPLICABLE TECHNICAL DATA FOR THE PROJECT.
TRADE NAMES, MANUFACTURERS, AND CATALOGUE NUMBERS ARE MENTIONED HEREIN AND ON THE DRAWINGS SOLELY IN ORDER TO ESTABLISH A STANDARD FOR THE TYPE, GENERAL DESIGN, AND QUALITY OF PRODUCT REQUIRED. OTHER PRODUCTS SIMILAR IN DESIGN OF EQUIVALENT QUALITY CAPABLE OF FITTING WITHIN THE SPACES ALLOCATED AND COMPLYING WITH THE DRAWINGS AND SPECIFICATIONS WILL BE CONSIDERED AFTER THE CONTRACT IS LET UNLESS "PRIOR APPROVAL" REQUIREMENTS ARE SET FORTH IN THESE DOCUMENTS.
WHERE TWO OR MORE MANUFACTURERS OR MATERIALS ARE NAMED, THE CONTRACTOR MAY SUBMIT ANY OF THOSE NAMES, PROVIDED THEY CONFORM TO THE SPECIFICATIONS AND DESIGN INTENT. CONTRACTOR SHALL INCLUDE WITH THE SUBMITTAL A LIST OF ALL COMPARATIVE FEATURES INDICATING COMPLIANCE WITH THE SPECIFICATIONS.
THE ARCHITECT AND/OR ENGINEER MAY REQUIRE THE SUBMISSION OF SAMPLES, PARTICULARLY WHEREVER EQUIPMENT OR APPLIANCES ARE VISIBLE IN FINISHED AREAS, SUCH AS CEILINGS, INTERIOR AND EXTERIOR WALLS. THE CONTRACTOR AND SUPPLIER SHALL ARRANGE FOR DEMONSTRATIONS OF THE INSTALLATION OF ANY OF THESE PRODUCTS AND THEIR ABILITY TO PERFORM AS SPECIFIED, IF REQUIRED.
REVIEW OF SUBMITTALS AND SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR FITTING THE EQUIPMENT IN THE SPACE ALLOTTED WITH SPACE FOR ALL CONNECTIONS AND SERVICING AND FOR THE COORDINATION OF THE WORK WITH WORK OF OTHER TRADES.

