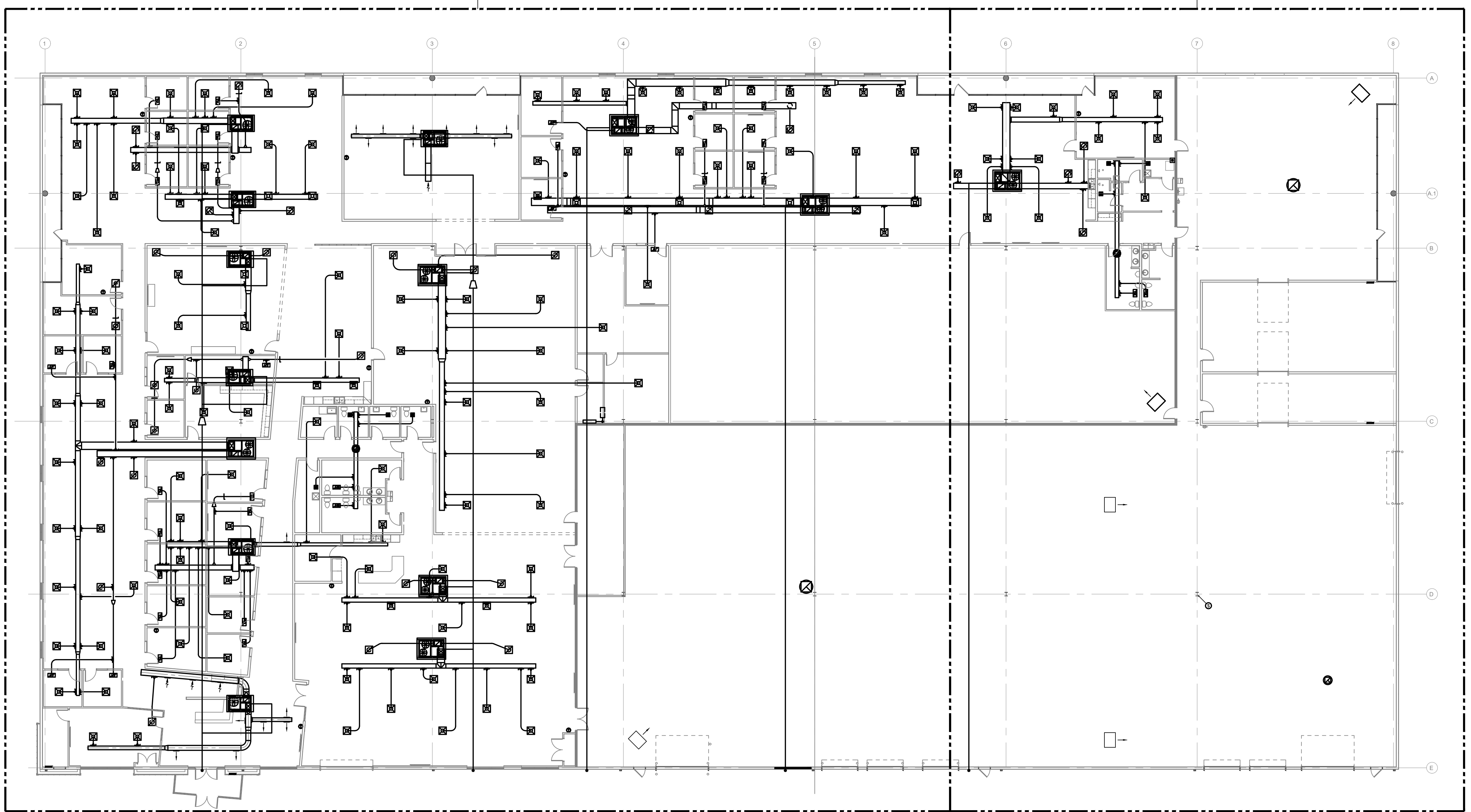
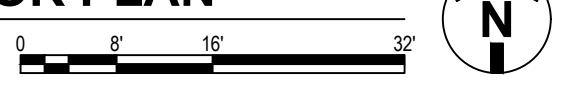


