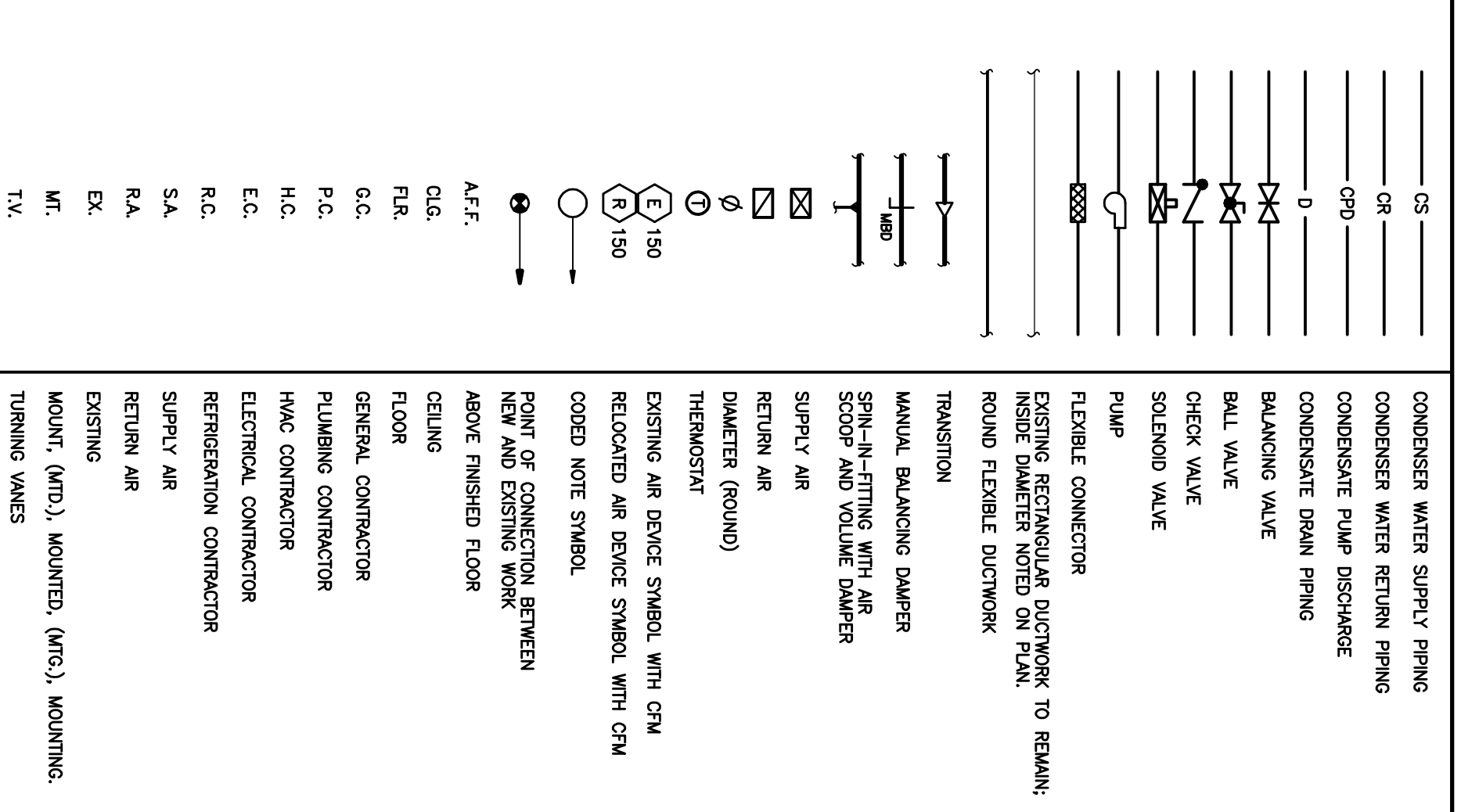


**HVAC SPECIFICATIONS**

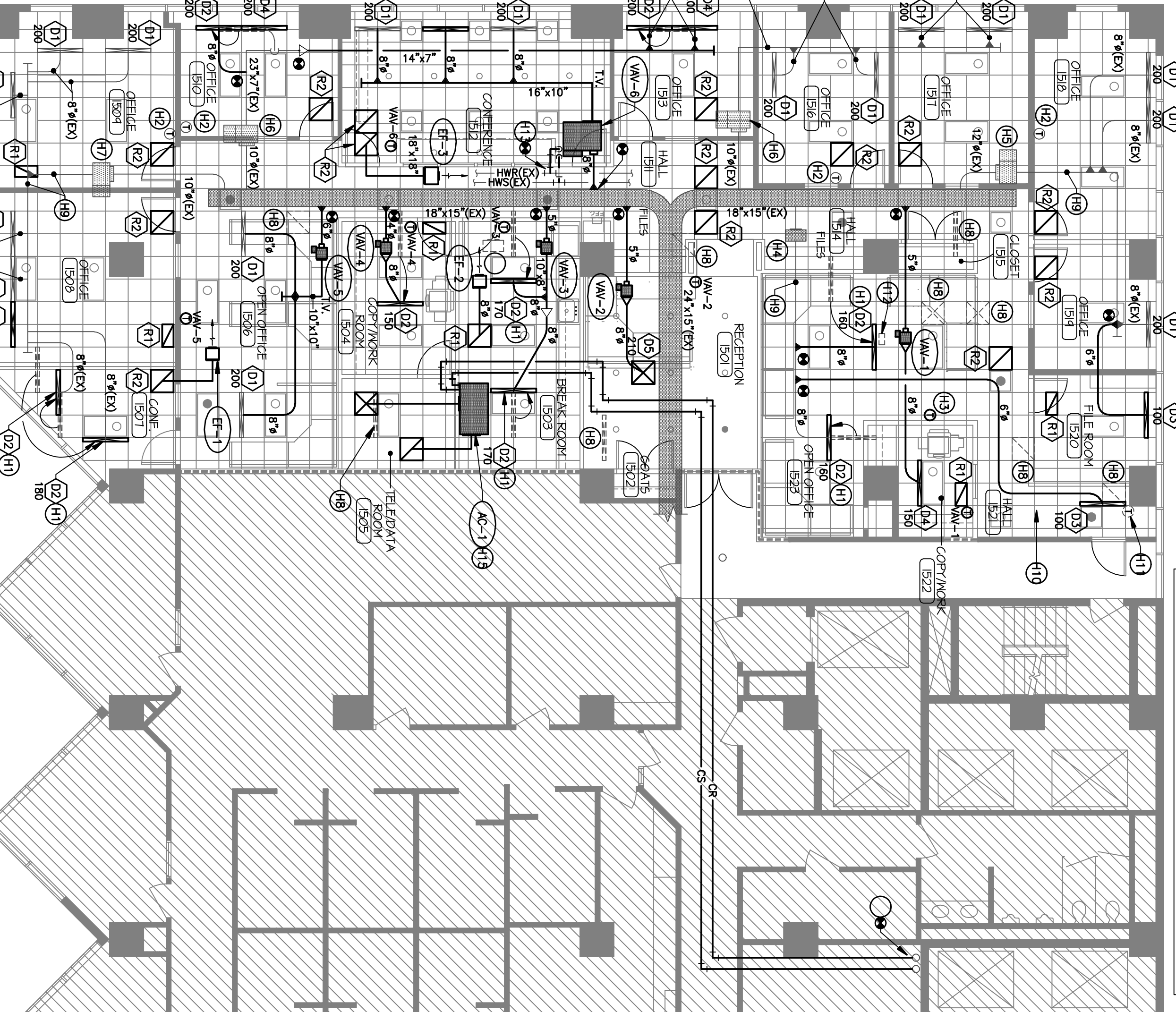
1. Furnish all materials, labor, tools, transportation, incidentals, and overhead charges for all work. Provide a schedule of work in order of drawings of work called for herein or shown on accompanying drawings. Include any minor items of work necessary to provide complete and fully operative systems whether specifically shown or not.
2. Codes and Standards: Comply with all Local and State building codes, Life Safety Code, National Fire Protection Association (NFPA), ASHRAE, SMACNA applicable utility company requirements and applicable Federal requirements.
3. Omissions and pay for all required permits, fees, inspections and tests. File drawings necessary to obtain permits, schedule necessary inspections and tests. Submit Certificates of Inspection and approval upon completion of the work.
4. Drawings are schematic and show approximate locations of ducts, piping and equipment. Coordinate and field verify exact locations with other trades. Obtain Architect's approval of significant deviations from drawing locations and layouts. The Architect reserves the right to make minor changes in location of equipment and ductwork. The Contractor shall coordinate and obtain approval of the Contractor's proposed changes. Examine and compare the Contract Documents and immediately report any conflict, error, inconsistency or omission. The Architect will determine which interpretation shall take precedence. Contractor is responsible for a more stringent interpretation.
5. Guarantee all work executed under this Contract to be free from defective workmanship and/or materials. Should any defects develop within a period of one (1) year after final acceptance has been made, correct them and report any damage that resulted from same or its substantial costs.
6. Submit 6 copies of shop drawings for all equipment, piping, and ductwork for approval before construction. Prepare required drawings at sufficient scale to clearly show details of others. Approval of shop drawings shall not relieve the contractor of responsibility for accuracy of shop drawings or of full compliance with the contract documents. Check, sign and approve all shop drawings. Drawings not signed and approved by the Contractor are void. Submit six bound copies of operation and maintenance manuals at completion of project.
