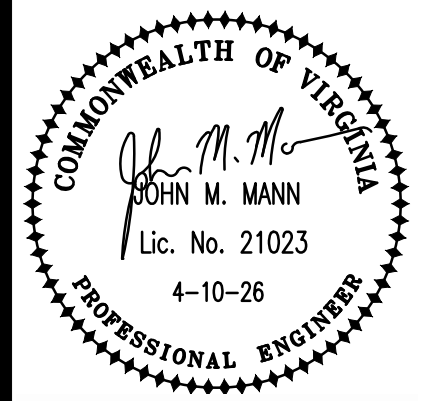


PARTIAL SECOND FLOOR PLAN – MECHANICAL DEMOLITION
 SCALE: 3/16" = 1'-0"

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DATE: APR 10 2026	COMM No: 25-11	DRAWN BY: DAR	CHECKED BY: JMM	STATE PROJECT No:
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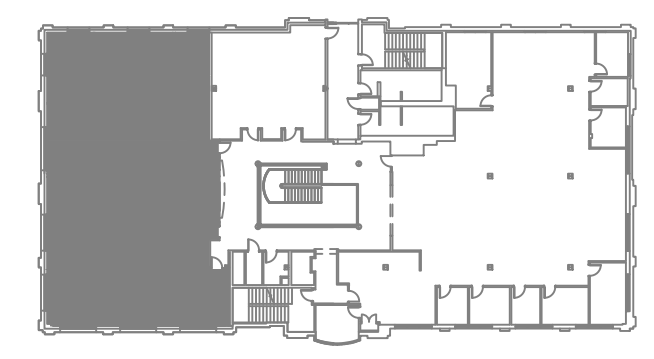
SECOND FLOOR PLAN - MECHANICAL DEMOLITION
 RENOVATION OF 2ND AND 3RD FLOOR USFA SUITES
 BLACKSBURG, VA



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 20 Midway Plaza Dr, Suite 300
 Christiansburg, VA 24073
 540-230-2619
 www.5designarchitecture.com

