MECHANICAL SYMBOLS AND ABBREVIATIONS

(NOTE: NOT ALL SYMBOLS MAY BE REQUIRED FOR THIS PROJECT)

HEATING AND AIR CONDITIONING

- HWS — HEATING HOT WATER SUPPLY
- HWR — HEATING HOT WATER RETURN
- HPS — HIGH PRESSURE STEAM. GAUGE PRESSURE IN PSI AS INDICATED.
- MPS-50 — MEDIUM PRESSURE STEAM. GAUGE PRESSURE IN PSI AS INDICATED.
- LPS — LOW PRESSURE STEAM
- LPS-1 — LOW PRESSURE STEAM (CLEAN)
- LPR — CONDENSATE RETURN - LPR, MPR, AND HPR - LOW, MEDIUM, AND HIGH PRESSURE RETURN
- CP — CONDENSATE PUMP DISCHARGE
- SR — SAFETY RELIEF VALVE DISCHARGE
- HCS — HOT AND CHILLED WATER SUPPLY
- HCR — HOT AND CHILLED WATER RETURN
- C — CONDENSER WATER SUPPLY
- CR — CONDENSER WATER RETURN
- CWS — CHILLED WATER SUPPLY
- CWR — CHILLED WATER RETURN
- HRS — HEAT RECOVERY SUPPLY
- HRR — HEAT RECOVERY RETURN
- RS — REFRIGERANT SUCTION GAS
- RL — REFRIGERANT LIQUID
- RHG — REFRIGERANT HOT GAS
- SMS — SNOW MELTING SYSTEM SUPPLY
- SMR — SNOW MELTING SYSTEM RETURN
- RRS — REMOTE RADIATOR SUPPLY
- RRR — REMOTE RADIATOR RETURN
- T — THERMOSTAT
- CR — RECESSED ASPIRATING THERMOSTAT
- H — HUMIDISTAT
- H — HUMIDISTAT SENSOR
- TS (S) — TEMPERATURE SENSOR
- P (S) — STATIC PRESSURE SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR

PIPING SYMBOLS

- ELBOW TURNED UP OR TOWARDS
- ELBOW TURNED DOWN OR AWAY
- TEE TURNED UP OR TOWARDS
- TEE TURNED DOWN OR AWAY
- ARROW IN LINE INDICATES DIRECTION OF FLOW
- PITCH DOWN IN DIRECTION OF ARROW
- REGULATING VALVE
- GATE VALVE
- GLOBE VALVE
- ANGLE GATE VALVE
- ANGLE GLOBE VALVE
- BALL VALVE
- SHUTOFF VALVE
- BUTTERFLY VALVE
- TWO WAY AUTOMATIC CONTROL VALVE
- THREE WAY AUTOMATIC MIXING OR DIVERTING VALVE
- RELIEF OR SAFETY VALVE
- PRESSURE REDUCING VALVE
- CHECK VALVE
- VALVE IN RISER
- BACKFLOW PREVENTOR (PRZ)
- STRAINER
- PIPE GUIDE
- PIPE ANCHOR
- STEAM DRIP ASSEMBLY. F & T=FLOAT & THERMOSTAT TRAP, BT=BUCKET TRAP
- E — EXPANSION COMPENSATOR
- FLEXIBLE PIPE CONNECTION
- MS — FLOW METER FITTING FOR ALL PIPING LARGER THAN 4". PART OF COMBINATION BALANCING VALVE AND FLOW METER FITTING FOR ALL PIPING 4" AND SMALLER.
- AV — AIR VENT
- VACUUM BREAKER
- UNION - SCREWED, FLANGED
- PETE'S PLUG
- PRESSURE GAUGE
- T — THERMOMETER

SHEET METAL- DOUBLE LINE

- DIRECTION OF FLOW
- 18 X 6 — DUCT SIZE, FIRST FIGURE IS SIDE SHOWN
- R — CHANGE OF ELEVATION, RISE(R), DROP(D)
- MANUAL VOLUME DAMPER
- SPLITTER DAMPER
- FIRE DAMPER / SMOKE DAMPER / COMBINATION FIRE/SMOKE DAMPER
- 3A — TRANSITION PIECE
- FLEXIBLE CONNECTION
- FLEXIBLE DUCT
- ELBOW WITH AIR VANES
- 1-1/2XR, 1/2XR — RADIUS ELBOW - WITH AIR VANES FOR DUCT WITH 'R' 30" OR MORE
- GRILLE OR REGISTER IN SIDE OF DUCT. SUPPLY, RETURN, OR EXHAUST AS INDICATED.
- B — BACK DRAFT DAMPER
- MOTOR OPERATED DAMPER - SUPPLY, RETURN, EXHAUST, OR OUTDOOR AIR AS INDICATED.
- EXHAUST OR RETURN AIR REGISTER OR GRILLE AS INDICATED IN BOTTOM OF DUCT
- DIFFUSER IN BOTTOM OF DUCT - SQUARE OR ROUND AS INDICATED
- AIR EXTRACTOR - FULL DEPTH OF BRANCH DUCT, GRILLE OR REGISTER
- SUPPLY OR DISCHARGE AIR DUCT. SOLID CROSS-UP OR TOWARDS, DASHED CROSS-DOWN OR AWAY.
- EXHAUST OR RELIEF AIR DUCT. SOLID CROSS-UP OR TOWARDS, DASHED CROSS-DOWN OR AWAY.
- RETURN OR OUTDOOR AIR DUCT. SOLID CROSS-UP OR TOWARDS, DASHED CROSS-DOWN OR AWAY.
- BRANCH DUCT TAKE-OFF
- 2 — DUCT PRESSURE CLASS. DESIGNATION IN INCHES OF W.G.
- N — "N" SUPERSCRIPT INDICATES NEGATIVE PRESSURE DUCT
- 4 — POINT OF CHANGE IN DUCT CONSTRUCTION (BY STATIC PRESSURE CLASS OR OPERATING PRESSURE IN ACCORDANCE WITH SMACNA)
- N 2 — PRESSURE CLASS SYMBOLS USED ON COMPUTER GENERATED DRAWINGS
- F — LOCATION OF DUCT MOUNTED SMOKE DETECTOR
- ROOM PRESSURE SENSOR
- THREE WAY THROW DIFFUSER SHADED AREA IN THE BLOCKED OFF QUADRANT.
- SUPPLY DIFFUSER
- RETURN DIFFUSER
- EXHAUST DIFFUSER

SHEET METAL ABBREVIATIONS

SA -- SUPPLY AIR	RG -- RETURN GRILLE
RA -- RETURN AIR	EG -- EXHAUST GRILLE
EA -- EXHAUST AIR	SD -- SUPPLY DIFFUSER
SR -- SUPPLY REGISTER	LD -- LINEAR DIFFUSER
RR -- RETURN REGISTER	FR -- FLOOR REGISTER
ER -- EXHAUST REGISTER	FG -- FLOOR GRILLE
SG -- SUPPLY GRILLE	LR -- LINEAR RETURN
BDD -- BACK DRAFT DAMPER	

STANDARD BRANCH DUCT SIZES *

CFM RANGE	BRANCH DIAMETER *	BRANCH SIZE **
0-100	6" Ø	8X4
105-200	8" Ø	10X6
205-300	10" Ø	12X6
305-450	12" Ø	14X8
455-600	14" Ø	16X10

* UNLESS NOTED OTHERWISE
** ADD REDUCER AT DIFFUSER NECK FOR BRANCHES LONGER THAN 72" IF SELECTED DIFFUSER HAS SMALLER NECK THAN BRANCH.

DEMOLITION GENERAL NOTES:

1. ALL ABANDONED HVAC PIPING, DUCTWORK, WASTE & VENT, COLD AND HOT WATER PIPING ETC FOUND ABOVE THE CEILING IN THE DEMOLITION AREA SHALL BE REMOVED. THIS INCLUDES MATERIAL AND SYSTEMS CURRENTLY ACTIVE BUT RENDERED INOPERATIVE, OR NOT REUSED DURING THE DEMOLITION OF THIS PROJECT; AND ASSOCIATED VALVE, HANGERS, CONTROLS, AND SPECIALTIES.
2. VERIFY EXACT SIZE AND LOCATION OF EXISTING UTILITIES BEFORE START OF DEMOLITION.
3. RELOCATE, REMOVE, AND ADJUST MECHANICAL ITEMS AS REQUIRED TO COORDINATE WITH NEW WORK PLANS.
4. ALL MECHANICAL ITEMS SHOWN ARE EXISTING AND SHOWN IN SCHEMATIC FORM ONLY.
5. REMOVE EXISTING PIPING AND DUCTWORK AS REQUIRED BACK TO LAST ACTIVE SERVICE POINT. REMOVE ALL ABANDONED PIPING AND DUCTWORK THAT CONFLICTS WITH NEW WORK. COORDINATE WITH OWNER FOR REMOVAL OF CORRECT SYSTEMS.
6. ALL DEMOLISHED FIXTURES AND EQUIPMENT SHALL BE REMOVED FROM PROPERTY.
7. COORDINATE MECHANICAL DEMOLITION AND EQUIPMENT WITH PHASING PLANS, OTHER TRADES, AND SPECIFICATIONS NOTED ON ALL OTHER PLANS.
8. IN AREAS WHERE EXISTING CONSTRUCTION IS REMOVED AND NO ADDITIONAL CONSTRUCTION IS INDICATED, PATCH AFFECTED AREA TO MATCH ADJACENT CONSTRUCTION.
9. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION OF ALL OTHER EQUIPMENT.
10. COORDINATE ANY SHUTDOWNS OF SERVICES OR EQUIPMENT WITH OWNER TO MINIMIZE INTERFERENCE WITH OWNER'S OPERATION AND DOWNTIME OF NEW AND EXISTING SERVICES. CONTRACTOR SHALL SUBMIT TO OWNER FOR REVIEW AND APPROVAL THE PROPOSED PHASING PLAN FOR CONNECTING NEW SERVICES TO EXISTING SERVICES.
11. CONTRACTOR SHALL COMPLY WITH GENERAL CONDITIONS AND PROTECTION PROVISIONS SPECIFIED FOR JOINT OWNER / CONTRACTOR OCCUPANCY WORK AREAS.
12. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS ABOVE CEILING BEFORE BEGINNING WORK. CONTRACTOR SHALL PROTECT EXISTING UTILITIES AND OTHER EXISTING FACILITY CONDITIONS FROM DAMAGE DURING CONSTRUCTION. ANY EXISTING UTILITIES AND SERVICES DAMAGED SHALL BE REPAIRED AT NO EXPENSE TO THE OWNER. CONTRACTOR SHALL TEMPORARILY MOVE OR TAKE OUT OF SERVICE ANY UTILITY NECESSARY TO COMPLETE WORK. SUCH SERVICES SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIFICATIONS.
13. — · — · — DESIGNATION OF MECHANICAL, PLUMBING AND FIRE PROTECTION EXISTING MATERIALS TO BE REMOVED.
14. ———— DESIGNATION OF MECHANICAL, PLUMBING AND FIRE PROTECTION EXISTING MATERIALS TO REMAIN.
15. INDICATES LIMIT OF DEMOLITION

HVAC GENERAL NOTES:

1. ALL DUCTWORK IS SHOWN IN SCHEMATIC FORM. NOT ALL DUCT RISES AND DROPS ARE SHOWN. PROVIDE OFFSETS AS REQUIRED FOR CLEARANCE WITH STRUCTURAL CONDITIONS AND OTHER BUILDING SYSTEMS. COORDINATE WITH OTHER TRADES AS REQUIRED. DO NOT SCALE DRAWINGS. DRAWINGS ARE NOT INTENDED TO BE USED AS CONTRACTOR SHOP DRAWINGS.
2. PROVIDE RIGID METAL DUCT, WITH NO EXCEPTION, WHERE FIRE WALLS AND/OR SMOKE WALLS ARE PENETRATED. BOTH SIDES OF WALL SHALL BE PROPERLY SEALED.
3. MANUAL VOLUME DAMPERS SHALL BE PROVIDED ON ALL SUPPLY, RETURN, AND EXHAUST BRANCH DUCTS.
4. VERIFY EXACT SIZE AND LOCATION OF EXISTING UTILITIES BEFORE START OF CONSTRUCTION.
5. SMOKE DAMPERS SHALL BE INSTALLED AS REQUIRED IN ALL DUCTS PENETRATING SMOKE RATED WALLS AS INDICATED ON ARCHITECTURAL PLANS. INSTALL WITH EXTENDED SLEEVES AND SPECIAL RATED WALL BOXES TO MAKE WALL PERPENDICULAR TO DUCT PENETRATION WHERE REQUIRED FOR IRREGULAR WALL BENDS AND ANGLES.
6. COORDINATE ANY SERVICE OR EQUIPMENT SHUTDOWNS WITH OWNER TO MINIMIZE INTERFERENCE WITH OWNER'S OPERATION AND DOWNTIME OF NEW AND EXISTING SERVICES. CONTRACTOR SHALL SUBMIT TO OWNER FOR REVIEW AND APPROVAL THE PROPOSED PHASING PLAN FOR CONNECTING NEW SERVICES TO EXISTING SERVICES.
7. ROUGH-IN AND CONNECT ALL PLUMBING REQUIRED TO EQUIPMENT FURNISHED AND INSTALLED BY OTHER DIVISIONS. WATER SUPPLY DROPS AND MEDICAL GAS DROPS IN WALLS TO FIXTURE GROUPS SHALL BE EXTENDED HORIZONTALLY TO SERVE EACH FIXTURE AS NEEDED.
8. PIPING THROUGH ALL FIRE OR SMOKE RATED FLOORS, ROOFS, WALLS, AND PARTITIONS SHALL BE PROVIDED WITH FIRE STOPPING. SPACE BETWEEN WALLS/FLOORS AND PIPING SHALL BE SEALED WITH FIRE BARRIER MATERIAL EQUIVALENT TO RATING OF WALL/FLOOR.
9. DIFFUSERS WITH NO THROW INDICATION SHALL BE 4-WAY.
10. ALL BRANCH DUCTWORK WITH MORE THAN ONE DIFFUSER SHALL REQUIRE MANUAL VOLUME DAMPER. THIS APPLIES TO ALL SUPPLY, RETURN, AND EXHAUST SYSTEMS.
11. EXACT LOCATION OF DIFFUSERS, GRILLES, AND REGISTERS, SHALL BE COORDINATED WITH REFLECTED CEILING PLANS BEFORE INSTALLATION. PROVIDE SYMMETRY WITH THE ROOM LIGHT SYSTEMS.
12. FIRE DAMPERS SHALL BE INSTALLED IN ALL DUCTS PENETRATING 2HR FIRE WALLS. DUCTS THRU 1HR FIRE WALLS SHALL NOT BE REQUIRED TO HAVE FIRE DAMPERS INSTALLED. FIRE DAMPERS SHALL BE INSTALLED IN A 1HR RATED WALLS WHEN TRANSFER AIR IS USED. INSTALL WITH EXTENDED SLEEVES AND SPECIAL RATED WALL BOXES TO MAKE WALL PERPENDICULAR TO DUCT PENETRATION WHERE REQUIRED FOR IRREGULAR WALL BENDS AND ANGLES. REFER TO SMACNA FIRE DAMPER GUIDE FIFTH EDITION.
13. VERIFY DIFFUSER, GRILLE, AN REGISTER MOUNTING FRAME TYPE WITH THE CEILING AND/OR WALL TYPES. MATCH FRAME STYLE WITH CEILING AND/OR WALL CONFIGURATION.
14. PROVIDE ACCESS DOORS OF PANELS FOR DUCT MOUNTED FIRE, SMOKE, AND FIRE/SMOKE DAMPERS. PROVIDE FIRE RATED ACCESS DOOR THROUGH CEILINGS WHERE DAMPERS ARE LOCATED ABOVE UNACCESSIBLE CEILINGS.
15. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES, AND REGISTERS.
16. COORDINATE ALL DOOR UNDER-CUTS INDICATED AND REQUIRED FOR PROPER AIR MOVEMENT.
17. INSTALL ALL EQUIPMENT PLUMB AND LEVEL. PROVIDE BLOCKING AND HARDWARE AS REQUIRED.
18. PROVIDE CONICAL TRANSITIONS ROUND TO ELLIPSE AT BRANCH DUCT TAKE-OFF'S WHERE REQUIRED.
19. ALL DUCTWORK IN MECHANICAL ROOM AND SUPPLY MAINS SHALL BE CONSTRUCTED TO PRESSURE CLASS OF 4 INCHES.
20. INDICATES CONNECT NEW TO EXISTING.
21. DIFFUSER AND REGISTER NOMENCLATURE SHALL BE AS FOLLOWS:
    SUPPLY - TYPE
    200 - CFM
22. TYPICAL VAV PRESSURE CLASSIFICATION. SEE TERMINAL AIR BOX SCHEDULE FOR INLET SIZE.
    D
23. CONTRACTOR SHALL PATCH AND SEAL ALL HOLES IN DUCT AND INSULATION CREATED FOR INSTALLATION INSPECTIONS MADE BY OWNER OR ENGINEER.
24. ALL CEILING MOUNTED ITEMS BETWEEN GRIDLINES "2" AND "5" AND FROM "CC" TO 32 FT EAST OF "CC", SHALL BE RIGIDLY SUPPORTED TO MINIMIZE MOTION DURING FUTURE MRI OPERATION. HANGERS SHALL BE FABRICATED FROM MATERIALS SUCH AS UNISTRUT. HANGERS SHALL BE BRACED TO PREVENT RACKING. FERROUS DUCT AND PIPE SHALL BE RIGIDLY FASTENED TO HANGER FRAME AND THERMALLY BROKEN. NON-FERROUS DUCT, PIPE, AND HANGERS MAY BE USED INSTEAD OF RIGID SUPPORTS. FERROUS LOOSE HANGER SYSTEMS SUCH AS HANGER STRAP AND ALL-THREAD ROD ARE PROHIBITED.
25. NO DUCT OR PIPE SHALL BE FABRICATED OR INSTALLED UNTIL SHOP DRAWINGS ARE COORDINATED WITH ALL OTHER TRADES AND APPROVED BY OWNER AND ENGINEER. THE QUALITY OF WORKMANSHIP REQUIRED FOR ALL WORK SHALL BE OF THE HIGHEST OBTAINALBE. WORKING WITH THE MATERIALS SPECIFIED. WORKMANSHIP SHALL BE SATISFACTORY TO THE OWNER AND ENGINEER, AND THEIR DECISION AS TO ACCEPTABLE QUALITY IS FINAL. IF WORKMANSHIP IS DETERMINED TO BE UNSATISFACTORY FOR ANY REASON, OR INSTALLED PRODUCTS DO NOT MEET DESIGN INTENT, THEN CONTRACTOR SHALL REPLACE UNSATISFACTORY MATERIALS WITH NO ADDITIONAL CHARGE TO OWNER.
26. ALL WORK PERFORMED IN THE CEILING OF ACTIVE VA PERSONS WORK AREA MUST BE COORDINATED WITH THE VA PROJECT MANAGER AND VA WORK AREA TENANT. WORK IN THESE AREAS SHALL BE PERFORMED AND COMPLETED DURING THE TIME PERIODS OUTSIDE THE NORMAL VA WORK DAY FOR EACH AREA, (EVENINGS AND WEEKENDS).
27. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES.

PIPING GENERAL NOTES:

1. VERIFY EXACT SIZE AND LOCATION OF EXISTING UTILITIES BEFORE START OF CONSTRUCTION.
2. PIPING IS SHOWN IN SCHEMATIC FORM. ROUTE PIPING AS REQUIRED FOR CLEARANCE WITH STRUCTURAL CONDITIONS AND OTHER BUILDING SYSTEMS. COORDINATE WITH OTHER TRADES AS REQUIRED. DO NOT SCALE DRAWINGS. DRAWINGS ARE NOT INTENDED TO BE USED AS CONTRACTOR SHOP DRAWINGS. PROVIDE ALL REQUIRED FITTINGS TO OFFSET ANY OBSTACLES.
3. COORDINATE ANY SERVICE OR EQUIPMENT SHUTDOWNS WITH OWNER TO MINIMIZE INTERFERENCE WITH OWNER'S OPERATION AND DOWNTIME OF NEW AND EXISTING SERVICES. CONTRACTOR SHALL SUBMIT TO OWNER FOR REVIEW AND APPROVAL THE PROPOSED PHASING PLAN FOR CONNECTING NEW SERVICES TO EXISTING SERVICES.
4. SEE PIPING DETAILS FOR EXACT PIPING CONNECTIONS TO EQUIPMENT. INSTALL PER MANUFACTURERS GUIDELINES.
5. WALL THERMOSTATS SHALL BE 4'-0" ABOVE FLOOR IN ROOMS AND CORRIDORS UNLESS NOTED OTHERWISE.
6. PIPING THROUGH ALL FIRE OR SMOKE RATED FLOORS, ROOFS, WALLS, AND PARTITIONS SHALL BE PROVIDED WITH FIRE STOPPING. SPACE BETWEEN WALLS/FLOORS AND PIPING SHALL BE SEALED WITH FIRE BARRIER MATERIAL EQUIVALENT TO RATING OF WALL/FLOOR.
7. ALL VALVES IN CORRIDORS SHALL BE LOCATED 1'-0" AWAY FROM WALLS UNLESS OTHERWISE NOTED. VALVES SHALL NOT BE LOCATED OVER INACCESSIBLE CEILINGS.
8. PATCH FLOORS, WALLS, CEILINGS, ETC. TO MATCH EXISTING CONDITIONS WHERE CUTTING IS REQUIRED.
9. INDICATES CONNECT NEW TO EXISTING.
10. ALL CEILING MOUNTED ITEMS BETWEEN GRIDLINES "2" AND "5", AND FROM "CC" TO 32 FT EAST OF "CC", SHALL BE RIGIDLY SUPPORTED TO MINIMIZE MOTION DURING FUTURE MRI OPERATION. HANGERS SHALL BE FABRICATED FROM MATERIALS SUCH AS UNISTRUT. HANGERS SHALL BE BRACED TO PREVENT RACKING. FERROUS DUCT AND PIPE SHALL BE RIGIDLY FASTENED TO HANGER FRAME AND THERMALLY BROKEN. NON-FERROUS DUCT, PIPE, AND HANGERS MAY BE USED INSTEAD OF RIGID SUPPORTS. FERROUS LOOSE HANGER SYSTEMS SUCH AS HANGER STRAP AND ALL-THREAD ROD ARE PROHIBITED.
11. NO DUCT OR PIPE SHALL BE FABRICATED OR INSTALLED UNTIL SHOP DRAWINGS ARE COORDINATED WITH ALL OTHER TRADES AND APPROVED BY OWNER AND ENGINEER. THE QUALITY OF WORKMANSHIP REQUIRED FOR ALL WORK SHALL BE OF THE HIGHEST OBTAINALBE. WORKING WITH THE MATERIALS SPECIFIED. WORKMANSHIP SHALL BE SATISFACTORY TO THE OWNER AND ENGINEER, AND THEIR DECISION AS TO ACCEPTABLE QUALITY IS FINAL. IF WORKMANSHIP IS DETERMINED TO BE UNSATISFACTORY FOR ANY REASON, OR INSTALLED PRODUCTS DO NOT MEET DESIGN INTENT, THEN CONTRACTOR SHALL REPLACE UNSATISFACTORY MATERIALS WITH NO ADDITIONAL CHARGE TO OWNER.
12. ALL WORK PERFORMED IN THE CEILING OF ACTIVE VA PERSONS WORK AREA MUST BE COORDINATED WITH THE VA PROJECT MANAGER AND VA WORK AREA TENANT. WORK IN THESE AREAS SHALL BE PERFORMED AND COMPLETED DURING THE TIME PERIODS OUTSIDE THE NORMAL VA WORK DAY FOR EACH AREA, (EVENINGS AND WEEKENDS).
13. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES.

Revisions	Date	Revisions	Date	Revisions	Date

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project number 11-25503

Drawing Title: MECHANICAL NOTES,SYMBOLS AND ABBREVIATIONS

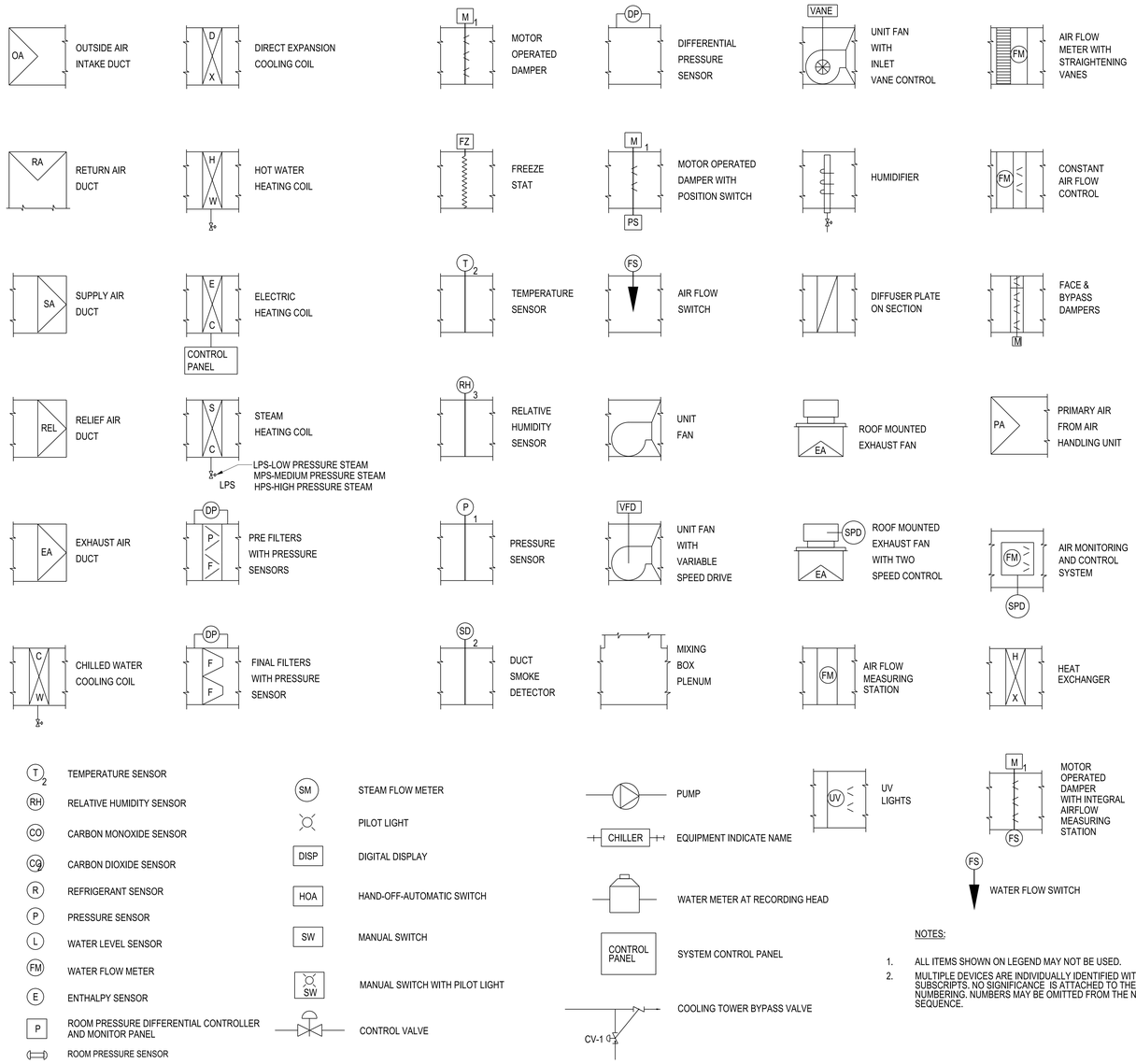
CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Date: 12/15/2014
Project No. 636-201
Building No. BLDG 1 | Checked AGW | Drawn RAH
Location: ICVA HEALTH CARE SYSTEM
DRAWING NO. 1-M1

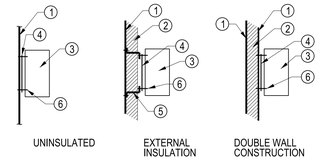
Office of Facilities
Department of Veterans Affairs

SYMBOLS



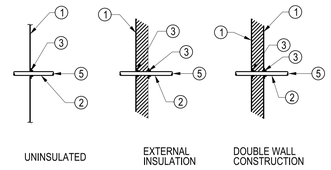
NOTES:

1. ALL ITEMS SHOWN ON LEGEND MAY NOT BE USED.
2. MULTIPLE DEVICES ARE INDIVIDUALLY IDENTIFIED WITH NUMERIC SUBSCRIPTS. NO SIGNIFICANCE IS ATTACHED TO THE ORDER OF NUMBERING. NUMBERS MAY BE OMITTED FROM THE NUMERICAL SEQUENCE.



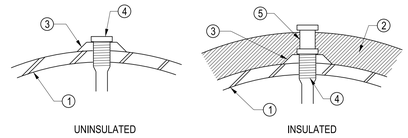
1. SHEET METAL
2. INSULATION OR LINER
3. CONTROL DEVICE
4. MOUNTING PLATE - MAY BE OMITTED WHERE CONTROL DEVICE INCLUDES A BOX OR BASE PLATE WHICH WILL PROVIDE REQUIRED MOUNTING STRENGTH AND RIGIDITY. FOR DAMPER MOTORS MOUNTING PLATE SHALL BE SUFFICIENTLY RIGID TO LIMIT MOTOR MOVEMENT TO DAMPER CONTROL ACTION.
5. MOUNTING BRACKET - TO MATCH INSULATION THICKNESS. SEAL AROUND BRACKET AS REQUIRED TO MAINTAIN VAPOR BARRIER.
6. MOUNTING SCREWS - AS REQUIRED BY CONTROL DEVICE. SEAL AS REQUIRED TO MAINTAIN VAPOR BARRIER AND ELIMINATE AIR LEAKAGE

1 MOUNTING DETAIL - DUCTWORK/EQUIPMENT
NO SCALE



1. SHEET METAL
2. CONTROL TUBING OR CONDUIT
3. DUCT FLANGE OR EQUIVALENT FITTINGS TO PROVIDE AIR TIGHT SEAL
4. TAPE AND SEALANT TO MAINTAIN VAPOR BARRIER
5. WHERE CONDUIT IS PROVIDED TO FACILITATE PASSAGE OF WIRES, CAPILLARY TUBES OR OTHER ELEMENTS, CAULK INSIDE OF OPENING TO PROVIDE AIR TIGHT SEAL.
6. APPLY LINER ADHESIVE TO MAINTAIN LINER FACE INTEGRITY.

2 DUCT PENETRATIONS
NO SCALE



1. PIPE
2. PIPE INSULATION
3. THREADED COUPLING WELDED TO PIPE
4. THERMAL WELL (ILLUSTRATED), NIPPLE OR OTHER ELEMENT OF CONTROL DEVICE.
5. EXTENSION TUBE TO MATCH INSULATION THICKNESS. ON COLD PIPES MAINTAIN VAPOR BARRIER WITH SEALANT.

3 PIPE PENETRATIONS
NO SCALE

DEFINITIONS:

FULL OPEN POSITION:
THE MAXIMUM POSSIBLE OPEN POSITION OF A VALVE OR DAMPER.

FULL CLOSED POSITION:
THE MINIMUM POSSIBLE OR SHUT OFF POSITION OF A VALVE OR DAMPER.

MAXIMUM OPEN POSITION:
THE MAXIMUM OPEN POSITION REQUIRED FOR A VALVE OR DAMPER AS INDICATED BY THE SCHEDULED OPERATING CAPACITY OR BY THE CONTROL SEQUENCE.

MINIMUM OPEN POSITION:
THE MINIMUM OPEN POSITION REQUIRED FOR A VALVE OR DAMPER AS INDICATED BY THE SCHEDULED OPERATING CAPACITY OR BY THE CONTROL SEQUENCE.

SET POINT:
THE DESIRED OPERATING POINT FOR A PARAMETER, AS DETERMINED BY MANUAL INPUT OR AUTOMATICALLY IN ACCORDANCE WITH THE CONTROL SEQUENCE.

FIELD DETERMINED SET POINT:
THE DESIRED OPERATING POINT FOR A PARAMETER, AS DETERMINED BY FIELD CONDITIONS, SUCH AS ACTUAL OPERATING POINTS, ACTUAL PRESSURE DROPS, OR OTHER FIELD DETERMINED VALUES.

REMOTE DAMPERS:
MOTOR OPERATED DAMPERS NOT LOCATED AT THE AIR HANDLING UNIT, INCLUDING SMOKE DAMPERS IN RATED WALLS, SMOKE MANAGEMENT DAMPERS, AND SHUT OFF DAMPERS WHICH MAY BE INSTALLED IN THE SUPPLY AND RETURN DUCT SYSTEMS, WHICH MUST OPEN UNDER NORMAL OPERATING CONDITIONS. THE NUMBER AND LOCATION OF REMOTE DAMPERS MAY VARY. SOME SYSTEMS MAY NOT CONTAIN REMOTE DAMPERS. SEE PLANS FOR LOCATION AND TYPE OF REMOTE DAMPERS.

BAS:
BUILDING AUTOMATION SYSTEM.

FSCS:
FIRE FIGHTERS SMOKE CONTROL STATION.

GENERAL NOTES

1. THESE GENERAL NOTES APPLY TO ALL CONTROL DIAGRAMS AND SEQUENCES AS WELL AS ALL WORK RELATED TO THE HVAC CONTROLS INDICATED ON OTHER M-SERIES DRAWINGS.
2. THE DIAGRAMS, POINT LISTS AND CONTROL SEQUENCES DESCRIBE THE REQUIRED SEQUENTIAL OPERATIONS OF SYSTEMS AND MAJOR COMPONENTS. THEY DO NOT DEFINE IN DETAIL THE OPERATION OF MINOR COMPONENTS, RELAYS, SWITCHES OR OTHER SMALL DEVICES REQUIRED FOR THE PROPER FUNCTIONING OF THE CONTROL SYSTEM. INCORPORATE ALL SUCH ITEMS IN ORDER TO PROVIDE PROPER OPERATION OF CONTROL COMPONENTS AND EQUIPMENT.
3. THE SEQUENCES OF OPERATION DESCRIBE CHANGES IN CONTROL FUNCTIONS AS OPERATING CONDITIONS VARY IN A PARTICULAR MANNER, SUCH AS RISING ROOM TEMPERATURE. UNLESS OTHERWISE STATED, THE SEQUENCES SHALL BE REVERSED WHEN THE OPERATING CONDITIONS REVERSE, SUCH AS WHEN THE RISING ROOM TEMPERATURE BEGINS TO FALL.
4. CONTROL DEVICE SET POINTS SHALL BE MANUALLY ADJUSTABLE OVER THEIR ENTIRE CONTROL RANGE. SET POINTS MAY BE FACTORY SET, BUT SHALL BE FIELD ADJUSTABLE. SPECIFIED SET POINTS SHALL TAKE PRECEDENCE OVER FACTORY SETTINGS.
5. WHERE THE CONTROL SEQUENCE INDICATES AN AUTOMATIC RESET PROCEDURE, THE SET POINT SHALL INDICATE THE NORMAL START-UP CONDITION.
6. TEMPERATURE, AIR FLOWS, PRESSURES AND SIMILAR DATA SHOWN ON CONTROL DIAGRAMS ARE NOMINAL VALUES SO THAT TYPICAL DIAGRAMS MAY BE USED. SEE EQUIPMENT SCHEDULES FOR DATA DIRECTLY APPLICABLE TO INDIVIDUAL EQUIPMENT ITEMS. WHERE NOTED, VALUES SHALL BE FIELD MEASURED OR CALCULATED IN ACCORDANCE WITH THE PROCEDURE INDICATED.
7. MULTIPLE ROOM SENSORS HAVE BEEN INDICATED FOR SOME EQUIPMENT ITEMS. OPERATION FOR THESE SENSORS SHALL BE ONE OF THE FOLLOWING AS INDICATED FOR THE EQUIPMENT ITEM:
   a. (A) AVERAGE: THE AVERAGE VALUE OF THE SENSOR OUTPUTS SHALL BE USED AS THE CONTROL SIGNAL.
   b. (M) MAXIMUM DEMAND: THE SENSOR INDICATING THE MAXIMUM DEMAND SHALL BE USED FOR CONTROL. SHOULD THE OUTPUT SIGNAL OF ANOTHER SENSOR INDICATE THAT IT HAS THE MAXIMUM DEMAND, CONTROL SHALL BE SHIFTED TO THAT SENSOR.
8. HAND - OFF - AUTOMATIC SWITCHES (HOA) SHALL HAVE THEIR OPERATING POSITION MONITORED. SHOULD THE SWITCH BE MOVED TO THE HAND POSITION, AN ALARM SHALL BE INDICATED GIVING THE UNIT IDENTIFICATION, THE TIME, AND THE MESSAGE "IN THE MANUAL ON POSITION". SHOULD THE SWITCH BE MOVED TO THE OFF POSITION, AN ALARM SHALL BE INDICATED GIVING THE UNIT IDENTIFICATION, THE TIME, AND THE MESSAGE "IN THE MANUAL OFF POSITION". A FIVE SECOND (ADJUSTABLE) DELAY SHALL BE PROVIDED SO THAT ONLY ONE ALARM RESULTS FROM THE MOVEMENT OF THE SWITCH.
9. HAND - OFF - AUTOMATIC SWITCHES (HOA) SHALL BE USED FOR MANUAL SHUT DOWN UNDER EMERGENCY CONDITIONS. HOA SWITCHES SHALL BE READILY ACCESSIBLE AND CLEARLY MARKED. HOA SWITCHES MAY BE MOUNTED ON THE FACE OF THE UNIT CONTROL PANEL AND MAY BE GANGED IN EQUIPMENT ROOMS WHERE CONTROL PANELS ARE NOT AVAILABLE OR READILY ACCESSIBLE. HOA SWITCHES SHALL BE WALL MOUNTED IN JUNCTION BOXES. IN FINISHED SPACES HOA SWITCHES SHALL BE FLUSH MOUNTED WITH SWITCH COVER PLATE.
10. BAS SHALL PROVIDE TIME DELAYS ON RESTART ON EMERGENCY POWER AND RESTORATION OF NORMAL POWER SO THAT ALL MOTORS DO NOT ATTEMPT TO START AT THE SAME TIME.
11. LOCATE THERMOSTATS AND OTHER DEVICES REQUIRING OCCUPANT MONITORING OR ADJUSTMENT AT AN ELEVATION 4'-0" ABOVE FINISHED FLOOR, IN ACCORDANCE WITH ADA REGULATIONS. SENSORS WITH NO EXTERNAL ADJUSTMENTS SHALL BE MOUNTED 5'-0" ABOVE FINISH FLOOR. COORDINATE WITH ARCHITECTURAL PLANS FOR EXACT LOCATIONS OF WALL MOUNT DEVICES.
12. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. INTERFACE EQUIPMENT AND WIRING SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
13. CEILING ACCESS PANELS AND DUCT ACCESS PANELS SHALL BE PROVIDED, WHERE REQUIRED, TO SERVICE DAMPERS, HEATERS, VALVES AND OTHER CONCEALED EQUIPMENT.
14. CONTROL WIRE AND CONDUIT SHALL BE SUPPLIED AND INSTALLED UNDER DIVISION 23, AND SHALL COMPLY WITH N.E.C AND DIVISION 26 SPECIFICATIONS.
15. CONTROL SYSTEM SUPPLIER SHALL PROVIDE ALL WIRING AND CONDUIT REQUIRED FOR THE INSTALLATION OF THE CONTROL SYSTEM, WIRING, CONDUIT AND RELATED EQUIPMENT SHALL COMPLY WITH THE PROVISIONS OF DIVISION 26. WORK SHALL INCLUDE ALL POWER AND CONTROL WIRING NEEDED FOR INTER-CONNECTIONS OF EQUIPMENT, REMOTE SENSORS AND DEVICES, INCLUDING SMOKE DAMPERS AND MOTOR OPERATED DAMPERS.
16. CONTROL SYSTEM SUPPLIER SHALL WIRE FROM POWER SOURCES INDICATED ON THE DRAWINGS, CIRCUITS PROVIDED FOR THE CONTROL SYSTEM SHALL BE 120 VOLT, 20 AMP, 60 HZ UNLESS OTHERWISE INDICATED. POWER CIRCUITS WILL BE PROVIDED BY DIVISION 26 TO THE TERMINAL POINTS INDICATED. CIRCUITS WILL BE TERMINATED IN MECHANICAL EQUIPMENT ROOMS OR ELECTRICAL ROOMS UNLESS OTHERWISE INDICATED. COORDINATE FINAL CONNECTION POINT LOCATION WITH DIVISION 26.
17. SMOKE DETECTORS, REMOTE TEST, RESET AND ALARM INDICATORS SHALL BE FURNISHED AND WIRED BY THE DIVISION 26 CONTRACTOR. CONTROL SUPPLIER IS RESPONSIBLE FOR WIRING FROM SMOKE DETECTOR CONTACTS AT AIR HANDLING UNIT DETECTORS TO DIRECTLY SHUT DOWN UNITS AND ACCOMPLISH OTHER REQUIRED CONTROL FUNCTIONS.
18. CONTROL SYSTEMS SUPPLIER SHALL WIRE FROM CONTACTS IN FIRE ALARM PANEL AS REQUIRED FOR INTERFACE BETWEEN FIRE ALARM SYSTEM AND HVAC CONTROL SYSTEMS.
19. THE CONTROL SEQUENCE SHALL BE ACCOMPLISHED BY THE DIRECT DIGITAL CONTROL SYSTEM UNLESS OTHERWISE NOTED. ALL VALVE AND DAMPER OPERATORS SHALL BE ELECTRONIC TYPE UNDER DIRECT DIGITAL CONTROL EXCEPT LARGE VALVE OR DAMPER OPERATORS MAY BE PNEUMATIC WHERE REQUIRED TO MEET POWER OR SPEED DEMANDS.
20. SET DEFAULT TEMPERATURE SETPOINTS TO DRIFT (+/-) 2 DEG F.