THE CONTRACTOR SHALL REVIEW ALL SUBMITTALS AND SHOP DRAWINGS AND INDICATE BY STAMP OR LETTER THAT HE HAS REVIEWED THEM, BEFORE FORWARDING THEM TO THE ARCHITECT AND/OR ENGINEER. SUBMITTALS AND DRAWINGS WILL BE RETURNED AFTER REVIEW INDICATING WHETHER EXCEPTIONS ARE TAKEN, THE SUBMITTAL RETURNED WITH CORRECTIONS, OR IS COMPLETELY REJECTED. RESUBMISSION OF REVISED SUBMITTALS AND SHOP DRAWINGS, IF REQUIRED, SHALL BE DONE BEFORE INSTALLATION AND CONSTRUCTION IS BEGUN. CORRECTIONS OR COMMENTS MADE ON THE SUBMITTALS AND DRAWINGS DURING THIS REVIEW DOES NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THIS REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, FABRICATION PROCESSES, TECHNIQUES OF CONSTRUCTION, COORDINATING THE WORK WITH THAT OF ALL OTHER TRADES, AND PERFORMING WORK IN A SAFE AND SATISFACTORY MANNER. REVIEW OF THE SUBMITTALS SHALL NOT PERMIT ANY DEVIATION FROM PLANS AND SPECIFICATIONS.
SUBMITTALS FOR A SPECIFIC CLASS OF PRODUCTS, SYSTEMS, INSTALLATION PROCEDURES, SHOP DRAWINGS, ETC. WILL BE REVIEWED BY THE ENGINEER ONE TIME AND ITS RESUBMITTAL ONE TIME, IF NECESSARY, AS ABOVE, AT NO COST TO THE CONTRACTOR. THE CONTRACTOR WILL BEAR THE FULL COST FOR ALL SUBSEQUENT RESUBMITTAL REVIEWS AT THE ENGINEER'S STANDARD HOURLY RATES. PAYMENT WILL BE REQUIRED AT COMPLETION OF RESPECTIVE REVIEW.
REQUIRED SHOP DRAWINGS:
SUBMIT THE FOLLOWING SHOP DRAWINGS BEFORE ANY MECHANICAL DUCTWORK, PIPING, EQUIPMENT, ETC. IS FABRICATED AND INSTALLED. SUBMIT THESE SHOP DRAWINGS IN ¼ INCH PER FOOT MINIMUM SCALE WITH NECESSARY PLANS, ELEVATIONS, SECTIONS, DETAILS, AND ISOMETRICS. SUBMIT SIX (6) PAPER COPIES AND ONE (1) CD-ROM WITH ALL THESE DRAWINGS IN AUTOCAD DRAWING DWG FILES, LATEST AUTOCAD FORMAT.
SOON AFTER AWARD OF THE CONTRACT, DETERMINE WHERE THERE MAY BE INSTALLATION, SPACE CONCERNS, AND/OR WHERE OTHER CONFLICTS MAY OCCUR. SUBMIT COORDINATION DRAWINGS, RELATING TO THESE CONFLICTS WITH THE MECHANICAL EQUIPMENT, DUCT, PIPING, ELECTRICAL, STRUCTURAL AND ARCHITECTURAL SYSTEMS ETC., SHOWING CLEARANCES AND RELATIONSHIP TO STRUCTURAL MEMBERS, PIPING, LIGHTS, CONDUITS, ELECTRICAL EQUIPMENT, AND BUILDING COMPONENTS. IN PREPARING THESE SHOP DRAWINGS, ESTABLISH LINES AND LEVELS FOR ALL DIVISIONS OF THE WORK IN THE AFFECTED AREA. IMMEDIATELY CALL TO THE ATTENTION OF THE ARCHITECT ANY INTERFERENCE OR CONFLICT FOR CLARIFICATION IN WRITING.
SUBMIT SHOP DRAWINGS FOR ALL DUCTWORK. SUBMIT LAYOUT DRAWINGS OF EACH MECHANICAL SYSTEM SHOWING THE LOCATION, ARRANGEMENT, ETC. OF ALL EQUIPMENT, ALL TRADES, ETC. TO BE INSTALLED RELATED TO THE RESPECTIVE SYSTEM.

15. AS-BUILT DRAWINGS:
MAINTAIN DAILY UPDATED DRAWINGS SHOWING DEVIATIONS FROM CONSTRUCTION DOCUMENTS. AT THE END OF THE PROJECT, PROFESSIONALLY PREPARE AS-BUILT DRAWINGS AND SUBMIT THREE COPIES, ONE REPRODUCIBLE.

16. OPERATION AND MAINTENANCE MANUALS:
UPON COMPLETION OF THE PROJECT, SUBMIT THREE COPIES OF ALL OPERATION AND MAINTENANCE MANUALS, WARRANTIES, SPARE PARTS LIST, AS-BUILT DRAWINGS, TEST AND BALANCE REPORTS, AND LETTER OF GUARANTEE ALL BOUND IN THREE RING BINDERS, CLEARLY SHOWING WHICH EQUIPMENT WAS SUPPLIED TO THE JOB.