DEMO NOTES THIS SHEET

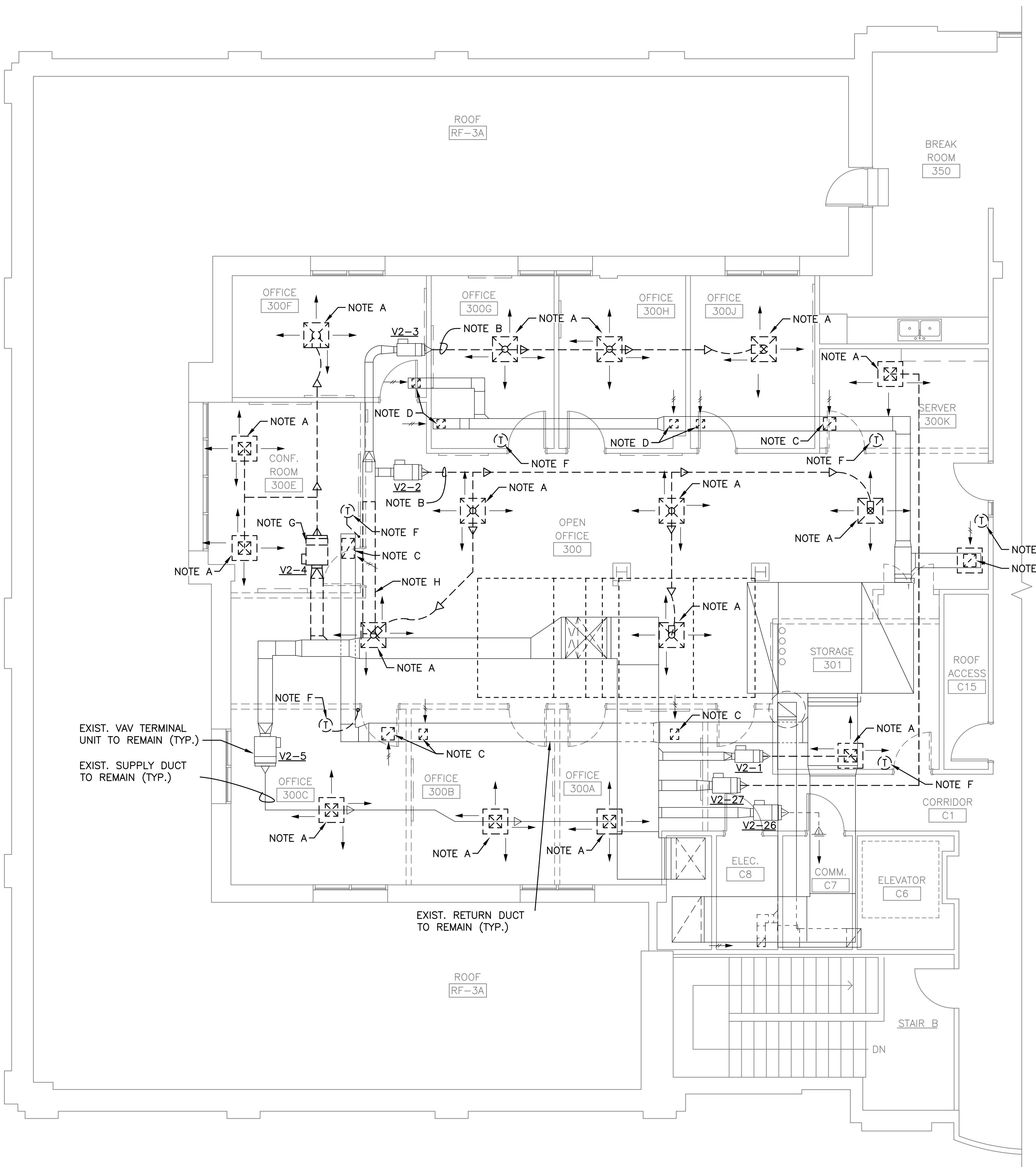
- A. REMOVE CEILING SUPPLY DIFFUSER AND ASSOCIATED FLEX DUCT.
- B. REMOVE ENTIRE SUPPLY DUCT DOWNSTREAM OF VAV TERMINAL UNIT. PREPARE FOR NEW DUCT TO CONNECT TO THE TERMINAL UNIT OUTLET.
- C. REMOVE CEILING RETURN GRILLE AND ASSOCIATED DUCT DROP. PATCH REMAINING BRANCH DUCT AIR TIGHT.
- D. REMOVE CEILING RETURN GRILLE AND PREPARE FOR NEW GRILLE.
- E. REMOVE SECTION OF RETURN BRANCH DUCT.
- F. REMOVE TEMPERATURE SENSOR AND PREPARE FOR NEW SENSOR AND EXTENSION OF CONTROL WIRE.
- G. REMOVE VAV TERMINAL UNIT AND ALL ASSOCIATED DUCTWORK. DISCONNECT HEATING WATER PIPES AND PREPARE FOR RECONNECTION TO NEW TERMINAL UNIT COIL.
- H. REMOVE SECTION OF SUPPLY DUCT.



SECOND FLOOR KEY PLAN
 N.T.S.

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 Roanoke, VA 24011
 540-344-5513



PARTIAL THIRD FLOOR PLAN – MECHANICAL DEMOLITION

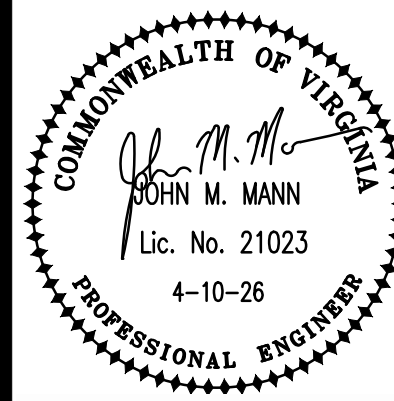
SCALE: 3/16" = 1'-0"

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**THIRD FLOOR PLAN -
 MECHANICAL DEMOLITION**

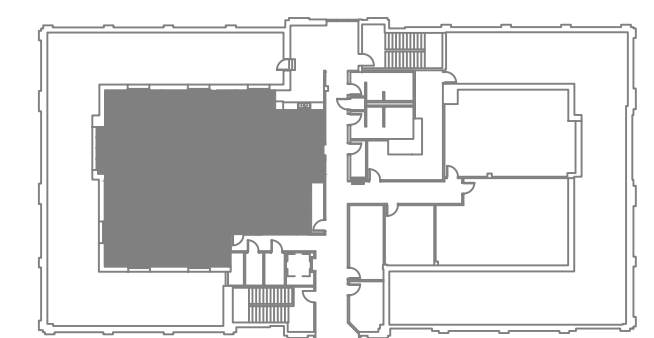
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DEMO NOTES THIS SHEET