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: MECHANICAL CONTROLS NOTES, SYMBOLS, AND ABBREVIATIONS

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: DRB

Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014

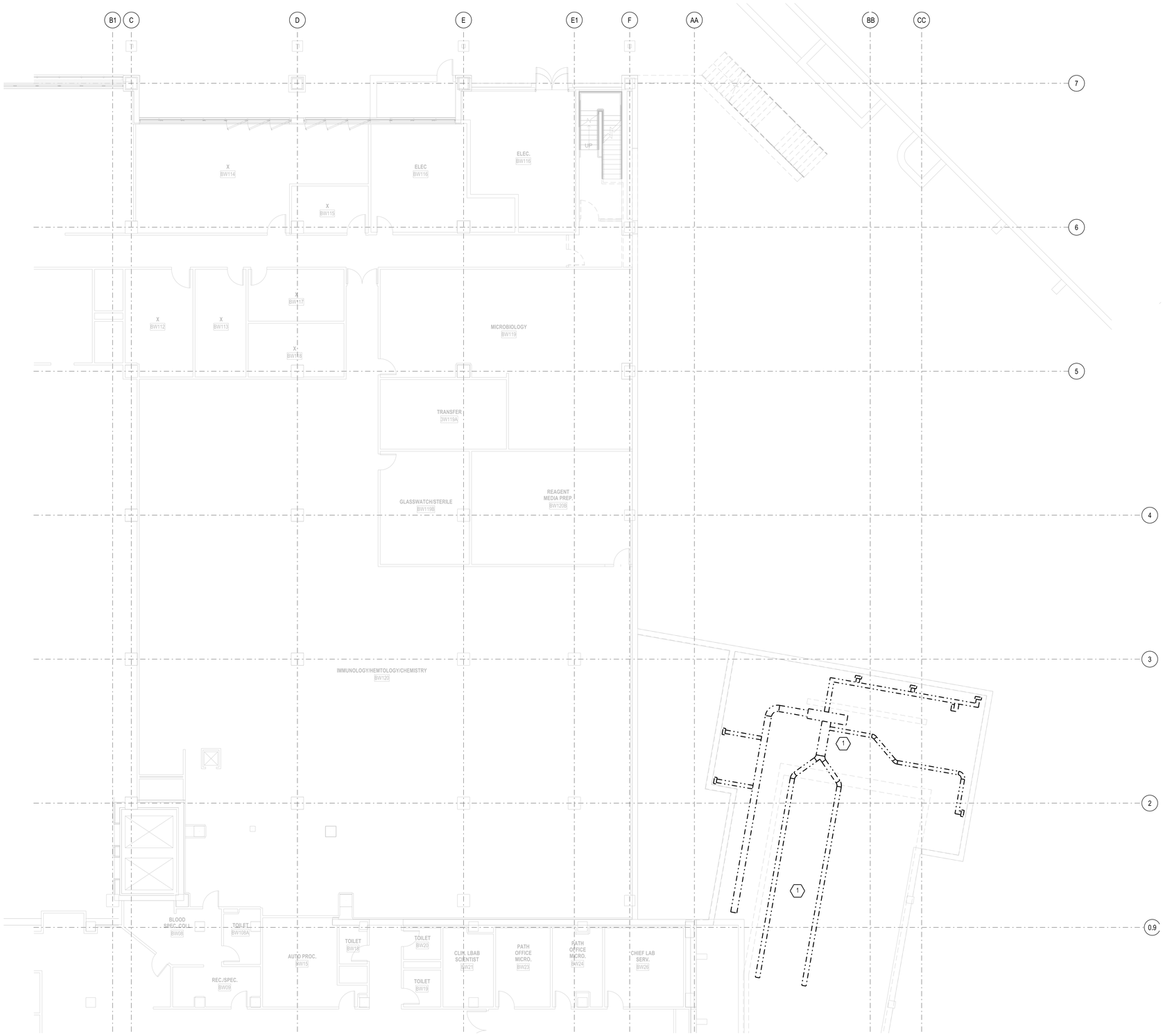
Project No.: 636-201

DRAWING NO.: 1-M2

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983



1 **ZONE A**

1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B. DEMOLISH WORK PER ARCHITECTURAL PLANS. PROVIDE MATERIALS NECESSARY TO CAP AND MODIFY SYSTEMS AS NEEDED, INCLUDING TEMPORARY TEMPERATURE CONTROLS MODIFICATIONS.

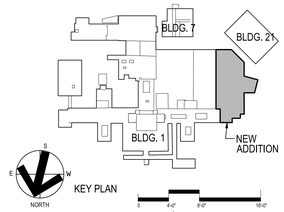
C. ALL PIPING THROUGH FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDED WITH FIRE STOPPING SLEEVES.

D. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES

E. GENERAL CONTRACTOR TO PATCH ALL FLOOR AND WALL PENETRATION HOLDS REMAINING AFTER DEMOLITION OF ALL PIPING, CONDUITS, AND DUCTWORK.

KEYED DEMO NOTES:

1 DEMOLISH ALL HVAC EQUIPMENT AND ASSOCIATED DUCT AND PIPE WITHIN CRAWL SPACE BELOW CHAPEL.



SCALE: 1/8" = 1'-0"

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
MECHANICAL HVAC DEMOLITION PLAN - LOWER LEVEL

CONSTRUCTION DOCUMENTS

Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. **BLDG 1** | Checked **AGW** | Drawn **RAH**

Location **ICVA HEALTH CARE SYSTEM**

Date **12/15/2014**

Project No. **636-201**

DRAWING NO. **1-M3**

Office of Facilities

Department of Veterans Affairs

PROJECT: IC - VAMC - EXPAND BLDG. 1 FOR PACT PROJECT
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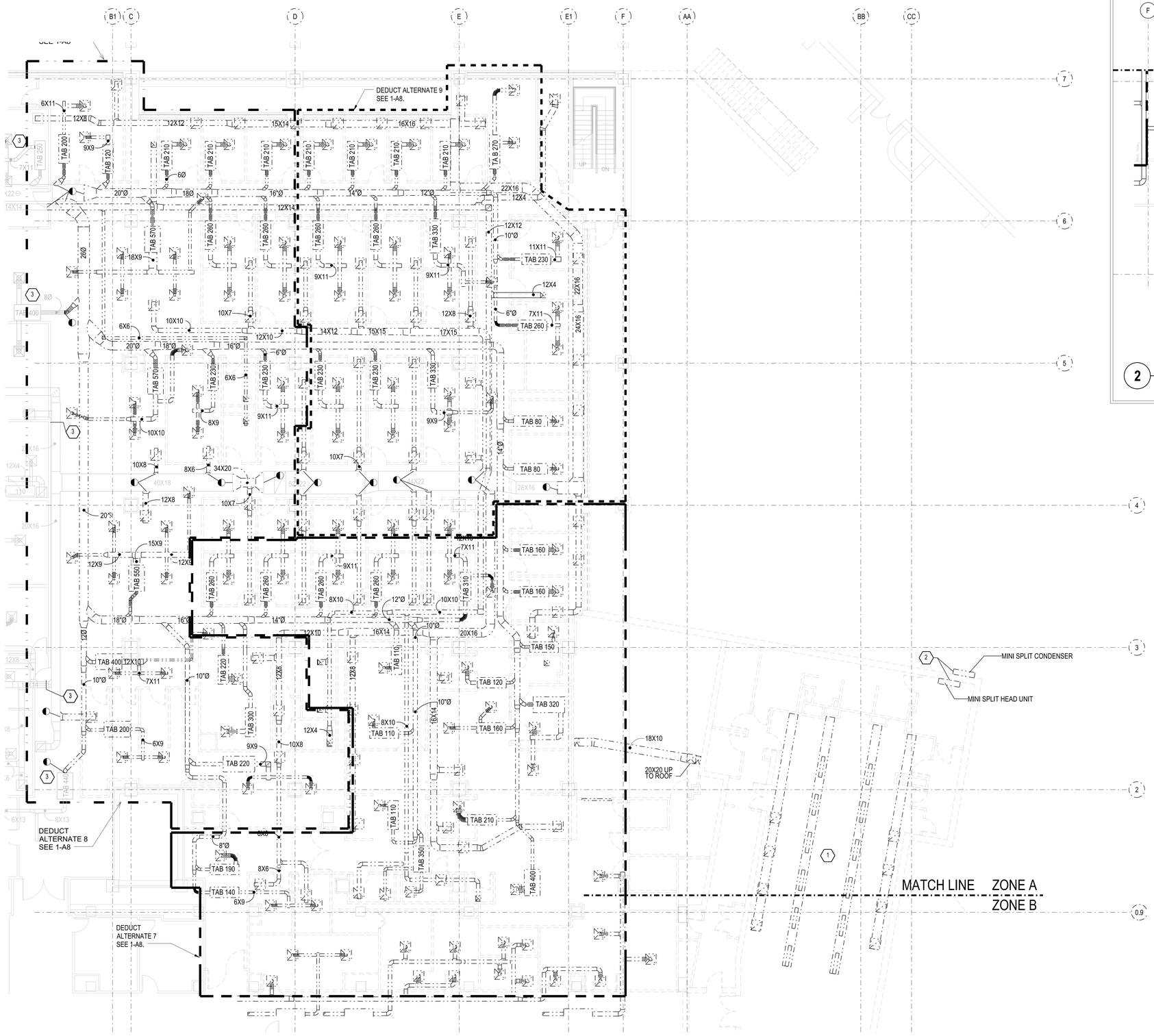
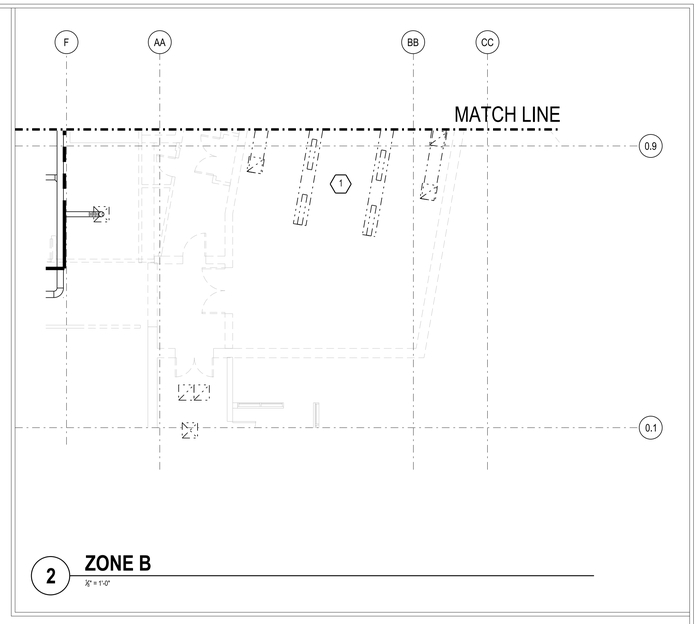
VA FORM 08-6231, FEB. 1983



1 **ZONE A**
1/8" = 1'-0"



2 **ZONE B**
1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B. DEMOLISH WORK PER ARCHITECTURAL PLANS. PROVIDE MATERIALS NECESSARY TO CAP AND MODIFY SYSTEMS AS NEEDED, INCLUDING TEMPORARY TEMPERATURE CONTROLS MODIFICATIONS.

C. RECORD FLOW DATA FROM TAB'S AND CONVECTORS TO REMAIN, PRIOR TO DEMOLITION. REBALANCE FLOW WHEN NEW SYSTEMS ARE COMPLETE.

D. ALL PIPING THROUGH FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDED WITH FIRE STOPPING SLEEVES.

E. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES.

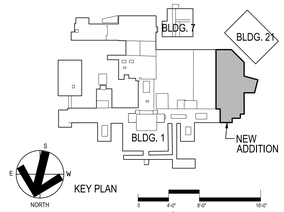
F. GENERAL CONTRACTOR TO PATCH ALL FLOOR AND WALL PENETRATION HOLDS REMAINING AFTER DEMOLITION OF ALL PIPING, CONDUITS, AND DUCTWORK.

G. PRIOR TO START OF ANY DEMOLITION, TEST AND MEASURE AIR FLOW AND HYDRONIC FLOWS OF ALL SYSTEMS WITHIN AFFECTED CONSTRUCTION AREA. REPORT DATE TO VA AND ENGINEER FOR VERIFICATIONS OF EXISTING EQUIPMENT PERFORMANCE.

H. CLEAN ALL DUCT MAIN ON THIS LEVEL THAT ARE EXISTING TO REMAIN FOR RECONNECTION, INCLUDING SUPPLY AIR, RETURN AIR AND EXHAUST AIR.

KEYED DEMO NOTES:

1. DEMOLISH ALL DUCTWORK IN CHAPEL BUILDING.
2. DEMOLISH AIR CONDITIONING SYSTEM, PIPING, WALL BRACKETS, POWER SUPPLY.
3. RECORD FLOW DATA FROM HVAC DEVICE, OR BRANCH MAIN PRIOR TO DEMOLITION, FOR REBALANCE OF FLOW WHEN NEW SYSTEMS ARE COMPLETE.



KEY PLAN

SCALE: 1/8" = 1'-0"

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
MECHANICAL HVAC DEMOLITION PLAN - LEVEL 1

CONSTRUCTION DOCUMENTS

Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. **BLDG 1** | Checked **AGW** | Drawn **DRB**

Location
ICVA HEALTH CARE SYSTEM

Date **12/15/2014**

Project No. **636-201**

DRAWING NO. **1-M4**

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

1 **ZONE A**

1/8" = 1'-0"

GENERAL HVAC DEMO NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B. ALL PIPING THROUGH FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDED WITH FIRE STOPPING SLEEVES.

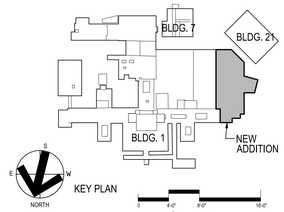
C. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES.

D. GENERAL CONTRACTOR TO PATCH ALL FLOOR AND WALL PENETRATION HOLDS REMAINING AFTER DEMOLITION OF ALL PIPING, CONDUITS, AND DUCTWORK.

KEYED DEMO NOTES:

1. LIEBERT CONDENSING UNIT SERVING BIO-MED BWMCC ROOM BW02A SHALL BE RELOCATED. RECOVER REFRIGERANT TO USE WITH REINSTALL. COORDINATE WITH OWNER AND MANUFACTURER FOR SHUT DOWN AND REINSTALLATION REQUIREMENTS. COORDINATE WITH OWNER FOR TEMPORARY LOCATION AND OPERATION DURING CONSTRUCTION, AND FOR ACCEPTABLE DOWNTIMES. REFER TO 1-M17 FOR TEMPORARY LOCATION.

2. DEMOLISH ALL HVAC EQUIPMENT AND ASSOCIATED DUCT, PIPE AND POWER SUPPLY, ON ROOF OF CHAPEL BUILDING.



Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: MECHANICAL HVAC DEMOLITION PLAN LEVEL 2

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: RAH

Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014

Project No.: 636-201

DRAWING NO. 1-M5

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

PROJECT: IC - VAMC - EXPAND BLDG. 1 FOR PACT PROJECT
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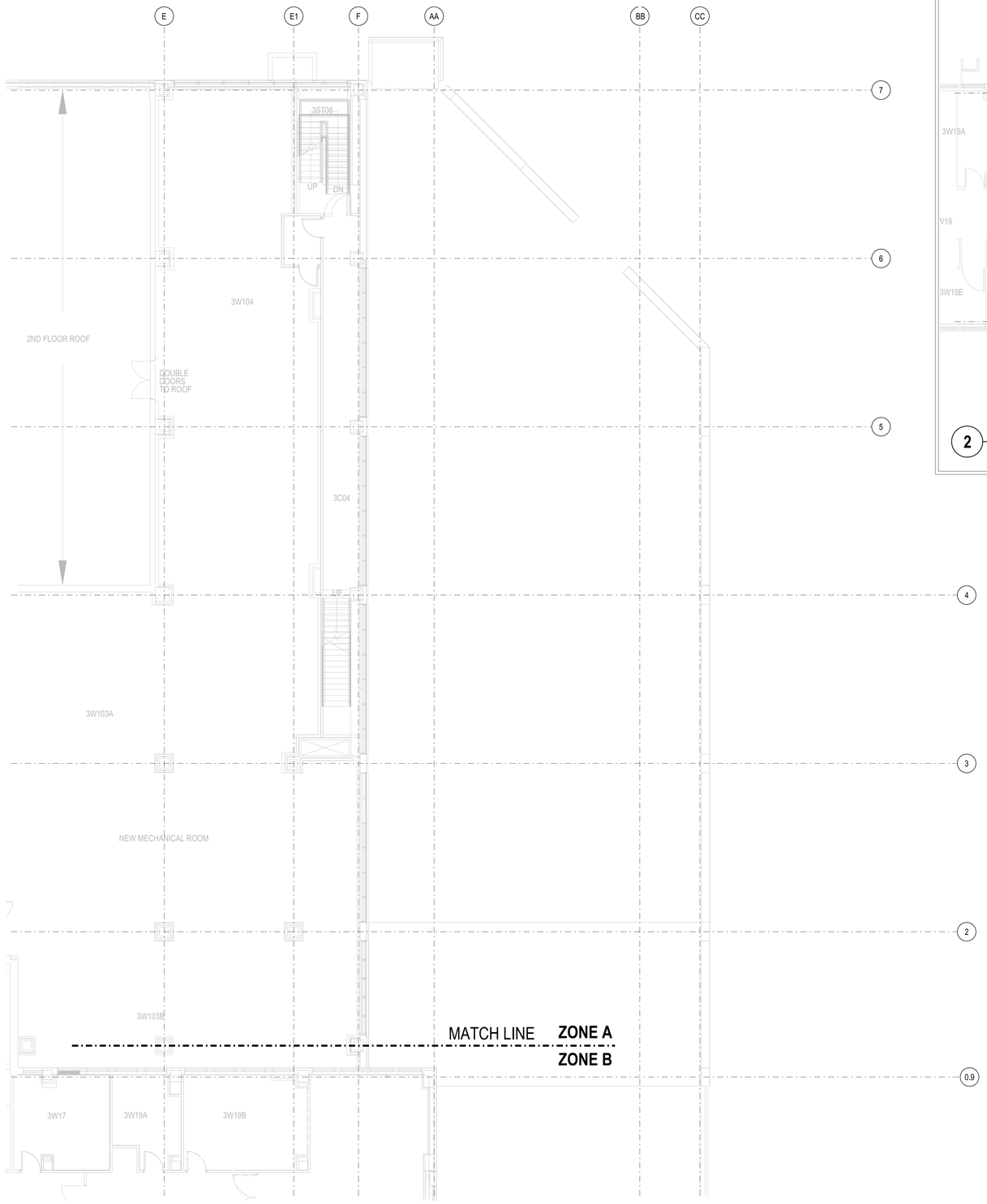
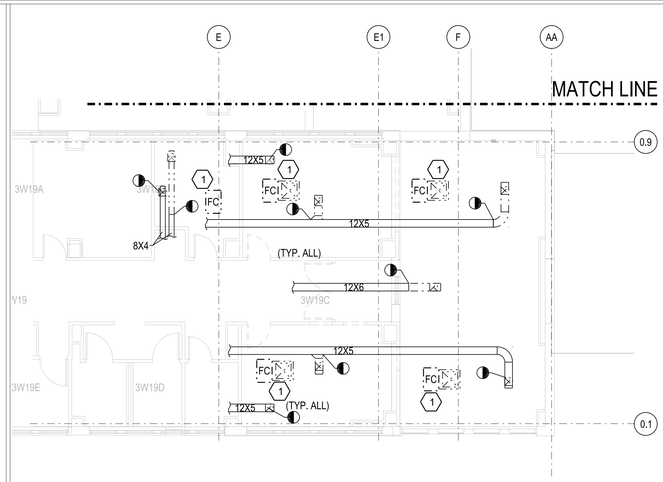


1 **ZONE A**
1/8" = 1'-0"



2 **ZONE B**
1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED,AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B. DEMOLISH WORK PER ARCHITECTURAL PLANS. PROVIDE MATERIALS NECESSARY TO CAP AND MODIFY SYSTEMS AS NEEDED. INCLUDING TEMPORARY TEMPERATURE CONTROLS MODIFICATIONS.

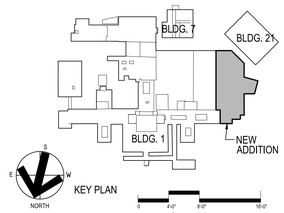
C. ALL PIPING THROUGH FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDED WITH FIRE STOPPING SLEEVES.

D. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES

E. GENERAL CONTRACTOR TO PATCH ALL FLOOR AND WALL PENETRATION HOLDS REMAINING AFTER DEMOLITION OF ALL PIPING, CONDUITS, AND DUCTWORK.

KEYED DEMO NOTES:

(1) DEMOLISH ALL FAN COIL UNITS AND ASSOCIATED DUCT BRANCHES.



SCALE: 1/8" = 1'-0"

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
MECHANICAL HVAC DEMOLITION PLAN LEVEL 3

CONSTRUCTION DOCUMENTS

Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. **BLDG 1** | Checked **AGW** | Drawn **RAH**

Location
ICVA HEALTH CARE SYSTEM

Date **12/15/2014**
Project No. **636-201**
DRAWING NO. **1-M6**

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

PROJECT: IC-VAMC- EXPAND BLDG. 1 FOR PACT PROJECT
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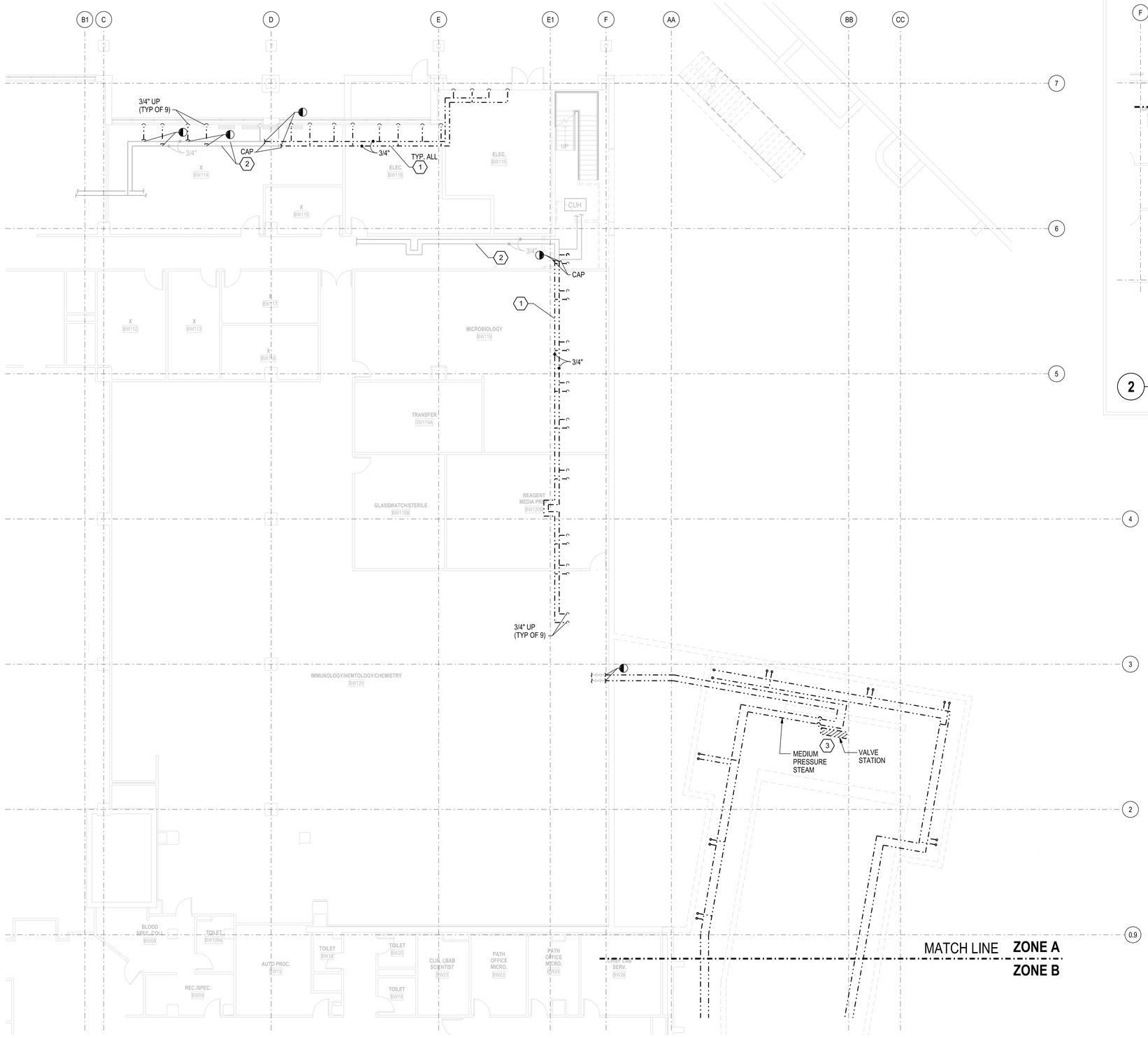
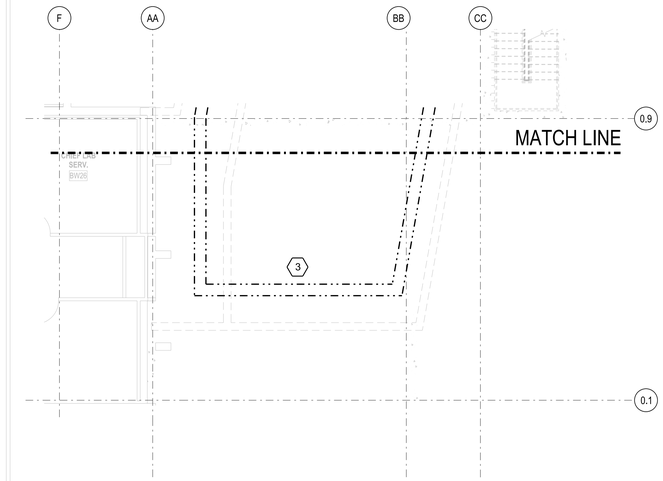


1 **ZONE A**

1/8" = 1'-0"



2 **ZONE B**

1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B. DEMOLISH WORK PER ARCHITECTURAL PLANS. PROVIDE MATERIALS NECESSARY TO CAP AND MODIFY SYSTEMS AS NEEDED. INCLUDING TEMPORARY TEMPERATURE CONTROLS MODIFICATIONS.

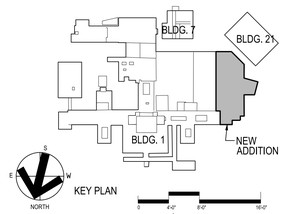
C. ALL PIPING THROUGH FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDED WITH FIRE STOPPING SLEEVES.

D. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES

E. GENERAL CONTRACTOR TO PATCH ALL FLOOR AND WALL PENETRATION HOLDS REMAINING AFTER DEMOLITION OF ALL PIPING, CONDUITS, AND DUCTWORK.

KEYED DEMO NOTES:

1. DEMOLISH PIPING MAIN AND BRANCHES UP TO LEVEL ONE CONVECTORS.
2. EXISTING TO REMAIN.
3. DEMOLISH ALL HVAC EQUIPMENT AND ASSOCIATED DUCT AND PIPE WITHIN CRAW SPACE BELOW CHAPEL.



Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: **MECHANICAL PIPING DEMOLITION PLAN- LOWER LEVEL**

CONSTRUCTION DOCUMENTS

Project Title: **EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY**

Building No.: **BLDG 1** | Checked: **AGW** | Drawn: **DRB**

Location: **ICVA HEALTH CARE SYSTEM**

Date: **12/15/2014**

Project No.: **636-201**

DRAWING NO.: **1-M7**

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

PROJECT: IC- VAMC- EXPAND BLDG. 1 FOR PACT PROJECT
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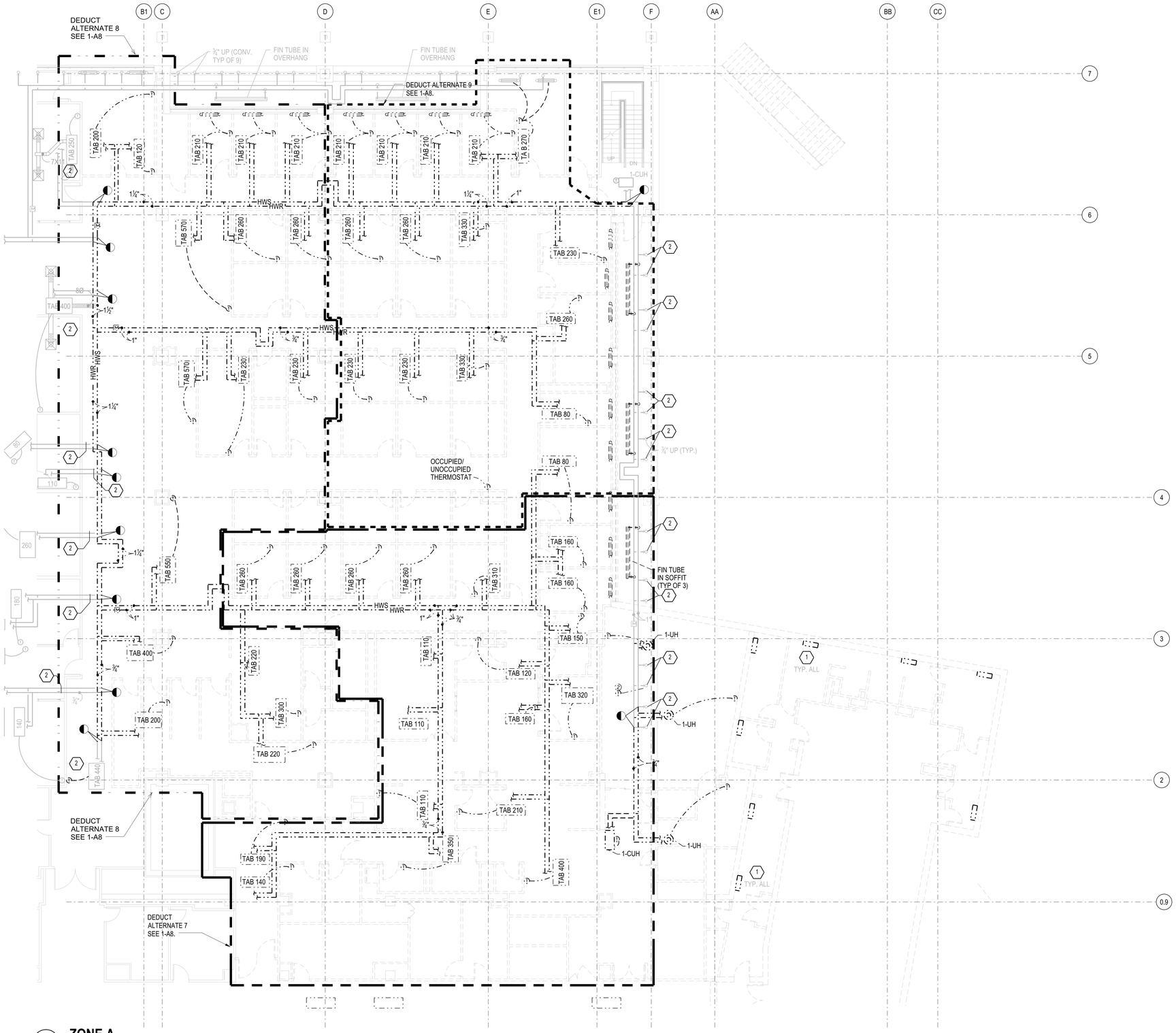
PLOTTED BY: Gregory Gaspen 12/16/2014
PLOTTED BY: Gregory Gaspen 12/16/2014 PEN TABLE:HE_JPO.CTHeery Engineers



1 **ZONE A**

1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B. RECORD FLOW DATA FROM TAB'S AND CONVECTORS TO REMAIN, PRIOR TO DEMOLITION. RE BALANCE FLOW WHEN NEW SYSTEMS ARE COMPLETE.

C. ALL PIPING THROUGH FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDED WITH FIRE STOPPING SLEEVES.

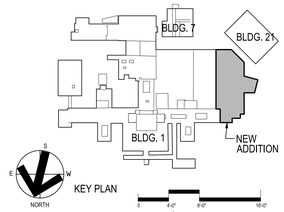
D. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES

E. GENERAL CONTRACTOR TO PATCH ALL FLOOR AND WALL PENETRATION HOLDS REMAINING AFTER DEMOLITION OF ALL PIPING, CONDUITS, AND DUCTWORK.

F. PRIOR TO START OF ANY DEMOLITION, TEST AND MEASURE AIR FLOW AND HYDRONIC FLOWS OF ALL SYSTEMS WITHIN AFFECTED CONSTRUCTION AREA. REPORT DATA TO VA AND ENGINEER FOR VERIFICATIONS OF EXISTING EQUIPMENT PERFORMANCE.

KEYED DEMO NOTES:

1. DEMOLISH ALL CONVECTORS AND PIPING IN CHAPEL BUILDING.
2. RECORD FLOW DATA FROM HVAC DEVICE, OR BRANCH MAIN, PRIOR TO DEMOLITION FOR REBALANCE OF FLOW WHEN NEW SYSTEM ARE COMPLETE.



SCALE: 1/8" = 1'-0"

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: MECHANICAL PIPING DEMOLITION PLAN - LEVEL 1

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: DRB

Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014

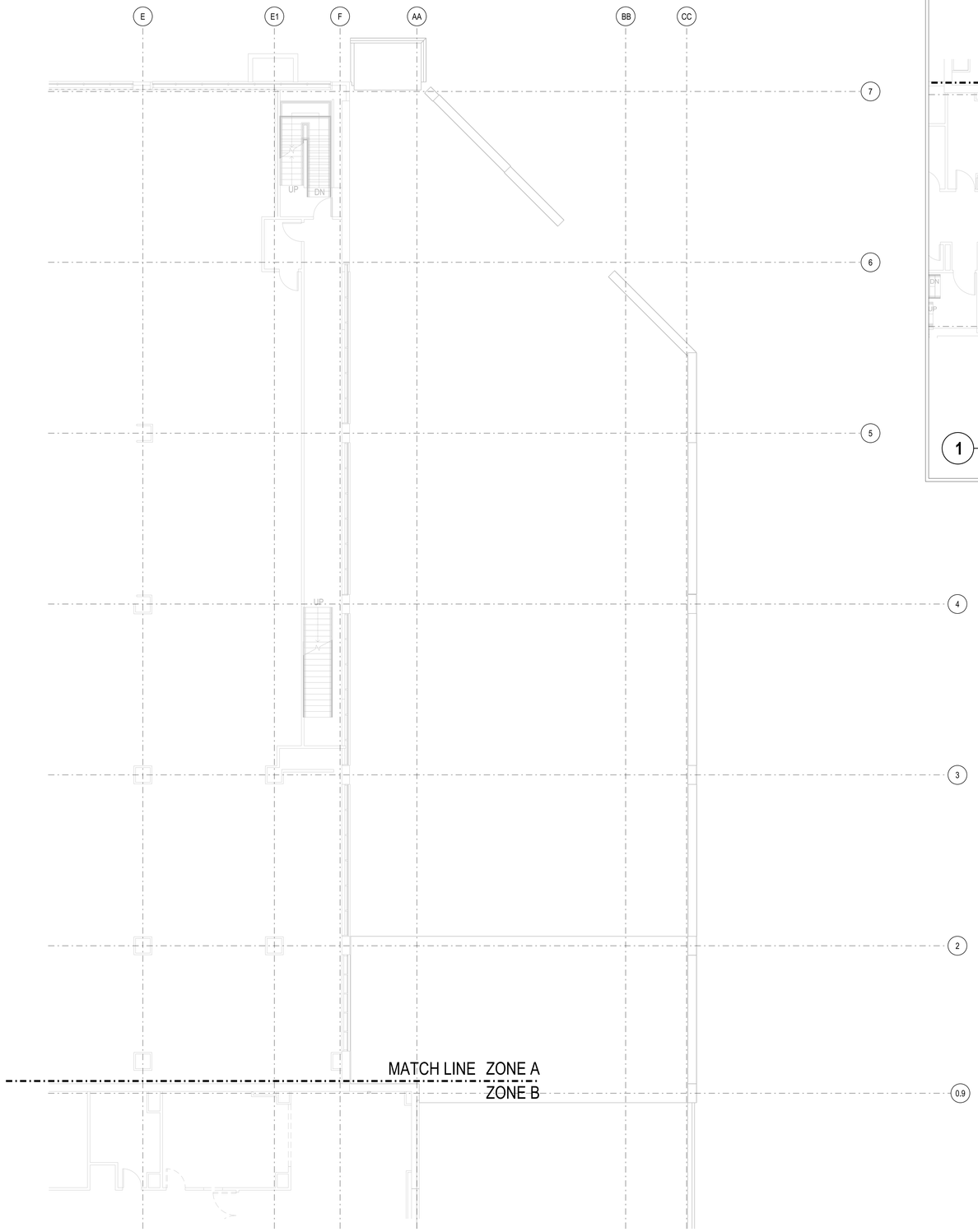
Project No.: 636-201

DRAWING NO.: 1-M8

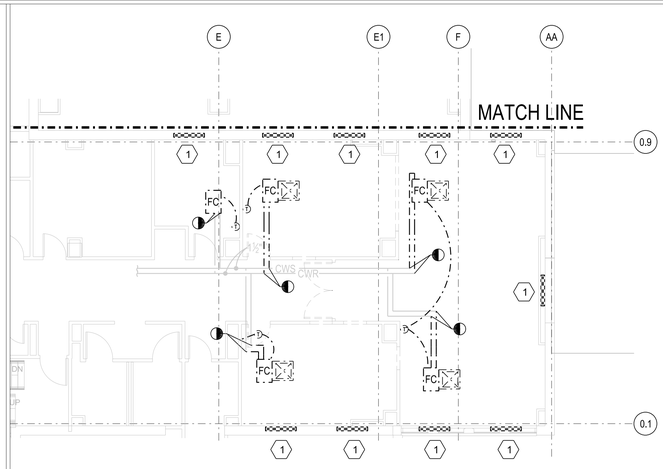
Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983



1 **ZONE A**
½" = 1'-0"



1 **ZONE B**
½" = 1'-0"

GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

C. ALL PIPING THROUGH FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDED WITH FIRE STOPPING SLEEVES.

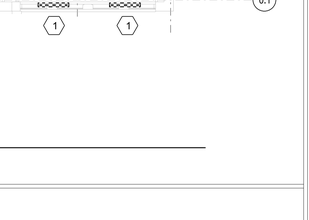
D. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES

E. GENERAL CONTRACTOR TO PATCH ALL FLOOR AND WALL PENETRATION HOLDS REMAINING AFTER DEMOLITION OF ALL PIPING, CONDUITS, AND DUCTWORK.

F. PRIOR TO START OF ANY DEMOLITION, TEST AND MEASURE AIR FLOW AND HYDRONIC FLOWS OF ALL SYSTEMS WITHIN AFFECTED CONSTRUCTION AREA. REPORT DATA TO VA AND ENGINEER FOR VERIFICATIONS OF EXISTING EQUIPMENT PERFORMANCE.

KEYED DEMO NOTES:

1. DEMO PIPE CONNECTING TO CONVECTORS AND CAP ABOVE 2ND FLOOR CEILING. GENERAL CONTRACTOR TO PATCH AND REPAIR WALLS, REFER TO ARCHITECTURAL PLANS.



SCALE: ¼" = 1'-0"

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
MECHANICAL PIPING DEMOLITION PLAN LEVEL 3

CONSTRUCTION DOCUMENTS

Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. **BLDG 1** | Checked **AGW** | Drawn **DRB**

Location
ICVA HEALTH CARE SYSTEM

Date **12/15/2014**

Project No. **636-201**

DRAWING NO. **1-M9**

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

PROJECT: IC-VAMC- EXPAND BLDG. 1 FOR PACT PROJECT
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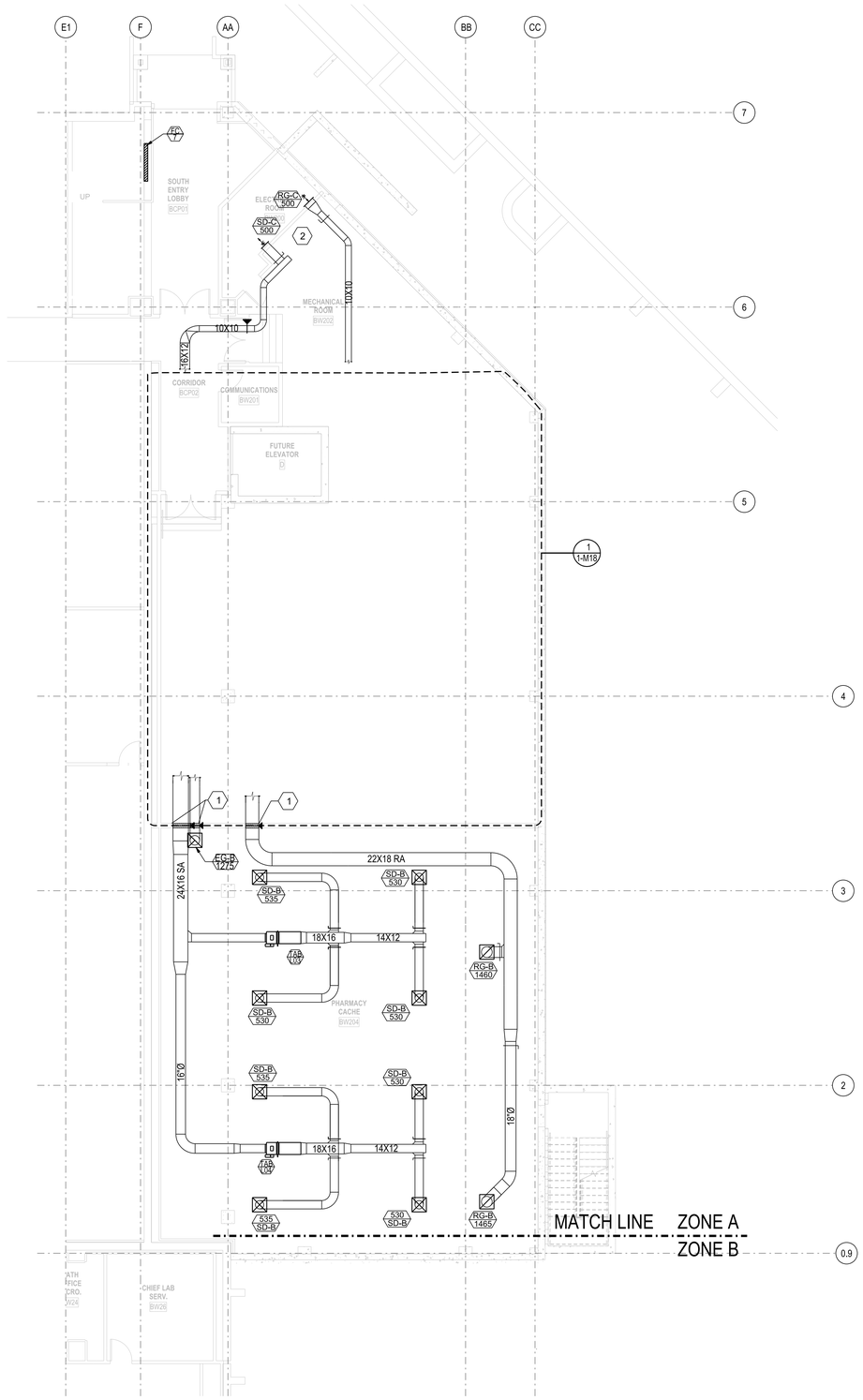


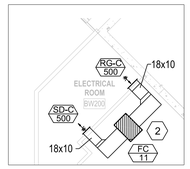
GENERAL MECHANICAL NOTES:

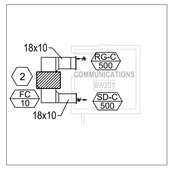
A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

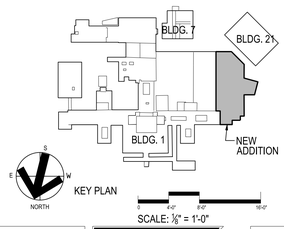
B. REFER TO SHEET 1-A8 FOR LIST OF AREAS AFFECTED BY DEDUCT ALTERNATES.