7. After placing systems in operation, thoroughly instruct designated Owner's personnel on operation and maintenance of all equipment and systems.
8. Repair or replace existing utilities where necessary to permit installation of work. Provide adequate means of protection during work operations. Repair any damage to existing premises during work to the satisfaction of the Utility Agency and at Contractor's expense.
9. All materials and equipment shall be new and of a quality specified. Workmanship shall conform to standards of best practice and all labor employed shall be competent to do work required.
10. Verify existing conditions prior to bid and start of work.
11. Coordinate and schedule all work with other trades.
12. All HVAC work shall be laid out with due consideration for the work of other trades. Any conflicts which occur due to lack of coordination by the HVAC Contractor with the other trades (contractors) shall be rectified by the HVAC Contractor with the exception of those specified by the Owner.
13. Protect equipment and materials during construction from damage from water, dirt, shading and drop ceiling, spatters paint droppings, etc. by use of shields and drop ceiling construction operations. Protect floors from staining and damage.
14. Coordinate and assist the General Contractor in all demolition work. Provide drawings in the specifications, and as required for the project.
15. The Contractor is responsible for routing all control wiring, power wiring and input utility connections for all existing equipment. Provide and secure insulation diagrams when reconstruction is executed.
16. Furnish all labor, equipment, materials, and accessories necessary for the installation of all mechanical insulation, ductwork, piping and equipment. All insulation shall be installed on ductwork, new insulation systems shall match existing (unless noted otherwise). Report any discrepancies to Architect.
17. All insulation shall have composite (resulation, jacket, and smoke developed) 50. ASTM E-94, NFPA 255, or UL 723, and not exceed flame spread, 25; Smoke developed, 50.
18. Insulation shall meet or exceed the requirements of OBC, 901.1. Insulation shall be installed on ductwork with 1-1/2" wrap type insulation with foil vapor barrier - R-6 min.