- A. REMOVE CEILING SUPPLY DIFFUSER AND ASSOCIATED FLEX DUCT.
- B. REMOVE ENTIRE SUPPLY DUCT DOWNSTREAM OF VAV TERMINAL UNIT. PREPARE FOR NEW DUCT TO CONNECT TO THE TERMINAL UNIT OUTLET.
- C. REMOVE CEILING RETURN GRILLE AND ASSOCIATED DUCT DROP. PATCH REMAINING BRANCH DUCT AIR TIGHT.
- D. REMOVE CEILING RETURN GRILLE AND PREPARE FOR NEW GRILLE.
- E. REMOVE CEILING SUPPLY GRILLE AND FLEX DUCT. PREPARE FOR NEW WORK.
- F. REMOVE TEMPERATURE SENSOR AND PREPARE FOR RELOCATION AND EXTENSION OF CONTROL WIRE.
- G. REMOVE VAV TERMINAL UNIT AND ALL ASSOCIATED DUCTWORK. DISCONNECT HEATING WATER PIPES AND PREPARE FOR RECONNECTION TO NEW TERMINAL UNIT COIL.
- H. REMOVE SECTION OF DUCTWORK.



THIRD FLOOR KEY PLAN

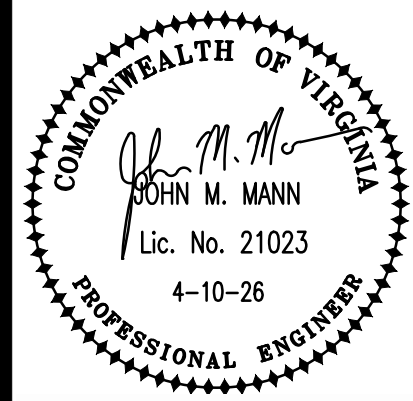
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SECOND FLOOR PLAN - MECHANICAL