KEYED HVAC NOTES:

1. INSTALL 1/2" STEEL SECURITY BARS WITHIN DUCT AT HORIZONTAL AND VERTICAL SPACING OF 4 INCHES.
2. INSTALL UNIT IF DEDUCT ALTERNATE FOR REMOVAL IF PHARMACY CACHE IS ACCEPTED. SUPPLY AND RETURN DUCT PLENUM SIZES TO MATCH UNIT CONNECTION SIZES.







Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
MECHANICAL HVAC PLAN LOWER LEVEL

CONSTRUCTION DOCUMENTS

Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. **BLDG 1** | Checked **AGW** | Drawn **RAH**

Location
ICVA HEALTH CARE SYSTEM

Date **12/15/2014**

Project No. **636-201**

DRAWING NO. **1-M10**

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

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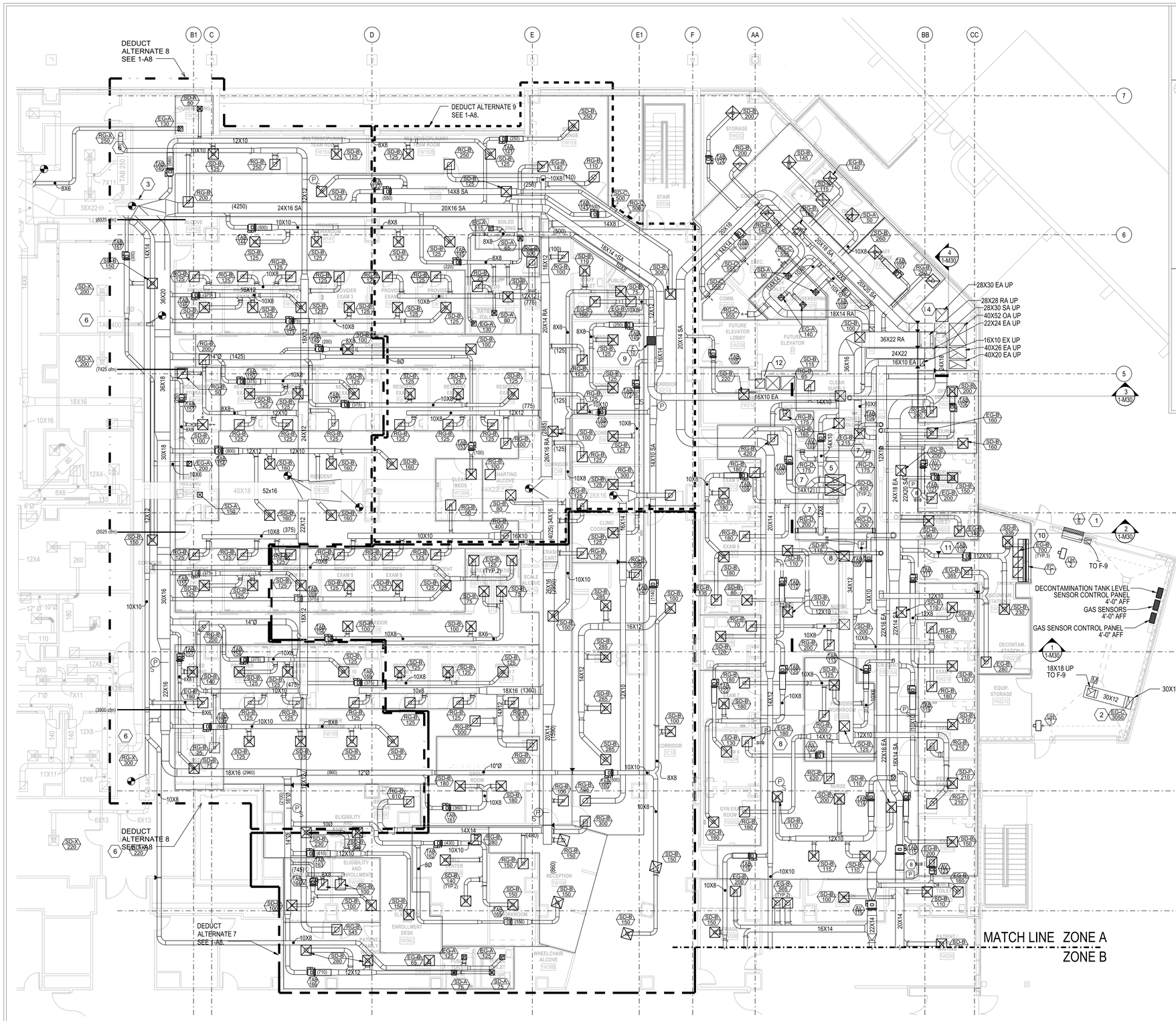
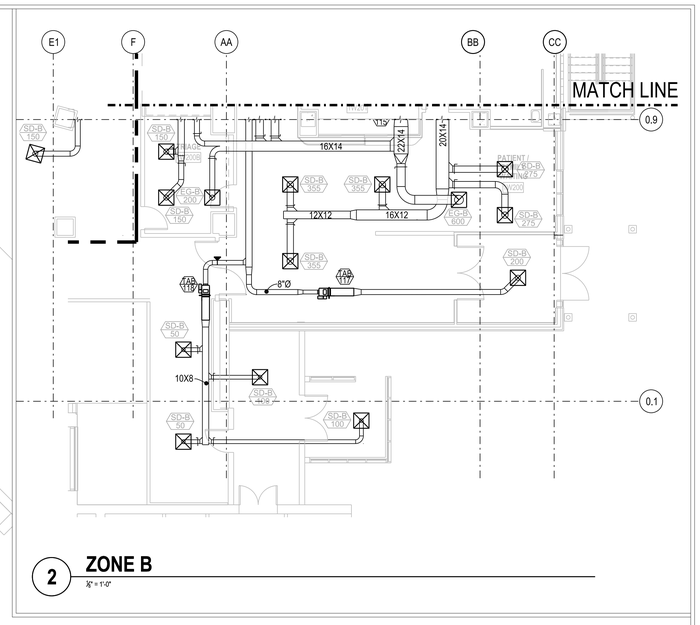


1 **ZONE A**
1/4" = 1'-0"



2 **ZONE B**
1/4" = 1'-0"

A ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B ROUTE DUCT IN JOIST SPACE WHERE SPACE IS LIMITED

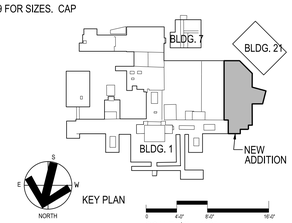
C EXISTING AIR HANDLER TO OPERATE WITH EXISTING CONTROL SEQUENCES. NEW TERMINAL AIR BOXES TO BE DIRECT DIGITAL CONTROLS AND CONNECTED TO DIGITAL CONTROL SYSTEM. PROVIDE PNEUMATIC TO DIGITAL CONTROLS COMPONENTS AS NEEDED.

D REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES

E. ALL CEILING MOUNTED ITEMS BETWEEN GRIDLINES "2" AND "5", AND FROM "CC" TO 32 FT EAST OF "CC", SHALL BE RIGIDLY SUPPORTED TO MINIMIZE MOTION DURING FUTURE MRI OPERATION. HANGERS SHALL BE FABRICATED FROM MATERIALS SUCH AS UNISTRUT. HANGERS SHALL BE BRACED TO PREVENT RACKING. FERROUS DUCT AND PIPE SHALL BE RIGIDLY FASTENED TO HANGER FRAME AND THERMALLY BROKEN. NON-FERROUS DUCT, PIPE, AND HANGERS MAY BE USED INSTEAD OF RIGID SUPPORTS. FERROUS LOOSE HANGER SYSTEMS SUCH AS HANGER STRAP AND ALL-THREAD ROD ARE PROHIBITED.

KEYED HVAC NOTES:

1. INSTALL LOUVER 4'-6" ABOVE FINISHED FLOOR. INTERIOR DAMPER AND SLEEVE SHALL NOT EXTEND MORE THAN 4 INCHES BEYOND WALL FACE.
2. INSTALL BOTTOM OF GRILLE 1 FOOT ABOVE FINISHED FLOOR. COORDINATE WITH GARAGE DOOR INSTALLATION. GRILLE TO BE MOUNTED ON SIDE OF DUCT FACING OPEN ROOM.
3. PATCH EXISTING DUCT WHERE DEMOLISHED DUCT IS CONNECTED. ALL LOCATIONS.
4. OFFSET EXHAUST DUCT NORTH TO ROUTE ABOVE SUPPLY AIR DUCT, INTO LOUVERED PENTHOUSE, AND AT LEVEL 1 STRUCTURAL FLOOR BEAM.
5. COORDINATE BOOM MOUNT LOCATIONS WITH GENERAL CONTRACTOR AND LIGHT WITH ELECTRICAL CONTRACTOR. INSTALL DUCT TO STRUCTURE WITHIN TRAUMA ROOM.
6. REBALANCE TO NOTED CFM
7. 12X6 RETURN DUCT DOWN WALL STUD CAVITY. INSTALL GRILLE 12" AFF IN TRAUMA ROOM.
8. WALL MOUNT ROOM PRESSURE MONITOR. INSTALL 48" A.F.F.
9. INSULATE FAN F-10 PLENUM BOX AND ACCESS PANEL WITH 2 INCH DUCT WRAP. CLEANLY CUT AND TAPE INSULATION AROUND ACCESS PANEL TO ALLOW EASY OPENING AND REPLACEMENT OF MAINTENANCE ACCESS PANEL.
10. INSTALL DUCT PLENUM FOR FC-1 RETURN AIR, FROM EG-B GRILLES TO FC-1 INTAKE. INCLUDE FILTER RACK.
11. IF AMBULANCE GARAGE IS ELIMINATED THEN TAB-110 SHALL SERVE REMAINING VESTIBULE, AND 665 CFM EXHAUSTED FROM VESTIBULE.
12. RISERS FOR FUTURE USE. REFERENCE 1-M29 FOR SIZES. CAP RISERS ABOVE CEILING AT 8'-6" A.F.F.



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

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International

11-25503

Drawing Title: **MECHANICAL HVAC PLAN LEVEL 1**

CONSTRUCTION DOCUMENTS

Project Title: **EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY**

Building No.: **BLDG 1** | Checked: **AGW** | Drawn: **RAH**

Location: **ICVA HEALTH CARE SYSTEM**

Date: **12/15/2014**

Project No.: **636-201**

DRAWING NO. **1-M11**

Office of Facilities

Department of Veterans Affairs

PROJECT: IC - VAMC - EXPAND BLDG. 1 FOR PACT PROJECT
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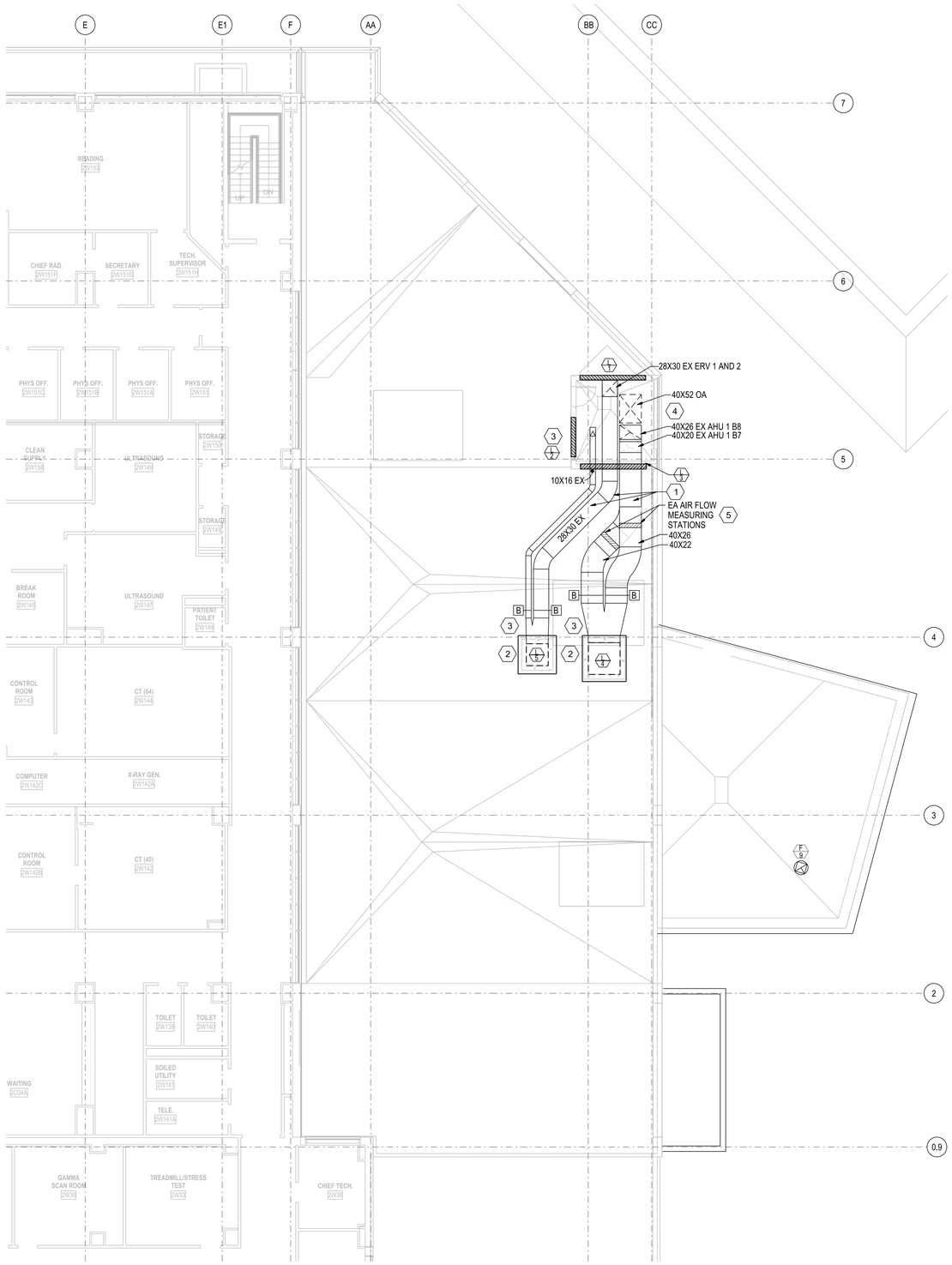
VA FORM 08-6231, FEB. 1983



GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

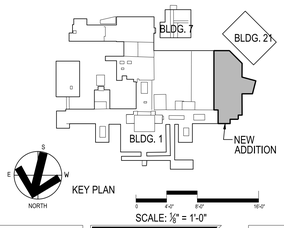
B. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES

KEYED HVAC NOTES:

1. ROUTE DUCT THROUGH PENTHOUSE WALL BELOW LOUVER.
2. ROOF VENTILATOR. DUCT CONNECTIONS MADE ON CURB WALL.
3. MAINTAIN 25' OUTDOOR AIR INTAKE SEPARATION FROM ALL EXHAUST HOODS AND PLUMBING VENTS.
4. EXTEND OA DUCT OPENING 4 INCHES MINIMUM ABOVE ROOF. METAL GRATE OVER DUCT OPENING BY GENERAL CONTRACTOR. ALL OTHER DUCT SHALL PENETRATE ROOF WITH ROOF CURB EXTENDING 4 INCHES MINIMUM ABOVE ROOF.
5. PROVIDE WEATHER TIGHT SIDE ACCESS PANELS FOR ACCESS TO AIRFLOW MEASURING STATION MAINTENANCE.

1 ZONE A

1/8" = 1'-0"



Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: MECHANICAL HVAC PLAN- LEVEL 2

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: RAH

Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014

Project No.: 636-201

DRAWING NO.: 1-M12

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

PROJECT: IC - VAMC - EXPAND BLDG. 1 FOR PACT PROJECT
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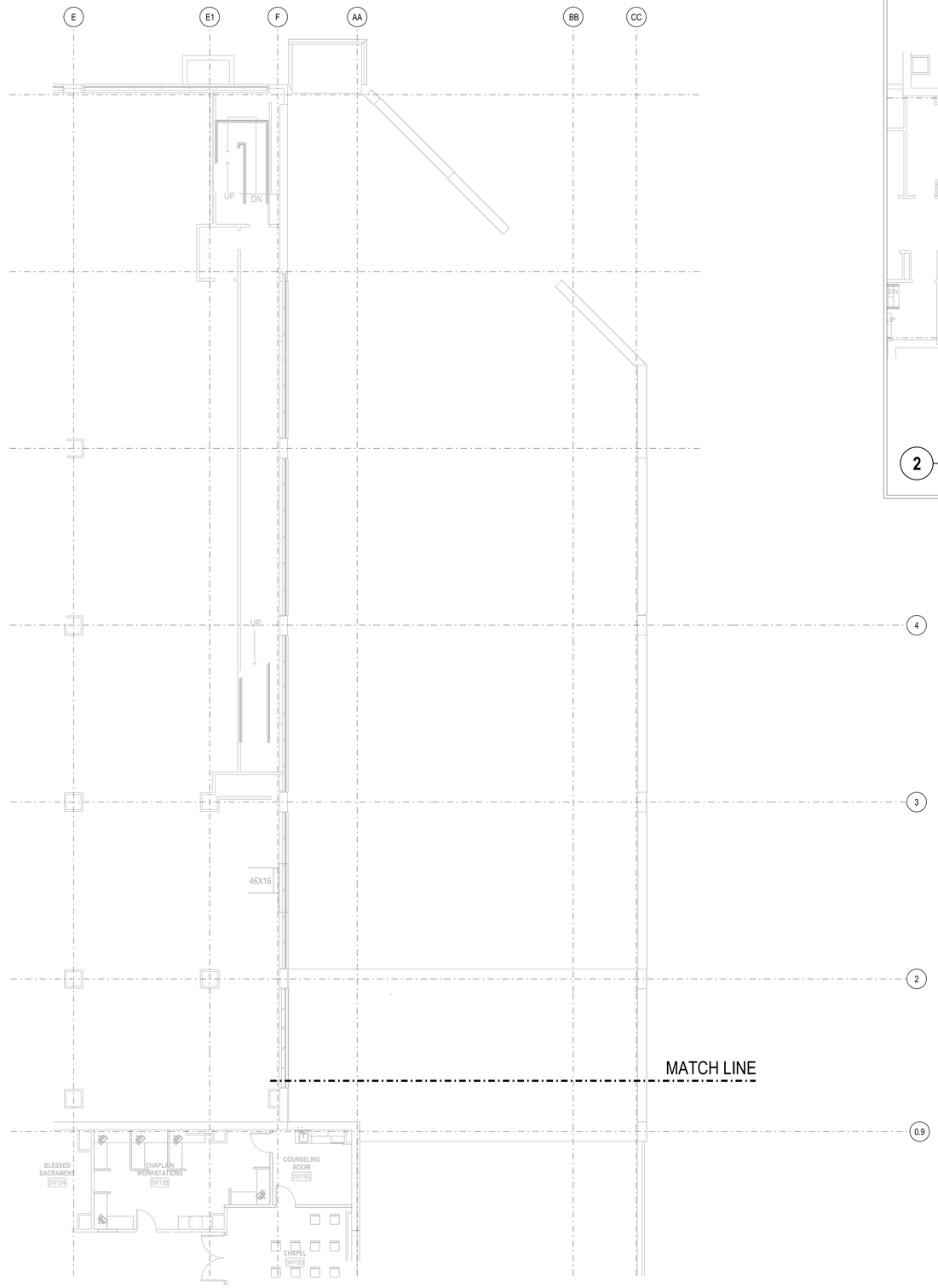
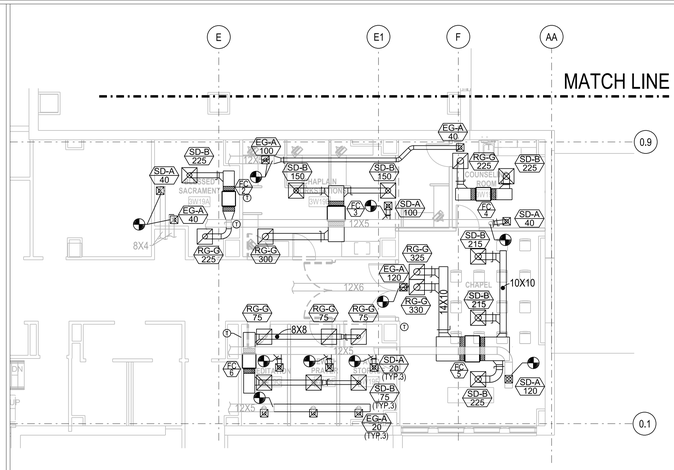


1 **ZONE A**

1/4" = 1'-0"



2 **ZONE B**

1/4" = 1'-0"

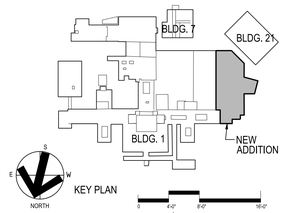
GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES

KEYED HVAC NOTES:

1 LOCATION OF RELOCATED LIEBERT CONDENSING UNIT SERVING BIO-MED BWMCC ROOM BW02A. REFER TO ARCHITECTURAL PLANS FOR ROOF MOUNTING CURB DETAIL. INSTALL UNIT AND REFRIGERANT PIPING PER MANUFACTURERS GUIDELINES. RECHARGE SYSTEM WITH THE UNIT'S RECOVERED REFRIGERANT AND PROVIDE ADDITIONAL REFRIGERANT AS NEEDED. COORDINATE WITH MANUFACTURER FOR INSTALLATION REQUIREMENTS.



Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: MECHANICAL HVAC PLAN LEVEL 3

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: RAH

Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014

Project No.: 636-201

DRAWING NO. 1-M13

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

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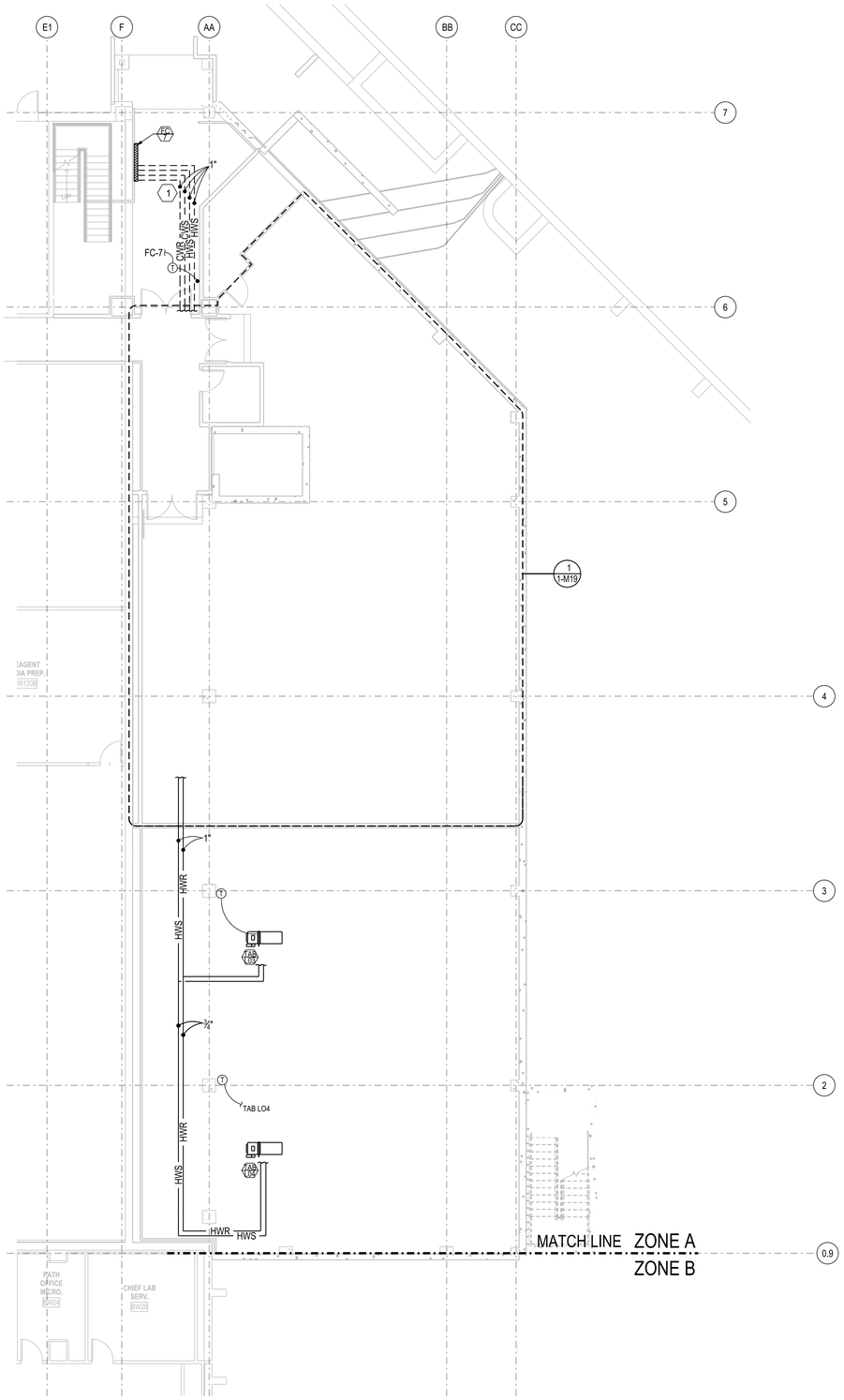


1 **ZONE A**

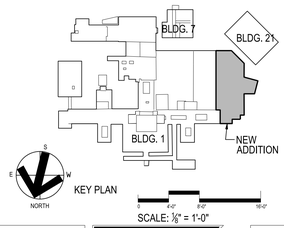
1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

KEYED PIPING NOTES:

1 ROUTE PIPE 6 INCH'S BELOW SLAB.



Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
MECHANICAL PIPING PLAN
LOWER LEVEL

CONSTRUCTION DOCUMENTS

Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. **BLDG 1** | Checked **AGW** | Drawn **RAH**

Location
ICVA HEALTH CARE SYSTEM

Date
12/15/2014

Project No.
636-201

DRAWING NO.
1-M14

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

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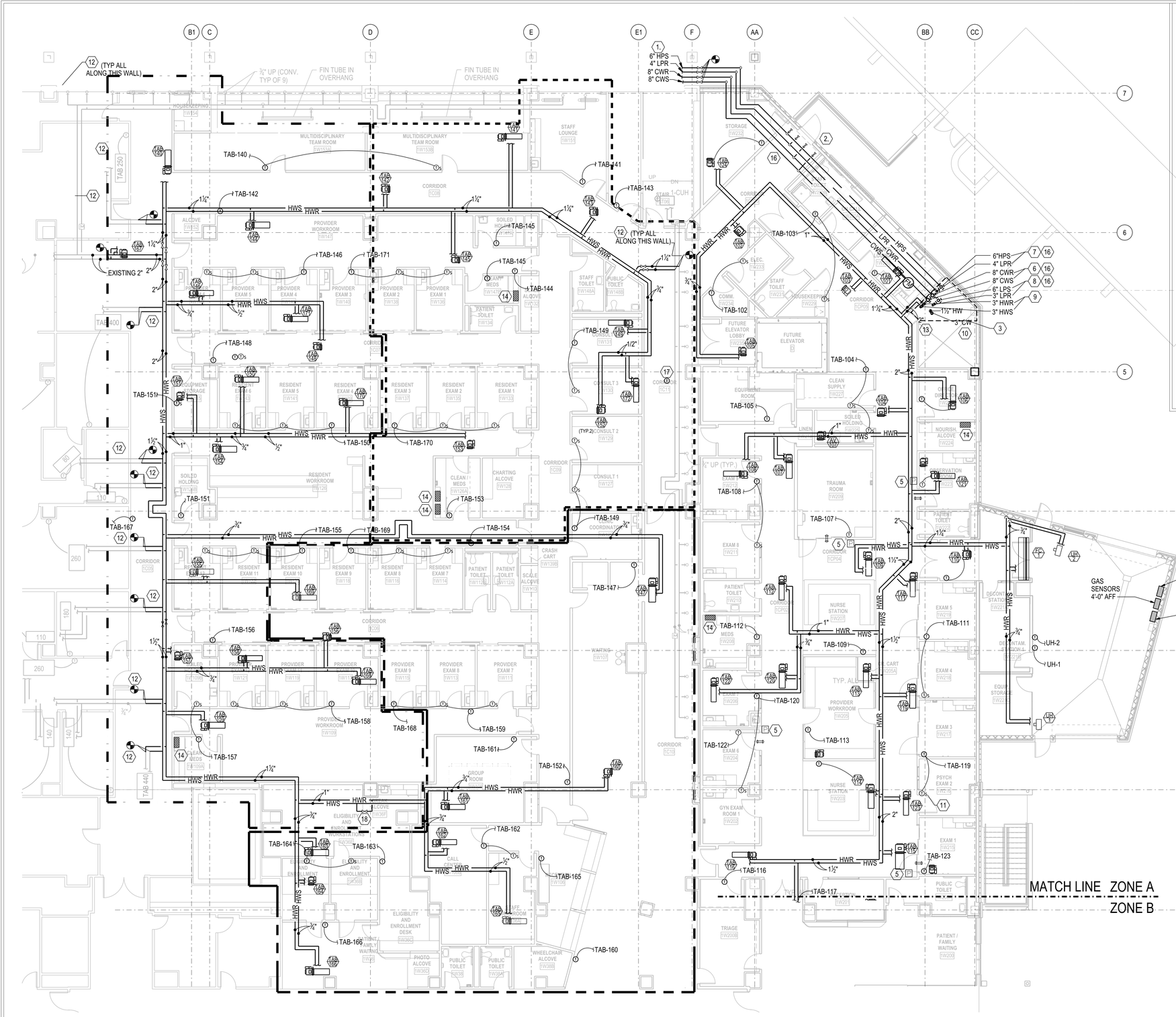
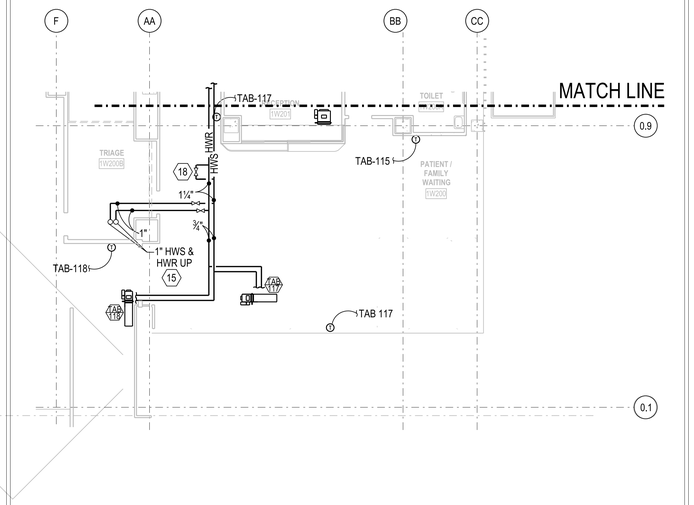


1 **ZONE A**
⅛" = 1'-0"



2 **ZONE B**
⅛" = 1'-0"

GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B. EXISTING AIR HANDER TO OPERATE WITH EXISTING CONTROL SEQUENCES. NEW TERMINAL AIR BOXES TO BE DIRECT DIGITAL CONTROLS AND CONNECTED TO DIGITAL CONTROL SYSTEM. PROVIDE PNEUMATIC TO DIGITAL CONTROLS COMPONENTS AS NEEDED.

C. C00RDINATE LOCATION OF THERMOSTATS AND SENSORS WITH ARCHITECTURAL PLAN AND OWNER.

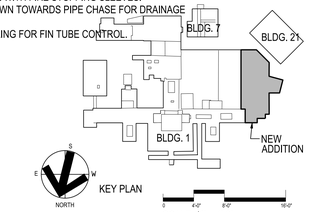
D. ALL PIPING THROUGH FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDED WITH FIRE STOPPING SLEEVES. INSTALL FIRE STOPPING SLEEVES THROUGH EXTERIOR WALLS.

E. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES.

F. ALL CEILING MOUNTED ITEMS BETWEEN GRIDLINES "2" AND "5", AND FROM "CC" TO 32 FT EAST OF "CC", SHALL BE RIGIDLY SUPPORTED TO MINIMIZE MOTION DURING FUTURE MRI OPERATION. HANGERS SHALL BE FABRICATED FROM MATERIALS SUCH AS UNISTRUT. HANGERS SHALL BE BRACED TO PREVENT RACKING. FERROUS DUCT AND PIPE SHALL BE RIGIDLY FASTENED TO HANGER FRAME AND THERMALLY BROKEN. NON-FERROUS DUCT, PIPE, AND HANGERS MAY BE USED INSTEAD OF RIGID SUPPORTS. FERROUS LOOSE HANGER SYSTEMS SUCH AS HANGER STRAP AND ALL-THREAD ROD ARE PROHIBITED.

KEYED PIPING NOTES:

1. CONNECT TO 8" CWS & CWR MAINS FROM MECHANICAL SITE DEVELOPMENT PROJECT'S ELEVATED PIPE CHASE ON THE EXTERIOR OF THE BUILDING.
2. PROVIDE MAIN CONNECTIONS FOR FUTURE EXPANSION. PIPE AND VALVES SHALL BE EQUAL IN SIZE AS THE MAIN PIPES.
3. PIPE CHASE METAL GRATE FLOORING AND ACCESS DOORS BY GENERAL CONTRACTOR. PIPING SHALL BE INSTALLED AS TIGHT TO STRUCTURE AND OTHER PIPING AS POSSIBLE, WITH MINIMAL CLEARANCE BETWEEN INSULATION.
4. NOTE USED
5. WALL MOUNT ROOM PRESSURE MONITOR.
6. 8" CWS AND 8" CWR DOWN TO MECHANICAL ROOM. 6" CWS AND 6" CWR UP WITH AUTO-AIR VENT, VALVE, AND CAP FOR FUTURE CONNECTION.
7. 6" HPS AND 4" LPR DOWN TO MECHANICAL ROOM.
8. 6" LPS AND 3" LPR VALVE AND CAPPED FOR FUTURE CONNECTION.
9. 3" HWS AND 3" HWR UP WITH AUTO-AIR VENT, VALVE, AND CAP FOR FUTURE CONNECTION.
10. 3" DOMESTIC CW AND 1 1/2" DOMESTIC HW UP WITH VALVE, AUTO AIR VENT, AND CAP FOR FUTURE CONNECTION. REFERENCE PLUMBING PLANS FOR CONTINUATION
11. TAMPER PROOF, INTENTIONAL TYPE TEMPERATURE SENSOR.
12. RECORD FLOW RATE PRIOR TO DEMOLITION OF MAINS. REBALANCE EXISTING TAB'S TO MEASURE FLOW. TYPICAL FOR ALL TAB'S AND CONVECTION HEATERS TO REMAIN.
13. ISOLATION VALVES ON HWS & HWR. FLOW CONTROL VALVE ON HWR.
14. TEMP-TRAK ALARM POINT CONNECTION TO BAS FOR UCR (UNDER COUNTER REFRIGERATORS). REFERENCE SHEET 1-E16. RACE WAY BY DIVISION 26. CABLING, CONNECTIONS, AND MONITORING POINT AND PROGRAMMING BY DIVISION 23 TEMPERATURE CONTROLS.
15. HWS AND HWR PIPING THROUGH LEVEL 2 AND LEVEL 3 FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDE WITH FIRE STOPPING SLEEVES.
16. SLOPE CWR, CWS LPR, HPS PIPING DOWN TOWARDS PIPE CHASE FOR DRAINAGE OF PIPING.
17. EXISTING THERMOSTAT IN ABOVE CEILING FOR FIN TUBE CONTROL.
18. MODULATING MINIMUM FLOW VALVE.



Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
MECHANICAL PIPING PLAN LEVEL 1

CONSTRUCTION DOCUMENTS

Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. **BLDG 1** | Checked **AGW** | Drawn **RAH**

Location
ICVA HEALTH CARE SYSTEM

Date **12/15/2014**
Project No. **636-201**
DRAWING NO. **1-M15**

Office of Facilities
Department of Veterans Affairs
INITIALS

VA FORM 08-6231, FEB. 1983

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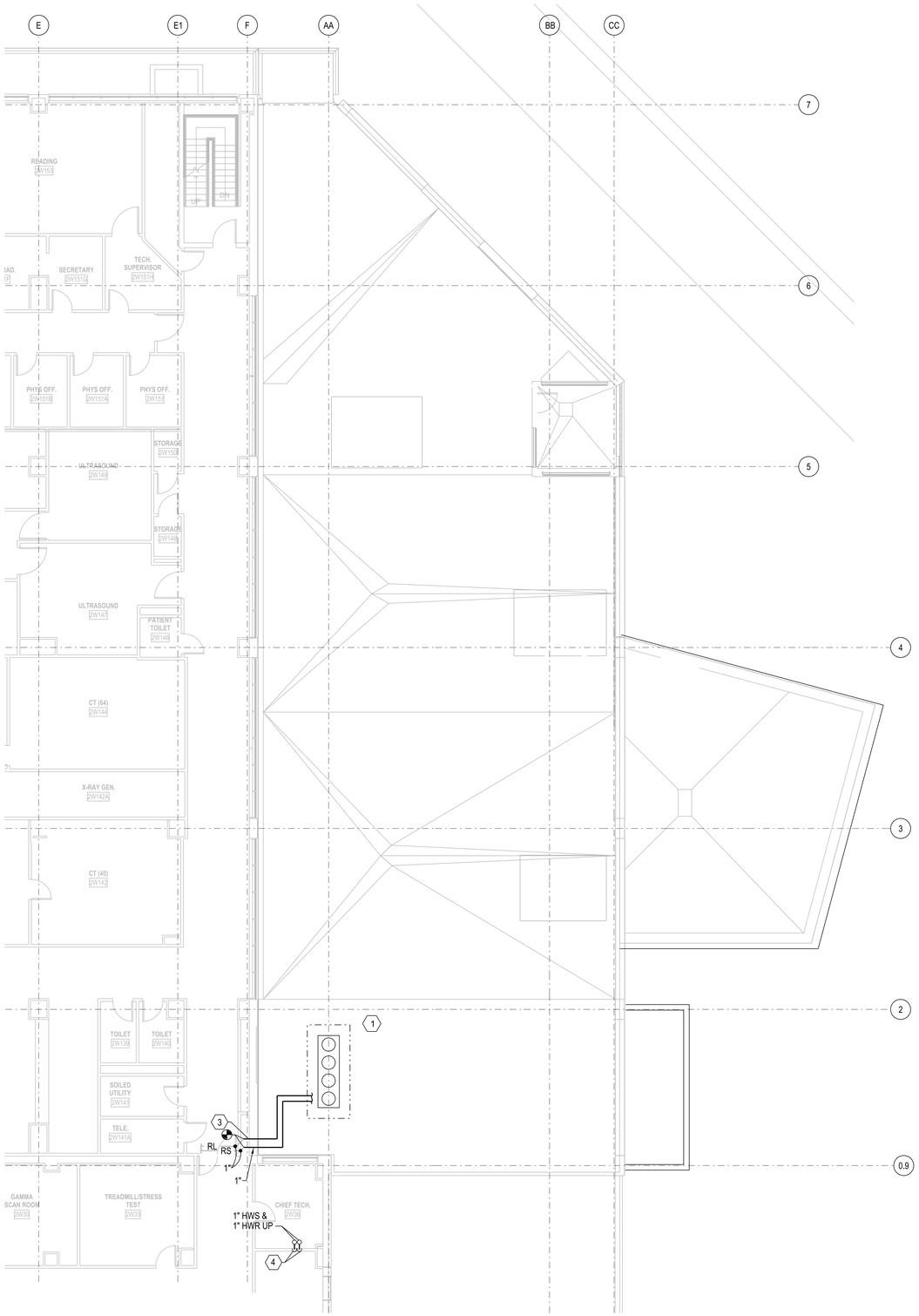


1 **ZONE A**

1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

B. COORDINATE LOCATION OF THERMOSTATS AND SENSORS WITH ARCHITECTURAL PLAN AND OWNER.

C. ALL PIPING THROUGH FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDED WITH FIRE STOPPING SLEEVES.

D. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES

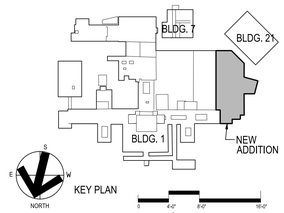
KEYED PIPING NOTES:

1. LOCATION OF RELOCATED LIEBERT CONDENSING UNIT SERVING BIO-MED BWMCC ROOM BW02A. REFER TO ARCHITECTURAL PLANS FOR ROOF MOUNTING CURB DETAIL. INSTALL UNIT AND REFRIGERANT PIPING PER MANUFACTURERS GUIDELINES. RECHARGE SYSTEM WITH THE UNIT'S RECOVERED REFRIGERANT AND PROVIDE ADDITIONAL REFRIGERANT AS NEEDED. COORDINATE WITH MANUFACTURER FOR INSTALLATION REQUIREMENTS. IF OWNER CHOOSES TO KEEP UNIT AT TEMPORANY LOCATION, THEN CONTRACTOR SHALL PROVIDE FULL CREDIT FOR THIS FINAL RELOCATION COST.

