MECHANICAL LEGEND

AIR DISTRIBUTION SYMBOLS

- UP / DN — SUPPLY DUCT (UP & DOWN)
- UP / DN — EXHAUST DUCT (UP & DOWN)
- UP / DN — RETURN DUCT (UP & DOWN)
- SQUARE SUPPLY AIR CEILING DIFFUSER
- RECTANGULAR EXHAUST AIR CEILING GRILLE
- RECTANGULAR RETURN AIR CEILING GRILLE
- ACCESS PANEL IN INACCESSIBLE CEILING (24x24, UNO)
- SIDEWALL SUPPLY REGISTER OR GRILLE (WALL TYPE)
- SIDEWALL EXHAUST OR RETURN REGISTER OR GRILLE (WALL TYPE)
- CONNECT NEW DUCT TO EXISTING DUCT
- R — INCLINED RISE, IN DIRECTION OF AIR FLOW
- D — INCLINED DROP, IN DIRECTION OF AIR FLOW
- LIMIT OF DEMOLITION
- FLEXIBLE CONNECTION, EQUIPMENT, VIBRATION
- VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
- STANDARD RADIUS ELBOW (LONG RADIUS)
- U — 1" DOOR UNDERCUT

AIR DISTRIBUTION SYMBOLS

- EXISTING DUCT TO REMAIN
- EXISTING DUCT TO BE REMOVED
- 10x8 — RECTANGULAR DUCT (INSIDE DIMENSIONS: WIDTH x DEPTH)
- 10ø — ROUND DUCT (INSIDE DIMENSIONS: DIAMETER)
- 10x8ø — OVAL DUCT (INSIDE DIMENSIONS: WIDTH x DEPTH)
- FLEXIBLE DUCTWORK (INSULATED)
- MANUAL VOLUME DAMPER
- FD — FIRE DAMPER
- SD — SMOKE DAMPER
- DD / FSD — COMBINATION FIRE/SMOKE DAMPER
- DD — DUCT SMOKE DETECTOR PROVIDED AND WIRED BY ELECTRICAL. INSTALLED BY MECHANICAL.
- M — MOTORIZED CONTROL DAMPER
- AFM — AIRFLOW MEASURING DEVICE
- 45° SUPPLY / 45° RETURN — STANDARD BRANCH SUPPLY OR RETURN, NO SPLITTER (45° TAP)

CONTROLS DEVICE SYMBOLS

- T — SPACE THERMOSTAT - WALL MOUNT
- T — SPACE TEMPERATURE SENSOR - WALL MOUNT
- H — SPACE HUMIDITY SENSOR - WALL MOUNT
- PC — SPACE PRESSURE CONTROLLER & DISPLAY - WALL MOUNT
- PS — SPACE PRESSURE SENSOR - WALL MOUNT

AIR TERMINAL SYMBOLS

- AIR TERMINAL UNIT WITH REHEAT COIL
- AIR TERMINAL UNIT WITHOUT REHEAT COIL

DRAWING SYMBOLS

- DRAWING MATCHLINE

EQUIPMENT ANNOTATIONS

1-ATU27-1

- BUILDING NO. WHERE EQUIPMENT IS LOCATED
- ITEM (AIR TERMINAL UNIT SHOWN)
- ITEM NUMBER (TERMINAL UNIT NO. 1)
- SERVED BY AIR HANDLING UNIT NO. 27

PIPING SYMBOLS

- HPS — HIGH PRESSURE STEAM - 60 PSI
- MPS — MEDIUM PRESSURE STEAM - 30 PSI
- PC — PUMPED STEAM CONDENSATE
- DR — STEAM DRIP RETURN
- VR — STEAM VACUUM RETURN
- HHWS — HOT WATER HEATING SUPPLY
- HHWR — HOT WATER HEATING RETURN
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- CD — CONDENSATE DRAIN LINE
- X — EXISTING PIPE TO BE REMOVED

VALVE SYMBOLS

- GATE VALVE
- GLOBE VALVE
- CHECK VALVE
- CIRCUIT SETTER
- FLEXIBLE CONNECTION
- BUTTERFLY VALVE
- BALL VALVE
- MODULATING CONTROL VALVE
- THREE-WAY CONTROL VALVE
- AUTOMATIC FLOW CONTROL VALVE
- CALIBRATED BALANCING VALVE
- GATE VALVE WITH 3/4" HOSE ADAPTER
- WYE STRAINER (WITH BALL VALVE & HOSE CONNECTION)
- ANGLE GLOBE VALVE

GENERAL PIPING SYMBOLS

- DIRECTION OF PIPE PITCH (DOWN)
- DIRECTION OF FLOW
- REDUCER OR INCREASER
- ECCENTRIC REDUCER
- TOP CONNECTION, 45° OR 90°
- BOTTOM CONNECTION, 45° OR 90°
- SIDE CONNECTION
- CAPPED OUTLET
- RISE OR DROP IN PIPE
- UNION
- PIPE UP
- PIPE DOWN
- THERMOMETER
- PRESSURE GAGE
- TEST PLUG (PRESSURE/TEMPERATURE)
- AV — AUTOMATIC AIR VENT
- MV — MANUAL AIR VENT
- QUICK-COUPLE HOSE CONNECTOR

MECHANICAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF FIELD CONDITIONS PRIOR TO BEGINNING WORK AND ORDERING EQUIPMENT, AND FOR COORDINATING NEW EQUIPMENT DIMENSIONS AND MEANS AND METHODS FOR INSTALLATION WITH FIELD CONDITIONS.
2. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH SUBMITTED EQUIPMENT TO ENSURE ALL INLET/OUTLET CONNECTIONS COORDINATE WITH FIELD INSTALLED DUCTWORK AND MAKE ANY NECESSARY DUCT MODIFICATIONS TO ENSURE PROPER OPERATION OF MECHANICAL EQUIPMENT.
3. SUBMITTALS SHALL MEET SCHEDULED DESIGN CHARACTERISTICS, INCLUDING BUT NOT LIMITED TO CFMS, EAT(DB/WB), ESP, CAPACITIES, VOLTAGES/PHASES, MCA/MOCP, SONES, ETC.
4. ALL DUCT CONSTRUCTION, INSTALLATION, AND SUPPORTS ARE TO COMPLY WITH LATEST EDITION OF SMACNA'S HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE DUCT.
5. INSULATE ALL DUCTWORK ACCORDING TO SPECIFICATIONS.
6. ALL WALL-MOUNTED THERMOSTATS AND/OR TEMPERATURE SENSORS SHALL BE INSTALLED AT AN ELEVATION OF 48" ABOVE FINISHED FLOOR TO THE TOP UNLESS OTHERWISE NOTED ON DRAWINGS. LOCATION OF WALL-MOUNTED THERMOSTATS SHALL BE COORDINATED WITH OTHER TRADES FOR A NEAT APPEARANCE. FINAL LOCATION OF THERMOSTATS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER OR REPRESENTATIVE IN THE FIELD.
7. ALL SUPPLY AIR DIFFUSERS SHALL BE 4-WAY THROW UNLESS NOTED OTHERWISE. CONTRACTOR SHALL PAINT INSIDE EACH RETURN GRILLE'S PLENUM AND DUCT CONNECTION FLAT BLACK TO CONCEAL CONNECTION. COORDINATE AIR DEVICE LOCATIONS WITH LIGHTING FIXTURES AND FIRE SPRINKLER HEADS. PRIOR TO INSTALLATION, THE CONTRACTOR IS TO REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN FOR ACTUAL FINAL LOCATIONS OF AIR DEVICES.
8. DIFFUSERS/GRILLES SHALL NEVER BE INSTALLED ON SURFACE OF ACOUSTICAL LAY-IN TILE. ALL DIFFUSERS/GRILLES IN LAY-IN CEILINGS SHALL BE LAY-IN PANEL MOUNT. REFER TO SCHEDULE. GYPSUM BOARD SURFACE MOUNT DIFFUSERS SHALL NOT BE BEVEL MOUNT.
9. CONTRACTOR SHALL COORDINATE DIFFUSER/GRILLE LOCATIONS WITH STRUCTURE IN EXPOSED SITUATIONS IN ORDER TO ENSURE AIR IS NOT DIRECTLY SUPPLIED OR RETURNED OVER STRUCTURE OR OTHER TRADE COMPONENTS SUCH AS FIRE SPRINKLER PIPING, PLUMBING PIPING, ETC., CAUSING DUST ACCUMULATION. DUCTWORK ALONG WITH DIFFUSER/GRILLE LOCATIONS SHALL BE INSTALLED SYMMETRICALLY WITH ANY ADJACENT DUCTWORK/GRILLES. CENTER DIFFUSERS/GRILLES BETWEEN STRUCTURAL MEMBERS WHERE DUCTWORK AND STRUCTURAL MEMBERS ARE EXPOSED. CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL INSTALLATION APPEARANCE AND SHALL MAKE APPROPRIATE CHANGES WHERE DIRECTED BY ARCHITECT/ENGINEER AT THEIR OWN EXPENSE WHERE ITEMS ARE NOT INSTALLED PER ABOVE STANDARDS.
10. CONTRACTOR SHALL PROVIDE A COPY OF THE TEST AND BALANCE REPORT BY AN AABC OR NEBB CERTIFIED AGENCY. THIS REPORT MUST BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO THE FINAL INSPECTION. THE CONTRACTOR MUST ALSO PROVIDE ALL REPORTS REQUIRED BY THE SPECIFICATION. OUTDOOR TEMPERATURE (DB); OUTSIDE AIR (DB/WB & CFM); SUPPLY AIR AT UNIT DISCHARGE (DB/WB & CFM); RETURN AIR {MIXED} (DB/WB & CFM); LEAVING COIL (DB/WB); DIFFUSER/GRILLE (DB/WB); EQUIPMENT (EWT/LWT); EQUIPMENT (EAT/LAT); EQUIPMENT (GPM); EQUIPMENT (PRESSURES). OUTSIDE AIR CFM SHALL BE MEASURED DIRECTLY AND NOT CALCULATED FROM THE DIFFERENCE BETWEEN SUPPLY AIR CFM AND RETURN AIR CFM.
11. CONTRACTOR SHALL MAKE NECESSARY ADJUSTMENTS DURING TEST AND BALANCE AS REQUIRED TO ENSURE EQUIPMENT IS OPERATING WITHIN 10% OF THE SPECIFIED CRITERIA. THIS INCLUDES, BUT IS NOT LIMITED TO, ADJUSTING BELTS, SHEAVES, PULLEYS, AND IMPELLERS.
12. ALL AIR HANDLING UNITS SHALL BE MECHANICALLY ATTACHED TO OTHER AIR DISTRIBUTION SYSTEM COMPONENTS. AIR HANDLING UNITS LOCATED OUTSIDE THE CONDITIONED SPACE SHALL BE SEALED USING APPROVED CLOSURE SYSTEMS CONFORMING TO THE APPROVED CLOSURE AND MECHANICAL APPLICATION REQUIREMENTS OF INTERNATIONAL BUILDING CODE.
13. ALL DUCTWORK MUST BE INSTALLED 6" AWAY FROM ANY FIRE RATED WALL TO FACILITATE INSPECTION.
14. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL TRADES INSTALLATION SCHEDULES. FIXED WORK SUCH AS DUCTWORK AND PLUMBING SHALL BE INSTALLED PRIOR TO ANY TRADE WORK THAT CAN BE EASILY RELOCATED OR OFFSET SUCH AS ELECTRICAL CONDUITS, SMALL WATER LINES, ETC. IDEALLY DUCTWORK SHALL BE INSTALLED FIRST. CONTRACTOR TO PROVIDE COORDINATION DRAWINGS TO COR PRIOR TO CONSTRUCTION.
15. PROVIDE A FIRE DAMPER AT EVERY DUCT PENETRATION OF A FIRE-RATED WALL OR CEILING, WHETHER SHOWN ON DRAWINGS OR NOT. ALL FIRE DAMPERS SHALL BE DYNAMIC TYPE WITH BLADES OUTSIDE AIRSTREAM, UNLESS NOTED OTHERWISE.
16. PROVIDE FIRE, SMOKE, AND COMBINATION FIRE/SMOKE DAMPERS AT EVERY LOCATION WHERE REQUIRED BY SECTION 607.5 OF THE IBC-MECHANICAL OR VA DESIGN MANUALS, WHETHER SHOWN ON DRAWINGS OR NOT. PROVIDE PROPER DAMPER ACTUATION IN ACCORDANCE WITH SECTION 607.3.3 OF THE IBC-MECHANICAL. PROVIDE ACCESS AND IDENTIFICATION IN ACCORDANCE WITH SECTION 607.4 OF THE IBC-MECHANICAL.
17. WHERE SMOKE OR COMBINATION FIRE/SMOKE DAMPERS ARE REQUIRED, THE ELECTRICAL OR FIRE ALARM CONTRACTOR (MECHANICAL CONTRACTOR TO COORDINATE) SHALL PROVIDE 120V POWER AND ENSURE PROPER OPERATION UPON ACTIVATION. PROVIDE PROPER DAMPER ACTUATION IN ACCORDANCE WITH SECTION 607.3.3.2 OF THE IBC-MECHANICAL.
18. PROVIDE A DUCT SMOKE DETECTOR IN THE SUPPLY AIR DUCT, DOWNSTREAM OF THE AIR FILTERS AND AHEAD OF ANY BRANCH CONNECTIONS, FOR ALL SYSTEMS HAVING A DESIGN CAPACITY GREATER THAN 2,000 CFM. DUCT SMOKE DETECTOR SHALL BE PROVIDED AND WIRED BY THE ELCTRICAL CONTRACOTR AND INSTALLED BY THE MECHANICAL CONTRACTOR..
19. PROVIDE DUCT SMOKE DETECTORS WHERE REQUIRED BY SECTION 606.2 AND 607.3.3.2 OF THE IBC-MECHANICAL. LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS SHOWN ON DRAWINGS ARE DIAGRAMMATIC IN LOCATION ONLY. FINAL PLACEMENT OF DETECTORS IN DUCTWORK SHALL MEET THE REQUIREMENTS OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE A PRESSURE DIFFERENTIAL TEST AND MANUFACTURER'S TEST KIT. A COPY OF ALL TEST DATA SHALL BE MADE AVAILABLE AT FINAL INSPECTION. PROVIDE A READILY ACCESSIBLE DUCT ACCESS DOOR FOR INSPECTING AND SERVICING EACH DETECTOR. PROVIDE CEILING/WALL ACCESS PANELS WHERE INSTALLED IN INACCESSIBLE LOCATIONS; ACCESS PANELS IN RATED CONSTRUCTION SHALL BEAR A U.L. LABEL. ELECTRICAL CONTRACTOR SHALL FURNISH AND WIRE DETECTOR, MECHANICAL CONTRACTOR SHALL INSTALL DETECTOR WITHIN THE DUCTWORK. ELECTRICAL OR FIRE ALARM CONTRACTOR (MECHANICAL CONTRACTOR TO COORDINATE) SHALL PROVIDE 120V POWER AND ENSURE PROPER OPERATION FOR EACH DETECTOR. OTHER THAN IN MECHANICAL SMOKE CONTROL SYSTEMS, UPON ACTIVATION, THE ASSOCIATED AIR DISTRIBUTION SYSTEM SHALL SHUT DOWN AND A SUPERVISORY SIGNAL SHALL BE GENERATED PER SECTION 606.4 OF THE IBC-MECHANICAL.
20. PENETRATIONS FOR PIPES, CONDUITS OR OTHER PURPOSES THROUGH ASSEMBLIES (FLOORS, ROOF, WALLS, PARTITIONS, ETC.) WITH A REQUIRED FIRE RESISTANCE RATING SHALL BE SEALED TO THE PENETRATING MEMBER IN AN APPROVED MANNER WHICH MAINTAINS THE REQUIRED FIRE RESISTANCE RATING OF THE ASSEMBLY.
21. INTENT OF MECHANICAL NOTES ON DRAWINGS IS TO CLARIFY THE SCOPE OF WORK AND ALERT CONTRACTOR OF EXISTING CONDITIONS. CONTRACTOR IS TO VISIT THE SITE AND VERIFY ALL CLEARANCES BEFORE FABRICATION OF DUCTWORK, AND PROVIDE ADDITIONAL OFFSET AND/OR CHANGES IN DUCT SIZES TO MEET FIELD CONDITIONS, AND TO COORDINATE WITH ELECTRICAL, PLUMBING, AND FIRE PROTECTION SUBCONTRACTORS, BEFORE ANY CONSTRUCTION WORK.
22. FLEXIBLE AND RIGID ROUND DUCT TAKE-OFFS FOR DIFFUSERS SHALL BE THE SAME SIZE AS DIFFUSER NECK. MAXIMUM FLEXIBLE DUCT LENGTH SHALL BE 5'-0".
23. INSTALL DUCTWORK AS HIGH AS POSSIBLE, TIGHT TO BOTTOM OF STRUCTURE, UNLESS NOTED OTHERWISE. COORDINATE DUCT ELEVATIONS WITH RAIN LEADERS, WATER PIPING, SANITARY DRAINS, AND MAJOR ELECTRICAL CONDUITS.
24. CONTRACTOR SHALL PROVIDE ALL SUPPLEMENTARY STEEL, STRUCTURES, INSERTS, SLEEVES, AND HANGING DEVICES REQUIRED TO INSTALL AND ADEQUATELY SUPPORT MECHANICAL EQUIPMENT AND COMPONENTS IN A MANNER WHICH WILL NOT OVERLOAD BUILDING STRUCTURE. CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR AND ALL BUILDING TRADES TO AVOID CONFLICTS AND TO MAINTAIN EQUIPMENT ACCESS AND SERVICEABILITY.
25. CONTRACTOR SHALL INSTALL MOTORIZED OUTSIDE AIR DAMPERS FOR ALL AIR HANDLING EQUIPMENT. AIR HANDLING UNITS SHALL HAVE AN EQUIVALENT OR BETTER OF RUSKIN "CD50" DAMPER, WHICH SHALL MODULATE PER 24V ACTUATOR MECHANICALLY WIRED. ALL DAMPERS SHALL CLOSE UPON UNIT SHUTDOWN.
26. PROVIDE A TRAP IN ALL CONDENSATE PIPING LOCATED AT THE AIR HANDLING EQUIPMENT. INSULATE ALL CONDENSATE LINES WITH 1/2" CLOSED CELL FOAM INSULATION. ALL PIPING EXPOSED TO EXTERNAL ELEMENTS SHALL BE JACKETED WITH UV STABILIZED PVC OR ALUMINUM SHEETING.
27. PROVIDE A 4" HIGH CONCRETE HOUSEKEEPING PAD UNDER ALL MECHANICAL EQUIPMENT, UNLESS NOTED OTHERWISE. PADS SHALL BE 6" LARGER THAN EQUIPMENT ON ALL SIDES.
28. ALL UNDERGROUND PIPING SHALL HAVE A MINIMUM 3'-0" OF COVER, UNLESS NOTED OTHERWISE.
29. IT IS THE RESPONSIBILITY OF THE MECHANICAL INSTALLER TO PATCH AND REPAIR ANY DUCT OPENINGS WHICH RESULT FROM THE RELOCATION OR ELIMINATION OF ANY EXISTING AIR DEVICES. THE PATCH IS TO BE OF A SIMILAR MATERIAL TO THE REPAIRED DUCT AND TO BE SEALED IN ACCORDANCE WITH SMACNA STANDARDS.
30. AIR HANDLING EQUIPMENT WARRANTIES SHALL BE EQUAL TO OR EXCEED WARRANTY OF SCHEDULED EQUIPMENT, UNLESS NOTED OTHERWISE.
31. PROVIDE SEISMIC RESTRAINTS FOR DUCTWORK AND PIPING CONFORMING TO THE LATEST EDITION OF THE "SMACNA GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING SYSTEMS."
32. PROVIDE ADDITIONAL DUCTWORK AND PIPING SUPPORTS ON BOTH SIDES AND WITHIN 18" OF EACH FIRE RATED WALL. DUCTWORK OR PIPING SHALL NOT BE SUPPORTED FROM ANY FIRE RATED WALL.
33. PROVIDE SINGLE WALL TURNING VANES IN ALL RECTANGULAR DUCT ELBOWS WITH ANGLES FROM 45 DEGREES TO 90 DEGREES, EXCEPT FOR TRANSFER AIR ELBOWS. TURNING VANES SHALL BE PROVIDED ACCORDING TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE.
34. DUCT DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS (FREE AREA).
35. CONTRACTOR SHALL COORDINATE ALL INTAKE/EXHAUST LOCATIONS TO ENSURE MINIMUM 10'-0" DISTANCE BETWEEN ANY INTAKES AND EXHAUSTS, PLUMBING VENTS, RELIEF, ETC.
36. ALL HVAC EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS UNLESS INDICATED OTHERWISE.
37. MECHANICAL CONTRACTOR SHALL SIZE AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS. REFRIGERANT PIPING SHALL BE TYPE "L" COPPER WITH SOLDERED OR BRAZED JOINTS AND 1" CLOSED CELL INSULATION. ALL PIPING EXPOSED TO EXTERNAL ELEMENTS SHALL BE JACKETED WITH UV STABILIZED PVC OR ALUMINUM SHEETING. PRE-CHARGED LINES AND SOLDER ON SHORT 90'S ARE NOT ACCEPTABLE. CONTRACTOR SHALL USE SWEEPING 90'S AT EVERY BEND WITH EXCEPTION OF EQUIPMENT CONNECTIONS.
38. CONTRACTOR SHALL PROVIDE A PERMANENT/PROFESSIONAL LABEL FOR EACH PIECE OF EQUIPMENT, ASSOCIATED THERMOSTAT(S) AND/OR SENSOR(S).
39. EQUIPMENT LOCATION IDENTIFICATIONS AT CEILINGS: WHERE VALVES, EQUIPMENT SUCH AS VAV BOXES, FANS, ETC., CIRCUIT BREAKERS, OR OTHER ITEMS SUBJECT TO ROUTINE SERVICE, ARE MOUNTED IN A CONCEALED AREA ABOVE A CEILING, THE CEILING MUST BE MARKED WITH A LABEL UNDER THE SERVICED DEVICE. THE LABEL SHALL CARRY APPROPRIATE IDENTIFICATION TAG.
40. DUCTWORK, DIFFUSERS, REGISTERS, GRILLES, AND OTHER MECHANICAL SYSTEM COMPONENTS SHALL NOT BE SUPPORTED BY THE CEILING OR CEILING SUSPENSION SYSTEM.
41. METAL DUCTWORK SHALL BE CONNECTED TO MECHANICAL EQUIPMENT WITH FLEXIBLE DUCT CONNECTORS EQUAL TO DURO DYNE "SUPER METAL-FAB" WITH EXCELON FABRIC; "GRIP LOC" SEAM; 24 GAGE METAL TABS. INSULATION SHALL BE INSTALLED OVER METAL TABS AS TO NOT CAUSE FRICTION ON FABRIC.
42. ALL EXHAUST DUCT WORK SHALL BE NON-INSULATED SHEET METAL, UNLESS NOTED OTHERWISE.
43. ALL FLEXIBLE DUCTS SHALL BE LISTED AND LABELED TO UL 181 AND SHALL BE CLASS 0 OR CLASS 1. FLEXIBLE DUCTS SHALL HAVE A MINIMUM RATED AIR VELOCITY OF 4000 FPM, A MINIMUM POSITIVE PRESSURE RATING OF 4 IN. WG, AND A MINIMUM NEGATIVE PRESSURE RATING OF 1 IN. WG.
44. CONTRACTOR SHALL SUPPLY PIPE SUPPORTS 4'-0" ON CENTERS FOR REFRIGERANT LINES AND CONDENSATE LINES. SUPPORTS SHALL BE PER DETAILS.
45. ALL DOOR UNDERCUTS FOR THE PURPOSE OF BALANCING RETURN AIR SHALL BE MINIMUM 1".
46. ALL CONTROL WIRING SHALL BE INCLUDED AS PART OF MECHANICAL WORK; REFER TO ELECTRICAL SPECIFICATIONS FOR CONDUIT AND WIRING REQUIREMENTS. COORDINATE WITH ELECTRICAL CONTRACTOR TO ENSURE THAT REQUIRED INTERFACE DEVICES ARE PROVIDED WITH ELECTRICAL COMPONENTS (I.E. FAN SPEED RHEOSTATS, AUXILIARY CONTACTS, INTERLOCKS, ETC.).
47. ALL EQUIPMENT DISCONNECTS, WHETHER INTERNALLY MOUNTED OR EXTERNALLY MOUNTED, SHALL BE FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR. IF EXTERNALLY MOUNTED, PROVIDE DISCONNECTING MEANS AT SAME ELEVATION AS EQUIPMENT. REFER TO ELECTRICAL SPECIFICATIONS FOR REQUIREMENTS.
48. MECHANICAL CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH ELECTRICAL CONTRACTOR BEFORE BIDDING/ORDERING AND INSTALLATION.
49. WHERE MOTOR SPEED CONTROL IS REQUIRED, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE APPROPRIATE METHOD OF SPEED CONTROL. TYPICALLY, SINGLE PHASE MOTORS REQUIRE SPEED CONTROLLERS, AND THREE PHASE MOTORS REQUIRE VFD'S.
50. WHERE JOB CONDITIONS REQUIRE CHANGES FROM THE CONTRACT DOCUMENTS THAT DO NOT CHANGE THE SCOPE OR NATURE OF WORK REQUIRED, THE CONTRACTOR SHALL MAKE SUCH CHANGES WITHOUT ADDITIONAL COST TO THE OWNER. NO OTHER CHANGES MAY BE MADE WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
51. PROVIDE COMMISSIONING FOR ALL MECHANICAL EQUIPMENT ACCORDING TO MECHANICAL SYSTEMS COMMISSIONING AND COMPLETION REQUIREMENTS OF VA SPECIFICATION SECTION 019100 AND INTERNATIONAL ENERGY CODE 2017 SECTION C408, INCLUDING BUT NOT LIMITED TO:
   A. A COMMISSIONING PLAN IN COMPLIANCE WITH SECTION C408.2.1.
   B. TESTING, ADJUSTING, AND BALANCING OF SYSTEMS ACCORDING TO C408.2.2.
   C. CONDUCT FUNCTIONAL PERFORMANCE TESTING ACCORDING TO C408.2.3.
   D. PRELIMINARY COMMISSIONING REPORT OF TEST PROCEDURES AND RESULTS PER C408.2.4.
   E. PRIOR TO FINAL INSPECTION, PROVIDE RECORD DRAWINGS, OPERATING AND MAINTENANCE MANUALS, SYSTEM BALANCING REPORT, AND FINAL COMMISSIONING REPORT TO THE OWNER ACCORDING TO C408.2.5.

GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INDICATIVE OF WORK TO BE PROVIDED (FURNISHED AND INSTALLED) UNDER THIS CONTRACT. DRAWINGS SHOULD NOT BE SCALED.
2. THE CONTRACTOR IS RESPONSIBLE TO EXAMINE THE EXISTING CONDITIONS UNDER WHICH THEY SHALL OPERATE AND VERIFY THE EXTENT OF WORK REQUIRED TO COMPLETE THE WORK UNDER THIS CONTRACT.
3. PRIOR TO ORDERING AND FABRICATING ANY EQUIPMENT, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXAMINE THE PHYSICAL CONDITIONS AT THE PROJECT SITE AND VERIFY SPACE AND SUFFICIENT CLEARANCES ARE AVAILABLE FOR INSTALLING EQUIPMENT, DUCTWORK, PIPING, AND APPURTENANCES, AND TO DETERMINE ANY NECESSARY MODIFICATIONS.
4. PERFORM ALL WORK IN COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES, REGULATIONS, AND STANDARDS ADOPTED BY THE AUTHORITY HAVING JURISDICTION. IF CONFLICTS EXIST BETWEEN THESE ENGINEERING DOCUMENTS AND CODES, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.
5. ALL CONSTRUCTION WORK SHALL ALSO MEET THE FOLLOWING CODE REQUIREMENTS:
   - INTERNATIONAL BUILDING CODE (IBC) 2018
   - INTERNATIONAL EXISTING BUILDING CODE 2018
   - IBC MECHANICAL 2018
   - IBC PLUMBING 2018
   - IBC ENERGY CONSERVATION 2018
   - INTERNATIONAL FIRE CODE 2018
   - NFPA 1-2018, THE UNIFORM FIRE CODE
   - NFPA 101-2018, THE LIFE SAFETY CODE
   - NFPA 51B-2019, STANDARD FOR FIRE PREVENTION DURING WELDING, CUTTING AND OTHER HOT WORK
   - NFPA 13-2019, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS
   - NFPA 70-2017, NATIONAL ELECTRICAL CODE
   - NFPA 90A-2018, STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTING SYSTEMS.
   - NFPA 99-2018, STANDARD FOR HEALTH CARE FACILITIES
   - NFPA 241-2019, STANDARD FOR SAFEGUARDING CONSTRUCTION, ALTERATION AND DEMOLITION OPERATIONS.
   - ALL APPLICABLE VA DESIGN MANUALS
6. CONTRACTOR SHALL COORDINATE AND SEQUENCE DEMOLITION, CLEANING, AND CONSTRUCTION WORK.
7. CONTRACTOR SHALL NOTE ANY SPECIAL REQUIREMENTS FOR INSTALLATION OF WORK UNDER THIS CONTRACT. DISMANTLE AND REASSEMBLE EQUIPMENT AS NECESSARY FOR ENTRY INTO THE BUILDING AND THE LOCATION OF INSTALLATION.
8. THE CONTRACTOR SHALL MAINTAIN A COMPLETE PROJECT SCHEDULE AND SHALL UPDATE THIS SCHEDULE WEEKLY. ANY CHANGES SHALL BE NOTED AND AN UPDATED SCHEDULE SHALL BE PROVIDED TO THE OWNER.
9. ALL PERMITS, FEES, TAXES, ETC SHALL BE PAID BY CONTRACTOR AS PART OF THE TOTAL PROJECT COST.
10. MAINTAIN THE INTEGRITY OF ALL FIRE AND SMOKE RATED WALLS, PARTITIONS, CEILINGS, AND FLOORS. SEAL ALL PENETRATIONS THROUGH RATED ASSEMBLIES WITH FIRESTOP MATERIAL IN ACCORDANCE WITH U.L. REQUIREMENTS TO MAINTAIN THE ASSEMBLY RATING.
11. CONTRACTOR SHALL FURNISH U.L. APPROVED DRAWINGS FOR EACH TYPE OF FIRE AND SMOKE RATED ASSEMBLY PENETRATION BY DUCTS, PIPES, OR CONDUITS, AND SHALL DISPLAY THESE DRAWINGS ON THE JOB SITE AT ALL TIMES DURING CONSTRUCTION.
12. CONTRACTOR SHALL REFER TO ALL DETAILS FOR PROPER GUIDANCE.
13. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND EQUIPMENT SUBMITTALS FOR ALL PRODUCTS USED ON PROJECT.
14. THE COR'S APPROVAL OF SUBMITTAL DATA SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR DEVIATIONS FROM THE REQUIREMENTS OF CONTRACT DOCUMENTS UNLESS THE CONTRACTOR HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER TO THE SPECIFIC DEVIATION. THE ENGINEER'S APPROVAL OF SUBMITTAL DATA SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN HIS OR HER SUBMITTAL DATA.
15. THE CONTRACTOR IS REQUIRED TO SUBMIT THREE COMPLETE O&M MANUALS IN THREE RING BINDERS AT SUBSTANTIAL COMPLETION. MANUALS SHALL INCLUDE INSTALLATION AND MAINTENANCE DATA ON ALL NEW EQUIPMENT AND MATERIALS, CERTIFIED TECHNICAL PRODUCT DATA, EQUIPMENT SHOP DRAWINGS, SPARE PARTS DATA, ETC. PROVIDE AN INDEX AND ASSOCIATED DIVIDERS.
16. CLOSE OUT DOCUMENTS: THE CONTRACTOR IS TO MAINTAIN ONE SET OF CONSTRUCTION DRAWINGS ON SITE AND KEEP CURRENT WITH MARK UP AS-BUILT CONDITIONS DURING CONSTRUCTION OF THE PROJECT. THIS SET IS TO INCLUDE ALL CONTRACT CHANGES, MODIFICATIONS AND CLARIFICATIONS. THIS SET ALONG WITH ALL SHOP DRAWINGS SHALL BE TURNED OVER TO THE ARCHITECT/ENGINEER AFTER CONSTRUCTION COMPLETION.
17. IT IS THE RESPONSIBILITY OF ALL BIDDERS TO THOROUGHLY REVIEW AND UNDERSTAND ALL CONSTRUCTION DOCUMENTS. THIS INCLUDES BUT IS NOT LIMITED TO ALL DRAWINGS, SPECIFICATION SECTIONS, ETC. THE DRAWINGS ARE SCHEMATIC IN NATURE. THEREFORE BEFORE STARTING ANY WORK, THE CONTRACTOR SHALL REVIEW ALL OTHER CONSTRUCTION DOCUMENTS, VERIFY FIELD CONDITIONS AND SHALL MAKE ANY REQUIRED MINOR ADJUSTMENTS WITHOUT EXTRA COST TO THE OWNER. ANY MAJOR DISCREPANCIES FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER. THE BASE BID SHALL REFLECT THE TOTAL COST OF NEW EQUIPMENT INSTALLATION. THIS INCLUDES LABOR, EQUIPMENT AND MATERIALS. NO CHANGE ORDERS SHALL BE ISSUED WITHOUT WRITTEN CONSENT AND APPROVAL FROM THE CONTRACTING OFFICER.

ABBREVIATIONS

(E)	EXISTING	GPM	GALLONS PER MINUTE
ADJ	ADJUSTABLE	HCV	HEATING CONTROL VALVE
AFF	ABOVE FINISHED FLOOR	HHWR	HEATING HOT WATER RETURN
AFM	AIRFLOW MEASURING DEVICE	HHWS	HEATING HOT WATER SUPPLY
AHJ	AUTHORITY HAVING JURISDICTION	HP	HORSEPOWER
AHU	AIR HANDLING UNIT	HPS	HIGH PRESSURE STEAM (60 PSI)
ATU	AIR TERMINAL UNIT	IBC	INTERNATIONAL BUILDING CODE
BAS	BUILDING AUTOMATION SYSTEM	IN	INCH
BHP	BRAKE HORSEPOWER	KW	KILOWATT
BOD	BOTTOM OF DUCT	LAT	LEAVING AIR TEMPERATURE
BOS	BOTTOM OF STRUCTURE	LWT	LEAVING WATER TEMPERATURE
BTUH	BRITISH THERMAL UNIT PER HOUR	LPS	LOW PRESSURE STEAM (5 PSI)
CAV	CONSTANT AIR VOLUME	MBTUH	1,000 BTUH
CCV	COOLING CONTROL VALVE	MCA	MINIMUM CIRCUIT AMPACITY
CD	CEILING SUPPLY AIR DIFFUSER	MOCP	MAXIMUM OVERCURRENT PROTECTION
CF	CUBIC FEET	MPS	MEDIUM PRESSURE STEAM (20 PSI)
CFM	CUBIC FEET PER MINUTE	MUA	MAKE UP AIR
CG	CEILING GRILLE	NC	NEW CONNECTION / NOISE CRITERIA
CHWR	CHILLED WATER RETURN	OA	OUTSIDE AIR
CHWS	CHILLED WATER SUPPLY	OAL	OUTSIDE AIR LOUVER
COR	CONTRACTING OFFICER'S REPRESENTATIVE	OBD	OPPOSED BLADE DAMPER
CTE	CONNECT TO EXISTING	PH	PHASE
CU	CONDENSING UNIT	PSIG	POUNDS PER SQUARE INCH GAGE
CV	CONSTANT AIR VOLUME	RA	RETURN AIR
DD	DUCT MOUNTED SMOKE DETECTOR	REF	REFRIGERANT
DIA	DIAMETER	RG	RETURN AIR GRILLE
DSSI	DUCTLESS SPLIT SYSTEM INDOOR UNIT	RH	RELATIVE HUMIDITY
DSSO	DUCTLESS SPLIT SYSTEM OUTDOOR UNIT	RPM	REVOLUTIONS PER MINUTE
EA	EXHAUST AIR	SA	SUPPLY AIR
EAT	ENTERING AIR TEMPERATURE	SD	SMOKE DAMPER
EDH	ELECTRIC DUCT HEATER	SF	SQUARE FEET
EF	EXHAUST FAN	SR	SUPPLY AIR REGISTER
EG	EXHAUST AIR GRILLE	TAB	TEST AND BALANCE
EWT	ENTERING WATER TEMPERATURE	TOD	TOP OF DUCT
FCU	FAN COIL UNIT	TYP	TYPICAL
FD	FIRE DAMPER	V	VOLTAGE
FLEX	FLEXIBLE	VAV	VARIABLE AIR VOLUME
FO	FLAT OVAL	VD	VOLUME DAMPER
FPM	FEET PER MINUTE	VFD	VARIABLE FREQUENCY DRIVE
FSD	COMBINATION FIRE SMOKE DAMPER	WG	WATER GAUGE
FT	FEET		

DRAWING INDEX - HVAC

Revisions: | Date:

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5/09/2022

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: NOTES AND LEGEND - HVAC

Approved:

Phase: ISSUED FOR CONSTRUCTION

FULLY SPRINKLERED

Project Title: NEW COMMUNITY LIVING CENTER

Location: 2094 Albany Post Road, Montrose, NY 10548

Issue Date: 05/09/2022 | Checked: CJF/NPS | Drawn: NS

Project Number: 620-334

Building Number: CLC

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VA FORM 08 - 6231

BIM 360://620-334 New Community Living Center/19577_MEP_VA Montrose CLC_R20.rvt

7/21/2021 1:32:38 PM

CSG WATER TREATMENT

EQUIPMENT MEETING OR EXCEEDING THE BASIS OF DESING LISTED BELOW MAY BE SUBMITTED. BASIS OF DESIGN MANUFACTUERER ASHBERRY, EQUIPMENT MODELS LISTED BELOW

ACA-10G-1 SINGLE CARBON FILTER SYSTEM

Qty (1) 10" Diameter x 54" FRP Pressure Vessels
Non-Code Pressure Vessel, 150 psig Rating
1 ft³ Carbon Filtration Media
Washed Gravel Sub-Fill for Media Support
1" Fleck Model 2750 Top-Mounted Control Valves for Automatic Operation
Automatic Backwash Flow Controller (6 gpm)
Pentair 3200 12-Day Calendar Clock Controller
RO Lockout switch
120V/1Ph/60Hz Electrical Power Rating
Estimated Shipping Weight, lbs: 165

MAT-45M-1 TWIN ALTERNATING SOFTENER SYSTEM

Qty (2) 10" Diameter x 54" FRP Pressure Vessels
Non-Code Pressure Vessels, 150 psig Rating
1.5 ft³ Softening Resin Per Vessel (45,000 grains Capacity Per Vessel)
1" Fleck Model 9100 Top-Mounted Control Valves for Automatic Operation
Pentair "SXT" digital display electronic timer
120/24 VAC, 60 Hz Electrical Power Rating
Alternating Flow Control Configuration for Continuous Treated Water Supply
Qty (1) Fleck Noryl Inline Paddlewheel-Type Flow Sensor(s) for Volume Initiated Regeneration Cycle
Qty (1) 18" x 40" Polyethylene Brine Storage Tank Assembly with Salt Shelf and Safety Overflow Valve
Water Hardness Testing Kit
Estimated Shipping Weight, lbs: 265

MRO-2500-2.5 SINGLE REVERSE OSMOSIS SYSTEM

2,500 gpd Nominal Product Output from the RO Machine (1.75 gpm @ 77° F)
Powder-coated steel wall-mount bracket
Pump, 0.75 HP, brass, 120 VAC, 1-Ph, 60 Hz
Polypropylene Cartridge Type Sediment Prefilter Housing (5-micron)
Polypropylene Cartridge Type Carbon Prefilter Housing
Qty (3) FRP Membrane Housings
Qty (3) Thin-Film Composite Low Pressure Membrane Elements (2.5" x 40")
Polyethylene interconnecting tubing
Panel Mounted RO Permeate, Concentrate and Recycle Flow Meters
Panel Mounted Pressure Gauges
Concentrate and Recycle Flow Control Valves
Automatic Inlet Feed Valve
Low Inlet Pressure Switch with Shut-Down
Estimated Shipping Weight, lbs: 115

TANK ASSY RO 160 GAL TITAN 3/4HP

160 gals of RO Storage
26" x 68" Flat Bottomed Polyethylene tank
Tank Comes Complete w/Inlet and Outlet Bulkhead Fittings Installed
Qty (1) 304SS Single Stage Centrifugal Pump (5 gpm @ 40 psi)
120 VAC, 1 Phase, 60 Hz, 3/4 HP TEFC Motor
Integral Bladder on Pump
Qty (2) Single Pull Double Throw Level Switches to Control RO Pump & Transfer Pump
Approximate Shipping Weight, lbs: 96

DEDUCTIVE ALTERNATE NOTES

(DEDUCTIVE ALTERNATES ARE CASCADING AND MUST BE EXCERCISED IN THE ORDER PRESENTED) FOR A DETAILED DESCRIPTION OF EACH DEDUCTIVE ALTERNATE REFR TO COVER SHEET ON GI000

DEDUCTIVE ALTERNATE #2 : ELIMINATE TUNNEL (EAST LEG).

DEDUCTIVE ALTERNATE #6 : REDUCE PLATFORM AT CHILLER

FLASH TANK SPECIFICATION

FT-B:
PROVIDE 12" DIAMTER BY 24" LONG HORIZONTAL FLASH TANK.
PRVODIE A 3" VENT OUT, A 2-1/2" PIPE IN, AND 1-1/2" PIPE OUT. REFER TO DETAIL FOR MORE INFORMATION.