SEE SHEET M-1
FOR WORK IN
THIS AREA

SEE SHEET M-1
FOR WORK IN
THIS AREA



3 OVERALL HVAC FLOOR PLAN
1/16"=1'-0"



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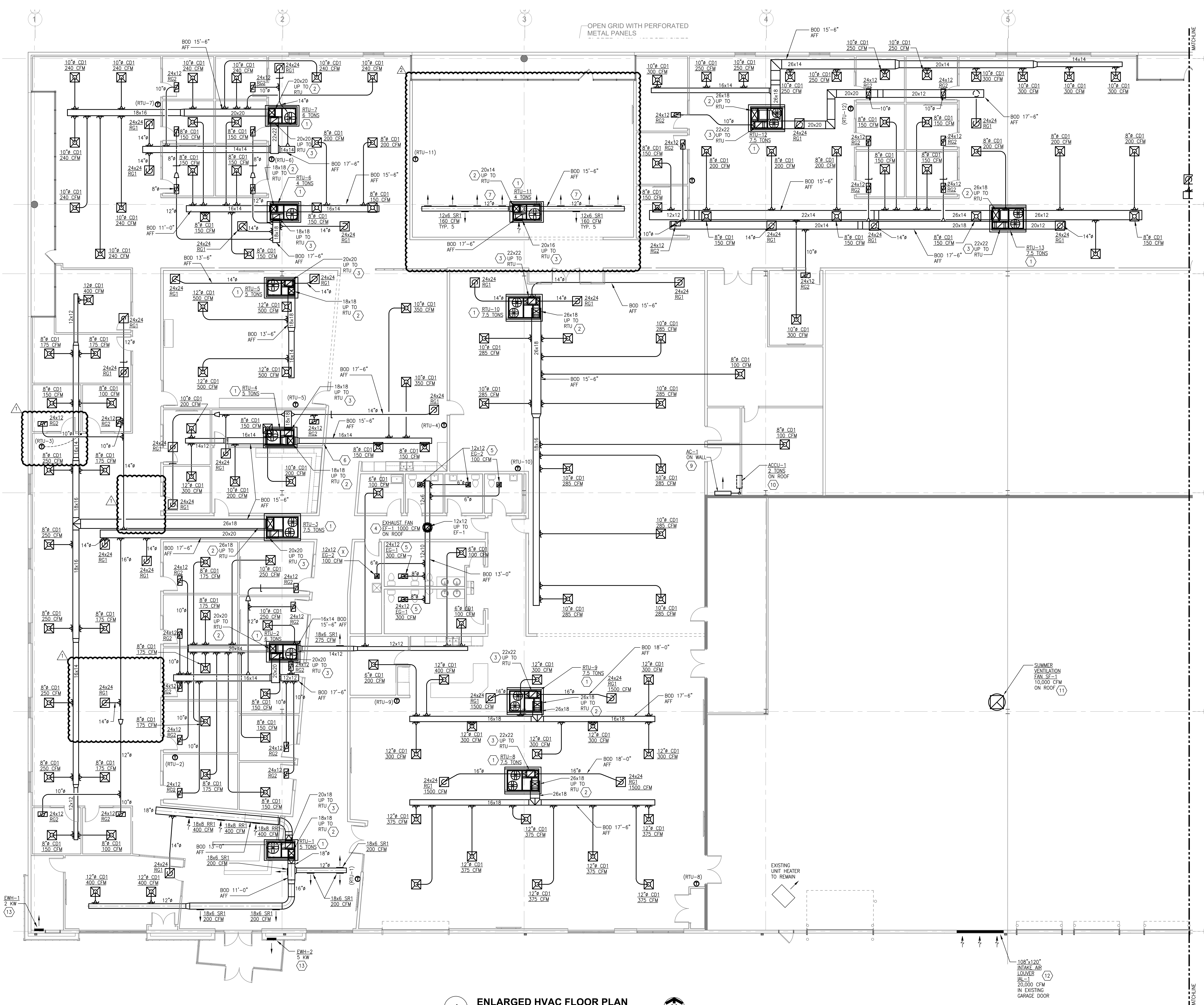
<p>OVERALL HVAC FLOOR PLAN</p> <p>HVAC RENOVATIONS FOR: PEOPLE WORKING COOPERATIVELY 3470 EAST KEMPER RD SHARONVILLE, OHIO 45241</p>		<p>PERFECTION GROUP</p>		<p>DATE: 9-23-25</p> <p>BY: CKB</p> <p>ISSUE/REVISION: ISSUED FOR PERMIT</p>
<p>JOB NO.: 25108</p> <p>SCALE: AS NOTED</p> <p>DATE: 9-15-25</p> <p>DRAWN BY: CKB</p> <p>APPROVED BY: CSL</p> <p>DRAWING NUMBER:</p> <p>M-1</p> <p>REVISION NO.: 0</p>				

