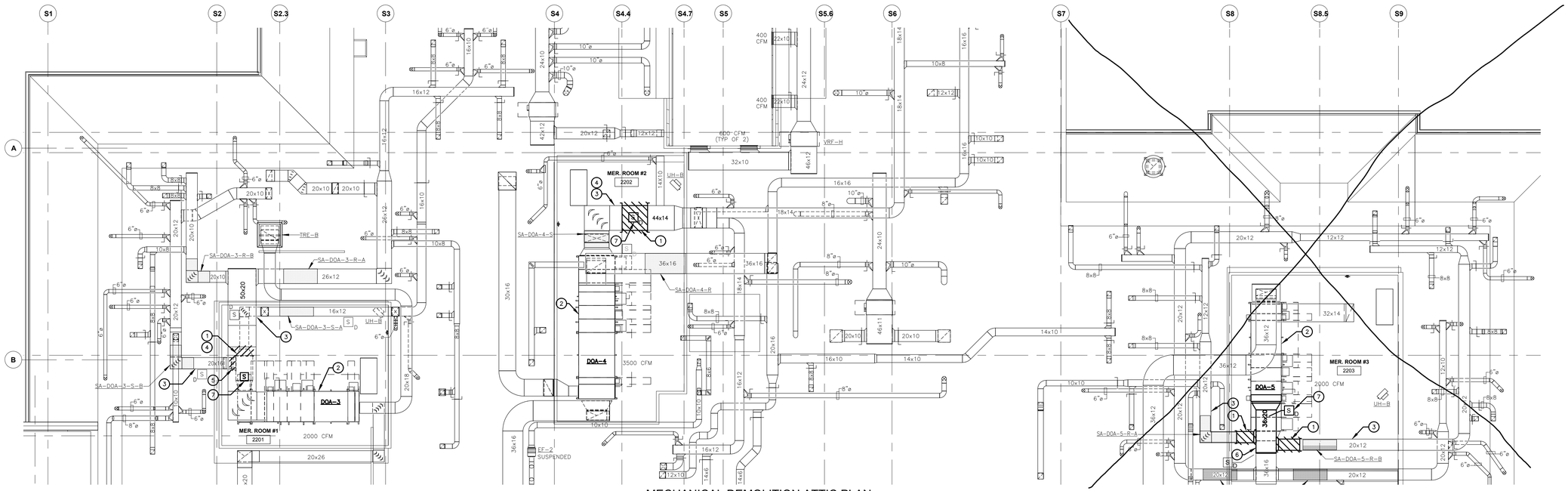
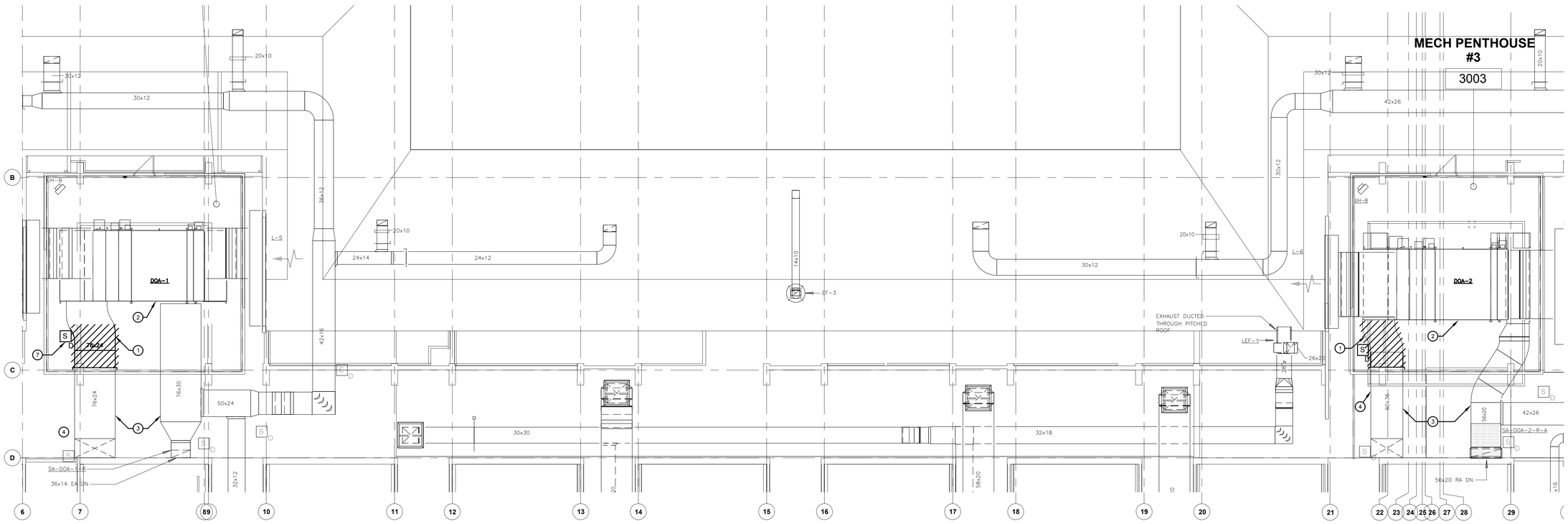


MECHANICAL DEMOLITION ATTIC PLAN
SCALE: 1/8"= 1'-0"

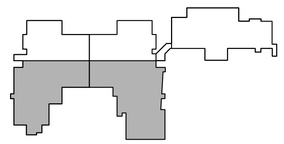


MECHANICAL DEMOLITION ATTIC PLAN
SCALE: 1/8"= 1'-0"

MECHANICAL DEMOLITION NOTES

1. REMOVE SECTION OF EXISTING DUCT TO ACCOMMODATE NEW DUCT MOUNTED HOT WATER COILS.
2. EXISTING AHU TO REMAIN.
3. EXISTING DUCTWORK TO REMAIN
4. DRAWINGS INDICATE INTENT – CONTRACTOR TO VERIFY EXACT DUCT SIZES AND CONFIGURATIONS. CONTRACTOR TO RELOCATE OR MODIFY EXISTING DUCTWORK TO ACCOMMODATE NEW HOT WATER REHEAT COILS.
5. REMOVE SECTION OF DUCT TO ACCOMMODATE NEW ELECTRIC COIL.
6. DISCONNECT SECTION OF EXISTING DUCTWORK AND MOVE ENTIRE ASSEMBLY TOWARD MECHANICAL ROOM WALL. NEW DUCT COIL WILL BE INSTALLED AT UNIT OUTLET.
7. RELOCATE EXISTING DUCT SMOKE DETECTOR. CONTRACTOR SHALL EXTEND ALL WIRING AS REQUIRED TO RELOCATE SMOKE DETECTOR.

Omit Reheat for DOA #5



KEY PLAN
N.T.S.

INNOVATIVE ENGINEERING SERVICES, LLC
AN INTEGRATED ENGINEERING + DESIGN FIRM
33 N PLAINS INDUSTRIAL RD
WALLINGFORD, CT 06492
TEL: 203.467.4370
WEB: WWW.IESLLC.BIZ

NOTES:

ISSUED FOR CONSTRUCTION DOCUMENTS

REV.	DATE	DESCRIPTION

PROJECT:

NONNAWAUG HS OFFICE WING

WOODBURY, CT 06798

SHEET TITLE:

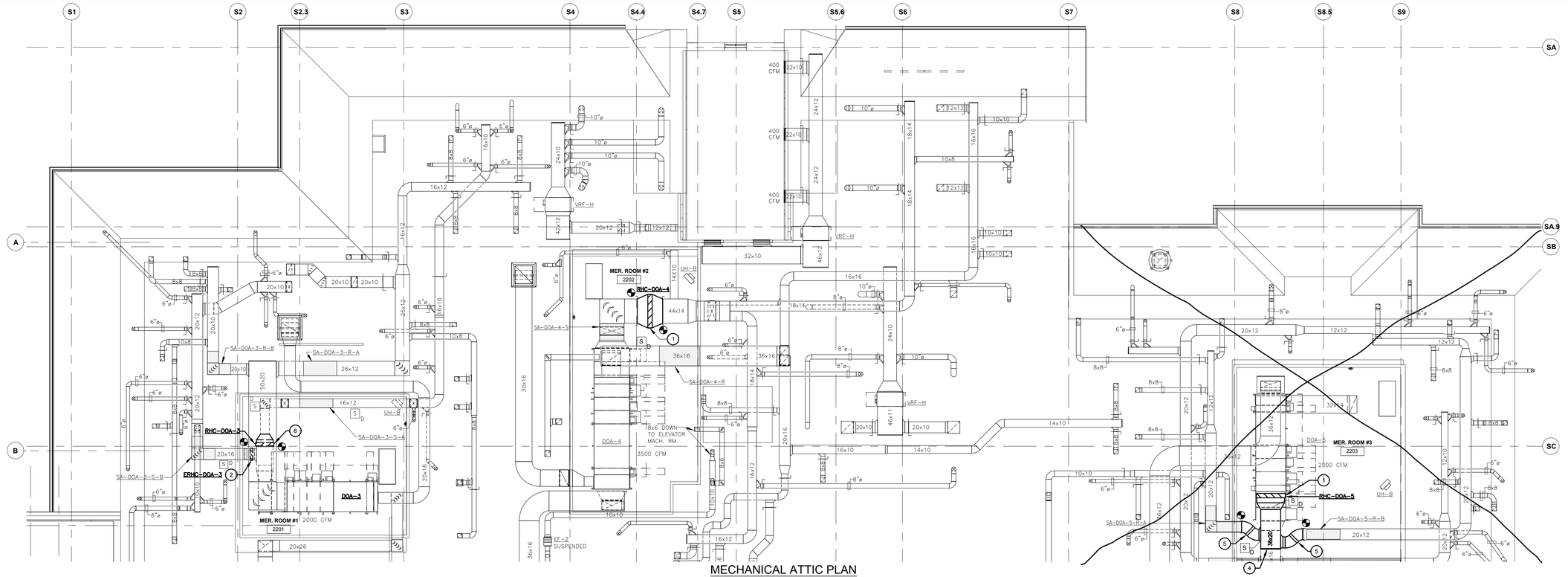
PARTIAL MECHANICAL DEMOLITION ATTIC PLANS