CHILLED WATER AIR HANDLER SCHEDULE

MARK	MODEL	PLENUM SUPPLY FAN DATA								PREHEAT COIL DATA								COOLING COIL DATA												HUMIDIFIER						AIR FILTER DATA	SHIPPING WEIGHT	OPERATING WEIGHT
		EXPANSION AIRFLOW	QTY	DESIGN AIRFLOW	DESIGN OA AIRFLOW	ESP	TSP	HP (EACH)	VOLTAGE	SYSTEM TYPE	FACE AREA	FACE VELOCITY	ROWS	EAT DB	LAT DB	GPM	TOTAL CAPACITY	EWT	LWT	SYSTEM TYPE	FACE AREA	FACE VELOCITY	ROWS	EAT DB	EAT WB	LAT DB	LAT WB	TOTAL CAPACITY	SENSIBLE CAPACITY	EWT	LWT	STEAM PRESSURE	STEAM FLOW RATE	EAT DB	ENTERING RH	LEAVING RH	CONDENSATE FLOW RATE			
2-AH01	CSAA025	12290 CFM	1	12290 CFM	4450 CFM	3.00 in-wg	6.23 in-wg	25 hp	208 V	Hot water	24.74 SF	500 FPM	1	40 °F	70 °F	44 GPM	401,670 Btu/h	180 °F	160 °F	Chilled water	24.74 SF	500 FPM	6	81 °F	66 °F	52 °F	52 °F	518,580 Btu/h	392,201 Btu/h	44 °F	56 °F	15 psig	129.98 lb/hr	60	15%	35%	17.95 lb/hr	4" high eff - 95% eff - MERV 14	3,822 lb	3,961 lb
2-AH02	CSAA025	12605 CFM	1	12605 CFM	4180 CFM	3.00 in-wg	6.24 in-wg	25 hp	208 V	Hot water	24.74 SF	500 FPM	1	40 °F	70 °F	44 GPM	402,026 Btu/h	180 °F	160 °F	Chilled water	24.74 SF	500 FPM	6	81 °F	66 °F	52 °F	52 °F	519,420 Btu/h	392,839 Btu/h	44 °F	56 °F	15 psig	225.35 lb/hr	60	15%	50%	17.97 lb/hr	4" high eff - 95% eff - MERV 14	3,822 lb	3,961 lb

NOTES:

1. PROVIDE MODULAR, HORIZONTAL DRAW-THROUGH UNIT WITH VERTICAL DISCHARGE. PROVIDE UNIT WITH HINGED ACCESS DOORS. PROVIDE ACCESS SECTION AFTER COOLING COIL FOR COIL CLEANING.
2. PROVIDE MODULATING ELECTRONIC CONTROL VALVE ON RETURN LINE FOR EACH HYDRONIC COIL.
3. PROVIDE UNIT WITH 6" BASE RAIL FACTORY CONNECTED (LEGS NOT ACCEPTABLE) AND EXTENDING THE ENTIRE LENGTH OF UNIT. ENSURE THAT PROPER RISE IS PROVIDED FOR CONDENSATE P-TRAP.
4. PROVIDE WITH 2 SETS OF FILTERS. AT PROJECT COMPLETION, INSTALL NEW FILTERS IN UNIT AND PROVIDE ONE EXTRA SET OF FILTERS FOR OWNER. UNITS SHALL NOT BE RUN WITHOUT SCHEDULED FILTERS IN PLACE.
5. PROVIDE UNIT-MOUNTED VFD, WITH SOFT START, MANUAL BYPASS SWITCH, SURGE PROTECTION, AND FUSED DISCONNECT.
6. ALL MOTORS SHALL BE PREMIUM EFFICIENCY, COMPATIBLE WITH VARIABLE FREQUENCY DRIVE OPERATION.
7. COORDINATE INSTALLATION OF EQUIPMENT TO PROVIDE ACCESS FOR MAINTENANCE AND FILTER REPLACEMENT.
8. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF FIELD CONDITIONS AND COORDINATING EQUIPMENT DIMENSIONS AND INSTALLATION WITH FIELD CONDITIONS.
9. FOR ALL SYSTEMS WITH DESIGN SUPPLY AIR GREATER THAN 2000 CFM, PROVIDE A DUCT SMOKE DETECTOR IN THE SUPPLY AIR DUCT, DOWNSTREAM OF THE AIR FILTERS AND AHEAD OF ANY BRANCH CONNECTIONS.

PACKAGED AIR COOLED CHILLER SCHEDULE

MARK	ELECTRICAL				FULL LOAD CAP.	IPLV	EWT	LWT	PUMPING PACKAGE		OPER. WEIGHT	BASIS OF DESIGN		SHIP WEIGHT
	FREQ.	VOLT.	PHASE	EER					PD	FLOW RATE		MANUFACTURER	MODEL	
CH-1	60 Hz	208 V	3	10.302	1169640.0 Btu/h	15.192	54 °F	44 °F	5.26 psi	233 GPM	6 lb	Trane	CGAM100	6 lb
CH-2	60 Hz	208 V	3	10.302	1169640.0 Btu/h	15.192	54 °F	44 °F	5.26 psi	233 GPM	6 lb	Trane	CGAM100	6 lb

NOTES:

1. PROVIDE WITH 136 GALLON CHILLED WATER BAFFLED STORAGE TANK ACCESSORY WITH ELECTRIC TANK HEATERS AND THERMOSTAT CONTROL.
2. PROVIDE WITH FACTORY INSTALLED EVAPORATOR HEATER FREEZE PROTECTION.
3. PROVIDE HEAT TAPE INSULATION ON ALL EXPOSED PIPING.
4. PROVIDE WITH SINGLE POINT POWER CONNECTION AND UNIT MOUNTED NON-FUSED DISCONNECT.
5. PROVIDE WITH DIGITAL COMPRESSOR
6. PROVIDE WITH ALL NOISE REDUCTION PACKAGES.
7. PROVIDE WITH FACTORY VIBRATION ISOLATION PACKAGE.
8. PROVIDE WITH CONTROLS CAPABLE OF STAND ALONE OPERATION AND INTERFACE WITH NIAGARA SYSTEM.

HYDRONIC WATER PUMP SCHEDULE

MARK	LOCATION	AREA SERVED	TYPE	CIRCULATING FLUID				ELECTRICAL DATA					BASIS OF DESIGN		NOTES
				FLUID	GPM	TOTAL HEAD	NPSH AVAILABLE	TEMPERATURE	MOTOR POWER	VOLTAGE	PHASE	RPM	SPEED CONTROL	MANUFACTURER	MODEL NUMBER	
CWP-1	MECHANICAL PENTHOUSE	CLC - BLDG XX	END SUCTION	CHILLED WATER	235 GPM	50 ftH2O	5 ftH2O	56 °F	7.500 hp	208 V	1	1800	VFD	BELL & GOSSETT	2.5 BB	1-5
CWP-2	MECHANICAL PENTHOUSE	CLC - BLDG XX	END SUCTION	CHILLED WATER	235 GPM	50 ftH2O	5 ftH2O	56 °F	7.500 hp	208 V	1	1800	VFD	BELL & GOSSETT	2.5 BB	1-5
HWP-1	MECHANICAL ROOM	CLC - BLDG XX	END SUCTION	HEATING HOT WATER	150 GPM	50 ftH2O	5 ftH2O	160 °F	5.000 hp	208 V	1	1800	VFD	BELL & GOSSETT	2 BD	1-5
HWP-2	MECHANICAL ROOM	CLC - BLDG XX	END SUCTION	HEATING HOT WATER	150 GPM	50 ftH2O	5 ftH2O	160 °F	5.000 hp	208 V	1	1800	VFD	BELL & GOSSETT	2 BD	1-5

NOTES:

1. DISCONNECT PROVIDED AND INSTALLED BY MECHANICAL, WIRED BY ELECTRICAL.
2. PROVIDE WITH VFD CONTROL FOR EACH PUMP.
3. PROVIDE EQUIPMENT PAD WITH VIBRATION ISOLATION.
4. REFER TO DETAILS FOR MORE INFORMATION.
5. INSTALL VIBRATION ISOLATION BASE PER TO DETAIL 7 ON SHEET M-501.

LOUVER SCHEDULE

vv	TYPE	AIR FLOW	VELOCITY	MAX AIR PRESSURE DROP	SIZE	FREE AREA	BASIS OF DESIGN		NOTES
							MANUFACTURER	MODEL NUMBER	
OAL-1	INTAKE	24895 CFM	960 FPM	0.17 in-wg	138x48	26.00 SF	GREENHECK	EVH-501D	1,2
RL-1	EXHAUST	24895 CFM	830 FPM	0.11 in-wg	102x72	30.10 SF	GREENHECK	EVH-501D	1,2

NOTES:

1. PROVIDE WITH BAKED ENAMEL FINISH. COORDINATE WITH ARCHITECT FOR FINAL PAINT COLOR.
2. PROVIDE WITH BIRDSCREEN, INSECT SCREEN AND ALL OTHER ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.

STEAM-TO-HOT WATER HEAT EXCHANGER SCHEDULE

MARK	LOCATION	SYSTEM	TYPE	WATER CONDITIONS			STEAM PRESSURE		CONTROL VALVE			STEAM TRAP		ELECTRICAL INFO				BASIS OF DESIGN		REMARKS
				GPM	EWT	LWT	MAX PD (PSI)	ENT CONTROL VALVE	ENT HX	FOULING FACTOR	SIZE	LBS/HR	TRAP #	SIZE	CAPACITY	QTY CONNECTIONS	VOLTAGE	PHASE	MCA	MOCP	MANUFACTURER	MODEL	
HX-01	144 - MECHANICAL	HYDRONIC WATER	SHELL AND TUBE	150 GPM	160 °F	180 °F	0.2	30 psi	30 psi	0	2 1/2"	1508	ST-B-3	0' - 0 9/16"	3016	2	120 V	1	4 A	15 A	CEMLINE	HTP848EX-S-D -SKID	1,2,3,5,6,7
HX-02	144 - MECHANICAL	DOMESTIC HOT WATER	SHELL AND TUBE	50 GPM	47 °F	180 °F	15	30 psi	30 psi	0	2"	3581	ST-B-4	0' - 1 5/8"	7162	2	120 V	1	4 A	15 A	CEMLINE	10SEH1030-D W	1-8

NOTES:

1. PROVIDE SKID MOUNTED, PRE-WIRED, DUPLEX PACKAGE SYSTEM COMPLETE WITH ASME 150 PSIG DUAL CARBON STEEL SHELL AND COPPER TUBE HEAT EXCHANGERS, DUPLEX CONTROL PANEL WITH DISCONNECTS.
2. PROVIDE WITH SKID MOUNTED ACCESSORIES INCLUDING EXPANSION TANK, AIR VENT.
3. INCLUDE ALL INTERCONNECTING PIPING AND ACCESSORIES INCLUDING TRAP, SERVICE AND STOP VALVES, CHECK VALVES, FLEXIBLE CONNECTORS, PRESSURE GAUGES, INLET AND OUTLET THERMOMETERS, AND ALL OTHER RELATED AND REQUIRED COMPONENTS FOR A COPMLETE WORKING SYSTEM
4. PROVIDE MIXING VALVE TO DISCHARGE 140F HOT WATER.
5. REFER TO DETAILS AND CONTROL DIAGRAMS
6. SYSTEM IS TO BE DESIGNED FOR 100% REDUNDANCY.
7. PROVIDE WITH INTEGRAL STEAM TRAPS.
8. LWT SHOWN IS NORMAL OPERATING TEMPERATURE. UNIT SHALL BE CAPABLE OF PROVIDING 180 DEG F LWT FOR THERMAL ERADICATION PURPOSES.

STEAM TRAP SCHEDULE

MARK	EQUIPMENT	LOCATION (AREA)	EQUIPMENT STEAM CONDITIONS		STEAM TRAP					NOTES
	EQUIPMENT SERVED		DEMAND (#/HR)	PRESSURE (PSI)	CAPACITY (#/HR)	MINIMUM DIFFERENTIAL PRESSURE	MAXIMUM DIFFERENTIAL PRESSURE	PIPE CONNECTION SIZE	STEAM TRAP TYPE	
ST-B-1	60 PSI STEAM MAIN SUPPLY	BASEMENT	98	60	294	2	60	3/4"	THERMODYNAMIC	1,2
ST-B-2	60 PSI SIDE PRESSURE REDCING STATION	BASEMENT	6	60	17	2	60	3/4"	THERMODYNAMIC	1,2
ST-B-3	HEATING HOT WATER HX	BASEMENT	1508	30	3016	2	30	2"	FLOAT AND THERMOSTATIC	1,2
ST-B-4	DOMESTIC WATER HX	BASEMENT	3581	30	7162	2	30	2-1/2"	FLOAT AND THERMOSTATIC	1,2
ST-B-5	30 PSI SIDE PRESSURE REDCING STATION	BASEMENT	4	60	13	2	30	3/4"	THERMODYNAMIC	1,2
ST-B-6	30 PSI STEAM MAIN SUPPLY	BASEMENT	8	30	24	2	60	3/4"	THERMODYNAMIC	1,2
ST-B-7	PRESSURE REDCING STATION	BASEMENT	3	30	9	2	30	3/4"	THERMODYNAMIC	1,2
ST-B-8	FLASH TANK	BASEMENT	4772	30	14317	2	30	2-1/2"	THERMODYNAMIC	1,2
ST-P-1	CLEAN STEAM GENERATOR (PLANT SIDE)	PENTHOUSE	504	30	1512	2	30	3/4"	FLOAT AND THERMOSTATIC	1,2
ST-P-2	2-AHU02 HUMIDIFIER	PENTHOUSE	18	15	54	2	15	3/4"	FLOAT AND THERMOSTATIC	1,2
ST-P-3	2-AHU01 HUMIDIFIER	PENTHOUSE	18	15	54	2	15	3/4"	FLOAT AND THERMOSTATIC	1,2
ST-P-4	15 PSI STEAM MAIN	PENTHOUSE	4	15	12	2	15	3/4"	THERMODYNAMIC	1,2

NOTES:

1. PROVIDE ALL REQUIRED FITTINGS AND ACCESSORIES FOR A PROPERLY OPERATING SYSTEM.
2. PROVIDE WITH CYPRESS ENVIROSYSTEMS WIRELESS STEAM TRAP MONITOR (WSTM-100) AND TIE-IN TO EXISTING CYPRESS WIRELESS STEAM TRAP MONITORING SYSTEM.

STEAM CONDENSATE PUMP SCHEDULE

MARK	LOCATION	SYSTEM SERVED	TYPE	GPM EACH PUMP	DISCHARGE PRESSURE	MAIN RECEIVER SIZE	MOTOR			REMARKS
							HP EACH	VOLTAGE	PHASE	
CRU-1	BASEMENT	HEAT EXCHANGERS, MAIN PRESSURE REDUCING STATION	DUPLEX	75 GPM	20.00 psi	65.0 gal	1.50 hp	208 V	3	1-7
CRU-2	PENTHOUSE	CLEAN STEAM GENERATOR PLANT SIDE CONDENSATE	DUPLEX	3 GPM	10.00 psi	15.0 gal	0.34 hp	208 V	3	1-7
CRU-3	PENTHOUSE	CLEAN STEAM GENERATOR PLANT SIDE CONDENSATE	DUPLEX	3 GPM	10.00 psi	15.0 gal	0.34 hp	208 V	3	1-7

NOTES:

1. PROVIDE WITH UL LISTED CONTROL PANEL MOUNTED AND WIRED WITH LIQUID TIGHT CONDUIT. PANEL TO INCLUDE 2 FUSED DISCONNECT AND COVER. INTERLOCK WITH EACH MOTOR. HOA SELECTOR, NUMBERED TERMINAL STRIP, TWO PUMP RUNNING PILOT LIGHTS, CONTROL POWER SWITCHING RELAY.
2. PROVIDE WATER LEVEL GAUGE WITH SHUTOFF VALVE.
3. PROVIDE CAST IRON RECEIVER WARRANTED FOR 20 YEARS.
4. PROVIDE HIGH LEVEL ALARM WITH SILENCING RELAY.
5. PROVIDE WITH EQUIPMENT PAD IF NEEDED.
6. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
7. PROVIDE WITH CONTROLS CAPABLE OF STAND ALONE OPERATION AND INTERFACE WITH FACILITY NIAGARA AND BACNET SYSTEMS.

STEAM PRESSURE REDUCING STATION

MARK	LOCATION	SYSTEM SERVED	VALVE SIZE	REQUIRED CAPACITY (lb/hr)	PRESSURE IN	PRESSURE OUT	REMARKS
PRV-1	BASEMENT	HEAT EXCHANGERS & CLEAN STEAM GENERATOR	1 1/2"	5595	60.00 psi	30.00 psi	-

DUCTLESS SPLIT SYSTEM SCHEDULE

MARK	MANUFACTURER	MODEL NUMBER	TYPE	TOTAL COOLING CAPACITY *	SEER *	AIR FLOW	ELECTRICAL DATA				CONDENSATE DRAIN SIZE	REFRIGERANT TYPE	UNIT WEIGHT	REMARKS
							VOLTAGE	PHASE	MCA	MOCP				
DSSI-01	MITSUBISHI	FE12NA	INDOOR UNIT; WALL MOUNTED	12,000 Btu/h	0	350 CFM	208 V	1	0 A	0 A	1 1/2"	R-410A	27 lb	1-8
DSSO-01	MITSUBISHI	MUZ-FE12NA	OUTDOOR UNIT; HEAT PUMP	12,000 Btu/h	24.6	0 CFM	0 V	1	9 A	15 A	0"	R-410A	80 lb	1,2,3,4,8

* COOLING PERFORMANCE AT AHRI RATING CONDITIONS OF 95 °Fdb OUTSIDE AIR, 80 °Fdb / 67 °Fwb ENTERING AIR TEMPERATURE.

NOTES:

1. REFRIGERANT PIPING SHALL BE SIZED BY MANUFACTURER. PROVIDE ALL ASSOCIATED COMPONENTS AND ACCESSORIES RECOMMENDED BY MANUFACTURER.
2. COORDINATE INSTALLATION OF EQUIPMENT TO PROVIDE REQUIRED CLEARANCES.
3. PROVIDE ALL REQUIRED INTERFACES, THERMOSTAT, SUB-COMPONENTS, AND SENSORS FOR A COMPLETE INSTALLATION AND INTERFACE WITH BUILDING AUTOMATION SYSTEM.
4. INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT.
5. PROVIDE UNIT WITH WASHABLE FILTER.
6. PROVIDE WITH CONDENSATE PUMP, RESERVOIR, AND DRAIN PAN LEVEL SENSOR WITH CONTROL TO SHUT UNIT OFF PRIOR TO DRAIN PAN OVERFLOW. PROVIDE CHECK VALVE AT CONDENSATE OUTLET.
7. PROVIDE BACKLIT, WIRED, WALL-MOUNT REMOTE CONTROLLER.
8. DISCONNECT TO BE PROVIDED BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR.

AIR DEVICE SCHEDULE

MARK	BASIS OF DESIGN		TYPE	AIRFLOW		PANEL SIZE (IN.)	NECK SIZE (IN.)	NOTES
	MANUFACTURER	MODEL		MIN.	MAX.			
CD-11	PRICE	ASPD	PLAQUE FACE	40 CFM	85 CFM	12x12	6ø	
CD-12	PRICE	ASPD	PLAQUE FACE	90 CFM	185 CFM	12x12	8ø	
CD-21	PRICE	ASPD	PLAQUE FACE	40 CFM	85 CFM	24x24	6ø	
CD-22	PRICE	ASPD	PLAQUE FACE	90 CFM	185 CFM	24x24	8ø	
CD-23	PRICE	ASPD	PLAQUE FACE	190 CFM	345 CFM	24x24	10ø	
CD-24	PRICE	ASPD	PLAQUE FACE	350 CFM	475 CFM	24x24	12ø	
EG-11	PRICE	630	LOUVERED, FIXED FACE EXHAUST GRILLE	40 CFM	95 CFM	12x12	6x6	
EG-12	PRICE	630	LOUVERED, FIXED FACE EXHAUST GRILLE	100 CFM	195 CFM	12x12	8x8	
EG-22	PRICE	630	LOUVERED, FIXED FACE EXHAUST GRILLE	100 CFM	195 CFM	24x24	8x8	
RG-11	PRICE	630	LOUVERED, FIXED FACE RETURN GRILLE	40 CFM	95 CFM	12x12	6x6	
RG-21	PRICE	630	LOUVERED, FIXED FACE RETURN GRILLE	40 CFM	95 CFM	24x24	6x6	
RG-22	PRICE	630	LOUVERED, FIXED FACE RETURN GRILLE	100 CFM	195 CFM	24x24	8x8	
RG-23	PRICE	630	LOUVERED, FIXED FACE RETURN GRILLE	200 CFM	295 CFM	24x24	10x10	
RG-24	PRICE	630	LOUVERED, FIXED FACE RETURN GRILLE	300 CFM	500 CFM	24x24	12x12	
SD-1	PRICE	620	SURFACE	0 CFM	0 CFM	N/A	10x6	
SD-2	PRICE	620	SURFACE	0 CFM	0 CFM	N/A	20x6	
SD-3	PRICE	630	SURFACE	0 CFM	0 CFM	N/A	14x6	
SD-4	PRICE	630	SURFACE	0 CFM	0 CFM	N/A	20x10	
SD-5	PRICE	620	SURFACE	0 CFM	0 CFM	N/A	10x8	
SG-1	PRICE	630	SURFACE	0 CFM	0 CFM	NA	16x8	
SG-2	PRICE	630	SURFACE	0 CFM	0 CFM	NA	40x24	
SG-3	PRICE	630	SURFACE	0 CFM	0 CFM	NA	20x14	
SGE-1	PRICE	630	SURFACE	0 CFM	0 CFM	NA	10x6	

NOTES:

1. BASIS OF DESIGN EQUIPMENT WITH REQUIRED PERFORMANCE CHARACTERISTICS IS SCHEDULED. OTHER MANUFACTURERS ARE ACCEPTABLE; HOWEVER EQUIPMENT NOT MEETING EQUIVALENT CRITERIA CANNOT BE CONSIDERED.
2. NECK SIZE AS INDICATED. RUNOUT BRANCH DUCTS SHALL BE THE SAME SIZE AS INDICATED NECK SIZE. PROVIDE TRANSITION IF NECESSARY.
3. PROVIDE VOLUME DAMPER INSTALLED IN BRANCH DUCT SERVING EACH DIFFUSER.
4. PROVIDE ALL REQUIRED ACCESSORIES FOR A COMPLETE INSTALLATION.
5. PROVIDE EXHAUST GRILLES LOCATED IN HARD CEILINGS WITH BALANCING DAMPER ADJUSTABLE AT FACE OF GRILLE.

EXHAUST/RELIEF FAN SCHEDULE

MARK	TYPE	SERVICE	AIR FLOW	EXTERNAL STATIC PRESSURE	FAN SPEED (RPM)	FAN MOTOR POWER	MOTOR SPEED (RPM)	FAN DRIVE	SOUND LEVEL (SONES)	ELECTRICAL		BASIS OF DESIGN		REMARKS
										VOLTAGE	PHASE	MANUFACTURER	MODEL NUMBER	
EF-01	ROOF DOWNBLAST	AH01; GENERAL	2610 CFM	1.00 in-wg	1286	2 hp	1725	DIRECT	16.0	208 V	1	GREENHECK	G-163-VG	1-8
EF-02	ROOF DOWNBLAST	AH02; GENERAL	2860 CFM	1.00 in-wg	1341	2 hp	1725	DIRECT	17.0	208 V	1	GREENHECK	G-163-VG	1-8
RF-2-01	MIXEDFLOW - HORIZONTAL	AH01 - RETURN	8875 CFM	1.00 in-wg	1770	5 hp	1770	DIRECT	31.0	208 V	3	GREENHECK	QEID-22-60	1-2,5,7-8
RF-2-02	MIXEDFLOW - HORIZONTAL	AH02 - RETURN	9320 CFM	1.00 in-wg	1770	3 hp	1170	DIRECT	31.0	208 V	3	GREENHECK	QEID-24-75	1-2,5,7-8

NOTES:

1. PROVIDE WITH PRE-WIRED DISCONNECT SWITCH. PROVIDED BY MECHANICAL, WIRED BY ELECTRICAL.
2. PROVIDE GRAVITY BACKDRAFT DAMPER.
3. PROVIDE ALUMINUM BIRDSCREEN AT EXTERIOR WALL OR ROOF PENETRATION.
4. PROVIDE WITH VFD.
5. PROVIDE THERMAL OVERLOAD MOTOR PROTECTION.
6. PROVIDE WITH FABRICATED ROOF CURB.
7. PROVIDE WITH SPRING ISOLATOR KIT.
8. INTERLOCK FAN WITH ASSOCIATED AHU.

CLEAN STEAM GENERATOR SCHEDULE

MARK	LOCATION	SYSTEM SERVED	INLET WATER FLOW RATE (GPM)	PLANT STEAM SUPPLY PRESSURE	STEAM INLET DIAMATER	CLEAN STEAM OUTPUT RATE (lb/hr)	STEAM PRESSURE	PLANT STEAM FLOW RATE (lb/hr)	STEAM TRAP NUMBER	POWER		NOTES
										VOLTS	PHASE	
2-CSG01	PENTHOUSE	AHU HUMIDIFIERS	3.5	30 psi	1 1/2"	360	15 psi	504	ST-P-1	120	1	1-5

NOTES:

1. PROVIDE WITH UL LISTED CONTROL PANEL MOUNTED AND WIRED WITH LIQUID TIGHT CONDUIT.
2. PROVIDE WITH EQUIPMENT PAD.
3. PROVIDE WITH CONTROLS CAPABLE OF STAND ALONE OPERATION AND INTERFACE WITH NIAGARA AND BACNET SYSTEMS.
4. PROVIDE WITH POINT-OF-USE REVERSE OSMOSIS FILTER STATION CAPABLE OF SUPPLYING 1400 GALLONS OF TREATED WATER PER DAY. REFER TO CSG WATER TREATMENT NOTES ON THIS SHEET FOR MORE INFORMATION.
5. PROVIDE WITH CLEAN STEAM SIDE CONDESATE COOLER.

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5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: SCHEDULES - HVAC
Approved:
Phase: ISSUED FOR CONSTRUCTION
FULLY SPRINKLERED
Project Title: NEW COMMUNITY LIVING CENTER
Location: 2094 Albany Post Road, Montrose, NY 10548
Issue Date: 05/09/2022
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Drawn: NS
Project Number: 620-334
Building Number: CLC
Drawing Number: M-002

BIM 360://620-334 New Community Living Center19677_MEP_VA Montrose CLC_R20.rvt
7/21/2021 1:32:46 PM

VA FORM 08 - 6231

EXPANSION TANKS

MARK	SYSTEM SERVED	LOCATION	APPROX SYSTEM VOLUME (GAL)	SYSTEM TEMPERATURE MIN (F)	SYSTEM TEMPERATURE MAX (F)	INITIAL PRESSURE IN TANK (PSI)	MAX OPERATING PRESSURE (PSI)	BLADDER ST YLE TANKVOLUME (GAL)	PIPE SIZE TO TANK (IN)
ET-HHW	HEATING HOT WATER	BASEMENT	510	47	180	30	60	37	1
ET-CHW	CHILLED WATER	BASEMENT	200	47	56	30	60	23	1

AIR SEPERATOR SCHEDULE

MARK	LOCATION	SYSTEM SERVED	PIPE SIZE (IN)	FLOW (GPM)	WATER PD (FT)	WEIGHT (LBS)	NOTES
AS-CHW	PENTHOUSE	CHILLED WATER	4	235	0.72	165	1
AS-HHW	BASEMENT	HEATING HOT WATER	4	140	0.94	125	1

NOTES:

1. PROVIDE WITH STRAINER.

DESIGN CONDITIONS

DESIGN CONDITIONS	SUMMER			WINTER	
	TEMPERATURE		RELATIVE HUMIDITY	TEMP	RELATIVE HUMIDITY
	°Fdb	°Fwb	%	°Fdb	%
OUTDOOR DESIGN CONDITIONS	91	77	53	43	NA
OUTDOOR DEHUMIDIFICATION DESIGN CONDITION	88	80	71	43	NA
INDOOR AREA TEMPERATURE/HUMIDITY SETPOINTS					
CLASSROOMS / CONFERENCE ROOMS	75	63	50	70	30
CORRIDORS	75	63	50	70	30
COMMUNICATION ROOMS	77	64	50	-	-
DATA CENTER	70	60	55	65	30
LOUNGES	75	63	50	70	30
ELECTRICAL ROOMS	86	66	50	-	-
OFFICES	75	63	50	70	30
TOILETS	77	64	50	70	30
WAITING AREAS	75	63	50	70	30
ALL OTHER SPACES	75	63	50	70	30

VAV AIR TERMINAL UNIT SCHEDULE - HOT WATER REHEAT - AHU-1

MARK	NOMINAL SIZE	AIRFLOW		MAX. TOTAL UNIT PRESSURE DROP	SPACE NOISE CRITERIA (NC)	HOT WATER HEATING COIL							CONTROL TYPE	CONTROL SEQUENCE	BASIS OF DESIGN		NOTES
		MAXIMUM	MINIMUM			HEATING AIRFLOW	ENTERING AIR TEMP.	ENTERING WATER TEMP.	LEAVING WATER TEMP.	HEATING WATER FLOW	COIL CAPACITY	HOT WATER PIPING RUNOUT SIZE			MANUFACTURER	MODEL NUMBER	
TU1-01	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-02	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-03	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-04	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-05	6	270 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-06	6	270 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-07	6	270 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-08	6	270 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-09	6	315 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-10	6	320 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-11	6	325 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-12	6	320 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-13	6	325 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-14	6	340 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	4,000 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-15	10	710 CFM	710 CFM	0.25 in-wg	35	280 CFM	55.0 °F	180 °F	160 °F	3.0 GPM	27,000 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-10	1-4
TU1-16	8	415 CFM	415 CFM	0.25 in-wg	35	180 CFM	55.0 °F	180 °F	160 °F	2.0 GPM	15,800 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-08	1-4
TU1-17	6	130 CFM	130 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	4,900 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-06	1-4
TU1-18	6	120 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-19	6	85 CFM	30 CFM	0.25 in-wg	35	25 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-20	14	1900 CFM	1900 CFM	0.25 in-wg	35	610 CFM	61.6 °F	180 °F	160 °F	5.0 GPM	72,200 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-14	1-4
TU1-21	6	100 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.0 GPM	3,800 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-06	1-4
TU1-22	6	180 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.0 GPM	3,800 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-06	1-4
TU1-23	10	1060 CFM	320 CFM	0.25 in-wg	35	320 CFM	55.0 °F	180 °F	160 °F	1.5 GPM	12,200 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-10	1-4
TU1-24	8	590 CFM	180 CFM	0.25 in-wg	35	180 CFM	55.0 °F	180 °F	160 °F	1.0 GPM	6,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-08	1-4
TU1-25	6	60 CFM	60 CFM	0.25 in-wg	35	20 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-06	1-4
TU1-26	6	280 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-27	6	230 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-28	6	100 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-29	6	100 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-31	14	1810 CFM	1810 CFM	0.25 in-wg	35	600 CFM	61.6 °F	180 °F	160 °F	5.0 GPM	68,700 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-14	1-4
TU1-32	6	300 CFM	300 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	1.5 GPM	11,400 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-06	1-4
TU1-33	6	80 CFM	80 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,000 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-34	6	90 CFM	80 CFM	0.25 in-wg	35	180 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,000 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU1-35	6	120 CFM	80 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,000 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4

NOTES:

1. ALL AIR TERMINAL UNITS SHALL BE PRESSURE INDEPENDENT TYPE WITH VELOCITY RESET CONTROLLERS.
2. HOT WATER REHEAT COIL SHALL HAVE A MAXIMUM WATER PRESSURE DROP OF 3.0 FT. WG.
3. PROVIDE WITH ARI 880 RATED MAXIMUM DAMPER LEAKAGE OF 2% NOMINAL AIRFLOW AT 3 INCH W.G. INLET STATIC PRESSURE.
4. INSTALL UNIT WITH CLEARANCE FOR ELECTRICAL AND MAINTENANCE ACCESS. PROVIDE CEILING ACCESS PANEL WHERE NEEDED FOR ACCESS TO UNIT.
5. PROVIDE SPACE PRESSURE CONTROLLER AND DISPLAY, PRESSURE DIFFERENTIAL SENSORS, AND INTERLOCKS TO MAINTAIN REQUIRED SPACE PRESSURE DIFFERENTIAL. SEE CONTROLS SHEETS.

VAV AIR TERMINAL UNIT SCHEDULE - HOT WATER REHEAT - AHU-2

MARK	NOMINAL SIZE	AIRFLOW		MAX. TOTAL UNIT PRESSURE DROP	SPACE NOISE CRITERIA (NC)	HOT WATER HEATING COIL							CONTROL TYPE	CONTROL TYPE	BASIS OF DESIGN		NOTES
		MAXIMUM	MINIMUM			HEATING AIRFLOW	ENTERING AIR TEMP.	ENTERING WATER TEMP.	LEAVING WATER TEMP.	HEATING WATER FLOW	COIL CAPACITY	HOT WATER PIPING RUNOUT SIZE			MANUFACTURER	MODEL NUMBER	
TU2-01	6	340 CFM	105 CFM	0.25 in-wg	35	105 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	4,000 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-02	6	325 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-03	6	325 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-04	6	320 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-05	6	320 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-06	6	230 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-07	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-08	6	220 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-09	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-10	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-11	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-12	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-13	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-14	6	240 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-15	8	435 CFM	435 CFM	0.25 in-wg	35	180 CFM	55.0 °F	180 °F	160 °F	2.0 GPM	16,500 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-08	1-4
TU2-16	10	725 CFM	725 CFM	0.25 in-wg	35	280 CFM	55.0 °F	180 °F	160 °F	3.0 GPM	27,500 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-10	1-4
TU2-17	6	395 CFM	120 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	4,600 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-18	10	650 CFM	650 CFM	0.25 in-wg	35	195 CFM	55.0 °F	180 °F	160 °F	3.0 GPM	24,700 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-10	1-4
TU2-19	6	80 CFM	80 CFM	0.25 in-wg	35	21 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,000 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-06	1-4
TU2-20	8	180 CFM	180 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	1.0 GPM	6,800 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-08	1-4
TU2-21	12	1160 CFM	1160 CFM	0.25 in-wg	35	400 CFM	61.6 °F	180 °F	160 °F	5.0 GPM	44,100 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-12	1-4
TU2-23	6	170 CFM	100 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	3,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-06	1-4
TU2-24	12	1255 CFM	400 CFM	0.25 in-wg	35	400 CFM	61.6 °F	180 °F	160 °F	2.0 GPM	15,200 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-12	1-4
TU2-25	8	665 CFM	200 CFM	0.25 in-wg	35	200 CFM	55.0 °F	180 °F	160 °F	1.0 GPM	7,600 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-08	1-4
TU2-26	16	2430 CFM	2430 CFM	0.25 in-wg	35	800 CFM	61.6 °F	180 °F	160 °F	5.0 GPM	92,300 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-16	1-4
TU2-27	8	520 CFM	180 CFM	0.25 in-wg	35	180 CFM	55.0 °F	180 °F	160 °F	1.0 GPM	6,800 Btu/h	3/4"	DDC	VAV	PRICE INDUSTRIES	SDV-08	1-4
TU2-28	6	290 CFM	290 CFM	0.25 in-wg	35	100 CFM	55.0 °F	180 °F	160 °F	0.5 GPM	11,000 Btu/h	3/4"	DDC	CV	PRICE INDUSTRIES	SDV-06	1-4

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4. INSTALL UNIT WITH CLEARANCE FOR ELECTRICAL AND MAINTENANCE ACCESS. PROVIDE CEILING ACCESS PANEL WHERE NEEDED FOR ACCESS TO UNIT.
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A MULTI-DISCIPLINE AE COMPANY

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STATE OF NEW YORK · NICHOLAS P. STEPHENSON · 102195 · LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: SCHEDULES - HVAC
Approved:
Phase: ISSUED FOR CONSTRUCTION
FULLY SPRINKLERED
Project Title: NEW COMMUNITY LIVING CENTER
Location: 2094 Albany Post Road, Montrose, NY 10548
Issue Date: 05/09/2022
Checked: NPS
Drawn: TMR
Project Number: 620-334
Building Number: CLC
Drawing Number: M-003

BIM 360://620-334 New Community Living Center/19577_MEP_VA Montrose CLC_R20.rvt
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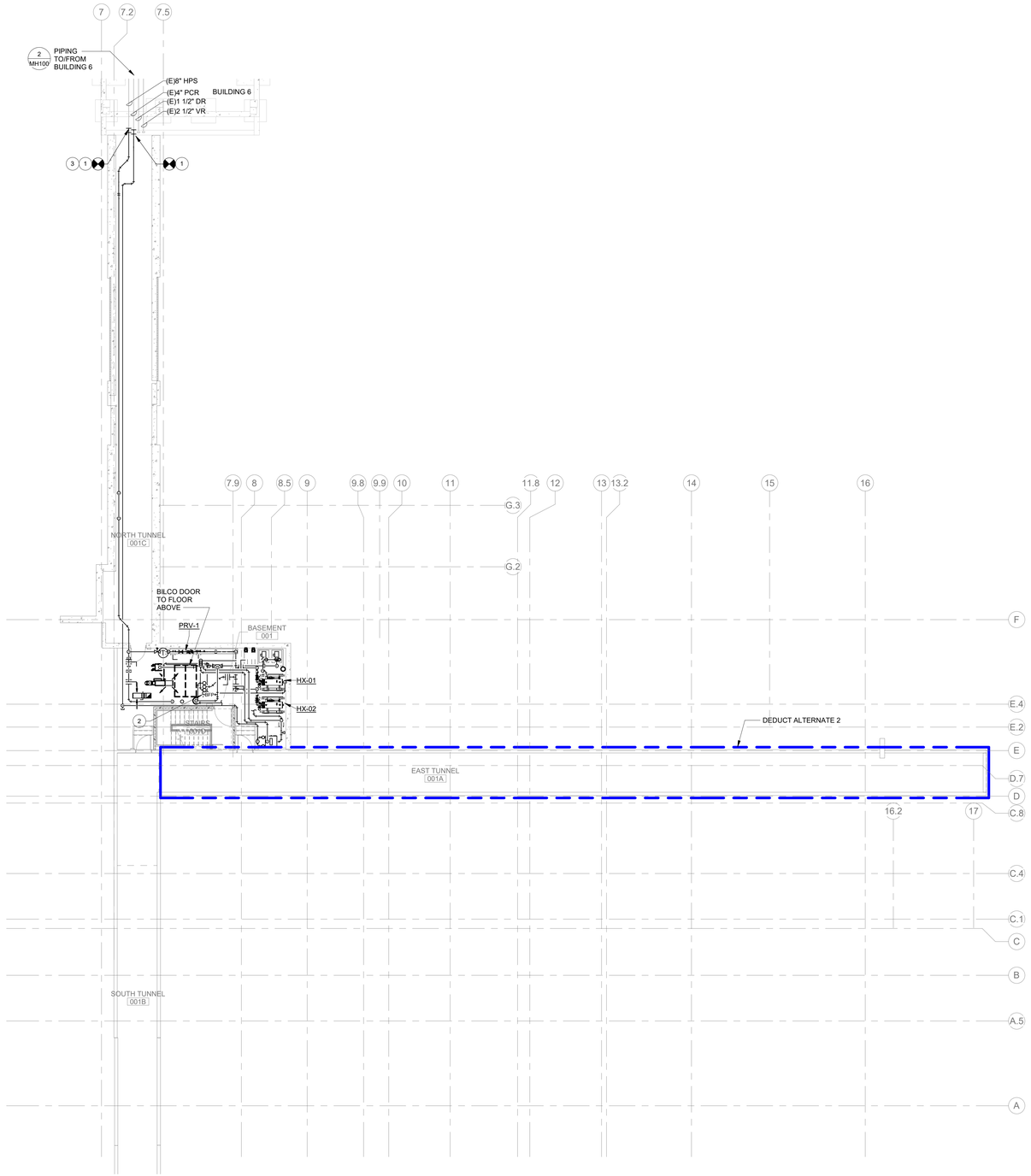
VA FORM 08 - 6231

2 BUILDING 6 STEAM CONNECTION
6" = 1'-0"



1 MECHANICAL OVERALL FLOOR PLAN - BASEMENT
3/32" = 1'-0"

GENERAL NOTES

A. ALL SERVICE INTERUPTIONS TO THIS FACILITY MUST BE SCHEDULED AT LEAST 3 WEEKS IN ADVANCE AND BE KEPT TO A MINIMUM. COORDINATE ALL DISRUPTIVE WORK AND OUTAGE REQUIREMENTS WITH THE COR.

B. CONTRACTOR TO FIELD VERIFY ALL CONNECTION POINTS TO EXISTING SYSTEM PIPING AND IDENTIFY ALL RISERS AFFECTED.

C. PROVIDE ACCESS PANELS AS REQUIRED FOR ALL VALVES NOT LOCATED ABOVE LAY-IN CEILING.

D. PROVIDE THERMOSTATS AT 48" AFF AND PROVIDE LABEL INDICATING WHICH EQUIPMENT IT SERVES.

E. FIRE DAMPERS ARE NOT REQUIRED AT 1 HOUR WALL PENETRATIONS AS LONG AS DUCTWORK IS CONSTRUCTED OF MINIMUM 26 GAUGE SHEET METAL.

KEYNOTES

1 CONNECT TO EXISTING HIGH PRESSURE STEAM AND PUMPED STEAM CONDENSATE IN THE STEAM TUNNEL AT BUILDING 6.

2 HEATING HOT WATER SYSTEM COLD WATER FILL LINE CONNECTION TO DCW PIPING. REFER TO DETAIL 2 ON SHEET M-503 FOR MORE INFORMATION.

3 PUMP STEAM CONDENSATE APPROXIMATLY 930 FT TO BUILDING 12 USING EXISTING CONDENSATE PIPING. INSPECT ENTIRE RUN OF PIPING PRIOR TO CONSRTUCTION.

DEDUCTIVE ALTERNATE NOTES

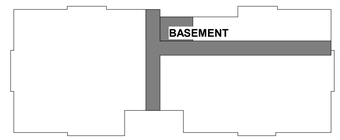
(DEDUCTIVE ALTERNATES ARE CASCADING AND MUST BE EXCERCISED IN THE ORDER PRESENTED) FOR A DETAILED DESCRIPTION OF EACH DEDUCTIVE ALTERNATE REFR TO COVER SHEET ON GI000

DEDUCTIVE ALTERNATE #2 : ELIMINATE TUNNEL (EAST LEG).

PARTITION RATING GRAPHICS:

PARTITIONS REQUIRED TO BE SMOKE RESISTANT, FIRE RESISTANT, OR BOTH FIRE AND SMOKE RESISTANT ARE SHOWN GRAPHICALLY ON PLANS WITH HATCH PATTERNS.