19. Interior ducts: Fiberglass duct wrap insulation, 1-1/2" thick, 2-1/4" round density (K=0.28) with minimum oil tanks. FSK facing, Johns Manville "Microline" with FSK facing or Owens-Corning Type 75 with FRK-25 facing.
20. Modify the air distribution system for the heating, ventilating and air conditioning system for the area of the building shown on the drawings and as herein specified. Include cleaning, testing, balancing and adjusting the air systems for proper air circulation to each area of the building.
21. Ductwork shall meet the requirements of SMACNA, NFPA 90A, OBC Mechanical Code, Article 3. Rectangular ducts shall be constructed and reinforced per SMACNA Duct Construction Standards, Section 1. All ductwork shall be sealed in accordance with SMACNA. HVAC Duct Construction Standards (Seal Class B) shall be used as the primary sealant. Coordinate all equipment and duct runs with structure, lights, ceiling, conduit, piping, and other equipment. Hold ductwork as high as possible at bottom of structure.
22. Duct lining shall be fireproof. Underwriters' approved, and conform to latest requirements of NFPA. Install per SMACNA Standards. Material: Owens-Corning Duct Liner, 1" thick, 1.5 lb./sq. yd. Density, K = 0.28, NBC = 0/60, flame spread 25, maximum smoke developed rating of 50 or less. Flexible duct shall not exceed 5 feet in length. Duct shall be rated for minimum 10" W.G. internal working pressure, for all duct sizes. Vinyl, clear plastic or mylar type liners are expressly prohibited.
23. Flexible ducts shall comply with NFPA requirements. Paragraph 90A, and shall be installed with flame spread rating of 25, maximum smoke developed rating of 50 or less. Flexible duct shall not exceed 5 feet in length. Duct shall be rated for minimum 10" W.G. internal working pressure, for all duct sizes. Vinyl, clear plastic or mylar type liners are expressly prohibited.
24. Furnish and install air devices as noted on the drawings or specified herein. Diffusers, registers and grilles shall be by Armstrong as scheduled on the drawings or equal. All devices shall be mounted flush in the ceiling or as noted on the drawings. All devices shall be finished to match the surrounding ceiling. Finish shall be selected by Architect. Coordinate exact location of all air devices with lighting plan and reflected ceiling plan.