KEYNOTES

- RTU MOUNTED ON 14" ROOF CURB. SEE SHEET M-7 FOR INSTALLATION DETAILS. SEE SHEET M-5 FOR GAS PIPING TO RTU.
- TRANSITION DUCT SIZE SHOWN TO RTU CONNECTION SIZE NEAR ROOF. ALL RECTANGULAR SUPPLY DUCTWORK UP TO RTU CONNECTION TO BE INTERNALLY LINED. ALL SUPPLY DUCTWORK SIZES SHOWN ON PLANS ARE OUTSIDE DIMENSIONS. ACTUAL DUCTWORK FREE AREA TO BE 2" SMALLER IN BOTH DIMENSIONS.
- TRANSITION DUCT SIZE SHOWN TO RTU CONNECTION SIZE NEAR ROOF. THE FIRST (2) SECTIONS OF RETURN DUCT TO BE INTERNALLY LINED. DUCTWORK SIZES SHOWN ON PLANS ARE OUTSIDE DIMENSIONS. ACTUAL DUCTWORK FREE AREA TO BE 2" SMALLER IN BOTH DIMENSIONS. DUCT SIZES TO REMAIN AS SHOWN PAST INTERNALLY LINED SECTION.
- EXHAUST FAN MOUNTED ON 14" ROOF CURB. DAMPER TRAY TO BE INSTALLED IN FAN INLET. TRANSITION DUCT TO FAN INLET SIZE AS REQUIRED AT ROOF.
- PROVIDE PLENUM BOX ON TOP OF GRILLE FOR DUCT CONNECTION.
- EXTERNALLY WRAP ROUND DUCT ABOVE ACOUSTIC CEILING. ONCE DUCT EXITS CEILING SPACE, DUCT TO REMAIN UN-INSULATED. EXPOSED DUCT TO BE PAINTED PER GC DIRECTION.
- ALL HORIZONTAL ROUND AND RECTANGULAR DUCTWORK IN THIS ROOM TO BE UN-INSULATED AND PAINTED PER GC DIRECTION. VERTICAL DUCTWORK TO BE INSULATED PER RTU NOTES.
- NOT USED.
- MOUNT AC-1 ON WALL AT 8'-0" AFF. PROVIDE CONDENSATE PUMP AND ROUTE PUMPED CONDENSATE PIPING TO WOP SINK IN JANITOR CLOSET NEAR COLUMN A7. SUPPORT PIPE FROM WALL AROUND FUTURE SPACE AND SLOPE TOWARDS WOP SINK. ENSURE PIPE IS ROUTED AT AN ADEQUATE HEIGHT TO PROVIDE SLOPE REQUIRED.
- MOUNT ON ROOF RAILS. ROUTE POWER CABLE AND LINESET BETWEEN AC-1 AND ACCU-1 AS REQUIRED.
- EXHAUST FAN MOUNTED ON 14" ROOF CURB. DAMPER TRAY TO BE INSTALLED IN FAN INLET. NO DUCTWORK TO BE INSTALLED ON FAN. PROVIDE BIRDSCREEN ON CURB INLET AT ROOF. FAN TO BE INTERLOCKED WITH SF-1 AND LOUVER IAL-1. BOTH FANS AND LOUVER DAMPER TO BE ENERGIZED WHEN COMMON THERMOSTAT SENSES SPACE TEMPERATURE ABOVE 80°F. FAN TO BE TIED INTO FIRE ALARM SYSTEM. COORDINATE WORK WITH GENERAL CONTRACTOR AND ELECTRICAL/FIRE ALARM CONTRACTORS.
- INSTALL LOUVER IN EXISTING GARAGE DOOR OPENING. FILL IN OPENING AROUND LOUVER AS REQUIRED AND FLASH TO WALL.
- ELECTRIC WALL HEATER TO BE SURFACE MOUNTED ON WALL. COORDINATE FINAL LOCATION WITH GC.

ALL SUPPLY DUCTWORK SIZES SHOWN ON PLANS ARE OUTSIDE DIMENSIONS. ACTUAL DUCTWORK FREE AREA TO BE 2" SMALLER IN BOTH DIMENSIONS.

THE FIRST (2) SECTIONS OF RETURN DUCT OFF RTU CONNECTION TO BE INTERNALLY LINED. DUCTWORK SIZES SHOWN ON PLANS ARE OUTSIDE DIMENSIONS. ACTUAL DUCTWORK FREE AREA TO BE 2" SMALLER IN BOTH DIMENSIONS. DUCT SIZES TO REMAIN AS SHOWN PAST INTERNALLY LINED SECTION.