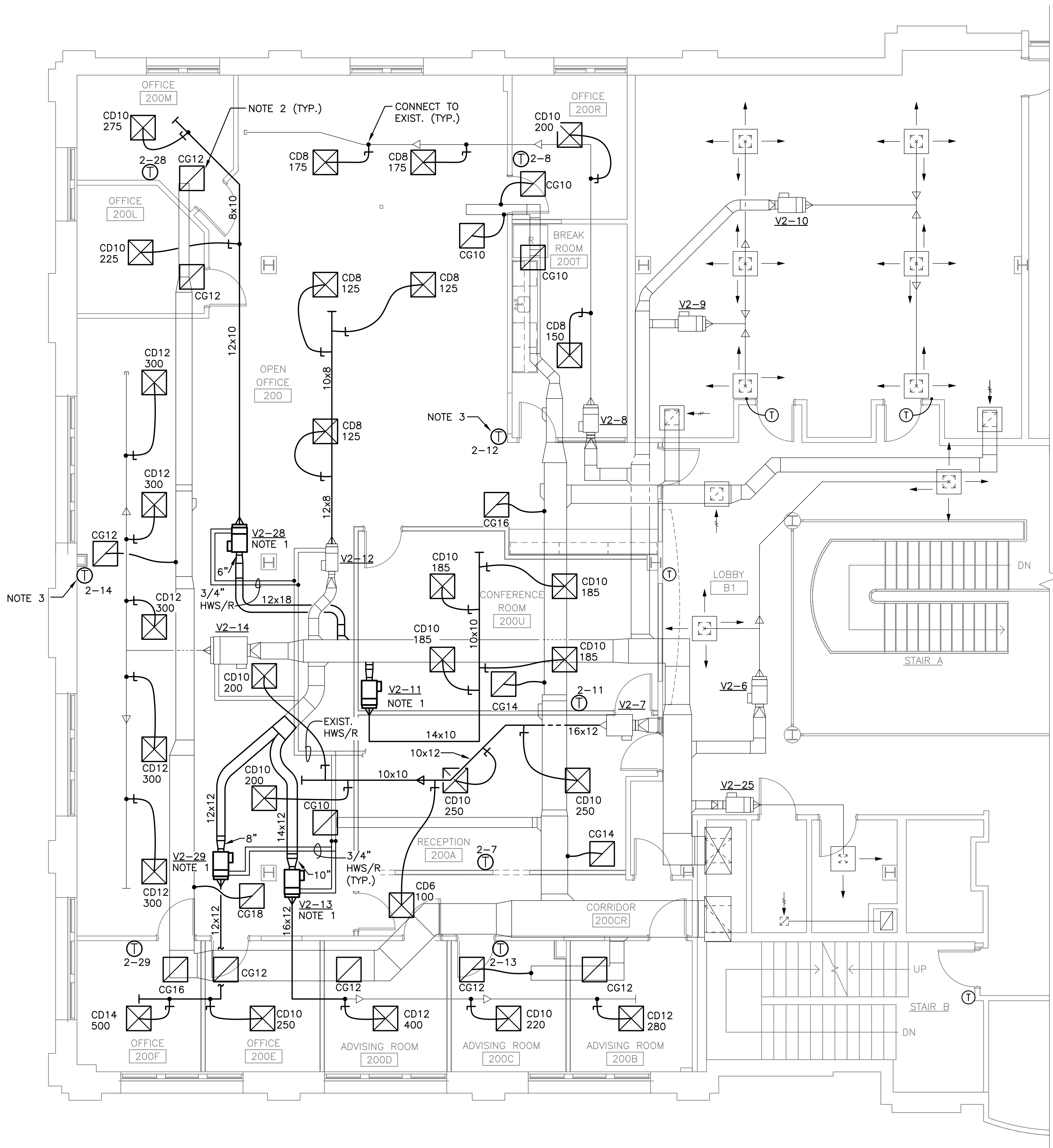
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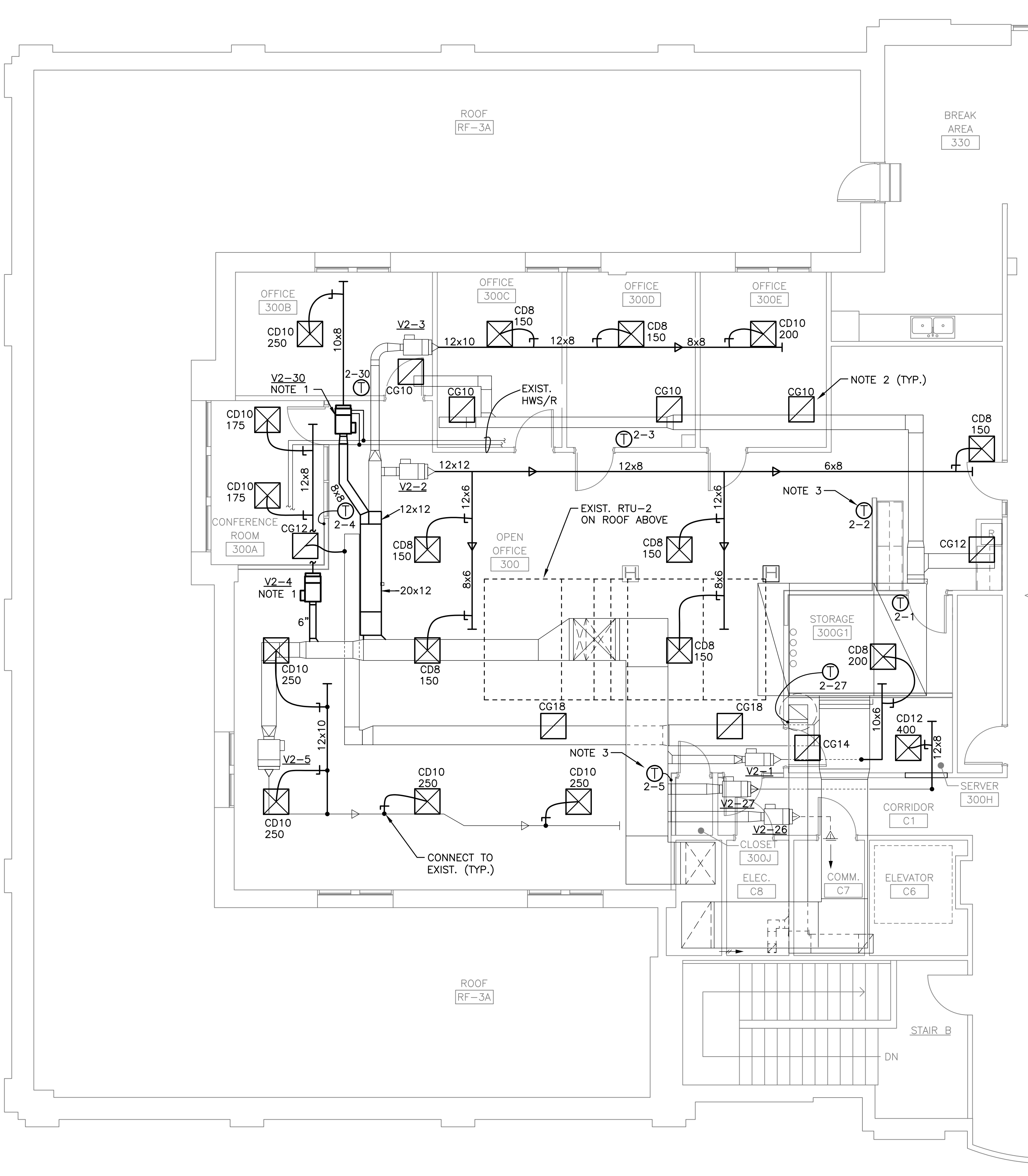
NOTES THIS SHEET