PROJECT NUMBER:	23174
ISSUED:	02/16/24
DRAWN BY:	
CHECKED BY:	
SCALE:	AS NOTED

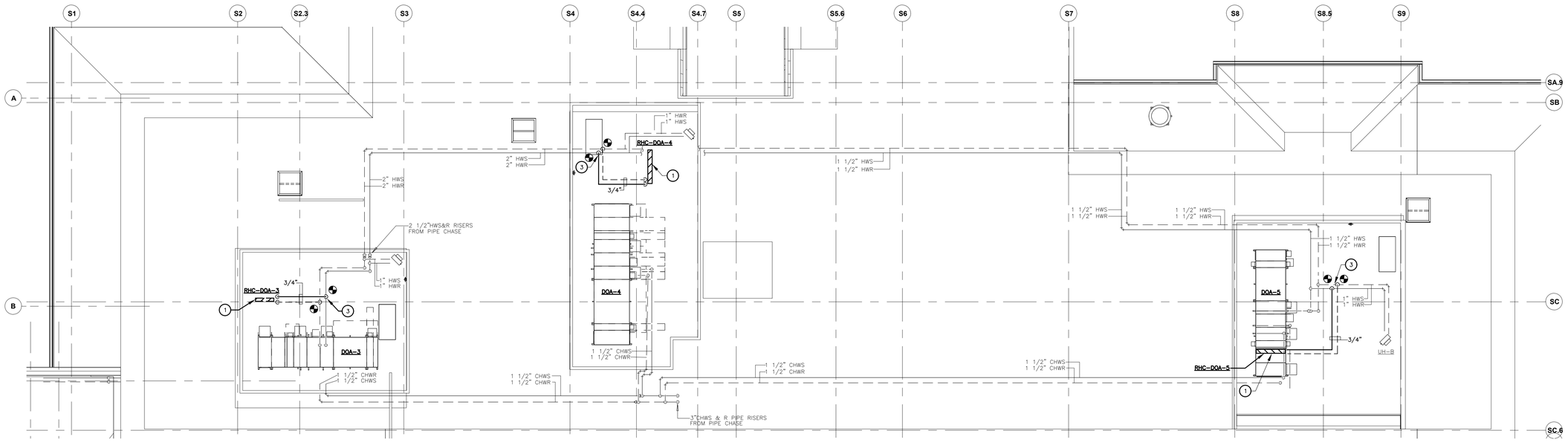
SHEET:

MD-1

G:\IES Projects\2023 Projects\Team TEM\23174 Nonnewaug HS Office Wing Reheat Coil Design\Contract Documents\23174_MD-1.dwg Plotted by dburgh on Feb 16, 2024 - 3:52pm



MECHANICAL ATTIC PLAN
SCALE: 1/8"= 1'-0"

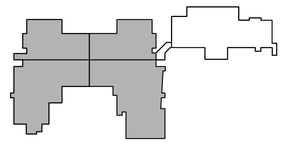


MECHANICAL PIPING ATTIC PLAN
SCALE: 1/8"= 1'-0"

MECHANICAL NOTES

1. NEW DUCT MOUNTED HOT WATER REHEAT COIL. REFER TO SCHEDULE FOR COIL REQUIREMENTS; PROVIDE DUCT TRANSITIONS AND MODIFICATIONS AS REQUIRED TO ACCOMMODATE NEW COIL. PROVIDE ALL REQUIRED HANGERS TO SUPPORT NEW COIL INDEPENDENT FROM DUCTWORK.
2. NEW ELECTRIC DUCT COIL (ERHC-DOA-3). OWNER TO VERIFY ACTUAL FLOW THROUGH SECTION OR DUCT TO PROPERLY SIZE NEW COIL. COIL IS SIZED FOR 1000 CFM @ 15?DEG F DELTA. AFTER OWNER VERIFICATION, CONTRACTOR SHALL PROVIDE NEW COIL TO MATCH EXISTING CONDITIONS. BMS TO PROVIDE ALL REQUIRED CONTROL TO ACHIEVE 70?F DISCHARGE AIR TEMP DURING COOLING SEASON ONLY.
3. CONNECT NEW PIPING TO EXISTING. CONNECT UPSTREAM OF EXISTING VALVES SERVING DOA UNIT. CONTRACTOR TO VERIFY IN FIELD. NEW HOT WATER COILS WILL BE OPERATIONAL IN COOLING SEASON ONLY AND BE UTILIZED FOR REHEAT. PROVIDE ALL FITTINGS, OFFSETS, HANGERS AS REQUIRED.
4. RELOCATED SECTION OF DUCTWORK TO ACCOMMODATE NEW RHC-DOA-5. CONTRACTOR TO PROVIDE ANY AND ALL TRANSITIONS, HANGERS, SUPPORTS, DUCTWORK AND PIECES REQUIRED TO ACCOMMODATE INSTALLATION OF NEW REHEAT COIL. PROVIDE DUCT INSULATION AS REQUIRED.
5. NEW DUCT OFFSET. PROVIDE OFFSET AS REQUIRED TO ACCOMMODATE INSTALLATION OF NEW COIL AND RELOCATED DUCT SMOKE DETECTOR.
6. NEW DUCT MOUNTED HOT WATER REHEAT COIL. REFER TO SCHEDULE FOR COIL REQUIREMENTS; PROVIDE DUCT TRANSITIONS AND MODIFICATIONS AS REQUIRED TO ACCOMMODATE NEW COIL. PROVIDE ALL REQUIRED HANGERS, TO SUPPORT NEW COIL INDEPENDENT FROM DUCTWORK. RELOCATE EXISTING ELECTRICAL EQUIPMENT TO ALLOW COIL INSTALLATION. OWNER TO VERIFY ACTUAL FLOW THROUGH SECTION OF DUCT. IF ACTUAL AIRFLOW VARIES FROM SCHEDULED COIL, CONTRACTOR TO PROVIDE COIL TO MATCH ACTUAL CONDITIONS.

Omit Reheat for DOA #5



KEY PLAN
N.T.S.

INNOVATIVE ENGINEERING SERVICES, LLC
AN INTEGRATED ENGINEERING + DESIGN FIRM
33 N PLAINS INDUSTRIAL RD
WALLINGFORD, CT 06492
TEL: 203.467.4370
WEB: WWW.IESLLC.BIZ

NOTES:

ISSUED FOR CONSTRUCTION DOCUMENTS

REV.	DATE	DESCRIPTION

PROJECT:

NONNAWAUG HS OFFICE WING

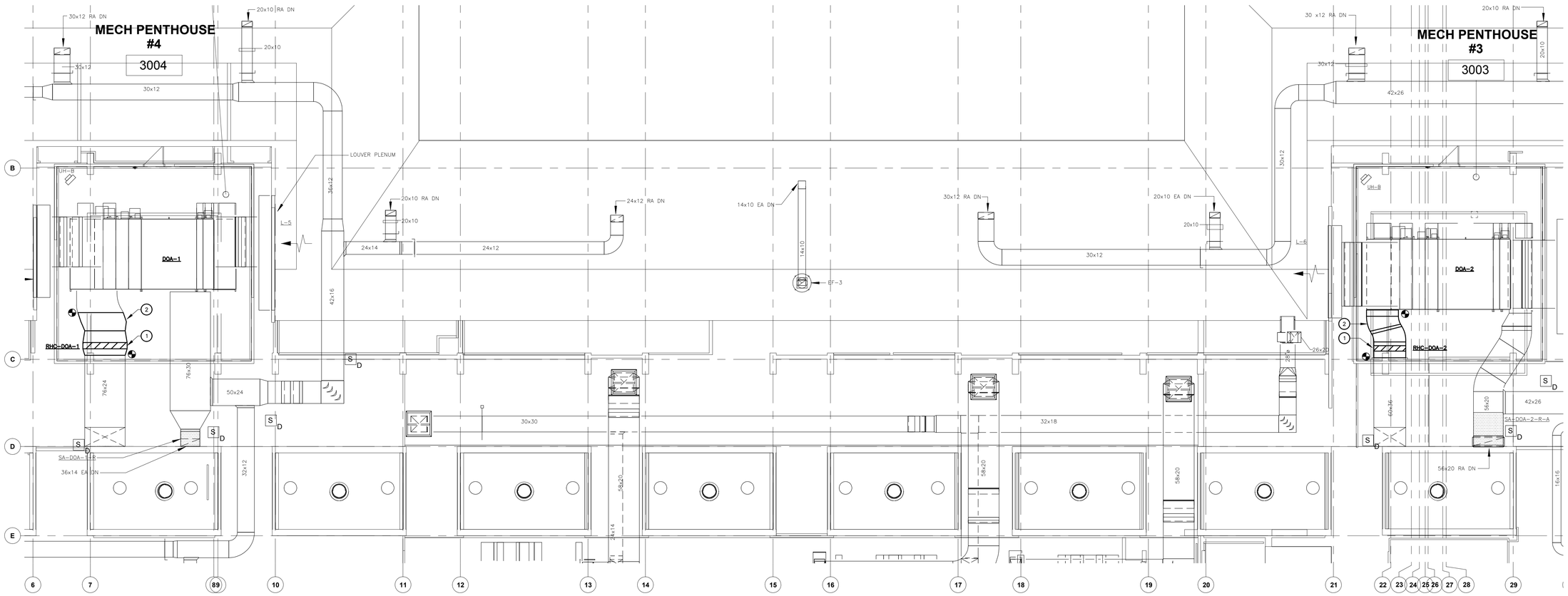
WOODBURY, CT 06798

SHEET TITLE:
PARTIAL MECHANICAL ATTIC PLAN

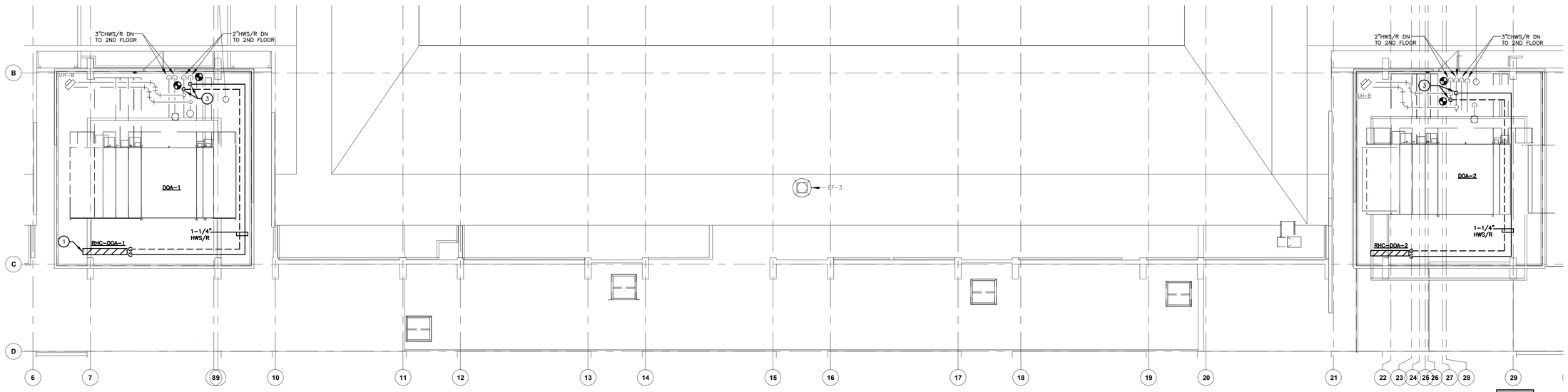
PROJECT NUMBER:	23174
ISSUED:	02/16/24
DRAWN BY:	
CHECKED BY:	
SCALE:	AS NOTED

SHEET:
M-1

G:\ES Projects\2023 Projects\Team TEM\23174 Nonnewaug HS Office Wing Reheat Coil Design\Contract Documents\23174_M-1.dwg Plotted by dburgh on Feb 16, 2024 - 3:52pm