2. NOT USED

3. RECONNECT REFRIGERANT PIPING TO EXISTING LINES FOR BIO MED BWMCC ROOM LIEBERT SYSTEM. COORDINATE WITH OWNER AND MANUFACTURE FOR RE-INSTALLATION REQUIREMENTS. FIELD VERIFY EXACT PIPE SIZING.

4. HWS AND HWR PIPING THROUGH LEVEL 2 AND LEVEL 3 FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDE WITH FIRE STOPPING SLEEVES.



SCALE: 1/8" = 1'-0"

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
MECHANICAL PIPING PLAN LEVEL 2

CONSTRUCTION DOCUMENTS

Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. **BLDG 1** | Checked **AGW** | Drawn **RAH**

Location **ICVA HEALTH CARE SYSTEM**

Date **12/15/2014**

Project No. **636-201**

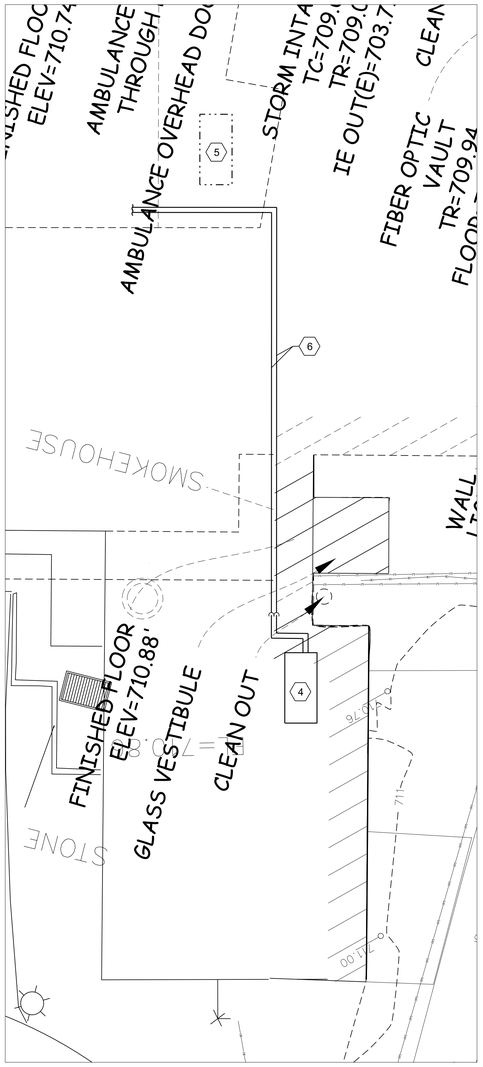
DRAWING NO. **1-M16**

Office of Facilities

Department of Veterans Affairs

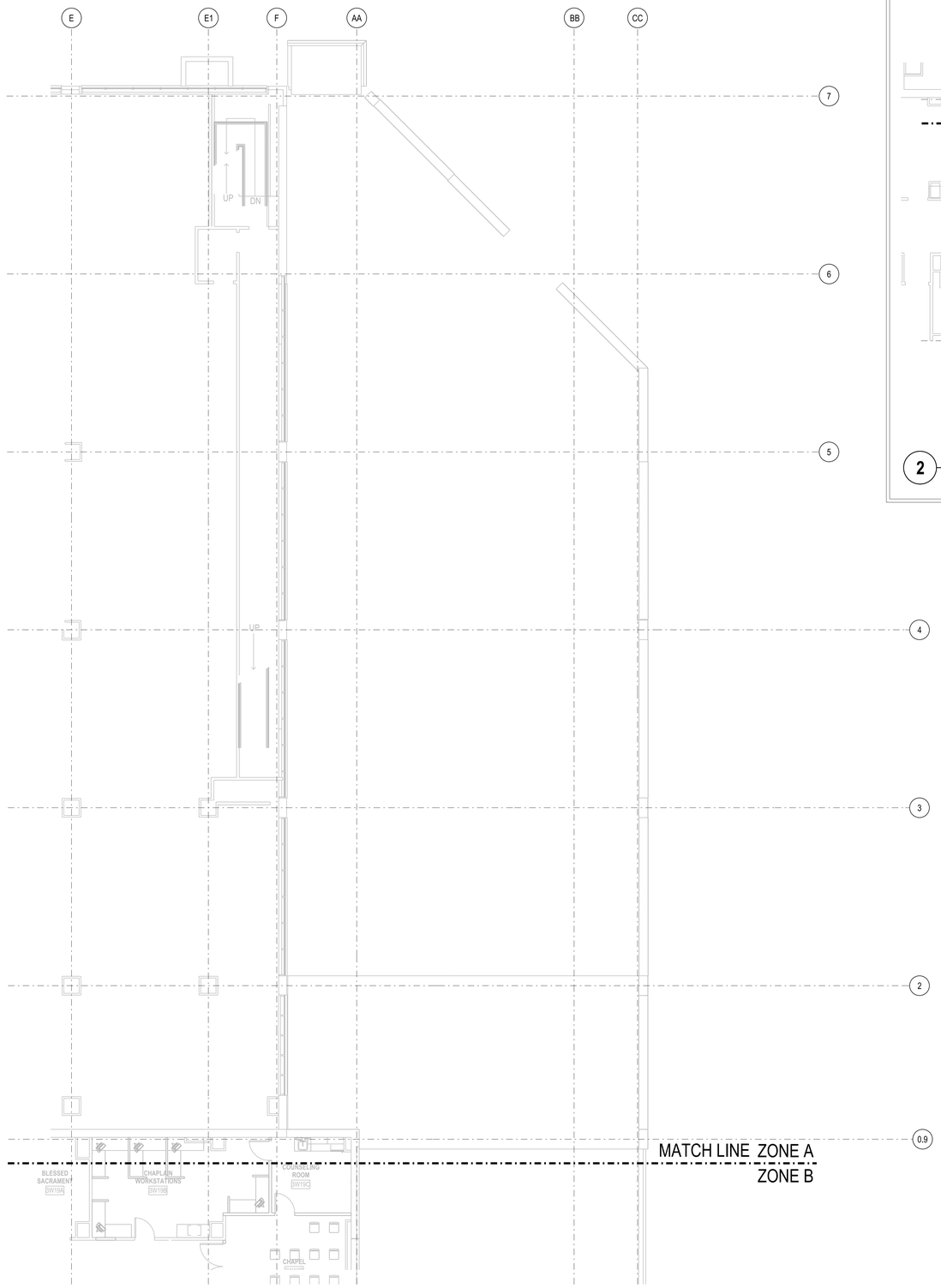
VA FORM 08-6231, FEB. 1983

PROJECT: IC - VAMC - EXPAND BLDG. 1 FOR PACT PROJECT
SHEET TITLE: F:\10\102560\h_CAD\1-M16-102560-MC.dgn
DATE: 12/15/2014 PEN TABLE:HE_IPLOT.Heery Eng.pen 12:17PM
PLOTTED BY: gorg



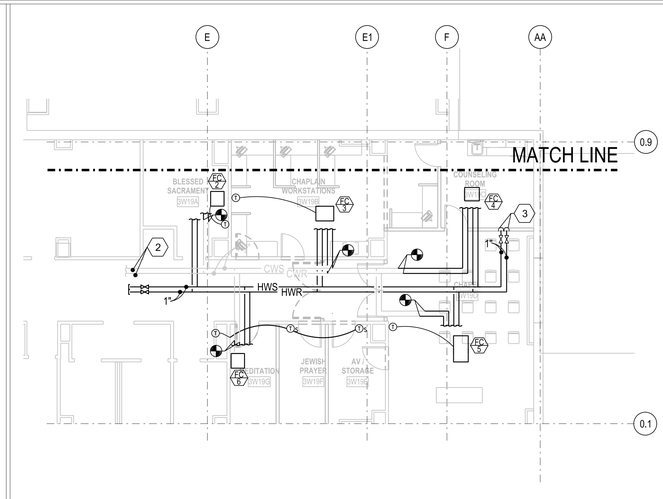
2 **LIEBERT RELOCATION**

½" = 1'-0"



1 **ZONE A**

½" = 1'-0"



2 **ZONE B**

½" = 1'-0"

GENERAL MECHANICAL NOTES:

A. ALL WORK WITHIN EXISTING FACILITY SHALL BE COORDINATED WITH THE OWNER. PROPER DUST AND DIRT BARRIERS SHALL BE CONSTRUCTED FOR SEPARATION WITH THE WORK AREA IN THE HOSPITAL. SEPARATION PARTITIONS SHALL BE MADE OF STUDS AND GYPSUM BOARD, TAPPED, AND CAULKED. PARTITION SHALL INCLUDE A DOOR. INFECTION CONTROL SHALL BE CLASS III.

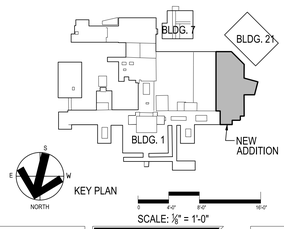
B. FEILD VERIFY LOCATION OF EXISTING PIPING FOR CONNECTION OF NEW EQUIPMENT.

C. ALL PIPING THROUGH FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDED WITH FIRE STOPPING SLEEVES.

D. REFER TO SHEET 1-A8 FOR LIST OF DEDUCT ALTERNATES

KEYED PIPING NOTES:

1. NOT USED
2. VALVE AND CAP ENDS OF MAINS FOR THE FUTURE WATER SOURCE RECONNECTION.
3. HWS AND HWR PIPING THROUGH LEVEL 2 AND LEVEL 3 FLOORS TO HAVE CORE DRILLED PENETRATIONS AND PROVIDE WITH FIRE STOPPING SLEEVES.
4. TEMPORARY LOCATION OF LIEBERT CONDENSING UNIT DURING CONSTRUCTION. COORDINATE WITH ARCHITECT AND OWNER FOR EXACT PLACEMENT.
5. EXISTING LOCATION OF LIEBERT CONDENSING UNIT.
6. ROUTE INSULATED REFRIGERATION PIPING ALONG EXTERIOR WALL. COORDINATE WITH ARCHITECTUAL PLANS FOR PHASING AND ELEVATION OF PIPING.



Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: **MECHANICAL PIPING PLAN LEVEL 3**

CONSTRUCTION DOCUMENTS

Project Title: **EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY**

Building No.: **BLDG 1** | Checked: **AGW** | Drawn: **RAH**

Location: **ICVA HEALTH CARE SYSTEM**

Date: **12/15/2014**

Project No.: **636-201**

DRAWING NO.: **1-M17**

Office of Facilities

Department of Veterans Affairs

PROJECT: IC: VAMC: EXPAND BLDG. 1 FOR PACT PROJECT
SHEET TITLE: F:\10\10206500_CADD\1-M17-10206500-1AC.dgn
PLOTTED BY: Rick Hoover 12/15/2014 PEN TABLE:HIE_IPLOT.Heery Engineers 12:37PM
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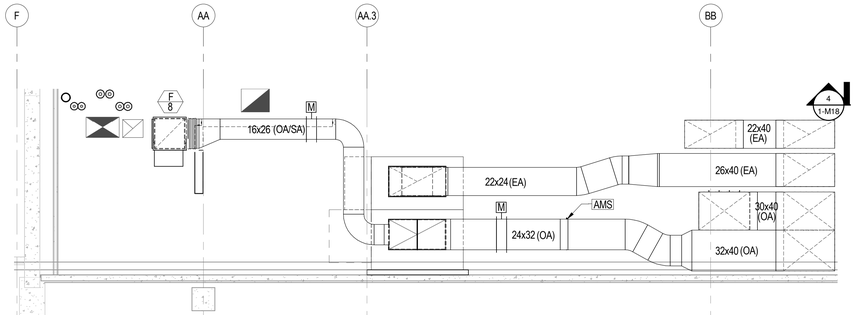
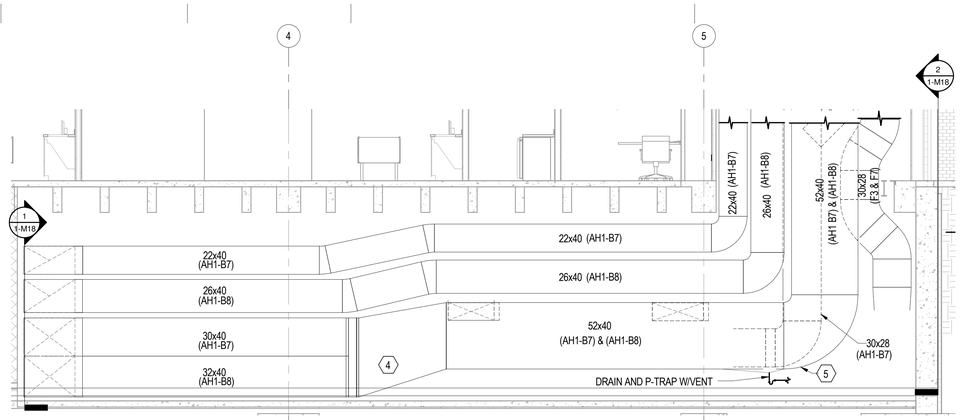
VA FORM 08-6231, FEB. 1983



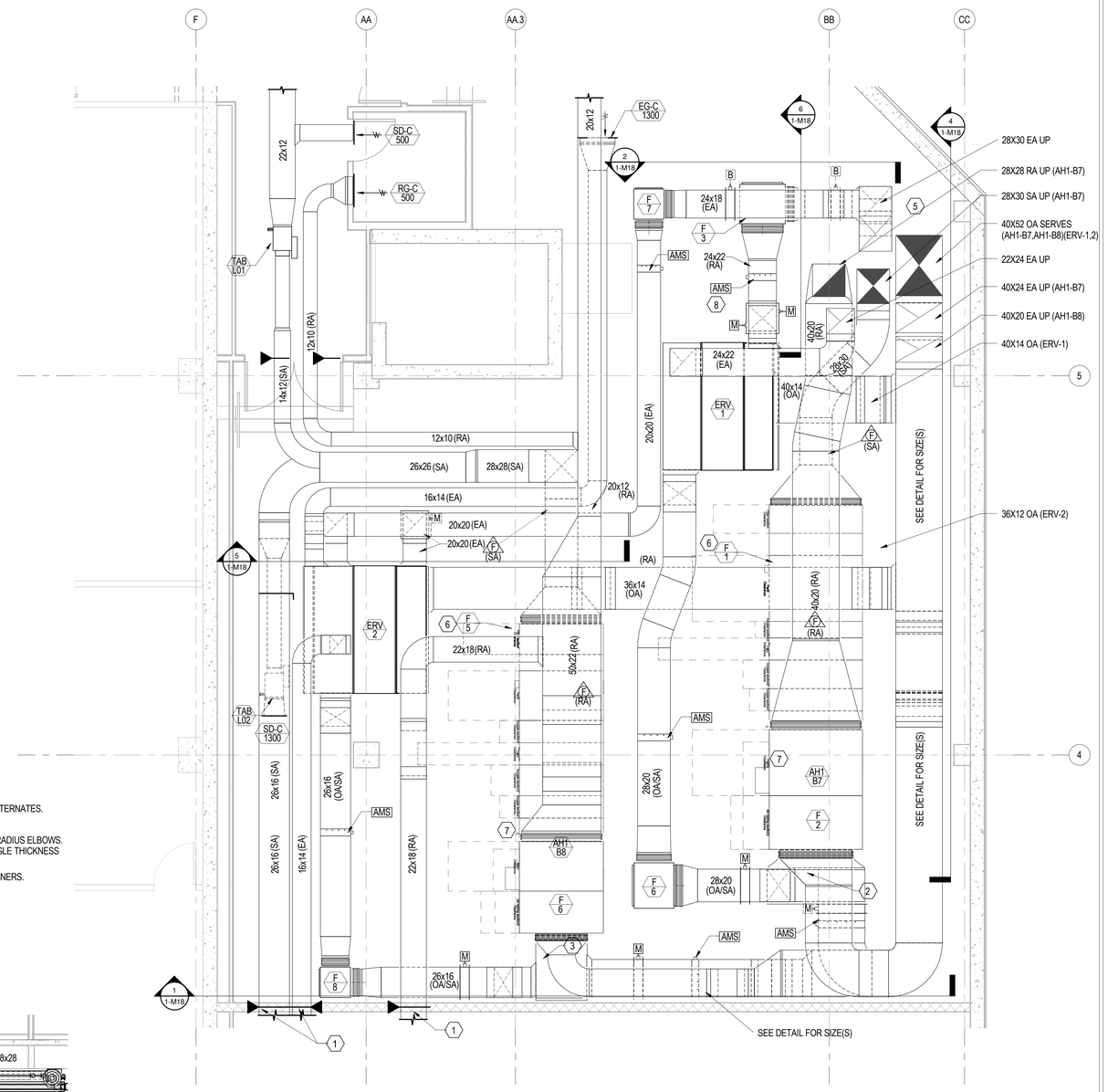
1 ENLARGED HVAC PLAN LOWER LEVEL SECTION VIEW 1
1/4" = 1'-0"



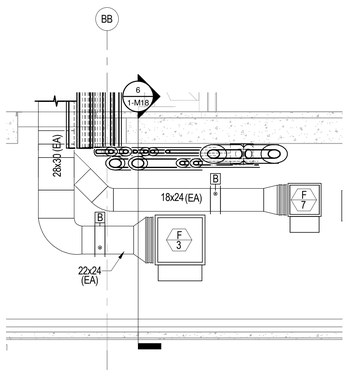
4 ENLARGED HVAC PLAN LOWER LEVEL SECTION VIEW 4
1/4" = 1'-0"

GENERAL MECHANICAL NOTES:

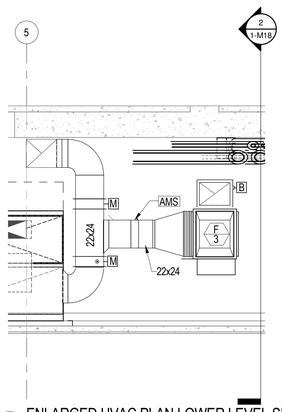
A. REFER TO SHEET 1-A8 FOR LIST OF AREAS AFFECTED BY DEDUCT ALTERNATES.
B. TRADES TO COORDINATE WITH EACH OTHER BEFORE WORK BEGINS.
C. PROVIDE FULL LENGTH SINGLE THICKNESS SPLITTER VANES IN ALL RADIUS ELBOWS. THREE SPLITTER VANES PER ELBOW EVENLY SPACED. PROVIDE SINGLE THICKNESS LONG SWEEP TURNING VANES IN ALL SQUARE ELBOWS.
D. INSTALL AIRFLOW MEASURING STATIONS WITH AIR FLOW STRAIGHTENERS.



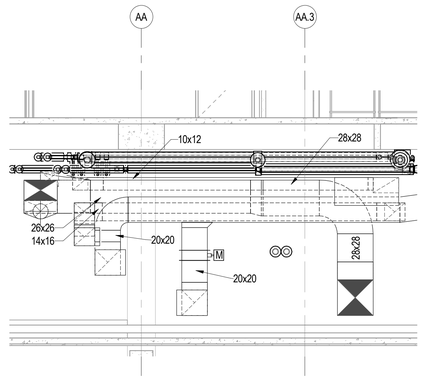
3 ENLARGED HVAC PLAN LOWER LEVEL
1/4" = 1'-0"



2 ENLARGED HVAC PLAN LOWER LEVEL SECTION VIEW 2
1/4" = 1'-0"



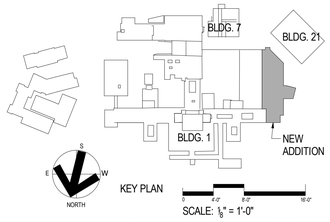
6 ENLARGED HVAC PLAN LOWER LEVEL SECTION VIEW 6
1/4" = 1'-0"



5 ENLARGED HVAC PLAN LOWER LEVEL SECTION VIEW 5
1/4" = 1'-0"

KEYED NOTES: (THIS PAGE ONLY)

1. INSTALL 1/2" STEEL SECURITY BARS WITHIN DUCT HORIZONTAL AND VERTICAL SPACING OF 4 INCHES.
2. SPLIT PLENUM OR INSTALL TWO SEPERATE DUCTS A MINIMUM OF 42X26. TRANSITION IF NEEDED.
3. SPLIT PLENUM OR INSTALL TWO SEPERATE DUCTS A MINIMUM OF 41X28. TRANSITION IF NEEDED.
4. OFFSET CHANGES FROM 52X40 TO 54X40 THEN SPLITS INTO TWO SEPERATE DUCTS 26X40 AND 28X40.
5. INSTALL STAINLESS STEEL ELBOW AND 4' STRAIGHT DUCT WITH SLOPE DRAINAGE POINT. CONNECT 1" DRAIN PIPE WITH P-TRAP ROUTE TO FLOOR DRAIN.
6. ROTATE SUPPLY FAN TO MINIMIZE AIRFLOW SYSTEM AFFECTS.
7. COORDINATE AIR HANDLER INSTALLATION WITH ABOVE STRUCTURE INSTALLATION.
8. CONNECT EXHAUST AIR BYPASS TO 24X22 EA DUCT MAIN, ELBOW DOWN AND TEE INTO 24X22 EA DUCT WITH CONNECTING TO F-3.
9. CONNECT EXHAUST AIR BYPASS TO SIDE OF ERV-2 EXHAUST AIR PLENUM.



KEY PLAN

SCALE: 1/8" = 1'-0"

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
HVAC ENLARGED PLANS
LOWER LEVEL MECH ROOM

CONSTRUCTION DOCUMENTS

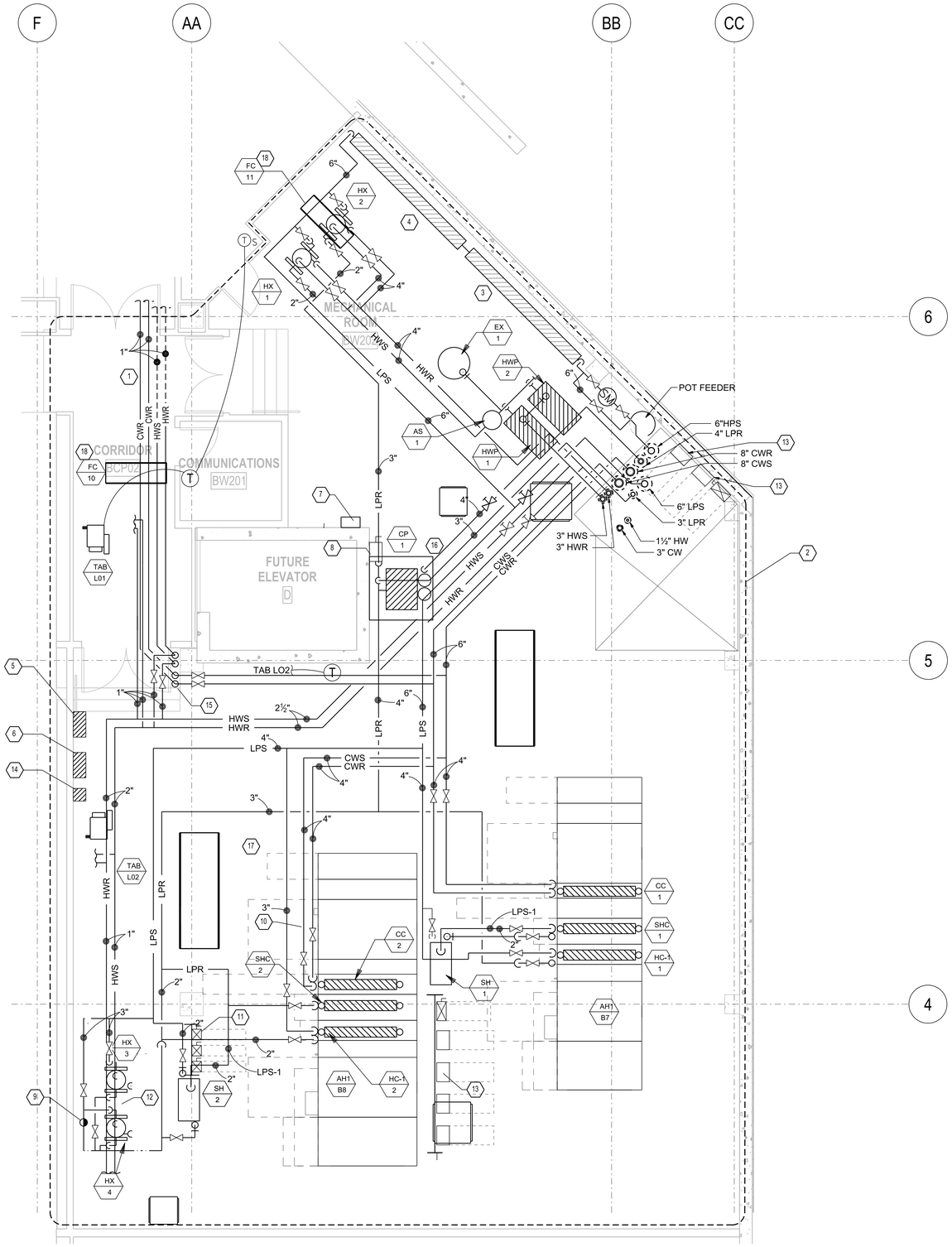
Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE, RADIOLOGY, EGRESS STAIRWELL

Building No. BLDG 1
Checked AW
Drawn RH
Location ICVA HEALTH CARE SYSTEM

Date 12/15/2013
Project No. 636-201
DRAWING NO. 1-M18

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983



1 **ENLARGED PIPING PLAN LOWER LEVEL**

1/4"=1'-0"

GENERAL MECHANICAL NOTES:

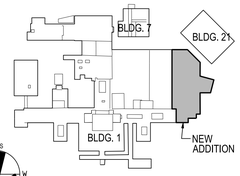
A. REFER TO SHEET 1-A8 FOR LIST OF AREAS AFFECTED BY DEDUCT ALTERNATES.

B. REFER TO SHEET 1-M20 FOR PIPING FLOW DIAGRAMS.

C. ROUTE HORIZONTAL STEAM CONDENSATE PIPING (LPR) BELOW SLAB. SLOPE AT 1" PER 10' MINIMUM.

KEYED PIPING NOTES:

1. ROUTE PIPE 6 INCH'S BELOW SLAB.
2. REFER TO 1-M20 FOR PIPING DIAGRAMS.
3. FIRST STAGE PRS. 115 PSI STEAM HPS DOWN TO 60 PSI. STEAM (HPS)
4. SECOND STAGE PRV. 60 PSI STEAM TO 15 PSI STEAM (LPS).
5. TEMPERATURE CONTROL PANEL
6. TEMPERATURE CONTROL POWER SUPPLIES (2).
7. SUMP POWER SUPPLY AND CONTROL BOX.
8. CP-1 CONDENSATE POWER SUPPLY AND CONTROL BOX.
9. END OF MAIN DRIP STATION.
10. STEAM COIL VALVES: ½ - ⅜" BYPASS CONTROL VALVE STATION.
11. DISCONNECTS AND STARTERS
12. INCREASE HOUSE KEEPING PAD INSTALLATION HEIGHTS AS NEEDED TO PROVIDE PROPER CONDENSATE PIPE SLOPE BACK TO CONDENSATE PUMP.
13. VFD'S INSTALLED ON FREE STANDING UNISTRUT TYPE SUPPORT.
14. PANDEMIC MODE SWITCH FOR AH1-B7. VERIFY EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
15. INSTALL PIPING AS CLOSE TO WALL AS POSSIBLE. GENERAL CONTRACTOR TO INSTALL DOOR STOP ON FLOOR TO PREVENT DAMAGE TO PIPES.
16. ROUTE LPR PIPING BELOW SLAB AND CONNECT TO CP-1. INSTALL CP-1 IN CONCRETE PIT 5' x 5' x 3'-10" DEEP, AND COVER WITH WELDED BAR GRATING MATCHING PIPE CHASE FLOOR GRATING (BARS 1⅛"x⅜" MINIMUM). GRATING BY GENERAL CONTRACTOR. COORDINATE EXACT PIT DEPTH WITH PIPE SLOPE AND FLOOR ELEVATIONS.
17. MAINTAIN 6'-8" CLEARANCE FOR EGRESS PATH BETWEEN NORTH AND SOUTH DOORS.
18. INSTALL UNIT IF DEDUCT ALTERNATE FOR REMOVAL OF PHARMACY CACHE IS ACCEPTED. SUPPLY AND RETURN PIPING TO BE CONNECTED FROM NEAREST MAINS.



KEY PLAN

SCALE: ¼" = 1'-0"

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: ENLARGED MECH PIPING PLAN LOWER LEVEL MECH ROOM

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: RAH

Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014

Project No.: 636-201

DRAWING NO.: 1-M19

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

PROJECT: IC-VAMC-EXPAND BLDG. 1 FOR PACT PROJECT
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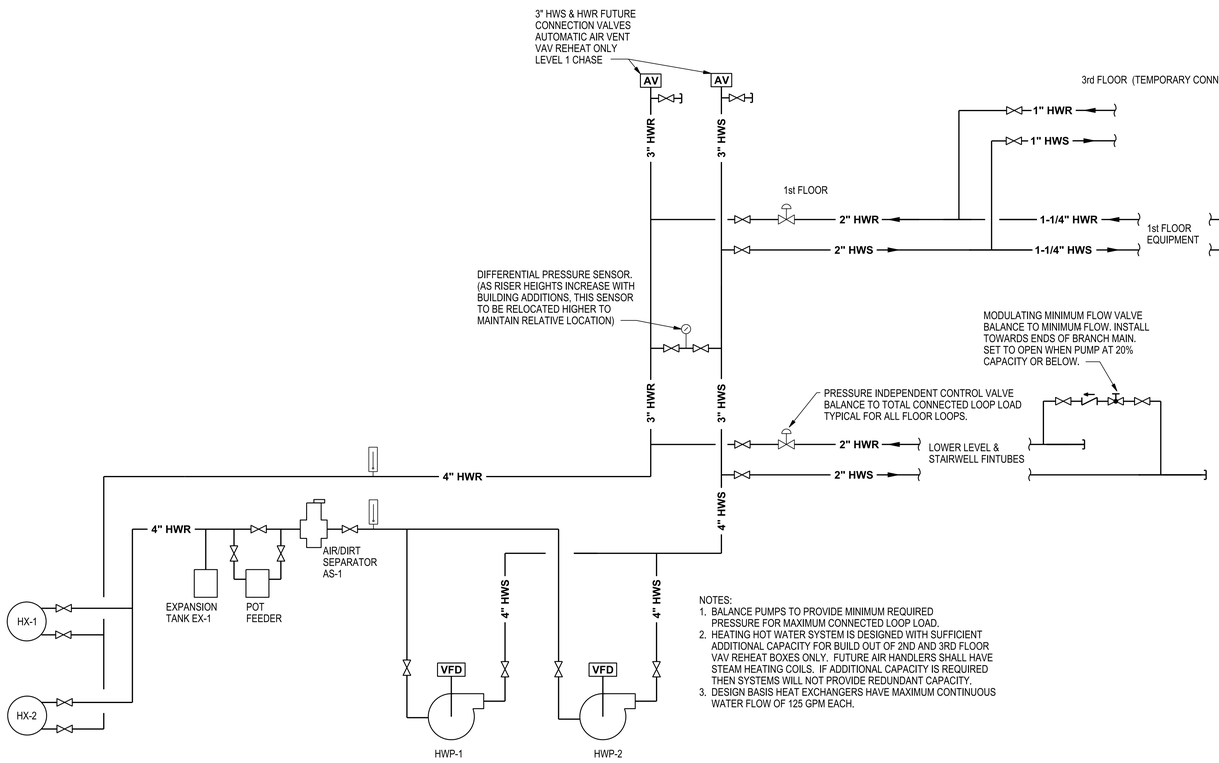
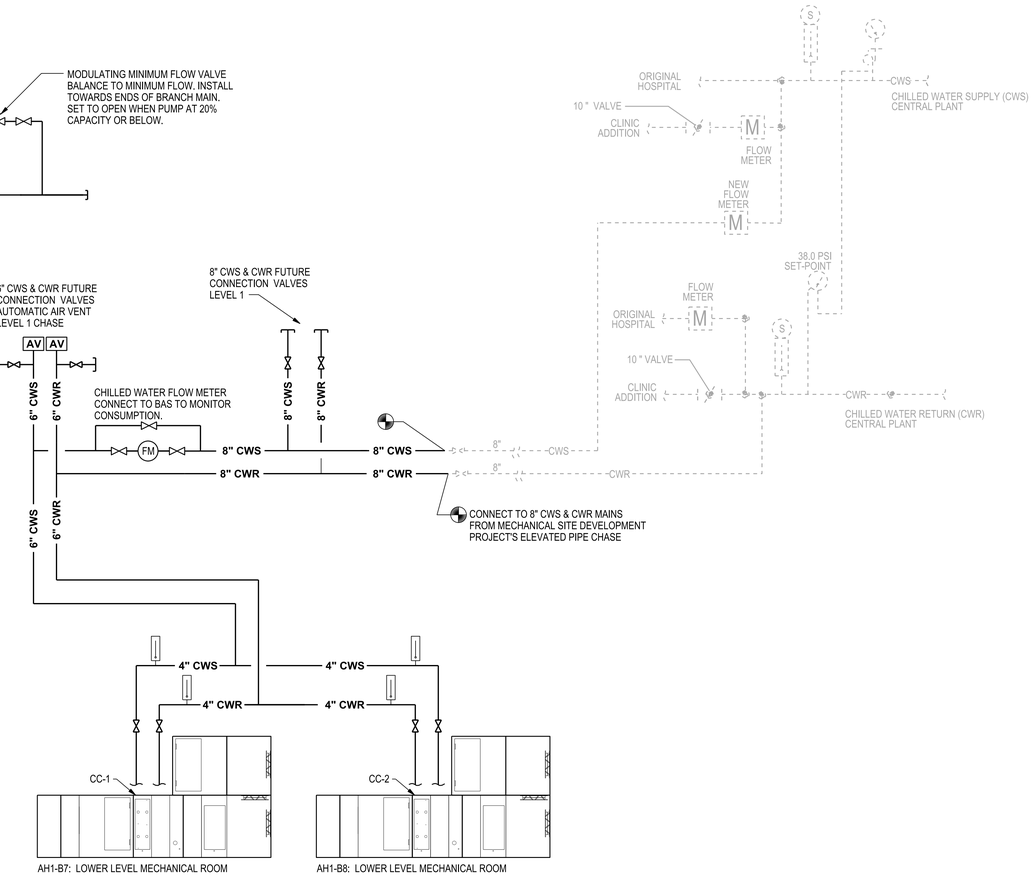


NOTES:
1. BALANCE PUMPS TO PROVIDE MINIMUM REQUIRED PRESSURE FOR MAXIMUM CONNECTED LOOP LOAD.
2. HEATING HOT WATER SYSTEM IS DESIGNED WITH SUFFICIENT ADDITIONAL CAPACITY FOR BUILD OUT OF 2ND AND 3RD FLOOR VAV REHEAT BOXES ONLY. FUTURE AIR HANDLERS SHALL HAVE STEAM HEATING COILS. IF ADDITIONAL CAPACITY IS REQUIRED THEN SYSTEMS WILL NOT PROVIDE REDUNDANT CAPACITY.
3. DESIGN BASIS HEAT EXCHANGERS HAVE MAXIMUM CONTINUOUS WATER FLOW OF 125 GPM EACH.

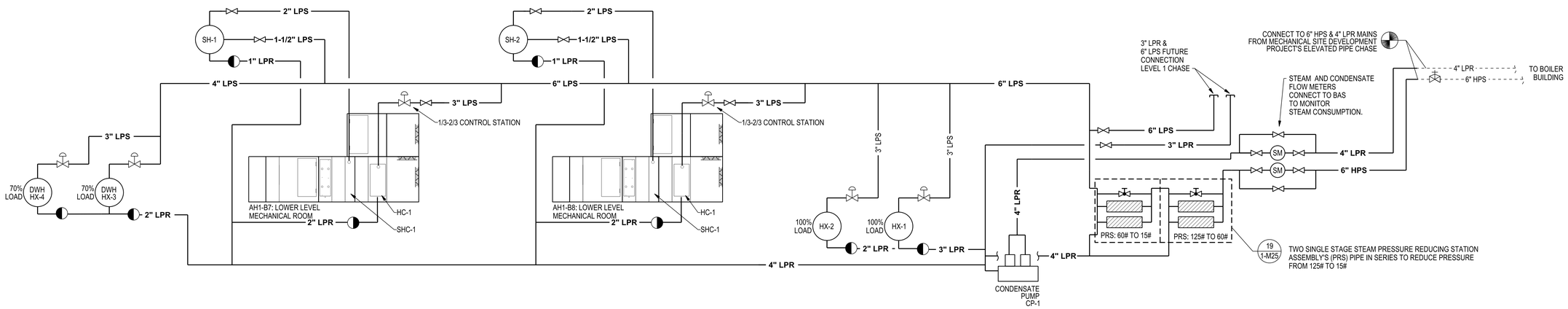
1 HEATING HOT WATER FLOW DIAGRAM

NO SCALE



2 CHILLED WATER FLOW DIAGRAM

NO SCALE



3 STEAM FLOW DIAGRAM

NO SCALE

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: STEAM & HEATING WATER & CHILLED WATER FLOW DIAGRAMS

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. BLDG 1 | Checked AGW | Drawn DRB

Location: ICVA HEALTH CARE SYSTEM

Date 12/15/2014

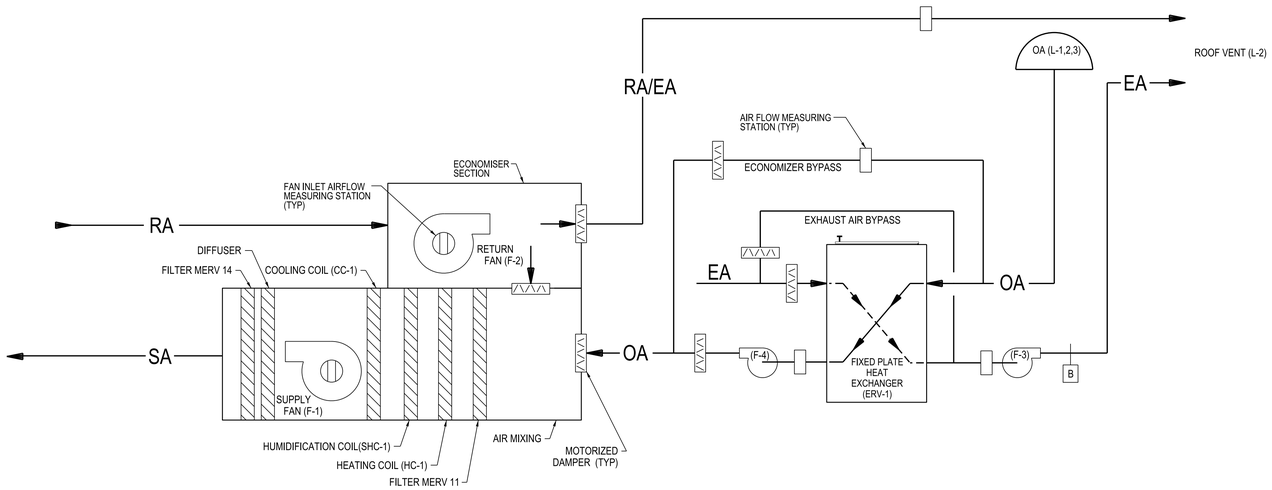
Project No. 636-201

DRAWING NO. 1-M20

Office of Facilities

Department of Veterans Affairs

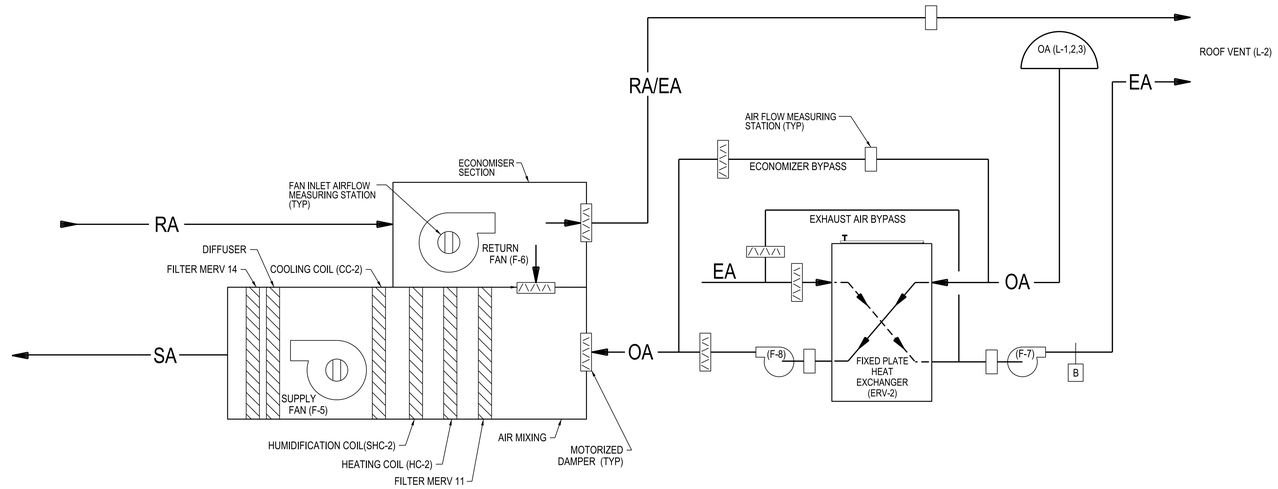
VA FORM 08-6231, FEB. 1983



NOTE:
AIRFLOW RATES SHOWN ARE DESIGN BASIS. DUCT IS SIZED FOR MAXIMUM AIR FLOW AS SHOWN ON PRINTS, SCHEDULED FAN CAPACITIES ARE GREATER FOR AIR LEAKAGE AND FUTURE USE.