1. PROVIDE NEW VAV TERMINAL UNIT AND DUCTWORK. MODIFY EXISTING HEATING WATER PIPING AS REQUIRED TO CONNECT TO NEW UNIT. PROVIDE NEW HEATING COIL CONTROL VALVE AND AUTO-BALANCING VALVE.
2. CONNECT CEILING RETURN GRILLE TO EXISTING RETURN DUCT WITH FLEX DUCT TO MATCH GRILLE DIAMETER. PULL FLEX DUCT TIGHT WITHOUT SAGS, KINKS, OR SHARP BENDS.
3. COORDINATE LOCATION OF THERMOSTAT WITH OFFICE FURNITURE PARTITIONS AND SHIFT THERMOSTAT LOCATION IF THE FURNITURE WILL BLOCK ACCESS.



SECOND FLOOR KEY PLAN
 N.T.S.

PARTIAL SECOND FLOOR PLAN - MECHANICAL
 SCALE: 3/16" = 1'-0"



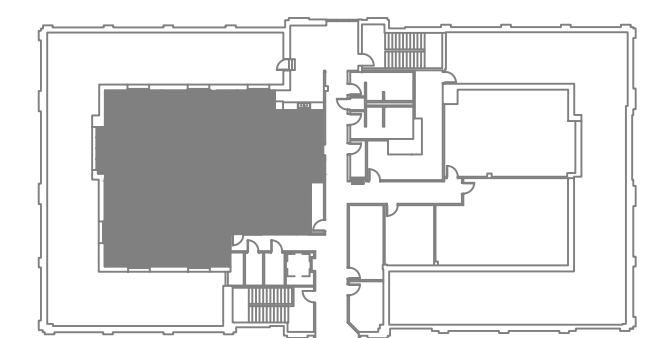
PARTIAL THIRD FLOOR PLAN - MECHANICAL

SCALE: 3/16" = 1'-0"

UBO APPROVAL

NOTES THIS SHEET

1. PROVIDE NEW VAV TERMINAL UNIT AND DUCTWORK. MODIFY EXISTING HEATING WATER PIPING AS REQUIRED TO CONNECT TO NEW UNIT. REPLACE HEATING COIL CONTROL VALVE AND AUTO-BALANCING VALVE.
2. CONNECT CEILING RETURN GRILLE TO EXISTING RETURN DUCT WITH FLEX DUCT TO MATCH GRILLE DIAMETER. PULL FLEX DUCT TIGHT WITHOUT SAGS, KINKS, OR SHARP BENDS.
3. COORDINATE LOCATION OF THERMOSTAT WITH OFFICE FURNITURE PARTITIONS AND SHIFT THERMOSTAT LOCATION IF THE PARTITION WILL BLOCK ACCESS.



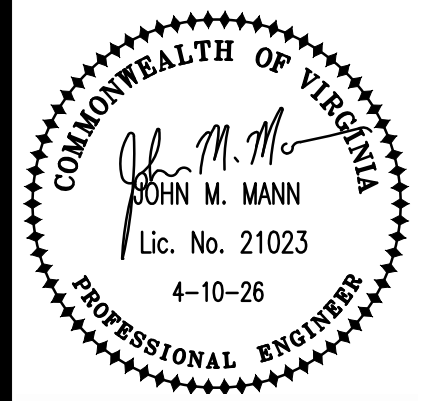
THIRD FLOOR KEY PLAN

N.T.S.