MECHANICAL ATTIC PLAN
SCALE: 1/8"= 1'-0"

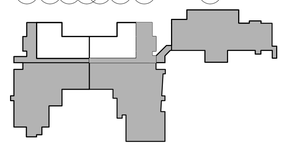


MECHANICAL PIPING ATTIC PLAN
SCALE: 1/8"= 1'-0"

MECHANICAL NOTES

1. NEW DUCT MOUNTED HOT WATER REHEAT COIL. REFER TO SCHEDULE FOR COIL REQUIREMENTS. PROVIDE DUCT TRANSITIONS AND MODIFICATIONS AS REQUIRED TO ACCOMMODATE NEW COIL. PROVIDE ALL REQUIRED HANGERS TO SUPPORT NEW COIL INDEPENDENT FROM DUCTWORK.
2. NEW DUCTWORK, PROVIDE OFFSETS AS REQUIRED TO ACCOMMODATE NEW REHEAT COIL.
3. CONNECT NEW PIPING TO EXISTING. CONNECT UPSTREAM OF EXISTING VALVES SERVING DOA UNIT. CONTRACTOR TO VERIFY IN FIELD. NEW HOT WATER COILS WILL BE OPERATIONAL IN COOLING SEASON ONLY AND BE UTILIZED FOR REHEAT.

Omit Reheat for DOA #5



KEY PLAN
N.T.S.

INNOVATIVE ENGINEERING SERVICES, LLC
AN INTEGRATED ENGINEERING + DESIGN FIRM
33 N PLAINS INDUSTRIAL RD
WALLINGFORD, CT 06492
TEL: 203.467.4370
WEB: WWW.IESLLC.BIZ

NOTES:

ISSUED FOR CONSTRUCTION DOCUMENTS

REV.	DATE	DESCRIPTION

PROJECT:

NONNAWAUG HS OFFICE WING

WOODBURY, CT 06798

SHEET TITLE:
PARTIAL MECHANICAL ATTIC PLAN

PROJECT NUMBER:	23174
ISSUED:	02/16/24
DRAWN BY:	
CHECKED BY:	
SCALE:	AS NOTED

SHEET:
M-2

G:\IES Projects\2023 Projects\Team TEM\23174 Nonnewaug HS Office Wing Reheat Coil Design\Contract Documents\23174_M-2.dwg Plotted by dburgh on Feb 16, 2024 - 3:52pm

ELECTRIC REHEAT COIL SCHEDULE

SYMBOL	MANUFACTURER MODEL NUMBER	SYSTEM SERVED	DIMENSIONS H X L	AIR FLOW (CFM)	EAT	LAT	VOLTS	KW
ERHC-DOA-3	NAILOR HL-480/3-SCRV-A1-24V-SC2	DOA-3	16X20	1000	54	70	460/3	5

NOTES:

COIL SHALL HAVE REMOTE CONTROL PANEL. CONTRACTOR TO MOUNT PANEL IN ACCESSIBLE LOCATION ACCORDING TO LOCAL CODES AND AS DIRECTED BY AHJ.
OWNER SHALL HIRE A BALANCER TO VERIFY ACTUAL AIRFLOW THROUGH BRANCH DUCT. CONTRACTOR SHALL PROVIDE COIL TO MATCH REQUIRED CONDITIONS.
COIL SHALL HAVE SCR CONTROL, AIRFLOW SWITCH, TRANSFORMER, FUSING, DOOR INTERLOCK AND CONTRACTOR.
BMS CONTRACTOR SHALL PROVIDE ALL REQUIRED CONTROLS.

HOT WATER REHEAT COIL SCHEDULE

TAG	MANUFACTURER MODEL NUMBER	SYSTEM SERVED	FIN DIMENSIONS H X L	VELOCITY (FPM)	AIR FLOW (CFM)	TOTAL CAPACITY MBH	EAT DEG F° DB	LAT DEG F° DB	WATER FLOW GPM	WATER P.D. FT. HD	EWT/LWT DEG F°	MAX AIR P.D. IN. WG	ROWS
RHC-DOA-1	DAIKIN 5WQ0603A	DOA-1	36"X76"	578	11,000	229	54	73	10	0.3	130/90	0.16	3
RHC-DOA-2	DAIKIN 5WQ0603A	DOA-2	36"X76"	578	11,000	229	54	73	10	0.3	130/90	0.16	3
RHC-DOA-3	DAIKIN 5BS0602B	DOA-3	15"X30"	320	1,000	19.4	54	71	1	2.7	130/90	0.06	2
RHC-DOA-4	DAIKIN 5BD06202B	DOA-4	18"X50"	560	3,500	62.2	54	70	3	4.7	130/90	0.2	2
RHC-DOA-5	DAIKIN 5BS1101B	DOA-5	18"X50"	320	2,000	35.6	54	70	1.8	6.6	130/90	0.05	1

NOTES:

SELECTIONS BASED ON 30% PROPYLENE GLYCOL.
OWNER SHALL HIRE A BALANCER TO VERIFY ACTUAL AIRFLOW THROUGH BRANCH DUCT SERVING RHC-DOA-3.
CONTRACTOR SHALL PROVIDE COIL TO MATCH REQUIRED CONDITIONS

MECHANICAL LEGEND

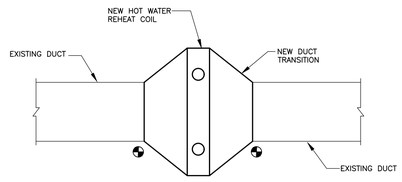
- AIR FLOW DIRECTION INDICATOR – SUPPLY
- AIR FLOW DIRECTION INDICATOR – RETURN
- DUCT RISER – SUPPLY/COMBUSTION AIR
- DUCT DROP – SUPPLY/COMBUSTION AIR
- DUCT RISER – RETURN/EXHAUST
- DUCT DROP – RETURN/EXHAUST
- REDUCER
- HTS – HOT WATER SUPPLY – HEATING
- HTR – HOT WATER RETURN – HEATING
- DIRECTION OF FLOW
- PIPE DOWN
- PIPE DROP
- PIPE RISE
- EXISTING TO BE REMOVED
- CONNECT TO EXISTING
- TEMPERATURE GAUGE
- PRESSURE GAUGE
- STRAINER – 'Y' TYPE
- UNION
- BALANCING VALVE
- BALL VALVE
- CHECK VALVE
- SOLENOID VALVE

MECHANICAL DEMOLITION NOTES

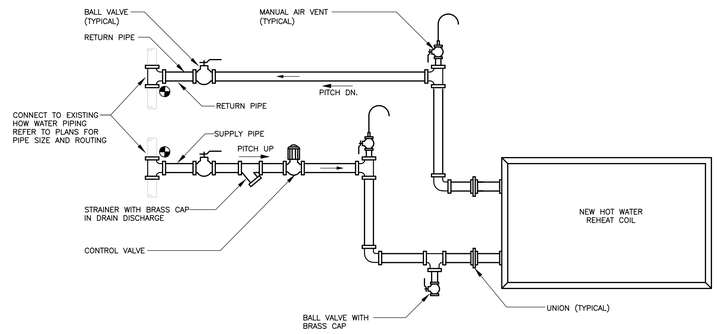
1. THE MECHANICAL CONTRACTOR SHALL REMOVE ALL MECHANICAL EQUIPMENT, ACCESSORIES, CONTROLS AND ASSOCIATED PIPING AS SHOWN OR INDICATED ON THE DRAWINGS.
2. NO EQUIPMENT OR DEVICES THAT HAVE BEEN DISCONNECTED AND OR ABANDONED SHALL REMAIN.
3. THE MECHANICAL CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING SYSTEMS AND CONDITIONS IN AREAS OF RENOVATION.
4. ANY SYSTEMS OR EQUIPMENT TO REMAIN ACTIVE DURING RENOVATION SHALL BE KEPT IN OPERATION BY PROVIDING TEMPORARY CONNECTIONS AS REQUIRED UNTIL NEW SYSTEMS ARE INSTALLED AND OPERATIONAL.
5. THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE OWNER, CM, AND OR GENERAL CONTRACTOR ANY AND ALL PHASING OF THE MECHANICAL DEMOLITION WORK IN ORDER TO SATISFY THE CONSTRUCTION SCHEDULE AND OWNERS OCCUPANCY REQUIREMENTS.
6. ALL SERVICE INTERRUPTIONS SHALL BE COORDINATED AND APPROVED WITH THE OWNER IN ADVANCE PRIOR TO COMMENCEMENT OF ANY WORK.
7. THE MECHANICAL CONTRACTOR SHALL COORDINATE HIS DEMOLITION WORK WITH THAT OF OTHER TRADES IN ORDER TO AVOID CONFLICTS.

MECHANICAL GENERAL NOTES

1. THESE GENERAL NOTES ARE APPLICABLE TO ALL MECHANICAL DRAWINGS.
2. DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL INTENT OF WORK. SEE DETAILS, SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
3. MECHANICAL CONTRACTOR MUST REVIEW DRAWINGS OF THE OTHER TRADES AS PART OF THIS CONTRACT FOR ADDITIONAL WORK REQUIRED AND OR COORDINATION OF HIS WORK FOR OPERATIONS OR CONNECTIONS TO OTHER SYSTEMS.



HOT WATER COIL DUCT DETAIL
N.T.S.



HOT WATER REHEAT COIL DETAIL
N.T.S.

OPERATION:

DURING HEATING SEASON, HOT WATER REHEAT COILS WILL BE OFF – NON OPERATIONAL. EXISTING UNIT MOUNTED HOT WATER COILS WILL OPERATE AS CURRENTLY PROGRAMMED.

DURING COOLING SEASON, UNIT MOUNTED HOT WATER COILS WILL BE OFF – NON OPERATIONAL. NEW HOT WATER REHEAT COILS WILL BE OPERATIONAL. REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE. BMS SHALL PROVIDE ALL SENSORS, WIRING AND PROGRAMMING GRAPHICS TO ACHIEVE REQUIRED SEQUENCE OF OPERATION.