**HVAC LEGEND**



**HVAC CODED NOTES**

- H1 RELOCATE EXISTING LINEAR SLOT DIFFUSER TO LOCATION DENOTED. REMOVE EXISTING LENGTH OF FLEX DUCT AS REQUIRED. BALANCE TO AIR VOLUME CONSTRUCTION.
- H2 EXISTING TRAIT TO REMAIN. COORDINATE EXACT LOCATION WITH NEW CONSTRUCTION.
- H3 RELOCATE TRAIT AS DENOTED.
- H4 EXISTING SINGLE DUCT TERMINAL BOX TO REMAIN, RATED FOR 420 CFM.
- H5 EXISTING PARALLEL FAN POWERED TERMINAL BOX TO REMAIN, RATED FOR 700 CFM.
- H6 EXISTING PARALLEL FAN POWERED TERMINAL BOX TO REMAIN, RATED FOR 800 CFM.
- H7 EXISTING PARALLEL FAN POWERED TERMINAL BOX TO REMAIN, RATED FOR 1470 CFM.
- H8 DEMO EXISTING AIR DEVICE.
- H9 EXISTING FAN POWERED TERMINAL BOX DISCHARGE DUCT TO REMAIN.
- H10 DEMO ALL EXISTING ABANDONED HVAC EQUIPMENT IN CEILING SPACE IN THIS AREA.
- H11 DEMO EXISTING TRAIT.
- H12 EXISTING EXISTING 12"x6" VERTICAL DUCT.
- H13 INTEREST EXISTING HWS AND HWR PIPING ABOVE CEILING AND CONNECT TO NEW FAN POWERED TERMINAL BOX. REFER TO DETAIL #1 THIS SHEET.
- H14 DEMO EXISTING SINGLE DUCT TERMINAL BOX AND TURN OVER TO LANDLORD.
- H15 AC-1: NEW SELF-CONTAINED COOLING ONLY A/C UNIT BASED ON LEIBERT MAIN-WARE 2" MODEL (MAGI/AMPHIBIOUS, WATER-COOLED, DUCTED SUPPLY & RETURN). FINISH WITH CONDENSATE PUMP AND DRAIN PAN. RAIN CONDENSATE LINE TO NEAREST SERVICE SINK OR FLOOR DRAIN (COORDINATE WITH LANDLORD). 609 CFM CAPACITY AT HIGH FAN SPEED. 9500 BTUH SENSIBLE CAP. 1775 BTUH LATENT CAP. CONDENSER PRESS. DROP OF 2.0 FT. FLOW RATE OF 1.8 GPM WITH 52°F WINTER EXT. & 77°F SUMMER EXT. TEMPERATURE & HUMIDITY SETPOINTS ARE 77°F & 45% RH RESPECTIVELY.