17. PROJECT COMPLETION:
BEFORE STARTING AND TESTING ANY SYSTEM, HVAC, OR PLUMBING, TO PREVENT INADVERTENT OPERATION OF THE MECHANICAL EQUIPMENT BEFORE THE MANUFACTURER'S INSPECTION AND TESTING, THE CONTRACTOR SHALL:
VERIFY THAT ALL ELECTRICAL POWER IS OFF TO ALL MECHANICAL EQUIPMENT, INCLUDING THE AHU'S, ACCU'S, BOOSTER PUMPS, FIRE PUMPS, ETC.
LOCK OUT EACH SYSTEM USING SETON MODEL NUMBER 70329; "DO NOT OPERATE" LOCK ON LOCKOUT TAGS, OR EQUIVALENT. INSTALL LOCKOUT TAGS AT EACH PIECE OF EQUIPMENT, ELECTRICAL DISCONNECTS, STARTERS, SWITCHES, ETC.
REMOVE THESE TAGS ONLY WHEN THE MANUFACTURER APPROVES OF THE EQUIPMENT INSTALLATION IN WRITING. EACH MANUFACTURER OR THEIR REPRESENTATIVE SHALL INSPECT THEIR EQUIPMENT FOR COMPLIANCE TO THEIR INSTALLATION REQUIREMENTS AND RECOMMENDATIONS. IN ADDITION, THE COMPRESSOR MANUFACTURER SHALL INSPECT EACH REFRIGERANT PIPING INSTALLATION FOR ADHERENCE TO THE APPROVED REFRIGERANT PIPING DIAGRAMS, ROUTING. EACH MANUFACTURER SHALL PREPARE A PUNCH LIST OF ALL DEFICIENCIES, IN WRITING WITH COPIES TO THE ARCHITECT AND CONTRACTOR.
EACH MANUFACTURER SHALL REINSPECT THE EQUIPMENT AFTER THE CONTRACTOR HAS CORRECTED ALL DEFICIENCIES. WHEN THE MANUFACTURER HAS GIVEN THEIR WRITTEN APPROVAL WITH COPIES TO THE ARCHITECT AND CONTRACTOR, THE CONTRACTOR MAY REMOVE THE LOCKOUT TAGS, SAFELY START, AND TEST THE EQUIPMENT, AS REQUIRED HEREIN.
CONTRACTOR SHALL PROVIDE FOR ALL NECESSARY DRILLING OF WALL STUDS, CEILING JOISTS, PLATES, FINISHES, ETC. TO ACCOMMODATE ROUTING AND INSTALLATION OF ALL PIPING, DUCT,

ETC.
HVAC EQUIPMENT, METHODS AND MATERIALS

18. DUCTWORK GENERAL:
DUCT SIZES SHOWN ON THE DRAWINGS ARE INSIDE DIMENSIONS AND DO NOT TAKE INTO ACCOUNT LINING THICKNESS. DUCTWORK SHALL BE GALVANIZED SHEET METAL WITH GAUGES, CONSTRUCTION DETAILS AND INSTALLATION ACCORDING TO N.F.P.A. STANDARD 90A, ASHRAE, AND SMACNA DUCT CONSTRUCTION MANUALS AND REQUIREMENTS. PROVIDE FLEXIBLE CONNECTIONS AT AIR HANDLING UNITS AND FANS. ALL COMBUSTION AIR INTAKE DUCTWORK SHALL BE EXTERNALLY INSULATED.
REFER TO PLANS FOR OTHER REQUIREMENTS FOR VENTING AND COMBUSTION AIR INTAKES.

19. FABRICATION, ERECTION, AND SUPPORT:
ALL DUCTWORK SHALL BE FABRICATED, ERECTED, BRACED, AND SUPPORTED IN STRICT ACCORDANCE WITH THE LATEST EDITIONS OF SMACNA AND ASHRAE REQUIREMENTS.

20. JOINT SEALING:
SEAL ALL DUCT JOINTS AND SEAMS (LONGITUDINAL AND TRANSVERSE) WITH HIGH PRESSURE DUCT SEALER, HARDCAST "IRON-GRIP 601" OR APPROVED EQUIVALENT. REINFORCED FOIL BACKED TAPES, CLOTH OR PLASTIC BACKED TAPES (DUCT TAPE) ARE NOT ACCEPTABLE.