PARTITION RATING GRAPHIC DESIGNATION:	PRIORITY
4 HR FIRE BARRIER	1 HIGHEST
3 HR FIRE BARRIER	2
2 HR FIRE & SMOKE BARRIER	3
2 HR FIRE BARRIER	
2 HR FIRE BARRIER/SHAFT	
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	5 LOWEST
NON RATED	



N

KEY PLAN

Revisions:	Date:

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STATE OF NEW YORK
NICHOLAS P. STEPHENSON
102795
LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL FLOOR PLAN - BASEMENT	Phase: ISSUED FOR CONSTRUCTION	Project Title: NEW COMMUNITY LIVING CENTER	Project Number: 620-334
			Building Number: CLC
Approved:	FULLY SPRINKLERED	Location: 2094 Albany Post Road, Montrose, NY 10548	Drawing Number: MH100
		Issue Date: 05/09/2022 / Checked: NPS / Drawn: NS	

BIM 360://620-334 New Community Living Center/19577_MEP_VA Montrose CLC_R20.rvt
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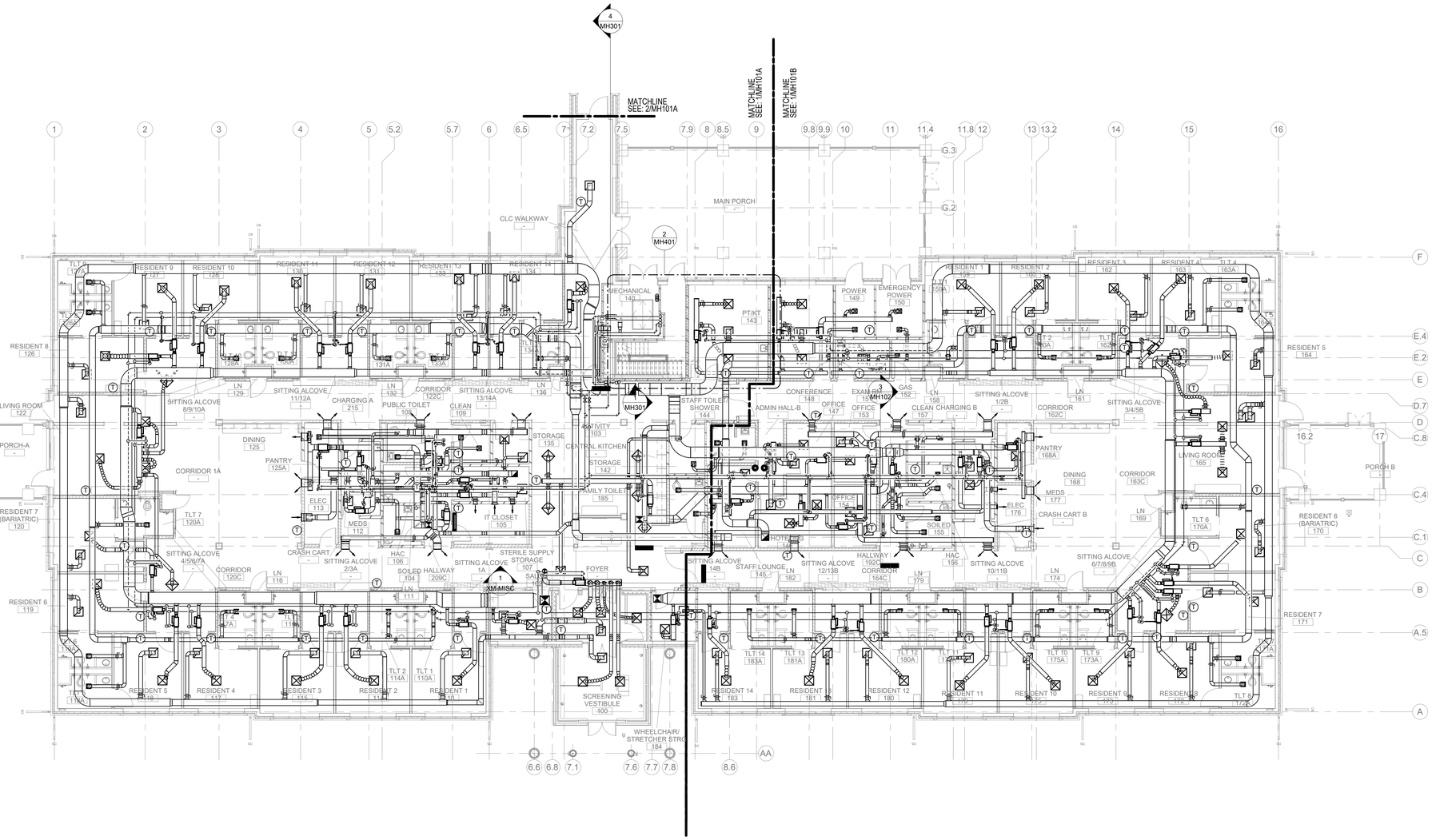

1 MECHANICAL OVERALL FLOOR PLAN - LEVEL 1

3/32" = 1'-0"

MECHANICAL LEGEND

UP DN	SUPPLY DUCT (UP & DOWN)
UP DN	EXHAUST DUCT (UP & DOWN)
UP DN	RETURN DUCT (UP & DOWN)
	SUPPLY, RETURN, EXHAUST DIFFUSER/GRILLE
	ACCESS PANEL IN INACCESSIBLE CEILING (24x24, UNO)
	SIDEWALL SUPPLY REGISTER OR GRILLE (WALL TYPE)
	SIDEWALL EXHAUST OR RETURN REGISTER OR GRILLE (WALL TYPE)
R/D	INCLINED RISE(R) OR DROP(D), IN DIRECTION OF AIR FLOW
	VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
	STANDARD RADIUS ELBOW (LONG RADIUS)
U	1" DOOR UNDERCUT
10x8	RECTANGULAR DUCT (INSIDE DIMENSIONS: WIDTH x DEPTH)
10ø	ROUND DUCT (INSIDE DIMENSIONS: DIAMETER)
	FLEXIBLE DUCTWORK (INSULATED)
	MANUAL VOLUME DAMPER
T	SPACE THERMOSTAT - WALL MOUNT
HPS	HIGH PRESSURE STEAM - 60 PSI
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2 HR FIRE BARRIER/SHAFT	
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1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	5 LOWEST
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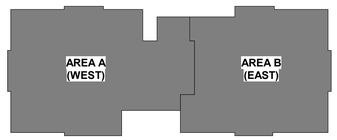

KEY PLAN

Revisions:	Date:

CONSULTANT

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STATE OF NEW YORK — NICHOLAS P. STEPHENSON — 102705 — LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	MECHANICAL OVERALL PLAN - LEVEL 1
Approved:	
Phase	ISSUED FOR CONSTRUCTION
	FULLY SPRINKLERED
Project Title	NEW COMMUNITY LIVING CENTER
Location	2094 Albany Post Road, Montrose, NY 10548
Issue Date	05/09/2022
Checked	CJF/NPS
Drawn	NS
Project Number	620-334
Building Number	CLC
Drawing Number	MH101

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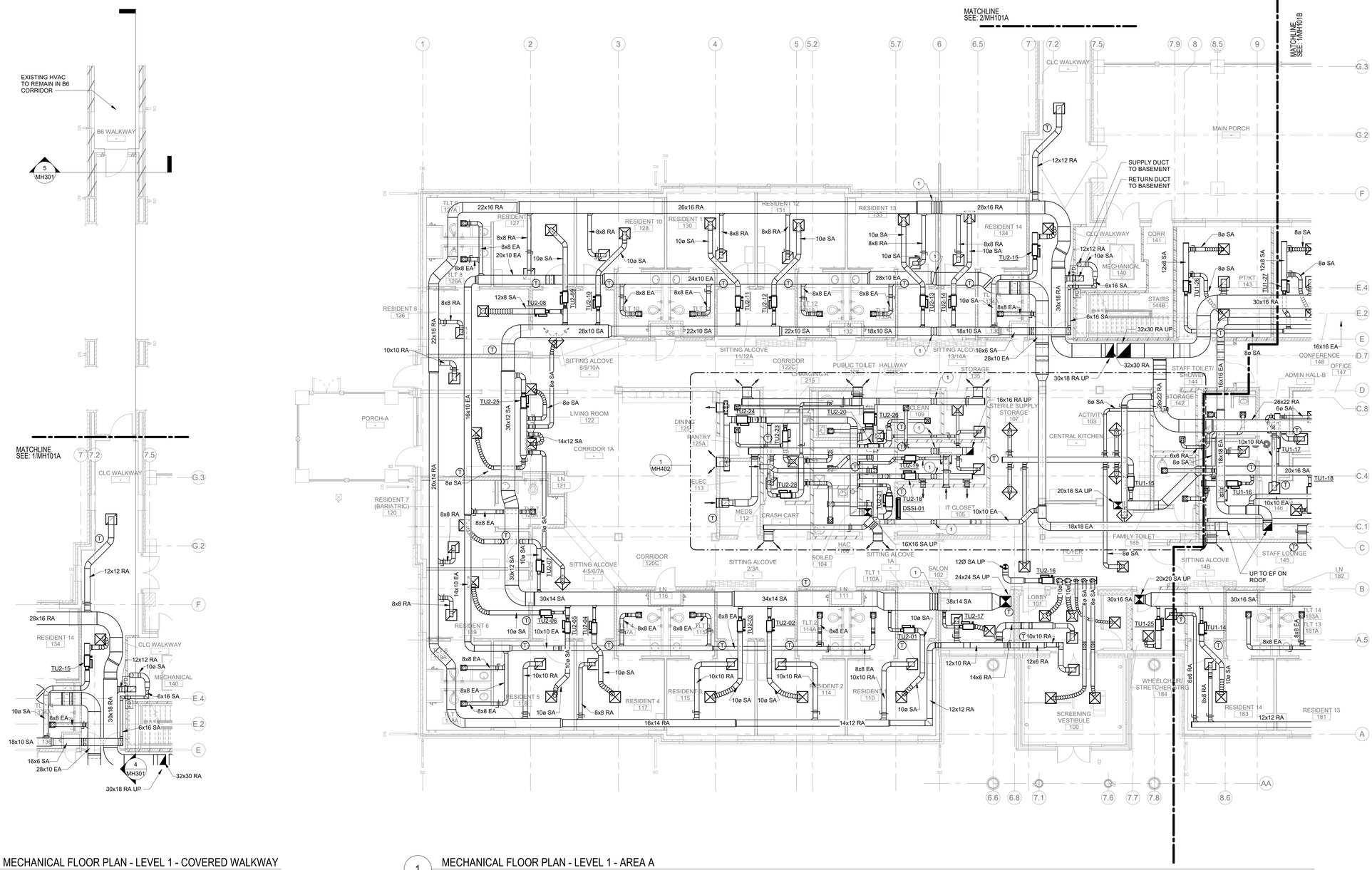

2 MECHANICAL FLOOR PLAN - LEVEL 1 - COVERED WALKWAY
1/8" = 1'-0"

1 MECHANICAL FLOOR PLAN - LEVEL 1 - AREA A
1/8" = 1'-0"

MECHANICAL LEGEND

- UP / DN — SUPPLY DUCT (UP & DOWN)
- UP / DN — EXHAUST DUCT (UP & DOWN)
- UP / DN — RETURN DUCT (UP & DOWN)
- SUPPLY, RETURN, EXHAUST DIFFUSER/GRILLE
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- VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
- STANDARD RADIUS ELBOW (LONG RADIUS)
- U — 1" DOOR UNDERCUT
- 10x8 — RECTANGULAR DUCT (INSIDE DIMENSIONS: WIDTH x DEPTH)
- 10ø — ROUND DUCT (INSIDE DIMENSIONS: DIAMETER)
- FLEXIBLE DUCTWORK (INSULATED)
- MANUAL VOLUME DAMPER
- T — SPACE THERMOSTAT - WALL MOUNT
- HPS — HIGH PRESSURE STEAM - 60 PSI
- MPS — MEDIUM PRESSURE STEAM - 30 PSI
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KEYNOTES

1 PROVIDE FLEXIBLE JOINT AT EXPANSION JOINT CROSSING.

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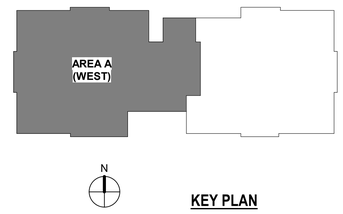
SMOKE PARTITION (NON RATED)	
NON RATED	5 LOWEST



KEY PLAN

Revisions:	Date:

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STATE OF NEW YORK — NICHOLAS P. STEPHENSON — 102193 — LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	MECHANICAL FLOOR PLAN - LEVEL 1 - AREA A
Approved:	
Phase	ISSUED FOR CONSTRUCTION
	FULLY SPRINKLERED
Project Title	NEW COMMUNITY LIVING CENTER
Location	2094 Albany Post Road, Montrose, NY 10548
Issue Date	05/09/2022
Checked	CJF/NPS
Drawn	NS
Project Number	620-334
Building Number	CLC
Drawing Number	MH101A

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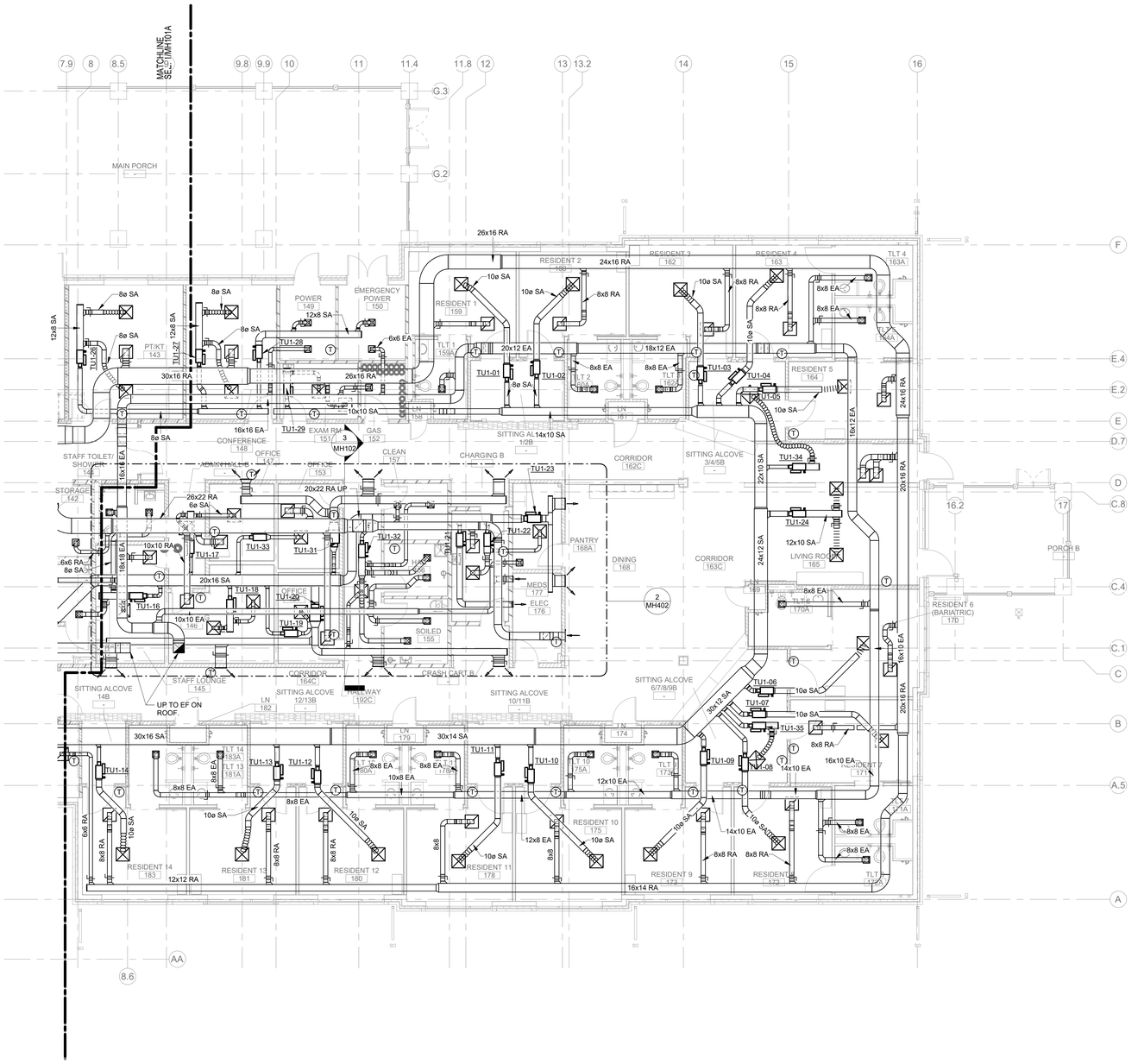

1 MECHANICAL FLOOR PLAN - LEVEL 1 - AREA B

1/8" = 1'-0"

MECHANICAL LEGEND

- UP / DN — SUPPLY DUCT (UP & DOWN)
- UP / DN — EXHAUST DUCT (UP & DOWN)
- UP / DN — RETURN DUCT (UP & DOWN)
- SUPPLY, RETURN, EXHAUST DIFFUSER/GRILLE
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KEYNOTES

1 RETURN DUCTWORK UP TO FLOOR ABOVE.

PARTITION RATING GRAPHICS:

PARTITIONS REQUIRED TO BE SMOKE RESISTANT, FIRE RESISTANT, OR BOTH FIRE AND SMOKE RESISTANT ARE SHOWN GRAPHICALLY ON PLANS WITH HATCH PATTERNS.

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2 HR FIRE BARRIER/SHAFT	
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1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	5 LOWEST
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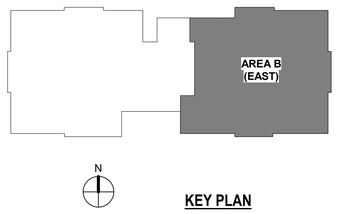

KEY PLAN

Revisions:	Date:

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5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL FLOOR PLAN - LEVEL 1 - AREA B	Phase: ISSUED FOR CONSTRUCTION	Project Title: NEW COMMUNITY LIVING CENTER	Project Number: 620-334
Approved:			Building Number: CLC
	FULLY SPRINKLERED	Location: 2094 Albany Post Road, Montrose, NY 10548	Drawing Number: MH101B
		Issue Date: 05/09/2022 / Checked: CJF/NPS / Drawn: NS	

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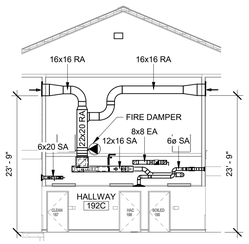
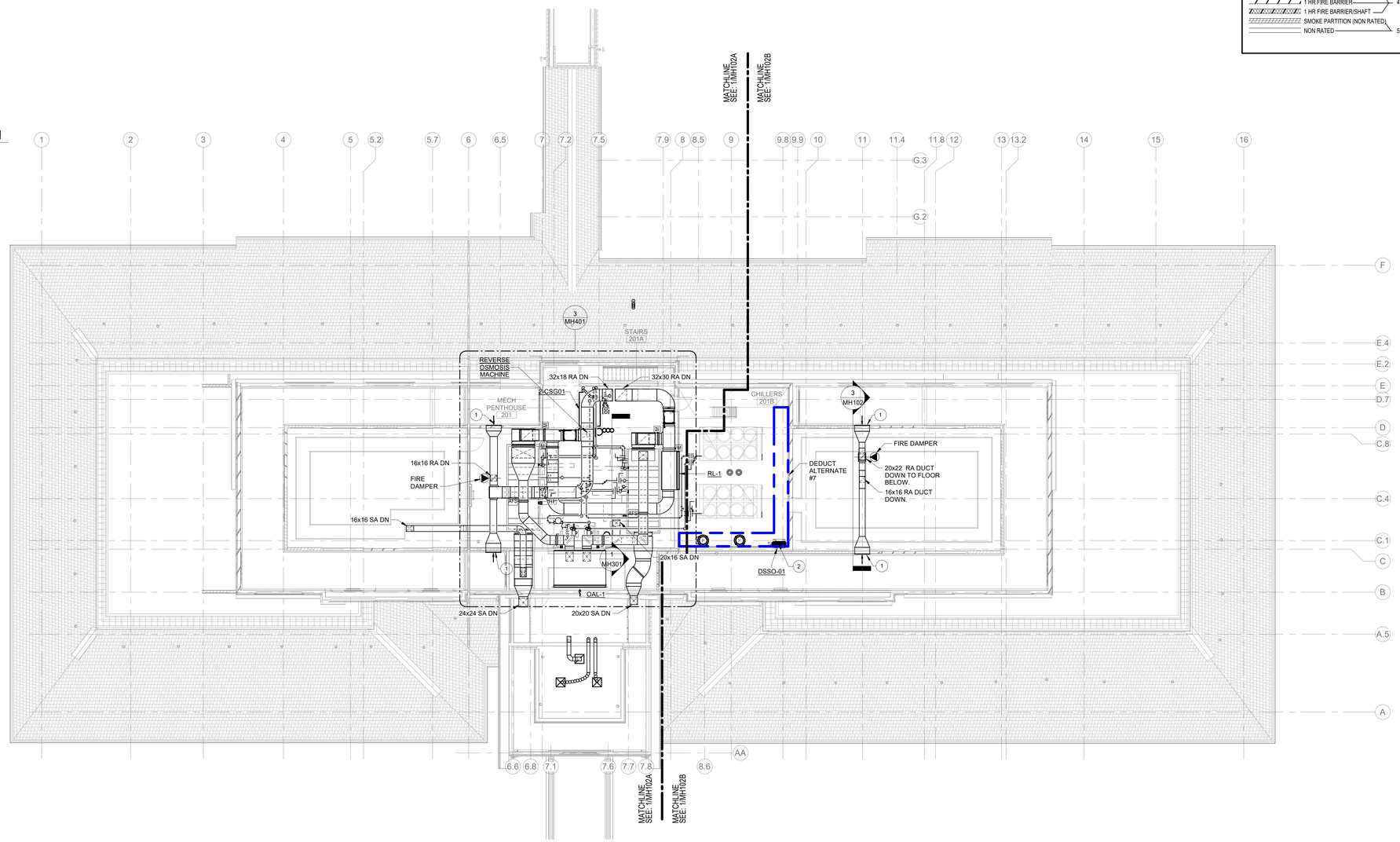


3 EAST CORRIDOR RETURN SECTION

3/32" = 1'-0"



1 MECHANICAL OVERALL FLOOR PLAN - PENTHOUSE

3/32" = 1'-0"

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- HHWR — HEATING HOT WATER RETURN
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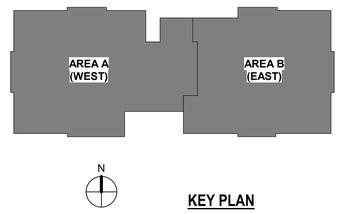
(DEDUCTIVE ALTERNATES ARE CASCADING AND MUST BE EXCERCISED IN THE ORDER PRESENTED) FOR A DETAILED DESCRIPTION OF EACH DEDUCTIVE ALTERNATE REFR TO COVER SHEET ON GI000

DEDUCTIVE ALTERNATE #7 : REDUCE PLATFORM AT CHILLER

KEYNOTES

1 RETURN DUCTS SERVING CORRIDORS BELOW MOUNTED AT 24'-9" AFF.

2 MOUNT MINISPLIT CONDENSING UNIT WITH WALL BRACKET ON BRICK WALL.



KEY PLAN

Revisions:	Date:

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A MULTI-DISCIPLINE COMPANY

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STATE OF NEW YORK — NICHOLAS P. STEPHENSON — 102795 — LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	MECHANICAL FLOOR PLAN - PENTHOUSE
Approved:	
Phase	ISSUED FOR CONSTRUCTION
	FULLY SPRINKLERED
Project Title	NEW COMMUNITY LIVING CENTER
Location	2094 Albany Post Road, Montrose, NY 10548
Issue Date	05/09/2022
Checked	CJF/NPS
Drawn	NS
Project Number	620-334
Building Number	CLC
Drawing Number	MH102

BIM 360://620-334 New Community Living Center\19577_MEP_VA Montrose CLC_R20.rvt
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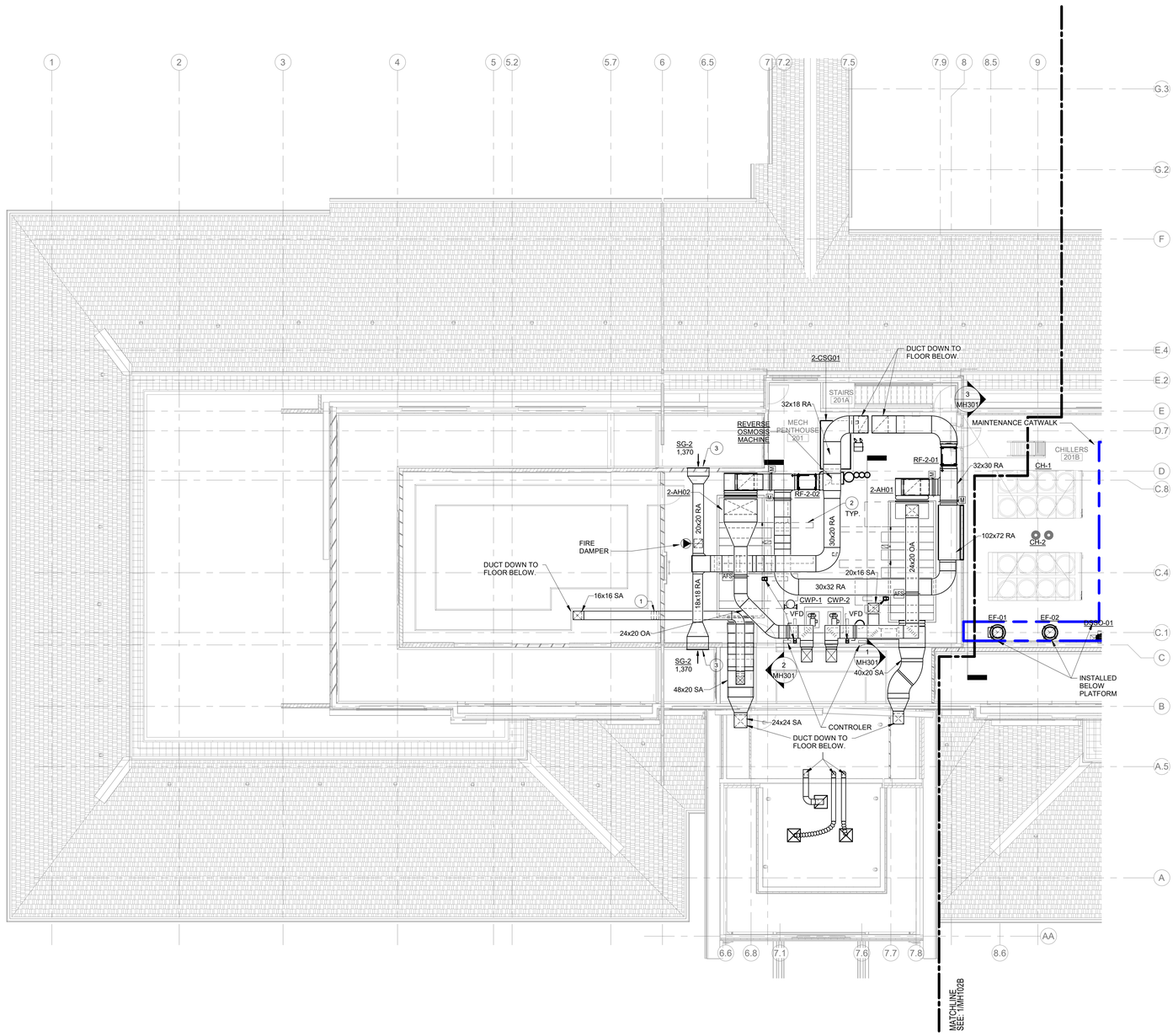
VA FORM 08 - 6231



1 MECHANICAL FLOOR PLAN - MECHANICAL PENTHOUSE - AREA A

1/8" = 1'-0"

PARTITION RATING GRAPHICS:

PARTITIONS REQUIRED TO BE SMOKE RESISTANT, FIRE RESISTANT, OR BOTH FIRE AND SMOKE RESISTANT ARE SHOWN GRAPHICALLY ON PLANS WITH HATCH PATTERNS.

PARTITION RATING GRAPHIC DESIGNATION:	PRIORITY
4 HR FIRE BARRIER	1 HIGHEST
3 HR FIRE BARRIER	2
2 HR FIRE & SMOKE BARRIER	3
2 HR FIRE BARRIER	
2 HR FIRE BARRIER/SHAFT	
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	5 LOWEST
NON RATED	

MECHANICAL LEGEND

- UP / DN — SUPPLY DUCT (UP & DOWN)
- UP / DN — EXHAUST DUCT (UP & DOWN)
- UP / DN — RETURN DUCT (UP & DOWN)
- SUPPLY, RETURN, EXHAUST DIFFUSER/GRILLE
- ACCESS PANEL IN INACCESSIBLE CEILING (24x24, UNO)
- SIDEWALL SUPPLY REGISTER OR GRILLE (WALL TYPE)
- SIDEWALL EXHAUST OR RETURN REGISTER OR GRILLE (WALL TYPE)
- R/D — INCLINED RISE(R) OR DROP(D), IN DIRECTION OF AIR FLOW
- VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
- STANDARD RADIUS ELBOW (LONG RADIUS)
- U — 1" DOOR UNDERCUT
- 10x8 — RECTANGULAR DUCT (INSIDE DIMENSIONS: WIDTH x DEPTH)
- 10ø — ROUND DUCT (INSIDE DIMENSIONS: DIAMETER)
- FLEXIBLE DUCTWORK (INSULATED)
- MANUAL VOLUME DAMPER
- T — SPACE THERMOSTAT - WALL MOUNT
- HPS — HIGH PRESSURE STEAM - 60 PSI
- MPS — MEDIUM PRESSURE STEAM - 30 PSI
- PC — PUMPED STEAM CONDENSATE
- HWS — HEATING HOT WATER SUPPLY
- HWR — HEATING HOT WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- CD — CONDENSATE DRAIN LINE

GENERAL NOTES

A. ALL SERVICE INTERUPTIONS TO THIS FACILITY MUST BE SCHEDULED AT LEAST 3 WEEKS IN ADVANCE AND BE KEPT TO A MINIMUM. COORDINATE ALL DISRUPTIVE WORK AND OUTAGE REQUIREMENTS WITH THE COR.

B. CONTRACTOR TO FIELD VERIFY ALL CONNECTION POINTS TO EXISTING SYSTEM PIPING AND IDENTIFY ALL RISERS AFFECTED.

C. PROVIDE ACCESS PANELS AS REQUIRED FOR ALL VALVES NOT LOCATED ABOVE LAY-IN CEILING.

D. PROVIDE THERMOSTATS AT 48" AFF AND PROVIDE LABEL INDICATING WHICH EQUIPMENT IT SERVES.

E. EQUIPMENT PAD TO BE PAINTED YELLOW.

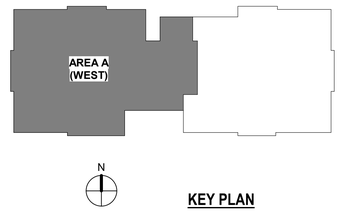
F. FIRE DAMPERS ARE NOT REQUIRED AT 1 HOUR WALL PENETRATIONS AS LONG AS DUCTWORK IS CONSTRUCTED OF MINIMUM 26 GAUGE SHEET METAL.

KEYNOTES

1 PROVIDE FLEXIBLE JOINT AT EXPANSION JOINT CROSSING.

2 NECCESARY CLEARENCES FOR AHU.

3 RETURN DUCTS SERVING CORRIDORS BELOW MOUNTED AT 24'-9" AFF.



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STATE OF NEW YORK — NICHOLAS P. STEPHENSON — 102795 — LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL FLOOR PLAN - PENTHOUSE - AREA A	Phase: ISSUED FOR CONSTRUCTION	Project Title: NEW COMMUNITY LIVING CENTER	Project Number: 620-334
Approved:	FULLY SPRINKLERED	Location: 2094 Albany Post Road, Montrose, NY 10548	Building Number: CLC
		Issue Date: 05/09/2022 / Checked: CJF/NPS / Drawn: NS	Drawing Number: MH102A

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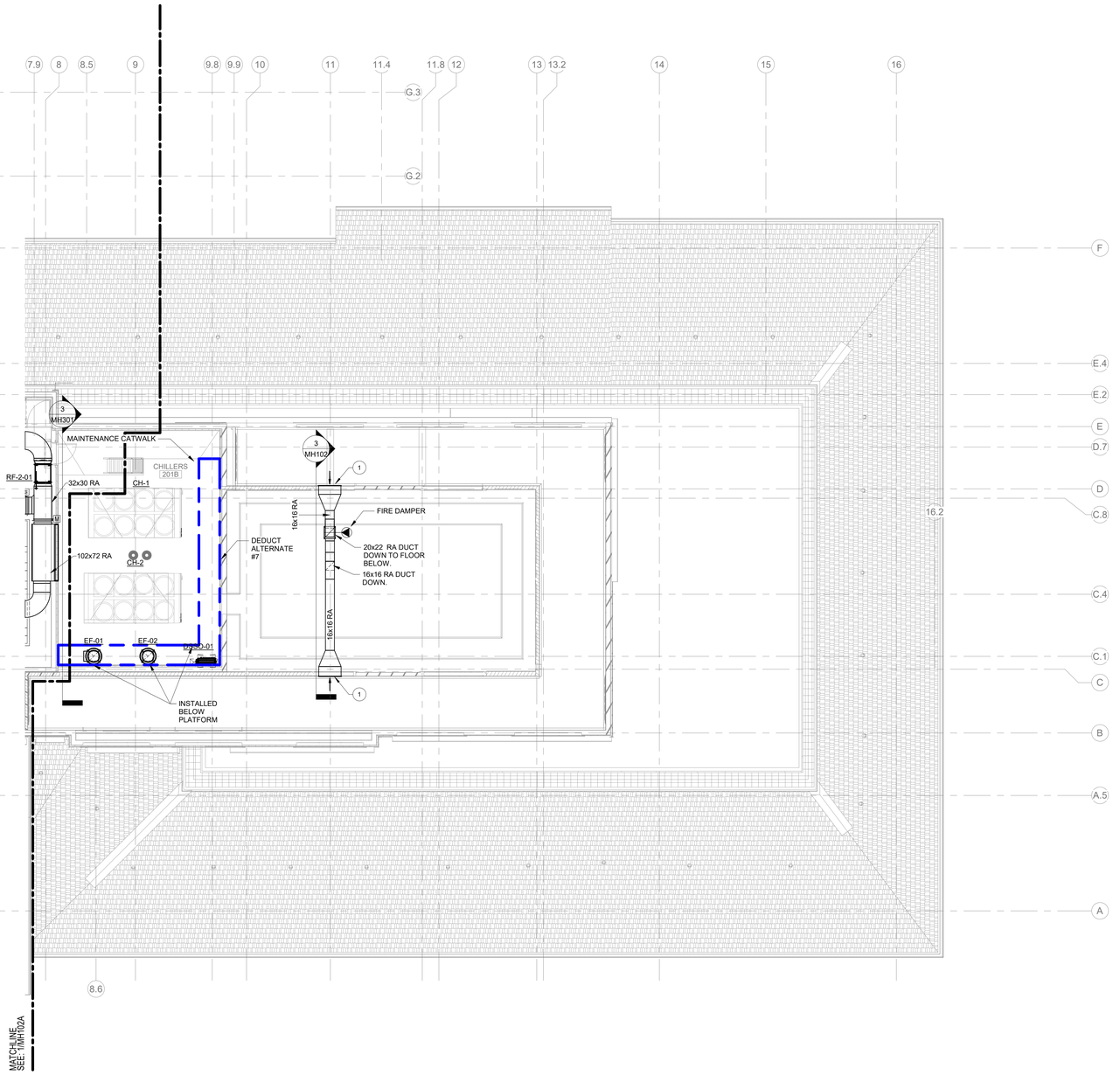

1 MECHANICAL FLOOR PLAN - MECHANICAL PENTHOUSE - AREA B

1/8" = 1'-0"

GENERAL NOTES

A. ALL SERVICE INTERUPTIONS TO THIS FACILITY MUST BE SCHEDULED AT LEAST 3 WEEKS IN ADVANCE AND BE KEPT TO A MINIMUM. COORDINATE ALL DISRUPTIVE WORK AND OUTAGE REQUIREMENTS WITH THE COR.

B. CONTRACTOR TO FIELD VERIFY ALL CONNECTION POINTS TO EXISTING SYSTEM PIPING AND IDENTIFY ALL RISERS AFFECTED.

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DEDUCTIVE ALTERNATE NOTES

(DEDUCTIVE ALTERNATES ARE CASCADING AND MUST BE EXCERCISED IN THE ORDER PRESENTED) FOR A DETAILED DESCRIPTION OF EACH DEDUCTIVE ALTERNATE REFR TO COVER SHEET ON GI000

DEDUCTIVE ALTERNATE #7 : REDUCE PLATFORM AT CHILLER

KEYNOTES

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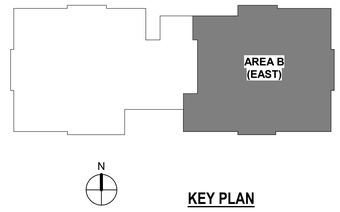
2 HR FIRE & SMOKE BARRIER	3
2 HR FIRE BARRIER	
2 HR FIRE BARRIER/SHAFT	
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	
NON RATED	5 LOWEST



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A MULTI-DISCIPLINE A/E COMPANY

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STATE OF NEW YORK · NICHOLAS P. STEPHENSON · 102795 · LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL FLOOR PLAN - PENTHOUSE - AREA B	Phase: ISSUED FOR CONSTRUCTION	Project Title: NEW COMMUNITY LIVING CENTER	Project Number: 620-334
Approved:	FULLY SPRINKLERED	Location: 2094 Albany Post Road, Montrose, NY 10548	Building Number: CLC
		Issue Date: 05/09/2022 · Checked: CJF/NPS · Drawn: NS	Drawing Number: MH102B

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MECHANICAL LEGEND

⊠ ◪ ⊠	SUPPLY, RETURN, EXHAUST DIFFUSER/GRILLE
◺	ACCESS PANEL IN INACCESSIBLE CEILING (24x24, UNO)
─┃→	SIDEWALL SUPPLY REGISTER OR GRILLE (WALL TYPE)
─┃←	SIDEWALL EXHAUST OR RETURN REGISTER OR GRILLE (WALL TYPE)
⁄U→	1" DOOR UNDERCUT
Ⓣ	COMBINATION THERMOSTAT & HUMIDITY SENSOR- WALL MOUNT
▭	AIR TERMINAL UNIT WITH REHEAT COIL

KEYNOTES

1 NOTED SIDEWALL SUPPLY GRILLE MOUNTED AT 10' AFF.

2 NOTED SIDEWALL RETURN GRILLE MOUNTED AT 9' AFF.

3 NOTED SIDEWALL SUPPLY GRILLE MOUNTED AT 9' AFF.

KEYNOTES

1 NOTED SIDEWALL SUPPLY GRILLE MOUNTED AT 10' AFF.

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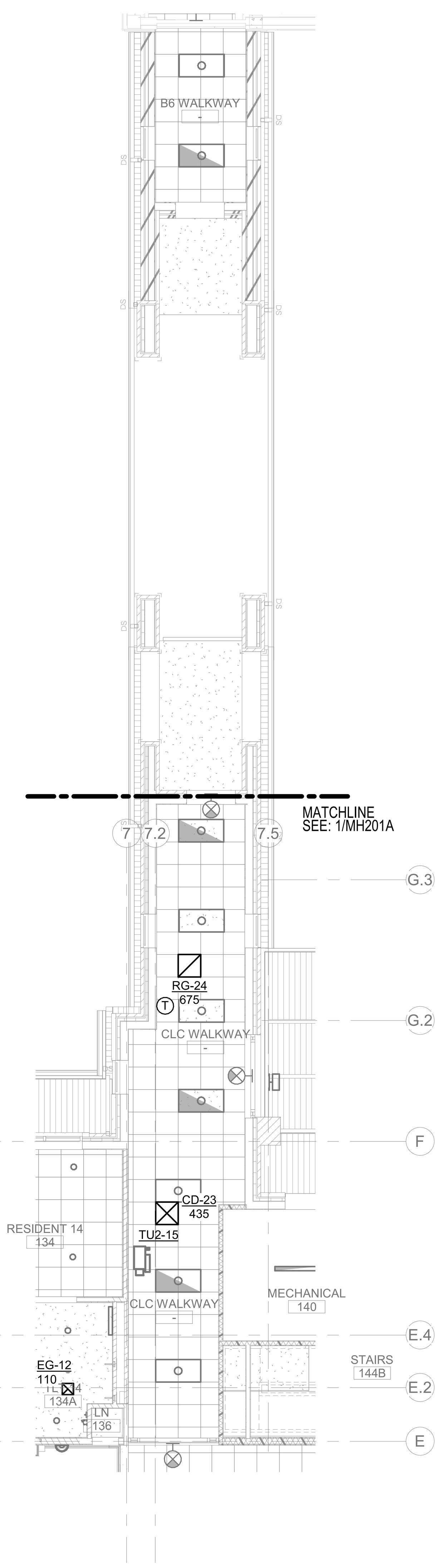
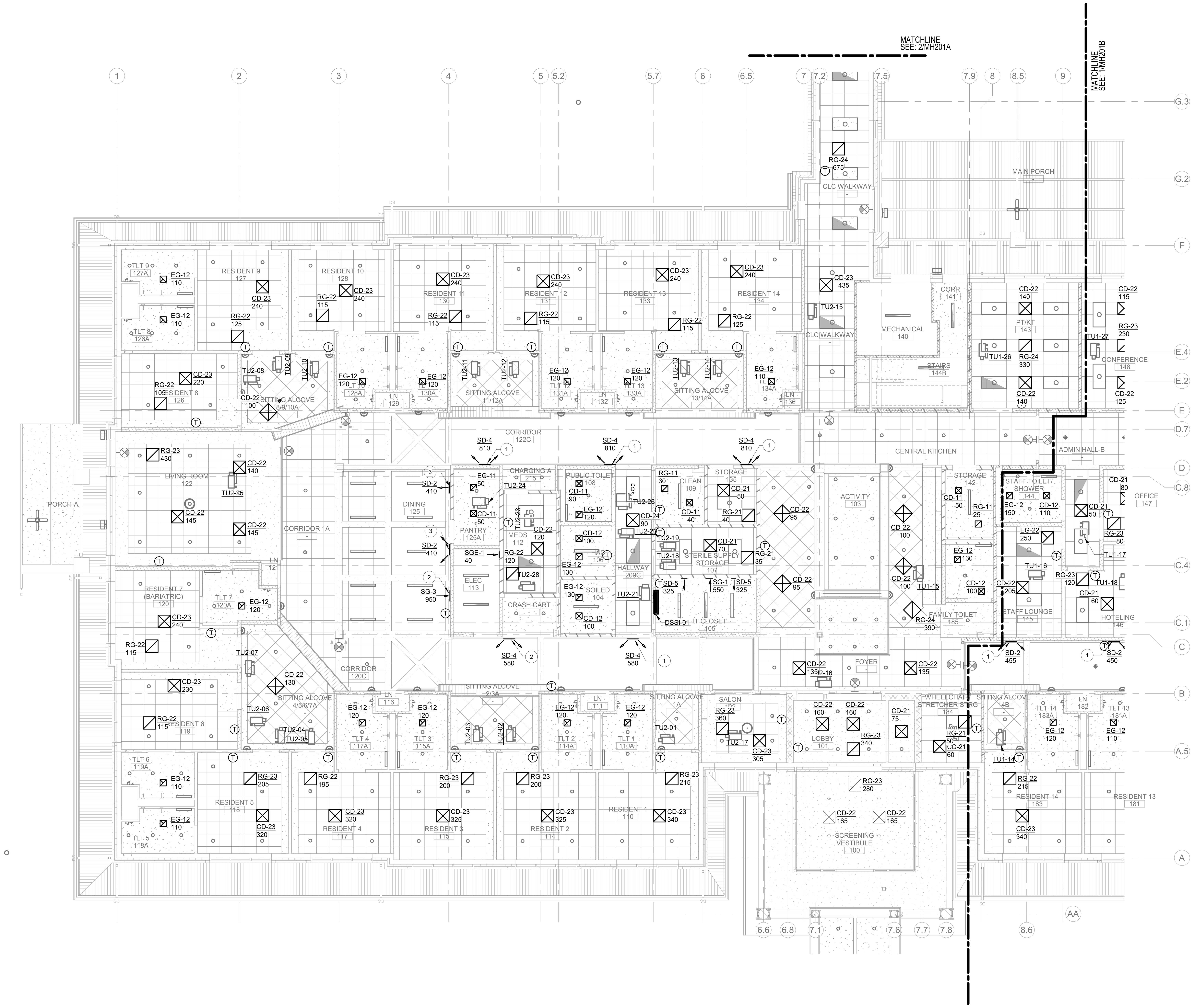
2 HR FIRE BARRIER	3
2 HR FIRE BARRIER/SHAFT	3
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	4
1 HR FIRE BARRIER/SHAFT	4
SMOKE PARTITION (NON RATED)	5 LOWEST
NON RATED	5 LOWEST