Omit Reheat for DOA #5

INNOVATIVE ENGINEERING SERVICES, LLC
AN INTEGRATED ENGINEERING + DESIGN FIRM
33 N PLAINS INDUSTRIAL RD
WALLINGFORD, CT 06492
TEL: 203.467.4370
WEB: WWW.IESLLC.BIZ

NOTES:

ISSUED FOR CONSTRUCTION DOCUMENTS

REV.	DATE	DESCRIPTION

PROJECT:

NONNAWAUG HS OFFICE WING

WOODBURY, CT 06798

SHEET TITLE:

MECHANICAL NOTES, LEGEND, SCHEDULE & DETAIL

PROJECT NUMBER:	23174
ISSUED:	02/16/24
DRAWN BY:	
CHECKED BY:	
SCALE:	AS NOTED

SHEET:

M-3

G:\IES Projects\2023 Projects\Team TEM\23174 Nonnewaug HS Office Wing Reheat Coil Design\Contract Documents\23174_M-3.dwg Plotted by dburgh on Feb 16, 2024 - 3:52pm

MECHANICAL (HVAC) SPECIFICATIONS

GENERAL

SCOPE

THE GENERAL SCOPE OF THE HVAC WORK IS TO REMOVE EXISTING SYSTEMS, MODIFY THE EXISTING SYSTEMS, AND PROVIDE NEW SYSTEMS AS INDICATED ON THESE DOCUMENTS

THE WORK TO BE DONE UNDER THIS DIVISION OF THE SPECIFICATIONS INCLUDE THE FURNISHING OF ALL EQUIPMENT, SUPPLIES, LABOR, SUPERVISION AND ALL MATERIALS NOT SPECIFICALLY MENTIONED BUT NECESSARY OR REQUIRED TO PROVIDE COMPLETE AND FULLY OPERATIONAL HVAC SYSTEMS. IT IS THE INTENTION OF THE SPECIFICATIONS AND DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION.

IT IS THE INTENT THAT ALL MECHANICAL WORK AND MATERIALS NECESSARY TO COMPLETE THE ENTIRE PROJECT IN ACCORDANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS, WHETHER SPECIFICALLY MENTIONED HERE OR NOT, SHALL BE FURNISHED. ALL WORK AND MATERIALS NECESSARY TO FULFILL THIS INTENT SHALL BE SUPPLIED UNDER THE MECHANICAL SPECIFICATIONS WITHOUT ADDITIONAL COST TO THE OWNER.

DEFINITIONS

'FURNISH' OR 'PROVIDE' – TO FURNISH, ERECT, INSTALL AND CONNECT UP COMPLETE AND READY FOR OPERATION PARTICULAR WORK REFERRED TO, UNLESS SPECIFICALLY INDICATED OR SPECIFIED OTHERWISE.

'WORK' – LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND ALL OTHER ITEMS CUSTOMARILY FURNISHED AND/OR REQUIRED FOR PROPER AND COMPLETE INSTALLATION OF WORK.

'EXPOSED' – NOT INSTALLED UNDERGROUND OR 'CONCEALED' AS DEFINED ABOVE.

'INDICATE' OR 'SHOWN' – AS INDICATED OR SHOWN ON DRAWINGS OR SPECIFIED WITH SPECIFICATIONS.

'PIPING' – PIPE, FITTINGS, FLANGES, VALVES, CONTROLS, HANGERS, TRAPS, DRAINS, INSULATION AND ITEMS CUSTOMARILY OR REQUIRED IN CONNECTION WITH OR RELATING TO SUCH PIPING.

'SUPPLY' – TO PURCHASE, PRODUCE, ACQUIRE AND DELIVER COMPLETE WITH ALL RELATED ITEMS.

'INSTALL' – TO ERECT, MOUNT AND CONNECT UP COMPLETE WITH ALL RELATED ACCESSORIES.

'NOTED' – AS INDICATED ON DRAWINGS AND/OR SPECIFIED.

CODES, RULES, PERMITS AND FEES

THIS CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS AND PAY ALL STATE AND LOCAL TAXES, FEES AND OTHER COSTS IN CONNECTION WITH HIS WORK; FILE ALL NECESSARY PLANS, PREPARE ALL DOCUMENTS AND OBTAIN ALL NECESSARY APPROVALS OF ALL STATE AND LOCAL DEPARTMENTS HAVING JURISDICTION; OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR HIS WORK AND DELIVERY OF SAME TO THE OWNER BEFORE REQUEST FOR ACCEPTANCE AND FINAL PAYMENT FOR THE WORK.

THIS CONTRACTOR SHALL INCLUDE IN THE WORK, WITHOUT EXTRA COST TO THE OWNER, ANY LABOR, MATERIALS, SERVICES, APPARATUS, DRAWINGS (IN ADDITION TO CONTRACT DRAWINGS AND DOCUMENTS), IN ORDER TO COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES AND REGULATIONS WHETHER OR NOT SHOWN ON THE DRAWINGS AND/OR SPECIFIED.

THIS CONTRACTOR SHALL PERFORM AND FILE ALL TESTS IN ACCORDANCE WITH THE CURRENT REGULATIONS OF THE STATE AND LOCAL AUTHORITIES. HE SHALL FURNISH AND INSTALL SIGNS REQUIRED BY THE STATE AND LOCAL AUTHORITIES.

ALL MATERIALS FURNISHED AND ALL WORK INSTALLED SHALL COMPLY WITH THE RULES AND RECOMMENDATIONS OF THE NATIONAL BOARD OF FIRE UNDERWRITERS, WITH ALL REQUIREMENTS OF LOCAL UTILITIES COMPANIES, WITH THE RECOMMENDATIONS OF THE FIRE INSURANCE RATING ORGANIZATION HAVING JURISDICTION.

CODES, REGULATIONS AND STANDARDS

ALL MECHANICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING APPROVED CODES, REGULATIONS AND STANDARDS:

IBC – INTERNATIONAL BUILDING CODE, 2021 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

IMC – INTERNATIONAL MECHANICAL CODE, 2021 EDITION. WITH 2022 CONNECTICUT AMENDMENTS.

IFC – INTERNATIONAL FIRE CODE, 2021 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

2022 CONNECTICUT STATE FIRE SAFETY CODE

STATE DEMOLITION CODE

LOCAL BUILDING CODE

NFPA – NATIONAL FIRE PROTECTION CODE

NFPA 70 – NATIONAL ELECTRICAL CODE, 2020 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

NFPA 72 – NATIONAL FIRE ALARM CODE, 2019 EDITION

NFPA 99 – HEALTH CARE FACILITIES CODE, 2021 EDITION

NFPA 101 – LIFE SAFETY CODE, 2021 EDITION, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

IECC – INTERNATIONAL ENERGY CONSERVATION CODE, 2021, AS AMENDED BY THE STATE OF CONNECTICUT 2022 AMENDMENTS.

ICC/ANSI A117.1, 2017, ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES, AS AMENDED BY THE STATE OF CONNECTICUT 2018 AMENDMENTS.

ANSI – AMERICAN NATIONAL STANDARDS INSTITUTE

ASTM – AMERICAN SOCIETY FOR TESTING AND MATERIALS

OSHA – OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

U.L. – UNDERWRITERS LABORATORIES

EPA – ENVIRONMENTAL PROTECTION AGENCY

COMPLY WITH REQUIREMENTS OF LOCAL AUTHORITY HAVING JURISDICTION.

INSURANCE

THE MECHANICAL CONTRACTOR SHALL FURNISH STATUTORY COMPENSATION INSURANCE CERTIFICATES FOR PERSONAL AND PROPERTY DAMAGE DISABILITY/LIABILITY AS REQUIRED BY THE OWNER AND/OR AS HEREINBEFORE DESCRIBED.

GUARANTEE AND SERVICE

THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE OF THE INSTALLATION. IN ADDITION, THE CONTRACTOR SHALL PROVIDE, FREE OF CHARGE, ONE YEAR'S MAINTENANCE GUARANTEE ON MAINTAINED SERVICE AND ADJUSTMENT OF ALL EQUIPMENT IN THIS CONTRACT.

ALL COMPRESSORS TO HAVE (5) FIVE YEAR EXTENDED WARRANTEES.

DRAWINGS AND INTENT

DRAWINGS ARE INTENDED AS WORKING DRAWINGS FOR GENERAL LAYOUT OF THE VARIOUS HVAC SYSTEMS. HOWEVER, LAYOUT OF EQUIPMENT, ACCESSORIES, SPECIALTIES, DUCTWORK, AND PIPING SYSTEMS ARE DIAGRAMMATIC UNLESS SPECIFICALLY DIMENSIONED, AND DO NOT NECESSARILY INDICATE EVERY REQUIRED PIPE, VALVE, FITTINGS, TRAP, ELBOW, TRANSITION, OFFSETS, OR SIMILAR ITEMS REQUIRED FOR A COMPLETE INSTALLATION.

ALL EXISTING CONDITIONS ARE NOT INDICATED ON THE DOCUMENTS AND THOSE SHOWN ARE APPROXIMATIONS. THE CONTRACTOR IS TO VERIFY, IN THE FIELD, ALL EXISTING CONDITIONS.

EXAMINATION OF PREMISES – SPECIAL NOTE: NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED FOR FAILURE TO VISIT SITE, OR ANY ALLEGED MISUNDERSTANDING OF MATERIAL TO BE FURNISHED, OR WORK TO BE DONE; IT BEING THAT TENDER OF PROPOSAL INDICATED WITH ITS AGREEMENT TO ITEMS AND CONDITIONS REFERRED TO HEREIN OR INDICATED ON AFOREMENTIONED DRAWINGS.

MEASUREMENTS

ALL MEASUREMENTS TAKEN AT THE BUILDING SHALL TAKE PRECEDENCE OVER SCALE DIMENSIONS. EVERY PART OF THE PLANS SHALL BE FITTED TO THE ACTUAL CONDITIONS AT THE BUILDING. IF IN CONFLICT WITH SCALE DIMENSIONS, CONTACT ARCHITECT FOR CLARIFICATION.

TEMPORARY SERVICES

THE HVAC CONTRACTOR IS TO COORDINATE WITH THE GENERAL CONTRACTOR, PRIOR TO PERFORMING WORK REQUIRING INTERRUPTION OF EXISTING SERVICES, THE CONTRACTOR SHALL SECURE FROM THE OWNER, APPROVAL OF THE PROPOSED OPERATION.

WORK SHALL BE ARRANGED FOR CONTINUOUS PERFORMANCE WHENEVER POSSIBLE. THE MECHANICAL CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES AND/OR CONNECTIONS WHERE REQUIRED AND/OR SCHEDULE AND PERFORM OVERTIME WORK FOR ANY OPERATION WHICH REQUIRED SHUTDOWN OF THE FACILITIES AT NO ADDITIONAL COST TO THE OWNER.

THE AREA OF CONSTRUCTION AND/OR ADJACENT SPACES MAY BE OCCUPIED DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR IS TO TAKE ALL NECESSARY MEASURES AND PROVIDE ALL MATERIALS TO ENSURE A SAFE ENVIRONMENT FOR THE FACILITY'S OCCUPANTS.