1 AIR FLOW DIAGRAM - AH1-B7 (L1, ED)

NO SCALE



NOTE:
AIRFLOW RATES SHOWN ARE DESIGN BASIS. DUCT IS SIZED FOR MAXIMUM AIR FLOW AS SHOWN ON PRINTS, SCHEDULED FAN CAPACITIES ARE GREATER FOR AIR LEAKAGE AND FUTURE USE.

2 AIR FLOW DIAGRAM - AH1-B8 (LL, L2)

NO SCALE

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: FLOW DIAGRAM- AIRFLOW

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: DRB

Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014

Project No.: 636-201

DRAWING NO.: 1-M21

Office of Facilities

Department of Veterans Affairs

INITIALS

VA FORM 08-6231, FEB. 1983

PUMP SCHEDULE (HVAC)

TAG	SYSTEM	LOCATION	TYPE	FLUID	CAPICITY (GPM)	DISCHARGE HEAD (FT)	RPM	CONTROL TYPE	SIZE DATA SUCTION (IN)	SIZE DATA DISCH. (IN)	MOTOR DATA HP	MOTOR DATA VOLT	MOTOR DATA PH	BASIS OF DESIGN MANUFACTURER AND MODEL NUMBER	NOTES
HWP-1	HYDRONIC HEATING	MECHANICAL BW202	CENTRIFUGAL BASE MOUNTED	WATER	125.0	60.0	1750.0	VFD	2	1-1/2	5.0	460	3	BELL & GOSSETT SERIES 1510 : 1-1/2BC	1, 2
HWP-2	HYDRONIC HEATING	MECHANICAL BW202	CENTRIFUGAL BASE MOUNTED	WATER	125.0	60.0	1750.0	VFD	2	1-1/2	5.0	460	3	BELL & GOSSETT SERIES 1510 : 1-1/2BC	1, 2

NOTES:
1. PREMIUM EFFICIENCY VFD RATED MOTOR. VARIABLE FREQUENCY DRIVES FOR PUMPS PROVIDED BY CONTROLS CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR.
2. INSTALL ON 3.5 INCH CONCRETE HOUSE KEEPING PAD.

CONDENSATE PUMP UNIT SCHEDULE

TAG	LOCATION	TYPE	CAPACITY COND LOAD LB/HR	CAPACITY PER PUMP (GPM)	DISCH. PRESS (PSIG)	RECEIVER DATA SIZE (GAL)	RECEIVER DATA INLET SIZE (IN)	RECEIVER DATA DISCH SIZE (IN)	RECEIVER DATA VENT SIZE (IN)	MOTOR DATA QTY	MOTOR DATA HP	MOTOR DATA RPM	MOTOR DATA VOLT	MOTOR DATA PH	BASIS OF DESIGN MANUFACTURER AND MODEL NUMBER	NOTES
CP-1	MECHANICAL BW202	DUPLEX	16,765	98	40	70	4	1-1/4" (2)	3	2	3	3450	460	3	RUSSELL PUMP 6640CVAD3	1,2,3,4,5

NOTES:
1. PROVIDE WITH HIGH LEVEL FLOAT SWITCH, THERMOMETER, GAUGE GLASS, DISCHARGE PRESSURE GUAGE, BASKET STRAINER, SUCTION ISOLATION VALVES.
2. STAINLES STEEL RECIEVER TANK, BRONZE IMPELLER, BRONZE FITTED WITH MECHANICAL SHAFT SEALS.
3. NEMA 1 DUPLEX PANEL WITH MAGNETIC STARTER, MAIN THRU THE DOOR DISCONNECT, CIRCUIT BREAKERS, LIGHTED SELECTOR SWITCHES TERMINAL STRIP.
4. INSTALL TANK AND PUMPS WITHIN SUMP PIT. INSTALL CONTROL PANEL 4 FT AFF ON NEAR WALL. ENSURE PIT IS LARGE ENOUGH FOR SELECTED PUMP.
5. CONDENSATE LOAD INCLUDES 2,650 LB/HR FOR FUTURE CAPACITY.

AIR&DIRT SEPARATOR SCHEDULE

TAG	SYSTEM	LOCATION	INLET SIZE (IN)	FLOW (GPM)	AIR REMOVAL	BASIS OF DESIGN MANUFACTURER AND MODEL NUMBER	NOTES
AS-1	HYDRONIC HEATING	MECHANICAL BW202	4	160	100%	SPIROTHERM VDN-1C-FA	1, 2

NOTES:
1. PROVIDE REDUCERS FROM LINE SIZE TO AIR SEPARATOR CONNECTIONS.
2. REMOVABLE LOWER HEAD FOR CLEANING.

EXPANSION TANK SCHEDULE (HVAC)

TAG	SYSTEM	LOCATION	TYPE	TANK VOLUME (GAL)	MIN. ACCEP VOLUME (GAL)	SIZE DATA DIA. (IN)	SIZE DATA LEN (IN)	SIZE DATA SYSTEM CONN. (IN)	AIR CHARGE PRESSURE (PSI)	SYSTEM OPERATION MIN. (PSI)	SYSTEM OPERATION MAX. (PSI)	BASIS OF DESIGN MANUFACTURER AND MODEL NUMBER	NOTES
EX-1	HYDRONIC HEATING	MECHANICAL BW202	DIAPHRAM	35	28	16	45	1	25	15	40	WESSELS NTA-60	1, 2, 3

NOTES:
1. ASME RATED.
2. PROVIDE AIR CHARGING VALVE, HEAVY DUTY BUTYL BLADDER, AND CARBON STEEL CONSTRUCTION.
3. FIELD ADJUST CHARGE PRESSURE AS REQUIRED.

LOUVER SCHEDULE

TAG	SERVICE	CFM	SIZE W x H (IN)	BASE HEIGHT (IN)	MAX. PD (IN. WG)	FREE AREA (FT^2)	FREE AREA VELOCITY (FPM)	RATED FOR AMCA 540, TAS 201, 202, 203	BASIS OF DESIGN MANUFACTURER MODEL NUMBER	NOTES
L-1	INTAKE	8,210	120 X 60	-	0.02	24.4	340	YES	GREENHECK EHH-501X	1,2,3
L-2	INTAKE	4,930	72 X 60	-	0.02	14.6	340	YES	GREENHECK EHH-501X	1,2,3
L-3	INTAKE	2,465	120 X 18	-	0.04	5.6	440	YES	GREENHECK EHH-501X	1,2,3
L-4	RELIEF	17,500	58 X 58	12	0.10	23.5	750	NO	GREENHECK FGR	1,2,3,7,8,9
L-5	EXHAUST	8,170	40 X 40	12	0.10	11.0	735	NO	GREENHECK FGR	1,2,3,7,8,9
L-6	INTAKE	3,050	48 X 48	-	0.05	7.2	425	YES	GREENHECK EHH-501X	1,2,3,4,5,6,8

NOTES:
1. REFERENCE SPECIFICATION SECTION "LOUVERS AND VENTS - 08 90 00". PROVIDED BY MECHANICAL CONTRACTOR.
2. COORDINATE WITH ARCHITECT FOR COLOR APROVAL. DARK BRONZE TO MATCH EXTERIOR DESIGN.
3. ALUMINUM CONSTRUCTION WITH BAKED ENAMEL FINISH.
4. PROVIDE WITH MOTORIZED LOW LEAKAGE CONTROL DAMPER.
5. DAMPER ACTUATORS TO BE 24-VOLT, 2-POSITION, SPRING RETURN, AND SUPPLIED WITH DAMPERS.
6. BIRDSCREEN AT INTERIOR SIDE OF DAMPER.
7. ROOF MOUNTED HOODED GRAVITY VENTILATOR WITH INSECT SCREEN.
8. HIGH WIND RATED.
9. MOUNT ON CURB 54-INCHES HIGH.

AIR VALVE SCHEDULE

AV	SYSTEM	AIRSIDE DATA MAX. FLOW (CFM)	AIRSIDE DATA MIN FLOW (CFM)	AIRSIDE DATA MAX. AIR PD (IN. WG)	AIRSIDE DATA MIN INLET SP,(IN)	AIRSIDE DATA MIN INLET (IN)	NOISE DATA SOUND RAD (NC)	NOISE DATA SOUND AIR (NC)	DESIGN BASIS MANUFACTURER AND MODEL NUMBER	NOTES
107	TAB 107	750	525	0.1	0.1	14	-	-	PRICE LDV	1, 2, 3, 4
115	TAB 115 & 116	2130	2130	0.1	0.1	18	-	-	PRICE LDV	1, 2, 3, 4
121	TAB 121	200	200	0.1	0.1	8	-	-	PRICE LDV	1, 2, 3, 4
122	TAB 122	180	180	0.1	0.1	8	-	-	PRICE LDV	1, 2, 3, 4
123	TAB 123	200	200	0.1	0.1	8	-	-	PRICE LDV	1, 2, 3, 4

NOTES:
1. DIGITAL CONTROLLED AND PRESSURE INDEPENDENT.
2. ACTUATORS AND CONTROL ACCESSORIES BY CONTROLS CONTRACTOR.
3. CONTROLED BY ROOM PRESSURE MONITOR.
4. PROVIDE WITH EBTRON MODEL ELF/D00 FOR AIRFLOW AND TEMPERATURE MEASUREMENT. VOLTAGE OUTPUT DETERMINED BY CONTROLS CONTRACTOR. INSTALL DOWNSTREAM OF COIL.

TERMINAL AIR BOX SCHEDULE (AH1-B8)

TAB	SYSTEM (VARIABLE/ CONSTANT)	AIRSIDE DATA MAX. FLOW (CFM)	AIRSIDE DATA MIN FLOW (CFM)	AIRSIDE DATA MIN INLET SP,(IN)	AIRSIDE DATA MIN INLET (IN)	REHEAT COIL DATA EAT (F)	REHEAT COIL DATA LAT MIN (F)	REHEAT COIL DATA EWT (F)	REHEAT COIL DATA LWT MIN (F)	REHEAT COIL DATA MAX FLOW (GPM)	REHEAT COIL DATA SCH CAP. (MBH)	REHEAT COIL DATA ROWS	REHEAT COIL DATA RUN OUT (IN)	NOISE DATA SOUND RAD (NC)	NOISE DATA SOUND AIR (NC)	NOISE DATA UNIT SOUND ATTEN.	INSULATION DATA DOUBLE WALL	INSULATION DATA FOIL FACED LINED	INSULATION DATA POLY DUCT WRAP	DESIGN BASIS MANUFACTURER AND MODEL NUMBER	NOTES
L01 ALT	VAV	1000	400	0.5	10	55	85	180	150	0.9	13.0	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8, 9
L02 ALT	CV	1300	1300	0.5	12	55	85	180	150	3.0	42.1	1	0.75	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8, 9
L03 ALT	VAV	2125	1275	0.5	14	55	85	180	150	3.0	41.3	1	0.75	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8, 9
L04 ALT	VAV	2125	1275	0.5	14	55	85	180	150	3.0	41.3	1	0.75	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8, 9

NOTES:
1. DIGITAL CONTROLLED AND PRESSURE INDEPENDENT.
2. ACTUATORS AND CONTROL ACCESSORIES BY CONTROLS CONTRACTOR.
3. PROVIDE WITH EBTRON MODEL ELF/D00 FOR AIRFLOW AND TEMPERATURE MEASUREMENT. VOLTAGE OUTPUT DETERMINED BY CONTROLS CONTRACTOR. INSTALL DOWNSTREAM OF COIL.
4. PROVIDE WITH 36 INCH DISCHARGE ATTENUATOR AS INTEGRAL EXTENSION.
5. REHEAT COIL TO BE DUCT MOUNTED NEAR VALVE ASSEMBLY DISCHARGE.
6. PROVIDE REQUIRED ATTENUATOR OUTLET ARRANGEMENT AS SHOWN FOR UNITS WITH LIMITED SPACE.
7. PROVIDE LABEL ON CEILING GRID DIRECTLY BENEATH TAB WITH SMALL LASER TAG.
8. EQUIPMENT SELECTIONS BASED ON 750 FT ELEVATION, AND FLUID TYPE: HOT WATER.
9. DELETE WITH DEDUCT ALTERNATE 5.

TERMINAL AIR BOX SCHEDULE (EMERGENCY AREA - AH1-B7)

TAB	SYSTEM (VARIABLE/ CONSTANT)	AIRSIDE DATA MAX. FLOW (CFM)	AIRSIDE DATA MIN FLOW (CFM)	AIRSIDE DATA MIN INLET SP,(IN)	AIRSIDE DATA MIN INLET (IN)	REHEAT COIL DATA EAT (F)	REHEAT COIL DATA LAT MIN (F)	REHEAT COIL DATA EWT (F)	REHEAT COIL DATA LWT MIN (F)	REHEAT COIL DATA MAX FLOW (GPM)	REHEAT COIL DATA SCH CAP. (MBH)	REHEAT COIL DATA ROWS	REHEAT COIL DATA RUN OUT (IN)	NOISE DATA SOUND RAD (NC)	NOISE DATA SOUND AIR (NC)	NOISE DATA UNIT SOUND ATTEN.	INSULATION DATA DOUBLE WALL	INSULATION DATA FOIL FACED LINED	INSULATION DATA POLY DUCT WRAP	DESIGN BASIS MANUFACTURER AND MODEL NUMBER	NOTES
101	VAV	260	80	0.5	7	55	85	180	150	0.5	2.6	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
102	VAV	1110	330	0.5	12	55	85	180	150	1.0	10.7	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
103	CV	490	490	0.5	8	55	85	180	150	1.5	15.9	1	0.75	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
104	CV	880	880	0.5	10	55	85	180	150	2.0	28.5	1	0.75	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
105	VAV	220	135	0.5	6	55	85	180	150	0.5	4.4	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
106	VAV	200	75	0.5	6	55	85	180	150	0.4	2.4	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
107	VAV	800	575	0.5	10	55	85	180	150	1.5	18.6	1	0.75	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
108	VAV	360	220	0.5	8	55	85	180	150	0.5	7.1	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
109	VAV	730	235	0.5	10	55	85	180	150	0.5	7.6	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
110	CV	565	565	0.5	8	55	85	180	150	1.5	18.3	1	0.75	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
111	VAV	360	220	0.5	7	55	85	180	150	0.5	7.1	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
112	VAV	120	70	0.5	6	55	85	180	150	0.5	2.3	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
113	VAV	250	145	0.5	7	55	85	180	150	0.5	4.7	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
114	VAV	645	235	0.5	10	55	85	180	150	0.5	7.6	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
115	CV	1825	1825	0.5	14	55	85	180	150	4.0	59.1	1	1	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
116	CV	300	300	0.5	7	55	85	180	150	1.0	9.7	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
117	VAV	200	50	0.5	6	55	85	180	150	0.5	1.6	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
118	VAV	300	50	0.5	7	55	85	180	150	0.5	1.6	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
119	VAV	420	220	0.5	8	55	85	180	150	0.8	7.1	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
120	VAV	360	220	0.5	8	55	85	180	150	0.8	7.1	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
121	CV	150	150	0.5	6	55	85	180	150	0.5	4.9	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
122	CV	130	130	0.5	6	55	85	180	150	0.5	4.2	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
123	CV	150	150	0.5	6	55	85	180	150	0.5	4.9	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
124	VAV	200	50	0.5	6	55	85	180	150	0.5	1.6	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
125 ALT	CV	1300	1300	0.5	12	55	85	180	150	3.0	42.1	1	0.75	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8, 9

NOTES:
1. DIGITAL CONTROLLED AND PRESSURE INDEPENDENT.
2. ACTUATORS AND CONTROL ACCESSORIES BY CONTROLS CONTRACTOR.
3. PROVIDE WITH EBTRON MODEL ELF/D00 FOR AIRFLOW AND TEMPERATURE MEASUREMENT. VOLTAGE OUTPUT DETERMINED BY CONTROLS CONTRACTOR. INSTALL DOWNSTREAM OF COIL.
4. PROVIDE WITH 36 INCH DISCHARGE ATTENUATOR AS INTEGRAL EXTENSION.
5. REHEAT COIL TO BE DUCT MOUNTED NEAR VALVE ASSEMBLY DISCHARGE.
6. PROVIDE REQUIRED ATTENUATOR OUTLET ARRANGEMENT AS SHOWN FOR UNITS WITH LIMITED SPACE.
7. PROVIDE LABEL ON CEILING GRID DIRECTLY BENEATH TAB WITH SMALL LASER TAG.
8. EQUIPMENT SELECTIONS BASED ON 750 FT ELEVATION, AND FLUID TYPE: HOT WATER.
9. ALTERNATE BID UNIT: INSTALL UNIT TO SERVE DESIGNATED ROOM IF DEDUCT ALTERNATE 5 FOR REMOVAL OF PHARMACY CACHE, AND AH1-B8 IS ACCEPTED.

Revisions | Date | Revisions | Date | Revisions | Date

HEERY design
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project number 11-25503

Drawing Title: MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: DRB

Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014

Project No.: 636-201

DRAWING NO.: 1-M22

Office of Facilities

Department of Veterans Affairs

HUMIDIFIER SCHEDULE (STEAM)

TAG	SYSTEM	LOCATION	WATER SOURCE	STEAM DATA TOTAL FLOW (LBS/HR)	STEAM DATA PRESS. (PSIG)	OUTLET TYPE	OUTLET DIAMETER (IN)	DIMENSIONS W x H x L (IN)	ELECTRICAL DATA AMP	VOLT	PH	STAGES	BASIS OF DESIGN MANUFACTURER AND MODEL NUMBER	NOTES
SH-1	EMER. DEPT L1	MECHANICAL 2W218	CITY POTABLE	281	15	FLANGE	4	19.25x19.5x39.68	0.6	120	1	-	DRISTEEM STS-100C	1,2,3,4,5
SH-2	GENERAL LL	MECHANICAL 2W218	CITY POTABLE	198	15	FLANGE	4	14.75x19.5x39.68	0.6	120	1	-	DRISTEEM STS-50C	1,2,3,4,5 6

NOTES:
1. STEAM TO STEAM HEAT EXCHANGER HUMIDITY GENERATOR.
2. PROVIDE WITH STAINLESS STEEL CONSTRUCTION, SUPPORT LEGS, AND MODULATING CONTROLS.
3. PROVIDE WITH CONTROL CABINET AND VAPOR-LOGIC CONTROLLER, DRANE-KOOLER, HUMIDISTAT AND TRANSMITTER. DISCONNECT BY ELECTRICAL CONTRACTOR.
4. CONNECT WITH 3/4 INCH DOMESTIC WATER SUPPLY WITH REDUCED PRESSURE ZONE BACKFLOW PREVENTER AND SHUT OFF VALVE.
5. ROUTE DRAINAGE TO NEARSET FLOOR DRAIN.
6. DELETE WITH DEDUCT ALTERNATE 5.

ENERGY RECOVERY VENTILATOR (FIXED PLATE HX)

TAG	SYSTEM	LOCATION	PRIMARY AIR MAX. (CFM)	PRIMARY AIR INTERNAL STATIC MAX. (IN. WG)	EXHAUST AIR MAX. (CFM)	EXHAUST AIR INTERNAL STATIC MAX. (IN. WG)	FILTER MERV	EFECTIVENESS SENSIBLE (%)	EFECTIVENESS WINTER (%)	EFECTIVENESS SUMMER (%)	VOLUME CONTROL	MOTOR HP	MOTOR VOLT	MOTOR PH	BASIS OF DESIGN MANUFACTURER AND MODEL OR TYPE	NOTES
ERV-1	EMER. DEPT L1	MECHANICAL BW202	4,380	0.50	4,380	0.50	8	82	75	68	CONSTANT FLOW	-	-	-	RENEWAIRE PA12X 1 UNIT	1,2,3,4,5,6
ERV-2	GENERAL LL	MECHANICAL BW202	2,700	0.40	2,700	0.40	8	80	78	68	CONSTANT FLOW	-	-	-	RENEWAIRE PA8X 1 UNIT	1,2,3,4,5,6, 7

NOTES:
1. PRIMIARY AIR AND EXHAUST AIR FLOWS SHALL BE EQUAL. MINIMUM EFFECTIVENESS 60%.
2. EQUIPMENT SELECTIONS BASED ON 750 FT ELEVATION.
3. PULL-PULL BLOWER ORIENTATION FOR SUPPLY AND EXHAUST AIR.
4. STACK AND MANIFOLD DUCT CONNECTIONS. PROVIDE DUCT-PLENUM MOUNTED ACCESS PANELS FOR FILTER ACCESS.
5. PROVIDE REQUIRED SERVICE CLEARANCE.
6. INSTALL AIR HANDLER ON 3.5 INCH HOUSEKEEPING PAD.
7. DELETE WITH DEDUCT ALTERNATE 5.

UNIT HEATER SCHEDULE (HOT WATER)

TAG	LOCATION	TYPE	AIR AIRFLOW (CFM)	AIR EAT (F)	WATER CAPACITY MBH	WATER INLET SIZE (IN)	WATER WATER FLOW (GPM)	MOTOR RPM	MOTOR V / PH / HZ	MOTOR MCA	MOTOR WATT	MOUNTING HEIGHT AFF (FT)	BASIS OF DESIGN MANUFACTURER AND MODEL NUMBER	NOTES
UH-1	AMBULANCE GARAGE	HOT WATER	395	60	13.1	1/2	1.3	1550	115 / 1 / 60	1	16	9	STERLING HS-18	1,2
UH-2	AMBULANCE GARAGE	HOT WATER	395	60	13.1	1/2	1.3	1550	115 / 1 / 60	1	16	9	STERLING HS-18	1,2

NOTES:
1. COORDINATE INSTALLATION LOCATION WITH EQUIPMENT PROVIDED BY OTHERS.
2. PROVIDE WITH DISCONNECT SWITCH AND VARIABLE SPEED SWITCH.

HEAT EXCHANGER SCHEDULE (STEAM-TO-WATER)

TAG	SYSTEM	LOCATION	TYPE	TUBESIDE DATA WATER FLOW (GPM)	TUBESIDE DATA MAX FLD. PD (FT)	TUBESIDE DATA EWT (F)	TUBESIDE DATA LWT (F)	TUBESIDE DATA TUBE O.D. (INCH)	TUBESIDE DATA TUBE WALL (INCH)	TUBESIDE DATA FOULING FACTOR	WATER CONN. SIZES (NPT)	SHELL DATA MAX. TEMP. (F)	SHELL DATA MAX. PRES. (PSI)	STEAM DATA MAX. FLOW (IBS/HR)	STEAM DATA PRESS. (PSIG)	ELECTRICAL AMPS	ELECTRICAL VOLT	ELECTRICAL PH	BASIS OF DESIGN MANUFACTURER AND MODEL NUMBER	NOTES
HX-1	HYDRONIC	MECHANICAL BW202	INDIRECT SHELL&TUBE	125	10	150	180	0.75	0.125	0.000	3"	350	185	3300	15	1.5	120	1	AERCO SWDW-68/2.5/EC	1,2,3,4,5
HX-2	HYDRONIC	MECHANICAL BW202	INDIRECT SHELL&TUBE	125	10	150	180	0.75	0.125	0.000	3"	350	185	3300	15	1.5	120	1	AERCO SWDW-68/2.5/EC	1,2,3,4,5

NOTES:
1. ELECTRONIC CONTROLS (+/- 4 F) WITH HIGH TURNDOWN CONTROL VALVES AND HIGH LIMIT TIPPED STATUS INDICATION.
2. INTEGRATE WITH EXISTING BUILDING AUTOMATION SYSTEM.
3. ASME RATED AND INSTALLED WITH RELIEF VALVES RATED FOR SERVICE REQUIREMENTS OF STEAM AND WATER SYSTEMS.
4. CONSTRUCTION: DOUBLE WALL TUBING, COPPER TUBES, 304 STAINLESS STEEL WETTED PARTS, VIRGIN TEFLON.
5. DISCONNECT BY ELECTRICAL CONTRACTOR.

FAN COIL SCHEDULE

TAG	SYSTEM	LOCATION	AIR CAPACITY MAX. (CFM)	AIR CAPACITY MIN (CFM)	AIR CAPACITY TSP. (IN. WG)	VOLUME CONTROL	MOTOR AMPS	MOTOR VOLT	MOTOR PH	COOLING DATA TUBE WALL (IN)	COOLING DATA EAT DB (F)	COOLING DATA LAT DB (F)	COOLING DATA EWT (F)	COOLING DATA LWT (F)	COOLING DATA FLOW (GPM)	COOLING DATA CONN (INCH)	COOLING DATA WATER PD (FT)	COOLING DATA TOTAL CAPACITY MBH	HEATING DATA TUBE WALL (IN)	HEATING DATA EAT DB (F)	HEATING DATA LAT DB (F)	HEATING DATA EWT (F)	HEATING DATA LWT (F)	HEATING DATA FLOW (GPM)	HEATING DATA CONN (INCH)	HEATING DATA WATER PD (FT)	HEATING DATA TOTAL CAPACITY MBH	UNIT DIMS (WxLxH)	BASIS OF DESIGN MANUFACTURER AND MODEL OR TYPE	NOTES
FC-1	DECON RM ENTRANCE	DECON VESTIBULE: L1	2,093	1,896	-	VARIABLE FLOW	2.5	120	1	-	-	-	-	-	-	-	-	-	0.032	65	100	180	160	8.0	1-1/4	4.4	79.5	99 x 26 x 17	POWERED AIRE CHS-2-96HW	1,2,3,4,5,7,9,10,11
FC-2	-	L3 BLESSED SACRAMENT	225	95	0.25	VARIABLE FLOW	0.7	120	1	0.032	80	55	45	55	2.0	3/4	5.1	8.5	0.032	70	120	180	140	0.7	3/4	1.5	11.5	21 x 24 x 10	MCQUAY THC-H02	1,2,4,5,6,7,8,10,11
FC-3	-	L3 CHAPLAIN WORKSTATIONS	300	125	0.25	VARIABLE FLOW	1.0	120	1	0.032	80	55	45	55	2.5	3/4	3.3	11.1	0.032	70	120	180	140	0.9	3/4	2.9	16.3	28 x 24 x 10	MCQUAY THC-H03	1,2,4,5,6,7,8,10,11
FC-4	-	L3 COUNSELING ROOM	225	95	0.25	VARIABLE FLOW	0.7	120	1	0.032	80	55	45	55	2.0	3/4	5.1	8.5	0.032	70	120	180	140	0.7	3/4	1.5	11.5	21 x 24 x 10	MCQUAY THC-H02	1,2,4,5,6,7,8,10,11
FC-5	-	L3 CHAPEL	655	400	0.25	VARIABLE FLOW	1.8	120	1	0.032	80	55	45	55	4.7	1.0	12.8	21.2	0.032	70	120	180	140	1.7	3/4	10.7	29.6	41 x 24 x 10	MCQUAY THC-H06	1,2,4,5,6,7,8,10,11
FC-6	-	L3 J.PRAY, MEDIT, AV.STOR.	225	95	0.25	VARIABLE FLOW	0.7	120	1	0.032	80	55	45	55	2.0	3/4	5.1	8.5	0.032	70	120	180	140	0.7	3/4	1.5	11.5	21 x 24 x 10	MCQUAY THC-H02	1,2,4,5,6,7,8,10,11
FC-7	ENTRANCE LOBBY/VEST.	SOUTH VESTIBULE	560	400	0.25	VARIABLE FLOW	2.4	120	1	0.032	80	60	45	55	5.0	1.0	12.4	23.9	0.032	70	90	180	150	3.0	3/4	9.9	9.9	62.5 x 10 x 27.6	MCQUAY FCVS-S08	1,2,4,5,6,7,9,11
FC-10 ALT BID	ALTERNATE BID - BW201	BCP02	500	500	0.15	VARIABLE FLOW	1.8	120	1	0.032	80	55	45	55	4.7	1.0	12.8	21.2	-	-	-	-	-	1.7	3/4	10.7	29.6	41 x 24 x 10	MCQUAY THC-H06	1,2,4,5,6,7,9,11,12
FC-11 ALT BID	ALTERNATE BID - BW200	BW202	500	500	0.15	VARIABLE FLOW	1.8	120	1	0.032	80	55	45	55	4.7	1.0	12.8	21.2	-	-	-	-	-	1.7	3/4	10.7	29.6	41 x 24 x 10	MCQUAY THC-H06	1,2,4,5,6,7,9,11,12

NOTES:
1. PREMIUM EFFICIENCY MOTORS.
2. EQUIPMENT SELECTIONS BASED ON 750 FT ELEVATION.
3. OPTIONS: CRUISE CONTROL PROGRAMMABLE SWITCH, MAGNETIC DOOR SWITCH, HIGH EFFICIENCY DISCHARGE NOZZLE.
4. THERMAL OVERLOAD PROTECTION, NON-FUSED DISCONNECT SWITCH MOUNTED TO NEAREST WALL. PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
5. INSTALL WITH MANUFACTURER RECOMMENDED VIBRATION ISOLATION: HANGING NEOPRENE ISOLATORS AND FLEXIBLE DUCT CONNECTIONS.
6. DIGITAL 3 SPEED AUTO-CONTROL, RETURN AIR PLENUM, DUCT FLANGES, CONDENSATE OVERFLOW SWITCH AND CONNECTED TO BAS, AND SELF-RESETTING THERMAL OVERLOAD SWITCH.
7. SECONDARY DRAINPAN BELOW UNIT AND VALVES, CONTRACTOR PROVIDED. ROUTE 1" CONDENSATE PIPE DOWN NEAREST WALL AND TO NEAREST SANITARY MAIN, INDIRECT CONNECTION BEFORE RISER DOWN.
8. MERV 8 THROWAWAY FILTER 1 INCH, AT RETURN GRILLE.
9. MERV 8 THROWAWAY FILTER INCH, UNIT MOUNTED.
10. INSTALL UNIT AS HIGH AS POSSIBLE TO MAXIMIZE CEILING SPACE AND MAINTAIN SERVICE CLEARANCES.
11. INSTALL VALVES AND PIPING WITHIN UNIT CASE.
12. ALTERNATE BID UNIT: INSTALL UNIT TO SERVE DESIGNATED ROOM IF DEDUCT ALTERNATE 5 FOR REMOVAL OF PHARMACY CACHE, AND AH1-B8 IS ACCEPTED.

AIR HANDLING UNIT SCHEDULE

TAG	SYSTEM	LOCATION	AIRFLOW SUPPLY MAX (CFM)	AIRFLOW SUPPLY MIN (CFM)	AIRFLOW OUTSIDE MAX (CFM)	AIRFLOW OUTSIDE MIN (CFM)	SUPPLY FAN QTY	SUPPLY FAN TAG	RELIEF FAN QTY	RELIEF FAN TAG	PLEATED PRE FILTER MERV	CARTRIDGE POST FILTER MERV	HEATING STEAM COIL TAG	COOLING WATER COIL TAG	HUMIDIFIER STEAM COIL TAG	BASIS OF DESIGN MANUFACTURER AND MODEL	UNIT DIMENSIONS (IN)	NOTES
AH1-B7	EMER. DEPT L1	MECHANICAL BW202	12,100	6,700	12,100	3,960	1	F-1	1	F-2	11	14	HC-1	CC-1	SHC-1	TRANE PERF CLIMATE CHANGER	244 L x 80 W x 127 H	1,2,3,4,5,6,7,8,9,10,11,12
AH1-B8	GENERAL LL	MECHANICAL BW202	7,000	3,725	7,000	2,650	1	F-5	1	F-6	11	14	HC-2	CC-2	SHC-2	TRANE PERF CLIMATE CHANGER	266 L x 72 W x 89 H	1,2,3,4,5,6,7,8,9,10,11,12 13

NOTES: REFERENCE 1-M26 FOR UNIT DETAIL.
1. MECHANICAL CONTRACTOR TO FIELD INSTALL UV LIGHTS AT COOLING COIL DISCHARGE.
2. VARIABLE FREQUENCY DRIVES FOR FANS PROVIDED BY CONTROLS CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR.
3. HUMIDIFIER DISPERSION TUBE SECTION FIELD INSTALLED BY MECHANICAL CONTRACTOR.
4. PROVIDE WITH ECONOMIZER DAMPERS AND AIR BLENDER SECTION.
5. EQUIPMENT SELECTIONS BASED ON 750 FT ELEVATION.
6. ALL AUTOMATIC CONTROL DEVICES, AIR FLOW MEASURING STATIONS, AND ACTUATORS PROVIDED AND INSTALLED BY CONTROLS CONTRACTOR. REFERENCE SPEC 23-0923.
7. DAMPERS PROVIDED BY AIR HANDLER MANUFACTURER.
8. SUPPLY AIRFLOW MEASURING STATION TO BE FAN INLET TYPE. FAN INLET AIRFLOW TRAVERSE PROBE, FACE MOUNTED, CALIBRATED TO EXACT INSTALLED FAN.
9. INSTALL AIR HANDLER ON 2 INCH HOUSEKEEPING PAD.
10. PROVIDE SEPARATE 120 VOLT 15 AMP CIRCUIT FOR INTERNAL LIGHTS. PROVIDE SEPARATE 120 VOLT 15 AMP CIRCUIT FOR UV LIGHT SYSTEM. PROVIDE SEPARATE 120 VOLT 15 AMP CIRCUIT FOR SERVICE RECEPTACLE.
11. ALL INTERNAL WIRING TO BE INSTALLED IN CONDUIT OR FLEXIBLE CONDUIT TO PREVENT UV DEGRADATION.
12. ROTATE SUPPLY FAN ORIENTATION TO PREVENT AIRFLOW SYSTEM AFFECTS WITH CONNECTED DUCT.
13. DELETE WITH DEDUCT ALTERNATE 5.

HEATING COIL SCHEDULE (STEAM-IFB)

TAG	SYSTEM	LOCATION	AIR CAPACITY (CFM)	QTY. OF COILS IN BANK	MIN. ROWS	MAX. FINS PER INCH	MAX. FACE VEL (FPM)	SIZE DATA FACE AREA (SF)	SIZE DATA TUBE LEN (IN)	SIZE DATA TUBE WID (IN)	SIZE DATA FIN HGT (IN)	SIZE DATA TUBE WALL (IN)	AIRSIDE DATA EAT DB (F)	AIRSIDE DATA LAT DB (F)	AIRSIDE DATA AIR PD (IN. WG)	STEAM DATA TEMP (F)	STEAM DATA PRESS. (PSIG)	STEAM DATA COND. LOAD (LBS/HR)	TOTAL CAPACITY MBH	BASIS OF DESIGN COIL TYPE	NOTES
HC-1	EMER. DEPT L1	AH1-B7	12,100	1	2	12	680	-	26.5	80.0	65.0	0.035	-11.0	67.0	0.40	250.0	15.0	1052.0	996.0	INTEGRAL FACE & BYPASS	1, 2, 3, 4
HC-2	GENERAL LL	AH1-B8	7,000	1	2	11	729	-	26.5	72	47	0.035	-11.0	65.0	0.44	250.0	15.0	608.0	545.0	INTEGRAL FACE & BYPASS	1, 2, 3, 4

NOTES:
1. EQUIPMENT SELECTIONS BASED ON 750 FT ELEVATION, AND FLUID TYPE: STEAM.
2. MANUFACTURER: L J WING.
3. COIL ACTUATOR PROVIDED BY MANUFACTURER.
4. STAINLESS STEEL DRAINPAN.

COOLING COIL SCHEDULE (CHILLED WATER)

TAG	SYSTEM	LOCATION	AIR CAPACITY (CFM)	QTY. OF COILS IN BANK	MIN. ROWS	MAX. FINS PER INCH	MAX. FACE VEL (FPM)	COIL SIZE DATA FACE AREA (SF)	COIL SIZE DATA TUBE LEN (IN)	COIL SIZE DATA TUBE WID (IN)	COIL SIZE DATA FIN HGT (IN)	COIL SIZE DATA TUBE WALL (IN)	AIRSIDE DATA EAT DB (F)	AIRSIDE DATA EAT WB (F)	AIRSIDE DATA LAT DB (F)	AIRSIDE DATA LAT WB (F)	AIRSIDE DATA AIR PD (IN. WG)	WATERSIDE DATA EWT (F)	WATERSIDE DATA LWT (F)	WATERSIDE DATA FLOW (GPM)	WATERSIDE DATA WATER PD (FT)	WATERSIDE DATA TOTAL CAPACITY MBH	BASIS OF DESIGN COIL TYPE	NOTES
CC-1	EMER. DEPT L1	AH1-B7	12,100	1	8	9	510	-	19.0	80.0	65.0	0.035	95.0	78.0	53.0	52.8	0.92	44.0	55.0	190.0	10.9	1049.0	TRANE 5D PRIMA FLO H	1,2,3,4,5
CC-2	LL	AH1-B8	7,000	1	8	9	542	-	19.0	72.0	47.0	0.035	95.0	78.0	53.0	52.8	1.09	44.0	55.0	110.0	9.8	607.0	TRANE 5D PRIMA FLO H	1,2,3,4,5

NOTES:
1. EQUIPMENT SELECTIONS BASED ON 750 FT ELEVATION, AND FLUID TYPE: WATER.
2. SEE SPECIFICATIONS FOR FURTHER DETAILS.
3. ROUTE CONDENSATE TO NEAREST FLOOR DRAIN.
4. COIL SHALL BE FULLY DRAINABLE.
5. STAINLESS STEEL DRAINPAN.

HUMIDIFIER COIL SCHEDULE (STEAM)

TAG	SYSTEM	LOCATION	AIR CAPACITY (CFM)	STEAM DATA TOTAL FLOW (LBS/HR)	STEAM DATA PRESS. (PSIG)	FACE DIMENSIONS HEIGHT (IN)	FACE DIMENSIONS WIDTH (IN)	OVERALL DIMENSIONS HEIGHT (IN)	OVERALL DIMENSIONS WIDTH (IN)	HEADER SIZE (IN)	TUBE CENTER (IN)	EAT (F DB)	LAT (F DB)	EA-RH (%)	LA-RH (%)	E-OA (%)	MAX AIR VELOCITY (FT/MIN)	APD (IN. WG)	BASIS OF DESIGN MANUFACTURER AND MODEL NUMBER	NOTES
SHC-1	EMER. DEPT L1	AH1-B7	12,100	266	5	70	33	80	36	4	3	52.6	55.0	10.0	70.0	36.0	785	0.06	DRISTEEM ULTRA-SORB LV	1,2,3
SHC-2	GENERAL LL	AH1-B8	7,000	190	5	70	33	79	36	3	3	52.6	55.0	10.0	70.0	36.0	785	0.06	DRISTEEM ULTRA-SORB LV	1,2,3

NOTES:
1. COORDINATE WITH AIR HANDLER MANUFACTURER FOR EXACT INSTALLATION REQUIREMENTS.
2. ROUTE CONDENSATE THROUGH CONDENSATE DRAIN COOLER THEN TO NEAREST FLOOR DRAIN.
3. HUMIDIFIER DISPERSION TUBE SECTION FIELD INSTALLED BY CONTRACTOR.