DATE: APR 10 2026	COMM No: 25-11	DRAWN BY: DAR	CHECKED BY: JMM	STATE PROJECT No:
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THIRD FLOOR PLAN - MECHANICAL

RENOVATION OF 2ND AND 3RD FLOOR USFA SUITES
BLACKSBURG, VA



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TEST AND BALANCE

PROVIDE TEST AND BALANCE OF NEW AND EXISTING VAV TERMINAL UNITS AND SUPPLY DIFFUSERS FOR PROPER OPERATION, AIRFLOW, CAPACITY, ACCEPTABLE SPACE TEMPERATURES, AND NOISE LEVELS. REFERENCE THE VAV TERMINAL UNIT SCHEDULES BELOW FOR MIN/MAX AIRFLOWS AND HEATING COIL CAPACITIES. PROVIDE WATER FLOW TESTING AND BALANCING OF THE DOMESTIC HOT WATER RECIRCULATING LOOP AS SHOWN ON THE PLUMBING DRAWINGS. PERFORM TAB AND RECORD RESULTS PER AABC OR NEBB STANDARDS AND SUBMIT REPORT FOR REVIEW. INDEPENDENT AABC/NEBB CERTIFIED TAB CONTRACTOR SHALL BE USED.

EXISTING VAV TERMINAL UNITS									
TAG	SIZE	MAXIMUM CFM	MIN. AND HEATING CFM	EAT °F	LAT °F	WCOIL CAP MBH	FLOW RATE GPM	AREA SERVED	
V2-1	5	200	200	55	104	10.6	0.5	3RD FL--STORAGE	
V2-2	8	750	250	55	100	11.9	0.5	3RD FL--OPEN OFFICE	
V2-3	6	500	200	55	104	10.6	0.5	3RD FL--OFFICES--NORTH	
V2-4	SEE NEW	VAV TERMINALS	FOR REPLACEMENT UNIT						
V2-5	12	1000	400	55	112	25.0	2.0	3RD FL--OPEN OFFICE--SOUTH	
V2-7	12	1000	400	55	106	22.1	1.5	2ND FL--RECEPTION	
V2-8	8	700	300	55	108	18.3	1.2	2ND FL--OFFICES--NORTH	
V2-11	SEE NEW	VAV TERMINALS	FOR REPLACEMENT UNIT						
V2-12	6	375	250	55	112	15.5	1.0	2ND FL--OPEN OFFICE	
V2-13	SEE NEW	VAV TERMINALS	FOR REPLACEMENT UNIT						
V2-14	12	1500	500	55	113	37.7	2.4	2ND FL--OPEN OFFICE--WEST	
V2-27	8	400	400	55	105	21.7	1.4	3RD FL--SERVER	

VAV NOTES: 1. INFORMATION FOR TEST AND BALANCE PURPOSES AND BASED ON MECHANICAL DRAWINGS AND SHOP DRAWING SUBMITTALS FROM ORIGINAL 2003 BUILDING CONSTRUCTION.
2. EXISTING TERMINAL UNITS ARE TITUS MODEL DESV (SHUTOFF BOX WITH HEATING COIL), 1.0" INLET STATIC AIR PRESSURE, HEATING CAPACITIES BASED ON 180 F EWT.

NEW VAV TERMINAL UNITS									
TAG	SIZE	MAXIMUM CFM	MIN. AND HEATING CFM	EAT °F	LAT °F	WCOIL CAP MBH	FLOW RATE GPM	AREA SERVED	
V2-4	6	350	175	55	110	10.4	0.5	3RD FL--CONFERENCE	
V2-11	8	750	250	55	112	15.4	1.0	2ND FL--CONFERENCE	
V2-13	10	900	300	55	110	17.8	1.2	2ND FL--OFFICES--SOUTH	
V2-28	6	500	200	55	104	10.6	0.5	2ND FL--OFFICES--NW	
V2-29	8	750	250	55	112	15.4	1.0	2ND FL--OFFICE--SW	
V2-30	5	250	200	55	104	10.6	0.5	3RD FL--OFFICE--NW	

NOTES:
1. BASED ON TITUS MODEL DESV SINGLE-DUCT WITH HEATING WATER COIL TO MATCH EXISTING TERMINAL UNITS.
2. DOUBLE WALL, 1" INSULATION, SOLID METAL NON-PERFORATED INNER LINER.
3. CONTROLS AND PIPING SHALL BE RIGHT HAND OR LEFT HAND AS REQUIRED BY EXISTING CONDITIONS. CONFIRM PROPER SERVICE CLEARANCES IN THE FIELD PRIOR TO ORDERING.
4. HEATING CAPACITIES BASED ON 180 F EWT. WATER PRESSURE DROP OF 2.0' MAXIMUM.
5. 1.0" INLET STATIC AIR PRESSURE. MAXIMUM NOISE LEVEL: 25 NC RADIATED AND 25 NC DISCHARGE.
6. PRESSURE-INDEPENDENT DDC CONTROLS BY SIEMENS.
7. HEATING CONTROL VALVES BY SIEMENS TO BE 2-WAY.
8. REPLACE AUTO-BALANCING VALVE.
9. PROVIDE CONTROL TRANSFORMER AND 120V DISCONNECT SWITCH.