CONTINUITY OF EXISTING SYSTEMS

WHEREVER AN EXISTING SYSTEM IS REMOVED, PARTIALLY REMOVED, OR MODIFIED THE REMAINING SYSTEM IS TO FUNCTION FULLY AS BEFORE.

MAINTAIN CONTINUITY OF THE EXISTING AIR SYSTEMS, HYDRONIC SYSTEMS, AND CONTROL SYSTEMS TO THE AREAS NOT AFFECTED BY THIS ALTERATION.

SCAFFOLDING, RIGGING AND HOISTING

UNLESS OTHERWISE SPECIFIED, CONTRACTOR SHALL FURNISH ALL SCAFFOLDING, RIGGING, HOISTING AND SERVICES NECESSARY FOR ERECTION AND DELIVERY INTO THE PREMISES OF ANY EQUIPMENT AND APPARATUS FURNISHED.

THE CONTRACTOR SHALL REMOVE SAME FROM PREMISES WHEN NO LONGER REQUIRED.

HOUSEKEEPING

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING STOCK OF MATERIALS AND EQUIPMENT STORED ON PREMISES, AT LOCATIONS DESIGNATED FOR SUCH USE, IN A NEAT AND ORDERLY MANNER.

THIS CONTRACTOR SHALL AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL OR RUBBISH CAUSED BY HIS EMPLOYEES AT WORK. HE SHALL REMOVE HIS RUBBISH AND SURPLUS MATERIALS FROM THE JOB SITE AT THE END OF EACH WORK DAY AND SHALL LEAVE THE PREMISES AND HIS WORK IN A CLEAN AND ORDERLY CONDITION.

ALL MATERIAL SCHEDULED FOR REMOVAL IS TO BE DISPOSED OF IN A MANNER MEETING ALL FEDERAL, STATE, AND LOCAL REGULATIONS.

PROTECTION OF MATERIALS AND EQUIPMENTS

CLOSE PIPE OPENINGS WITH CAPS OR PLUGS DURING INSTALLATION.

PROVIDE TEMPORARY CLOSURES ON OPEN ENDED DUCTS DURING CONSTRUCTION PERIOD.

TIGHTLY COVER AND PROTECT FIXTURES AND EQUIPMENT AGAINST DIRT, WATER AND CHEMICAL OR MECHANICAL INJURY.

AT COMPLETION OF ALL WORK, FIXTURES, EXPOSED MATERIALS AND EQUIPMENT SHALL BE THOROUGHLY CLEANED.

SHOP DRAWINGS

PRIOR TO DELIVERY TO THE JOB SITE, BUT SUFFICIENTLY IN ADVANCE OF REQUIREMENTS NECESSARY TO ALLOW ENGINEER AMPLE TIME FOR REVIEW, CONTRACTOR SHALL SUBMIT FOR APPROVAL, FIVE (5) COPIES OF EACH SHOP DRAWING.

INDICATE ON EACH SUBMISSION:

1. PROJECT NAME AND LOCATION
2. ARCHITECT AND ENGINEER
3. ITEM IDENTIFICATION
4. APPROVAL STAMP OF PRIME CONTRACTOR

ALL DUCTWORK SHOP DRAWINGS AND COORDINATION DRAWINGS SHALL BE SUBMITTED ON 3/8 IN SCALE DRAWINGS AND SHALL INCLUDE LOCATIONS AND SIZES OF EXISTING EQUIPMENT ALONG WITH NEW WORK. DRAWINGS SHALL INDICATE LOCATIONS OF HANGERS, SUPPORTS, EXPANSION JOINTS, GUIDES, ANCHORS AND ANCHOR LOADS.

COORDINATION DRAWINGS SHALL INDICATE ALL MEP EQUIPMENT, DUCTS AND PIPES AND PERTINENT ARCHITECTURAL ITEMS. MOUNTING HEIGHTS SHALL BE NOTED.

SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

1. DUCTWORK LAYOUT, SHEET METAL DETAILS/STANDARDS
2. COORDINATION DRAWINGS

SUBMITTALS

PRIOR TO DELIVERY TO THE JOB SITE, BUT SUFFICIENTLY IN ADVANCE OF REQUIREMENTS NECESSARY TO ALLOW ENGINEER AMPLE TIME FOR REVIEW, CONTRACTOR SHALL SUBMIT FOR APPROVAL, FIVE (5) COPIES OF EACH SHOP DRAWING.

INDICATE ON EACH SUBMISSION:

1. PROJECT NAME AND LOCATION
2. ENGINEER
3. ITEM IDENTIFICATION
4. APPROVAL STAMP OF PRIME CONTRACTOR

SUBMIT SUBMITTALS ON THE FOLLOWING:

1. PIPING MATERIALS
2. PIPING SPECIALTIES
3. PIPING INSULATIONS
4. DUCT MATERIALS
5. DUCTWORK SPECIALTIES
6. DUCTWORK INSULATORS
7. HEATING EQUIPMENT
8. CONTROLS
9. HYDRONIC SYSTEMS BALANCING REPORTS
10. AIR SYSTEMS BALANCING REPORTS

EQUIPMENT DEVIATION

THE PLANS AND/OR SPECIFICATIONS INDICATE THE NAME, MODEL NUMBER OR TYPE OF EQUIPMENT OR MATERIALS SPECIFIED TO SET THE STANDARD OF THE EQUIPMENT FOR THE PROJECT. THE ENGINEER WILL ENTERTAIN THE USE OF OTHER MANUFACTURER'S EQUIPMENT OF LIKE FUNCTIONS AND EQUAL QUALITY. FINAL ACCEPTANCE OF SUBSTITUTES IS AT THE ENGINEER'S DISCRETION. SHOULD THE BIDDER DESIRE TO USE EQUIPMENT OR MATERIALS OR A MANUFACTURER OTHER THAN THOSE SPECIFIED OR SHOWN, HE SHALL ATTACH A RIDER TO THE BID FORM LISTING THE DEDUCTIONS AND/OR ADDITIONS TO HIS BASE BID, TOGETHER WITH THE MANUFACTURE'S NAME AND MODEL NUMBERS OF THE EQUIPMENT OR MATERIALS HE PROPOSED TO FURNISH AS 'SUBSTITUTES'. IF NO SUBSTITUTE INFORMATION IS FURNISHED, IT WILL BE EXPRESSLY UNDERSTOOD THAT ALL EQUIPMENT AND MATERIALS NAMED WILL BE FURNISHED IN FULL ACCORDANCE WITH THE PLANS AND/OR SPECIFICATIONS.

RECORD DRAWINGS

CONTRACTOR SHALL KEEP ACCURATE RECORD OF ALL DEVIATIONS IN WORK AS ACTUALLY INSTALLED FROM WORK INDICATED PAYING PARTICULAR ATTENTION TO DIMENSIONING OUTSIDE UNDERGROUND UTILITY LINES, THEIR OFFSETS AND VALVES.

AT THE CLOSE-OUT OF THE PROJECT THE CONTRACTOR IS TO DELIVER TO THE OWNER TWO SETS OF "AS-BUILT" DRAWINGS COPIES OF ALL APPROVED SHOP DRAWINGS.

OWNER'S INSTRUCTIONS AND SYSTEM OPERATION

THE CONTRACTOR IS TO INSTRUCT THE OWNER, OR HIS REPRESENTATIVE, ON THE OPERATION AND MAINTENANCE PROCEDURES FOR ALL OF THE INSTALLED SYSTEMS AND EQUIPMENT. IN ADDITION TO THE VERBAL INSTRUCTIONS, THESE INSTRUCTIONS SHALL BE WRITTEN IN LAYMAN'S LANGUAGE AND SHALL BE INSERTED IN VINYL-COVERED THREE-RING LOOSE LEAF BINDER. THIS INFORMATION IN BINDER SHALL BE FIRST SENT TO AND APPROVED BY THE ARCHITECT/ENGINEER BEFORE TURNING OVER TO OWNER.

INSTALLATIONS

SLEEVES

PROVIDE NO. 22 GA. GALVANIZED IRON SLEEVES EXTENDED THROUGH CONSTRUCTION AT ALL PENETRATIONS THROUGH CEILINGS, WALLS AND PARTITIONS.

FOR INSULATED PIPING THE SLEEVE IS TO BE SIZED TO ALLOW INSULATION TO PASS THROUGH SLEEVE, PROVIDE 1/2 INCH SPACE BETWEEN PIPE AND/OR INSULATION AND SLEEVE.

FIRE SEAL ALL SLEEVES IN ACCORDANCE WITH BUILDING CODE AND APPLICABLE SECTIONS OF THE NFPA.

EXPANSION ANCHORS

SUSPEND HANGERS FROM EXPANSION ANCHORS IN SOLID CONCRETE SLABS SIMILAR TO HILTI HDI. PROVIDE HANGER IN PLACE WITH DOUBLE NUTS.

PROVIDE PROTECTION SHIELDS IN INSULATED PIPING. INSTALL HANGERS OVER INSULATION AND SHIELDS.

WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING HANGER RODS IN REQUIRED LOCATIONS, PROVIDE ADDITIONAL STEEL FRAMING AS REQUIRED AND REVIEWED.

HANGERS AND SUPPORTING

PIPE HANGING AND SUPPORTING – PIPING SHALL NOT BE SUPPORTED BY OTHER PIPING, BUT SHALL BE SUPPORTED WITH PIPE HANGERS SUITABLE FOR THE SIZE OF PIPE AND PROPER STRENGTH AND QUALITY AT PROPER INTERVALS SO THAT THE PIPING CANNOT BE MOVED ACCIDENTALLY FROM THE INSTALLED POSITION AS FOLLOWS:

PROVIDE CLEVIS HANGERS	AT CENTER OF CENTER SPACING (UNLESS OTHERWISE NOTED)
1/2 INCH PIPE OR TUBING	6 FEET
3/4 INCH OR 1 INCH PIPE OR TUBING	8 FEET
1-1/4 INCH OR LARGER (HORIZONTAL)	10 FEET
1-1/4 INCH OR LARGER (VERTICAL)	EVERY FLOOR LEVEL

DUCT HANGING AND SUPPORTING – DUCTWORK SHALL NOT BE SUPPORTED BY OTHER DUCTWORK OR PIPING, BUT SHALL BE SUPPORTED WITH HANGERS OF TYPE AND AT SPACING AS PER SMACNA STANDARDS.

VIBRATION AND SEISMIC CONTROL

QUIET OPERATION – ALL WORK SHALL OPERATE UNDER ALL CONDITIONS OF LOAD WITHOUT ANY SOUND OR VIBRATION WHICH IS OBJECTIONABLE IN THE OPINION OF THE ENGINEER. IN CASE OF MOVING MACHINERY, SOUND OR VIBRATION NOTICEABLE OUTSIDE OF ROOM IN WHICH IT IS INSTALLED, OR ANNOYING INSIDE ITS OWN ROOM, WILL BE CONSIDERED OBJECTIONABLE BY THE ENGINEER AND SHALL BE REMEDIED IN APPROVED MANNER BY THE CONTRACTOR AT HIS EXPENSE.