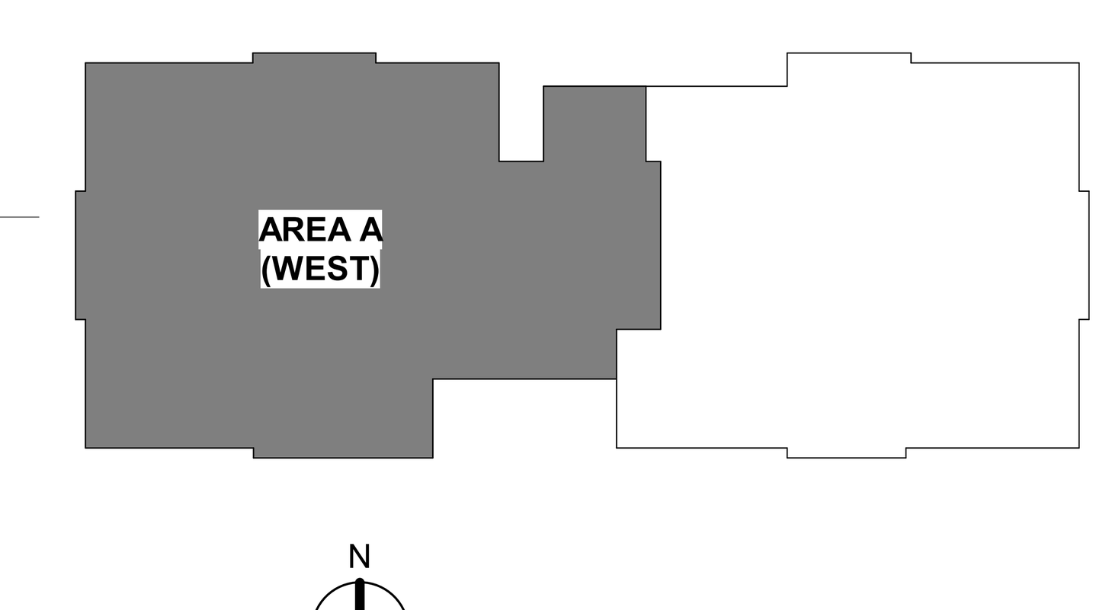
2 MECHANICAL AIRFLOWS FLOOR PLAN - LEVEL 1 - COVERED WALKWAY

1/8" = 1'-0"



1 MECHANICAL AIRFLOWS PLAN - LEVEL 1 - AREA A

1/8" = 1'-0"



KEY PLAN

Revisions:	**Date:**

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A MULTI-DISCIPLINE COMPANY

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STATE OF NEW YORK ★ NICHOLAS P. STEPHENSON ★ LICENSED PROFESSIONAL ENGINEER 102795
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5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
MECHANICAL AIRFLOWS PLAN - LEVEL 1 - AREA A	ISSUED FOR CONSTRUCTION	NEW COMMUNITY LIVING CENTER	620-334
			Building Number: CLC
Approved:	FULLY SPRINKLERED	Location: 2094 Albany Post Road, Montrose, NY 10548	Drawing Number: MH201A
		Issue Date: 05/09/2022 · Checked: CJF/NPS · Drawn: NS	

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1 MECHANICAL AIRFLOWS PLAN - LEVEL 1 - AREA B

1/8" = 1'-0"

MECHANICAL LEGEND

- SUPPLY, RETURN, EXHAUST DIFFUSER/GRILLE
- ACCESS PANEL IN INACCESSIBLE CEILING (24x24, UNO)
- SIDEWALL SUPPLY REGISTER OR GRILLE (WALL TYPE)
- SIDEWALL EXHAUST OR RETURN REGISTER OR GRILLE (WALL TYPE)
- 1" DOOR UNDERCUT
- COMBINATION THERMOSTAT & HUMIDITY SENSOR- WALL MOUNT
- AIR TERMINAL UNIT WITH REHEAT COIL

KEYNOTES

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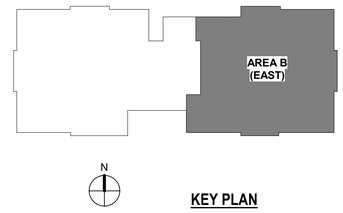
2 HR FIRE BARRIER	
2 HR FIRE BARRIER/SHAFT	
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	
NON RATED	5 LOWEST



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STATE OF NEW YORK — NICHOLAS P. STEPHENSON — 102795 — LICENSED PROFESSIONAL ENGINEER
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Drawing Title: MECHANICAL AIRFLOWS PLAN - LEVEL 1 - AREA B	Phase: ISSUED FOR CONSTRUCTION	Project Title: NEW COMMUNITY LIVING CENTER	Project Number: 620-334
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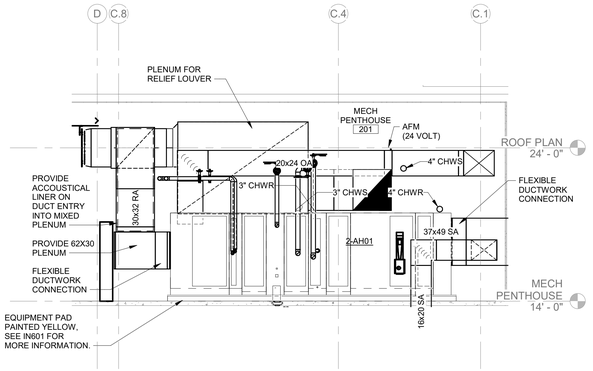
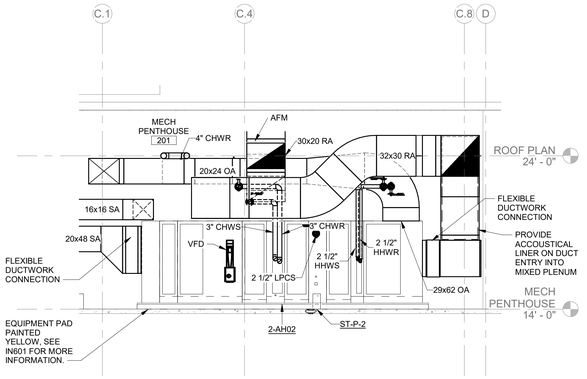


1 2-AH01 SECTION
1/4" = 1'-0"



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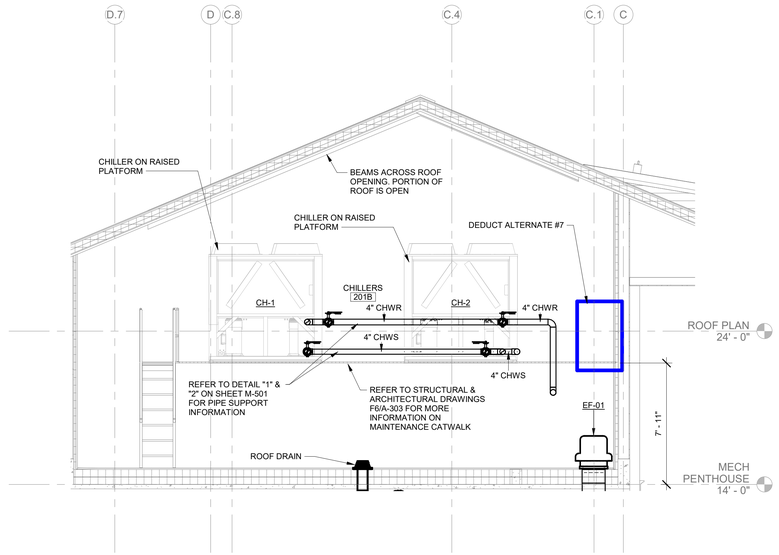
1/4" = 1'-0"



3 CHILLER SECTION
1/4" = 1'-0"

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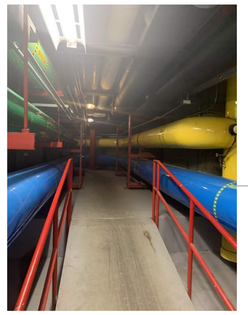
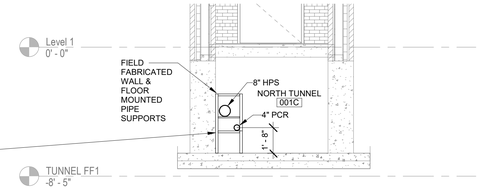
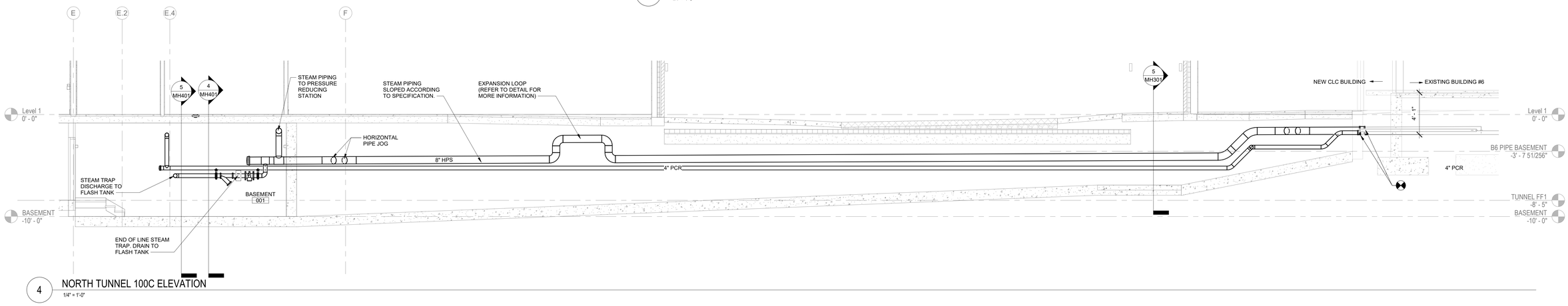
(DEDUCTIVE ALTERNATES ARE CASCADING AND MUST BE EXCERCISED IN THE ORDER PRESENTED) FOR A DETAILED DESCRIPTION OF EACH DEDUCTIVE ALTERNATE REFR TO COVER SHEET ON GI000

DEDUCTIVE ALTERNATE #7 : REDUCE PLATFORM AT CHILLER





5 STEAM TUNNEL CROSS SECTION
1/4" = 1'-0"



4 NORTH TUNNEL 100C ELEVATION
1/4" = 1'-0"

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STATE OF NEW YORK — NICHOLAS P. STEPHENSON — 102193 — LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	MECHANICAL SECTIONS
Approved:	
Phase	ISSUED FOR CONSTRUCTION
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Project Title	NEW COMMUNITY LIVING CENTER
Location	2094 Albany Post Road, Montrose, NY 10548
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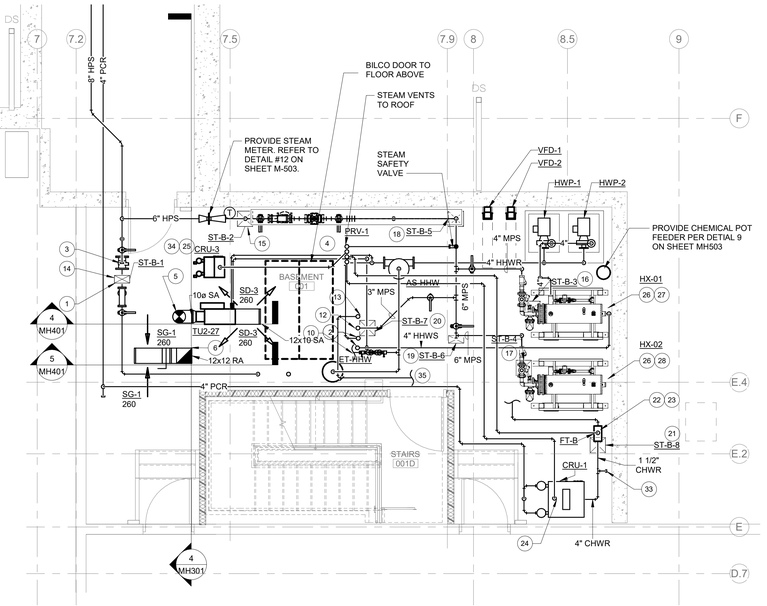
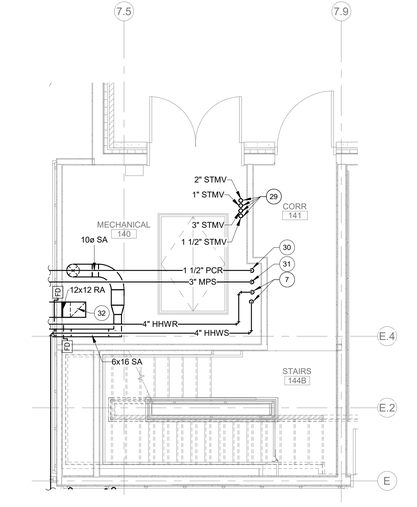


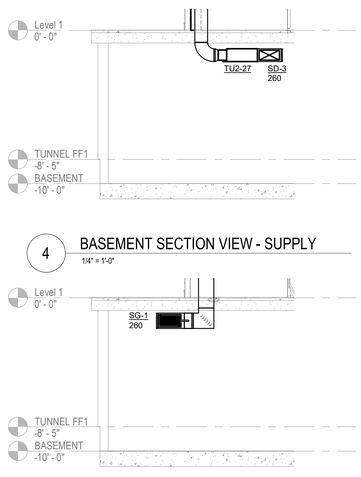
1 ENLARGED BASEMENT PLAN - HVAC

1/4" = 1'-0"



2 ENLARGED MECHANICAL ROOM PLAN - HVAC

1/4" = 1'-0"

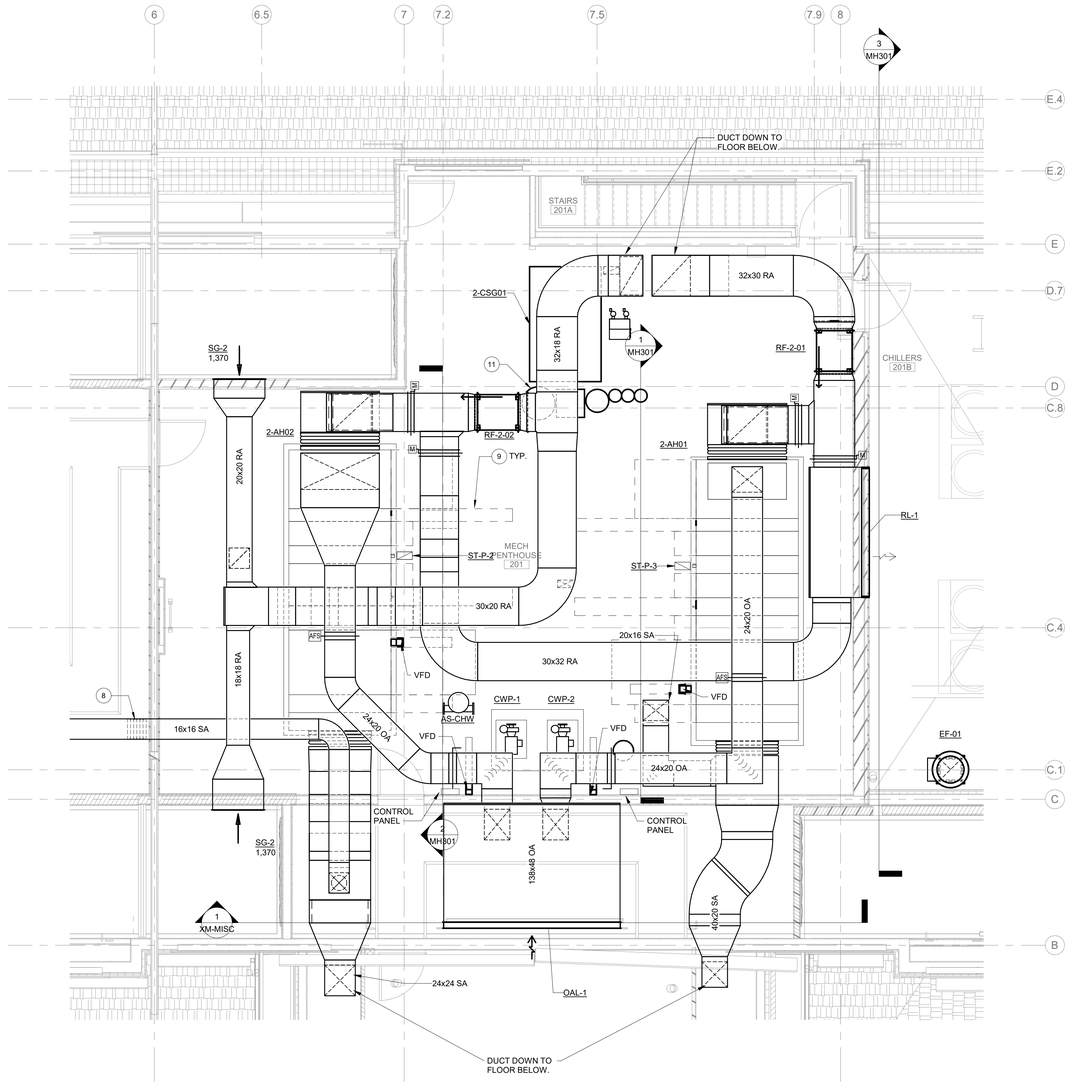


4 BASEMENT SECTION VIEW - SUPPLY

1/4" = 1'-0"

5 BASEMENT SECTION VIEW - RETURN

1/4" = 1'-0"



3 ENLARGED PENTHOUSE PLAN - HVAC

1/4" = 1'-0"

KEYNOTES

1 PROVIDE END OF LINE STEAM TRAP. REFER TO DETAIL #8 ON SHEET MH504 FOR ADDITIONAL INFORMATION.

2 HEATING HOT WATER SUPPLY AND RETURN PIPING FROM FLOOR ABOVE.

3 STEAM MAIN CAPPED FOR FUTURE CONNECTION.

4 PROVIDE PRESSURE REDUCING STATION. REFER TO DETAIL #1 ON SHEET MH504.

5 SUPPLY DUCTWORK DOWN FROM FLOOR ABOVE.

6 RETURN DUCTWORK UP TO FLOOR ABOVE.

7 HEATING HOT WATER SUPPLY AND RETURN PIPING DOWN TO BASEMENT BELOW.2" HHWR AND HHWS DOWN.

8 PROVIDE FLEXIBLE JOINT AT EXPANSION JOINT CROSSING.

9 NECCESARY CLEARENCES FOR AHU.

10 HEATING HOT WATER SYSTEM COLD WATER FILL LINE CONNECTION TO DCW PIPING. REFER TO DETAIL 2 ON SHEET M-503 FOR MORE INFORMATION.

11 WATER TREATMENT EQUIPMENT FOR CLEAN STEAM GENERATOR. REFER TO SHEET M-002 CSG WATER TREATMENT NOTES FOR MORE INFORMATION.

12 MPS PIPING FROM FLOOR ABOVE.

13 PCR PIPING FROM FLOOR ABOVE.

14 ROUTE CONDENSATE PIPE FROM STEAM TRAP ST-B-1 TO CRU-3. COORDINATE STEAM TRAP HEIGHT WITH CRU TO ENSURE CONDENSATE PROPERLY GRAVITY DRAINS TO CRU.

15 ROUTE CONDENSATE PIPE FROM STEAM TRAP ST-B-2 TO CRU-3. COORDINATE STEAM TRAP HEIGHT WITH CRU TO ENSURE CONDENSATE PROPERLY GRAVITY DRAINS TO CRU.

16 ROUTE CONDENSATE PIPE FROM STEAM TRAP ST-B-3 TO FT-B. COORDINATE STEAM TRAP HEIGHT WITH FLASH TANK TO ENSURE CONDENSATE PROPERLY GRAVITY DRAINS TO FLASH TANK.

17 ROUTE CONDENSATE PIPE FROM STEAM TRAP ST-B-4 TO FT-B. COORDINATE STEAM TRAP HEIGHT WITH FLASH TANK TO ENSURE CONDENSATE PROPERLY GRAVITY DRAINS TO FLASH TANK.

18 ROUTE CONDENSATE PIPE FROM STEAM TRAP ST-B-5 TO CRU-3. COORDINATE STEAM TRAP HEIGHT WITH CRU TO ENSURE CONDENSATE PROPERLY GRAVITY DRAINS TO CRU.

19 ROUTE CONDENSATE PIPE FROM STEAM TRAP ST-B-6 TO CRU-3. COORDINATE STEAM TRAP HEIGHT WITH CRU TO ENSURE CONDENSATE PROPERLY GRAVITY DRAINS TO CRU.

20 ROUTE CONDENSATE PIPE FROM STEAM TRAP ST-B-7 TO CRU-3. COORDINATE STEAM TRAP HEIGHT WITH CRU TO ENSURE CONDENSATE PROPERLY GRAVITY DRAINS TO CRU.

21 ROUTE CONDENSATE PIPE FROM STEAM TRAP ST-B-8 TO CRU-1. COORDINATE STEAM TRAP HEIGHT WITH CRU TO ENSURE CONDENSATE PROPERLY GRAVITY DRAINS TO CRU.

22 ROUTE CONDENSATE PIPE FROM FT-B TO CRU-1. COORDINATE FLASH TANK HEIGHT WITH CRU TO ENSURE CONDENSATE PROPERLY GRAVITY DRAINS TO CRU.

23 ROUTE FT-B 3" VENT TO ROOF.

24 ROUTE 1-1/2" VENT FROM CRU-1 TO ROOF.

25 ROUTE 1" VENT FROM CRU-3 TO ROOF.

26 MOUNT HEAT EXCHANGER ON A FRAME. COORDINATE HEIGHT SO THAT CONDENSATE FROM THE HEAT EXCHANGER CAN GRAVITY DRAIN INTO THE ASSOCIATED STEAM TRAP, THEN TO THE FLASH TANK, THEN TO THE CRU.

27 ROUTE CONDENSATE PIPW FROM HX-1 TO ST-B-3.

28 ROUTE CONDENSATE PIPW FROM HX-2 TO ST-B-4.

29 STEAM VENT PIPING FROM FLOOR BASEMENT TO ROOF ABOVE.

30 STEAM CONDENSATE PIPING FROM CRU-3 DOWN TO BASEMENT BELOW.

31 MEDIUM PRESSURE STEAM PIPING DOWN TO BASEMENT BELOW.

32 RETURN DUCT TO BASEMENT BELOW.

33 PROVIDE 4" STUB FOR FUTURE CONDENSATE FROM VA MONTROSE CLC BLDG PHASE 4.

34 ROUTE CONDENSATE FROM CRU-3 TO CRU-1.

35 ROUTE CONDENSATE FROM CRU-2 TO CRU-1.

MECHANICAL LEGEND

- SUPPLY DUCT (UP & DOWN)
- EXHAUST DUCT (UP & DOWN)
- RETURN DUCT (UP & DOWN)
- SUPPLY, RETURN, EXHAUST DIFFUSER/GRILLE
- ACCESS PANEL IN INACCESSIBLE CEILING (24x24, UNO)
- SIDEWALL SUPPLY REGISTER OR GRILLE (WALL TYPE)
- SIDEWALL EXHAUST OR RETURN REGISTER OR GRILLE (WALL TYPE)
- INCLINED RISE(R) OR DROP(D), IN DIRECTION OF AIR FLOW
- VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
- STANDARD RADIUS ELBOW (LONG RADIUS)
- 1" DOOR UNDERCUT
- 10x8 — RECTANGULAR DUCT (INSIDE DIMENSIONS: WIDTH x DEPTH)
- 10ø — ROUND DUCT (INSIDE DIMENSIONS: DIAMETER)
- FLEXIBLE DUCTWORK (INSULATED)
- MANUAL VOLUME DAMPER
- (T) SPACE THERMOSTAT - WALL MOUNT
- HPS — HIGH PRESSURE STEAM - 60 PSI
- MPS — MEDIUM PRESSURE STEAM - 30 PSI
- PC — PUMPED STEAM CONDENSATE
- HHWS — HEATING HOT WATER SUPPLY
- HHWR — HEATING HOT WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- CD — CONDENSATE DRAIN LINE

GENERAL NOTES

A. ALL SERVICE INTERUPTIONS TO THIS FACILITY MUST BE SCHEDULED AT LEAST 3 WEEKS IN ADVANCE AND BE KEPT TO A MINIMUM. COORDINATE ALL DISRUPTIVE WORK AND OUTAGE REQUIREMENTS WITH THE COR.

B. CONTRACTOR TO FIELD VERIFY ALL CONNECTION POINTS TO EXISTING SYSTEM PIPING AND IDENTIFY ALL RISERS AFFECTED.

C. PROVIDE ACCESS PANELS AS REQUIRED FOR ALL VALVES NOT LOCATED ABOVE LAY-IN CEILING.

D. PROVIDE THERMOSTATS AT 48" AFF AND PROVIDE LABEL INDICATING WHICH EQUIPMENT IT SERVES.

E. FIRE DAMPERS ARE NOT REQUIRED AT 1 HOUR WALL PENETRATIONS AS LONG AS DUCTWORK IS CONSTRUCTED OF MINIMUM 26 GAUGE SHEET METAL.

PARTITION RATING GRAPHICS:

PARTITIONS REQUIRED TO BE SMOKE RESISTANT, FIRE RESISTANT, OR BOTH FIRE AND SMOKE RESISTANT ARE SHOWN GRAPHICALLY ON PLANS WITH HATCH PATTERNS.

PARTITION RATING GRAPHIC DESIGNATION:	PRIORITY
4 HR FIRE BARRIER	1 HIGHEST
3 HR FIRE BARRIER	2
2 HR FIRE & SMOKE BARRIER	3
2 HR FIRE BARRIER	
2 HR FIRE BARRIER/SHAFT	
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	5 LOWEST
NON RATED	

Revisions:	Date:

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STATE OF NEW YORK — NICHOLAS P. STEPHENSON — 102795 — LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: ENLARGED VIEWS - HVAC	Phase: ISSUED FOR CONSTRUCTION
Approved:	FULLY SPRINKLERED

Project Title: NEW COMMUNITY LIVING CENTER			Project Number: 620-334
			Building Number: CLC
Location: 2094 Albany Post Road, Montrose, NY 10548			Drawing Number: MH401
Issue Date: 05/09/2022	Checked: CJF/NPS	Drawn: NS	

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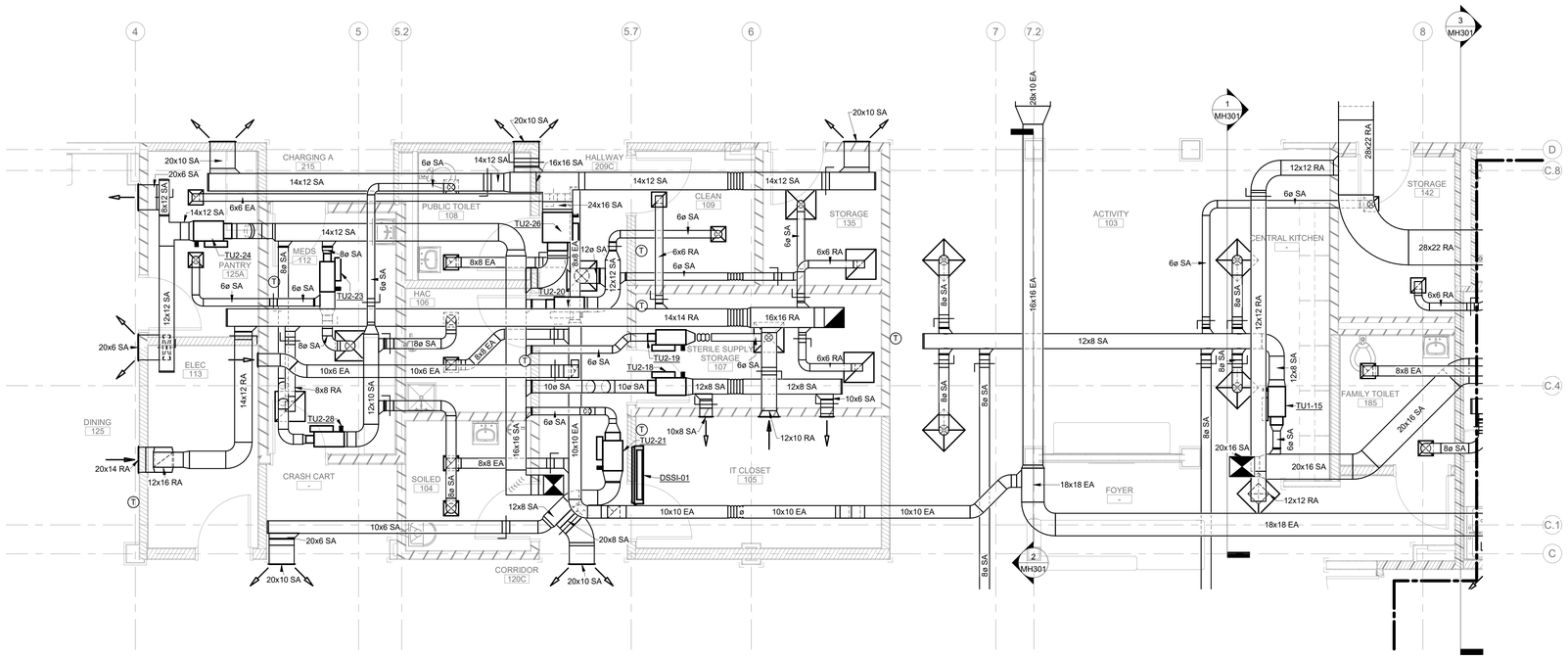
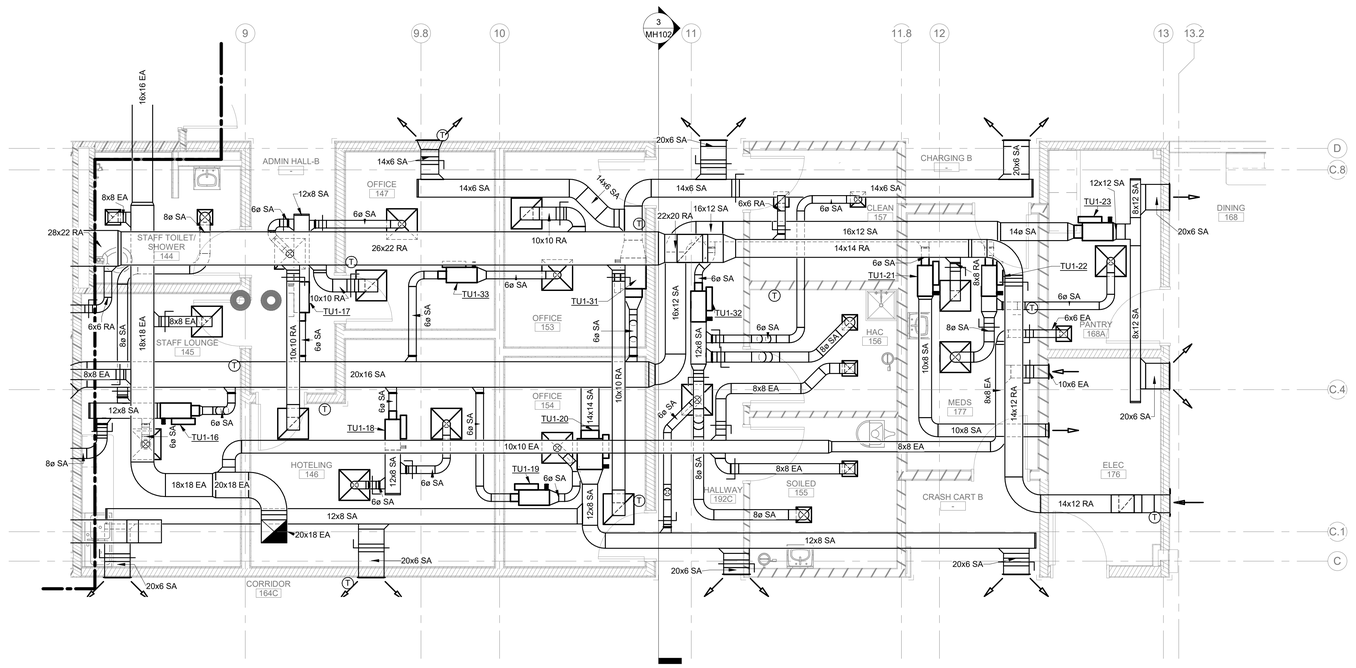


1 MECHANICAL FLOOR PLAN - LEVEL 1 - AREA A - ENLARGED

1/4" = 1'-0"



2 MECHANICAL FLOOR PLAN - LEVEL 1 - AREA B - ENLARGED

1/4" = 1'-0"

MECHANICAL LEGEND

- UP DN — SUPPLY DUCT (UP & DOWN)
- UP DN — EXHAUST DUCT (UP & DOWN)
- UP DN — RETURN DUCT (UP & DOWN)
- SUPPLY, RETURN, EXHAUST DIFFUSER/GRILLE
- ACCESS PANEL IN INACCESSIBLE CEILING (24x24, UNO)
- SIDEWALL SUPPLY REGISTER OR GRILLE (WALL TYPE)
- SIDEWALL EXHAUST OR RETURN REGISTER OR GRILLE (WALL TYPE)
- R/D — INCLINED RISE(R) OR DROP(D), IN DIRECTION OF AIR FLOW
- VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
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- FLEXIBLE DUCTWORK (INSULATED)
- MANUAL VOLUME DAMPER
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PARTITION RATING GRAPHIC DESIGNATION:	PRIORITY
4 HR FIRE BARRIER	1 HIGHEST
3 HR FIRE BARRIER	2
2 HR FIRE & SMOKE BARRIER	
2 HR FIRE BARRIER	3
2 HR FIRE BARRIER/SHAFT	
1 HR FIRE & SMOKE BARRIER	
1 HR FIRE BARRIER	4
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	
NON RATED	5 LOWEST

Revisions:	Date:

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STAMP

STATE OF NEW YORK — NICHOLAS P. STEPHENSON — 102175 — LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	ENLARGED VIEWS - HVAC
Approved:	
Phase	ISSUED FOR CONSTRUCTION
	FULLY SPRINKLERED
Project Title	NEW COMMUNITY LIVING CENTER
Location	2094 Albany Post Road, Montrose, NY 10548
Issue Date	05/09/2022
Checked	CJF/NPS
Drawn	TMR
Project Number	620-334
Building Number	CLC
Drawing Number	MH402

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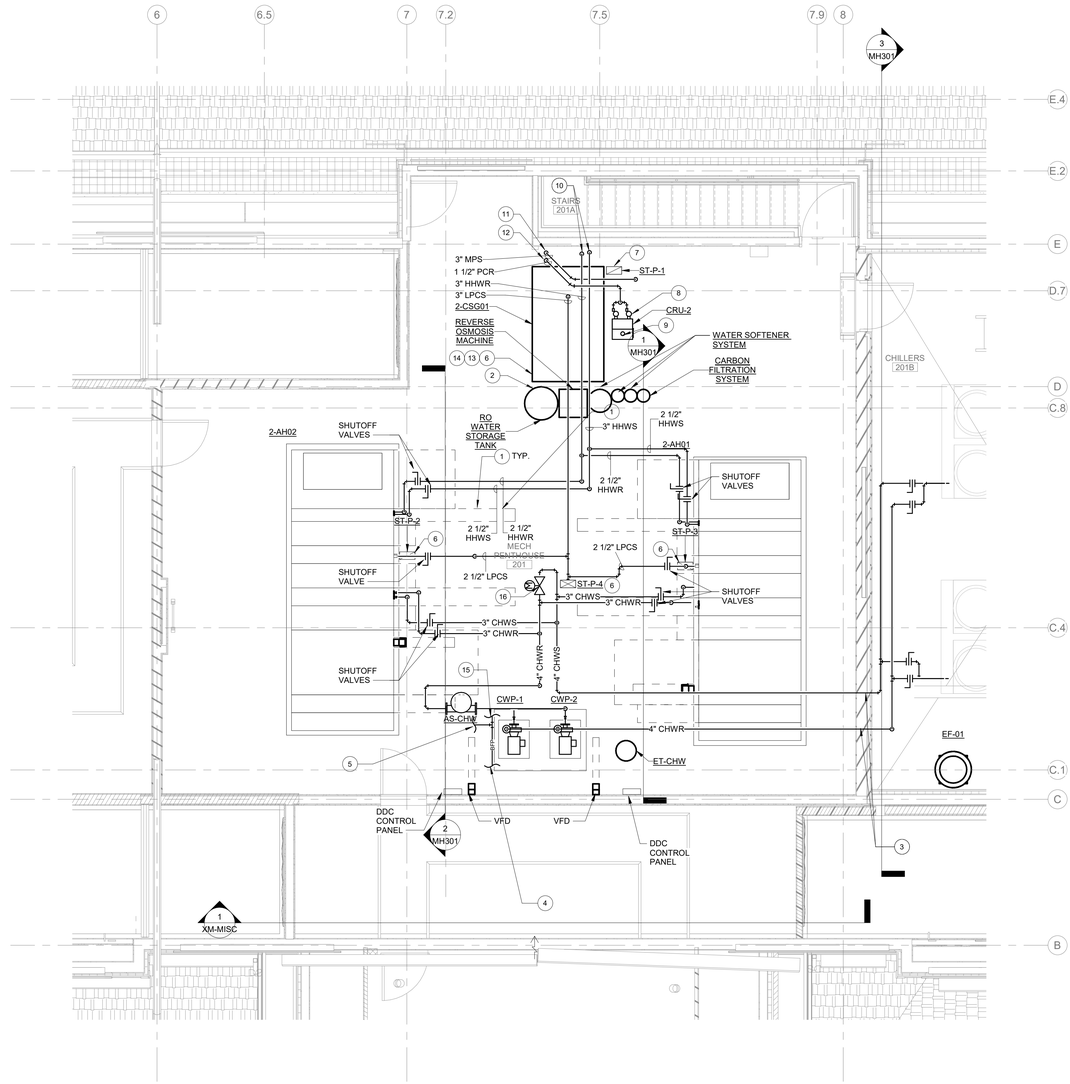

1 ENLARGED PENTHOUSE PLAN - MECHANICAL PIPING

1/4" = 1'-0"

KEYNOTES

1. NECCESARY CLEARENCES FOR AHU.
2. WATER TREATMENT EQUIPMENT FOR CLEAN STEAM GENERATOR, REFER TO SHEET M-002 CSG WATER TREATMENT NOTES FOR MORE INFORMATION.
3. CHWS & CHWR PIPING THROUGH EXTERIOR WALL. SEAL PENETRATION ACCORDING TO DETAIL 4 ON SHEET M-501 AND SPECIFICATIONS.
4. DCW PIPE TO COLD WATER FILL LINE FOR CHILLED WATER SYSTEM.
5. TIE CHILLED WATER SYSTEM COLD WATER FILL LINE BETWEEN THE AIR SEPERATOR AND EXPANSION TANK PER DETAIL 2 ON SHEET M-503.
6. ROUTE CLEAN STEAM CONDENSATE FROM STEAM TRAP THROUGH A DRAIN TEMPERING VALVE AND THEN TO NEAREST FLOOR SINK.
7. ROUTE PLANT SIDE CONDENSATE FROM CLEAN STEAM GENERATOR TO CRU-2.
8. ROUTE CONDENSATE FROM CRU-2 TO CONDESNATE RETURN PIPE IN BASEMENT.
9. ROUTE CONDENSATE RETURN PUMP 1" VENT PIPE TO ROOF.
10. HEATING HOT WATER PIPES TO CEILING OF FLOOR BELOW.
11. MPS TO CEILING OF FLOOR BELOW.
12. PCR TO CEILING OF FLOOR BELOW.
13. COORDINATE CLEAN STEAM GENERATOR MOUNTING HEIGHT SO THAT CONDENSATE LINE FROM STEAM TRAP GRAVITY DRAINS CRU-2.
14. CLEAN STEAM GENERATOR SHALL BE PROVIDED WITH A CLEAN STEAM SIDE CONDENSATE COOLER. ROUTE CLEAN STEAM CONDENSATE FROM THE CLEAN STEAM GENERATOR TO EXISITNG FLOOR DRAIN LOCATED IN BASEMENT.
15. ROUTE WATER TO ALL DRAIN TEMPERING VALVES LOCATED IN PENTHOUSE.
16. MOTORIZED BYPASS VALVE FOR CHILLED WATER SYSTEM.