21. FLEXIBLE AIR DUCT:
DUCT SHALL BE UL LISTED UL-181, CLASS I AIR DUCT MATERIAL AND SHALL COMPLY WITH N.F.P.A 90A AND 90B AND ALL LOCAL REQUIREMENTS. DUCT SHALL HAVE AN OPERATING AIR PRESSURE OF 6 INCHES WG POSITIVE AND 4 INCHES WG NEGATIVE, ACOUSTICAL DOUBLE LAMINATED INNER FABRIC BONDED TO A STEEL HELIX WIRE. OUTER JACKET FIRE RETARDANT REINFORCED ALUMINUM MYLAR WITH FIBERGLASS INSULATION. FLEXMASTER TYPE "8M" ACOUSTICAL INSULATED OR EQUIVALENT.
MAKE ALL FLEXIBLE DUCT CONNECTIONS TO HARD DUCT USING STAINLESS STEEL SCREW CLAMPING BANDS AND SEALED AIR TIGHT WITH HIGH PRESSURE DUCT SEALER. PLASTIC BANDS ARE NOT ACCEPTABLE.
SEAL FLEXIBLE DUCT VAPOR BARRIER TO HARD DUCT AND/OR ADJACENT INSULATION. NO EXPOSED FIBERGLASS SHALL BE VISIBLE.

22. AIR DISTRIBUTION DEVICES:
COORDINATE THE EXACT LOCATIONS OF ALL AIR DEVICE NEEDS WITH THE ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION. COORDINATE THE EXACT LOCATION OF EACH OUTLET WITH THE ARCHITECT WITH REGARD TO CEILING AND WALL SPACING, CENTERING ALONG SOFFITS, WALLS, ETC. FURNISH AND INSTALL WHERE SHOWN ON THE DRAWINGS ALL DIFFUSERS, GRILLES, AND REGISTERS OF THE SIZE, TYPE, AND CAPACITY AS INDICATED IN THE AIR DEVICE SCHEDULE. ELBOWS:
23. BRANCH TAKEOFF FITTINGS:
AT ALL MAIN TO BRANCH DUCT TAPS, TAKEOFFS, OR RUN-OUTS, PROVIDE 45 DEGREE ENTRANCE TAPS, AS DETAILED BY SMACNA STANDARDS.

24. GENERAL
THIS SECTION APPLIES TO ALL MECHANICAL WORK.
ALL INSULATION SHALL BE IN STRICT ACCORDANCE WITH ASHRAE STANDARDS AND ALL LOCAL AND STATE ENERGY CODES.
THE INSULATION WORK SHALL BE PERFORMED BY A FIRM REGULARLY ENGAGED IN THIS TYPE WORK USING MECHANICS SKILLED IN THE TRADE.
INSTALL ALL MATERIALS AS RECOMMENDED BY THE MANUFACTURER FOR THE SERVICE INTENDED. ALL INSULATION MATERIAL, INCLUDING SEALER MATERIAL, ADHESIVES, COVERING MATERIAL, FINISH, ETC. SHALL HAVE A U.L. LISTED FLAME SPREAD RATING NOT OVER 24 WITHOUT EVIDENCE OF CONTINUED PROGRESSIVE COMBUSTION AND WITH A SMOKE DEVELOPED RATING NOT HIGHER THAN 50. ALL COATINGS AND COVERINGS FOR HOT SERVICE SHALL BE BREATHER TYPE AND VAPOR BARRIER TYPE FOR COLD SERVICE.
HVAC PIPING:
INSULATE REFRIGERANT SUCTION LINES AND ALL CONDENSATE DRAIN LINES WITH 1" THICK CLOSE CELLED ELASTOMERIC INSULATION INSTALLED PER THE MANUFACTURERS REQUIREMENTS. PAINT EXTERIOR INSULATION WITH TWO COATS OF PAINT AS REQUIRED BY THE INSULATION MANUFACTURER.
EXTERNALLY INSULATED DUCTS (SUPPLY DUCTS COMPLETELY ABOVE LAY IN CEILINGS NOT IN DINING AREAS):
EXTERNALLY INSULATE ALL SUPPLY DUCTWORK WITH 1 1/2" THICK (3/4 LBS/CU. FT. DENSITY) DUCT WRAP WITH ALUMINUM ALL SERVICE JACKET, VAPOR BARRIER, EXCEPT PRE-INSULATED FLEXIBLE DUCT.
SUPPLY AND RETURN DUCTS FROM MAKE UP AIR UNITS AND RTU'S LOCATED OUTSIDE THE BUILDING THERMAL ENVELOPE SHALL BE PROVIDED WITH 3" THICK DUCT WRAP AND ALUMAGUARD, ALL WEATHER, FLEXIBLE WEATHER-PROOFING JACKET.