PROVIDE FLEXIBLE PIPE CONNECTIONS AT ALL PIPING CONNECTED TO MOVING EQUIPMENT.

SEISMIC RESTRAINTS

SEISMIC RESTRAINTS DESIGNED AND CONSTRUCTED FOR LATERAL FORCES IN ANY DIRECTION SHALL BE PROVIDED FOR ALL MECHANICAL EQUIPMENT IN ACCORDANCE WITH THE STATE BUILDING CODE.

SEISMIC RESTRAINTS SHALL NOT BE REQUIRED FOR THE FOLLOWING:

1. PIPING IN BOILER AND MECHANICAL ROOMS LESS THAN 1-1/4 INCH INSIDE DIAMETER.
2. ALL OTHER PIPING LESS THAN 2-1/2 INCH INSIDE DIAMETER.
3. RECTANGULAR AIR-HANDLING DUCTS LESS THAN 6 SQUARE FEET IN CROSS-SECTIONAL AREA.
4. ROUND AIR-HANDLING DUCTS LESS THAN 28 INCHES IN DIAMETER.
5. PIPING SUSPENDED BY INDIVIDUAL HANGERS 12 INCHES OR LESS IN LENGTH FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE SUPPORT FOR THE HANGER.
6. DUCTS SUSPENDED BY HANGERS 12 INCHES OR LESS IN LENGTH FROM THE TOP OF THE DUCT TO THE BOTTOM OF THE SUPPORT FOR THE HANGER.

SEISMIC RESTRAINT FOR DUCTWORK; PROVIDE REQUIRED BRACING MATERIAL. DUCTWORK SHALL BE SUPPORTED AND BRACED TO RESIST ALL DIRECTIONAL (TRANSVERSE, LONGITUDINAL AND VERTICAL) FORCES EQUAL TO 10 PERCENT OF THE WEIGHT OF THE DUCT SYSTEM.

IDENTIFICATION

ALL IDENTIFICATION LABELING IS TO COMPLY WITH ASME A13.1

ALL PIPING IS TO BE LABELED WITH INDICATIONS OF SERVICE AND DIRECTION OF FLOW.

ALL DUCTWORK IS TO BE LABELED WITH INDICATIONS OF SERVICE, DIRECTION OF FLOW AND ASSOCIATED SYSTEM DESIGNATION.

ALL EQUIPMENT IS TO HAVE PERMANENT LABELS INDICATING EQUIPMENT DESIGNATION.

PIPING INSTALLATION

SIZES AND APPROXIMATE LOCATION OF PIPING SYSTEMS ARE SHOWN ON THE DRAWINGS. CHECK CAREFULLY WITH THE ARCHITECTURAL DRAWINGS, DRAWINGS SHOWING WORK OF OTHER TRADES, AND EXISTING FIELD CONDITIONS TO MAKE SURE THAT THERE WILL BE NO CONFLICT BETWEEN THESE TRADES AND THE PIPING SYSTEMS. PIPES SHALL BE OFFSET AS REQUIRED TO CLEAR STRUCTURAL MEMBERS AND EXISTING FIELD CONDITIONS.

PIPING TO BE INSTALLED WITH PROPER PITCH TO LOW POINTS. PROVIDE DRAIN VALVES AT ALL LOW POINTS AND AIR VENTS AT ALL HIGH POINTS OF THE PIPING SYSTEM.

INSTALL PIPING TO ALLOW FOR PIPE EXPANSION.

DUCT INSTALLATION

SIZES AND APPROXIMATE LOCATION OF ALL DUCTS ARE SHOWN ON THE DRAWINGS. CHECK CAREFULLY WITH THE ARCHITECTURAL DRAWINGS, DRAWINGS SHOWING WORK OF OTHER TRADES, AND EXISTING FIELD CONDITIONS TO MAKE SURE THAT THERE WILL BE NO CONFLICT BETWEEN THESE TRADES AND THE DUCTS. DUCTS SHALL BE OFFSET AS REQUIRED TO CLEAR STRUCTURAL MEMBERS AND EXISTING FIELD CONDITIONS; IF NECESSARY, THE DIMENSIONS OF THE DUCT MAY BE ALTERED PROVIDED THE CROSS-SECTIONAL AREA IS IN NO CASE REDUCED.

FIELD QUALITY CONTROL

PERFORM THE FOLLOWING FIELD TESTS AND INSPECTIONS ACCORDING TO SMACNA'S "HVAC AIR DUCT LEAKAGE TEST MANUAL" AND PREPARE TEST REPORTS:

DISASSEMBLE, REASSEMBLE AND SEAL SEGMENTS OF SYSTEMS TO ACCOMMODATE LEAKAGE TESTING AND FOR COMPLIANCE WITH TEST REQUIREMENTS.

CONDUCT TESTS AT STATIC PRESSURES EQUAL TO MAXIMUM DESIGN PRESSURE OF SYSTEM OR SECTION BEING TESTED. IF PRESSURE CLASSES ARE NOT INDICATED, TEST ENTIRE SYSTEM AT MAXIMUM SYSTEM DESIGN PRESSURE. DO NOT PRESSURIZE SYSTEMS ABOVE MAXIMUM DESIGN OPERATING PRESSURE. GIVE SEVEN DAYS ADVANCE NOTICE FOR TESTING.

MAXIMUM ALLOWABLE LEAKAGE: COMPLY WITH REQUIREMENTS FOR LEAKAGE CLASS 3 FOR ROUND AND FLAT-OVAL DUCTS, LEAKAGE CLASS 12 FOR RECTANGULAR DUCTS IN PRESSURE CLASSES LOWER THAN AND EQUAL TO 2-INCH WG (500 PA) (BOTH POSITIVE AND NEGATIVE PRESSURES), AND LEAKAGE CLASS 6 FOR PRESSURE CLASSES FROM 2- TO 10- WG (500 TO 2500 PA).

REMAKE LEAKING JOINTS AND RETEST UNTIL LEAKAGE IS EQUAL TO OR LESS THAN MAXIMUM ALLOWABLE.

MATERIALS

DISSIMILAR METALS

WHENEVER DISSIMILAR PIPING MATERIALS ARE CONNECTED THE TWO SHALL BE SEPARATED WITH AN 'INSULATION' CONNECTION (DIELECTRIC) FITTING.

PIPING

HOT WATER HEATING PIPING

TYPE L COPPER TUBING WITH SWEAT FITTINGS WITH 95-5 SOLDER OR STANDARD WEIGHT, SCHEDULE 40, OPEN HEARTH STEEL, NATIONAL OR EQUAL. FITTINGS FOR STEEL PIPE SHALL BE AS FOLLOWS: GENERALLY, BUTT WELDING FITTINGS OVER TWO INCHES SHALL BE USED AND EITHER SOCKET-WELD OR SCREWED FOR TWO INCHES AND UNDER. WELDING FITTINGS SHALL BE STANDARD FORGED STEEL WITH CHAMFERED ENDS. ALL BRANCHES SHALL BE WELDED WITH EITHER WELDOLETE OR TEES, OR MATCH EXISTING MATERIALS.

PIPE INSULATION

THE FOLLOWING PIPING SYSTEMS ARE TO BE INSULATED:

HEATING HOT WATER SUPPLY AND RETURN PIPING

HOT WATER HEATING PIPING INSULATION

INSULATE WITH RIGID PREFORMED FIBERGLASS WITH AP-T PLUS JACKET, SCHULLER MICRO-LOK OR EQUAL. INSULATION THICKNESS SHALL BE 1" THICK FOR BELOW 1 ½" OR SMALLER PIPING, 1-1/2" THICK FOR 2" TO 3" PIPING AND 2" THICK FOR PIPING 4" AND LARGER. PROVIDE ZESTON COVERS ON ALL FITTINGS.

VALVES AND SPECIALTIES

BALANCING FITTINGS

PROVIDE "B & G" CIRCUIT SETTER BALANCING FITTINGS ON ALL WATER SYSTEMS WHENEVER REQUIRED FOR BALANCING OF SYSTEMS.

HOT WATER VALVES

BALL TYPE VALVES TO BE JAMESBURY, CLINCHER, OR APOLLO GATE TYPE VALVES TO BE MILWAUKEE #F-2885M (FLANGED) OS&Y TYPE VALVES TO BE IRON BODY, BRONZE MOUNTED OR (SCREWED), BRONZE, RISING STEM. CHECK VALVES TO BE CRANE/JENKINS VALVES.

THERMOMETERS

SHALL BE TRERICE UNIVERSAL ANGLE TYPE #L80732, SOLID LIQUID FILLED, 4 ½" DIAL SIZE. FURNISH WITH SEPARABLE SOCKET WITH 2" EXTENSION NECK.

DUCTWORK

SHEET METAL DUCTWORK

ALL DUCTWORK SHALL BE CONSTRUCTED OF #1 QUALITY SHEETS OF GALVANIZED STEEL FREE OF CRACKS OR BLEMISHES. WHEN PITTSBURGING OR SNAP LOCKING A JOINT, THE GALVANIZED STEEL SHALL NOT BE CHIPPED OFF. ALL PARTS OF THE SHEET METAL DUCT SYSTEM SHALL BE OF THE GAGE, CONSTRUCTION, HANGING METHOD, AND INSTALLED IN STRICT ACCORDANCE WITH THE CURRENT EDITION OF THE SMACNA STANDARDS, INCLUDING DUCT LEAKAGE REQUIREMENTS.

DUCT INSULATION

THERMAL INSULATION SCHEDULE

INSULATE DUCTS IN COMPLIANCE WITH THE INTERNATIONAL ENERGY CONSERVATION CODE. COMMERCIAL DUCTWORK SHALL BE INSULATED TO R-8

DUCT SEALING

SEAL ALL DUCTWORK IN COMPLIANCE WITH THE INTERNATIONAL ENERGY CONSERVATION CODE.

COMMERCIAL DUCTS, SEAL ALL LONGITUDINAL AND TRANSVERSE JOINTS, SEAMS AND CONNECTIONS.

DUCT ACCESS DOORS

PROVIDE ACCESS DOORS, SIZED AND LOCATED FOR MAINTENANCE WORK, UPSTREAM WHERE POSSIBLE, FOR EACH DUCT MOUNTED SMOKE DETECTOR AND EACH FIRE DAMPER OR DEVICE WITHIN THE DUCT THAT REQUIRES SERVICE OR INSPECTION. ACCESS SECTIONS IN INSULATED DUCTS SHALL BE DOUBLE-WALL, INSULATED. REFER TO SMACNA STANDARDS. PROVIDE LOCK TYPE 2 (DOOR LATCH, NOT SASH LOCK).