PARTITION RATING GRAPHICS:

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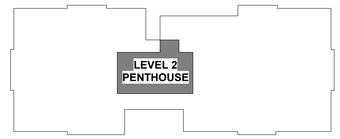
PARTITION RATING GRAPHIC DESIGNATION:	PRIORITY
4 HR FIRE BARRIER	1 HIGHEST
3 HR FIRE BARRIER	2
2 HR FIRE & SMOKE BARRIER	3
2 HR FIRE BARRIER	
2 HR FIRE BARRIER/SHAFT	
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	5 LOWEST
NON RATED	



KEY PLAN

Revisions:	Date:

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STAMP

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: ENLARGED VIEWS - HVAC	Phase: ISSUED FOR CONSTRUCTION	Project Title: NEW COMMUNITY LIVING CENTER	Project Number: 620-334
Approved:			Building Number: CLC
	FULLY SPRINKLERED	Location: 2094 Albany Post Road, Montrose, NY 10548	Drawing Number: MH403
		Issue Date: 05/09/2022 / Checked: CJF/NPS / Drawn: TMR	

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KEYNOTES	
1	NOTED TERMINAL UNIT WATER COIL SHALL BE PIPED WITH A 3-WAY VALVE PER DETAIL 3 ON SHEET M-503.

PARTITION RATING GRAPHICS:

PARTITIONS REQUIRED TO BE SMOKE RESISTANT, FIRE RESISTANT, OR BOTH FIRE AND SMOKE RESISTANT ARE SHOWN GRAPHICALLY ON PLANS WITH HATCH PATTERNS.

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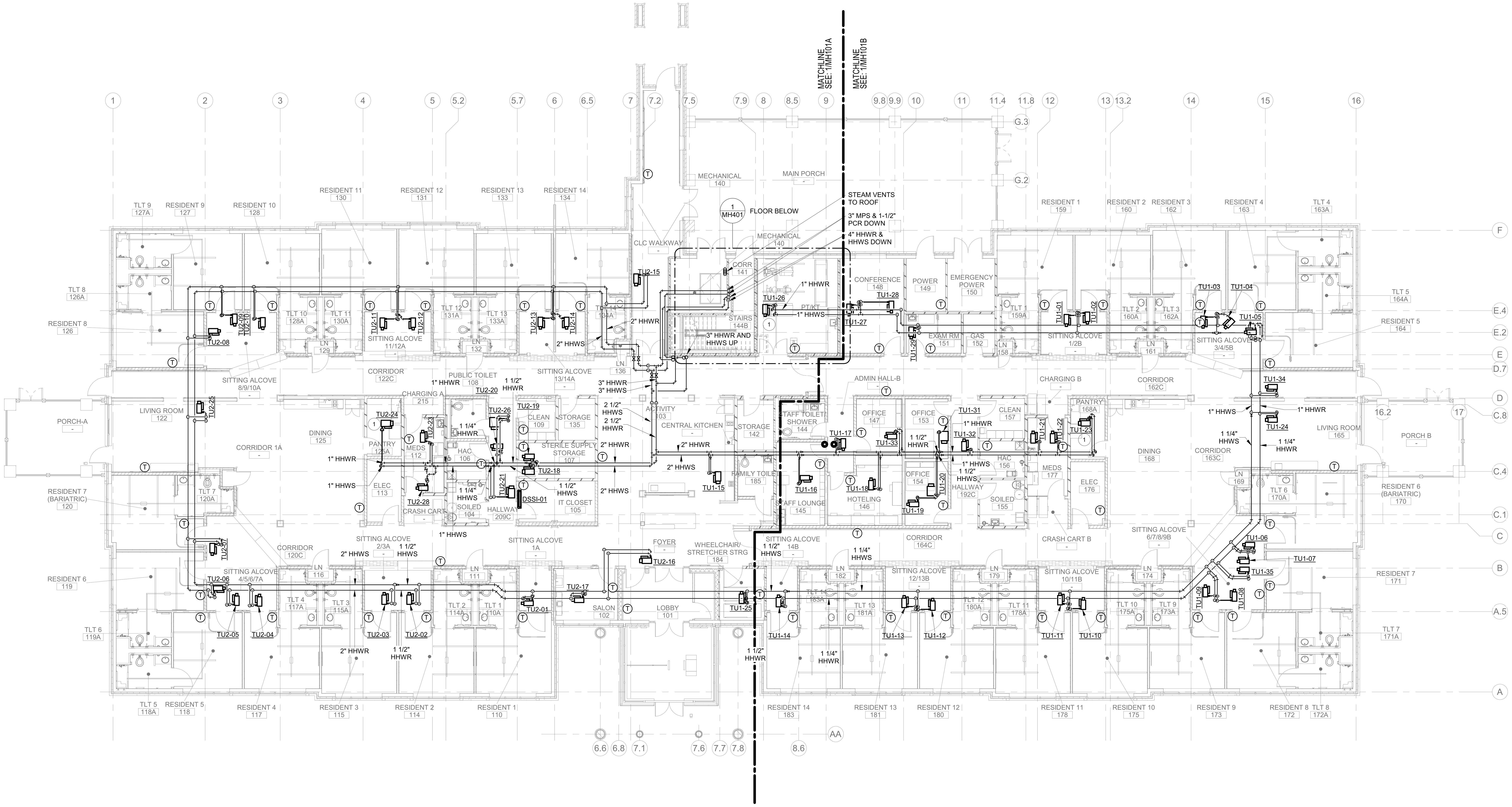
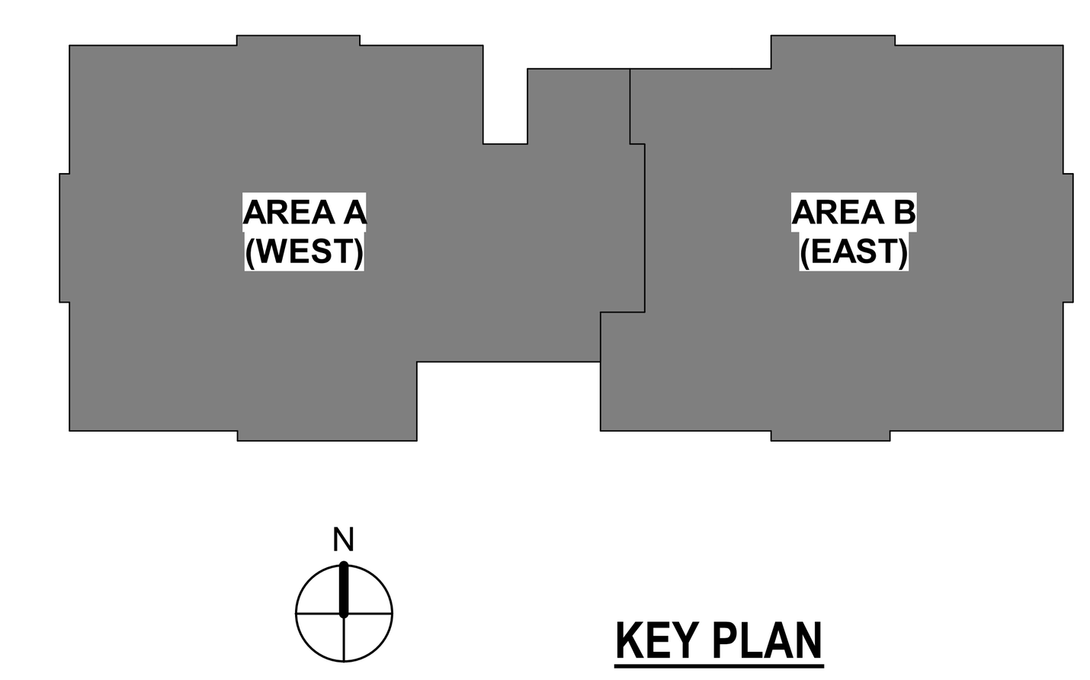
2 HR FIRE BARRIER	3
2 HR FIRE BARRIER/SHAFT	3
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	4
1 HR FIRE BARRIER/SHAFT	4
SMOKE PARTITION (NON RATED)	5 LOWEST
NON RATED	5 LOWEST



1 MECHANICAL OVERALL PIPING PLAN - LEVEL 1
3/32" = 1'-0"



KEY PLAN

Revisions: | Date:

CONSULTANT
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STATE OF NEW YORK · NICHOLAS P. STEPHENSON · LICENSED PROFESSIONAL ENGINEER · 102795
5/09/2022

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL OVERALL PIPING PLAN - LEVEL 1
Approved:
Phase: ISSUED FOR CONSTRUCTION
FULLY SPRINKLERED
Project Title: NEW COMMUNITY LIVING CENTER
Location: 2094 Albany Post Road, Montrose, NY 10548
Issue Date: 05/09/2022 | Checked: NPS | Drawn: NS
Project Number: 620-334
Building Number: CLC
Drawing Number: MP101

KEYNOTES

1 NOTED TERMINAL UNIT WATER COIL SHALL BE PIPED WITH A 3-WAY VALVE PER DETAIL 3 ON SHEET M-503.

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2 HR FIRE BARRIER/SHAFT	
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	5 LOWEST
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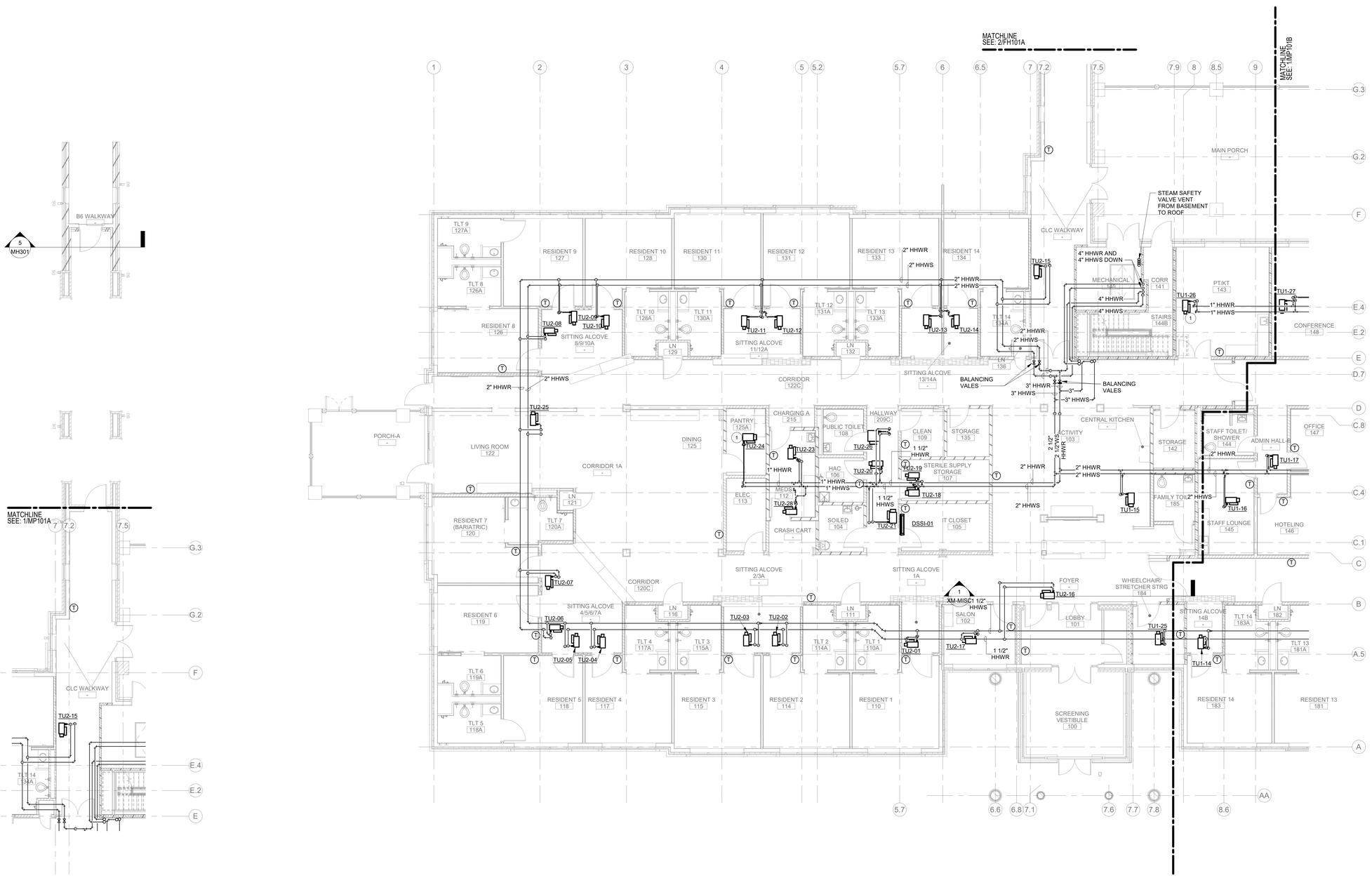
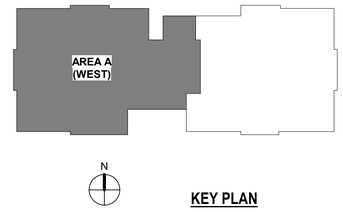


2 MECHANICAL PIPING FLOOR PLANS - LEVEL 1 - COVERED WALKWAY
1/8" = 1'-0"

1 MECHANICAL PIPING FLOOR PLANS - LEVEL 1 - AREA A
1/8" = 1'-0"



KEY PLAN

Revisions:	Date:

CONSULTANT

Landscape Architect	Protective Design Specialist	Structural	MEP
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(520) 622-9565	(212) 967-4890	(717) 481-2991	(813) 289-4700
Josh Orth., PLA	Corrine Tan, SE	Jason Vannoy, SE, PE	Nicholas Stephenson, PE

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STAMP: STATE OF NEW YORK, NICHOLAS P. STEPHENSON, 102795, LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	MECHANICAL PIPING PLAN - LEVEL 1 - AREA A
Approved:	
Phase	ISSUED FOR CONSTRUCTION
	FULLY SPRINKLERED
Project Title	NEW COMMUNITY LIVING CENTER
Location	2094 Albany Post Road, Montrose, NY 10548
Issue Date	05/09/2022
Checked	NPS
Drawn	NS
Project Number	620-334
Building Number	CLC
Drawing Number	MP101A

BIM 360://620-334 New Community Living Center/19577_MEP_VA Montrose CLC_R20.rvt
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VA FORM 08 - 6231

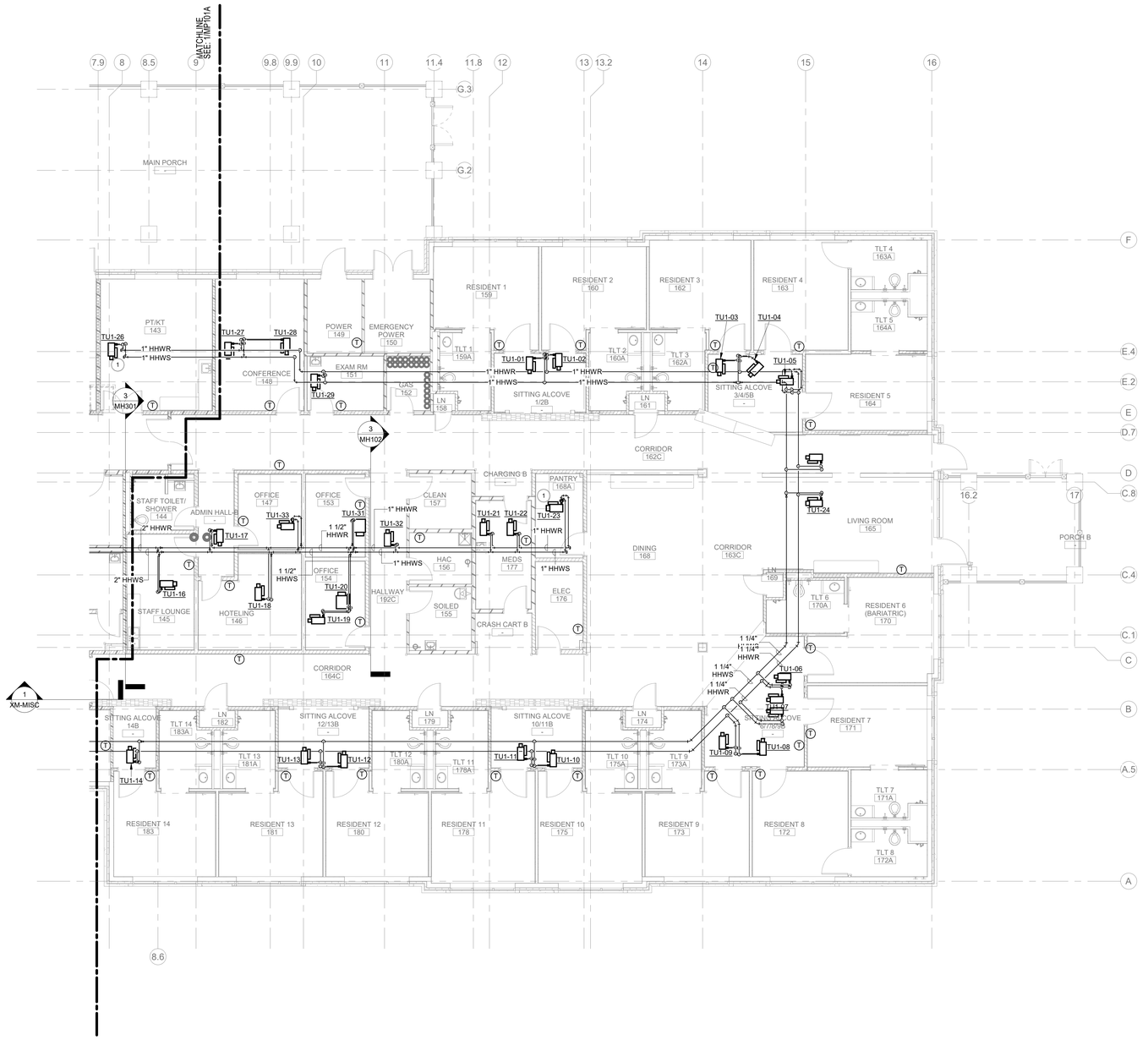
KEYNOTES

1 NOTED TERMINAL UNIT WATER COIL SHALL BE PIPED WITH A 3-WAY VALVE PER DETAIL 3 ON SHEET M-503.

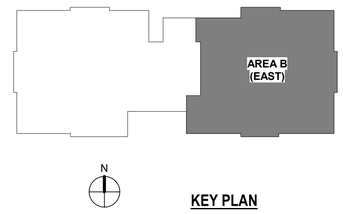
PARTITION RATING GRAPHICS:

PARTITIONS REQUIRED TO BE SMOKE RESISTANT, FIRE RESISTANT, OR BOTH FIRE AND SMOKE RESISTANT ARE SHOWN GRAPHICALLY ON PLANS WITH HATCH PATTERNS.

PARTITION RATING GRAPHIC DESIGNATION:	PRIORITY
4 HR FIRE BARRIER	1 HIGHEST
3 HR FIRE BARRIER	2
2 HR FIRE & SMOKE BARRIER	3
2 HR FIRE BARRIER	
2 HR FIRE BARRIER/SHAFT	
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	
NON RATED	5 LOWEST



1 MECHANICAL PIPING FLOOR PLANS - LEVEL 1 - AREA B
1/8" = 1'-0"



KEY PLAN

Revisions:	Date:

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	MECHANICAL PIPING PLAN - LEVEL 1 - AREA B
Approved:	
Phase	ISSUED FOR CONSTRUCTION
	FULLY SPRINKLERED
Project Title	NEW COMMUNITY LIVING CENTER
Location	2094 Albany Post Road, Montrose, NY 10548
Issue Date	05/09/2022
Checked	NPS
Drawn	NS
Project Number	620-334
Building Number	CLC
Drawing Number	MP101B

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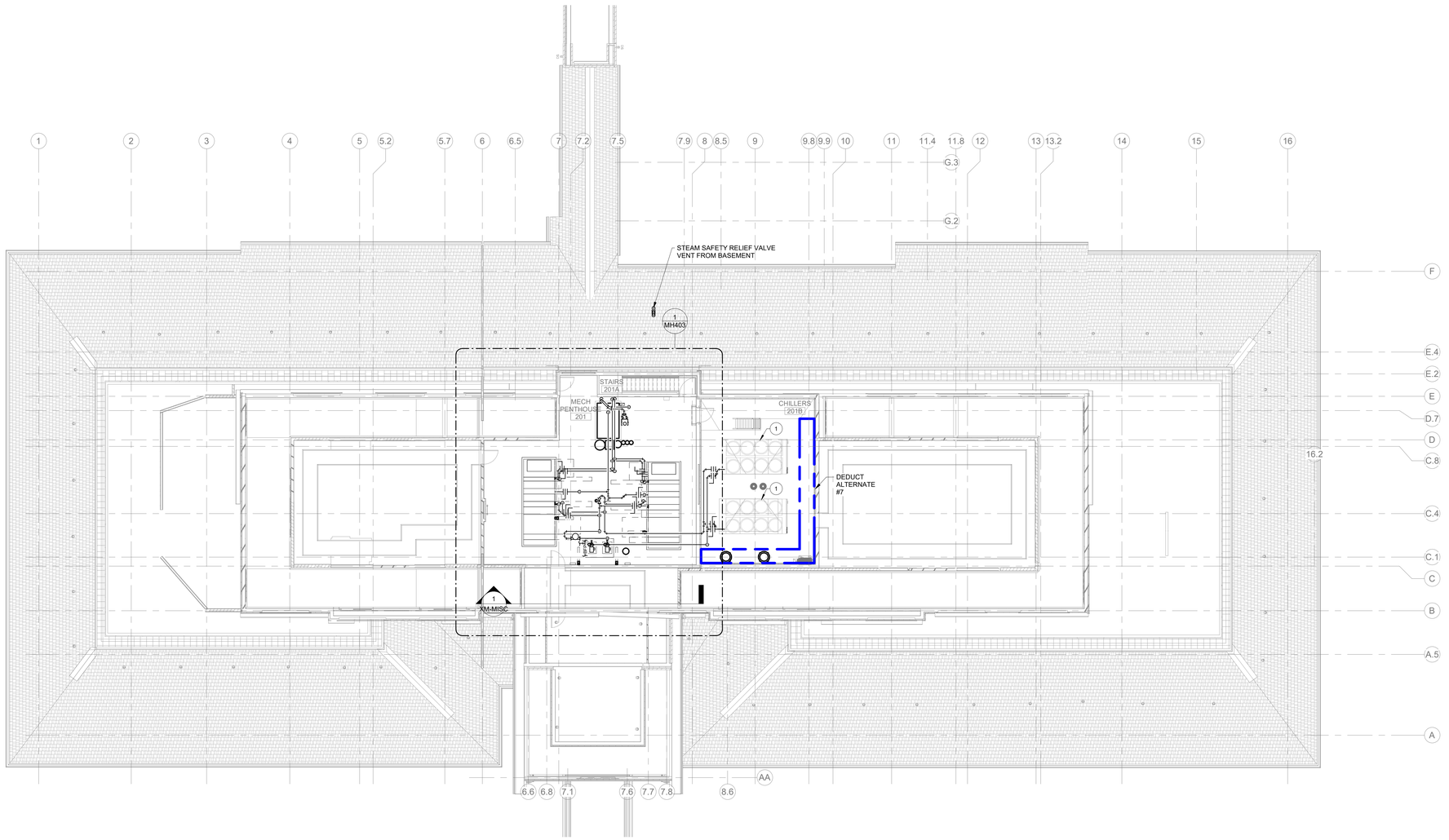

1 MECHANICAL PIPING FLOOR PLAN - MECHANICAL PENTHOUSE
3/32" = 1'-0"

MECHANICAL PIPING LEGEND

——HPS——	HIGH PRESSURE STEAM - 60 PSI
——MPS——	MEDIUM PRESSURE STEAM - 30 PSI
——PC——	PUMPED STEAM CONDENSATE
——HHWS——	HEATING HOT WATER SUPPLY
——HHWR——	HEATING HOT WATER RETURN
——CHWS——	CHILLED WATER SUPPLY
——CHWR——	CHILLED WATER RETURN
——CD——	CONDENSATE DRAIN LINE

GENERAL NOTES

A. ALL SERVICE INTERUPTIONS TO THIS FACILITY MUST BE SCHEDULED AT LEAST 3 WEEKS IN ADVANCE AND BE KEPT TO A MINIMUM. COORDINATE ALL DISRUPTIVE WORK AND OUTAGE REQUIREMENTS WITH THE COR.

B. CONTRACTOR TO FIELD VERIFY ALL CONNECTION POINTS TO EXISTING SYSTEM PIPING AND IDENTIFY ALL RISERS AFFECTED.

C. PROVIDE ACCESS PANELS AS REQUIRED FOR ALL VALVES NOT LOCATED ABOVE LAY-IN CEILING.

KEYNOTES

1 ROUTE DRAIN FROM CHILLER TO ROOF DRAIN.

DEDUCTIVE ALTERNATE NOTES

(DEDUCTIVE ALTERNATES ARE CASCADING AND MUST BE EXCERCISED IN THE ORDER PRESENTED) FOR A DETAILED DESCRIPTION OF EACH DEDUCTIVE ALTERNATE REFR TO COVER SHEET ON GI000

DEDUCTIVE ALTERNATE #7 : REDUCE PLATFORM AT CHILLER

PARTITION RATING GRAPHICS:

PARTITIONS REQUIRED TO BE SMOKE RESISTANT, FIRE RESISTANT, OR BOTH FIRE AND SMOKE RESISTANT ARE SHOWN GRAPHICALLY ON PLANS WITH HATCH PATTERNS.

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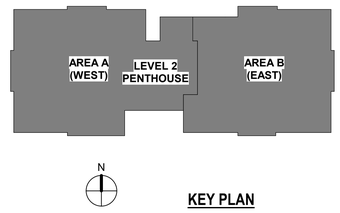
2 HR FIRE BARRIER	
2 HR FIRE BARRIER/SHAFT	
1 HR FIRE & SMOKE BARRIER	4
1 HR FIRE BARRIER	
1 HR FIRE BARRIER/SHAFT	
SMOKE PARTITION (NON RATED)	
NON RATED	5 LOWEST



KEY PLAN

Revisions:	Date:

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STAMP
STATE OF NEW YORK — NICHOLAS P. STEPHENSON — 102193 — LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL PIPING PLAN - PENTHOUSE	Phase: ISSUED FOR CONSTRUCTION	Project Title: NEW COMMUNITY LIVING CENTER	Project Number: 620-334
Approved:	FULLY SPRINKLERED	Location: 2094 Albany Post Road, Montrose, NY 10548	Building Number: CLC
		Issue Date: 05/09/2022 / Checked: NS / Drawn: NS	Drawing Number: MP102

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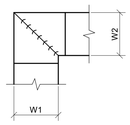
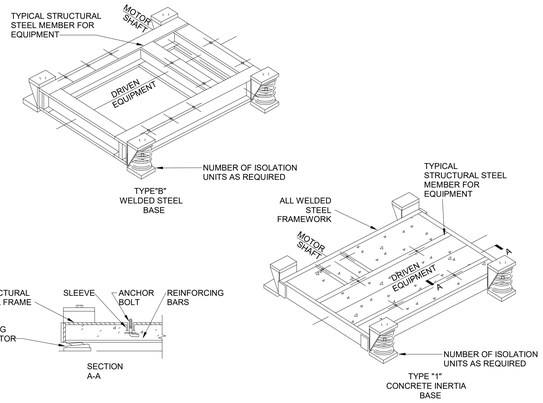


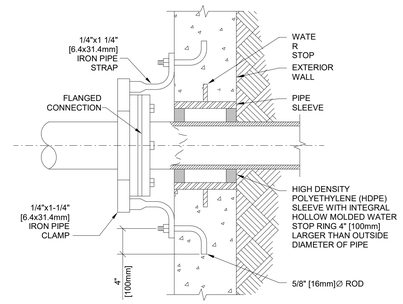
NOTE:

1. ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.
2. WHEN W1 DOES NOT EQUAL W2, VANE SHALL BE SINGLE THICKNESS VANE TYPE REGARDLESS OF W DIMENSION.
3. ALL SINGLE THICKNESS VANES SHALL HAVE A 2" [50mm] RADIUS, 1 1/2" [40mm] MAXIMUM SPACE BETWEEN VANES AND A 3/4" [20mm] TRAILING EDGE.
4. WHEN W1 EQUALS W2 AND W1 IS GREATER THAN 36" [500mm] VANES SHALL BE DOUBLE VANE TYPE.

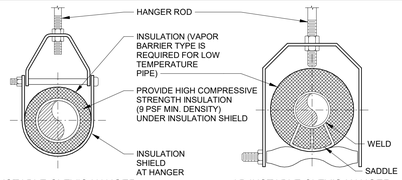
10 DUCTWORK SQUARE VANE ELBOWS
NTS

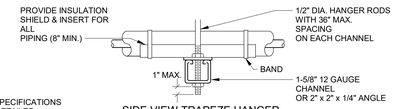


7 VIBRATION ISOLATION BASES
NTS



4 SUPPORT ANCHOR (CHILLED WATER)
NTS

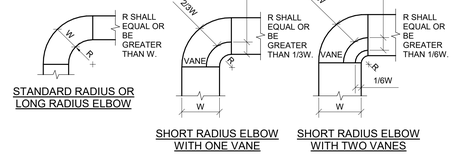




NOTE:
SEE SPECIFICATIONS FOR DETAILED HANGER REQUIREMENTS

MAXIMUM PIPE/TUBING SUPPORT SPACING																	
NOM. SIZE IN.	THRU 3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
PIPE FT.	7	7	7	9	10	11	12	14	16	17	19	22	23	25	27	28	30	32
TUBING FT.	5 FT	6	7	8	8	9	10	12	13	14	16	-	-	-	-	-	-	-
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.																		

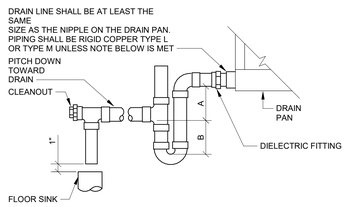
1 PIPE HANGERS DETAIL
NTS



NOTE:

1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
2. ALL STANDARD RADIUS ELBOWS CAN BE SUBSTITUTED WITH SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.

11 DUCTWORK RADIUS ELBOWS
NTS



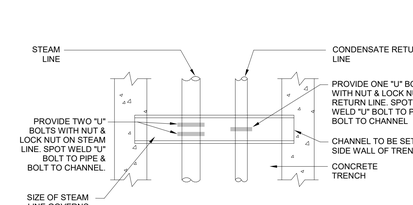
NOTE:

1. CPVC PIPE MAY BE USED ONLY IF APPROVED BY LOCAL VA AND IS INDOORS AND DOES NOT PASS THROUGH RATED BARRIERS.
2. DIELECTRIC FITTING TO BE USED WHEN TWO DISSIMILAR METALS ARE TO BE CONNECTED.

UNIT TYPE	A	B
DRAW THRU	2" [50mm] PLUS X	X
BLOW THRU	1" [25mm] MINIMUM	2X

WHERE X = STATIC PRESSURE IN PAN

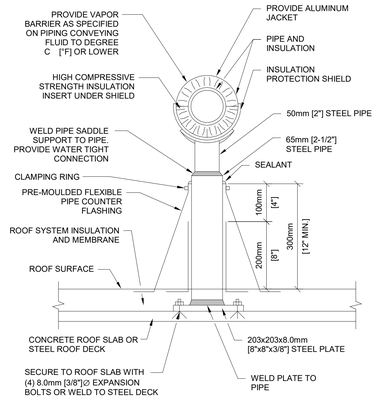
8 AIR HANDLING UNIT DRAIN TRAP DETAIL
NTS



SCHEDULE		
SIZE OF PIPE INCH [mm]	SIZE OF "U" BOLT INCH [mm]	SIZE OF CHANNEL INCH [mm]
1 - 2 [25 - 50]	3/8 [10] DIA.	6 x 10.5 [150x265]
2-1/2 - 5 [65 - 125]	1/2 [15] DIA.	8 x 13.75 [200x345]
6 - 8 [150 - 200]	3/4 [20] DIA.	10 x 20 [250x500]

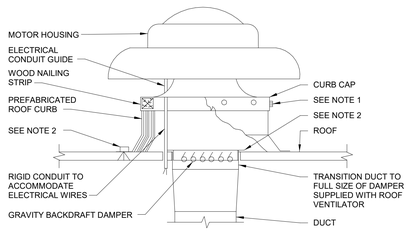
SCHEDULE FOR 8 FT. [2.4m] SPAN OR LESS.

ANCHOR INSTALLATION STEAM/CONDENSATE PIPING IN TRENCH
NTS



NOTES:
PROVIDE RESTRAINING CLAMPS 2438mm [8'-0"] O.C.

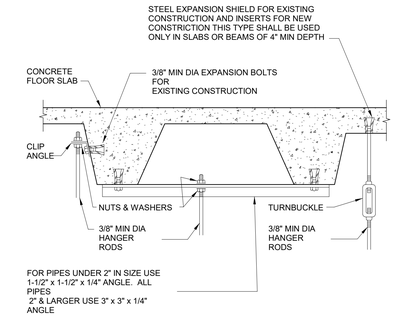
2 DETAIL FOR SUPPORTING PIPE ON ROOF
NTS



NOTE:

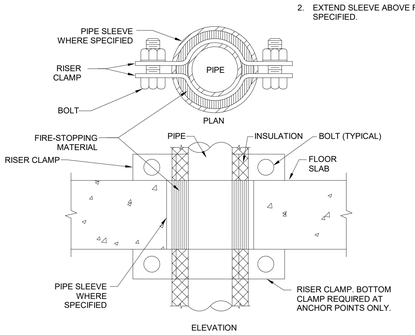
1. SECURE CURB CAP TO WOOD NAILING STRIP WITH 3/8" [10mm] CADMIUM PLATED LAG BOLTS NOT OVER 12" [300mm] ON CENTER.
2. SECURE ROOF CURB, DUCTWORK AND DAMPER TO ROOF WITH EXPANSION BOLTS (CONCRETE ROOF) OR RUST RESISTANT BOLTS (METAL DECK AND BAR JOIST ROOF).
3. RUN ELECTRICAL LINES THROUGH CLEARANCE HOLE PROVIDED IN GRAVITY DAMPER, THEN THROUGH VENTILATOR ELECTRICAL CONDUIT GUIDE.

9 POWER ROOF VENTILATOR
NTS



6 SECURING HANGER RODS IN CONCRETE
NTS

NOTES:
1. PROVIDE ANCHORS ONLY SHERE SHOWN ON DRAWINGS.
2. EXTEND SLEEVE ABOVE FLOOR WHERE SPECIFIED.



3 SUPPORT/ANCHOR FOR PIPE RISERS
NTS

Revisions:	Date:

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5/09/2022

Office of Construction and Facilities Management

U.S. Department of Veterans Affairs

Drawing Title	DETAILS - HVAC
Approved:	
Phase	ISSUED FOR CONSTRUCTION
	FULLY SPRINKLERED
Project Title	NEW COMMUNITY LIVING CENTER
Location	2094 Albany Post Road, Montrose, NY 10548
Issue Date	05/09/2022
Checked	NPS
Drawn	DM
Project Number	620-334
Building Number	CLC
Drawing Number	M-501

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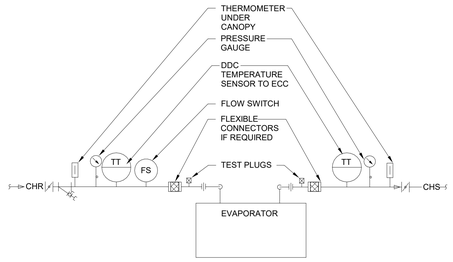
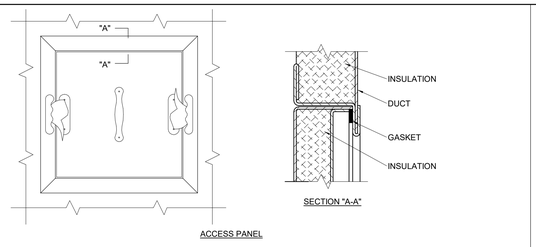
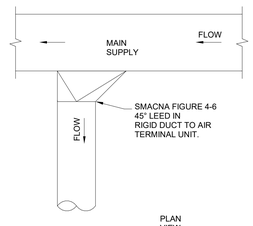


9 AIR COOLED CHILLER - PIPING CONNECTIONS
NTS

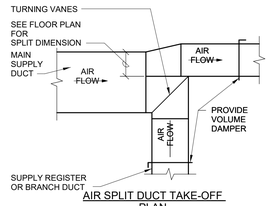


NOTES:
1. LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
2. HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS.
3. SEE SMACNA 2005, FIGURE 9-15
4. USE ACCESS DOORS ON AIR HANDLING UNITS AND DUCTWORK INSTALLED IN EQUIPMENT ROOMS.
5. USE ACCESS PANELS ON ALL EQUIPMENT AND DUCTWORK INSTALLED ABOVE FINISHED CEILINGS.

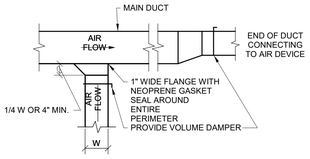
6 ACCESS PANEL AND DOOR DETAIL
NTS



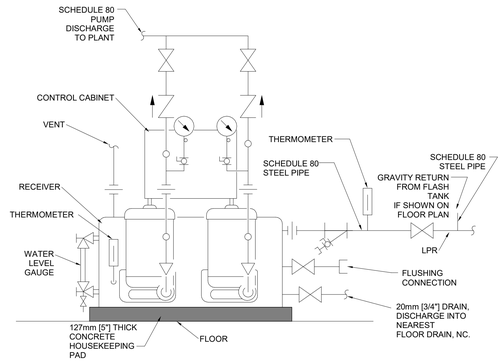
3 ALTERNATE SUPPLY DUCT TAKEOFF - AIR TERMINAL UNITS
NTS



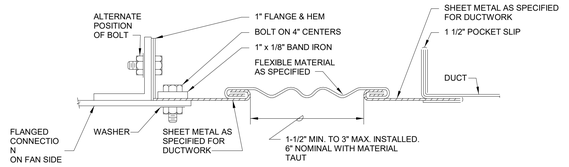
AIR SPLIT DUCT TAKE-OFF
PLAN
VIEW



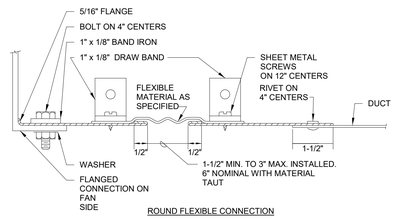
BRANCH DUCT TAKE-OFF PLAN VIEW



10 CONDENSATE PUMPS - PIPING CONNECTIONS
NTS

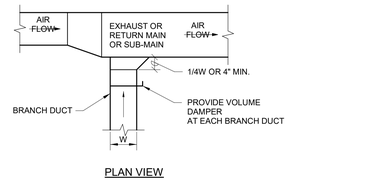


RECTANGULAR FLEXIBLE CONNECTION



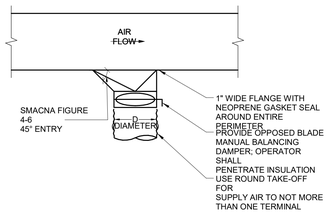
ROUND FLEXIBLE CONNECTION

7 FLEXIBLE DUCT CONNECTIONS
NTS



PLAN VIEW

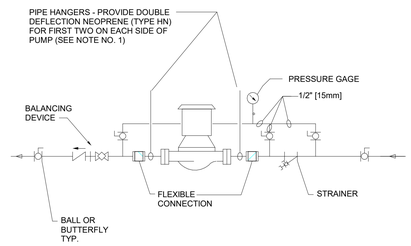
4 EXHAUST OR RETURN BRANCH DUCTWORK
NTS



ROUND BRANCH DUCT TAKE-OFF
PLAN VIEW

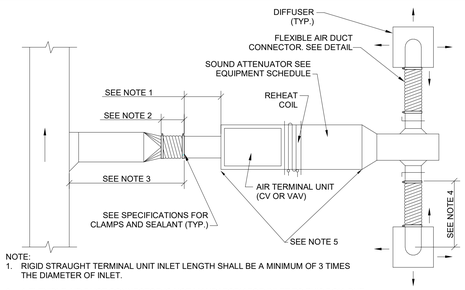
NOTE:
1. WHEREVER THE DEPTH OF THE TRUNK DUCT IS LESS THAN ROUND RUNOUT DUCT DIAMETER, PROVIDE TRANSITION FITTING OF EQUIVALENT AREA TO THE RUNOUT DUCT.

1 DUCT TAKEOFF DETAILS
NTS



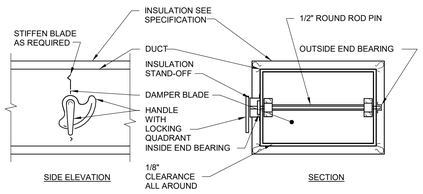
NOTES:
1. SUPPORT PUMP FROM PIPING ONLY. DO NOT SUPPORT PUMP FROM MOTOR.

11 IN-LINE PUMPS - PIPING CONNECTIONS
NTS



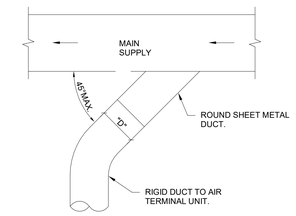
NOTE:
1. RIGID STRAUGHT TERMINAL UNIT INLET LENGTH SHALL BE A MINIMUM OF 3 TIMES THE DIAMETER OF INLET.
2. A FLEXIBLE AIR DUCT CONNECTOR IS NOT MANDATORY FOR INLET TO THIS BOX, BUT ALLOWED TO ACCOMMODATE MINOR OFFSETS. MAXIMUM LENGTH 3'-0" [900mm].
3. A BRANCH DUCT SERVING AN INDIVIDUAL BOX MAY BE THE SAME SIZE AS THE BOX INLET, PROVIDED THE EQUIVALENT LENGTH OF THE BRANCH DUCT, AS SHOWN, DOES NOT EXCEED 10 FEET (3 METERS). FOR LONGER LENGTHS, INCREASE THE DUCT SIZE AND PROVIDE A DUCT TRANSITION TO MAINTAIN THE DUCT STATIC PRESSURE DROP AT OR BELOW 0.2"/100' [1.63Pa/m].
4. FLEXIBLE AIR DUCT CONNECTORS, WHEN USED FROM TERMINAL UNIT SUPPLY AIR DUCT TO DIFFUSER, SHALL NOT EXCEED 5'-0" [1500mm]. USE RIGID ELBOWS FOR CHANGE OF DIRECTION GREATER THAN 45°.
5. COMPONENT ARRANGEMENT MAY VARY BY MANUFACTURER. PROVIDE INSULATION W/ VAPOR BARRIER FOR CONNECTING DUCT SECTIONS.
6. USE OF THE FLEXIBLE AIR DUCT CONNECTORS ARE NOT PERMITTED FOR THE DEDICATED AHU SERVING THE SURGICAL SUITE.