4 ENLARGED HVAC FLOOR PLAN
1/8"=1'-0"

DATE	BY	ISSUE/REVISION
9-23-25	CKB	ISSUED FOR PERMIT
12-16-25	CKB	RTU-3 REVISION
1-2-25	CKB	RTU-11 REVISION

STATE OF OHIO
 WILLIAM JOHN ALBRECHT, JR.
 ENGINEER
 No. 10812

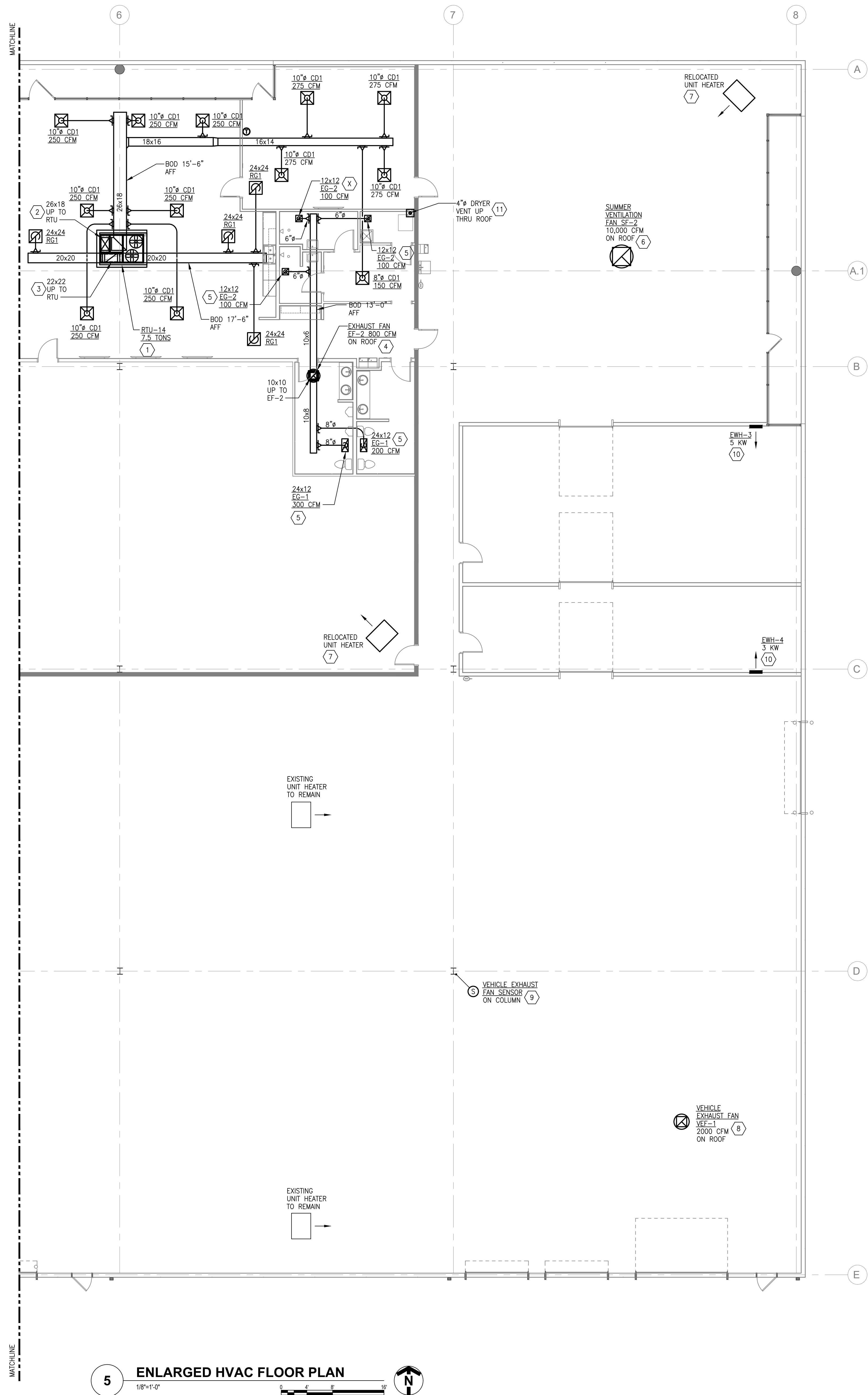
ESTD 1951
PERFECTION GROUP

HVAC FLOOR PLAN
 HVAC RENOVATIONS FOR:
 PEOPLE WORKING COOPERATIVELY
 3470 EAST KEMPER RD
 SHARONVILLE, OHIO 45241

JOB NO.: 25108
 SCALE: AS NOTED
 DATE: 9-15-25
 DRAWN BY: CKB
 APPROVED BY: CSL
 DRAWING NUMBER:
M-2
 REVISION NO.: 2

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KEYNOTES

- 1 RTU MOUNTED ON 14" ROOF CURB. SEE SHEET M-7 FOR INSTALLATION DETAILS. SEE SHEET M-5 FOR GAS PIPING TO RTU.
- 2 TRANSITION DUCT SIZE SHOWN TO RTU CONNECTION SIZE NEAR ROOF. ALL RECTANGULAR SUPPLY DUCTWORK UP TO RTU CONNECTION TO BE INTERNALLY LINED. ALL SUPPLY DUCTWORK SIZES SHOWN ON PLANS ARE OUTSIDE DIMENSIONS. ACTUAL DUCTWORK FREE AREA TO BE 2" SMALLER IN BOTH DIMENSIONS.
- 3 TRANSITION DUCT SIZE SHOWN TO RTU CONNECTION SIZE NEAR ROOF. THE FIRST (2) SECTIONS OF RETURN DUCT TO BE INTERNALLY LINED. DUCTWORK SIZES SHOWN ON PLANS ARE OUTSIDE DIMENSIONS. ACTUAL DUCTWORK FREE AREA TO BE 2" SMALLER IN BOTH DIMENSIONS. DUCT SIZES TO REMAIN AS SHOWN PAST INTERNALLY LINED SECTION.
- 4 EXHAUST FAN MOUNTED ON 14" ROOF CURB. DAMPER TRAY TO BE INSTALLED IN FAN INLET. TRANSITION DUCT TO FAN INLET SIZE AS REQUIRED AT ROOF.
- 5 PROVIDE PLENUM BOX ON TOP OF GRILLE FOR DUCT CONNECTION.