25. EQUIPMENT:
CAPACITY, PERFORMANCE AND CHARACTERISTICS OF EQUIPMENT SHALL BE AS INDICATED ON THE DRAWINGS AND AS SPECIFIED OR IMPLIED HEREIN. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY INCREASED COST TO HIMSELF OR OTHERS FOR EQUIPMENT WHICH DEVIATES FROM THAT SCHEDULED OR IMPLIED HEREIN. REGARDLESS OF COST AFFECT, THE ARCHITECT MUST APPROVE ANY DEVIATION FROM THE DRAWINGS AND THE SPECIFICATION.

26. MOTORS AND STARTERS:
ALL ELECTRIC MOTORS SHALL BE HIGH EFFICIENCY TYPE WITH MAXIMUM OF 1750 RPM WITH OPEN DRIP PROOF OR TEFC ENCLOSURES, UNLESS OTHERWISE NOTED. MOTORS LOCATED ON AIR HANDLING UNITS SHALL BE MOUNTED IN RUBBER SUPPORTS OR THE FAN SHALL BE INDEPENDENTLY SUPPORTED ON SPRING ISOLATORS. MOTORS LOCATED IN THE CONDITIONED SPACE SHALL BE SELECTED FOR QUIET OPERATION AND SHALL NOT PRODUCE AN OBJECTIONABLE "MOTOR NOISE" IN THE SPACE.
ELECTRICAL CHARACTERISTICS SHALL BE VERIFIED FROM THE ELECTRICAL DRAWINGS, PRIOR TO BIDDING, AND VERIFIED ON THE JOB WITH THE ELECTRICAL SUB-CONTRACTOR. IF A CONFLICT ARISES, THE ELECTRICAL DRAWINGS SHALL BE THE AUTHORITY.
PROVIDE MOTOR STARTERS AND PROPER HEATER ELEMENTS SIZED IN ACCORDANCE WITH NFPA 70. STARTERS SHALL BE SQUARE-D OR EQUIVALENT WITH OVERLOAD TRIP ELEMENT IN EACH PHASE. LARGER MOTORS AND THEIR STARTERS SHALL MEET THE REQUIREMENTS OF THE UTILITY COMPANY AS TO INRUSH ALLOWABLE AND THE TYPE OF STARTING PERMITTED.
SHOULD ANY MECHANICAL EQUIPMENT REQUIRE EXTRA WORK BY OTHER TRADES, FOR PROPER INSTALLATION, THIS CONTRACTOR SHALL BEAR ALL COSTS, SUCH AS INCREASED ELECTRICAL, STRUCTURAL, ROOFING, ETC.

END OF MECHANICAL SPECIFICATIONS.