FAN SCHEDULE

TAG	SYSTEM	LOCATION	AIR CAPACITY MAX. (CFM)	AIR CAPACITY MIN (CFM)	TSP. (IN. WG)	ESP (IN. WG)	FAN RPM	VOLUME CONTROL	CONTROL TYPE	MOTOR HP	MOTOR BHP	MOTOR VOLT	MOTOR PH	BASIS OF DESIGN MANUFACTURER AND MODEL OR TYPE	NOTES
F-1	SUPPLY AIR	AH1-B7	12,100	6,700	6.50	3.00	1,922	VARIABLE FLOW	VFD	25.0	19.1	460	3	TYPE: AF, CLASS 2	1,2,3,5,6
F-2	RETURN AIR	AH1-B7	7,300	2,340	2.30	2.00	1,727	VARIABLE FLOW	VFD	7.5	5.1	460	3	TYPE: AF, CLASS 2	1,2,3,5,6
F-3	EXHAUST AIR	ERV-1	5,020	4,535	3.60	3.60	983	VARIABLE FLOW	VFD	7.5	7.3	460	3	GREENHECK BSQ-360HP-75 BC, BELT DRIVE	1,2,3,5,6
F-4	OUTSIDE AIR	ERV-1	5,020	4,535	2.50	2.50	1,274	CONSTANT FLOW	MAGNETIC STARTER	5.0	3.8	460	3	GREENHECK BSQ-240HP-50 BC, BELT DRIVE	1,2,3,4,5
F-5	SUPPLY AIR	AH1-B8	7,000	3,725	5.70	1.50	2,288	VARIABLE FLOW	VFD	15.0	10.4	460	3	TYPE: AF, CLASS 2	1,2,3,5,6, 7
F-6	RETURN AIR	AH1-B8	7,000	3,725	1.10	0.75	1,489	VARIABLE FLOW	VFD	5.0	3.1	460	3	TYPE: AF, CLASS 2	1,2,3,5,6, 7
F-7	EXHAUST AIR	ERV-2	2,700	2,650	2.50	2.50	1,655	VARIABLE FLOW	VFD	2.0	2.0	460	3	GREENHECK BSQ-180HP-20 BC, BELT DRIVE	1,2,3,5,6, 7
F-8	OUTSIDE AIR	ERV-2	2,700	2,650	2.50	2.50	1,655	CONSTANT FLOW	MAGNETIC STARTER	2.0	2.0	460	3	GREENHECK BSQ-180HP-20 BC, BELT DRIVE	1,2,3,4,5, 7
F-9	GARAGE EXHAUST	AMB. GARAGE 1W221 ROOF	3,050	3,050	0.50	0.50	560	CONSTANT FLOW	MAGNETIC STARTER	0.5	0.5	460	3	GREENHECK CUBE-240-5 BELT DRIVE, UPBLAST	1,2,3,4,5
F-10	LEVEL 1 EXHAUST	CORRIDOR 1C11	740	670	0.50	0.50	1,074	CONSTANT FLOW	MAGNETIC STARTER	0.25	0.2	115	1	GREENHECK BDF-80-4 FC, BELT DRIVE	1,2,3,4,5

NOTES:
1. PREMIUM EFFICIENCY MOTORS WITH THERMAL OVERLOAD PROTECTION
2. EQUIPMENT SELECTIONS BASED ON 750 FT ELEVATION.
3. CALIBRATE VFD TO MATCH MOTOR PERFORMANCE OF BALANCED SYSTEM, AND SET CARRIER FREQUENCY ABOVE AUDIBLE LEVEL.
4. MAGNETIC STARTERS AND DISCONNECT PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
5. INSTALL WITH VIBRATION ISOLATION: HANGING NEOPRENE ISOLATORS, FLEXIBLE DUCT CONNECTIONS, OR INTERNAL VIBRATION ISOLATION.
6. VARIABLE FREQUENCY DRIVES FOR FANS PROVIDED BY CONTROLS CONTRACTOR; INSTALLED BY ELECTRICAL CONTRACTOR. DISCONNECT BY ELECTRICAL CONTRA
7. DELETE WITH DEDUCT ALTERNATE 5

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
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project number
11-25503

Drawing Title: MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1
Checked: AGW
Drawn: DRB
Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014
Project No.: 636-201
DRAWING NO.: 1-M23

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

DIFFUSER REGISTER AND GRILLE SCHEDULE

TAG	SERVICE	CFM RANGE	NECK DIA. (IN)	SIZE FACE (IN)	LINEAR DATA QTY OF SLOT	LINEAR DATA SLOT WIDTH (IN)	LINEAR DATA SLOT LENGTH (IN)	LINEAR DATA BAR WIDTH (IN)	MAX. PD (IN. WG)	MAX. NOISE (NC)	PATTERN	DESIGN BASIS MANUFACTURER AND MODEL NUMBER	NOTES
SD-A	CEILING SUPPLY DIFFUSER	50 - 150	6	12 x 12	-	-	-	-	0.07	25	4 - WAY	PRICE SCD	1, 2, 3, 6, 7
		155 - 250	8						0.10	25			
SD-B	CEILING SUPPLY DIFFUSER	50 - 150	6	24 x 24	-	-	-	-	0.07	25	4 - WAY	PRICE SCD	1, 2, 3, 6, 7
		155 - 300	8						0.08	25			
		305 - 450	10						0.09	25			
		455 - 630	12						0.09	25			
		635 - 850	14						0.10	25			
SD-C	WALL SUPPLY DIFFUSER	50 - 150	8 x 4	-	-	-	-	-	0.10	25	DOUBLE DEFLECTION	PRICE 520	1, 2, 3, 6, 7
		155 - 340	10 x 6						0.10	25			
		345 - 650	14 x 10						0.10	30			
		655 - 1070	18 x 12						0.10	30			
		1075 - 1440	18 x 16						0.10	30			
SD-D	CEILING SUPPLY DIFFUSER OPERATING ROOM	50 - 150	10	24 x 24	-	-	-	-	0.36	20	LAMINAR FLOW	PRICE LFDCSS	1, 2, 3, 4, 6, 7, 8
		155 - 400	12	24 x 48					0.34	20			
SD-E	WALL SUPPLY DIFFUSER	0	BLANK	CONCEALED FRAME	1	1	48	1	0.18	30	LINEAR VERTICAL	PRICE JS	1, 2, 3, 5, 6, 7, 9
		250 - 325	26 x 6 8										
		330 - 420	10										
SD-F	SECURITY GRILLE	0 - 250	8	14 x 14	-	-	-	-	0.02	25	PERFERATED	PRICE MSRRP	1, 3, 6, 7, 10
SD-X	EXISTING TO REMAIN SUPPLY DIFFUSER	-	-	-	-	-	-	-	-	-	-	-	-
RG-A	CEILING RETURN GRILLE	0 - 200	8	12 x 12	-	-	-	-	0.10	20	EGG CRATE	PRICE 80	1, 2, 3, 6, 7
		205 - 400	10						0.10	20			
RG-B	CEILING RETURN GRILLE	0 - 200	8	24 x 24	-	-	-	-	0.10	20	EGG CRATE	PRICE 80	1, 2, 3, 6, 7
		205 - 400	10						0.10	20			
		405 - 650	12						0.10	20			
		655 - 1200	14						0.10	20			
		1205 - 2000	18						0.10	20			
RG-C	WALL RETURN GRILLE	50 - 150	12 x 6	-	-	-	-	-	0.10	25	FIXED LOUVER	PRICE 70	1, 2, 3, 6, 7
		155 - 250	14 x 8						0.10	25			
		255 - 520	18 x 10						0.10	30			
		525 - 830	24 x 14						0.10	30			
		835 - 1400	30 x 24						0.10	30			
RG-D	WALL RETURN GRILLE OPERATING ROOM	50 - 200	10 x 8	12 x 10	-	-	-	-	0.10	30	FIXED LOUVER	PRICE 735H	1, 2, 3, 6, 7
RG-E	WALL RETURN DIFFUSER	0 - 400	10	CONCEALED FRAME	1	1	48	1	0.18	30	LINEAR VERTICAL	PRICE JS	1, 2, 3, 5, 6, 7, 9
RG-F	SECURITY GRILLE	0 - 250	8	14 x 14	-	-	-	-	0.02	25	PERFERATED	PRICE MSRRP	1, 3, 6, 7, 10
RG-G	CEILING RETURN GRILLE	0 - 950	14	24 x 24	-	-	-	-	0.10	35	EGG CRATE FILTER GRILLE	PRICE 80FF	1, 3, 6, 7, 10, 11
		955 - 3600	16						0.13				
RG-X	EXISTING TO REMAIN RETURN GRILLE	-	-	-	-	-	-	-	-	-	-	-	-
EG-A	CEILING EXHAUST GRILLE	0 - 200	8	12 x 12	-	-	-	-	0.10	20	EGG CRATE	PRICE 80	1, 2, 3, 6, 7
		205 - 400	10						0.10	20			
EG-B	CEILING EXHAUST GRILLE	0 - 200	8	24 x 24	-	-	-	-	0.10	20	EGG CRATE	PRICE 80	1, 2, 3, 6, 7
		205 - 400	10						0.10	20			
		405 - 650	12						0.10	20			
		655 - 1200	14						0.10	20			
EG-C	WALL RETURN GRILLE	50 - 150	12 x 6	-	-	-	-	-	0.10	25	FIXED LOUVER	PRICE 70	1, 2, 3, 6, 7
		155 - 250	14 x 8						0.10	25			
		255 - 520	18 x 10						0.10	30			
		525 - 830	24 x 14						0.10	30			
		835 - 1400	30 x 24						0.10	30			
		1875 - 2500	30 x 30	32 x 32					0.10	36			
		2505 - 3100	32 X 30	34 X 32					0.10	40			
EG-X	EXISTING TO REMAIN EXHAUST GRILLE	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:
1. COORDINATE MOUNTING FRAME STYLE WITH CEILING OR WALL.
2. ALL PATTERNS SHALL BE 4-WAY UNLESS OTHERWISE NOTED. INSTALL AIRFLOW STRAIGHTENERS ON ALL DEVICES. BAFFLE AIRFLOW TO AVOID THERMOSTATS AND SENSORS.
3. ARCHITECT TO SELECT COLOR.
4. ALUMINUM CONSTRUCTION, AND INSULATED HOUSING.
5. REFERENCE ARCHITECTURAL PLANS FOR RADIUS OF ARCH.
6. CHANGES IN DUCT SIZE FROM DUCT BRANCH TO DIFFUSER NECK SIZE SHALL BE MADE AT DIFFUSER.
7. MAXIMUM FLEXIBLE DUCT LENGTH 72 INCHES. INSTALL DUCT TO DIFFUSERS AND GRILLES AS STRAIGHT AS POSSIBLE.
8. PROVIDE WITH FILTER RACK. DO NOT INCLUDE HIGH EFFICIENCY FILTER (HEPA).
9. INSTALL AS CONTINUOUS DIFFUSER ALONG NOTED WALL. FRAME TYPE 22 CONCEALED FRAME. REFERENCE ARCHITECTURAL PLANS FOR WALL CURVATURE DETAILS.
10. FASTEN TO CEILING FRAMING AND SECURE INTO PLACE WITH 4-SIDED MOUNTING FRAME.
11. PROVIDE WITH 1-INCH DEEP MERV 4 FILTER AND REMOVABLE FACE.

TERMINAL AIR BOX SCHEDULE (PRIMARY CARE CLINIC - AH-EX)

TAB	SYSTEM (VARIABLE/ CONSTANT)	AIRSIDE DATA MAX. FLOW (CFM)	AIRSIDE DATA MIN FLOW (CFM)	AIRSIDE DATA MIN INLET SP.(IN)	AIRSIDE DATA MIN INLET (IN)	REHEAT COIL DATA EAT (F)	REHEAT COIL DATA LAT MIN (F)	REHEAT COIL DATA EWT (F)	REHEAT COIL DATA LWT MIN (F)	REHEAT COIL DATA MAX FLOW (GPM)	REHEAT COIL DATA SCH CAP. (MBH)	REHEAT COIL DATA ROWS	REHEAT COIL DATA RUN OUT (IN)	NOISE DATA SOUND RAD (NC)	NOISE DATA SOUND AIR (NC)	NOISE DATA UNIT SOUND ATTEN.	INSULATION DATA DOUBLE WALL	INSULATION DATA FOIL FACED LINED	INSULATION DATA POLY DUCT WRAP	DESIGN BASIS MANUFACTURER AND MODEL NUMBER	NOTES
140	VAV	580	400	0.5	9	55	85	180	150	1.1	13.0	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
141	VAV	250	100	0.5	6	55	85	180	150	0.5	3.2	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
142	VAV	550	425	0.5	8	55	85	180	150	1.1	13.8	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
143	VAV	500	165	0.5	8	55	85	180	150	0.5	5.3	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
144	VAV	500	150	0.5	8	55	85	180	150	0.5	4.9	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
145	CV	220	220	0.5	6	55	85	180	150	0.5	7.1	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
146	VAV	300	255	0.5	8	55	85	180	150	0.8	8.3	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
147	VAV	1140	540	0.5	12	55	85	180	150	1.2	17.5	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
148	VAV	200	115	0.5	6	55	85	180	150	0.6	3.7	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
149	VAV	250	150	0.5	6	55	85	180	150	0.6	4.9	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
150	VAV	320	275	0.5	7	55	85	180	150	0.8	8.9	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
151	CV	250	250	0.5	6	55	85	180	150	0.5	8.1	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
152	VAV	400	150	0.5	8	55	85	180	150	0.5	4.9	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
153	VAV	100	50	0.5	6	55	85	180	150	0.5	1.6	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
154	VAV	800	250	0.5	10	55	85	180	150	0.5	8.1	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
155	VAV	375	255	0.5	8	55	85	180	150	0.8	8.3	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
156	CV	350	350	0.5	8	55	85	180	150	1.0	11.3	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
157	CV	200	200	0.5	6	55	85	180	150	0.4	6.5	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
158	VAV	325	290	0.5	8	55	85	180	150	0.8	9.4	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
159	VAV	500	150	0.5	8	55	85	180	150	0.5	4.9	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
160	VAV	500	420	0.5	8	55	85	180	150	1.0	13.6	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
161	VAV	360	130	0.5	8	55	85	180	150	0.6	4.2	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
162	VAV	430	170	0.5	8	55	85	180	150	0.6	5.5	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
163	VAV	560	275	0.5	8	55	85	180	150	0.8	8.9	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
164	VAV	200	130	0.5	6	55	85	180	150	0.7	4.2	1	0.5	25	25			X		PRICE SDV	1,2,3,4,5,6,7,8
165	VAV	150	50	0.5	6	55	85	180	150	0.5	1.6	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
166	VAV	650	390	0.5	8	55	85	180	150	1.0	12.6	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
167	VAV	300	100	0.5	7	55	85	180	150	0.5	3.2	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
168	VAV	320	275	0.5	7	55	85	180	150	0.8	8.9	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
169	VAV	300	255	0.5	7	55	85	180	150	0.8	8.3	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
170	VAV	320	275	0.5	7	55	85	180	150	0.8	8.9	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
171	VAV	300	255	0.5	7	55	85	180	150	0.8	8.3	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8
172	VAV	375	300	0.5	7	55	85	180	150	0.8	9.7	1	0.5	25	25	X		X		PRICE SDV	1,2,3,4,5,6,7,8

NOTES:
1. DIGITAL CONTROLLED AND PRESSURE INDEPENDENT.
2. ACTUATORS AND CONTROL ACCESSORIES BY CONTROLS CONTRACTOR.
3. PROVIDE WITH EBTRON MODEL ELF/D00 FOR AIRFLOW AND TEMPERATURE MEASUREMENT. VOLTAGE OUTPUT DETERMINED BY CONTROLS CONTRACTOR. INSTALL DOWNSTREAM OF COIL.
4. PROVIDE WITH 36 INCH DISCHARGE ATTENUATOR AS INTEGRAL EXTENSION.
5. REHEAT COIL TO BE DUCT MOUNTED NEAR VALVE ASSEMBLY DISCHARGE.
6. PROVIDE REQUIRED ATTENUATOR OUTLET ARRANGEMENT AS SHOWN FOR UNITS WITH LIMITED SPACE.
7. PROVIDE LABEL ON CEILING GRID DIRECTLY BENEATH TAB WITH SMALL LASER TAG.
8. EQUIPMENT SELECTIONS BASED ON 750 FT ELEVATION, AND FLUID TYPE: HOT WATER.

Revisions | Date | Revisions | Date | Revisions | Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: DRB

Location: ICVA HEALTH CARE SYSTEM

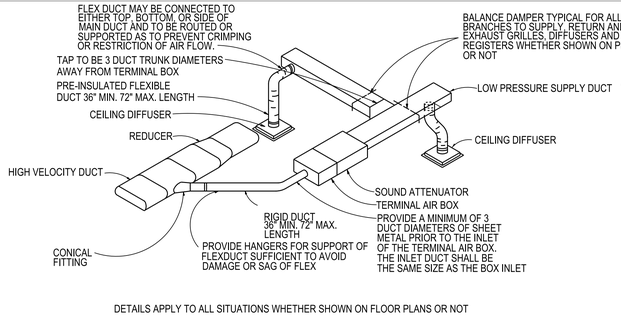
Date: 12/15/2014

Project No.: 636-201

DRAWING NO.: 1-M24

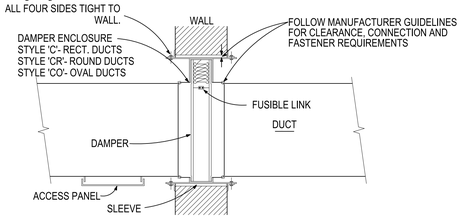
Office of Facilities

Department of Veterans Affairs



DETAILS APPLY TO ALL SITUATIONS WHETHER SHOWN ON FLOOR PLANS OR NOT

1 HIGH AND LOW VELOCITY DUCT SYSTEM DETAIL
NO SCALE



2 FIRE DAMPER DETAIL
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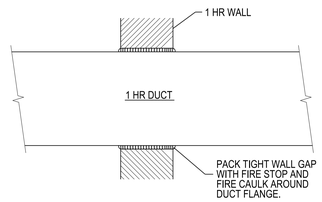
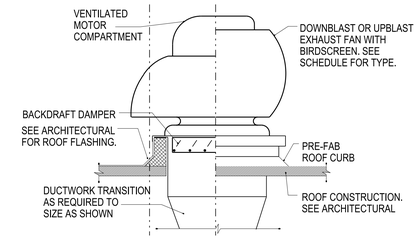
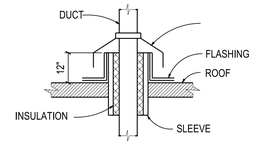


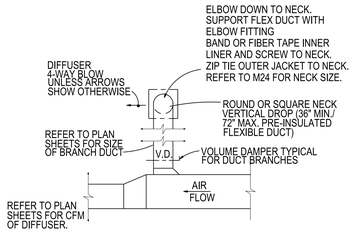
3 DUCT THRU 1 HOUR WALL
NO SCALE



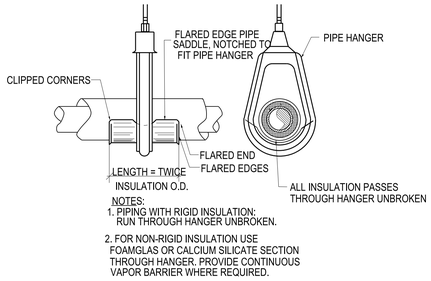
4 ROOF MOUNTED EXHAUST FAN DETAIL
NO CSALE



5 TYPICAL ROOF SLEEVE DETAIL
NO SCALE



6 TYPICAL DIFFUSER BRANCH
NO SCALE



7 INSULATED PIPING HANGER DETAIL
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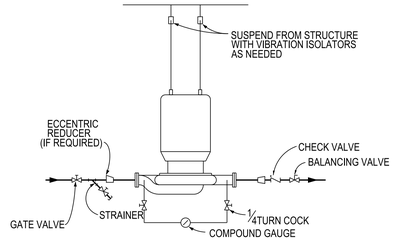
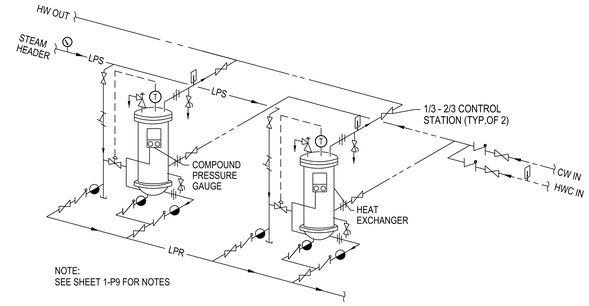
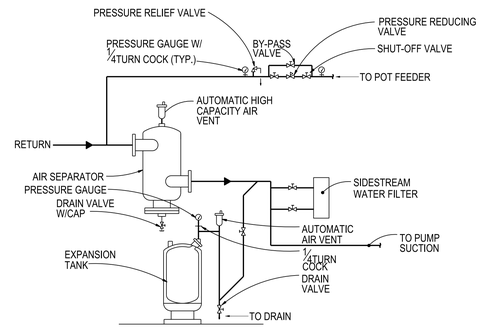


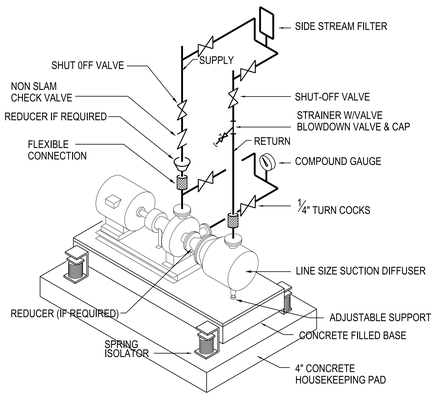
8 PIPING DIAGRAM - INLINE PUMP
NO SCALE



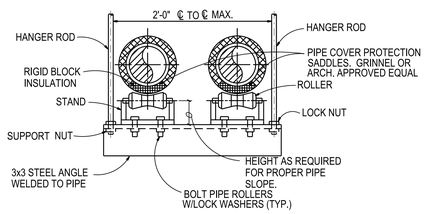
9 WATER HEATER DETAIL- STEAM TO HOT WATER EXCHANGER
NO SCALE



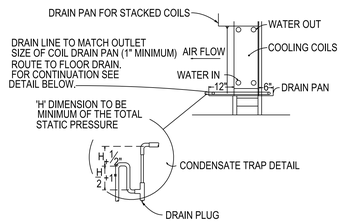
10 EXPANSION TANK AND AIR SEPARATOR PIPING DETAIL
NO SCALE



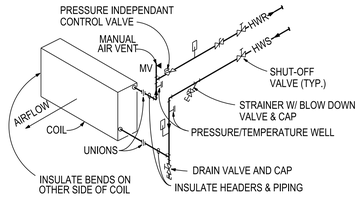
11 END SUCTION PUMP
NO SCALE



12 STEAM SUPPLY AND RETURN PIPE HANGER DETAIL
NO SCALE

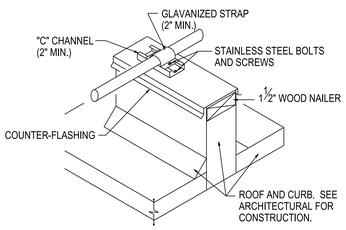


13 COOLING COIL CONDENSATE DRAIN TRAP DETAIL
NO SCALE

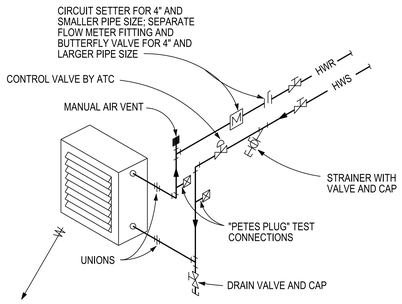


*COMBINATION VALVES ARE NOT ALLOWED.

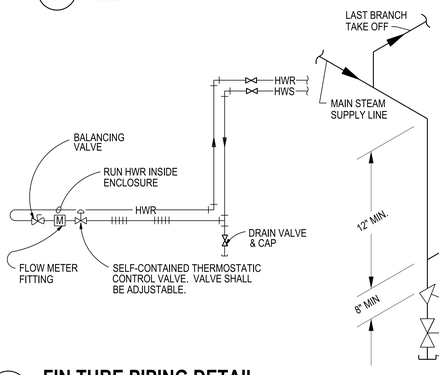
14 HOT WATER REHEAT COIL PIPING DETAIL
NO SCALE



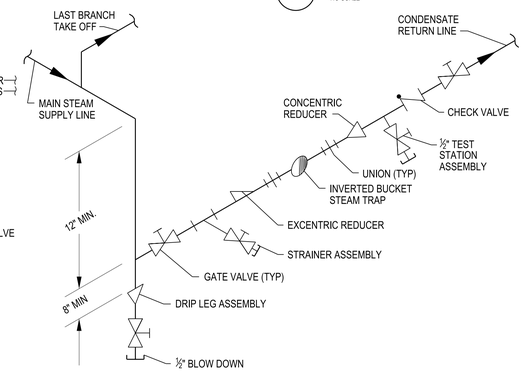
15 ROOF MOUNTED PIPING SUPPORT DETAIL
NO SCALE



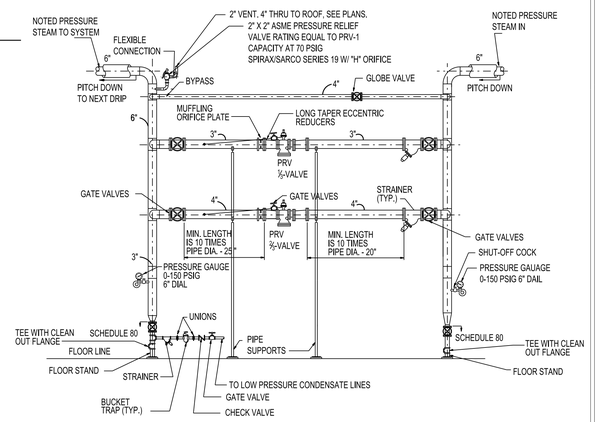
16 HOT WATER UNIT HEATER - PIPING DIAGRAM
NO SCALE



17 FIN TUBE PIPING DETAIL
NO SCALE



18 END OF MAIN DRIP STATION PIPING (BUILDING) DETAIL
NO SCALE



19 SINGLE STAGE STEAM PRESSURE REDUCING STATION
NO SCALE

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: MECHANICAL DETAILS

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: DRB

Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014

Project No.: 636-201

DRAWING NO. 1-M25

Office of Facilities

Department of Veterans Affairs

INITIALS

VA FORM 08-6231, FEB. 1983

PROJECT: IC - VAMC - EXPAND BLDG. 1 FOR PACT PROJECT
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PLOT DATE: 12/15/2014
PLOT TIME: 12:23:22PM
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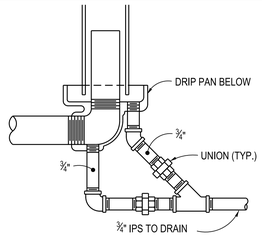
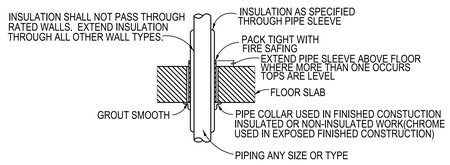
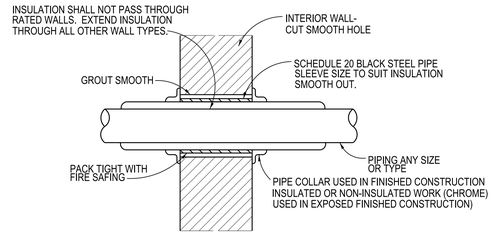


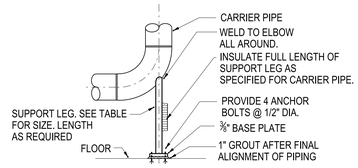
1 DRIP PAN ELBOW FOR STEAM VENTS
NO SCALE



2 PIPE FLOOR SLAB PENETRATION DETAIL
NO SCALE

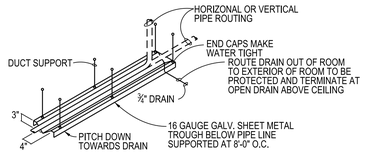


3 PIPE INTERIOR WALL PENETRATION DETAIL
NO SCALE



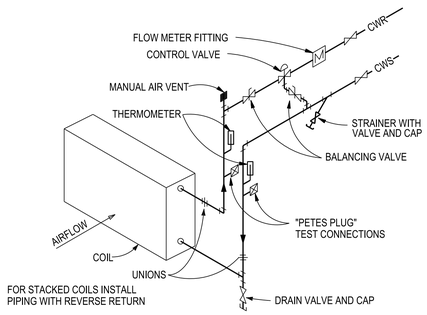
SIZE TABLE						
CARRIER PIPE SIZE (IN)	2½"-4	6-12	14-16	18 & UP		
SUPPORT LEG SIZE (IN)	2	3	4	6		
BASE PLATE (INXIN)	6X6	7X7	8X8	10X10		

4 SUPPORT LEG DETAIL
NO SCALE

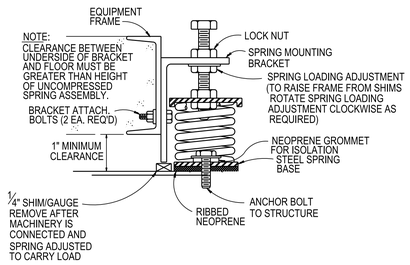


PROVIDE TROUGH UNDER PIPE IN COMPUTER ROOM, ELEVATOR MACHINE ROOMS COMMUNICATIONS ROOMS & ELECTRICAL ROOMS.

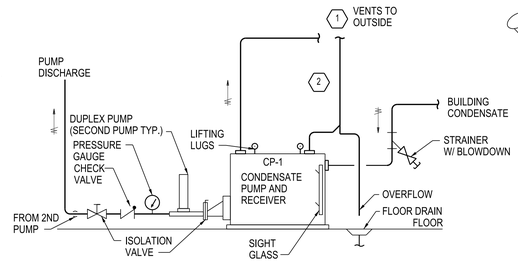
5 SHEET METAL TROUGH DETAIL
NO SCALE



6 PIPING DIAGRAM - CHILLED WATER COIL
NO SCALE



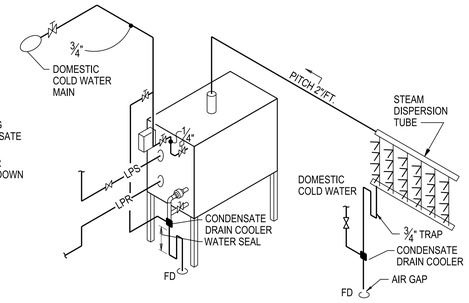
7 SPRING ISOLATOR AND MOUNTING BRACKET ASSEMBLY DETAIL
NO SCALE



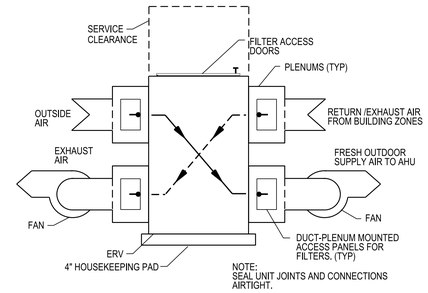
8 CONDENSATE RETURN UNIT DETAIL
NO SCALE

NOTES:

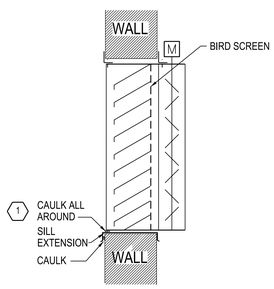
1. PROVIDE TWO SEPARATE VENTS DIRECTLY FROM RECEIVER TANK.
2. VENT PIPING TO MATCH UNIT OUTSIZE. COORDINATE VENT DISCHARGE LOCATION WITH FM- UTILITIES & ENERGY MANAGEMENT- MECHANICAL DISTRIBUTION.



9 HUMIDIFER PIPING DETAIL
NO SCALE

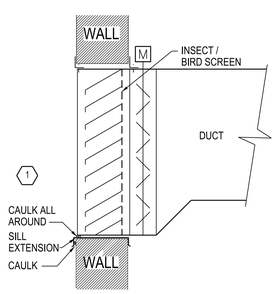


10 ERV DUCT DETAIL
NO SCALE



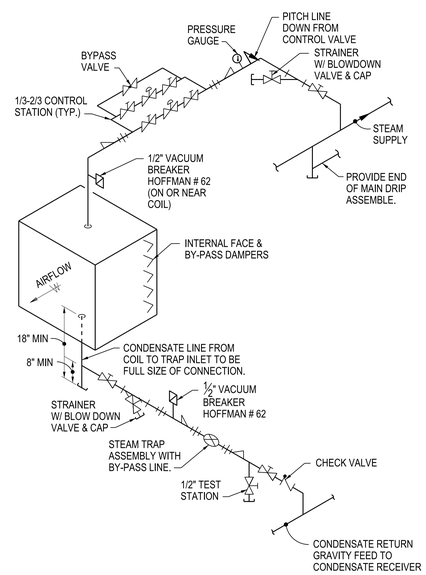
11 LOUVER AND MOTORIZED DAMPER
NO SCALE

1. COORDINATE MOUNTING REQURIEMENTS WITH GENERAL CONTRACTOR AND MANUFACTURER OF EXTERIOR WALL MATERIALS.



15 DETAIL LOUVER END DAMPER
NO SCALE

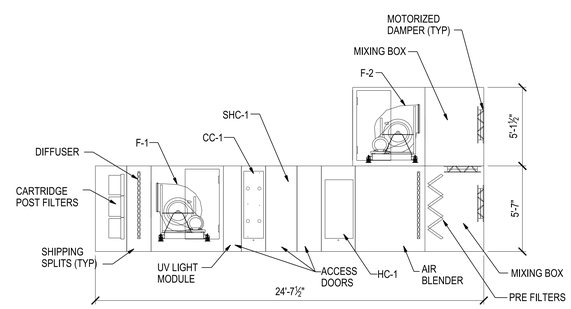
1. COORDINATE MOUNTING REQURIEMENTS WITH GENERAL CONTRACTOR AND MANUFACTURER OF EXTERIOR WALL MATERIALS.



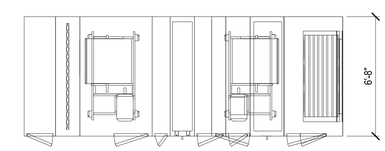
12 STEAM PREHEAT COIL WITH INTERNAL FACE AND BY-PASS DAMPER DETAIL
NO SCALE

NOTES:

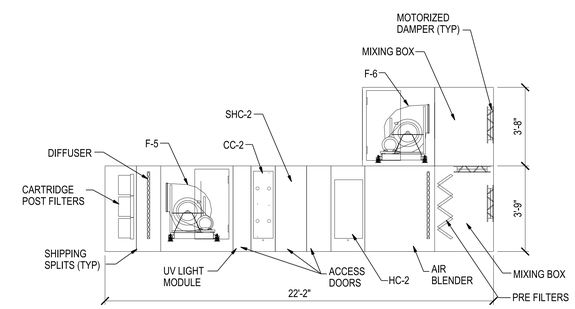
INSTALL PIPING TO ALLOW FOR EASE OF COIL REMOVAL.



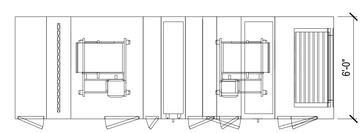
OVERALL ELEVATION VIEW: RIGHT



13 AH1-B7
NO SCALE



OVERALL ELEVATION VIEW: RIGHT



14 AH1-B8
NO SCALE

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design
Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number 11-25503

Drawing Title: MECHANICAL DETAILS

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No.: BLDG 1 | Checked: AGW | Drawn: DRB

Location: ICVA HEALTH CARE SYSTEM

Date: 12/15/2014

Project No.: 636-201

DRAWING NO. 1-M26

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

INITIALS INITIALS

PROJECT: IC-VAMC-EXPAND BLDG. 1 FOR PACT PROJECT
SHEET TITLE: F:\10\1020600\...CADD\1-M26-1020600-MC.dgn
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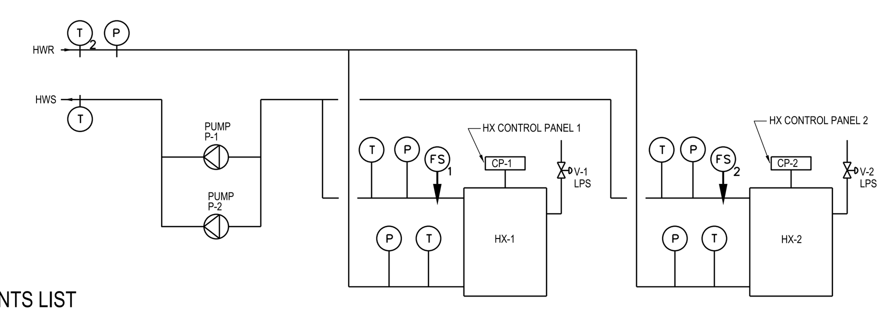


POINTS LIST — HEAT EXCHANGERS

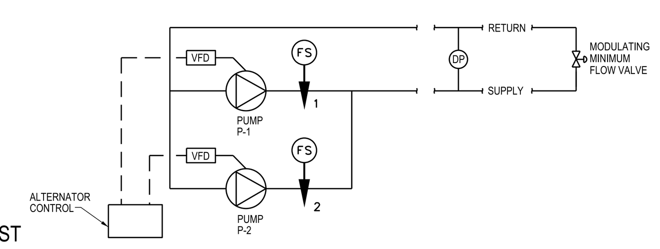
NOTES:
1. ALL HARDWARE AND ALARM POINTS SHALL BE REPRESENTED ON THE GRAPHICS DISPLAY
2. ALL APPLICATION PROGRAMS SHALL BE FULLY FUNCTIONAL USING DATA APPLICABLE TO THIS PROJECT.

EQUIPMENT DESCRIPTION	HAND/OFF/AUTO SWITCH	FLOW SWITCH	HIGH TEMPERATURE SAFETY SWITCH	HIGH PRESSURE SAFETY SWITCH	ENTERING WATER TEMPERATURE	LEAVING WATER TEMPERATURE	ENTERING WATER PRESSURE	LEAVING WATER PRESSURE	ENTERING STEAM TEMPERATURE	ENTERING STEAM PRESSURE	SET POINT ADJUSTMENT	START/STOP	STATUS	VALVE POSITION FUEL	HIGH TEMPERATURE (WATER & STEAM)	LOW TEMPERATURE (WATER & STEAM)	HIGH PRESSURE (WATER & STEAM)	LOW PRESSURE (WATER & STEAM)	HIGH LEVEL WATER	LOW LEVEL WATER	SYSTEM TROUBLE	SCHEDULED START/STOP	OPTIMUM START/STOP	RUN TIME RECORD	TREND LOG ANALYSIS	MAINTENANCE MANAGEMENT	AUTOMATIC ALTERNATING/SEQUENCING	FAILURE MODE RECORD	ENERGY MANAGEMENT
HEAT EXCHANGERS 1 & 2 & 3 & 4		•	•	•	•	•	•	•	•	•					•	•	•	•	•	•				•	•	•			•
CONTROL PANELS 1 & 2 & 3 & 4	•										•		•	•							•	•	•	•	•	•	•	•	
PUMPS P-1 & P-2 & P-3 & P-4	•	•					•	•				•	•											•	•	•			
SYSTEM TEMPERATURE					•	•			•						•	•	•	•											

SEQUENCE OF OPERATIONS

1. DURING NORMAL OPERATION THE HEAT EXCHANGERS SHALL BE CONTROLLED BY THE HEAT EXCHANGER MANUFACTURERS PACKAGED CONTROL SYSTEM, INCLUDING ALL CONTROL VALVES AND SAFETY DEVICES.
2. AUXILARY POINT CONTACTS SHALL BE PROVIDED TO PASS ALL HEAT EXCHANGER CONTROL PANEL ALARMS TO BAS.
3. THE HEAT EXCHANGER OPERATING TEMPERATURE SHALL BE REMOTELY SET THROUGH THE BAS.
4. THE HEAT EXCHANGER SHALL MODULATE THE STEAM VALVE (V-1,2) TO MAINTAIN A DISCHARGE WATER TEMPERATURE OF 180 DEG F, OR MINIMUM RESET TEMPERATURE.
5. HIGH AND LOW SYSTEM PRESSURE(S) ALARMS SHALL BE SIGNALED TO BAS.
6. ALTERNATE HEAT EXCHANGERS TO SHIFT LAG/LEAD DUTIES TO PROVIDE EVEN WEAR.
7. WHEN THE HOT WATER SYSTEM IS ENABLED THE BAS CONTROL SYSTEM WILL START THE LEAD PUMP (P-1) AND PROVE FLOW USING A FLOW SWITCH (FS-1), THEN ENABLE THE HEAT EXCHANGER CONTROL PANEL (CP-1), THEN SIGNAL A START CONDITION.
8. THE LAG PUMP (P-2) AND HEAT EXCHANGER (HX-2) SHALL START WHEN THE LEAD HEAT EXCHANGER FAILS TO MAINTAIN SET POINT FOR A PERIOD OF 30 MINUTES (ADJUSTABLE). THE LAG HEAT EXCHANGER SHALL ON UNTIL BOTH UNITS HAVE OPERATED ON LOW STEAM INPUT FOR A PERIOD OF 30 MINUTES (ADJUSTABLE).
9. IF THE LEAD HEAT EXCHANGER FAILS TO START, AN ALARM SHALL BE SIGNALED, AND THE START COMMAND WILL BE SHIFTED TO THE LAG HEAT EXCHANGER.
10. *** DOMESTIC WATER HEATING HEAT EXCHANGER SHALL MODULATE THE STEAM VALVE (V-1,2) TO MAINTAIN A DISCHARGE WATER TEMPERATURE OF 140 DEG F. DOMESTIC HOT WATER PUMP AND BALANCING VALVES SHALL BE BALANCED AND SET TO A MAXIMUM TEMPERATURE LOSS OF 10 DEG-F.
11. WHEN THE UNIT IS SHUT DOWN ALL COIL VALVES SHALL BE CLOSED.
12. DISCHARGE TEMPERATURE SHALL BE RESET BASED ON OUTSIDE AIR TEMPERATURE IN A STRAIGHT LINE RELATIONSHIP. PROVIDE 180 DEG F WATER WHEN OUTSIDE AIR IS 32 DEG F (OR LOWER). PROVIDE 140 DEG F WATER WHEN OUTSIDE AIR IS 75 DEG F (OR GREATER). ON INCREASE OF ZONE HEATING DEMAND, THE DISCHARGE TEMPERATURE SHALL BE RESET UPWARD TO MAINTAIN SPACE CONDITIONS.
13. DISCHARGE TEMPERATURE SHALL BE RESET UNDER NIGHT SET BACK CONTROL.
14. RESET TEMPERATURES TO BE ADJUSTABLE WITHIN BAS.