8 DUCT CONNECTIONS - AIR TERMINAL UNITS
NTS



NOTE:
1. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

5 VOLUME DAMPER DETAIL
NTS



PLAN
VIEW

2 SUPPLY DUCT TAKEOFF - AIR TERMINAL UNIT
NTS

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STATE OF NEW YORK — NICHOLAS P. STEPHENSON — 102795 — LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title DETAILS - HVAC	**Phase** ISSUED FOR CONSTRUCTION
Approved:	FULLY SPRINKLERED

Project Title NEW COMMUNITY LIVING CENTER	**Project Number** 620-334
	Building Number CLC
Location 2094 Albany Post Road, Montrose, NY 10548	**Drawing Number** M-502
Issue Date 05/09/2022	**Checked** NPS / **Drawn** DM

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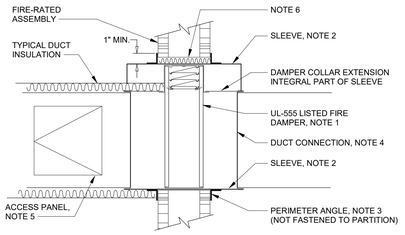
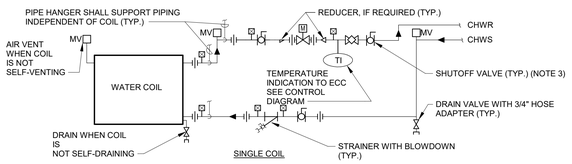


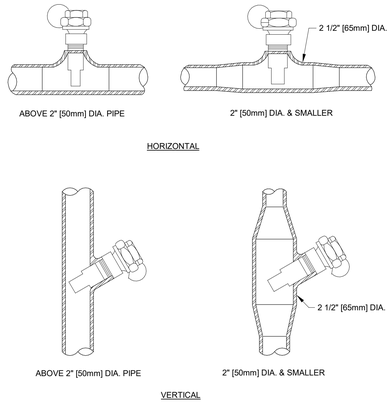
NOTES:
1. A VERTICAL DAMPER IS SHOWN. HORIZONTAL DAMPER INSTALLATION IS SIMILAR. FOLLOW DAMPER MANUFACTURER'S INSTRUCTIONS, INCLUDING FASTENER OPTIONS AND GAGES FOR SLEEVE AND PERIMETER ANGLES. FIRE DAMPERS MUST BE INSTALLED IN THE PARTITION OR FLOOR, NOT OUTSIDE THE PARTITION. FIRE DAMPER RATING SHALL BE 3-HOUR FOR PENETRATIONS OF 3-HOUR OR GREATER RATED ASSEMBLIES, AND 1.5-HOUR FOR PENETRATIONS OF LESS THAN 3-HOUR RATED ASSEMBLIES.
2. GALVANIZED SLEEVE: GAGE NOT LESS THAN CONNECTING DUCT OR DAMPER FRAME, AS ALLOWED BY UL-555. FASTEN SLEEVE TO DAMPER FRAME AND TO PERIMETER ANGLES.
3. PERIMETER ANGLES: GALVANIZED STEEL, NOT LESS THAN 1-1/2" x 1-1/2", 14 GAGE, TO PROVIDE 1 INCH MINIMUM OVERLAP OF OPENING ON ALL 4 SIDES.
4. CONNECT DUCT TO SLEEVE OR FIRE DAMPER WITH BREAKAWAY DUCT CONNECTION.
5. ACCESS PANELS: SIZE AND LOCATION TO PERMIT SERVICING THE FUSIBLE LINK OR LINKS.
6. PROVIDE 1/2" INCH CLEARANCE ON HEIGHT AND WIDTH. FILL OPEN SPACE WITH ROCK WOOL FIRESTOP FIBER.

12 FIRE DAMPER DETAIL
NTS

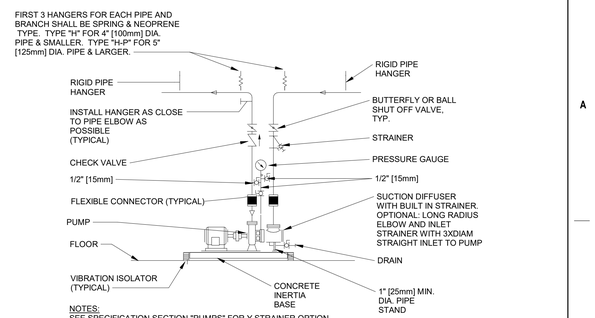


NOTES:
1. WHEN COIL IS INCLUDED IN CASING MOUNTED ON VIBRATION ISOLATORS THE FIRST 2 HANGERS FOR EACH PIPE SHALL BE SPRING & NEOPRENE TYPE; TYPE "H" FOR 4"ø PIPE & SMALLER; TYPE "H-P" FOR 5"ø PIPE & LARGER.
2. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS; NEITHER SHALL IT BLOCK THE SERVICING OF FILTERS, VALES, OR EQUIPMENT.
3. PROVIDE BALL VALVES FOR 2" AND SMALLER PIPES, AND BUTTERFLY VALVES FOR 2-1/2" AND LARGER PIPES

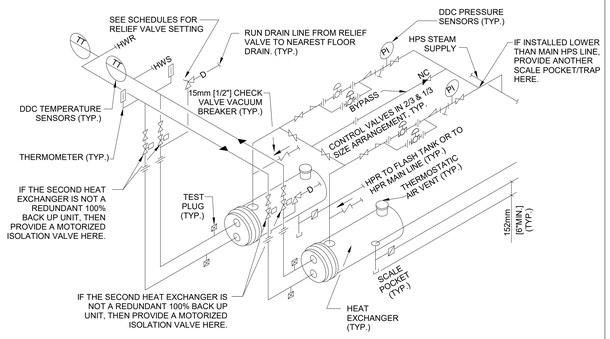
7 AIR HANDLING UNIT COILS - PIPING CONNECTIONS
NTS



4 INSTALLATION OF THERMOMETER WELLS
NTS

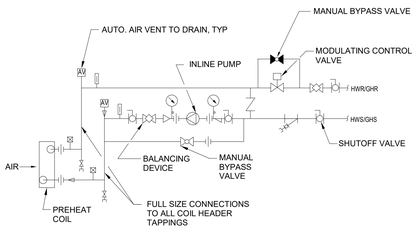


1 SINGLE SUCTION FLOOR-MOUNTED PUMPS - CONNECTIONS WITH FLEXIBLE CONNECTORS
NTS



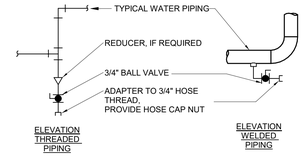
NOTES:
1. THE ABOVE DETAIL SHOWS REQUIRED PIPING FOR TWO HEAT EXCHANGERS IN PARALLEL. INDICATE IF 100% REDUNDANT OR NOT.
2. PROVIDE SADDLE SUPPORTS AND LEGS OR HANGERS FOR HEAT EXCHANGER. MOUNTING HEIGHT SHALL BE ADJUSTED TO FACILITATE GRAVITY RETURN OF STEAM CONDENSATE.
3. MAKE THE BYPASS THE SAME SIZE AS THE CONNECTIONS TO THE CONTROL VALVES.
4. CONTROL VALVES SHALL BE 1/3 AND 2/3 SIZE ARRANGEMENT.

11 HEAT EXCHANGER - STEAM TO HOT WATER
NTS



NOTE:
1. SIZE AND SELECT COIL FOR PARALLEL FLOW AND MINIMUM TUBE WATER VELOCITY OF 0.91 M/S [3.0 FPS].

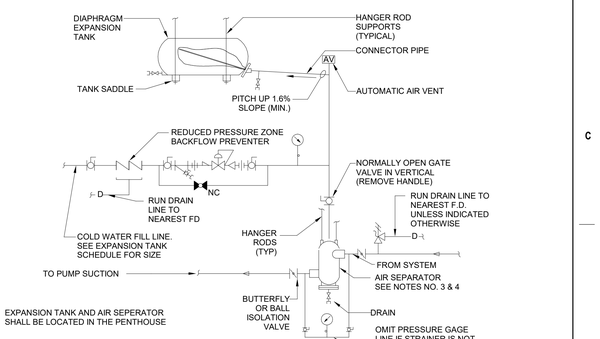
8 PREHEAT COIL (HOT WATER) - PIPING CONNECTIONS
NTS



TYPICAL CHILLED AND HOT WATER PIPING DRAIN VALVE CONNECTIONS

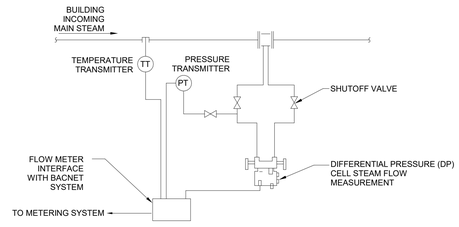
NOTES:
1. DRAIN ALL LOW POINTS AS INDICATED ABOVE.
2. WHERE SCALE POCKETS ARE SHOWN ON PIPE RISER DIAGRAMS AND/OR PLANS LOCATE DRAIN AT BOTTOM OF SCALE POCKET.

5 DRAIN VALVE CONNECTIONS DETAIL
NTS



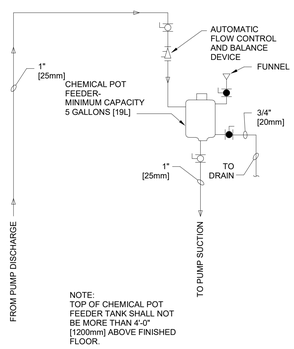
NOTES:
1. SEE EXPANSION TANK SYSTEM SCHEDULE FOR COMPONENT SIZES.
2. RELIEF VALVE FOR CHILLED WATER SYSTEM IS SHOWN. OMIT WHEN RELIEF VALVE IS SHOWN ON HEAT EXCHANGER DETAIL & SYSTEM IS USED ONLY FOR HOT WATER HEATING.
3. PROVIDE STRAINER IN AIR SEPARATOR WHEN INDICATED IN EXPANSION TANK SCHEDULE.
4. FOR HOT WATER SYSTEM 50mm [2"] AND SMALLER AND CHILLED WATER SYSTEMS USE IN-LINE AIR PURGER IN LIEU OF AIR SEPARATOR.
5. SET PRESSURE REDUCING VALVE SO PRESSURE AT HIGHEST POINT IN SYSTEM HAS A MINIMUM OF 28kPa. [4 PSIG]

2 HORIZONTAL EXPANSION TANK - PIPING CONNECTIONS
NTS



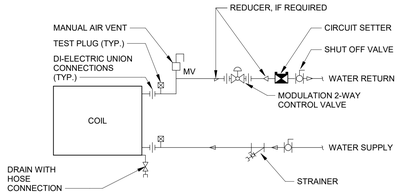
NOTE:
1. MAINTAIN UPSTREAM AND DOWN STREAM DISTANCES RECOMMENDED BY METER MANUFACTURERS.
2. BASIS OF DEISGN SPIRAX.

12 STEAM METER DETAIL
NTS



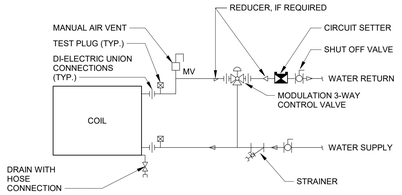
NOTE:
TOP OF CHEMICAL POT FEEDER TANK SHALL NOT BE MORE THAN 4'-0" [1200mm] ABOVE FINISHED FLOOR.

9 WATER TREATMENT - CLOSED SYSTEMS
NTS



NOTE:
TERMINAL UNITS SHALL BE PROVIDED WIT 2 WAY VALVES PER THIS DETAIL UNLESS NOTED OTHERWISE

6 TERMINAL UNIT WATER COILS - PIPING CONNECTIONS - 2 WAY VALVE
NTS



NOTE:
NOTED TERMINAL UNITS SHALL BE PROVIDED WIT 3 WAY VALVES PER THIS DETAIL

3 TERMINAL UNIT WATER COILS - PIPING CONNECTIONS - 3 WAY VALVE
NTS

Revisions:	Date:

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5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: DETAILS - HVAC	Phase: ISSUED FOR CONSTRUCTION	Project Title: NEW COMMUNITY LIVING CENTER	Project Number: 620-334
Approved:			Building Number: CLC
	FULLY SPRINKLERED	Location: 2094 Albany Post Road, Montrose, NY 10548	Drawing Number: M-503
		Issue Date: 05/09/2022 / Checked: NPS / Drawn: DM	

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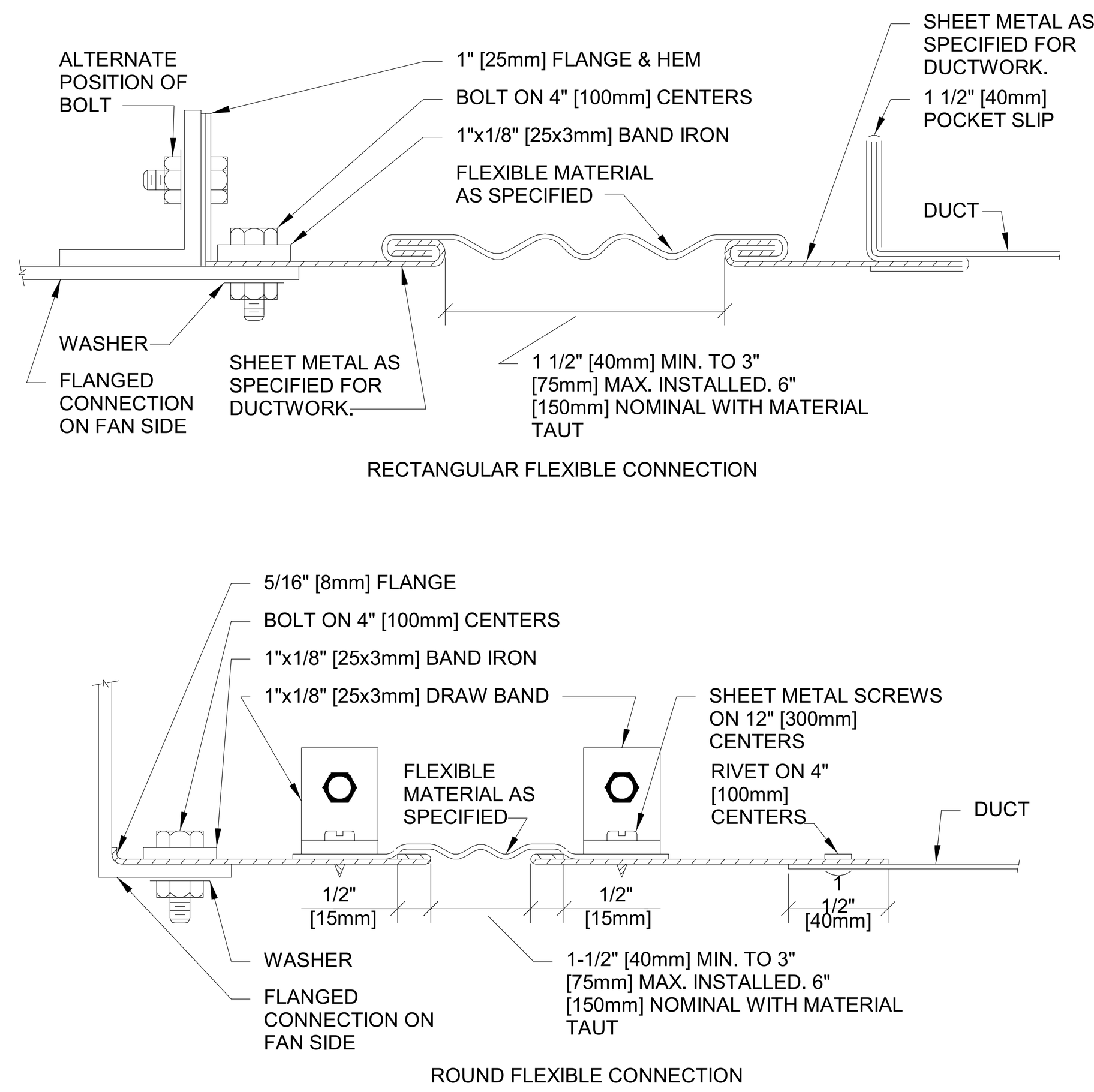
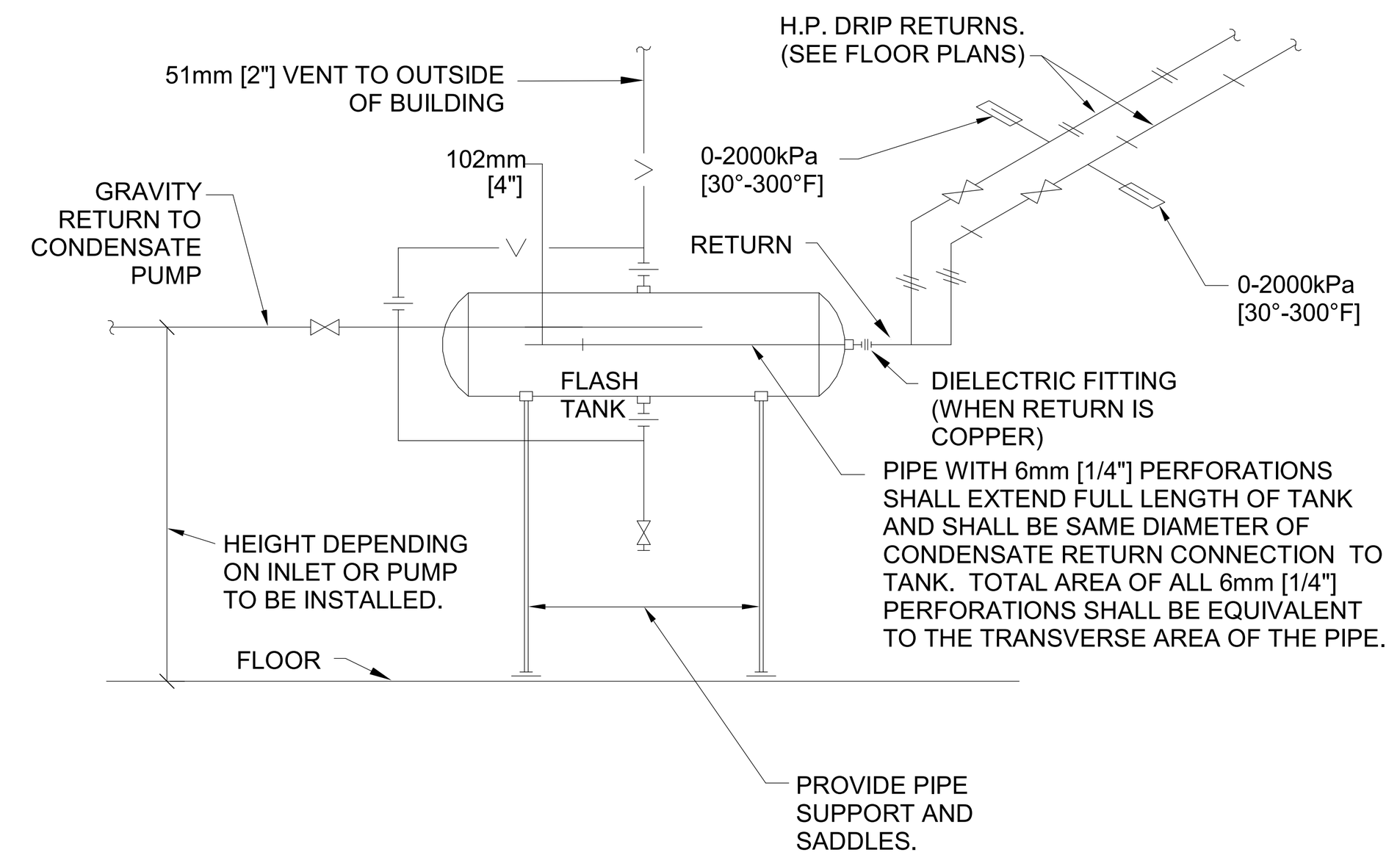
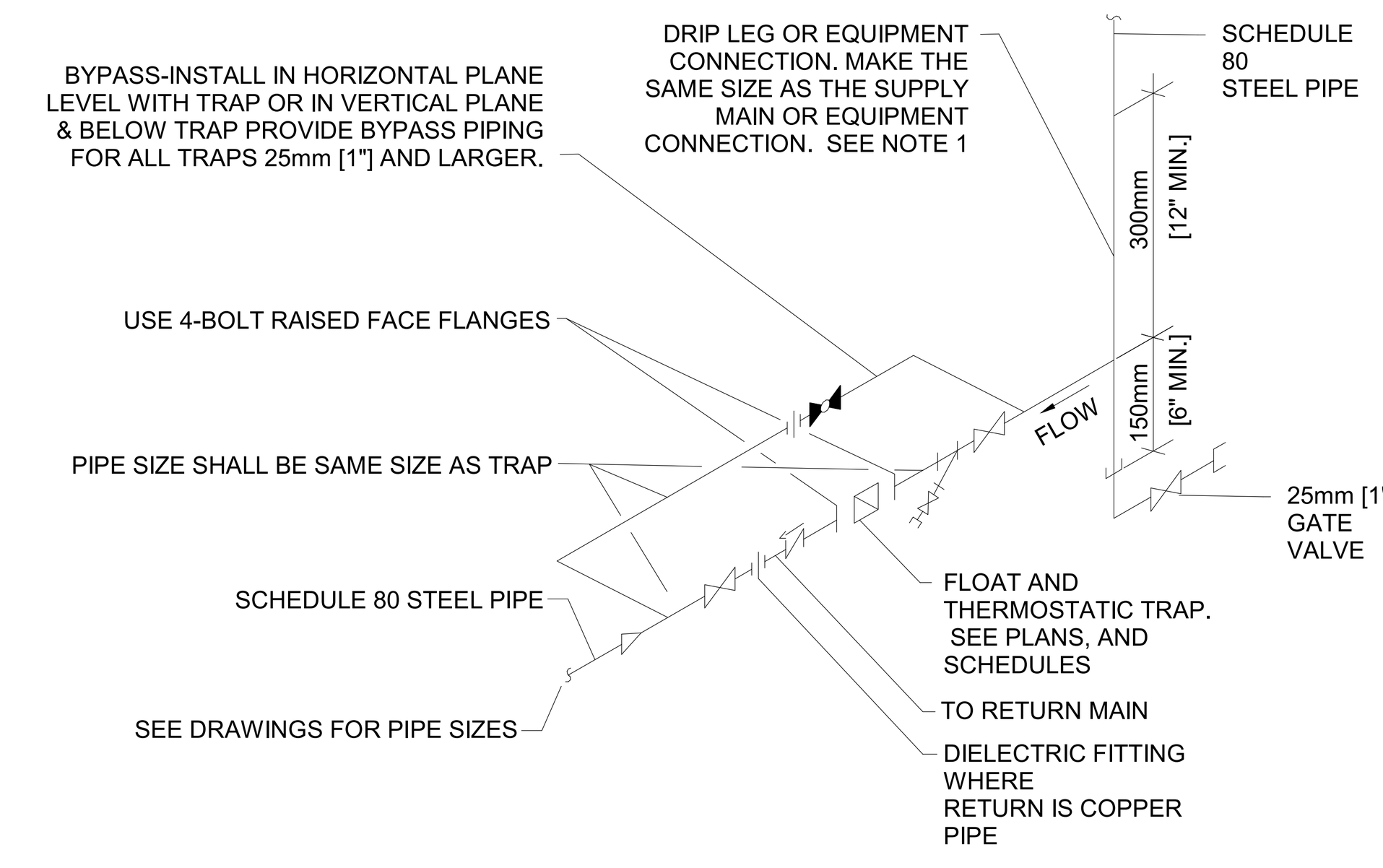


9 FLEXIBLE DUCT CONNECTIONS
NTS



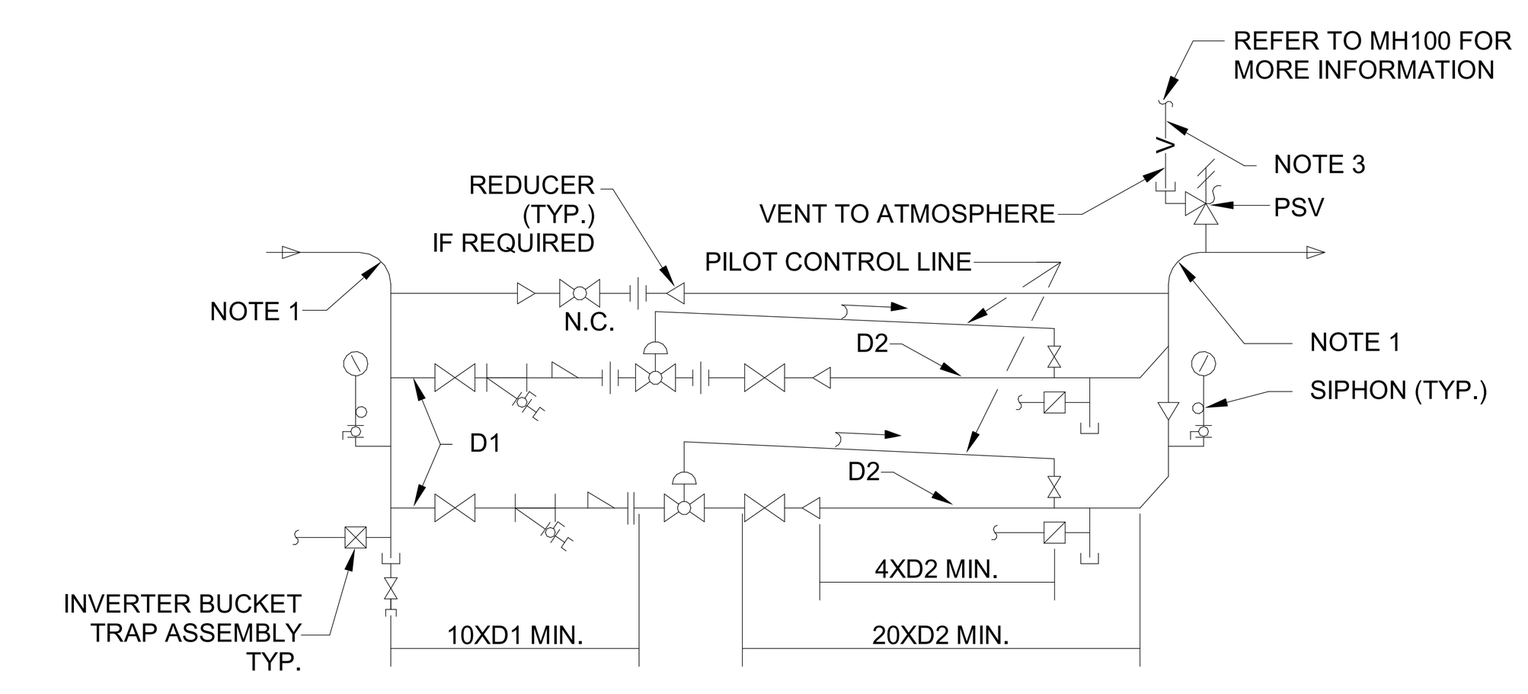
NOTE:
REFER TO SHEET M002 FOR MORE INFORMATION.

7 TYPICAL CONNECTIONS TO FLASH TANK
NTS



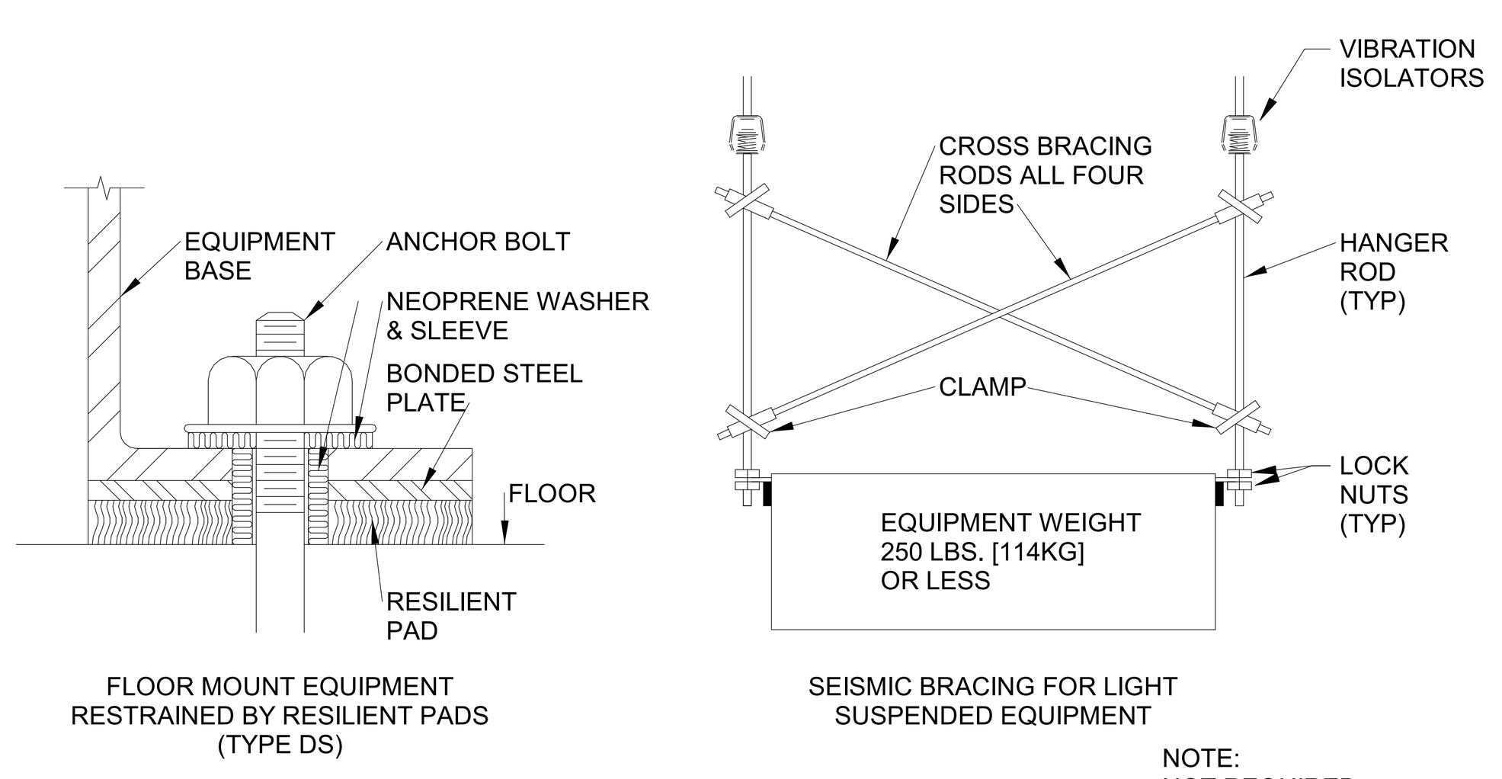
NOTE:
ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 300mm [12"] MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 150mm [6"] SCALE POCKET BELOW TRAP INLET.

4 FLOAT AND THERMOSTATIC STEAM TRAP ASSEMBLY
NTS



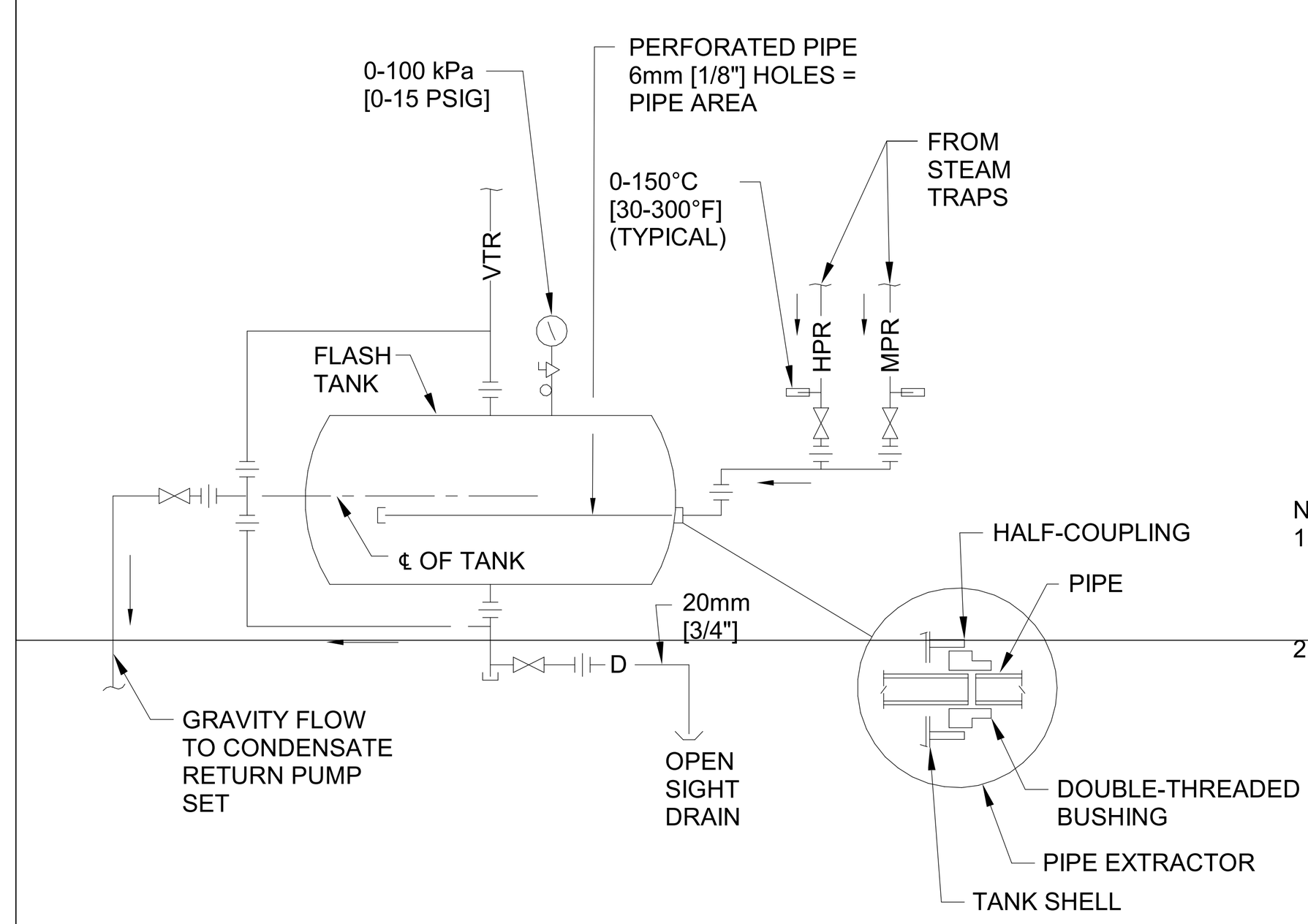
NOTES:
1. SEE FLOOR PLANS FOR PIPE SIZES.
2. SEE EQUIPMENT SCHEDULES FOR VALVE DATA AND PIPE SIZES D1 AND D2. INSTALL VALVES AS RECOMMENDED BY MANUFACTURER.
3. MAKE BYPASS VALVE DISCHARGE PIPE THE SAME SIZE AS D2 FOR THE LARGEST PRV.
4. PROVIDE NECESSARY UNIONS FOR THE REMOVAL OF VALVE WITH SCREWED CONNECTIONS.
5. SLOPE PILOT CONTROL LINE FROM PRESSURE REDUCING VALVE TO DOWN STREAM STEAM PIPING. MINIMUM SLOPE SHALL BE 25'/100', 25mm/300mm [1"/12"]

1 STEAM PRESSURE REDUCING STATION - DOUBLE VALVE (1/3 AND 2/3)
NTS



NOTE:
NOT REQUIRED FOR AIR TERMINAL UNITS.

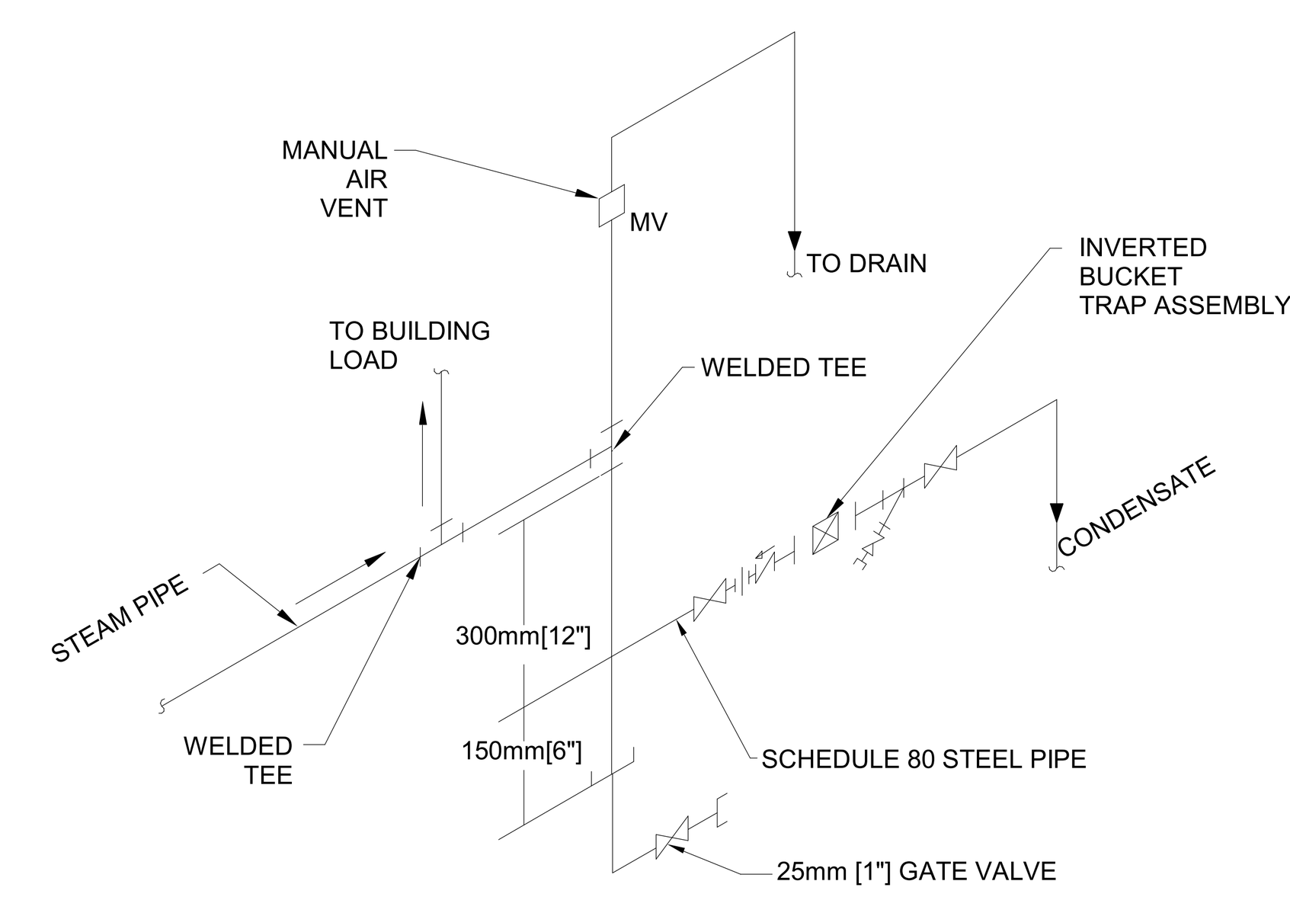
10 SEISMIC BRACING FOR EQUIPMENT
NTS



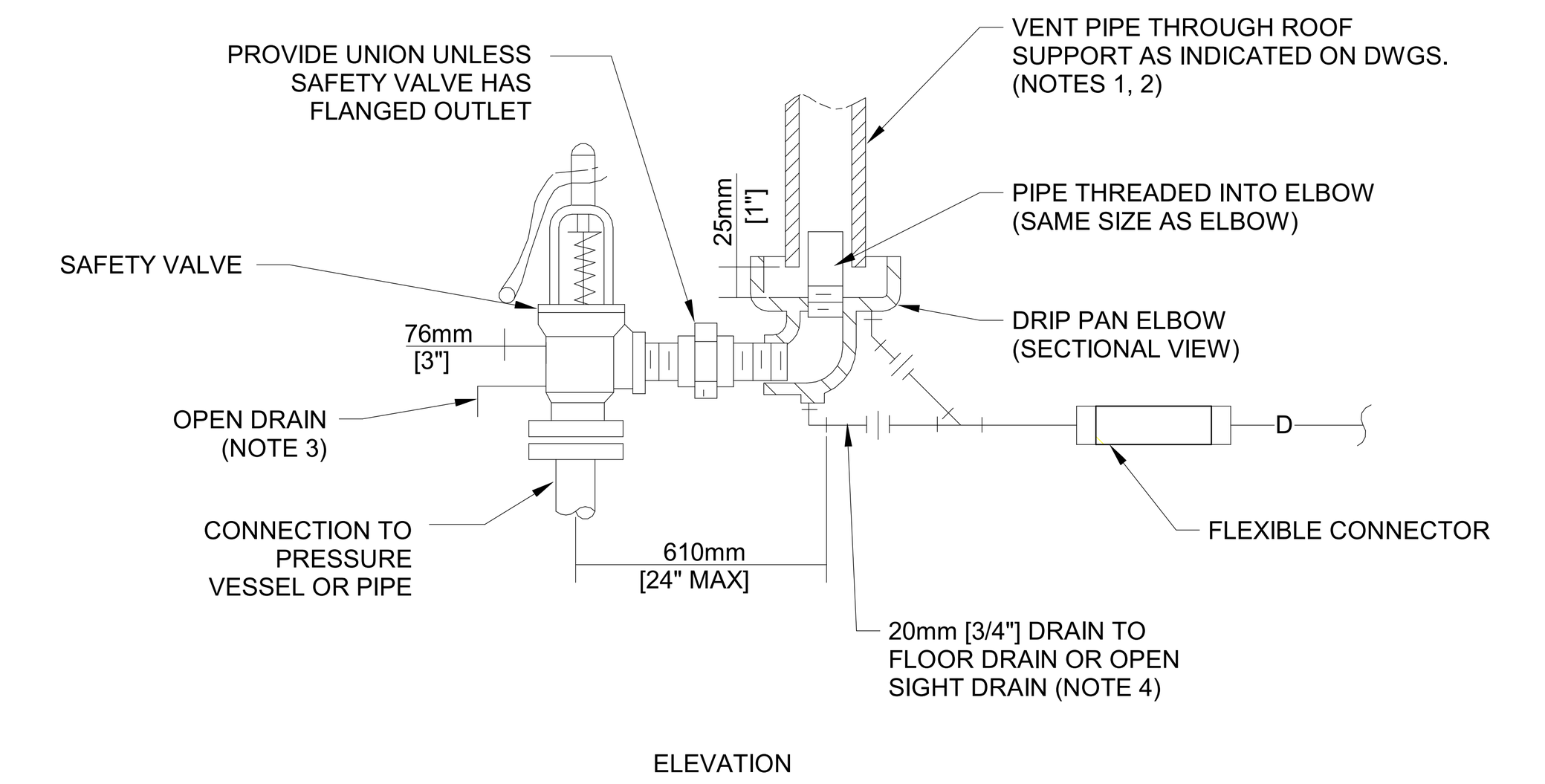
STEAM PRESSURE kPa [PSIG]	TANK AREA SQ. M [SQ. FT.]
NOTE 1	NOTE 2
1034 [150]	0.35 [3.71]
862 [125]	0.32 [3.40]
758 [110]	0.29 [3.15]
689 [110]	0.28 [3.00]
414 [60]	0.21 [2.23]
207 [30]	0.13 [1.34]

NOTES:
1. PRESSURE UPSTREAM OF STEAM TRAPS ON HPR AND MPR LINES.
2. LENGTH x DIAMETER AT CENTER OF TANK PER 1,000 LBS/HR OF CONDENSATE. TANK AT ATMOSPHERIC PRESSURE.