CONTROLS

GENERAL

PROVIDE ALL TEMPERATURE, OPERATION AND SAFETY CONTROLS, LOW VOLTAGE CONTROL WIRING, HARDWARE, SOFTWARE, AND ACCESSORIES NECESSARY TO ACHIEVE A FULLY OPERATIONAL HVAC CONTROL SYSTEM. POWER WIRING SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

TESTING AND BALANCING

GENERAL

COMPLETELY TEST AND BALANCE HOT WATER SYSTEMS AND ALL SUPPLY, RETURN AIR SYSTEMS AND PROVE THE CAPACITIES OF THE SYSTEM AND THE SYSTEM COMPONENTS. SUBMIT RESULTS TO ENGINEER FOR APPROVAL

GENERAL PIPE TEST

UNLESS OTHERWISE NOTED, TEST ALL PIPING HYDROSTATICALLY AT NOT LESS THAN 200 PSIG (# PER SQUARE INCH PRESSURE) FOR TWO HOURS AND ALL DEFECTIVE MATERIAL SHALL BE REPLACED. BEFORE MAKING FINAL APPROVAL, THE SUBCONTRACTOR SHOULD PRODUCE A WRITTEN STATEMENT, SIGNED BY A REPRESENTATIVE OF THE OWNER'S UNDERWRITER, THAT THE WORK HAS BEEN COMPLETED AND TESTED IN ACCORDANCE WITH APPROVED SPECIFICATIONS AND PLANS. UNLESS OTHERWISE NOTED, PERFORM PRESSURE TESTS AND OBTAIN APPROVAL OF TEST RESULTS BEFORE STARTING CLEANING OR CONCEALING OF PIPE UNDER INSULATION OR OTHER FINISH. INSULATION REMOVAL AND REINSTALLATION WHICH IS REQUIRED BECAUSE INSULATION WAS INSTALLED PRIOR TO TESTING SHALL BE DONE BE THE CONTRACTOR AT NO EXTRA COST.

TESTS ARE SATISFACTORY ONLY WHEN JOISTS SHOW NO VISIBLE LEAKS AND TEST PRESSURE REMAINS CONSTANT AFTER CONTINUOUS TEST PERIOD. REPAIR LEAKS, AND REMOVE AND REPLACE DEFECTIVE PIPE, FITTINGS AND JOISTS WITH NEW MATERIAL, UNTIL ACCEPTED BY ARCHITECT AND INSPECTING AUTHORITY. WICKING, CAULKING, COMPOUNDING, PEENING, OR OTHER MAKESHIFT TYPE OF REPAIRS ARE NOT PERMITTED. REPEAT TESTS AFTER REPAIRS UNTIL SYSTEMS ARE PROVEN TIGHT.

HOT WATER PIPE TEST

TESTS SHALL BE MAINTAINED AS LONG AS NECESSARY TO COMPLETELY INSPECT PIPING (MINIMUM 4 HOURS).

TEST WATER PIPING BY APPLYING HYDROSTATIC PRESSURE USING PUMP; ENSURE THAT LINES ARE VENTED OF ALL AIR.

FOLLOWING PRECAUTIONS SHALL BE TAKEN DURING PRESSURE TESTS:

1. HOT WATER SYSTEM RELIEF VALVE SHALL BE REMOVED.
2. SYSTEM PRESSURE GAUGES WITH SCALE RANGES LOWER THAN TEST PRESSURE SHALL BE REMOVED OR ISOLATED.
3. WATER CONTROL VALVES SHALL BE REMOVED.

AIR SYSTEMS BALANCING

PROCURE THE SERVICES OF A CERTIFIED BALANCING CO. TO PERFORM THE TESTING AND BALANCING OF THE AIR SYSTEMS.

COMPLETELY TEST AND BALANCE ALL SUPPLY, RETURN AND EXHAUST AIR SYSTEMS AND PROVE THE CAPACITIES OF THE SYSTEM AND THE SYSTEM COMPONENTS. BALANCE THE GRILLES, REGISTERS, DIFFUSERS AND EQUIPMENT TO OBTAIN THE RESULTS INDICATED ON THE DWGS. SUBMIT A BALANCING REPORT INDICATING THE RESULTS TO ENGINEER FOR APPROVAL.

WATER SYSTEMS BALANCING

PROCURE THE SERVICES OF A CERTIFIED BALANCING CO. TO PERFORM THE TESTING AND BALANCING OF THE WATER SYSTEMS.

COMPLETELY TEST AND BALANCE ALL SUPPLY AND RETURN PIPING SYSTEMS. BALANCE FLOWS TO DESIGN/SCHEDULED LISTING FOR EACH PIECE OF EQUIPMENT (PUMP, COIL, TERMINAL UNIT, ETC.). INCLUDE SIZE, CV VALUE OF EACH CONTROL VALVE, AND EQUIPMENT SERVED IN THE FINAL BALANCING REPORT. SUBMIT THE REPORT TO THE ENGINEER FOR APPROVAL.

Omit Reheat for DOA #5

INNOVATIVE ENGINEERING SERVICES, LLC
AN INTEGRATED ENGINEERING + DESIGN FIRM
33 N PLAINS INDUSTRIAL RD
WALLINGFORD, CT 06492
TEL: 203.467.4370
WEB: WWW.IESLLC.BIZ

NOTES:

ISSUED FOR CONSTRUCTION DOCUMENTS

REV.	DATE	DESCRIPTION

PROJECT:

NONNAWAUG HS OFFICE WING

WOODBURY, CT 06798

SHEET TITLE: **MECHANICAL SPECIFICATIONS**

PROJECT NUMBER:	23174
ISSUED:	02/16/24
DRAWN BY:	
CHECKED BY:	
SCALE:	AS NOTED

SHEET: **M-4**

G:\IES Projects\2023 Projects\Team TEM\23174 Nonnewaug HS Office Wing Reheat Coil Design\Contract Documents\23174_M-4.dwg Plotted by dburgh on Feb 16, 2024 - 3:52pm

OLP-1-E(2) (EXISTING)

RATING: 208Y/120V, 3ø, 4W
MAIN BUS: ☐ CU ☐ AL 400A MAIN BUS
MAIN DEVICE: M.L.O.
INTERRUPTING RATING: EXISTING

LOCATION: EXISTING ELEC. RM E122
MOUNTING: ☐ FLUSH ☒ SURFACE
TRIM: ☒ SINGLE DOOR ☐ DOOR-IN-DOOR

CKT NO	BREAKER AMP	BREAKER POLES	DESCRIPTION	WIRE & CONDUIT	KVA	A	B	C	KVA	WIRE & CONDUIT	DESCRIPTION	BREAKER POLES	BREAKER AMP	CKT NO
1	20	1	EXISTING	EXISTING	0.0	♦			0.0	EXISTING	EXISTING	1	20	2
3	20	1	EXISTING	EXISTING	0.0		♦		0.0	EXISTING	EXISTING	1	20	4
5	20	1	EXISTING	EXISTING	0.0			♦	0.0	EXISTING	EXISTING	1	20	6
7	20	1	EXISTING	EXISTING	0.0	♦			0.0	EXISTING	EXISTING	1	20	8
9	20	1	EXISTING	EXISTING	0.0		♦		0.0	EXISTING	EXISTING	1	20	10
11	20	1	EXISTING	EXISTING	0.0			♦	0.0	EXISTING	EXISTING	1	20	12
13	20	1	EXISTING	EXISTING	0.0	♦			0.0	EXISTING	EXISTING	1	20	14
15	20	1	EXISTING	EXISTING	0.0		♦		0.0	EXISTING	EXISTING	1	20	16
17	20	1	EXISTING	EXISTING	0.0			♦	0.0	EXISTING	EXISTING	1	20	18
19	20	1	EXISTING	EXISTING	0.0	♦			0.0	EXISTING	EXISTING	1	20	20
21	20	1	EXISTING	EXISTING	0.0		♦		0.0	EXISTING	EXISTING	1	20	22
23	20	1	EXISTING	EXISTING	0.0			♦	0.0	EXISTING	EXISTING	1	20	24
25	20	1	EXISTING	EXISTING	0.0	♦			0.0	EXISTING	EXISTING	1	20	26
27	20	1	EXISTING	EXISTING	0.0		♦		0.0	EXISTING	EXISTING	1	20	28
29	20	1	EXISTING	EXISTING	0.0			♦	0.0	EXISTING	EXISTING	1	20	30
31	20	1	EXISTING	EXISTING	0.0	♦			0.0	EXISTING	EXISTING	1	20	32
33	20	1	EXISTING	EXISTING	0.0		♦		0.0	EXISTING	EXISTING	1	20	34
35	20	1	EXISTING	EXISTING	0.0			♦	0.0	EXISTING	EXISTING	1	20	36
37	–	1	SPACE	–	0.0	♦			1.6	3/4"C, 3#12, #12G	ELEC REHEAT COIL	3	20	38
39	–	1	SPACE	–	0.0		♦		1.6	–	–	–	–	40
41	–	1	SPACE	–	0.0			♦	1.6	–	–	–	–	42
				TOTALS PER PHASE		1.6	1.6	1.6						
				NEW LOAD	4.8									