HEAT EXCHANGERS



POINTS LIST

EQUIPMENT DESCRIPTION	START/STOP	FLOW SWITCH	DIFFERENTIAL PRESSURE	ENTERING WATER PRESSURE	LEAVING WATER PRESSURE	SET POINT ADJUSTMENT	STATUS	VFD STATUS	SPEED CONTROL ADJUSTMENT	HIGH PRESSURE	LOW PRESSURE	FAILURE TO START	RUN TIME RECORD	TREND LOG ANALYSIS	MAINTENANCE MANAGEMENT	ENERGY MANAGEMENT
HWP-1, HWP-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SEQUENCE OF OPERATION

1. ON A RUN COMMAND, THE SEQUENCE CONTROLLER SHALL SELECT AND START THE LEAD PUMP(P-1) THE PUMP SHALL RUN CONTINUOUSLY UNTIL IT IS SHUT DOWN.
2. A FLOW SWITCH SHALL VERIFY PUMP OPERATION. SHOULD THE SWITCH FAIL TO INDICATE FLOW, A FLOW ALARM SHALL BE REPORTED AND THE SEQUENCE CONTROLLER SHALL STOP THE LEAD PUMP (P-1), AND START THE LAG PUMP (P-2).
3. A DIFFERENTIAL PRESSURE SENSOR (DP) SHALL BE LOCATED BETWEEN THE SUPPLY AND RETURN MAINS NEAR THE FAR END OF THE DISTRIBUTION SYSTEM. THE PRESSURE DIFFERENTIAL SHALL BE MAINTAINED BY VARYING THE SPEED OF THE PUMP AS REQUIRED TO MEET FIELD SET MINIMUM DIFFERENTIAL PRESSURE.
4. THE ALTERNATOR SHALL ALTERNATE WHICH PUMP IS THE LEAD PUMP ON EACH START CYCLE TO PROVIDE EVEN WEAR.
5. HIGH AND LOW SYSTEM PRESSURE ALARMS AND LOW FLOW ALARMS SHALL BE INDICATED SHOULD THE DIFFERENTIAL PRESSURE EXCEED THE RESPECTIVE SETPOINTS.
6. SHOULD ONE PUMP BE UNABLE TO MAINTAIN THE DIFFERENTIAL PRESSURE SETPOINT, THE SEQUENCE CONTROLLER SHALL START THE LAG PUMP. DURING THE START OF THE SECOND PUMP, THE SPEED OF THE FIRST PUMP SHALL BE REDUCED TO MATCH THE SPEED OF THE SECOND PUMP. THE SPEED OF BOTH PUMPS SHALL THEN BE MODULATED TOGETHER AS REQUIRED TO MAINTAIN SETPOINT.
7. A MODULATING MINIMUM FLOW VALVE LOCATED NEAR THE END OF EACH LEVEL BRANCH MAIN, SHALL ASSIST TO MAINTAIN MINIMUM PUMP FLOW RATE WHEN REQUIRED. THE MINIMUM FLOW CONTROL VALVE SHALL MODULATE OPEN AS REQUIRED TO MAINTAIN SET POINT. WHEN PUMP IS OPERATING ABOVE MINIMUM FLOW RATE THE VALVE SHALL BE FULLY CLOSED.

HEATING WATER CIRCULATION PUMPS

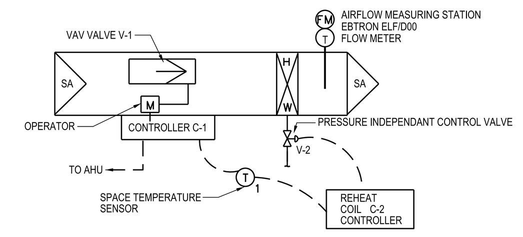
POINTS LIST

EQUIPMENT DESCRIPTION	START/STOP	STATUS	RUN TIME RECORD	MAINTENANCE MANAGEMENT	NIGHT SETBACK (OCCUPIED/UNOCCUPIED)
FTH-1, FTH-2	•	•	•	•	•

SEQUENCE OF OPERATION

1. WHEN SPACE TEMPERATURE FALLS BELOW SET POINT THE HEATER SHALL OPEN HOT WATER VALVE. HEATER SHALL CONTINUE TO OPERATE UNTIL SPACE TEMPERATURE RISES ABOVE SET POINT, AT WHICH TIME THE HEATER SHALL CLOSE HOT WATER VALVE. BAS SHALL MONITOR OPERATION SCHEDULE.
2. HEATER SHALL SHUT DOWN ON FIRE ALARM.
3. HEATER SETPOINT SHALL BE SET BACK DURING UNOCCUPIED HOURS.

HOT WATER CONVECTORS



POINTS LIST

EQUIPMENT DESCRIPTION	START/STOP FROM AHU CONTROL	HIGH TEMPERATURE SAFETY SWITCH	AIR FLOW RATE	ROOM SET POINT ADJUSTMENT	DISCHARGE TEMPERATURE	AIR FLOW RATE	DAMPER POSITION	SCR CONTROL ADJUSTMENT	HIGH TEMPERATURE (ROOM)	LOW TEMPERATURE (ROOM)	FAILURE TO OPEN DAMPER	NIGHT SETBACK (OCCUPIED/UNOCCUPIED)	TREND LOG ANALYSIS (DISCHARGE TEMP)	MAINTENANCE MANAGEMENT
VARIABLE FLOW WITH REHEAT	•	•	•	•	•	•	•	•	•	•	•	•	•	•

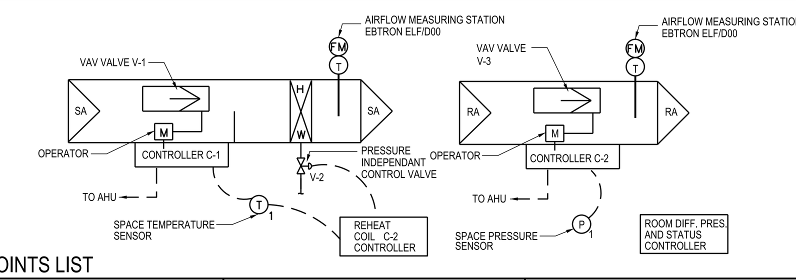
SEQUENCE OF OPERATION

1. ON MAXIMUM COOLING DEMAND, THE CONTROLLER (C-1) SHALL CAUSE THE VARIABLE AIR VOLUME VALVE (V-1) TO BE AT ITS MAXIMUM FLOW POSITION.
2. AS THE SPACE TEMPERATURE (T-1) FALLS, THE VARIABLE AIR VOLUME VALVE (V-1) SHALL MODULATE TOWARD THE CLOSED POSITION UNTIL THE MINIMUM POSITION IS REACHED. WHEN THE AIR HANDLING UNIT IS SHUT DOWN, THE VALVE SHALL CLOSE.
3. THE CONTROLLER (C-1) SHALL SEND A SIGNAL TO THE AIR HANDLING UNIT RESET CONTROL TO FUNCTION AS DESCRIBED IN THE AIR HANDLING UNIT SEQUENCE.

REHEAT OPERATION

4. UPON FURTHER DROP IN TEMPERATURE, THE HEATING COIL SHALL BE ACTUATED. PROVIDE A FULLY ADJUSTABLE DEAD BAND BETWEEN THE MINIMUM VARIABLE AIR VOLUME POSITION AND COIL ACTUATION.
5. IF THE TEMPERATURE CONTINUES TO FALL, THE REHEAT COIL CONTROLLER (C-2) SHALL OPERATE THE HOT WATER VALVE (V-2) AS REQUIRED TO MEET THE DEMAND. WHEN THE DEMAND IS SATISFIED, THE COIL SHALL BE SHUT OFF.
6. ON MAXIMUM HEATING DEMAND, THE CONTROLLER (C-1) SHALL CAUSE THE VARIABLE AIR VOLUME VALVE (V-1) TO BE AT ITS MINIMUM FLOW POSITION.
7. VAV REHEAT TO MAINTAIN MINIMUM AIRFLOW WHEN OUTSIDE AIR TEMPERATURE IS 60 OR ABOVE.

VARIABLE AIR VOLUME BOX WITH HOT WATER REHEAT



POINTS LIST

EQUIPMENT DESCRIPTION	START/STOP FROM AHU CONTROL	HIGH TEMPERATURE SAFETY SWITCH	AIR FLOW RATE	ROOM SET POINT ADJUSTMENT	DISCHARGE TEMPERATURE	AIR FLOW RATES (SUPPLY & RETURN)	DAMPER POSITION	SCR CONTROL ADJUSTMENT	HIGH TEMPERATURE (ROOM)	LOW TEMPERATURE (ROOM)	LOW ROOM PRESSURE (LOW AIR DIFF.)	FAILURE TO OPEN DAMPER	NIGHT SETBACK (OCCUPIED/UNOCCUPIED)	TREND LOG ANALYSIS (DISCHARGE TEMP)	MAINTENANCE MANAGEMENT
VARIABLE FLOW BOX WITH REHEAT & AIR VALVE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

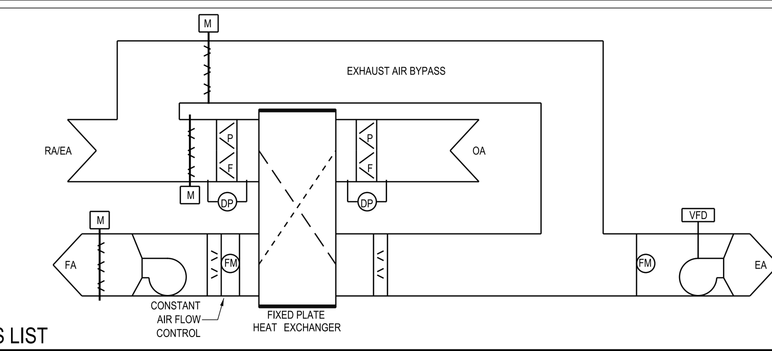
SEQUENCE OF OPERATION

1. ON MAXIMUM COOLING DEMAND, THE CONTROLLER (C-1) SHALL CAUSE THE VARIABLE AIR VOLUME VALVE (V-1) TO BE AT ITS MAXIMUM FLOW POSITION.
2. AS THE SPACE TEMPERATURE (T-1) FALLS, THE VARIABLE AIR VOLUME VALVE (V-1) SHALL MODULATE TOWARD THE CLOSED POSITION UNTIL THE MINIMUM POSITION IS REACHED. WHEN THE AIR HANDLING UNIT IS SHUT DOWN, THE VALVE SHALL CLOSE.
3. THE CONTROLLER (C-1) SHALL SEND A SIGNAL TO THE AIR HANDLING UNIT RESET CONTROL TO FUNCTION AS DESCRIBED IN THE AIR HANDLING UNIT SEQUENCE.
4. VAV VALVE (V-3) SHALL LAG VAV VALVE (V-1) BY 50 CFM OR AS REQUIRED TO MEET ROOM PRESSURIZATION BY MAINTAINING SUPPLY AND RETURN AIR DIFFERENTIAL.
5. WHEN THE AIR HANDLING UNIT IS SHUT DOWN, BOTH VAV VALVES SHALL CLOSE.
6. ROOM DIFFERENTIAL PRESSURE CONTROLLER SHALL MAINTAIN AIRFLOW QUANTITY REQUIREMENTS, AND DISPLAY TEMPERATURE AND AIRFLOW SETTINGS AND INSTANTANEOUS VALUES.
7. FOR CONSTANT VOLUME OPERATION: THE CONTROLLER SHALL MODULATE THE VARIABLE AIR VOLUME VALVE (V-1) AS REQURIED TO MAINTAIN A CONSTANT AIR VOLUME OUTPUT.

REHEAT OPERATION

8. UPON FURTHER DROP IN TEMPERATURE, THE HEATING COIL SHALL BE ACTUATED. PROVIDE A FULLY ADJUSTABLE DEAD BAND BETWEEN THE MINIMUM VARIABLE AIR VOLUME POSITION AND COIL ACTUATION.
9. IF THE TEMPERATURE CONTINUES TO FALL, THE REHEAT COIL CONTROLLER (C-2) SHALL OPERATE THE HOT WATER VALVE (V-2) AS REQUIRED TO MEET THE DEMAND. WHEN THE DEMAND IS SATISFIED, THE COIL SHALL BE SHUT OFF.

PRESSURIZED ROOM VARIABLE AIR VOLUME BOX AND AIR VALVE



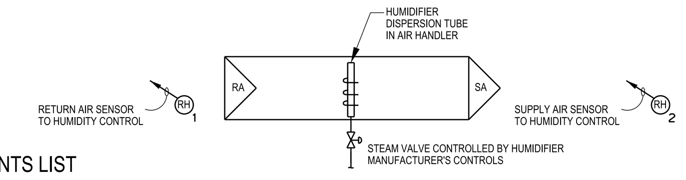
POINTS LIST

EQUIPMENT DESCRIPTION	START/STOP	CURRENT SENSING RELAY	DIFFERENTIAL PRESSURE	OPEN/CLOSE	TIMED DELAY	STATUS	FAILURE TO START	HIGH PRESSURE	RUN TIME RECORD	MAINTENANCE MANAGEMENT	NIGHT SETBACK (OCC/UNOCC)	ENERGY MANAGEMENT
F-3, 4, 7, 8	•	•		•	•	•	•		•	•	•	•
FILTERS			•					•				

SEQUENCE OF OPERATION

1. FAN SHALL BE STARTED AUTOMATICALLY BY THE BAS BASED ON THE OPERATING SCHEDULE AND CONTINUE TO RUN UNTIL SHUTDOWN.
2. A CURRENT SENSING RELAY SHALL PROVE OPERATIOIN. IF OPERATION IS NOT ACHIEVED AN ALARM SHALL BE INDICATED.
3. THE FANS SHALL SHUT DOWN ON FIRE ALARM.
4. FANS SHALL BE SCHEDULED OFF DURING UNOCCUPIED HOURS.
5. FANS SHALL OPERATE TO PROVIDE EQUAL MINIMUM OUTDOOR AIR VENTILATION AND BUILDING EXHAUST AIR.
6. DURING AIR HANDLER ECONOMIZER MODE THE OUTDOOR AIR FAN SHALL SHUT DOWN, THE SUPPLY/FRESH AIR SUPPLY MOTORIZED DAMPER SHALL CLOSE, THE ERV EXHAUST FAN SHALL OPERATE CONTINUOSLY AND MODULATE TO MAINTAIN SETPOINT AIRFLOW, THE EXHAUST AIR BYPASS DAMPER SHALL OPEN, THE RETURN AIR DAMPER SHALL CLOSE. NO AIRFLOW THROUGH ERV CORES.
7. CALIBRATE MOTORIZED BYPASS DAMPERS TO PROVIDE BALANCED AIRFLOW WHILE SYSTEM IS IN ECONOMIZER MODE.

ENERGY RECOVER VENTILATOR FANS: ERV-1, ERV-2, F-3, F-4, F-7, F-8



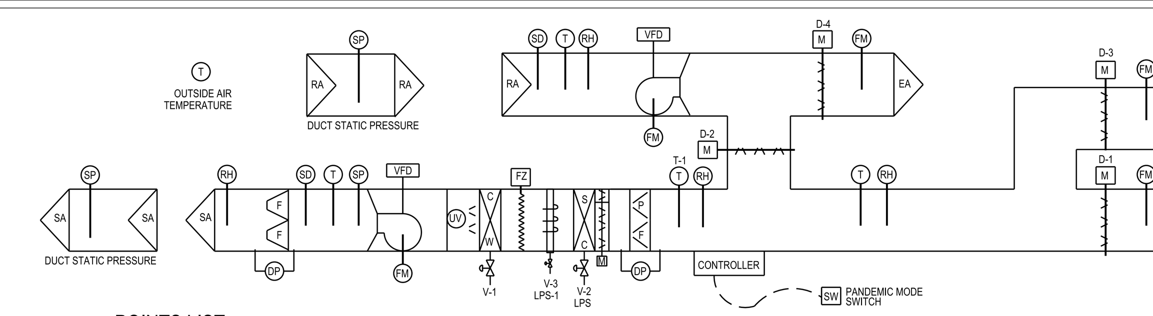
POINTS LIST

EQUIPMENT DESCRIPTION	START/STOP SWITCH	RETURN AIR RELATIVE HUMIDITY	SUPPLY AIR RELATIVE HUMIDITY	STATUS	VALVE POSITION	HIGH HUMIDITY (DUCT)	LOW HUMIDITY (DUCT)	FAILURE TO OPEN	FAILURE TO CLOSE	FAILURE TO START	RUN TIME RECORD	NIGHT SETBACK (OCCUPIED/UNOCCUPIED)	TREND LOG ANALYSIS	MAINTENANCE MANAGEMENT
SH-1, SH-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SEQUENCE OF OPERATION

1. WHEN AIR HANDLING UNIT IS RUNNING, THE HUMIDIFIER AND ITS CONTROLS SYSTEM SHALL BE ENABLED.
2. DURING NORMAL OPERATION THE HUMIDIFIER SHALL BE CONTROLLED BY THE HUMIDIFIER MANUFACTURERS PACKAGED CONTROL SYSTEM, INCLUDING ALL CONTROL VALVES AND SAFETY DEVICES.
3. AUXILARY POINT CONTACTS SHALL BE PROVIDED TO PASS ALL HUMIDIFIER CONTROL PANEL ALARMS TO BAS.
4. THE HUMIDIFIER OPERATING SET POINTS SHALL BE REMOTELY SET THROUGH THE BAS.
5. HIGH AND LOW SYSTEM PRESSURE(S) ALARMS SHALL BE SIGNALED TO BAS.
6. WHEN RETURN AIR RELATIVE HUMIDITY (RH-1) FALLS BELOW SETPOINT, THE NORMALLY CLOSED HUMIDIFIER CONTROL VALVE (V-1) SHALL MODULATE TOWARDS ITS FULL OPEN POSITION AS REQUIRED TO MAINTAIN DESIRED RELATIVE HUMIDITY LEVELS.
7. A DUCT MOUNTED RELATIVE HUMIDITY SENSOR (RH-2) DOWNSTREAM OF THE HUMIDIFIER SHALL LIMIT THE MAXIMUM RELATIVE HUMIDITY IN THE DUCTWORK. SHOULD THE DUCT RELATIVE HUMIDITY EXCEED THE SETPOINT, THE LIMIT CONTROL SHALL OVERRIDE THE SPACE CONTROL TO LIMIT DUCT RELATIVE HUMIDITY LEVELS.
8. HIGH AND LOW LEVEL DUCT ALARMS SHALL BE INDICATED IF THE HUMIDITY (RH-2) LEVEL IN THE DUCTWORK EXCEEDS SETPOINTS.
9. LOCKOUT HUMIDIFIER WHEN NO AIRFLOW IS SENSED BY EITHER FAN STATUS, AIRFLOW MEASURING STATIONS, OR STATIC PRESSURE.

HUMIDIFIER: SH-1, SH-2



POINTS LIST

Equipment: AIR HANDLER; FANS; CHILLED WATER; HUMIDIFIER TUBES; STEAM COIL; UV LIGHTS; FILTERS; DAMPERS; AIRFLOW MEASUREMENT

NOTES:
1. ALL HARDWARE AND ALARM POINTS SHALL BE REPRESENTED ON THE GRAPHICS DISPLAY
2. ALL APPLICATION PROGRAMS SHALL BE FULLY FUNCTIONAL USING DATA APPLICABLE TO THIS PROJECT.
3. SIGNAL FROM ONE SENSOR MAY BE SHARED AMONG SEVERAL UNITS

SEQUENCE OF OPERATION

1. A START SIGNAL SHALL SIGNAL THE DESIGNATED DAMPERS SHALL GO TO STARTING POSITIONS, THEN AFTER A 20 SECOND (ADJUSTABLE) DELAY, THE FANS SHALL START AND CONTINUE UNTIL SHUT DOWN.
2. A STATIC PRESSURE SENSOR IN THE FAN DISCHARGE SHALL PROVE AIR FLOW AND LIMIT MAXIMUM DISCHARGE PRESSURE. SHOULD MINIMUM PRESSURE FAIL TO BE MAINTAINED, AN ALARM SHALL BE INDICATED. SHOULD DISCHARGE PRESSURE EXCEED MAXIMUM SETTING AN ALARM SHALL BE INDICATED AND THE LIMIT CONTROL SHALL OVERRIDE THE FAN SPEED TO MAINTAIN MAXIMUM ACCEPTABLE LIMIT. IF PRESSURE CONTINUES TO RISE THE FAN SHALL SHUT DOWN. A STATIC PRESSURE SAFETY SENSOR IN SUPPLY AIR INTAKE SHALL MONITOR FOR LOW PRESSURE AND SHALL SIGNAL ALARM WHEN PRESSURE FALLS BELOW SETPOINT. IF THE PRESSURE CONTINUES TO FALL THE UNIT SHALL SHUT DOWN.
3. A STATIC PRESSURE SENSOR IN THE DISTRIBUTION DUCT SHALL PROVIDE CONTROL INPUT FOR THE SUPPLY FAN SPEED CONTROL. THE SENSOR SHALL BE LOCATED TWO THIRDS OF THE TOTAL DISTANCE FROM THE SUPPLY/RETURN FAN ON THE LONGEST RUN. THE FAN SPEED SHALL VARY AS REQUIRED TO MAINTAIN DESIRED DUCT PRESSURE THAT WILL MAINTAIN SUFFICIENT BALANCED AIR FLOW TO TERMINAL DEVICES. BOTH SUPPLY AND RETURN FANS SHALL MODULATE TO MAINTAIN DESIRED BUILDING PRESSURIZATION. RETURN FAN SHALL BE SET TO LAG SUPPLY FAN BY AMOUNT OF CONSTANT EXHAUSTED AIR PLUS 500 CFM FOR BUILDING POSITIVE PRESSURIZATION.
4. AIR FLOW MONITORING STATIONS SHALL VERIFY DESIRED AIRFLOWS AND TO MAINTAIN BUILDING PRESSURIZATION BY MAINTAINING A POSITIVE SUPPLY DIFFERENTIAL.
5. ENERGY RECOVERY FANS FOR EXHAUST AND MINIMUM OUTDOOR AIR VENTILATION SHALL RUN CONTINUOUSLY AT CONSTANT AIRFLOW UNTIL SHUT DOWN PER ECONOMIZER MODE.
6. A MIXED AIR TEMPERATURE SENSOR SHALL MONITOR UNIT OPERATION AND PROVIDE FREEZE PROTECTION. SHOULD MIXED AIR TEMPERATURE FALL BELOW SETPOINT (35 DEG F) A WARNMING ALARM SHALL BE INDICATED. SHOULD MIXED AIR TEMPERATURE CONTINUE TO FALL, THE OUTSIDE AIR DAMPERS SHALL CLOSE AND THE ERV FANS SHALL SHUT DOWN. THE RETURN AIR DAMPER SHALL FULLY OPEN AND A FREEZE ALARM INDICATED.
7. ON START UP THE OUTSIDE AIR DAMPER (D-1) SHALL BE FULLY OPEN. THE ERV SUPPLY AND EXHAUST FANS SHALL ENERGIZE. THE RETURN AIR DAMPER (D-2) SHALL BE FULLY OPEN, AND THE SUPPLY AND RETURN FANS SHALL ENERGIZE TO MINIMUM SETPOINTS. DAMPERS (D-3, D-4) SHALL BE CLOSED. WHEN THE UNIT SHUTS DOWN ALL DAMPERS SHALL RETURN TO FULLY CLOSED POSITIONS.
8. WHEN THE DUCT SMOKE DETECTORS (SD-1 OR SD-2) DETECT PARTICLES OF COMBUSTION, IT SHALL DE-ENERGIZE THE HVAC UNIT THROUGH AN ADDRESSABLE FIRE ALARM SYSTEM RELAY. A STATUS SIGNAL SHALL ALSO BE SENT TO THE JOHNSON CONTROLS METASYS SYSTEM INDICATING THE FAN STATUS OF THE RESPECTIVE HVAC UNIT. UNDER FIRE ALARM CONDITIONS THE UNIT SHALL SHUT DOWN. REFERENCE THE AIR HANDLER FIRE SIGNAL DIAGRAM SEQUENCE OF OPERATION.
9. WHEN RETURN AIR TEMPERATURE (T-1) IS GREATER THAN 56 DEG F, DISCHARGE HUMIDITY AND TEMPERATURE SHALL BE MAINTAINED BY MODULATING THE CHILLED WATER VALVE, ERV SUPPLY AND EXHAUST FANS ENERGIZED PROVIDING MINIMUM OUTDOOR AIR SETPOINTS, DAMPERS (D-3, D-4) SHALL BE CLOSED, DAMPER (D-2) OPEN.
10. WHEN RETURN AIR TEMPERATURE (T-1) IS BETWEEN 54 TO 56 DEG F (ECONOMIZER MODE), DAMPERS (D-1, D-4) SHALL BE CLOSED, DAMPER (D-2) OPEN, ERV OUTDOOR AIR SUPPLY FAN SHALL BE OFF, ERV EXHAUST AIR FAN SHALL BE ENERGIZED AND PULL AIR THROUGH EXHAUST AIR BYPASS DAMPER, ALL OUTDOOR AIR SHALL FLOW THROUGH DAMPER (D-3) BYPASS, CHILLED WATER COIL MODULATES TO MAINTAIN DISCHARGE HUMIDITY SETPOINT, DAMPERS (D-2, D-3, D-4) SHALL MODULATE TO MAINTAIN 55 DEG F DISCHARGE SETPOINT WHEN OUTSIDE AIR IS BETWEEN 15 TO 56 DEG F.
11. WHEN RETURN AIR TEMPERATURE (T-1) IS BELOW 54 DEG F, OR WHEN OUTDOOR AIR IS BELOW 15 DEG F, OR WHEN DISCHARGE TEMPERATURE CAN NOT BE MAINTAINED WITH MINIMAL OUTDOOR AIR FROM ECONOMIZER OPERATION: THE DISCHARGE TEMPERATURE SHALL BE MAINTAINED BY MODULATING LP-STEAM VALVE, HUMIDIFIER TO MAINTAIN HUMIDITY SETPOINT, ERV SUPPLY AND EXHAUST FANS ENERGIZED PROVIDING MINIMUM OUTDOOR AIR SETPOINTS. STEAM COIL VALVE (V-2) SHALL BE A 1/3-2/3-BYPASS CONTROL VALVE STATION.
12. TO PREVENT COIL FREEZING AND AIR STRATIFICATION WHEN OUTSIDE AIR TEMPERATURE IS 35 DEG F OR BELOW, OPEN STEAM COIL VALVE MINIMALLY TO KEEP STEAM COIL WARM AND MODULATE FACE DAMPERS TO PROVIDE REQUIRED REHEAT OF MIXED AIR FLOW.
13. WHEN THE UNIT IS SHUT DOWN ALL COIL VALVES SHALL BE CLOSED. DISCHARGE TEMPERATURE SHALL BE RESET UPWARD UNTIL ONE VAV ZONE VALVE SERVED BY THE UNIT REACHES ITS MAXIMUM FLOW POSITION OR UNTIL THE UPPER LIMIT OF SPACE TEMPERATURE IS REACHED AT ANY TEMPERATURE ZONE SERVED BY THE UNIT. ON INCREASE OF ZONE COOLING DEMAND, THE DISCHARGE TEMPERATURE SHALL BE RESET DOWNWARD TO MAINTAIN SPACE CONDITIONS. A RETURN AIR HIGH HUMIDITY SENSOR SHALL ALSO RESET THE DISCHARGE TEMPERATURE DOWNWARD WHEN ITS SET POINT IS EXCEEDED. WHEN DISCHARGE HUMIDITY SENSOR FALLS BELOW SETPOINT, HUMIDIFIER VALVE (V-3) SHALL MODULATE TO MAINTAIN HUMIDITY SET POINT.
14. DISCHARGE TEMPERATURE SHALL BE RESET UNDER NIGHT SET BACK CONTROL. DURING NIGHT SET BACK CONTROL THE OUTDOOR AIR INTAKE SHALL REMAIN AT MINIMUM FLOW.
15. WHEN THE ERV FANS ARE OPERATING, THEY PROVIDE FOR MINIMUM OUTDOOR INTAKE AND MINIMUM EXHAUST FLOW.
16. DIFFERENTIAL PRESSURE SENSORS ACROSS EACH FILTER BANK SHALL BE MONITORED. AN ALARM SHALL INDICATE IF THE DIFFERENTIAL PRESSURE EXCEEDS ALLOWABLE DIFFERENCE.
17. WHEN FANS ARE ENERGIZED THE UV LIGHTS SHALL BE OPERATING. UV EMITTERS SHALL BE PROPERLY MAINTAINED PER MANUFACTURERS INSTRUCTIONS TO MAINTAIN PERFORMANCE INTENSITY. CURRENT SENSOR SHALL VERIFY OPERATION.
18. PANDEMIC MODE OPERATION: (AH1-B7 ONLY)
    UNIT SHALL OPERATE AT 100% OUTSIDE AIR CAPACITY.
    DAMPER (D-1) SHALL FULLY OPEN.
    DAMPER (D-2) SHALL FULLY CLOSE.
    DAMPER (D-3) SHALL MODULATE TO PROVIDE CALIBRATED OUTSIDE AIRFLOW.
    DAMPER (D-4) SHALL FULLY OPEN.
    FANS TO MODULATE TO MAINTAIN STATIC PRESSURE SET POINTS.
    ERV EXHAUST FAN SHALL OPERATE TO PROVIDE SCHEDULED AIRFLOW.
    WHEN OUTDOOR AIR TEMPERATURE IS BETWEEN 15 TO 55 DEG F, THE ERV SUPPLY FAN SHALL BE OFF, DAMPER (D-1) SHALL CLOSE, ALL OUTSIDE AIR SHALL SHALL PASS THROUGH DAMPER (D-3). ERV EXHAUST FAN SHALL ENERGIZE AND PULL AIR THROUGH EXHAUST AIR BYPASS DAMPER.
    AIRFLOW MEASURING STATIONS TO MONITOR AND ASSIST DAMPERS TO MAINTAIN SET POINTS.
    COIL VALVES SHALL MODULATE TO MAINTAIN DISCHARGE TEMPERATURE AND HUMIDITY SET POINTS.
    A LARGE RED MUSHROOM PUSH BUTTON WITH GUARD CAP SHALL BE MOUNTED NEAR AIR HANDLER TO ENGAGE PANDEMIC MODE OPERATION. LABEL ABOVE SWITCH THEWORDS "PANDEMIC MODE OPERATION 100% OA". LOCATE ONE PUSH BUTTON FOR EACH AIR HANDLER PER OWNER DESIGNATED LOCATION.
    ALL GENERAL OPERATIONAL ALARMS SHALL APPLY TO PANDEMIC MODE OPERATION.
19. ALTERNATIVE SMOKE CONTROL PROGRAM FOR INFECTION CONTROL DURING FIRE ALARM. WHEN THE SUPPLY DUCT SMOKE DETECTOR DETECTS PARTICLES OF COMBUSTION, IT SHALL DE-ENERGIZE THE HVAC UNIT THROUGH AN ADDRESSABLE FIRE ALARM SYSTEM RELAY. A STATUS SIGNAL SHALL ALSO BE SENT TO THE JOHNSON CONTROLS METASYS SYSTEM INDICATING THE FAN STATUS OF THE RESPECTIVE HVAC UNIT. WHEN THE RETURN DUCT SMOKE DETECTOR DETECTS PARTICLES OF COMBUSTION, OR UNDER FIRE ALARM CONDITIONS THE UNIT SHALL OPERATE AT 100% OUTDOOR AIR AND EXHAUST AIRFLOW THROUGH ERV SHALL BE BYPASSED TO PREVENT ANY SMOKE FROM ENTERING ERV. REFERENCE THE AIR HANDLER FIRE SIGNAL DIAGRAM SEQUENCE OF OPERATION.

AIR HANDLERS: AH1-B7, AH1-B8

SEQUENCE OF OPERATION FOR FLOW METERS

1. FLOW METERS SHALL MEASURE FLOW RATE AND SUPPLY AND RETURN TEMPERATURES TO CALCULATE THE ENERGY CONSUMED IN THE SYSTEM. THE HOURLY RATE SHALL BE CONTINUOUSLY CALCULATED AND DISPLAYED AND LOGGED.
2. THE DAILY CONSUMPTION SHALL BE CALCULATED AND STORED AS PART OF THE ENERGY MANAGEMENT PROGRAM. AT THE END OF EACH MONTH THE DAILY TOTAL FOR EACH DAY OF THE MONTH, THE TOTAL CONSUMPTION FOR THE MONTH, AND THE TOTALS FOR THE PREVIOUS TWELVE MONTHS SHALL BE PRINTED IN A REPORT. UNITS FOR SHILLED WATER DATA SHALL BE MBH (1,000 BTU/HOUR) AND MBH/DAY (1,000 BTU/DAY). STEAM AND CONDENSATE RETURN SHALL BE MBH (1,000 BTU/HOUR) AND LBS/HOUR.
3. OTHER FACILITY DATA AND ENERGY MANAGMENT CALCULATIONS SHALL BE PROGRAMMED TO MATCH EXISTING ENERGY PROGRAM GUIDELINES. COORDINATE WITH OWNER.
4. MONITOR METERS FOR STATUS AND CREATE ALARMS.

FLOW METERS

POINTS LIST

EQUIPMENT DESCRIPTION	CURRENT SENSING RELAY	HIGH WATER LEVEL	FAILURE TO START	RUN TIME RECORD	MAINTENANCE MANAGEMENT
SP-1	•	•	•	•	•

SEQUENCE OF OPERATION

1. FLOAT SWITCH TO START PUMP AND RUN CONTINUOUSLY UNTIL IT IS SHUT DOWN.
2. A CURRENT SENSING RELAY SHALL VERIFY PUMP OPERATION. IF FLOW IS NOT INDICATED AFTER THE RUN COMMAND, A FLOW ALARM SHALL BE INDICATED BY HORN ON PANEL AND ALARM TO BAS.

SUMP PUMP

POINTS LIST

EQUIPMENT DESCRIPTION	HAND/OFF/AUTO	FLOW SWITCH	ENTERING AND LEAVING WATER PRESSURES	ENTERING AND LEAVING WATER TEMPERATURES	STATUS	START/STOP	DIFFERENTIAL PUMP PRESSURE	FLOW RATE	HIGH PRESSURE	LOW PRESSURE	FAILURE TO START	RUN TIME RECORD	MAINTENANCE MANAGEMENT
DOMESTIC HOT WATER CIRCULATION PUMPS	•	•	•	•	•	•	•	•	•	•	•	•	•

SEQUENCE OF OPERATION FOR CIRCULATION PUMPS

1. ON RUN COMMAND, PUMP SHALL START AND RUN CONTINUOUSLY.
2. AN AQUASTAT SHALL MONITOR WATER TEMPERATURE AND SIGNAL PUMP TO START TO MAINTAIN LOOP TEMPERATURE SETPOINT.
3. A TIMER SHALL BE SET TO CONTROL PERIODS OF OPERATION.
4. A FLOW SWITCH SHALL VERIFY PUMP OPERATION. AN ALARM SHALL BE INDICATED IF NO FLOW IS OBTAINED.
5. OPERATE SYSTEM AT TEMPERATURES AND DURATIONS PER VA LEGIONELLA PREVENTION POLICY.
6. PROVIDE A MANUAL OVERRIDE PROGRAM TO OPERATE THE SYSTEM AT ELEVATED TEMPERATURES FOR SYSTEM DISINFECTION PER VA LEGIONALLA PREVENTION POLICY.

DOMESTIC HOT WATER CIRCULATION PUMPS

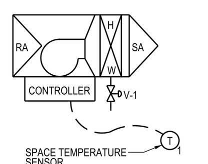
POINTS LIST

EQUIPMENT DESCRIPTION	LOW WATER LEVEL	HIGH WATER LEVEL
SENSOR CONTROL PANEL	•	•

SEQUENCE OF OPERATION

1. A LOW LEVELFLOAT SWITCH TO SIGNAL LOW LEVEL ALARM TO BAS.
2. A HIGH LEVEL FLOAT SWITCH TO SIGNAL HIGH LEVEL ALARM TO BAS.

DECONTAMINATION TANK LEVEL ALARMS



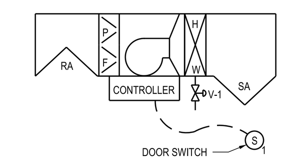
POINTS LIST

EQUIPMENT DESCRIPTION	START/STOP	STATUS	FAILURE TO START	RUN TIME RECORD	MAINTENANCE MANAGEMENT
UH-1, UH-2	•	•	•	•	•

SEQUENCE OF OPERATION

1. WHEN SPACE TEMPERATURE FALLS BELOW SET POINT THE FAN SHALL ENERGIZE AND THE HOT WATER VALVE OPENS. HEATER SHALL CONTINUE TO OPERATE UNTIL SPACE TEMPERATURE RISES ABOVE SET POINT, AT WHICH TIME THE HEATER SHALL DE-ENERGIZE OR CLOSE HOT WATER VALVE. BAS SHALL MONITOR OPERATION SCHEDULE.
2. HEATER SHALL SHUT DOWN ON FIRE ALARM.

HOT WATER UNIT HEATERS



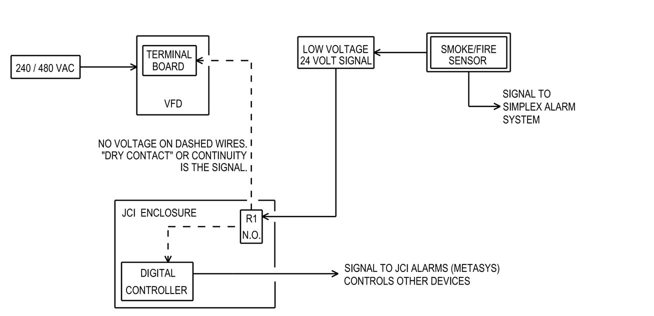
POINTS LIST

EQUIPMENT DESCRIPTION	START/STOP	STATUS	FAILURE TO START	RUN TIME RECORD	MAINTENANCE MANAGEMENT
FC-1	•	•	•	•	•

SEQUENCE OF OPERATION

1. WHEN DOOR SWITCH OPENS THE FAN SHALL ENERGIZE AND THE HOT WATER VALVE OPENS. HEATER SHALL CONTINUE TO OPERATE UNTIL DOOR CLOSES, AT WHICH TIME THE HEATER SHALL DE-ENERGIZE OR CLOSE HOT WATER VALVE. BAS SHALL MONITOR OPERATION SCHEDULE.
2. UNIT MAY ALSO OPERATE WITH MANUAL SWITCH AND TIMER.
3. UNIT MAY ALSO OPERATE WITH CRUISE CONTROL AND PROGRAMMABLE SWITCH.
4. SET OPERATION LIMITS ACCORDING TO MANUFACTURERS GUIDELINES.
5. HEATER SHALL SHUT DOWN ON FIRE ALARM.

AIR CURTAIN

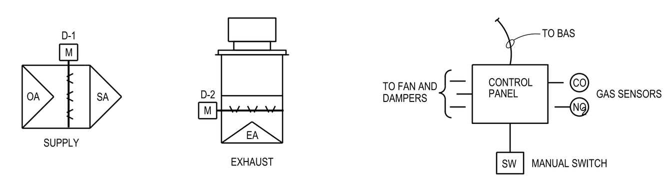


SEQUENCE OF OPERATION

1. SMOKE/FIRE SENSOR TRIPS AND SENDS ALARMS TO SIMPLEX UNIT.
2. SMOKE/FIRE SENSOR TRIPS R1 IN THE JCI BOX.
3. R1 PROVIDES A DRY CONTACT SIGNAL (BO)
   A) TO THE VFD TERMINAL BOARD AS INPUT TO SHUT DOWN VFD POWER
   B) TO THE JCI CONTROLLER FOR JCI CONTROLS AND ALARMS

- SELF MONITORING CIRCUIT: IF A LOSS OF POWER OCCURS OR A WIRE IS CUT THE SYSTEM ACTIVATES.
- R1 IS A NORMALLY OPEN (N.O.) RELAY MEANING POWER KEEPS THE CONTACTS CLOSED. CLOSED CONTACTS PROVIDE "CONTINUITY" (ACTS LIKE A CLOSED OR TURNED ON SWITCH). CUTTING THE POWER LINE TO R1 OR CUTTING THE OUTPUT WIRES FROM R1 WILL CAUSE A CHANGE OF STATE AND ACTIVATE FIRE/SMOKE PROTOCOLS.
- IT IS PREFERRED THAT R1 BE PHYSICALLY LOCATED IN THE JCI ENCLOSURE, AS SHOWN, BECAUSE THE INDICATOR LIGHT ON THE RELAY IS A SYSTEM TROUBLE SHOOTING AID. VFD ENCLOSURES HAVE SAFETY INTERLOCKS AND OPENING THE VFD DOOR WILL SHUT DOWN THE UNIT.

AIR HANDLER FIRE SIGNAL DIAGRAM



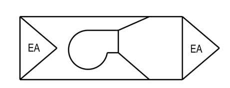
POINTS LIST

EQUIPMENT DESCRIPTION	HAND/OFF/AUTO SWITCH	CURRENT SENSING RELAY	OPEN/CLOSE	TIMED DELAY	STATUS	FAILURE TO START	FAILURE TO OPEN	FAILURE TO CLOSE	RUN TIME RECORD	MAINTENANCE MANAGEMENT
F-9	•	•		•	•	•			•	•
MOTORIZED DAMPER		•	•				•	•		

SEQUENCE OF OPERATION

1. FAN SHALL BE STARTED AUTOMATICALLY BY GAS MONITORING SYSTEM, AND CONTINUE TO RUN UNTIL SHUTDOWN. A MANUAL SWITCH SHALL OVERRIDE AUTOMATIC OPERATION.
2. A CURRENT SENSING RELAY SHALL PROVE OPERATION. IF OPERATION IS NOT ACHIEVED AN ALARM SHALL BE INDICATED.
3. WHEN ENABLED, THE INTAKE AND EXHAUST AIR DAMPERS SHALL OPEN, THEN AFTER A 20 SECOND DELAY THE FAN SHALL START AND OPERATE FOR A MINIMUM OF 10 MINUTES THEN SHUT DOWN.
4. THE GAS MONITORING SYSTEM SHALL BE PROGRAMMED TO OPERATE THE FAN AND DAMPER SYSTEM PER SPECIFIED GAS CONCENTRATION LIMITS IN SPECIFICATION SECTION "23 0923 DIRECT DIGITAL CONTROL SYSTEM FOR HVAC - HAZARDOUS GAS MONITORING". PROGRAM AND OPERATE GAS DETECTION SYSTEM PER MANUFACTURERS GUIDELINES.
5. INTEGRATE OPERATION OF GAS MONITORING SYSTEM, AND RELAYS FOR FAN AND MOTORIZED DAMPER WITH BUILDING AUTOMATION SYSTEM FOR MONITORING AND ALARMS.
6. THE FAN SHALL SHUT DOWN ON FIRE ALARM.