BAS CONTROLS--SEQUENCE OF OPERATION

ALL CONTROLS SHALL BE INCLUDED IN THE CONTRACT AND SHALL BE PROVIDED BY SIEMENS WITH NO SUBSTITUTIONS ALLOWED. CONTROLS SHALL INCLUDE ALL DDC CONTROLLERS, SOFTWARE, PROGRAMMING, SENSORS, DAMPERS, ACTUATORS, TRANSFORMERS, WIRING, INTERLOCKS AND OTHER DEVICES TO ENABLE THE SEQUENCE OF OPERATION. CONTROLS SHALL BE COORDINATED WITH THE EQUIPMENT PROVIDED.

NEW VAV TERMINAL UNITS V2-4, V2-11, V2-13, V2-28, V2-29, V2-30:

PROVIDE PRESSURE INDEPENDENT DDC CONTROLLER FOR NEW TERMINAL UNITS, 24 VOLT ACTUATOR. CONTROL POINTS TO INCLUDE AIRFLOW, INLET TEMPERATURE, DISCHARGE TEMPERATURE, MODULATING HEATING VALVE, AND SETPOINTS.

CONTROLLER WILL MAINTAIN ROOM SETPOINT FROM THE SPACE SENSOR. THE CONTROLS SHALL MODULATE THE AIR DAMPER FROM MAXIMUM TO MINIMUM POSITION ON A FALL IN SPACE TEMPERATURE BELOW SETPOINT. ON A FURTHER DROP IN SPACE TEMPERATURE, THE TWO-WAY HEATING COIL CONTROL VALVE SHALL MODULATE OPEN AS REQUIRED TO MAINTAIN SPACE HEATING SETPOINT.

WALL TEMPERATURE SENSOR TO BE WIRED WITH ADJUSTABLE SETPOINT DIAL.4

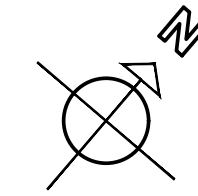
EXISTING VAV TERMINAL UNITS: RELOCATE AND REPLACE WALL TEMPERATURE SENSOR. PERFORM FUNCTIONAL TEST AND VERIFY OPERATION OF EXISTING VAV DAMPER AND HEATING COIL CONTROL VALVE.

MECHANICAL LEGEND	
SYMBOL	DESCRIPTION
----	ITEM TO BE REMOVED
10x6	10X6 DUCT
☒ CD9 250	9" SUPPLY DIFFUSER SUPPLYING 250 CFM
☒ CG12	CEILING RETURN GRILLE
—CWS/R	CHILLED WATER SUPPLY/RETURN PIPING
—HWS/R	HOT WATER SUPPLY/RETURN PIPING
—D	CONDENSATE DRAIN
V2-4	VAV TERMINAL UNIT #4, FROM RTU-2 SYSTEM
⊙	THERMOSTAT/SENSOR
┌	MANUAL VOLUME DAMPER
EXIST.	EXISTING
CD	CEILING DIFFUSER
CG	CEILING RETURN GRILLE