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SALEM VA

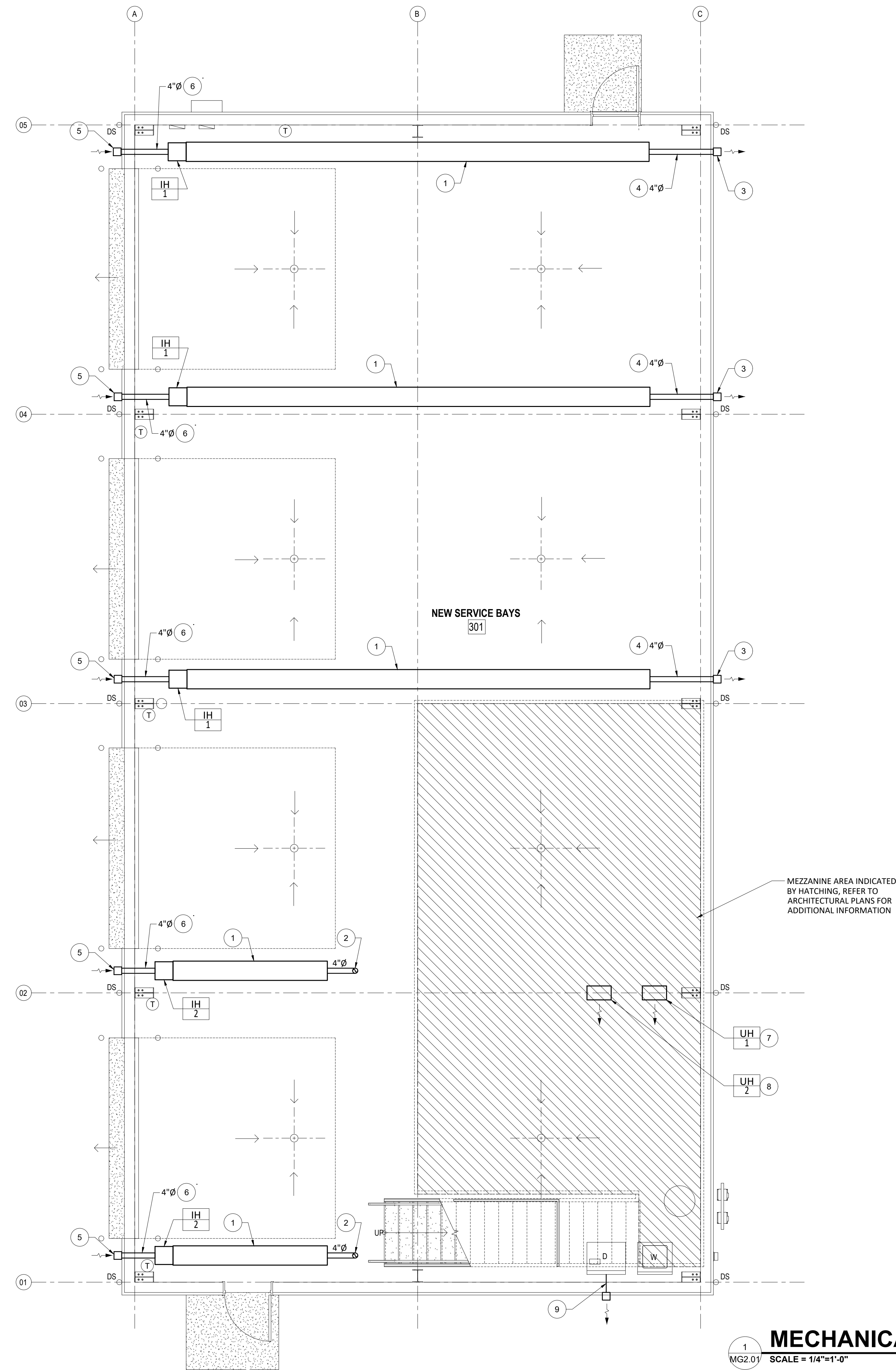


SALEM FIRE STATION #2 - NEW SERVICE BAYS
NEW CONSTRUCTION
MECHANICAL SPECIFICATIONS

415 ELECTRIC ROAD
SALEM, VIRGINIA 24163

DRAWN BY **JNB**
DESIGNED BY **JNB**
CHECKED BY **JNB**
DATE **2024-08-30**
SCALE **AS NOTED**
REVISIONS

MG1.02
PROJECT NO 03220052.01



- KEYED NOTES:**
- 1 MOUNT HEATER AT 12FT.-8IN. ABOVE FINISHED FLOOR.
 - 2 4" EXHAUST VENT FROM HEATER UP THROUGH ROOF. PROVIDE B TO C ADAPTER TO ATTACHED TO END OF TUBE IN PLACE OF SUPPLIED VENT ADAPTER. VENT PIPING SHALL BE DOUBLE-WALL TYPE B VENT SUITABLE FOR CATEGORY I VENTING. PROVIDE VENT CAP AT MIN. OF 24" ABOVE ROOF, EQUIVALENT TO METALBESTOS 4" VENT CAP OR OTHER AS APPROVED BY HEATER MANUFACTURE. AT VERTICAL TURN UP, PROVIDE TEE FITTING WITH CLEAN OUT CAP AT BOTTOM. SLOPE HORIZONTAL PORTION OF VENT AWAY FROM HEATER AT 1/2 IN. PER 20FT.
 - 3 PROVIDE HORIZONTAL VENT HOOD, EQUIVALENT TO TJERNLUND PRODUCTS, MODEL VH1-4.