**FLOOR PLAN - HVAC**

- HVAC DEMOLITION NOTES**
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DEMOLITION OF ALL HVAC ASSOCIATED WITH THIS PROJECT (UNLESS NOTED TO REMAIN). RETURN TO LANDLORD ALL EQUIPMENT THAT IS RELOCATED, OTHERWISE, REMOVE REMAINDER FROM PREMISES.
  2. REMOVE EXISTING AIR DEVICES AND BRANCH DUCTS IN THIS TENANT SPACE NOT BEING REUSED. PATCH/SEAL MAIN DUCT AT TAPS.

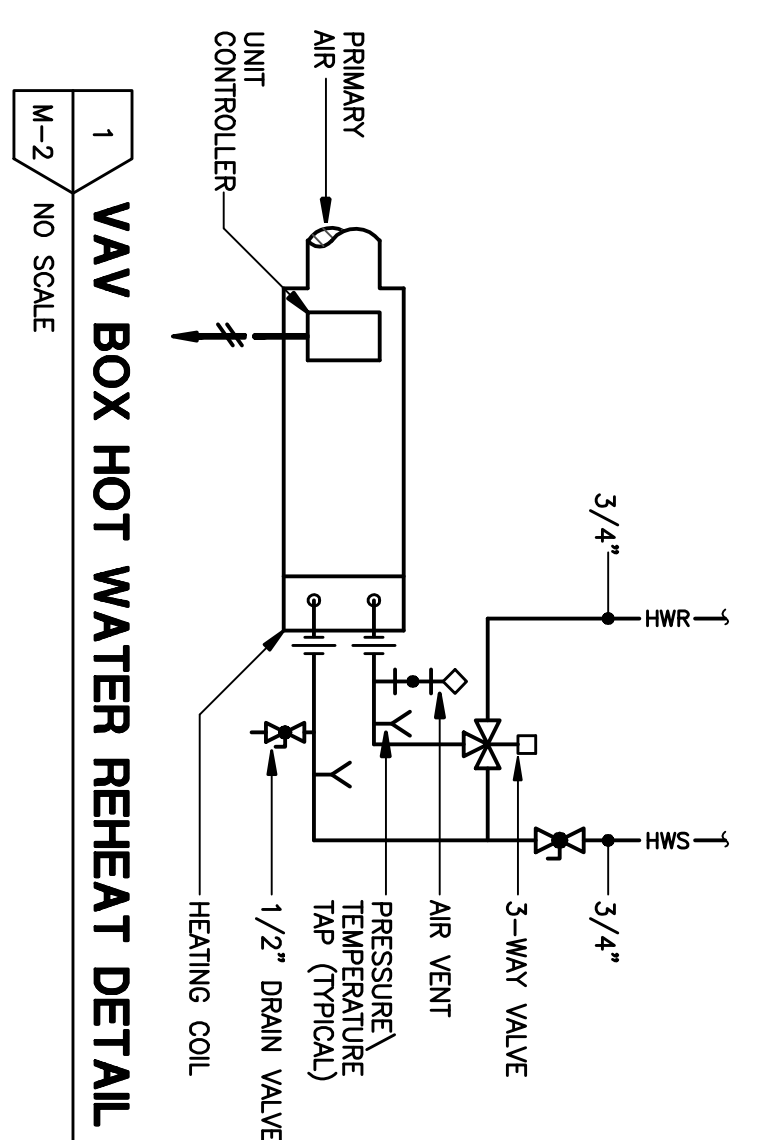
NOTE: SPACE ABOVE CEILING AND BELOW FLOOR IS USED AS A RETURN AIR PLenum.