8 FLASH TANK
NTS

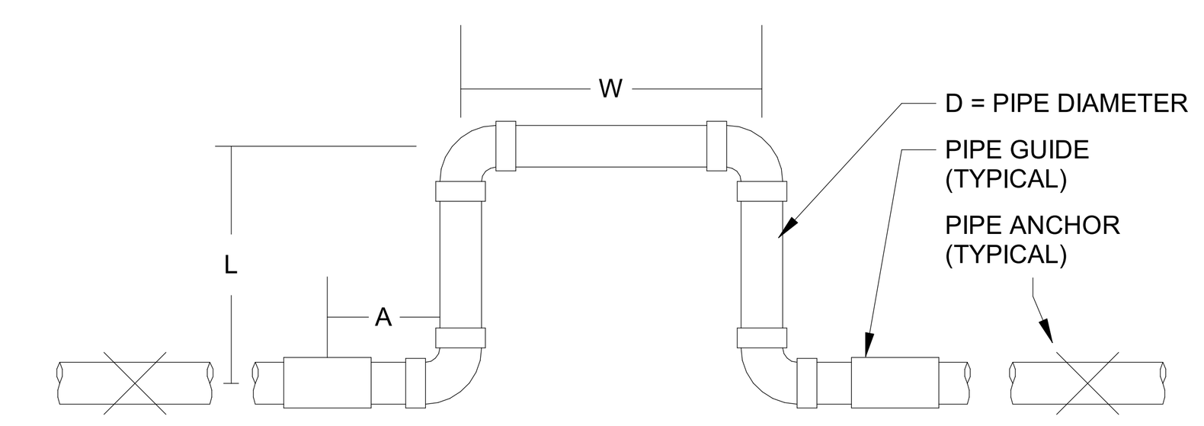


5 END OF STEAM LINE DRIP TRAP
NTS



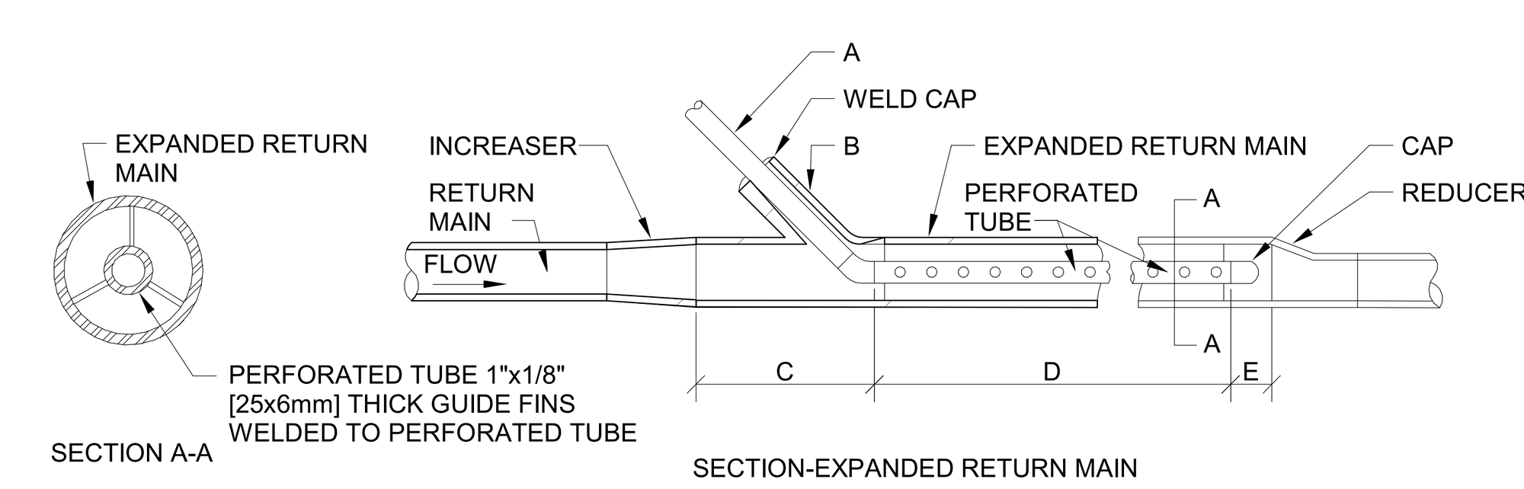
NOTES:
1. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, SIZE THE VENT PIPE SO THAT STEAM IS NOT BLOWN OUT AT THE VENT PIPE ENTRANCE. UTILIZE THE CALCULATION METHOD CONTAINED IN ANSI B31.1. POWER PIPING CODE, APPENDIX II.
2. VENT PIPE SHALL TERMINATE 1829mm [6'] MIN. ABOVE FINISHED ROOF.
3. DISCHARGE OF DRAIN SHALL BE DIRECTED AWAY FROM PLATFORMS OR OTHER AREAS WHICH PERSONNEL MAY OCCUPY.
4. NO OTHER DRAIN SHALL BE CONNECTED TO THE DRIP PAN ELBOW DRAIN PIPE.

2 STEAM SAFETY VALVE
NTS



STEAM - EXPANSION LOOP SCHEDULE				
SERVICE	MAX. TEMP.	D	W	L
STEAM	250-320°F	10",12"	8'-0"	10'-0"
STEAM	250-400°F	6",8"	6'-0"	12'-0"
STEAM	250-320°F	4"	5'-0"	10'-0"
STEAM	250-320°F	2-1/2",3"	4'-0"	8'-0"
STEAM	250-320°F	1-1/2",2"	3'-0"	6'-0"
STEAM	250-320°F	<1-1/4"	2'-6"	5'-0"
HOT WATER - EXPANSION LOOP SCHEDULE				
SERVICE	MAX. TEMP.	D	W	L
HOT WATER	160-200°F	6",8"	5'-0"	10'-0"
HOT WATER	160-200°F	4",5"	6'-0"	12'-0"
HOT WATER	160-200°F	2-1/2",3"	5'-0'	10'-0"
HOT WATER	160-200°F	1-1/2",2"	4'-0"	8'-0"
HOT WATER	160-200°F	<1-1/4"	3'-0"	6'-0"

11 EXPANSION LOOP AND SCHEDULE
NTS

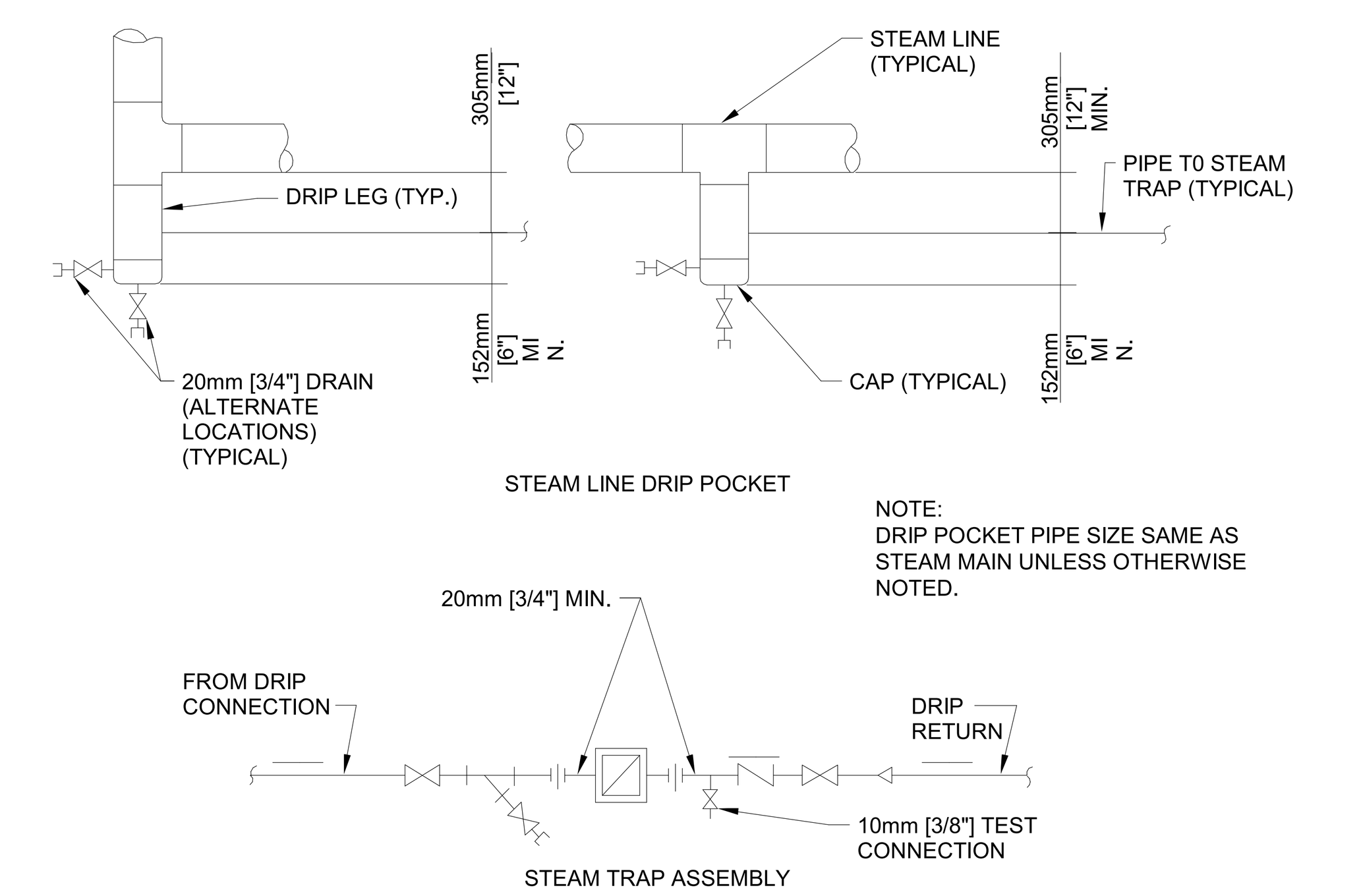


A	SIZE, TRAP DISCHARGE LINE	15mm [1/2"]	20mm [3/4"]
B	SIZE, 45° WELDING NIPPLE	25mm [1"]	32mm [1-1/4"]
C	LENGTH OF EXPANDED MAIN AHEAD OF TRAP DISCHARGE PIPE	175mm [7"]	175mm [7"]
D	LENGTH OF PERFORATED PIPE	415mm [16-1/2"]	415mm [16-1/2"]
E	LENGTH OF EXPANDED MAIN FOLLOWING PERFORATED PIPE	50mm [2"]	50mm [2"]

RETURN MAIN SIZE	UP TO 40mm [1-1/2"]	50mm [2"]	75mm [3"] & OVER
EXPANDED RETURN MAIN SIZE		65mm [2-1/2"]	SAME SIZE

NOTES:
1. 15mm [1/2"] PERFORATED TUBE SHALL HAVE 40 - 16mm [1/8"] DIAMETER HOLES SPACED 40mm [1-1/2"] O.C. IN 4 ROWS.
2. 20mm [3/4"] PERFORATED TUBE SHALL HAVE 78 - 6mm [1/2"] DIAMETER HOLES SPACED 40mm [1-1/2"] O.C. IN 6 ROWS.
3. HOLES IN TUBE SHALL BE SPACED EQUALLY AROUND PERIMETER.

6 HIGH PRESSURE STEAM TRAP DISCHARGE INTO PUMPED CONDENSATE RETURN LINE
NTS



NOTE:
DRIP POCKET PIPE SIZE SAME AS STEAM MAIN UNLESS OTHERWISE NOTED.

3 STEAM LINE DRIP POCKET AND STEAM TRAP ASSEMBLY
NTS

Revisions: | Date:

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5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: DETAILS - HVAC

Approved:

Phase: ISSUED FOR CONSTRUCTION

FULLY SPRINKLERED

Project Title: NEW COMMUNITY LIVING CENTER

Location: 2094 Albany Post Road, Montrose, NY 10548

Issue Date: 05/09/2022 | Checked: CJF/NPS | Drawn: DM/NS

Project Number: 620-334

Building Number: CLC

Drawing Number: M-504

BIM 360://620-334 New Community Living Center/19577_MEP_VA Montrose CLC_R20.rvt
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VA FORM 08 - 6231

CONTROL SYSTEM CONFIGURATION

A. PROVIDE NEW BACNET ECC OPEN PROTOCOL BAS SYSTEM AND FRONT END COMPUTER WORKSTATION COMPLETE WITH SOFTWARE, GRAPHICS, MONITOR AND INTEGRATOR. PROVIDE NEW BACNET CONTROLS FOR CURRENT PROJECT. PROVIDE BACNET GATEWAY FOR EXISTING MONITORING EQUIPMENT.

B. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR NEW OPEN AUTOMATION INFRASTRUCTURE, JAVA-BASED NIAGARA FRAMEWORK, BUILDING MANAGEMENT AND CONTROL SYSTEM. SYSTEM ARCHITECTURE SHALL FULLY SUPPORT A MULTI-VENDOR ENVIRONMENT AND BE ABLE TO INTEGRATE THIRD PARTY SYSTEMS VIA EXISTING VENDOR PROTOCOLS INCLUDING LONTALK, BACNET, AND MODBUS.

C. ALL NIAGARA SOFTWARE LICENSES SHALL FOLLOW NIAGARA OPEN COMPATIBILITY STATEMENTS AND SPECIFICATIONS.

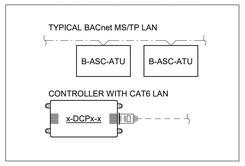
NOTES

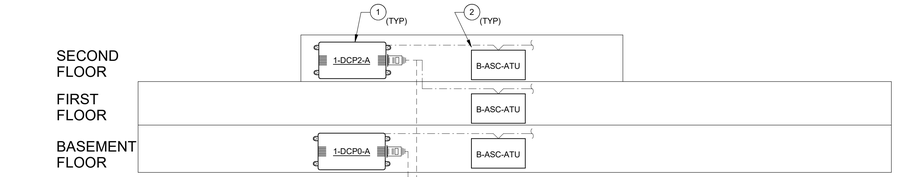
1. PROVIDE NEW BACNET NIAGARA (B-AWS) ENGINEERING CONTROL CENTER (ECC). PROVIDE UNINTERRUPTIBLE POWER SUPPLY (UPS) BACKUP FOR NEW BACNET EQUIPMENT. UPS SHALL BE OF "ONLINE" TYPE SUCH AS "ONLINE DOUBLE CONVERSION".
2. EXISTING CONTROLLERS ARE TO REMAIN.
3. INSTALL NEW BACNET GATEWAY WITH FULL COMMUNICATION TO EXISTING CONTROLLERS AS NECESSARY.
4. INSTALL NEW BACNET COMMUNICATION NETWORK AS NECESSARY.
5. INSTALL MULTIPLE BUILDING CONTROLLERS AS REQUIRED.
6. PROVIDE MINIMUM QUANTITY OF CONTROLLERS AND CONTROLLER ENCLOSURES AS INDICATED.
7. PROVIDE QUANTITY OF PANELS AS REQUIRED BY DDC SYSTEM.
8. PROVIDE NEW PORTABLE OPERATORS TERMINAL.
9. PROVIDE ALL CONTROL WIRING INSTALLED IN ELECTRIC METALLIC TUBING OR CONDUIT.

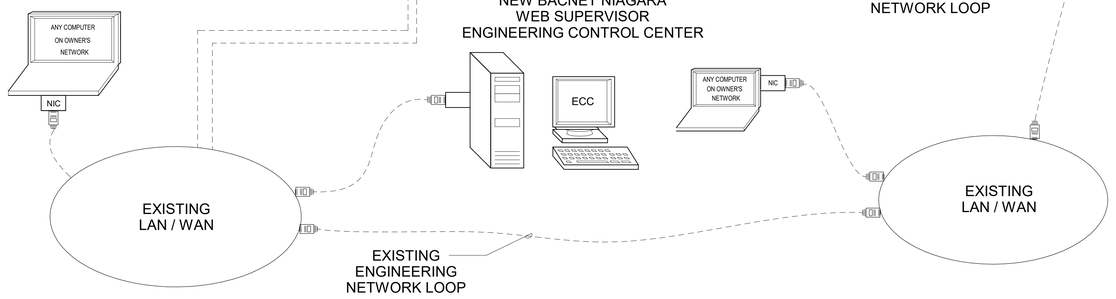
(#) DETAIL KEYNOTES

1. PROVIDE MINIMUM QUANTITY OF DIRECT DIGITAL CONTROLLERS AND CONTROLLER ENCLOSURES AS INDICATED. COORDINATE INSTALLATION LOCATIONS WITH EXISTING CONDITIONS AND SYSTEM REQUIREMENTS.
2. PROVIDE FOR EACH AIR TERMINAL UNIT.

TYPICAL LAN LEGEND

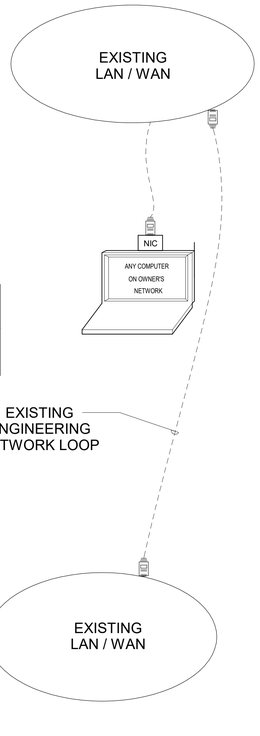






3 BACNET NIAGARA SYSTEM ARCHITECTURE
NTS

THE ECC ARCHITECTURE SHOWN IS A DIAGRAMMATIC REPRESENTATION AND IS NOT MEANT TO BE THE EXACT ARCHITECTURE FOR THIS PROJECT. CONTROLS CONTRACTOR TO COORDINATE WITH EXISTING CONTROLS AND DETERMINE THE EXACT ARCHITECTURE FOR THE SYSTEM BEING PROVIDED AND SHALL INCLUDE IN THE SUBMITTALS.



VAV AIR TERMINAL UNIT - SEQUENCE OF OPERATION

A. PROVIDE SPACE TEMPERATURE SETPOINTS ACCORDING TO INDOOR AREA SETPOINTS FROM HVAC DESIGN DATA SCHEDULE ON SHEET MH002. EXAMPLE OF SETPOINTS SHALL BE SET AS FOLLOWS:

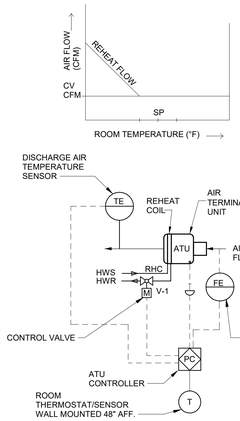
SPACE COOLING SETPOINT: 70°F (ADJUSTABLE)
SPACE HEATING SETPOINT: 70°F (ADJUSTABLE)
DEADBAND OF 3°F BETWEEN HEATING AND COOLING SETPOINTS WILL BE MAINTAINED.

B. DURING OCCUPIED MODE OF OPERATION, MODULATE THE AIR CONTROL DAMPER AS NECESSARY TO MAINTAIN AIRFLOW SETPOINT. IF THE SPACE TEMPERATURE FALLS BELOW THE SPACE HEATING SETPOINT, MODULATE THE HEATING CONTROL VALVE AS NECESSARY TO MAINTAIN SPACE HEATING SETPOINT. ON A RISE IN SPACE TEMPERATURE, THE REVERSE SHALL OCCUR.

C. DURING UNOCCUPIED HOURS, MODULATE AIR CONTROL DAMPER AS NECESSARY TO MAINTAIN AIR FLOW SETPOINT. IF SPACE TEMPERATURE FALLS BELOW UNOCCUPIED SPACE HEATING SETPOINT, MODULATE THE HEATING CONTROL VALVE AS NECESSARY TO MAINTAIN UNOCCUPIED SPACE HEATING SETPOINT. ON A RISE IN SPACE TEMPERATURE, THE REVERSE SHALL OCCUR.

D. UPON ACTIVATION OF THE EMERGENCY CONSTANT SPEED OPERATION FOR THE ASSOCIATED AIR HANDLING UNIT, MODULATE AIR CONTROL DAMPER TO MAINTAIN AIR FLOW SETPOINT.

NOTES:
1. EACH TERMINAL UNIT SHALL BE CONTROLLED BY A DEDICATED, UNIT MOUNTED, STANDALONE CONTROLLER. THE CONTROLLER SHALL MONITOR AND CONTROL EACH UNIT IN STAND-ALONE MODE OR AS DIRECTED BY BUILDING AUTOMATION SYSTEM.
2. ALL AIR TERMINAL UNITS SHALL BE PRESSURE INDEPENDENT TYPE WITH VELOCITY RESET CONTROLLERS. ALL TERMINAL UNITS SHALL BE CAPABLE OF VARIABLE VOLUME ALTHOUGH SOME WILL ACT AS CONSTANT VOLUME.
3. COORDINATE SETPOINTS AND PERFORMANCE WITH TEST AND BALANCE CONTRACTOR.
4. SPACE TEMPERATURE SETPOINTS SHALL BE ADJUSTABLE FROM THE ECC FRONT END INTERFACE.
5. COORDINATE AND ADJUST OCCUPANCY SCHEDULES AND UNOCCUPIED TEMPERATURES WITH THE COR.



1 CONSTANT VOLUME AIR TERMINAL UNIT CONTROL DIAGRAM
NTS

VAV AIR TERMINAL UNIT - SEQUENCE OF OPERATION

A. PROVIDE SPACE TEMPERATURE SETPOINTS ACCORDING TO INDOOR AREA SETPOINTS FROM HVAC DESIGN DATA SCHEDULE ON SHEET M-003. EXAMPLE OF SETPOINTS SHALL BE SET AS FOLLOWS:

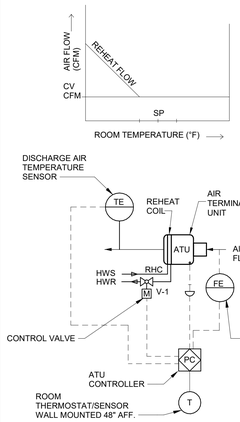
SPACE COOLING SETPOINT: 70°F (ADJUSTABLE)
SPACE HEATING SETPOINT: 70°F (ADJUSTABLE)
DEADBAND OF 3°F BETWEEN HEATING AND COOLING SETPOINTS WILL BE MAINTAINED.

B. DURING OCCUPIED MODE OF OPERATION, MODULATE THE AIR CONTROL DAMPER AS NECESSARY TO MAINTAIN AIRFLOW SETPOINT. IF THE SPACE TEMPERATURE FALLS BELOW THE SPACE HEATING SETPOINT, MODULATE THE HEATING CONTROL VALVE AS NECESSARY TO MAINTAIN SPACE HEATING SETPOINT. ON A RISE IN SPACE TEMPERATURE, THE REVERSE SHALL OCCUR.

C. DURING UNOCCUPIED HOURS, MODULATE AIR CONTROL DAMPER AS NECESSARY TO MAINTAIN AIR FLOW SETPOINT. IF SPACE TEMPERATURE FALLS BELOW UNOCCUPIED SPACE HEATING SETPOINT, MODULATE THE HEATING CONTROL VALVE AS NECESSARY TO MAINTAIN UNOCCUPIED SPACE HEATING SETPOINT. ON A RISE IN SPACE TEMPERATURE, THE REVERSE SHALL OCCUR.

D. UPON ACTIVATION OF THE EMERGENCY CONSTANT SPEED OPERATION FOR THE ASSOCIATED AIR HANDLING UNIT, MODULATE AIR CONTROL DAMPER TO MAINTAIN AIR FLOW SETPOINT.

NOTES:
1. EACH TERMINAL UNIT SHALL BE CONTROLLED BY A DEDICATED, UNIT MOUNTED, STANDALONE CONTROLLER. THE CONTROLLER SHALL MONITOR AND CONTROL EACH UNIT IN STAND-ALONE MODE OR AS DIRECTED BY BUILDING AUTOMATION SYSTEM.
2. ALL AIR TERMINAL UNITS SHALL BE PRESSURE INDEPENDENT TYPE WITH VELOCITY RESET CONTROLLERS. ALL TERMINAL UNITS SHALL BE CAPABLE OF VARIABLE VOLUME ALTHOUGH SOME WILL ACT AS CONSTANT VOLUME.
3. COORDINATE SETPOINTS AND PERFORMANCE WITH TEST AND BALANCE CONTRACTOR.
4. SPACE TEMPERATURE SETPOINTS SHALL BE ADJUSTABLE FROM THE ECC FRONT END INTERFACE.
5. COORDINATE AND ADJUST OCCUPANCY SCHEDULES AND UNOCCUPIED TEMPERATURES WITH THE COR.



2 VARIABLE VOLUME AIR TERMINAL UNIT CONTROL DIAGRAM
NTS

ROOM AIR BALANCE - 2-AH01

AHU NUMBER	ROOM NUMBER	ROOM NAME	AREA	DESIGN SUPPLY CFM	DESIGN RETURN CFM	DESIGN EXHAUST CFM	COMMENTS
2-AH01	-	ADMIN HALL-B	89.55 SF	50 CFM	0 CFM	0 CFM	
2-AH01	-	SITTING ALCOVE 10/11B	129.79 SF	0 CFM	0 CFM	0 CFM	1
2-AH01	-	SITTING ALCOVE 12B	126.91 SF	0 CFM	0 CFM	0 CFM	1
2-AH01	-	SITTING ALCOVE 14B	62.83 SF	0 CFM	0 CFM	0 CFM	1
2-AH01	-	SITTING ALCOVE 6/7/8/9B	195.41 SF	0 CFM	0 CFM	0 CFM	1
2-AH01	-	SITTING ALCOVE 12/13B	131.94 SF	0 CFM	0 CFM	0 CFM	1
2-AH01	-	CHARGING B	35.2 SF	0 CFM	0 CFM	0 CFM	1
2-AH01	-	SITTING ALCOVE 3/4/5B	148.83 SF	0 CFM	0 CFM	0 CFM	1
2-AH01	-	CRASH CART B	53.18 SF	0 CFM	0 CFM	0 CFM	1
2-AH01	144	STAFF TOILET/ SHOWER	75.68 SF	110 CFM	0 CFM	150 CFM	
2-AH01	145	STAFF LOUNGE	183.84 SF	205 CFM	0 CFM	0 CFM	
2-AH01	146	HOTELING	208.81 SF	120 CFM	120 CFM	0 CFM	
2-AH01	147	OFFICE	111.81 SF	80 CFM	80 CFM	0 CFM	
2-AH01	148	CONFERENCE	275.76 SF	240 CFM	230 CFM	0 CFM	
2-AH01	149	POWER	95.18 SF	50 CFM	0 CFM	50 CFM	
2-AH01	150	EMERGENCY POWER	114.95 SF	50 CFM	0 CFM	55 CFM	
2-AH01	151	EXAM RM	97.57 SF	100 CFM	75 CFM	0 CFM	
2-AH01	152	GAS	55.64 SF	0 CFM	0 CFM	70 CFM	
2-AH01	153	OFFICE	115.96 SF	80 CFM	80 CFM	0 CFM	
2-AH01	154	OFFICE	124.33 SF	85 CFM	85 CFM	0 CFM	
2-AH01	155	SOILED	93.84 SF	130 CFM	0 CFM	170 CFM	
2-AH01	156	HAC	75.5 SF	110 CFM	0 CFM	150 CFM	
2-AH01	157	CLEAN	81.29 SF	60 CFM	40 CFM	0 CFM	
2-AH01	159	RESIDENT 1	227.42 SF	240 CFM	0 CFM	0 CFM	
2-AH01	159A	TLT 1	85.19 SF	0 CFM	0 CFM	120 CFM	2
2-AH01	160	RESIDENT 2	226.26 SF	240 CFM	0 CFM	0 CFM	
2-AH01	160A	TLT 2	88.74 SF	0 CFM	0 CFM	120 CFM	2
2-AH01	162	RESIDENT 3	234.3 SF	240 CFM	0 CFM	0 CFM	
2-AH01	162A	TLT 3	89.28 SF	0 CFM	0 CFM	110 CFM	2
2-AH01	162C	CORRIDOR	943.19 SF	1810 CFM	490 CFM	0 CFM	
2-AH01	163	RESIDENT 4	244.43 SF	0 CFM	0 CFM	0 CFM	
2-AH01	163A	TLT 4	80.51 SF	0 CFM	0 CFM	110 CFM	2
2-AH01	163C	CORRIDOR	235.14 SF	0 CFM	0 CFM	0 CFM	1
2-AH01	164	RESIDENT 5	219.49 SF	270 CFM	155 CFM	0 CFM	
2-AH01	164A	TLT 5	81.08 SF	0 CFM	0 CFM	110 CFM	2
2-AH01	164C	CORRIDOR	867.74 SF	1810 CFM	0 CFM	0 CFM	
2-AH01	165	LIVING ROOM	390.19 SF	490 CFM	0 CFM	0 CFM	
2-AH01	166	DINING	497.59 SF	0 CFM	1040 CFM	0 CFM	
2-AH01	168A	PANTRY	94.28 SF	60 CFM	0 CFM	60 CFM	
2-AH01	170	RESIDENT 6 (BARIATRIC)	256.86 SF	270 CFM	0 CFM	0 CFM	
2-AH01	170A	TLT 6	87.41 SF	0 CFM	0 CFM	110 CFM	2
2-AH01	171	RESIDENT 7	229.83 SF	270 CFM	155 CFM	0 CFM	
2-AH01	171A	TLT 7	78.37 SF	0 CFM	0 CFM	110 CFM	2
2-AH01	172	RESIDENT 8	238.86 SF	270 CFM	145 CFM	0 CFM	
2-AH01	172A	TLT 8	78.3 SF	0 CFM	0 CFM	120 CFM	2
2-AH01	173	RESIDENT 9	230.84 SF	315 CFM	190 CFM	0 CFM	
2-AH01	173A	TLT 9	88.67 SF	0 CFM	0 CFM	120 CFM	2
2-AH01	175	RESIDENT 10	245.95 SF	320 CFM	195 CFM	0 CFM	
2-AH01	175A	TLT 10	87.97 SF	0 CFM	0 CFM	120 CFM	2
2-AH01	176	ELEC	97.84 SF	100 CFM	0 CFM	110 CFM	
2-AH01	177	MEDS	141.66 SF	120 CFM	120 CFM	0 CFM	
2-AH01	178	RESIDENT 11	245.31 SF	325 CFM	210 CFM	0 CFM	
2-AH01	178A	TLT 11	88.67 SF	0 CFM	0 CFM	110 CFM	2
2-AH01	180	RESIDENT 12	226.72 SF	320 CFM	205 CFM	0 CFM	
2-AH01	180A	TLT 12	88.59 SF	0 CFM	0 CFM	110 CFM	2
2-AH01	181	RESIDENT 13	230.71 SF	325 CFM	210 CFM	0 CFM	
2-AH01	181A	TLT 13	88.64 SF	0 CFM	0 CFM	110 CFM	2
2-AH01	183	RESIDENT 14	225.35 SF	340 CFM	215 CFM	0 CFM	
2-AH01	183A	TLT 14	88.59 SF	0 CFM	0 CFM	120 CFM	2
2-AH01	192C	HALLWAY	162.14 SF	90 CFM	0 CFM	0 CFM	

ROOM AIR BALANCE - 2-AH02

AHU NUMBER	ROOM NUMBER	ROOM NAME	AREA	DESIGN SUPPLY CFM	DESIGN RETURN CFM	DESIGN EXHAUST CFM	COMMENTS
2-AH02	-	FOYER	555.2 SF	270 CFM	390 CFM	0 CFM	
2-AH02	-	CRASH CART	53.87 SF	0 CFM	0 CFM	0 CFM	1
2-AH02	-	SITTING ALCOVE 2/3A	131.36 SF	0 CFM	0 CFM	0 CFM	1
2-AH02	-	SITTING ALCOVE 13/14A	127.48 SF	0 CFM	0 CFM	0 CFM	1
2-AH02	-	SITTING ALCOVE 11/12A	127.64 SF	0 CFM	0 CFM	0 CFM	1
2-AH02	-	SITTING ALCOVE 1A	65.08 SF	0 CFM	0 CFM	0 CFM	1
2-AH02	-	SITTING ALCOVE 4/5/6/7A	209.13 SF	130 CFM	0 CFM	0 CFM	
2-AH02	-	CENTRAL KITCHEN	68.08 SF	0 CFM	0 CFM	0 CFM	1
2-AH02	-	CLC WALKWAY	482.71 SF	435 CFM	675 CFM	0 CFM	
2-AH02	-	SITTING ALCOVE 8/9/10A	153.79 SF	100 CFM	0 CFM	0 CFM	
2-AH02	-	CORRIDOR 1A	319.97 SF	0 CFM	0 CFM	0 CFM	1
2-AH02	001	BASEMENT	344.07 SF	0 CFM	0 CFM	0 CFM	1
2-AH02	101	LOBBY	166 SF	0 CFM	0 CFM	0 CFM	
2-AH02	102	SALON	150.11 SF	0 CFM	0 CFM	0 CFM	
2-AH02	103	ACTIVITY	552.65 SF	390 CFM	0 CFM	0 CFM	
2-AH02	104	SOILED	71.48 SF	100 CFM	0 CFM	130 CFM	
2-AH02	105	IT CLOSET	142.3 SF	650 CFM	550 CFM	0 CFM	
2-AH02	106	HAC	68.06 SF	100 CFM	0 CFM	130 CFM	
2-AH02	107	STERILE SUPPLY STORAGE	123.37 SF	70 CFM	35 CFM	0 CFM	
2-AH02	108	PUBLIC TOILET	63.28 SF	90 CFM	0 CFM	120 CFM	
2-AH02	109	CLEAN	69.11 SF	40 CFM	30 CFM	0 CFM	
2-AH02	110	RESIDENT 1	248.17 SF	340 CFM	215 CFM	0 CFM	
2-AH02	110A	TLT 1	88.43 SF	0 CFM	0 CFM	120 CFM	2
2-AH02	112	MEDS	135.69 SF	120 CFM	120 CFM	0 CFM	
2-AH02	113	ELEC	98.57 SF	0 CFM	0 CFM	40 CFM	
2-AH02	114	RESIDENT 2	246.77 SF	0 CFM	200 CFM	0 CFM	
2-AH02	114A	TLT 2	88.69 SF	0 CFM	0 CFM	120 CFM	2
2-AH02	115	RESIDENT 3	246.71 SF	0 CFM	200 CFM	0 CFM	
2-AH02	115A	TLT 3	88.68 SF	0 CFM	0 CFM	120 CFM	2
2-AH02	117	RESIDENT 4	230.77 SF	0 CFM	195 CFM	0 CFM	
2-AH02	117A	TLT 4	88.68 SF	0 CFM	0 CFM	120 CFM	2
2-AH02	118	RESIDENT 5	237.5 SF	0 CFM	205 CFM	0 CFM	
2-AH02	118A	TLT 5	77.96 SF	0 CFM	0 CFM	110 CFM	2
2-AH02	119	RESIDENT 6	232.42 SF	230 CFM	115 CFM	0 CFM	
2-AH02	119A	TLT 6	77.96 SF	0 CFM	0 CFM	110 CFM	2
2-AH02	120	RESIDENT 7 (BARIATRIC)	254.18 SF	240 CFM	115 CFM	0 CFM	
2-AH02	120A	TLT 7	91.49 SF	0 CFM	0 CFM	120 CFM	2
2-AH02	120C	CORRIDOR	536.06 SF	1160 CFM	0 CFM	0 CFM	
2-AH02	122	LIVING ROOM	401.54 SF	290 CFM	0 CFM	0 CFM	
2-AH02	122C	CORRIDOR	1,221.23 SF	2570 CFM	430 CFM	0 CFM	
2-AH02	125	DINING	499.32 SF	820 CFM	950 CFM	0 CFM	
2-AH02	125A	PANTRY	90.19 SF	50 CFM	0 CFM	50 CFM	
2-AH02	126	RESIDENT 8	220.96 SF	220 CFM	105 CFM	0 CFM	
2-AH02	126A	TLT 8	77.88 SF	0 CFM	0 CFM	110 CFM	2
2-AH02	127	RESIDENT 9	237.84 SF	240 CFM	125 CFM	0 CFM	
2-AH02	127A	TLT 9	77.64 SF	0 CFM	0 CFM	110 CFM	2
2-AH02	128	RESIDENT 10	230.74 SF	240 CFM	115 CFM	0 CFM	
2-AH02	128A	TLT 10	88.79 SF	0 CFM	0 CFM	120 CFM	2
2-AH02	130	RESIDENT 11	246.75 SF	240 CFM	115 CFM	0 CFM	
2-AH02	130A	TLT 11	88.76 SF	0 CFM	0 CFM	120 CFM	2
2-AH02	131	RESIDENT 12	246.71 SF	240 CFM	115 CFM	0 CFM	
2-AH02	131A	TLT 12	88.68 SF	0 CFM	0 CFM	120 CFM	2
2-AH02	133	RESIDENT 13	230.46 SF	240 CFM	115 CFM	0 CFM	
2-AH02	133A	TLT 13	88.8 SF	0 CFM	0 CFM	120 CFM	2
2-AH02	134	RESIDENT 14	232.1 SF	240 CFM	125 CFM	0 CFM	
2-AH02	134A	TLT 14	88.11 SF	0 CFM	0 CFM	110 CFM	2
2-AH02	135	STORAGE	69.69 SF	50 CFM	40 CFM	0 CFM	
2-AH02	142	STORAGE	82.15 SF	50 CFM	25 CFM	0 CFM	
2-AH02	143	PT/KT	348.13 SF	280 CFM	330 CFM	0 CFM	
2-AH02	184	WHEELCHAIR/ STRETCHER STRG	105.62 SF	60 CFM	50 CFM	0 CFM	
2-AH02	185	FAMILY TOILET	66.09 SF	100 CFM	0 CFM	130 CFM	
2-AH02	209C	HALLWAY	160.04 SF	90 CFM	0 CFM	0 CFM	
2-AH02	215	CHARGING A	33.62 SF	0 CFM	0 CFM	0 CFM	1

COMMENTS:

1. SPACE INDIRECTLY SUPPLIED BY ADJACENT SPACE.
2. RESIDENT RESTROOMS INDIRECTLY SUPPLIED FROM ASSOCIATED RESIDENT ROOM.

Revisions:	Date:

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STAMP

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: CONTROLS - HVAC

Approved:

Phase: ISSUED FOR CONSTRUCTION

FULLY SPRINKLERED

Project Title: NEW COMMUNITY LIVING CENTER

Location: 2094 Albany Post Road, Montrose, NY 10548

Issue Date: 05/09/2022

Checked: CJF/NPS

Drawn: DM/NS

Project Number: 620-334

Building Number: CLC

Drawing Number: M-601

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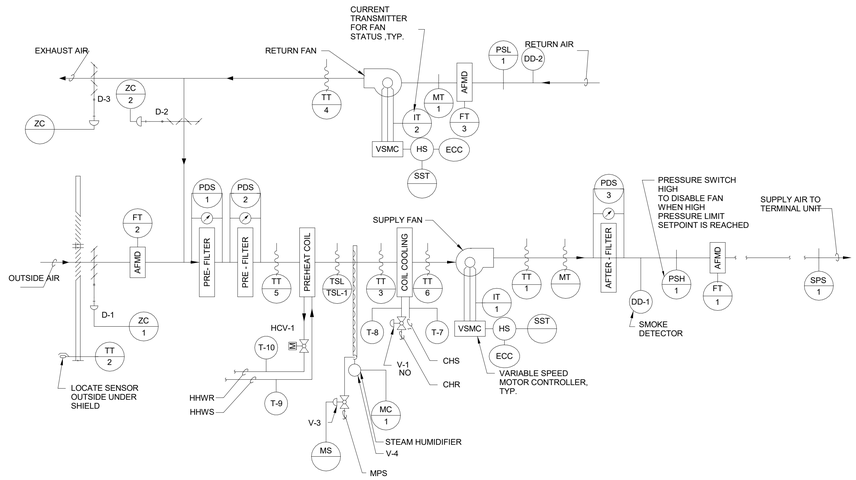
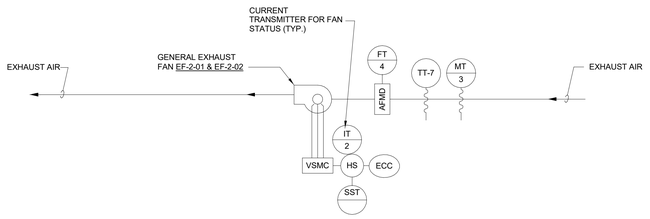


1 VARIABLE AIR VOLUME AIR HANDLING UNIT WITH OUTSIDE AIR CONTROL DIAGRAM

NTS



2 EXHAUST FAN CONTROL DIAGRAM - EF-2-01 & EF-2-02

NTS

CONTROLS SYMBOLS

T	ROOM THERMOSTAT/TRANSMITTER - WALL MOUNT
M	ROOM HUMIDISTAT (MOISTURE)/TRANSMITTER - WALL MOUNT
TT	TEMPERATURE TRANSMITTER
TT	TEMPERATURE TRANSMITTER, AVERAGING ELEMENT
MT	MOISTURE (HUMIDITY) TRANSMITTER
PT	PRESSURE TRANSMITTER
SPS	STATIC PRESSURE SENSOR
FT	FLOW TRANSMITTER
IT	CURRENT TRANSMITTER
CT	CONDUCTIVITY TRANSMITTER
SD	SMOKE DETECTOR
PDT	PRESSURE DIFFERENTIAL TRANSMITTER
PDS	PRESSURE DIFFERENTIAL SWITCH
HS	HAND SWITCH (HAND-OFF-AUTO SWITCH)
ZC	VALVE OR DAMPER POSITION CONTROLLER