 - 4 HORIZONTAL VENT PIPING SHALL BE INSTALLED AS PER MANUFACTURES REQUIREMENTS FOR CATEGORY III VENTING. SLOPE VENT DOWNWARDS, AWAY FROM HEATER AT 1/2 IN. PER 20FT. VENT PIPING SHALL BE SINGLE WALL PIPE, TYPE C, THAT IS CORROSION RESISTANT GALVANIZED STEEL, MINIMUM 26 GAUGE.
 - 5 PROVIDE 4" VENT CAP, ROBERTS GORDON PART NUMBER 90502300, OR EQUIVALENT APPROVED BY HEATER MANUFACTURER.
 - 6 COMBUSTION AIR INTAKE DUCT SHALL BE SINGLE WALL GALVANIZED STEEL, SUITABLE FOR LOW PRESSURE SYSTEMS WITH MINIMUM 1-1/2" EXTERNAL INSULATION. PROVIDE FLEXIBLE HOSE CONNECTION AT BURNER INLET AS PER MANUFACTURES INSTALLATION RECOMMENDATIONS.
 - 7 UNIT HEATER TO BE SUSPENDED FROM BOTTOM OF MEZZANINE FLOOR.
 - 8 UNIT HEATER TO BE SUSPENDED FROM ROOF ABOVE MEZZANINE.
 - 9 PROVIDE 4" Ø DRYER VENT FROM DRYER TO EXTERIOR WALL WITH WALL VENT AND BACKDRAFT DAMPER.

MECHANICAL NEW WORK PLAN - GARAGE
 1 MG2.01 SCALE = 1/4"=1'-0"



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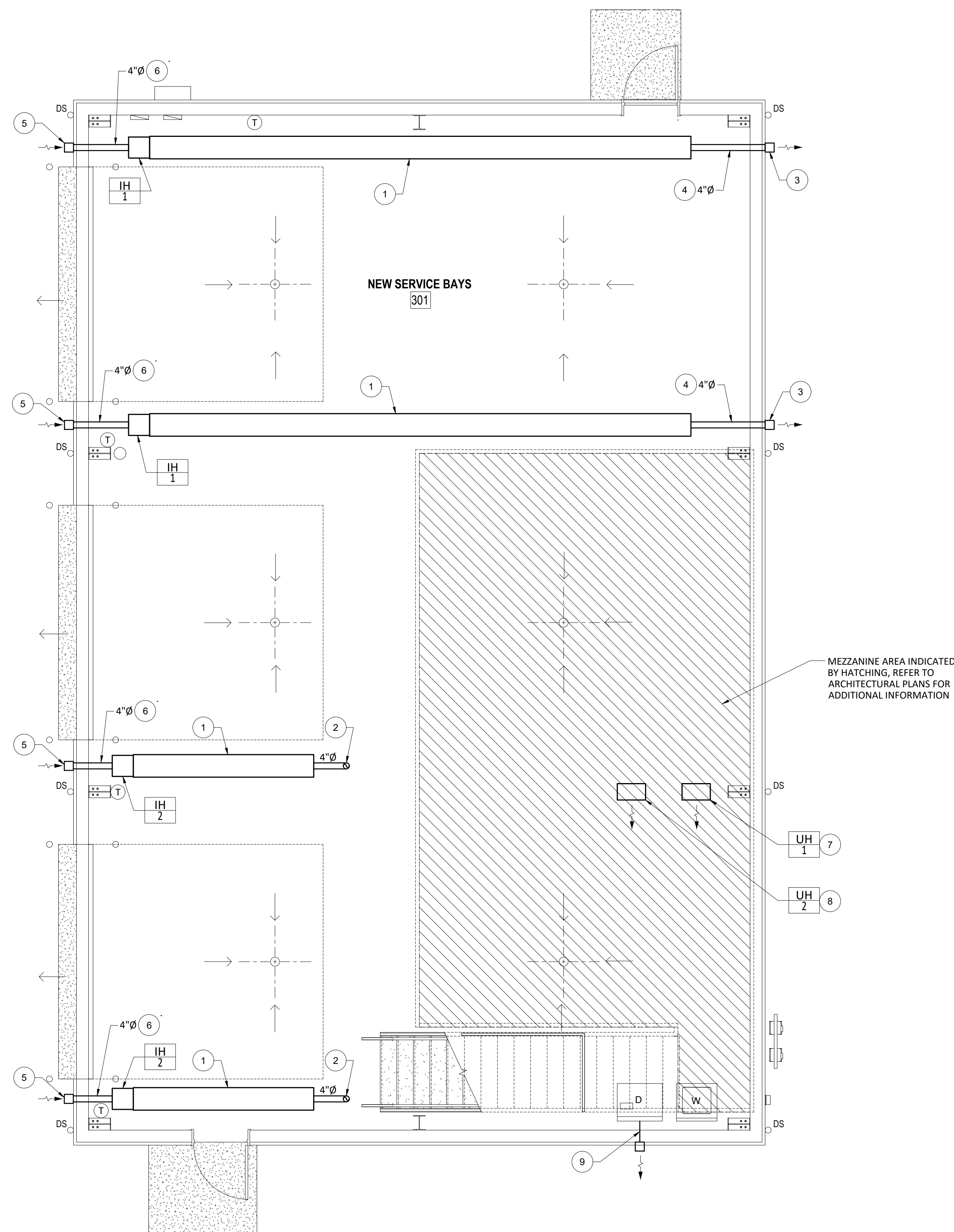