ELECTRICAL SPECIFICATION

1. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK REQUIRED FOR A COMPLETE, FULLY OPERABLE INSTALLATION. ALL WORK TO BE DONE IN ACCORDANCE WITH THE LATEST APPROVED ISSUE OF THE NEC AND APPLICABLE LOCAL CODES.
2. PRIOR TO SUBMISSION OF BIDS GIVE WRITTEN NOTICE TO ARCHITECT AND ENGINEER OF ANY MATERIAL OR APPARATUS THAT IS INADEQUATE, UNSUITABLE FOR THE USE, IN VIOLATION OF LAWS, ORDINANCES, RULES, CODES OR ANY REGULATIONS OF AUTHORITIES HAVING JURISDICTION OR ANY NECESSARY ITEMS OF WORK THAT HAS BEEN OMITTED. CONTRACTOR AFFIRMS THAT ABSENT SUCH NOTICE, ALL SYSTEMS WILL FUNCTION SATISFACTORILY WITHOUT ADDITIONAL EXTRA COMPENSATION.
3. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND ADHERE TO THE CONTENTS OF THE BID DOCUMENTS. ANY DEVIATIONS FROM THE INFORMATION PROVIDED IN THE DOCUMENTS MUST BE LISTED IN WRITING. INNOVATIVE ENGINEERING SERVICES, LLC HAS THE RIGHT TO BE COMPENSATED FOR REVIEW OF VALUE ENGINEERING OR SUBSTITUTED MATERIALS AND EQUIPMENT.
4. ELECTRICAL CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED TO THEIR ORIGINAL CONDITION. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING, PATCHING, PAINTING, CLEAN-UP, ELECTRICAL DEBRIS REMOVAL AND GENERAL COORDINATION OF THE WORK EFFORT AS REQUIRED FOR THE INSTALLATION OF THE ELECTRICAL ITEMS OF WORK.
5. THE DRAWINGS SHOW THE GENERAL LAYOUT AND SOME OF THE DETAIL, BUT THEY DO NOT SHOW EVERY FITTING, BEND, ... ETC. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL SUCH MATERIALS TO MAKE A COMPLETE INSTALLATION.
6. ALL PART NUMBERS ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. THEY ARE NOT TO BE CONSIDERED THE COMPLETE SPECIFICATION OF THE PRODUCT. THE PART NUMBER AND DESCRIPTION WILL BE THE COMPLETE SPECIFICATION. IN THE EVENT OF A DISCREPANCY BETWEEN THE TWO, THE MORE STRINGENT, MORE COSTLY FEATURE/PERFORMANCE WILL BE REQUIRED.
7. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING OF ALL PHASES OF THE WORK AND TO DEMONSTRATE TO OWNER THAT THE EQUIPMENT IS IN FULL OPERATING ORDER.
8. DO NOT SCALE DRAWINGS; ACTUAL FIELD MEASUREMENTS AND DIMENSIONS TAKE PRECEDENCE IN ALL CASES.
9. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT, AIA DOCUMENT 201, LATEST EDITION.
10. ELECTRICAL CONTRACTOR SHALL INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND OR REQUIREMENTS FOR PROPER OPERATION AND MAINTENANCE.
11. ELECTRICAL CONTRACTOR SHALL WARRANT AND GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER.
12. ELECTRICAL CONTRACTOR SHALL GIVE OWNER 10 DAYS ADVANCE NOTICE OF SHUTDOWNS, OR AS DIRECTED BY THE OWNER. SHUTDOWNS TO BE KEPT TO A MINIMUM. AT NO TIME SHALL THE BUILDING/SPACE BE LEFT WITHOUT COMMERCIAL POWER IN FULL OPERATING ORDER.
13. PROVIDE INDEPENDENT SEISMIC SUPPORT OF ALL ELECTRICAL EQUIPMENT PER THE LATEST ADOPTED VERSION OF THE INTERNATIONAL BUILDING CODE.
14. ALL ELECTRICAL PENETRATIONS TO BE FIREPROOFED TO MAINTAIN INTEGRITY OF FIRE WALLS/FLOORS/CEILINGS. NON-RATED WALLS SHALL BE SEALED AIRTIGHT.
15. ALL THE WIRE SIZES ARE BASED ON COPPER, ALUMINUM IS NOT TO BE USED UNLESS NOTED OTHERWISE.
16. MINIMUM CONDUCTOR SIZE FOR A FULLY LOADED 20A CIRCUIT, UNLESS OTHERWISE NOTED, SHALL BE #12 FOR ALL BRANCH CIRCUIT RUNS UP TO THE FIRST OUTLET; OVER 60 FEET, #10; OVER 105 FEET, #8; INCREASE CONDUIT SIZE TO SUIT.
17. CIRCUIT NUMBERS ARE INDICATED FOR INTENT ONLY. THE ELECTRICAL CONTRACTOR SHALL ADJUST ACCORDINGLY IN THE FIELD, TO BALANCE CIRCUITS EVENLY ON ALL PHASES.
18. ALL WIRING METHODS ARE TO BE IN ACCORDANCE WITH THE CURRENT ISSUE OF THE NATIONAL ELECTRICAL CODE, AND APPLICABLE LOCAL CODES. ALL WIRING IS TO BE IN CONDUIT, UNLESS SPECIFICALLY NOTED OTHERWISE. ALL WIRING IS TO BE CONCEALED.
19. SHARED NEUTRALS ARE NOT TO BE USED. PROVIDE SEPARATE NEUTRALS FOR ALL CIRCUITS INCLUDING SWITCHES PER THE LATEST EDITION OF THE NEC.
20. ELECTRICAL CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR APPROVAL FOR DISCONNECT SWITCH, CIRCUIT BREAKER....ETC.
21. COORDINATE EXACT PLACEMENT OF EQUIPMENT WITH ARCHITECTURAL AND MECHANICAL PLANS, MAKE FIELD ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS, VERIFY WITH OWNER.
22. ELECTRICAL CONTRACTOR TO COORDINATE WITH ARCHITECTURAL AND MECHANICAL CONTRACTOR FOR ITEMS SUPPLIED BY THE MECHANICAL/OTHER DIVISIONS BUT INSTALLED BY THE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO REVIEW ALL THE PLANS FOR THE PROJECT AND ASSIST IN PROVIDING COORDINATION DRAWINGS WITH OTHER TRADES.
23. ELECTRICAL CONTRACTOR TO VERIFY LOADS, SETTINGS, OVERCURRENT PROTECTION... ETC TO INSURE COMPATIBILITY OF EQUIPMENT.
24. PROVIDE LAMICOID NAMEPLATES AND TYPEWRITTEN PANEL SCHEDULES FOR ALL PANEL BOARDS. DISTRIBUTION AND DISCONNECT EQUIPMENT, MODIFIED OR PROVIDED AS NEW AS PART OF THE SCOPE OF WORK. ALTERNATE LABELING PROVISIONS MUST BE APPROVED BY THE ENGINEER.

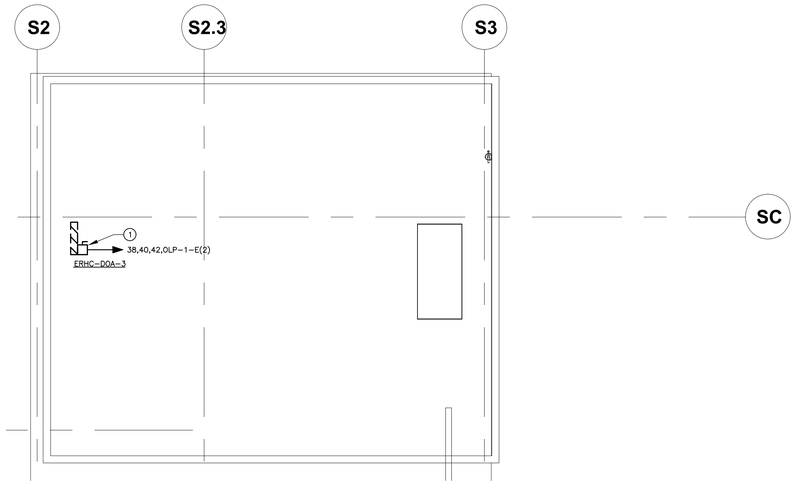
ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
▭	EXISTING PANELBOARD / LOAD CENTER
———	CONDUIT AND WIRE
- - - - - -	CONDUIT AND WIRE, SWITCHED
→ 1,LP	HOMERUN TO PANELBOARD, NUMBERS/LETTERS INDICATE CIRCUIT & PANELBOARD TERMINATION UNLESS OTHERWISE INDICATED
⊓	SAFETY DISCONNECT SWITCH

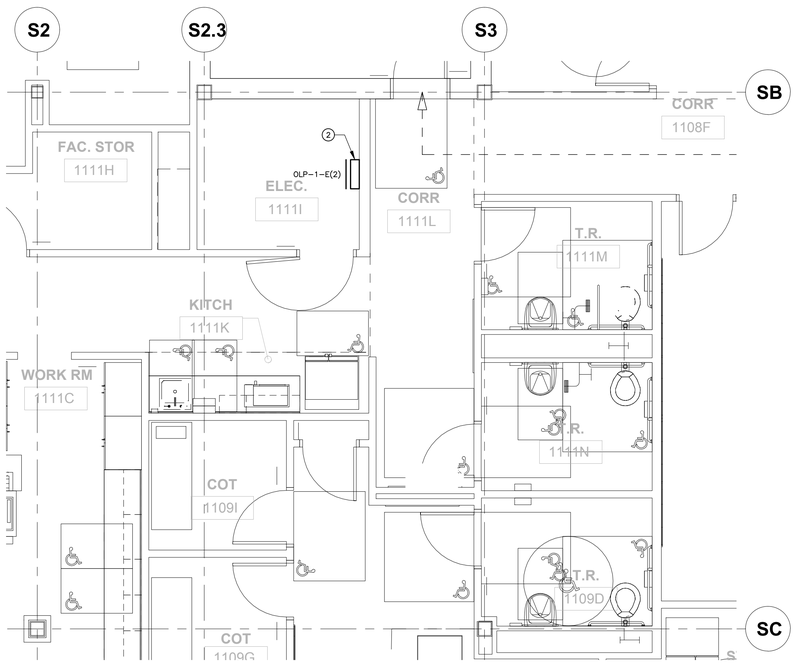
HVAC FEEDER SCHEDULE

SYMBOL	V – PH	AMP	DISC. SW.	STARTER NEMA SIZE	HP (KW)	NOTES
ERHC	208V–3ø	13.9	30A, 3P, 240V DISC. SWITCH	–	(5)	

NOTES:
1. –
2. –



ELECTRICAL - POWER PARTIAL ATTIC PLAN
SCALE: 1/4"= 1'-0"

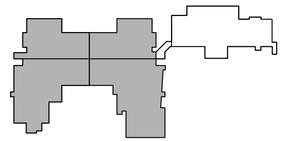


ELECTRICAL - POWER PARTIAL FIRST FLOOR PLAN
SCALE: 1/4"= 1'-0"

DRAWING NOTES

1. ELECTRIC REHEAT COIL, PROVIDE POWER FROM EXISTING PANELBOARD.
2. EXISTING PANELBOARD TO BE REUSED, VERIFY EXACT LOCATION WITHIN ROOM.

Omit Reheat for DOA #5



KEY PLAN
N.T.S.

INNOVATIVE ENGINEERING SERVICES, LLC
AN INTEGRATED ENGINEERING + DESIGN FIRM
33 N PLAINS INDUSTRIAL RD
WALLINGFORD, CT 06492
TEL: 203.467.4370
WEB: WWW.IESLLC.BIZ

NOTES:

ISSUED FOR CONSTRUCTION DOCUMENTS

REV.	DATE	DESCRIPTION

PROJECT:

NONNAWAUG HS OFFICE WING

WOODBURY, CT 06798

SHEET TITLE:

ELECTRICAL - POWER PARTIAL FIRST FLOOR PLAN

PROJECT NUMBER:	23174
ISSUED:	02/16/24
DRAWN BY:	
CHECKED BY:	
SCALE:	AS NOTED

SHEET:

E-1

G:\IES Projects\2023 Projects\Team TEM\23174 Nonnewaug HS Office Wing Reheat Coil Design\Contract Documents\23174_E-1.dwg Plotted by dburgh on Feb 16, 2024 - 3:52pm