CONTROLS SYMBOLS

TSL	TEMPERATURE SWITCH, LOW (FREEZESTAT)
TSH	TEMPERATURE SWITCH, HIGH (FREEZESTAT)
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
LTCP	LOCAL TEMPERATURE CONTROL PANEL
HVAC	HVAC CONTROL PANEL
VSMC	VARIABLE SPEED MOTOR CONTROLLER
ECC	INTEGRATE CONTROL POINT ON REMOTE GRAPHICS WORKSTATION AT ENERGY CONTROL CENTER
TC	TEMPERATURE CONTROLLER. SEE SEQUENCE OF OPERATION
PC	PRESSURE CONTROLLER. SEE SEQUENCE OF OPERATION
SC	SPEED CONTROLLER. SEE SEQUENCE OF OPERATION
FC	FLOW CONTROLLER. SEE SEQUENCE OF OPERATION
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW

POINTS LIST: 2-AH01 & 2-AH02

POINT TAG	POINT DESCRIPTION	UNITS	POINT TYPE					SETPOINTS			ALARM CONDITION	NOTES
			BINARY		ANALOG		VIRTUAL	ADJ.	INITIAL	HIGH	LOW	
			IN	OUT	IN	OUT						
	OCCUPIED MODE STATUS	ON/OFF					X					
	UNOCCUPIED MODE STATUS	ON/OFF					X					
	HUMIDIFICATION MODE STATUS	ON/OFF					X					
	DEHUMIDIFICATION MODE STATUS	ON/OFF					X					
	SUPPLY FAN START/STOP	ON/OFF		X								
C-1	SUPPLY FAN STATUS	ON/OFF	X								SUPPLY FAN PROOF FAILED	
	SUPPLY FAN SPEED COMMAND	%				X						
	SUPPLY FAN MINIMUM SPEED SETPOINT	%					X	X	50			
	SUPPLY FAN VFD ALARM	ON/OFF	X									
PSH-1	SUPPLY DUCT PRESSURE SWITCH HIGH LIMIT SAFETY	NORMAL/ALARM	X					X	5.0		ALARM	
DD-1	SUPPLY AIR DUCT SMOKE DETECTOR	NORMAL/ALARM	X								ALARM	
FT-1	SUPPLY AIR FLOW	CFM			X							
	SUPPLY AIR FLOW SETPOINT	CFM					X					
SPS-1	SUPPLY AIR STATIC PRESSURE	IN. W.G.			X						MORE THAN 20% ABOVE OR BELOW SETPOINT	
	SUPPLY AIR STATIC PRESSURE SETPOINT	IN. W.G.					X	X	2.0	2.5	1.0	
	MAXIMUM ATU ZONE DAMPER POSITION	% OPEN					X					
TT-1	SUPPLY AIR TEMPERATURE	DEG. F			X						MORE THAN 10 DEG F ABOVE OR BELOW SETPOINT	AVERAGING
	SUPPLY AIR TEMPERATURE SETPOINT	DEG. F					X	X	53	60	49	
	RETURN FAN START/STOP	ON/OFF		X								
IT-2	RETURN FAN STATUS	ON/OFF	X								RETURN FAN PROOF FAILED	
	RETURN FAN SPEED COMMAND	%				X						
	RETURN FAN VFD ALARM	ON/OFF	X									
PSL-1	RETURN DUCT PRESSURE SWITCH LOW LIMIT SAFETY	NORMAL/ALARM	X									
DD-2	SUPPLY AIR DUCT SMOKE DETECTOR	NORMAL/ALARM	X								ALARM	
FT-3	RETURN AIR FLOW	CFM			X							
	RETURN AIR FLOW SETPOINT	CFM					X					
TT-4	RETURN AIR TEMPERATURE	DEG. F			X							
MT-1	RETURN AIR RELATIVE HUMIDITY	% RH			X							
	RETURN AIR RELATIVE HUMIDITY SETPOINT	% RH					X	X	60			
D-2	RETURN AIR DAMPER COMMAND	% OPEN				X						N.O.
ZC-2	RETURN AIR DAMPER POSITION	% OPEN	X									
FT-2	OUTSIDE AIR FLOW	CFM			X						OA FLOW LESS THAN 80% OF SETPOINT	
	OUTSIDE AIR FLOW SETPOINT	CFM					X	X	X			PER SCHEDULE
TT-2	OUTSIDE AIR TEMPERATURE	DEG. F			X							
D-1	OUTSIDE AIR DAMPER COMMAND	% OPEN				X						N.C.
ZC-1	OUTSIDE AIR DAMPER POSITION	% OPEN			X							
D-3	RELIEF AIR DAMPER	OPEN/CLOSED				X						N.C.
D-3-P	RELIEF AIR DAMPER POSITION	OPEN/CLOSED	X									
PDS-1	PRE-FILTER 1 DIFFERENTIAL PRESSURE	IN. W.G.			X							
PDS-2	PRE-FILTER 2 DIFFERENTIAL PRESSURE	IN. W.G.			X							
PDS-3	AFTER-FILTER DIFFERENTIAL PRESSURE	IN. W.G.			X							
TT-5	MIXED AIR TEMPERATURE	DEG. F			X							AVERAGING
TSL-1	FREEZESTAT; COOLING COIL TEMPERATURE LOW LIMIT	DEG. F	X						39		LOW LIMIT ALARM	
	UV LIGHT START/STOP	ON/OFF		X								
IT-3	UV LIGHT STATUS	ON/OFF	X									
V-3	STEAM CONTROL VALVE COMMAND	% OPEN				X						N.C.
V-4	HUMIDIFIER CONTROL VALVE	% OPEN				X						N.C.
V-1	COOLING CONTROL VALVE COMMAND	% OPEN				X						N.O.
T-7	CHILLED WATER SUPPLY TEMPERATURE	DEG. F			X							
T-8	CHILLED WATER RETURN TEMPERATURE	DEG. F			X							
TT-6	COOLING COIL LEAVING AIR TEMPERATURE	DEG. F			X						MORE THAN 10 DEG F ABOVE OR BELOW SETPOINT	AVERAGING
HCV-1	PREHEAT CONTROL VALVE COMMAND	% OPEN				X						N.O.
T-9	HOT WATER SUPPLY TEMPERATURE	DEG. F			X							

2-AH01 & AH02 - SEQUENCE OF OPERATION

1. GENERAL

a) UNIT IS NORMALLY STARTED AND STOPPED BY THE DIRECT DIGITAL CONTROL PANEL (DCP) OR REMOTELY AT THE ECC. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE.

b) THE AIR HANDLING UNIT SYSTEM INCLUDES THE AIR HANDLING UNIT COMPONENTS, SUPPLY FAN(S), RETURN FAN(S) AND ASSOCIATED EXHAUST FAN. WHEN THE SYSTEM IS INITIATED TO OPERATE, THEN ALL OTHER EQUIPMENT THAT IS REQUIRED FOR OPERATION SHALL BE PLACED INTO OPERATION ACCORDING TO THEIR RESPECTIVE SEQUENCES OF OPERATION.

c) THE INDICATED EXHAUST FAN SHALL BE INTERLOCKED TO OPERATE WHENEVER THE AIR HANDLER SUPPLY FAN CIRCUIT IS ENERGIZED.

d) INTERLOCK THE AIR HANDLING UNIT SYSTEM WITH THE EXISTING FIRE ALARM SYSTEM AND EXISTING SMOKE DAMPERS.

e) WHEN THE UNIT IS "OFF", OUTSIDE AIR DAMPER D-1 SHALL BE FULLY CLOSED.

f) WHEN THE UNIT IS "ON", OUTSIDE AIR DAMPER D-1 SHALL OPEN, AND SMOKE DAMPERS SHALL BE FULLY OPEN.

g) POSITIVE RUN OPERATION STATUS FOR THE SUPPLY FAN(S) AND ASSOCIATED EXHAUST FAN, AS SENSED BY RESPECTIVE CURRENT SWITCHES OR EXISTING DIFFERENTIAL PRESSURE SWITCHES, SHALL BE INDICATED AT THE DCP AND ECC.

h) ALL DIRECT DIGITAL CONTROL PANELS (DCP) SHALL BE FED FROM AN EMERGENCY POWER CIRCUIT.

2. RUN CONDITIONS

a) OCCUPIED MODE: ENABLE THE AIR HANDLING UNIT BASED ON A USER DEFINABLE OCCUPIED TIME SCHEDULE.

b) UNOCCUPIED MODE: ENABLE UNOCCUPIED MODE OF OPERATION TO ALLOW THE SYSTEM AND ASSOCIATED EQUIPMENT TO SHUT DOWN, AND INTERMITTENTLY START AND STOP AS NECESSARY TO MAINTAIN UNOCCUPIED SETPOINTS.

c) COOLING MODE: IF SPACE TEMPERATURE IS ABOVE THE COOLING SETPOINT, ENTER COOLING MODE UNTIL TEMPERATURE FALLS BELOW SETPOINT MINUS A 2°F DEADBAND.

d) HEATING MODE: IF SPACE TEMPERATURE IS BELOW THE HEATING SETPOINT, ENTER HEATING MODE UNTIL TEMPERATURE RISES ABOVE SETPOINT PLUS A 2°F DEADBAND.

e) DEHUMIDIFICATION MODE: IF RETURN AIR HUMIDITY IS ABOVE SETPOINT, THEN ENTER DEHUMIDIFICATION MODE UNTIL RETURN AIR HUMIDITY FALLS BELOW SETPOINT MINUS A 3% DEADBAND.

3. AIR FLOW CONTROL

a) THE SUPPLY AIR FLOW SHALL BE CONTROLLED BY THE DCP AND MODULATE THE SUPPLY FAN VARIABLE FREQUENCY DRIVE (VFD) SPEED TO MAINTAIN A SPACE TEMPERATURE SETPOINT, AS MEASURED BY TEMPERATURE SENSORS LOCATED IN THE SPACE. WHEN MULTIPLE SENSORS ARE INDICATED, POLL ALL SENSORS AND CONTROL TO THE MOST DEMANDING READING.

b) THE DCP SHALL MONITOR THE OUTSIDE AIR FLOW FROM OUTSIDE AIR UNIT MOUNTED AIR FLOW MEASURING DEVICE. WHEN IN OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN THE OUTSIDE AIR FLOW SETPOINT. THE DCP SHALL MODULATE THE OUTSIDE AIR DAMPER FROM 0-100% AS NECESSARY TO MAINTAIN THE OUTSIDE AIR FLOW SETPOINT.

c) DURING NORMAL OPERATION, THE RETURN FAN WILL START AND STOP WITH THE ASSOCIATED SUPPLY FAN.

4. TEMPERATURE CONTROL

a) SUPPLY AIR TEMPERATURE, SENSED BY TT-1, SHALL BE MAINTAINED AT SETPOINT VIA DIGITAL CONTROL PANEL BY MODULATING V-1 OR D-2 AND D-3 OR V-2 IN SEQUENCE.

b) WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS ABOVE 75°F (ADJ) [23.8°C], THE DIGITAL CONTROL PANEL SHALL PREVENT THE MODULATION OF D-2 AND D-3 AND SHALL ASSUME THE MINIMUM OUTSIDE AIR POSITION (D-2 FULLY OPENED AND D-3 FULLY CLOSED). THE DIGITAL CONTROL PANEL SHALL MODULATE V-1 TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.

c) WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS BETWEEN 65°F [18.3°C] AND THE SUPPLY AIR TEMPERATURE SENSED BY TT-1, DAMPER D-2 SHALL FULLY CLOSE AND D1 AND D3 SHALL BE FULLY OPEN (MAXIMUM OUTSIDE AIR POSITION). THE DIGITAL CONTROL PANEL SHALL MODULATE V-1 TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.

d) WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS BELOW THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1, DAMPERS D1, D-2 AND D-3 SHALL MODULATE TO MAINTAIN THE SCHEDULED SUPPLY AIR TEMPERATURE. IF D-2 IS OPEN AND D-3 IS CLOSED TO MINIMUM OUTSIDE AIR, V-2 SHALL MODULATE OPEN TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.

5. HUMIDITY CONTROL

a) WHEN THE DIGITAL CONTROL PANEL IS NOT CALLING FOR HUMIDITY, SENSED BY RETURN AIR HUMIDITY H-1, 2-WAY "ON-OFF" CONTROL VALVE V-3 SHALL REMAIN CLOSED. WHEN THE DIGITAL CONTROL PANEL IS CALLING FOR HUMIDITY, V-3 SHALL REMAIN OPEN.

b) RETURN AIR HUMIDITY SHALL BE MAINTAINED AT SETPOINT OF 35% RH (ADJ) VIA DIGITAL CONTROL PANEL BY MODULATING CONTROL VALVE V-4 TO MAINTAIN THE DESIRED HUMIDITY. THE DCP SHALL OVERRIDE THIS CONTROL TO MAINTAIN HUMIDITY OF 80% AS SENSED BY H-2. DCP SHALL CLOSE VALVE V-3 WHENEVER THE SUPPLY FAN IS OFF. VALVE V-4 SHALL BE INTERLOCKED WITH A TEMPERATURE SWITCH TO KEEP THE HUMIDIFIER OFF UNTIL CONDENSATE TEMPERATURE APPROACHES STEAM TEMPERATURE.

c) IF THE RETURN AIR HUMIDITY AS SENSED BY H-1 RISES ABOVE THE RETURN AIR HUMIDITY SETPOINT, THE SYSTEM SHALL ENTER A DEHUMIDIFICATION MODE OF OPERATION UNTIL RETURN AIR HUMIDITY FALLS BELOW SETPOINT MINUS A 3% DEADBAND. THE DCP SHALL MODULATE THE COOLING CONTROL VALVE TO MAINTAIN COOLING COIL LEAVING AIR TEMPERATURE SETPOINT LOW LIMIT, AND MODULATE THE HEATING CONTROL VALVE TO MAINTAIN A SPACE TEMPERATURE COOLING SETPOINT.

6. FREEZE PROTECTION

a) IF THE COOLING COIL ENTERING AIR TEMPERATURE AS SENSED BY T-3 FALLS BELOW 40°F, A WARNING ALARM SIGNAL SHALL BE INDICATED AT THE DCP AND ECC. IF THIS TEMPERATURE FALLS BELOW 35°F, AS SENSED BY THE FREEZESTAT TSL-1, THE SUPPLY FAN(S) SHALL SHUT DOWN AND A CRITICAL ALARM SHALL BE INDICATED AT THE DCP AND ECC. THE FREEZESTAT TSL-1 SHALL BE HARDWIRED TO THE SUPPLY FAN VFD(S) AND THE UNIT SHALL BE SHUTDOWN IN HAND, AUTO, OR BYPASS MODE. TSL-1 SHALL REQUIRE MANUAL RESET AT THE DEVICE.

7. SMOKE CONTROL AUTOMATIC SHUTDOWN/RESTART

a) WHEN SMOKE IS DETECTED BY ANY ASSOCIATED DUCT MOUNTED SMOKE DETECTOR, THE SUPPLY FAN(S) AND INTERLOCKED RETURN/EXHAUST FAN(S) SHALL SHUT "OFF", AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM, AND ALL SMOKE DAMPERS SHALL CLOSE.

b) SUPPLY FAN(S) AND INTERLOCKED EXHAUST FAN SHALL AUTOMATICALLY RESTART AND SMOKE DAMPERS SHALL OPEN WHEN FIRE ALARM CIRCUIT IS RESET.

8. EMERGENCY CONSTANT SPEED OPERATION

a) UPON FAILURE OF SUPPLY FAN VFD(S), THE SUPPLY FAN(S) SHALL BE STARTED/STOPPED MANUALLY AT THE DCP OR THE ECC THROUGH THE BY-PASS STARTER. ACTIVATION OF CONSTANT SPEED OPERATION SHALL CAUSE THE SUPPLY FAN(S) TO OPERATE AT CONSTANT SPEED.

9. SAFETIES

a) HIGH PRESSURE LIMIT: THE DCP, USING HIGH PRESSURE LIMIT SWITCH PSH-1 LOCATED AT THE SUPPLY FAN DISCHARGE, SHALL PREVENT THE SUPPLY FAN(S) FROM DEVELOPING OVER 4 IN. W.G. OF POSITIVE STATIC PRESSURE (FIELD ADJUSTABLE). IF STATIC PRESSURE AT PSH-1 DOES EXCEED 4 IN. W.G., THE SWITCH WILL OVERRIDE ALL CONTROLS AND SHUT DOWN THE SUPPLY FAN(S), AND A "HIGH PRESSURE" ALARM SIGNAL SHALL BE INDICATED AT THE DCP AND ECC. PSH-1 SHALL BE HARDWIRED TO THE SUPPLY FAN VFD(S) AND UNIT SHALL BE SHUTDOWN IN HAND, AUTO, OR BYPASS MODE. PSH-1 WILL REQUIRE MANUAL RESET AT THE DEVICE.

b) DAMPER PROOF END SWITCH: PROVIDE AN END SWITCH HARDWIRED TO THE VFD(S) TO OVERRIDE ALL CONTROLS AND PREVENT OPERATION OF THE UNIT FANS IF THE OUTSIDE AIR DAMPER FAILS TO OPEN. FOR ALL CONTROL DAMPERS ASSOCIATED WITH UNIT, PROVIDE END SWITCH DAMPER POSITION INDICATION AT THE DCP AND ECC.

c) FILTER STATUS: THE DCP SHALL MONITOR AND INDICATE THE DIFFERENTIAL PRESSURE ACROSS EACH AIR HANDLING UNIT FILTER SECTION. PROGRAM A HIGH LIMIT SETPOINT FOR EACH FILTER SECTION IN ACCORDANCE WITH FILTER MANUFACTURER'S RECOMMENDATION. IF THE DIFFERENTIAL PRESSURE ACROSS A FILTER SECTION IS GREATER THAN THE HIGH LIMIT SETPOINT, THE DCP AND ECC SHALL REPORT A FILTER MAINTENANCE ALARM WITH MESSAGE INDICATING THAT THE FILTER NEEDS TO BE CHANGED.

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5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: CONTROLS - HVAC

Approved:

Phase: ISSUED FOR CONSTRUCTION

FULLY SPRINKLERED

Project Title: NEW COMMUNITY LIVING CENTER

Location: 2094 Albany Post Road, Montrose, NY 10548

Issue Date: 05/09/2022 | Checked: CJF/NPS | Drawn: NS

Project Number: 620-334

Building Number: CLC

Drawing Number: M-602

BIM 360://620-334 New Community Living Center/19577_MEP_VA Montrose CLC_R20.rvt

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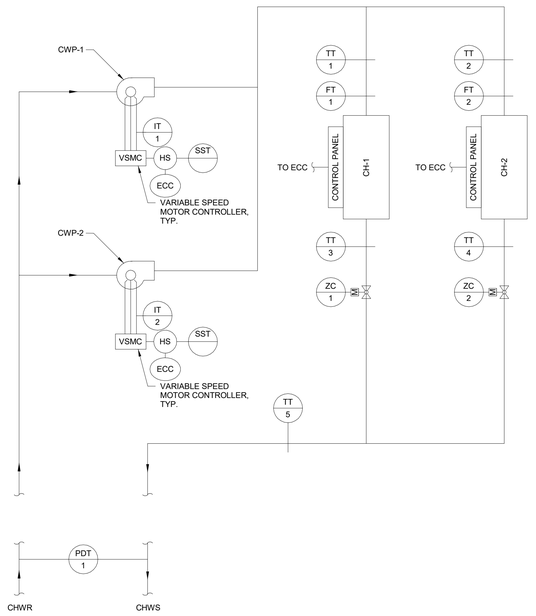


CHILLED WATER SYSTEM - SEQUENCE OF OPERATION

1. GENERAL
   a) THE SYSTEM CONSIST OF TWO CHILLERS IN DUTY/STAND-BY CONFIGURATION AND TWO PUMPS IN DUTY/STAND-BY CONFIGURATION.
   b) CHILLED WATER SYSTEM SHALL BE ENABLED/DISABLED BY THE DIRECT DIGITAL CONTROL PANEL (DCP) OR REMOTELY AT THE ECC.
   c) THE PUMP/CHILLER DESIGNATED FOR OPERATION WHEN THE SYSTEM IS ENABLED SHALL BE DESIGNATED AS THE DUTY PUMP/CHILLER, AND THE REDUNDANT EQUIPMENT SHALL BE DESIGNATED AS STAND-BY. PUMP/CHILLER DUTY/STAND-BY DESIGNATION SHALL ROTATE EACH WEEK.
   d) WHEN THE CHILLED WATER SYSTEM IS ENABLED AND THE OUTSIDE AIR TEMPERATURE LOCKOUT IS DISABLED:
      d)a) THE DUTY CHILLER ISOLATION VALVE SHALL OPEN AND BE PROVEN.
      d)b) THE DUTY PUMP SHALL START AND BE PROVEN.
      d)c) ONCE FLOW IS PROVEN THROUGH THE CHILLER, THE CHILLER SHALL START AND BE PROVEN.
      d)d) PUMP SPEED CONTROL SEQUENCE SHALL ACTIVATE.
      d)e) CHILLED WATER SUPPLY TEMPERATE CONTROL SEQUENCE ACTIVATES.
      d)f) BYPASS VALVE CONTROL SEQUENCE SHALL ACTIVATE.
   e) IF EITHER DUTY PUMP OR CHILLER IS COMMANDED TO START AND FAILS OR STATUS CAN NOT BE PROVEN, THE PUMP OR CHILLER SHALL BE COMMANDED TO STOP AND TAKEN OUT OF SERVICE. AN ALARM SHALL BE SENT TO THE ECC. THE STAND-BY PUMP OR CHILLER SHALL BE COMMANDED TO START.
   f) ALL DIRECT DIGITAL CONTROL PANELS (DCP) SHALL BE FED FROM AN EMERGENCY POWER CIRCUIT.
2. PUMP SPEED CONTROL
   a) THE VFD SHALL MODULATE THE PUMP SPEED TO MAINTAIN THE CHILLED WATER SYSTEM DIFFERENTIAL SETPOINT.
   b) LIMIT PUMP SPEED RATE OF CHANGE TO 10% (ADJ) OVER 5 MINUTES (CONFIRM RATE OF CHANGE REQUIREMENTS WITH CHILLER MANUFACTURER).
   c) DIFFERENTIAL PRESSURE SETPOINT RESET CONTROL
      c)a) IF ANY TEMPERATURE CONTROL VALVE IN THE SYSTEM IS GREATER THAN 90% OPEN, THE DIFFERENTIAL PRESSURE SETPOINT SHALL INCREASE BY 1 PSIG EVERY 5 MINUTES UNTIL ALL VALVES ARE LESS THAN 90% OPEN.
      c)b) IF ALL TEMPERATURE CONTROL VALVES IN THE SYSTEM ARE LESS THAN 80% OPEN, THE DIFFERENTIAL PRESSURE SETPOINT SHALL DECREASE BY 1 PSIG EVERY 5 MINUTES UNTIL AT LEAST ONE VALVE IS GREATER THAN 80% OPEN.
3. CHILLED WATER SUPPLY TEMPERATURE CONTROL
   a) THE DUTY CHILLER SHALL MODULATE CAPACITY TO MAINTAIN THE CHILLED WATER SUPPLY TEMPERATURE SETPOINT.
4. BYPASS VALVE CONTROL SEQUENCE
   a) THE BYPASS VALVE SHALL MODULATE TO MAINTAIN THE MINIMUM FLOW THROUGH THE DUTY CHILLER.
   b) CONFIRM MINIMUM FLOW RATE WITH CHILLER MANUFACTURER.

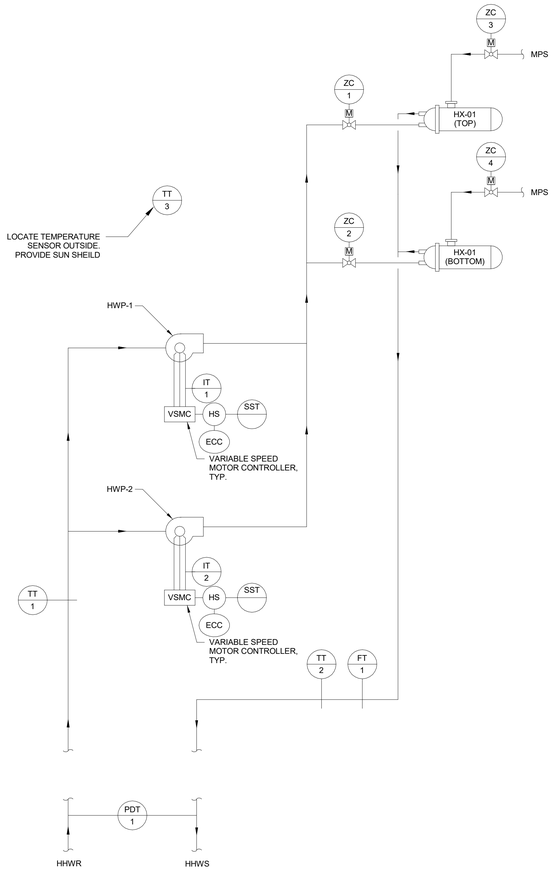
POINTS LIST: CHILLER

POINT TAG	POINT DESCRIPTION	UNITS	POINT TYPE						SETPOINTS			ALARM CONDITION	NOTES
			BINARY		ANALOG		VIRTUAL	ADJ.	INITIAL	HIGH	LOW		
			IN	OUT	IN	OUT							
	CH-1: CHILLER START/STOP	ON/OFF		X									
	CH-1: CHILLER STATUS	ON/OFF	X										
	CH-1: CHILLER ALARM	ON/OFF	X									ALARM	ALARM "INTERNAL CHILLER ALARM"
TT-1	CH-1: CHILLED WATER INLET TEMPERATURE	DEG. F			X								
TT-3	CH-1: CHILLED WATER OUTLET TEMPERATURE	DEG. F			X								
FT-1	CH-1: CHILLED WATER FLOW	GPM			X								
	CH-1: CHILLED WATER INLET PRESSURE	PSIG			X								
	CH-1: CHILLED WATER OUTLET PRESSURE	PSIG			X								
ZC-1	CH-1: ISOLATION VALVE	OPEN/CLOSED		X									
	CWP-1: PUMP START/STOP	ON/OFF		X									
IT-1	CWP-1: PUMP STATUS	ON/OFF	X									CWP-1 PROOF FAILED	
	CWP-1: PUMP SPEED COMMAND	%				X							
	CWP-1: PUMP MINIMUM SPEED SETPOINT	%					X	X	30%				
	CWP-1: PUMP VFD ALARM	ON/OFF	X										ALARM "INTERNAL PUMP ALARM"
	CH-2: CHILLER START/STOP	ON/OFF		X									
	CH-2: CHILLER STATUS	ON/OFF	X										
	CH-2: CHILLER ALARM	ON/OFF	X										ALARM "INTERNAL CHILLER ALARM"
TT-2	CH-2: CHILLED WATER INLET TEMPERATURE	DEG. F			X								
TT-4	CH-2: CHILLED WATER OUTLET TEMPERATURE	DEG. F			X								
FT-2	CH-2: CHILLED WATER FLOW	PSIG			X								
	CH-2: CHILLED WATER INLET PRESSURE	PSIG			X								
	CH-2: CHILLED WATER OUTLET PRESSURE	PSIG			X								
ZC-1	CH-2: ISOLATION VALVE	OPEN/CLOSED		X									
	CWP-2: PUMP START/STOP	ON/OFF		X									
IT-2	CWP-2: PUMP STATUS	ON/OFF	X									CWP-2 PROOF FAILED	
	CWP-2: PUMP SPEED COMMAND	%				X							
	CWP-2: PUMP MINIMUM SPEED SETPOINT	%					X	X	30%				
	CWP-2: PUMP VFD ALARM	ON/OFF	X										ALARM "INTERNAL PUMP ALARM"
TT-5	CHILLED WATER SUPPLY TEMPERATURE	DEG. F			X								
	CHILLED WATER SUPPLY TEMPERATURE SETPOINT	DEG. F					X	X	NOTE 1				
	MINIMUM FLOW BYPASS VALVE	% OPEN				X							
	CHILLED WATER MINIMUM FLOW SETPOINT	GPM					X	X	NOTE 2				
	CHILLED WATER SYSTEM DIFFERENTIAL PRESSURE	PSIG			X								
	CHILLED WATER SYSTEM DIFFERENTIAL PRESSURE SETPOINT	PSIG					X	X	NOTE 3			MORE THAN 20% ABOVE OR BELOW SETPOINT	

NOTES
1) REFER TO SCHEDULES FOR LWT.
2) REFER TO SCHEDULES AND CONFIRM WITH MANUFACTURER OF APPROVED SUMBITTED CHILLER FOR CHILLER MINIMUM FLOW.
3) SETPOINT TO BE DETERMINED BY TAB

2 CHILLED WATER SYSTEM CONTROL DIAGRAM

NTS



HHW SYSTEM - SEQUENCE OF OPERATION

1. GENERAL
   a) THE SYSTEM CONSIST OF TWO SHELL AND TUBE HX IN DUTY/STAND-BY CONFIGURATION AND TWO PUMPS IN DUTY/STAND-BY CONFIGURATION.
   b) HEATING HOT WATER SYSTEM SHALL BE ENABLED/DISABLED BY THE DIRECT DIGITAL CONTROL PANEL (DCP) OR REMOTELY AT THE ECC.
   c) THE PUMP/HX DESIGNATED FOR OPERATION WHEN THE SYSTEM IS ENABLED SHALL BE DESIGNATED AS THE DUTY PUMP/HX, AND THE REDUNDANT EQUIPMENT SHALL BE DESIGNATED AS STAND-BY. PUMP/HX DUTY/STAND-BY DESIGNATION SHALL ROTATE EACH WEEK.
   d) WHEN THE HEATING HOT WATER SYSTEM IS ENABLED:
      d)a) THE DUTY HX ISOLATION VALVE SHALL OPEN AND BE PROVEN.
      d)b) THE DUTY PUMP SHALL START AND BE PROVEN.
      d)c) PUMP SPEED CONTROL SEQUENCE SHALL ACTIVATE.
      d)d) HEATING HOT WATER SUPPLY TEMPERATE CONTROL SEQUENCE SHALL ACTIVATE.
      d)e) BYPASS VALVE CONTROL SEQUENCE SHALL ACTIVATE.
      d)f) OUTSIDE AIR RESET CONTROL SEQUENCE SHALL ACTIVATE.
   e) IF EITHER DUTY PUMP OR HX VALVE IS COMMANDED TO START/OPEN AND FAILS OR STATUS CAN NOT BE PROVEN, THE PUMP OR HX SHALL BE COMMANDED TO STOP AND TAKEN OUT OF SERVICE. AN ALARM SHALL BE SENT TO THE ECC. THE STAND-BY PUMP OR HX SHALL BE COMMANDED TO START.
   f) ALL DIRECT DIGITAL CONTROL PANELS (DCP) SHALL BE FED FROM AN EMERGENCY POWER CIRCUIT.
2. PUMP SPEED CONTROL
   a) THE VFD SHALL MODULATE THE PUMP SPEED TO MAINTAIN THE HEATING HOT WATER SYSTEM DIFFERENTIAL SETPOINT.
   b) DIFFERENTIAL PRESSURE SETPOINT RESET CONTROL
      b)a) IF ANY TEMPERATURE CONTROL VALVE IN THE SYSTEM IS GREATER THAN 90% OPEN, THE DIFFERENTIAL PRESSURE SETPOINT SHALL INCREASE BY 1 PSIG EVERY 5 MINUTES UNTIL ALL VALVES ARE LESS THAN 90% OPEN.
      b)b) IF ALL TEMPERATURE CONTROL VALVES IN THE SYSTEM ARE LESS THAN 80% OPEN, THE DIFFERENTIAL PRESSURE SETPOINT SHALL DECREASE BY 1 PSIG EVERY 5 MINUTES UNTIL AT LEAST ONE VALVE IS GREATER THAN 80% OPEN.
3. HEATING HOT WATER SUPPLY TEMPERATURE CONTROL
   a) THE DUTY HX STEAM CONTROL VALVE SHALL MODULATE CAPACITY TO MAINTAIN THE HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT.
4. BYPASS VALVE CONTROL SEQUENCE
   a) THE BYPASS VALVE SHALL MODULATE TO MAINTAIN THE DIFFERENTIAL PRESSURE SETPOINT OF THE SYSTEM WHEN THE DUTY PUMP IS AT MINIMUM SPEED.
5. OUTSIDE AIR RESET CONTROL SEQUENCE
   a) THE HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL BE RESET BASED ON THE OUTSIDE AIR TEMPERATURE.
      a)a) FOR OUTSIDE AIR TEMPERATURES GREATER THAN 70°F, THE HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL BE 140°F.
      a)b) FOR OUTSIDE AIR TEMPERATURES LESS THAN 30°F, THE HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL BE 180°F.
      a)c) WHEN THE OUTSIDE AIR TEMPERATURE IS BETWEEN 70°F AND 30°F, THE HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL BE RESET BETWEEN 140°F AND 180°F BASED ON AN INVERSE LINEAR RELATIONSHIP WITH THE OUTSIDE AIR TEMPERATURE.
6. SAFETIES
   a) IF THE HEATING HOT WATER SUPPLY TEMPERATURE EXCEEDS THE HIGH LIMIT SETPOINT. ALL STEAM CONTROL VALVES SHALL MODULATE CLOSED AND AN ALARM SENT TO THE ECC.
   b) ALL STEAM CONTROL VALVES SHALL REMAIN CLOSED WHENEVER PUMPS ARE NOT RUNNING AS INDICATED BY CURRENT SWITCH.

POINTS LIST: HEAT EXCHANGER

POINT TAG	POINT DESCRIPTION	UNITS	POINT TYPE						SETPOINTS			ALARM CONDITION	NOTES
			BINARY		ANALOG		VIRTUAL	ADJ.	INITIAL	HIGH	LOW		
			IN	OUT	IN	OUT							
ZC-1	HX-1 TOP: ISOLATION VALVE	OPEN/CLOSE			X								
ZC-3	HX-1 TOP: STEAM CONTROL VALVE POSITION	%			X								
	HX-1 TOP: HX CONTROLLER ALARM	ON/OFF	X										
ZC-2	HX-1 BOTTOM: ISOLATION VALVE	OPEN/CLOSE			X								
ZC-4	HX-1 BOTTOM: STEAM CONTROL VALVE POSITION	%	X										
	HX-1 BOTTOM: HX CONTROLLER ALARM	ON/OFF	X										
	HWP-1: PUMP START/STOP	ON/OFF			X								
IT-1	HWP-1: PUMP STATUS	ON/OFF	X									HWP-1 PROOF FAILED	
	HWP-1: PUMP SPEED COMMAND	%					X						
	HWP-1: PUMP MINIMUM SPEED SETPOINT	%						X	X	30%			
	HWP-1: PUMP VFD ALARM	ON/OFF	X										ALARM "INTERNAL PUMP ALARM"
	HWP-2: PUMP START/STOP	ON/OFF			X								
IT-2	HWP-2: PUMP STATUS	ON/OFF	X									HWP-2 PROOF FAILED	
	HWP-2: PUMP SPEED COMMAND	%					X						
	HWP-2: PUMP MINIMUM SPEED SETPOINT	%						X	X	30%			
	HWP-2: PUMP VFD ALARM	ON/OFF	X										ALARM "INTERNAL PUMP ALARM"
	HEATING HOT WATER FLOW	GPM				X							
	HEATING HOT WATER SUPPLY TEMPERATURE	DEG F				X					190 F		
	HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT	DEG F						X	X		180 F	140 F	
TT-3	AMBIENT TEMPERATURE	DEG F				X							
	OUTSIDE AIR RESET ENABLED	ON/OFF						X	X				
	HEATING HOT WATER SYSTEM DIFFERENTIAL PRESSURE	PSIG				X							
	HEATING HOT WATER SYSTEM DIFFERENTIAL PRESSURE SETPOINT	PSIG						X	X	NOTE 1			MORE THAN 20% ABOVE OR BELOW SETPOINT	

NOTES
1) SETPOINT TO BE DETERMINED BY TAB

1 HEATING HOT WATER SYSTEM CONTROL DIAGRAM

NTS

Revisions:	Date:

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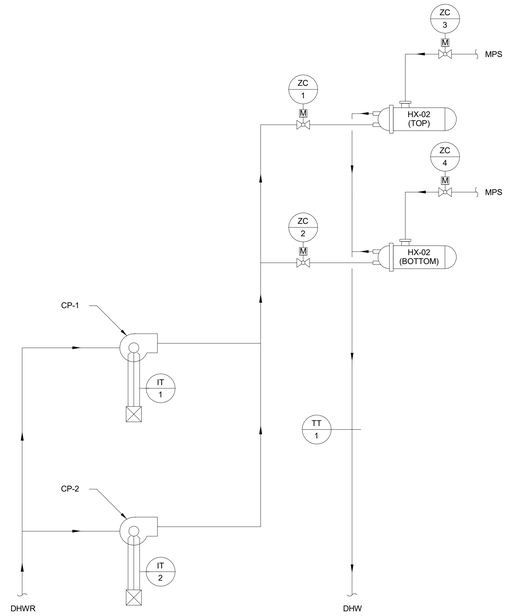
STATE OF NEW YORK · NICHOLAS P. STEPHENSON · 102193 · LICENSED PROFESSIONAL ENGINEER
5/09/2022

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	CONTROLS - HVAC
Approved:	
Phase	ISSUED FOR CONSTRUCTION
	FULLY SPRINKLERED
Project Title	NEW COMMUNITY LIVING CENTER
Location	2094 Albany Post Road, Montrose, NY 10548
Issue Date	05/09/2022
Checked	CJF/NPS
Drawn	TMR
Project Number	620-334
Building Number	CLC
Drawing Number	M-603

BIM 360://620-334 New Community Living Center\19577_MEP_VA Montrose CLC_R20.rvt
7/21/2021 1:33:00 PM
VA FORM 08 - 6231



DHW SYSTEM - SEQUENCE OF OPERATION

1. GENERAL

   a) THE SYSTEM CONSIST OF TWO SHELL AND TUBE HX IN DUTY/STAND-BY CONFIGURATION AND TWO PUMPS IN DUTY/STAND-BY CONFIGURATION.

   b) DOMESTIC HOT WATER SYSTEM SHALL BE ENABLED/DISABLED BY THE DIRECT DIGITAL CONTROL PANEL (DCP) OR REMOTELY AT THE ECC.

   c) THE PUMP/HX DESIGNATED FOR OPERATION WHEN THE SYSTEM IS ENABLED SHALL BE DESIGNATED AS THE DUTY PUMP/HX, AND THE REDUNDANT EQUIPMENT SHALL BE DESIGNATED AS STAND-BY. PUMP/HX DUTY/STAND-BY DESIGNATION SHALL ROTATE EACH WEEK.

   d) WHEN THE DOMESTIC HOT WATER SYSTEM IS ENABLED:
   d)a) THE DUTY HX ISOLATION VALVE SHALL OPEN AND BE PROVEN.
   d)b) THE DUTY PUMP SHALL START AND BE PROVEN.
   d)c) DOMESTIC HOT WATER SUPPLY TEMPERATE CONTROL SEQUENCE SHALL ACTIVATE.

   e) IF EITHER DUTY PUMP OR HX VALVE IS COMMANDED TO START/OPEN AND FAILS OR STATUS CAN NOT BE PROVEN, THE PUMP OR HX SHALL BE COMMANDED TO STOP AND TAKEN OUT OF SERVICE. AN ALARM SHALL BE SENT TO THE ECC. THE STAND-BY PUMP OR HX SHALL BE COMMANDED TO START.

   f) ALL DIRECT DIGITAL CONTROL PANELS (DCP) SHALL BE FED FROM AN EMERGENCY POWER CIRCUIT.

2. DOMESTIC HOT WATER SUPPLY TEMPERATURE CONTROL

   a) THE DUTY HX STEAM CONTROL VALVE SHALL MODULATE CAPACITY TO MAINTAIN THE DOMESTIC HOT WATER SUPPLY TEMPERATURE SETPOINT.

3. THERMAL ERADICATION MODE

   a) UPON ACTIVATION, DOMESTIC HOT WATER SUPPLY TEMPERATURE SHALL BE RESET TO THE THERMAL ERADICATION MODE SETPOINT.

4. SAFETIES

   a) IF THE DOMESTIC HOT WATER SUPPLY TEMPERATURE EXCEEDS THE HIGH LIMIT SETPOINT. ALL STEAM CONTROL VALVES SHALL MODULATE CLOSED AND AN ALARM SENT TO THE ECC.
   b) ALL STEAM CONTROL VALVES SHALL REMAIN CLOSED WHENEVER PUMPS ARE NOT RUNNING AS INDICATED BY CURRENT SWITCH.

POINTS LIST: PUMPS

POINT TAG	POINT DESCRIPTION	UNITS	POINT TYPE					SETPOINTS			ALARM CONDITION	NOTES
			BINARY		ANALOG		VIRTUAL	ADJ.	INITIAL	HIGH	LOW		
			IN	OUT	IN	OUT							
	HX-2 TOP: ISOLATION VALVE	OPEN/CLOSE		X									
	HX-2 TOP: STEAM CONTROL VALVE POSITION	%		X									
	HX-2 TOP: HX CONTROLLER ALARM	ON/OFF	X										
	HX-2 BOTTOM: ISOLATION VALVE	OPEN/CLOSE		X									
	HX-2 BOTTOM: STEAM CONTROL VALVE POSITION	%	X										
	HX-2 BOTTOM: HX CONTROLLER ALARM	ON/OFF	X										
	CP-1: PUMP START/STOP	ON/OFF		X									
	CP-1: PUMP STATUS	ON/OFF	X									CP-1 PROOF FAILED	
	CP-2: PUMP START/STOP	ON/OFF		X									
	CP-2: PUMP STATUS	ON/OFF	X									CP-2 PROOF FAILED	
	DOMESTIC HOT WATER TEMPERATURE	DEG F			X					190 F			
	DOMESTIC HOT WATER TEMPERATURE SETPOINT	DEG F					X	X	140 F			HIGH SETPOINT EXCEEDED	
	THERMAL ERADICATION TEMPERATURE SETPOINT	DEG F					X	X	180 F				

1 DOMESTIC HOT WATER SYSTEM CONTROL DIAGRAM

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FULLY SPRINKLERED

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Issue Date: 05/09/2022

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Drawn: TMR/GF

Project Number: 620-334

Building Number: CLC

Drawing Number: M-604

BIM 360://620-334 New Community Living Center\19577_MEP_VA Montrose CLC_R20.rvt

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