SALEM FIRE STATION #2 - NEW SERVICE BAYS
 NEW CONSTRUCTION
MECHANICAL NEW WORK PLAN - GARAGE

415 ELECTRIC ROAD
 SALEM, VIRGINIA 24153

DRAWN BY JNB
 DESIGNED BY JNB
 CHECKED BY JNB
 DATE 2024-08-30
 SCALE AS NOTED
 REVISIONS

MG2.01
 PROJECT NO 03220052.01



- KEYED NOTES:
- 1 MOUNT HEATER AT 12FT. -8IN. ABOVE FINISHED FLOOR.
 - 2 4" EXHAUST VENT FROM HEATER UP THROUGH ROOF. PROVIDE B TO C ADAPTER TO ATTACHED TO END OF TUBE IN PLACE OF SUPPLIED VENT ADAPTER. VENT PIPING SHALL BE DOUBLE-WALL TYPE B VENT SUITABLE FOR CATEGORY I VENTING. PROVIDE VENT CAP AT MIN. OF 24" ABOVE ROOF, EQUIVALENT TO METALBESTOS 4" VENT CAP OR OTHER AS APPROVED BY HEATER MANUFACTURE. AT VERTICAL TURN UP, PROVIDE TEE FITTING WITH CLEAN OUT CAP AT BOTTOM. SLOPE HORIZONTAL PORTION OF VENT AWAY FROM HEATER AT 1/2 IN. PER 20FT.
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 - 8 UNIT HEATER TO BE SUSPENDED FROM ROOF ABOVE MEZZANINE.
 - 9 PROVIDE 4"Ø DRYER VENT FROM DRYER TO EXTERIOR WALL WITH WALL VENT AND BACKDRAFT DAMPER.

MECHANICAL NEW WORK PLAN - ALTERNATE
 SCALE = 1/4"=1'-0"



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SALEM, VA



SALEM FIRE STATION #2 - NEW SERVICE BAYS
 NEW CONSTRUCTION
MECHANICAL NEW WORK PLAN - GARAGE ALTERNATE
 415 ELECTRIC ROAD
 SALEM, VIRGINIA 24163

DRAWN BY JNB
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