GENERAL MECHANICAL NOTES

- ALL WORK SHALL COMPLY WITH THE 2021 VIRGINIA UNIFORM STATEWIDE BUILDING CODE AND CURRENT VIRGINIA TECH DESIGN AND CONSTRUCTION STANDARDS.
- PROVIDE COMPLETE SUBMITTAL INFORMATION FOR EQUIPMENT AND DEVICES.
- RECORD ALL CHANGES IN THE WORK ON THE PROJECT RECORD DRAWINGS.
- PROVIDE DETAILED OPERATION AND MAINTENANCE MANUALS FOR ALL EQUIPMENT.
- MECHANICAL EQUIPMENT, MATERIALS AND LABOR SHALL INCLUDE A ONE YEAR WARRANTY.
- DRAWINGS INDICATE GENERAL LAYOUT OF PIPING, DUCTWORK AND EQUIPMENT. THE CONTRACTOR SHALL INVESTIGATE ALL STRUCTURAL, ELECTRICAL AND FINISH CONDITIONS AFFECTING THE WORK AND SHALL ARRANGE THE MECHANICAL WORK ACCORDINGLY. PROVIDE ADDITIONAL FITTINGS, OFFSETS AND TRANSITIONS AS REQUIRED TO PROPERLY COMPLETE THE WORK, WHETHER OR NOT SUCH COMPONENTS ARE INDICATED ON THE DRAWINGS.
- ALL WORK SHALL BE NEW AND IS INCLUDED IN THE CONTRACT UNLESS SPECIFICALLY NOTED TO BE EXISTING OR NOT IN CONTRACT.
- FIELD VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING BID, FABRICATION OR ORDERING OF EQUIPMENT.
- MOST EXISTING DUCTWORK AND PIPING IS NOT SHOWN ON THESE DRAWINGS. WHERE EXISTING DUCTWORK AND PIPING IS SHOWN, IT IS FOR INFORMATION PURPOSES AND IS BASED ON EXISTING DRAWINGS. VERIFY EXISTING CONSTRUCTION IN THE FIELD PRIOR TO BIDDING AND CONSTRUCTION. IF EXISTING DUCTWORK OR PIPING ARE SMALLER THAN INDICATED SIZE, NOTIFY THE A/E IMMEDIATELY.
- THE EXISTING BUILDING WILL BE OCCUPIED DURING THE ENTIRE PERIOD OF CONSTRUCTION. COORDINATE ALL WORK WITH THE OWNER IN ORDER TO MINIMIZE DISRUPTION OF THE USE OF THE EXISTING BUILDING.
- IN ADDITION TO DEMOLITION WORK INDICATED, PROVIDE MISCELLANEOUS SELECTIVE DEMOLITION OF EXISTING CONSTRUCTION AS REQUIRED FOR PROPER INSTALLATION OF THE PROPOSED CONSTRUCTION. REMOVE ALL COMPONENTS WHICH ARE NOT REQUIRED FOR THE PROPOSED CONSTRUCTION, INCLUDING HANGERS, ANCHORS, MOUNTING BRACKETS, AND OTHER MISCELLANEOUS COMPONENTS. THESE DRAWINGS DO NOT PURPORT TO SHOW ALL MISCELLANEOUS DEMOLITION.
- CONFIRM LOCATION OF EXISTING AND NEW ELECTRICAL PANELBOARDS. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL PANELBOARDS.
- COORDINATE ALL WORK WITH FIRE RATED ASSEMBLIES. PROVIDE FIRESTOPPING AT PENETRATIONS OF RATED ASSEMBLIES AND AT FLOORS. SEAL AIRTIGHT ALL PIPE AND DUCT PENETRATIONS OF NON-RATED ASSEMBLIES. ALL MATERIALS LOCATED IN RETURN AIR PLENUMS SHALL BE LISTED FOR INSTALLATION IN PLENUMS.
- COORDINATE INSTALLATION OF EQUIPMENT AND OTHER DEVICES TO PROVIDE ACCESS FOR SERVICING.
- PROVIDE ALL MISCELLANEOUS COMPONENTS REQUIRED FOR A COMPLETE AND PROPER INSTALLATION, WHETHER OR NOT THESE COMPONENTS ARE SPECIFIED HEREIN.
- METAL ACCESS DOORS SHALL BE PROVIDED AS REQUIRED FOR ALL COMPONENTS REQUIRING ACCESS. COORDINATE LOCATIONS WHERE ACCESS DOORS WILL BE REQUIRED FOR VALVES, DAMPERS, SENSORS OR OTHER DEVICES.
- DIAMETER OF FLEX DUCT SHALL MATCH DIFFUSER INLET SIZE. SUPPORT EVERY FOUR FEET WITH MAXIMUM OF 1" SAG. MAXIMUM LENGTH IS EIGHT FEET.
- INSTALL PIPING AND PIPE HANGERS PER ASME B31.9. SUPPORT PIPING AND SPACE HANGERS IN ACCORDANCE WITH VIRGINIA MECHANICAL CODE, TABLE 305.4.
- START-UP EQUIPMENT AND PERFORM FUNCTIONAL TEST IN HEATING AND COOLING MODES. PROGRAM THERMOSTATS AND INSTRUCT OWNER'S MAINTENANCE PERSONNEL ON THE OPERATION OF EQUIPMENT AND CONTROLS. PROVIDE FINAL FILTER CHANGE.

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SCHEDULES AND NOTES -
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