**H.C. TO FIELD VERIFY FIELD CONDITIONS PRIOR TO BID.**

**COOLING ONLY V.A.V. BOX SCHEDULE**

SYMBOL	TRADE MODEL	INLET DIM.	COOLING AIRFLOW	HEATING AIRFLOW	COOLING ESTIMATED S.P.	ELECTRICAL VOLTAGE/PHASE	NOTES
VM-1	VCF-04	4"	225	150	0.08	120V/1φ	1,3
VM-2	VCF-05	5"	350	210	0.03	120V/1φ	1,3
VM-3	VCF-05	5"	350	340	0.07	120V/1φ	1,3
VM-4	VCF-04	4"	225	150	0.08	120V/1φ	1,3
VM-5	VCF-06	6"	500	400	0.02	120V/1φ	1,3
VM-9	VWF-08-0317	8"	900	660	0.16	120V/1φ	1,3

- NOTES:**
- 1) CONTROLS TO MATCH EXISTING AND CONNECT TO TRANE BUILDING MANAGEMENT SYSTEM.
  - 2) ELECTRIC HEATER TO HAVE 24K. MAGNETIC CONTACTOR, AIRFLOW SWITCH, AND DOOR MOUNTED DISCONNECT SWITCH.
  - 3) SUP AND DRAVE OUTLET DUCT CONNECTION



**AIR DEVICE SCHEDULE**

SYMBOL	FACE SIZE	NECK SIZE	MODEL, TINS.	TOTAL CFM	MOUNTING SURFACE	AIR PATTERN	NOTES
D1	4" LONG SLOT		EXISTING AIR DEVICE TO REMAIN, CFM DENOTED ON PLAN				1
D2	4" LONG SLOT		EXISTING AIR DEVICE RELOCATED, CFM DENOTED ON PLAN				
D3	4" LONG SLOT		NOTE 6		LV-IN	SUPPLY	3,5,6
D4	4" LONG SLOT		NOTE 6		LV-IN	SUPPLY	3,5,6
D5	2"x24"	8"	NOTE 6		SURFACE	SUPPLY	1,2,4
R1	24"x12"	22"x10"	50F		LV-IN	RETURN	1,3,5
R2	24"x24"	22"x22"	50F		LV-IN	RETURN	1,3,5

- NOTES:**
- 1) FINISH TO MATCH EXISTING AIR DEVICES IN THIS TENANT SPACE.
  - 2) FINISH TO MATCH EXISTING AIR DEVICES IN THIS TENANT SPACE.
  - 3) FRAME TO BE COMPATIBLE WITH STD. T-Bar CEILING.
  - 4) SPRINGS TO BE COMPATIBLE WITH PLASTER, DRYWALL, OR OTHER SURFACES TO BE MOUNTED IN LV-IN TILES. SUPPORT FROM ABOVE.
  - 5) TO BE MOUNTED IN LV-IN TILES. SUPPORT FROM ABOVE.
  - 6) READ MEANS EXISTING PRESSURE PRESS PROVIDE NEW DIFFUSER FROM LANDLORD'S STOCK FILE TO MATCH EXISTING IN MAIN CORRIDOR AND THE AS SHOWN.



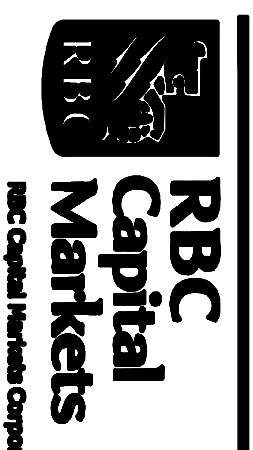
**SHEET TITLE: FLOOR PLAN - HVAC**

Date: \_\_\_\_\_  
 Comm. No: \_\_\_\_\_  
 In Charge: \_\_\_\_\_  
 Drawn By: \_\_\_\_\_  
 Checked By: \_\_\_\_\_

**M-2**

**TENANT IMPROVEMENTS FOR:**

**RBC Capital Markets**  
 One Columbus Center  
 15th Floor - Suite 15550  
 10 West Broad St.  
 Columbus, OH 43215



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