EXHAUST FAN - F-9: GARAGE VENTILATION



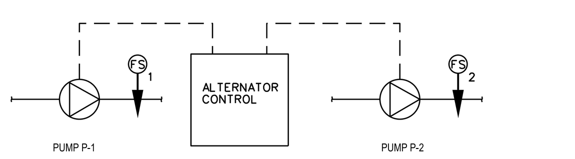
POINTS LIST

EQUIPMENT DESCRIPTION	START/STOP	CURRENT SENSING RELAY	OPEN/CLOSE	TIMED DELAY	STATUS	FAILURE TO START	RUN TIME RECORD	MAINTENANCE MANAGEMENT	NIGHT SETBACK (OCC/UNOCC)
F-10	•	•	•	•	•	•	•	•	•

SEQUENCE OF OPERATION

1. FAN SHALL BE STARTED AUTOMATICALLY BY THE BAS BASED ON THE OPERATING SCHEDULE AND CONTINUE TO RUN UNTIL SHUTDOWN.
2. A CURRENT SENSING RELAY SHALL PROVE OPERATION. IF OPERATION IS NOT ACHIEVED AN ALARM SHALL BE INDICATED.
3. THE FAN SHALL SHUT DOWN ON FIRE ALARM.
4. FANS SHALL BE SCHEDULED OFF DURING UNOCCUPIED HOURS.

EXHAUST FAN - F-10: RESTROOM EXHAUST



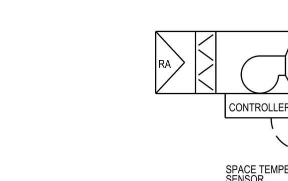
POINTS LIST

Equipment: CP-1

SEQUENCE OF OPERATION

1. FLOAT SWITCH TO ENGAGE THE ALTERNATOR TO START LEAD PUMP AND RUN CONTINUOUSLY UNTIL IT IS SHUT DOWN. UPON SHUTDOWN, THE LAG PUMP SHALL BE SWITCHED TO LEAD POSITION.
2. A CURRENT SENSING RELAY SHALL VERIFY PUMP OPERATION. IF FLOW IS NOT INDICATED AFTER THE RUN COMMAND, A FLOW ALARM SHALL BE INDICATED AND THE ALTERNTOR SHALL CAUSE THE LAG PUMP TO START.

STEAM CONDENSATE PUMP



POINTS LIST

Equipment: FC-1, 2, 3, 4, 5, 6

SEQUENCE OF OPERATION

1. HEATING MODE: WHEN SPACE TEMPERATURE FALLS BELOW SET POINT THE FAN SHALL ENERGIZE AND THE HOT WATER VALVE SHALL MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT. FAN COIL SHALL CONTINUE TO OPERATE UNTIL SPACE TEMPERATURE RAISES ABOVE SET POINT, AT WHICH TIME THE FAN COIL SHALL DE-ENERGIZE OR CLOSE HOT WATER VALVE.
2. COOLING MODE: WHEN SPACE TEMPERATURE RISES ABOVE SET POINT THE FAN SHALL ENERGIZE AND THE CHILLED WATER VALVE SHALL MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT. FAN COIL SHALL CONTINUE TO OPERATE UNTIL SPACE TEMPERATURE FALLS BELOW SET POINT, AT WHICH TIME THE FAN COIL SHALL DE-ENERGIZE OR CLOSE CHILLED WATER VALVE.
3. DURING OCCUPIED MODE THE FAN SHALL OPERATE AT LOW SPEED TO CIRCULATE AIR WITHIN ZONE. UPON CALL FOR HEATING OR COOLING THE FAN SHALL CONTINUE TO OPERATE AT LOW SPEED. IF ZONE SETPOINT CAN NOT BE MET AFTER 5 MINUTES THEN THE FAN SHALL OPERATE AT FULL SPEED UNTIL SET POINT IS MET FOR 2 MINUTES.
4. DURING UNOCCUPIED MODE THE FAN SHALL BE OFF AND VALVES CLOSED. UPON CALL FOR HEATING OR COOLING THE FAN AND COILS SHALL OPERATE PER OCCUP[IED MODE. INCREASE TEMPERATURE DEADBAND PER EXISTING BAS PROGRAMMING.
5. FAN COIL SHALL SHUT DOWN ON FIRE ALARM.
6. UNIT SHALL SHUST DOWN AND VALVES SHALL CLOSE UPON CONDENSATE OVERFLOW ALARM.

HOT AND CHILLED WATER FAN COILS

Revisions	Date	Revisions	Date	Revisions	Date

VA FORM 08-6231, FEB 1983

HEERY design
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project number 11-25503

Drawing Title: SEQUENCE OF OPERATION MECHANICAL SYSTEMS

CONSTRUCTION DOCUMENTS

Project Title: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. BLDG 1 | Checked AGW | Drawn DRB

Location: ICVA HEALTH CARE SYSTEM

Date 12/15/2014

Project No. 636-201

DRAWING NO. 1-M27

Office of Facilities — Department of Veterans Affairs

INITIALS

POINTS LIST

OCCUPANCY SCHEDULE: / NIGHT SETBACK SCHEDULE: / EQUIPMENT DESCRIPTION	HARDWARE (1) INPUT DIGITAL: CURRENT SENSING RELAY (CSR)	HARDWARE INPUT ANALOG: ENTERING WATER PRESSURE	LEAVING WATER PRESSURE	LEAVING WATER TEMPERATURE (HWS)	ENTERING WATER TEMPERATURE (HWR)	OUTSIDE CONCRETE SLAB TEMPERATURE	ENTERING STEAM TEMPERATURE	ENTERING STEAM PRESSURE	SET POINT ADJUSTMENT	HARDWARE OUTPUT DIGITAL: START/STOP	TIMED DELAY	HARDWARE OUTPUT ANALOG: VALVE POSITION	SOFTWARE ALARMS (1): HIGH TEMPERATURE (DISCHARGE, MIXED)	LOW TEMPERATURE (DISCHARGE, MIXED)	HIGH PRESSURE	LOW PRESSURE	FAILURE TO OPEN	FAILURE TO CLOSE	FAILURE TO START	FREEZE	SOFTWARE APPLICATION PROGRAMS (2): SCHEDULED START/STOP	RUN TIME RECORD	MAINTENANCE MANAGEMENT	FAILURE MODE RECORD
P-1	•	•	•	•	•	•			•	•			•	•	•	•			•		•	•	•	•
STEAM VALVE TO HEAT EXCHANGER							•	•	•		•	•	•	•			•	•		•		•	•	•

NOTES:

1. ALL HARDWARE AND ALARM POINTS SHALL BE REPRESENTED ON THE GRAPHICS DISPLAY
2. ALL APPLICATION PROGRAMS SHALL BE FULLY FUNCTIONA USING DATA APPLICABLE TO THIS PROJECT

SEQUENCE OF OPERATION

1. ON RUN COMMAND, PUMP SHALL START AND RUN CONTINUOUSLY UNTIL SHUTDOWN.
2. A CURRENT SENSING RELAY SHALL VERIFY PUMP OPERATION. AN ALARM SHALL BE INDICATED IF NO FLOW IS OBTAINED.
3. HIGH AND LOW SYSTEM PRESSURE ALARMS SHALL BE INDICATED WHEN THE RESPECTIVE SETPOINTS ARE EXCEEDED. MAXIMUM SURFACE TEMPERATURE OF 40 DEG-F.
4. A MINIMUM WATER TEMPERATURE (T-1) SHALL BE MAINTAINED BY MODULATING THE STEAM VALVE (V-1) THROUGH HEAT EXCHANGER (HX-1-A). WHEN THE PUMP (P-1-A) IS SHUT DOWN, THE STEAM VALVE SHALL BE FULLY CLOSED.

SNOW MELT PUMP CONTROL AND STEAM VALVE CONTROL

HEAT EXCHANGER SCHEDULE (STEAM-TO-WATER)

TAG	SYSTEM	LOCATION	TYPE	TUBESIDE DATA: WATER FLOW (GPM)	WATER PD (FT)	EWT (F)	LWT (F)	NUMBER OF PASSES	TUBE O.D. (INCH)	TUBE WALL (INCH)	FOULING FACTOR	MIN. HEATING SURFACE (SF)	SHELL DATA: DIA. (IN)	LEN (IN)	STEAM DATA: FLOW (IBS/HR)	PRESS. (PSIG)	DESIGN BASIS MANUFACTURER AND MODEL NUMBER	NOTES
HX-1-A	RADIANT FLOOR	MECHANICAL ROOM	U TUBE	10	0.9	90	120	2	3/4	0.035	0.00000	6.9	4	24	150	15	TACO G04204-S	1,2,3

NOTES:

1. TUBESIDE LOOP WATER CONTAINS 30% PROPYLENE GLYCOL.
2. STEAM INLET 1-1/2 INCH NPT. CONDENSATE NOZZLE 1 INCH NPT. TUBESIDE NOZZLES 1.5 INCH NPT.
3. ASME RATED AND INSTALLED WITH RELIEF VALVES RATED FOR SERVICE REQUIREMENTS OF STEAM AND WATER SYSTEMS.

PUMP SCHEDULE

TAG	SYSTEM	LOCATION	TYPE	FLUID	CAPICITY (GPM)	DISCHARGE HEAD (FT)	SIZE DATA: SUCTION (IN)	DISCH. (IN)	MOTOR DATA: HP	VOLT	PH	DESIGN BASIS MANUFACTURER AND MODEL NUMBER	NOTES
P-1-A	RADIANT FLOOR	MECHANICAL ROOM	CANNED ROTOR	50% GLYCOL	10.0	30.0	1-1/2	1-1/2	1/6	115	1	TACO 2400-20	1

NOTES:

1. PREMIUM EFFICIENCY MOTOR.

EXPANSION TANK SCHEDULE

TAG	SYSTEM	LOCATION	TYPE	TANK VOLUME (GAL)	MIN. ACCEP VOLUME (GAL)	SIZE DATA: DIA. (IN)	LEN (IN)	SYSTEM CONN. (IN)	AIR CHARGE PRESSURE (PSI)	SYSTEM OPERATION: MIN. (PSI)	MAX. (PSI)	DESIGN BASIS MANUFACTURER AND MODEL NUMBER	NOTES
EX-1-A	RADIANT FLOOR	MECHANICAL ROOM	BLADDER	10	5.5	12	23.5	3/4	15	10	20	WESSELS NLA-35	1,2

NOTES:

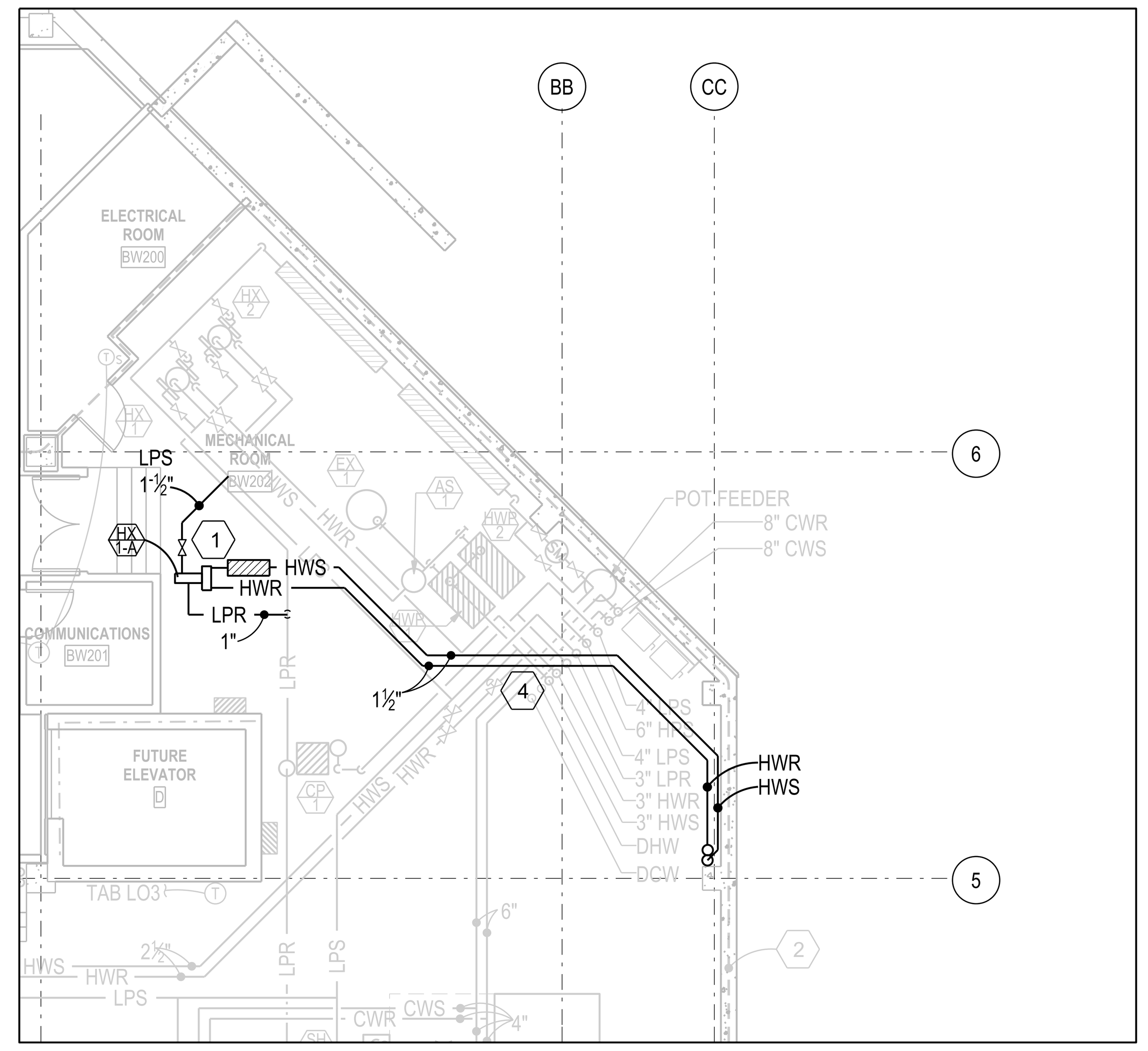
1. ASME RATED.
2. PROVIDE AIR CHARGING VALVE, HEAVY DUTY BUTYL BLADDER, AND CARBON STEEL CONSTRUCTION.

AIR SEPARATOR SCHEDULE

TAG	SYSTEM	LOCATION	INLET SIZE (IN)	FLOW (GPM)	AIR REMOVAL	DESIGN BASIS MANUFACTURER AND MODEL NUMBER	NOTES
AS-1-A	RADIANT FLOOR	MECHANICAL ROOM	1-1/2	10	100%	SPIROTHERM VDR-150	1

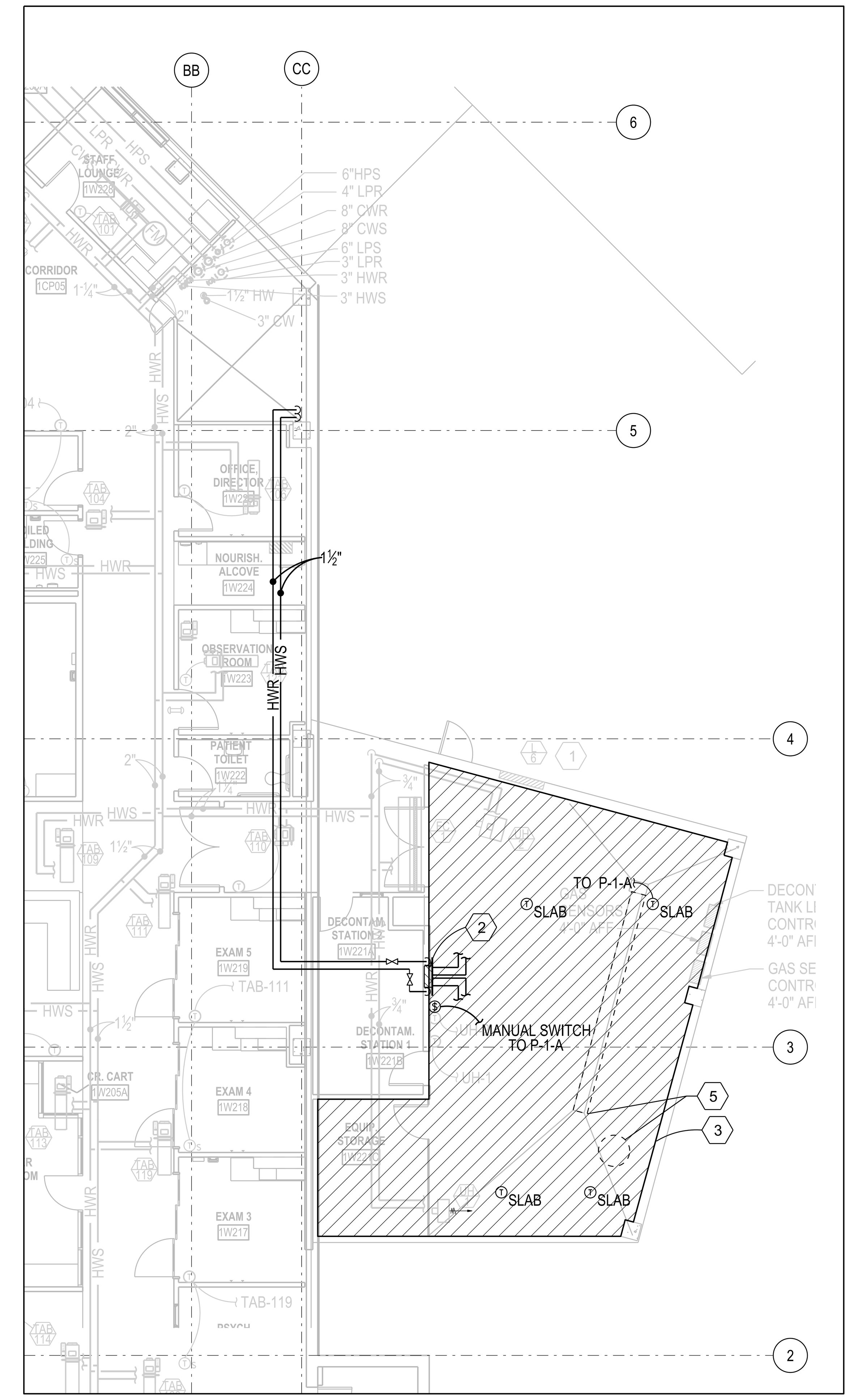
NOTES:

1. PROVIDE REDUCERS FROM LINE SIZE TO AIR SEPARATOR CONNECTIONS.



1 LOWER LEVEL PIPING PLAN

1/8" = 1'-0"



2 LEVEL 1 PIPING PLAN

1/8" = 1'-0"

RADIANT CIRCUIT SCHEDULE

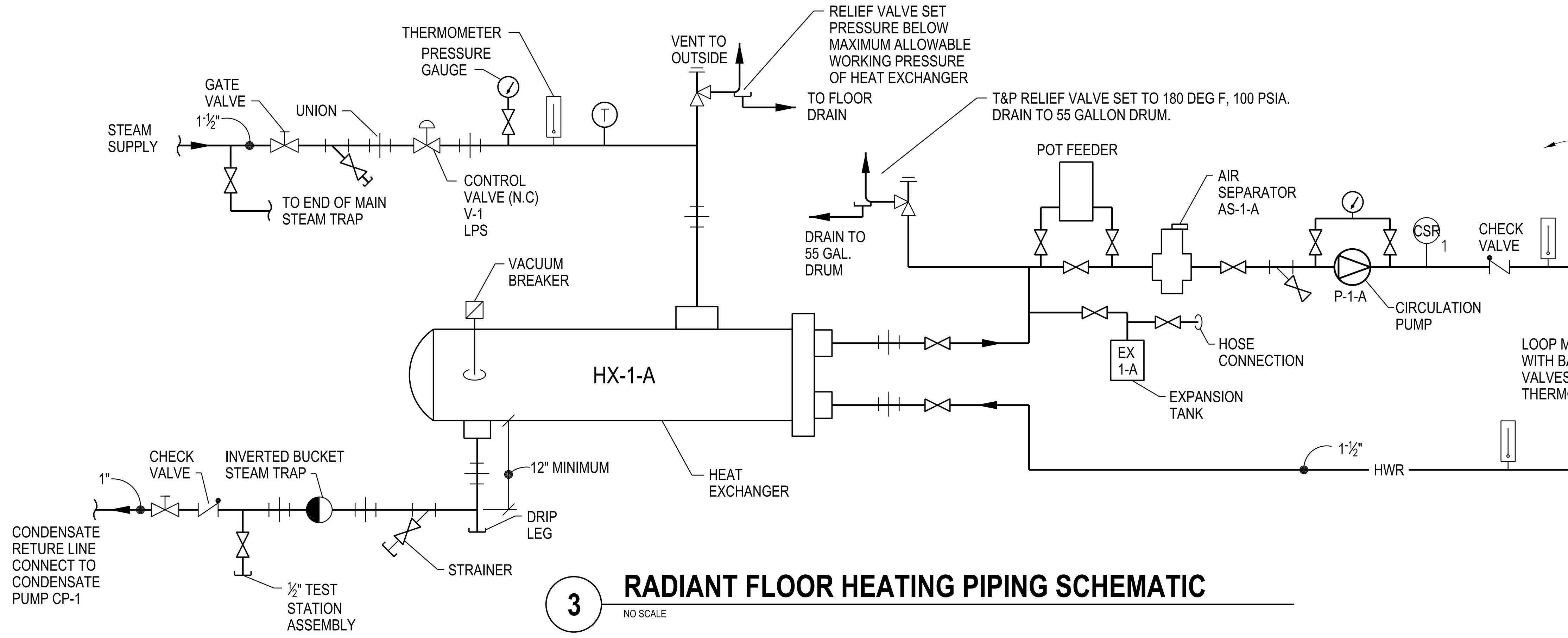
CIRCUIT NUMBER	MAXIMUM CIRCUIT LENGTH (FT)	CAPACITY (MBH)	MAX. SURFACE TEMP (F)	HW SUPPLY TEMP (F)	CIRCUIT FLOW (GPM)	NOTES
1	240	30	50	120	2.0	1 - 9
2	240	30	50	120	2.0	1 - 9
3	240	30	50	120	2.0	1 - 9
4	240	30	50	120	2.0	1 - 9
5	240	30	50	120	2.0	1 - 9

NOTES:

1. RADIANT HEAT PIPING SHALL BE CONTINUOUS 3/4" ID WIRSBO HEPEX OR WATTS RADIANTPEX+ WITH OXYGEN BARRIER, AND WITHOUT BURRIED SPLICES.
2. PIPING SHALL BE SPACED 8 INCHES APART.
3. PIPING LENGTH IS LENGTH UNDER SLAB.
4. BALANCE CIRCUIT FLOWS TO EACH MANIFOLD TO PROVIDE A 30-F TEMPERATURE DIFFERENCE BETWEEN SUPPLY AND RETURN WATER, OR LISTED FLOW, WHICHEVER IS GREATER.
5. PROVIDE MANUAL BALANCING VALVE ON EACH CIRCUIT BRANCH.
6. INSTALL PIPING BELOW CONCRETE WITHIN 3 INCH SAND BED, WITH 2 INCH OF SAND COVERING TOP OF PIPE. INSTALL A MINIMUM OF 2 INCHES OF RIGID INSULATION BELOW SAND BED.
7. INSTALL PIPING PER MANUFACTURERS GUIDELINES. PROVIDE PHOTOS OF INSTALL WITH AS BUILT PLANS.
8. CLEAN AND FLUSH SYSTEM. FILL WITH PREMIXED 50% PROPYLENE GLYCOL.
9. INSTALL 4 SLAB TEMPERATURE SENSORS, ENCAPSULATED RUGGEDIZED. LABEL LOCATIONS ON CONCRETE SURFACE WITH OWNER APPROVED MARKER OR SYMBOL.

KEYED NOTES:

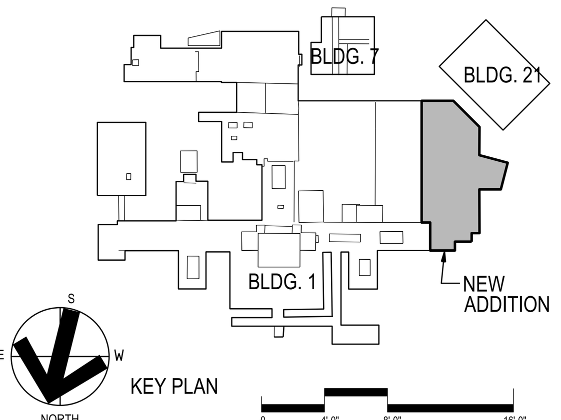
1. REFERENCE DETAIL 3 THIS SHEET FOR RADIANT HEATING EQUIPMENT.
2. RADIANT LOOP MANIFOLDS LOCATED IN 24" X 24" X 4" STAINLESS BOX WITHIN WALL. INCLUDE LOCKABLE ACCESS PANEL 24" X 24". REFER TO CIRCUIT SCHEDULE FOR LOOP DETAILS.
3. GARAGE FLOOR AREA FOR RADIANT HEATING= AREA 985 SF, 150 BTU/SF. INSTALL PER RADIANT CIRCUIT SCHEDULE.
4. ROUTE RADIANT HEATING MAINS BELOW RISERS OF ASSOCIATED GENERAL PIPING.
5. ROUTE LOOPS AROUND OR BELOW IN FLOOR OBJECTS, SUCH AS TRENCH DRAIN, MANHOLE, DECONTAMINATION VALVE STEM, AND OTHER FLOOR FIXTURES.



3 RADIANT FLOOR HEATING PIPING SCHEMATIC

NO SCALE

SPECIAL NOTE:
THIS SHEET IS AN ALTERNATE ONLY. ALL INFORMATION AND EQUIPMENT IS EXCLUSIVE TO PROVIDING RADIANT FLOOR GARAGE HEATING ONLY. REFER TO SHEET 1-A8 FOR LIST OF ALL DEDUCT ALTERNATES.



SCALE: 1/8" = 1'-0"

HEERY design
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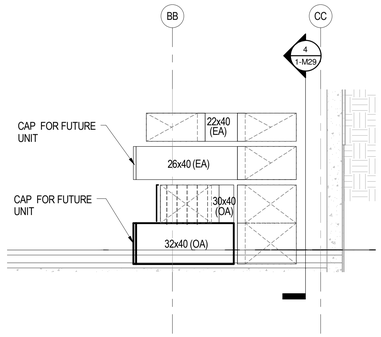
project number 11-25503

Drawing Title	Project Title	Date
MECHANICAL ALTERNATE #1 RADIANT FLOOR HEATING SYSTEM	EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY	12/15/2014
CONSTRUCTION DOCUMENTS	Building No. BLDG 1 / Checked AGW / Drawn RAH	Project No. 636-201
	Location ICVA HEALTH CARE SYSTEM	DRAWING NO. 1-M28

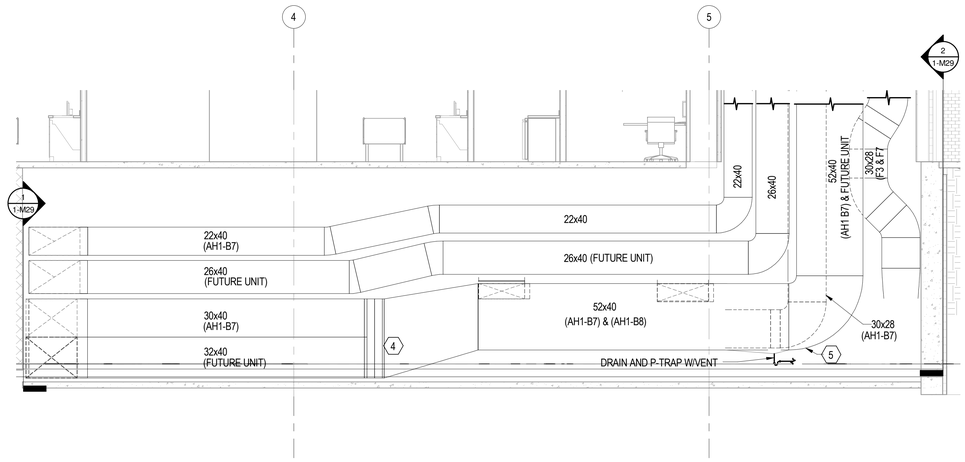
Office of Facilities
Department of Veterans Affairs

Revisions | Date | Revisions | Date | Revisions | Date

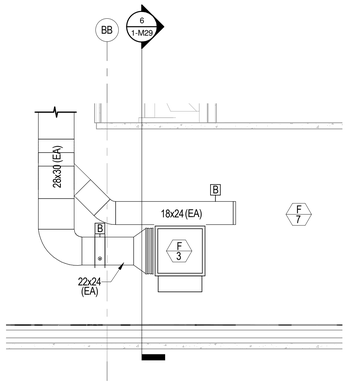
VA FORM 08-6231, FEB. 1983



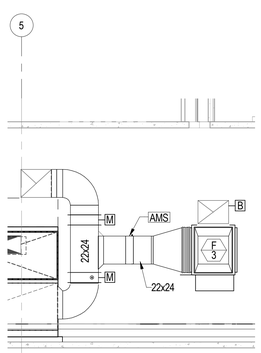
1 ENLARGED HVAC PLAN LOWER LEVEL SECTION VIEW 1
1/4" = 1'-0"



4 ENLARGED HVAC PLAN LOWER LEVEL SECTION VIEW 4
1/4" = 1'-0"



2 ENLARGED HVAC PLAN LOWER LEVEL SECTION VIEW 2
1/4" = 1'-0"



6 ENLARGED HVAC PLAN LOWER LEVEL SECTION VIEW 6
1/4" = 1'-0"

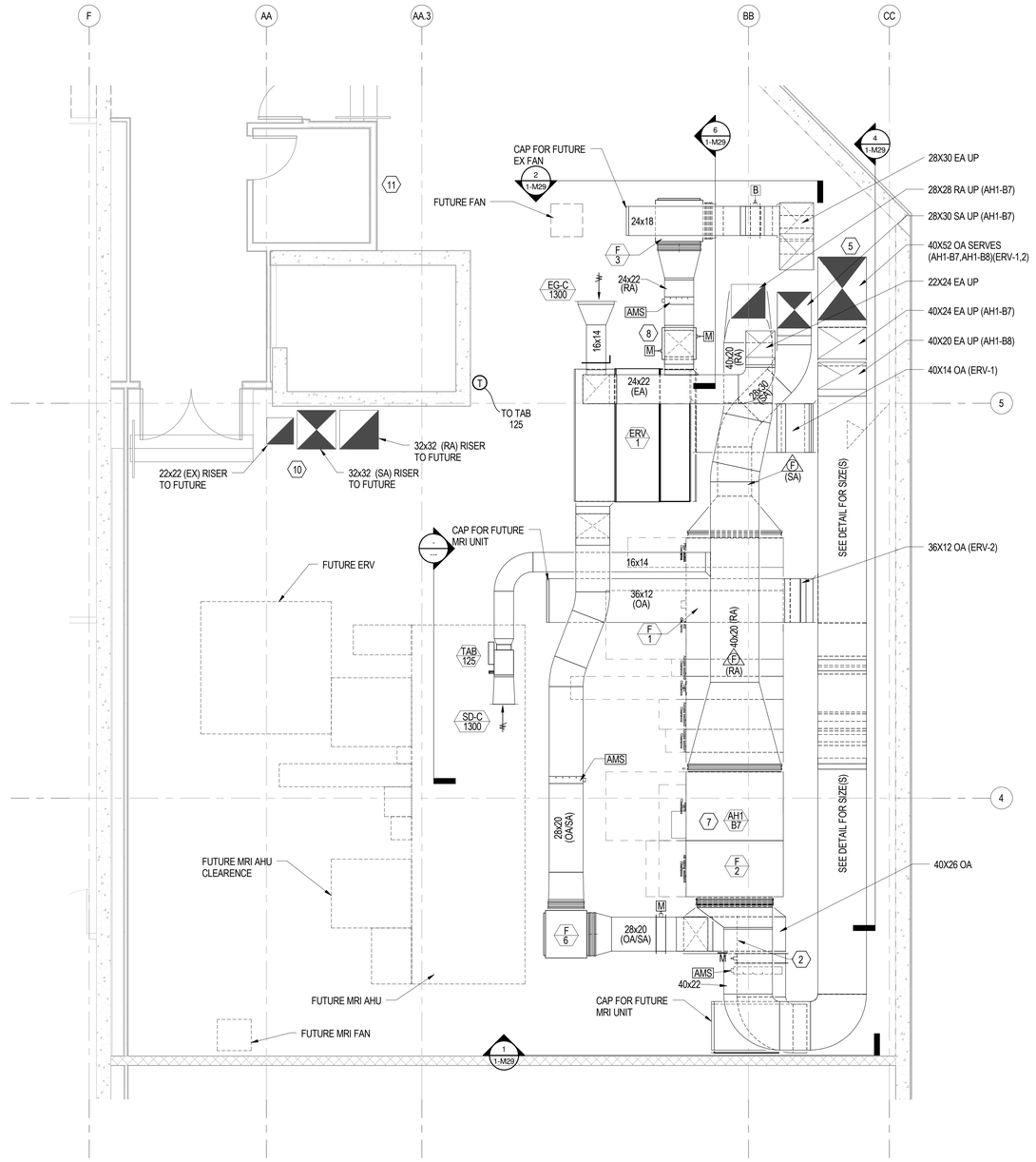
GENERAL MECHANICAL NOTES:

A. REFER TO SHEET 1-A8 FOR LIST OF AREAS AFFECTED BY DEDUCT ALTERNATES.

B. TRADES TO COORDINATE WITH EACH OTHER BEFORE WORK BEGINS.

C. PROVIDE FULL LENGTH SINGLE THICKNESS SPLITTER VANES IN ALL RADIUS ELBOWS. THREE SPLITTER VANES PER ELBOW EVENLY SPACED. PROVIDE SINGLE THICKNESS LONG SWEEP TURNING VANES IN ALL SQUARE ELBOWS.

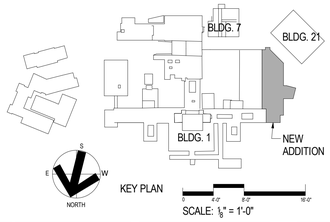
D. INSTALL AIRFLOW MEASURING STATIONS WITH AIR FLOW STRAIGHTENERS.



3 ENLARGED HVAC PLAN LOWER LEVEL
1/4" = 1'-0"

KEYED NOTES: (THIS PAGE ONLY)

1. INSTALL 1/2" STEEL SECURITY BARS WITHIN DUCT HORIZONTAL AND VERTICAL SPACING OF 4 INCHES.
2. SPLIT PLENUM OR INSTALL TWO SEPERATE DUCTS A MINIMUM OF 42X26. TRANSITION IF NEEDED.
3. SPLIT PLENUM OR INSTALL TWO SEPERATE DUCTS A MINIMUM OF 41X28. TRANSITION IF NEEDED.
4. OFFSET CHANGES FROM 52X40 TO 54X40 THEN SPLITS INTO TWO SEPERATE DUCTS 26X40 AND 28X40.
5. INSTALL STAINLESS STEEL ELBOW AND 4' STRAIGHT DUCT WITH SLOPE DRAINAGE POINT. CONNECT 1" DRAIN PIPE WITH P-TRAP ROUTE TO FLOOR DRAIN.
6. ROTATE SUPPLY FAN TO MINIMIZE AIRFLOW SYSTEM AFFECTS.
7. COORDINATE AIR HANDLER INSTALLATION WITH ABOVE STRUCTURE INSTALLATION.
8. CONNECT EXHAUST AIR BYPASS TO 24X22 EA DUCT MAIN, ELBOW DOWN AND TEE INTO 24X22 EA DUCT WITH CONNECTING TO F-3.
9. CONNECT EXHAUST AIR BYPASS TO SIDE OF ERV-2 EXHAUST AIR PLENUM.
10. CONTINUE RISERS TO ABOVE LEVEL 1 CEILING. CAP BOTH ENDS OF RISERS.
11. SEE FAN COIL DETAIL ON 1-M10



KEY PLAN

SCALE: 1/8" = 1'-0"

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
HVAC ENLARGED PLANS LOWER LEVEL MECH ROOM

CONSTRUCTION DOCUMENTS

Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE, RADIOLOGY, EGRESS STAIRWELL

Building No. **BLDG 1** | Checked **AW** | Drawn **RH**

Location **ICVA HEALTH CARE SYSTEM**

Date **12/15/2013**

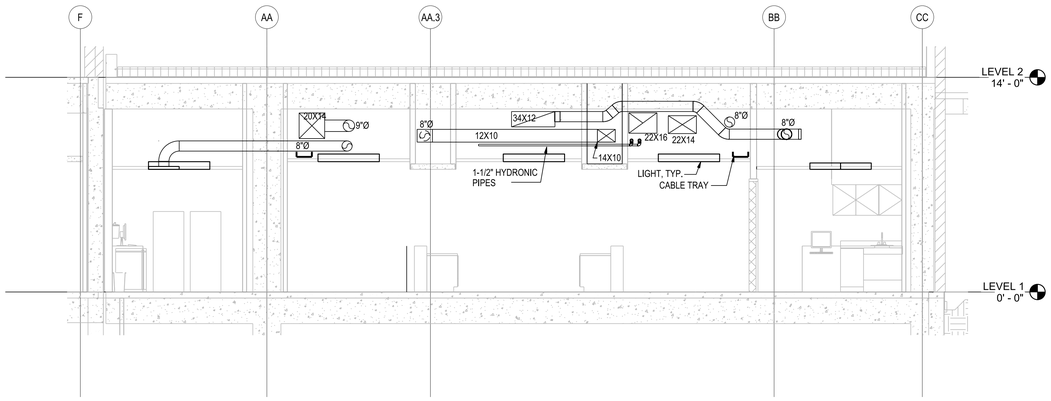
Project No. **636-201**

DRAWING NO. **1-M29**

Office of Facilities

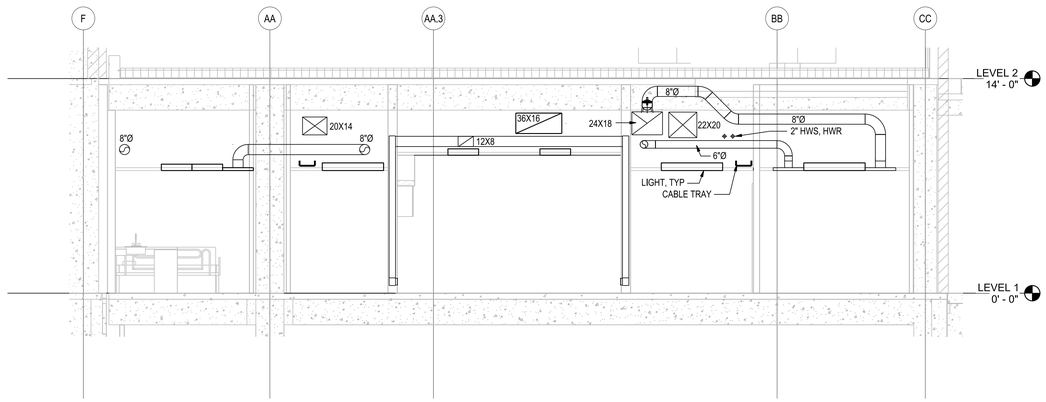
Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983



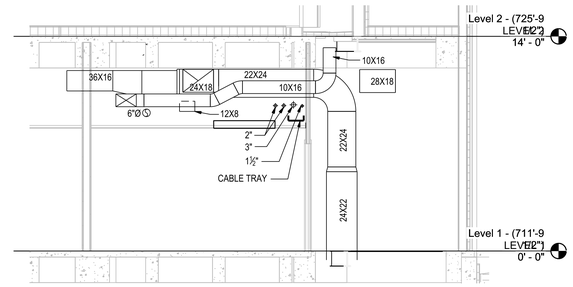
1 HVAC SECTION 1

1/4"=1'-0"



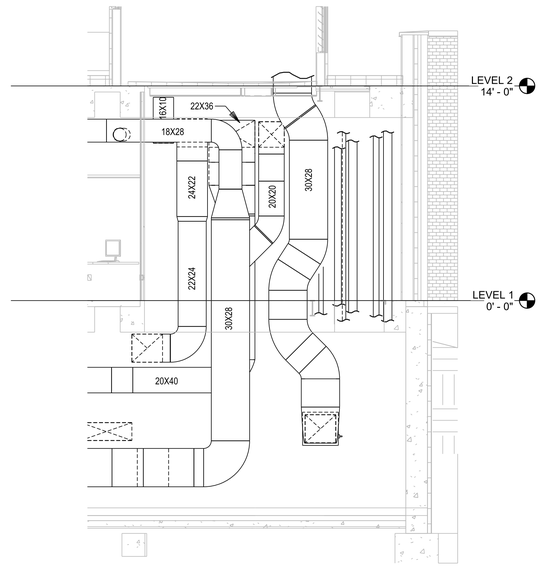
2 HVAC SECTION 2

1/4"=1'-0"



3 HVAC SECTION 3

1/4"=1'-0"



4 HVAC SECTION 4

1/4"=1'-0"

Revisions	Date	Revisions	Date	Revisions	Date

HEERY design

Heery International Inc.
125 South Dubuque Street,
Suite 500,
Iowa City, IA 52240-4003
319.354.4700

project number
11-25503

Drawing Title
HVAC SECTIONS

CONSTRUCTION DOCUMENTS

Project Title
EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY

Building No. **BLDG 1** | Checked **AGW** | Drawn **RAH**

Location
ICVA HEALTH CARE SYSTEM

Date **12/15/2014**

Project No. **636-201**

DRAWING NO. **1-M30**

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231, FEB. 1983

PROJECT: IC-VAMC- EXPAND BLDG. 1 FOR PACT PROJECT
SHEET TITLE: F:\10\10206600\-CADD\1-M30-10206600-IAC.dgn
PLOTTED BY: AGW PEN TABLE:HE_JR_OT.Heery1.Eng.pen 12:23PM
PLOTTED ON: 12/12/2014