- 6 EXHAUST FAN MOUNTED ON 14" ROOF CURB. DAMPER TRAY TO BE INSTALLED IN FAN INLET. NO DUCTWORK TO BE INSTALLED ON FAN. PROVIDE BIRDSCREEN ON CURB INLET AT ROOF. FAN TO BE INTERLOCKED WITH SF-1 AND LOUVER IAL-1. BOTH FANS AND LOUVER DAMPER TO BE ENERGIZED WHEN COMMON THERMOSTAT SENSES SPACE TEMPERATURE ABOVE 60°F.
- 7 SEE SHEET M-5 FOR GAS PIPING AND FLEUE.
- 8 VEHICLE EXHAUST FAN MOUNTED ON 14" ROOF CURB. DAMPER TRAY TO BE INSTALLED IN FAN INLET. NO DUCTWORK TO BE INSTALLED ON FAN. PROVIDE BIRDSCREEN ON CURB INLET AT ROOF. FAN TO BE ENERGIZED WHEN CO LEVELS RISE ABOVE SETPOINT AS SENSED BY CO SENSOR ON COLUMN.
- 9 MOUNT CO SENSOR ON COLUMN AT 60" AFF.
- 10 ELECTRIC WALL HEATER TO BE RECESSED MOUNTED IN WALL. COORDINATE FINAL LOCATION WITH GC.
- 11 ROUTE UP THRU ROOF CURB. FLASH TO ROOF AS REQUIRED. TERMINATE WITH VERTICAL VENT CAP MIN. 30" ABOVE ROOF.


ALL SUPPLY DUCTWORK SIZES SHOWN ON PLANS ARE OUTSIDE DIMENSIONS. ACTUAL DUCTWORK FREE AREA TO BE 2" SMALLER IN BOTH DIMENSIONS.

THE FIRST (2) SECTIONS OF RETURN DUCT OFF RTU CONNECTION TO BE INTERNALLY LINED. DUCTWORK SIZES SHOWN ON PLANS ARE OUTSIDE DIMENSIONS. ACTUAL DUCTWORK FREE AREA TO BE 2" SMALLER IN BOTH DIMENSIONS. DUCT SIZES TO REMAIN AS SHOWN PAST INTERNALLY LINED SECTION.

DATE	BY	ISSUE/REVISION	
9-23-25	CKB	ISSUED FOR PERMIT	
DATE	BY	ISSUE/REVISION	



MODEL OR CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE BOARD OF PROFESSIONAL ENGINEERS OF THE STATE OF OHIO. THIS SEAL IS VALID ONLY WHEN USED ON THE ORIGINAL DRAWING. IT IS THE RESPONSIBILITY OF THE USER TO OBTAIN THE NECESSARY PERMISSIONS TO REPRODUCE OR TRANSMIT THIS SEAL OR ITS CONTENTS.



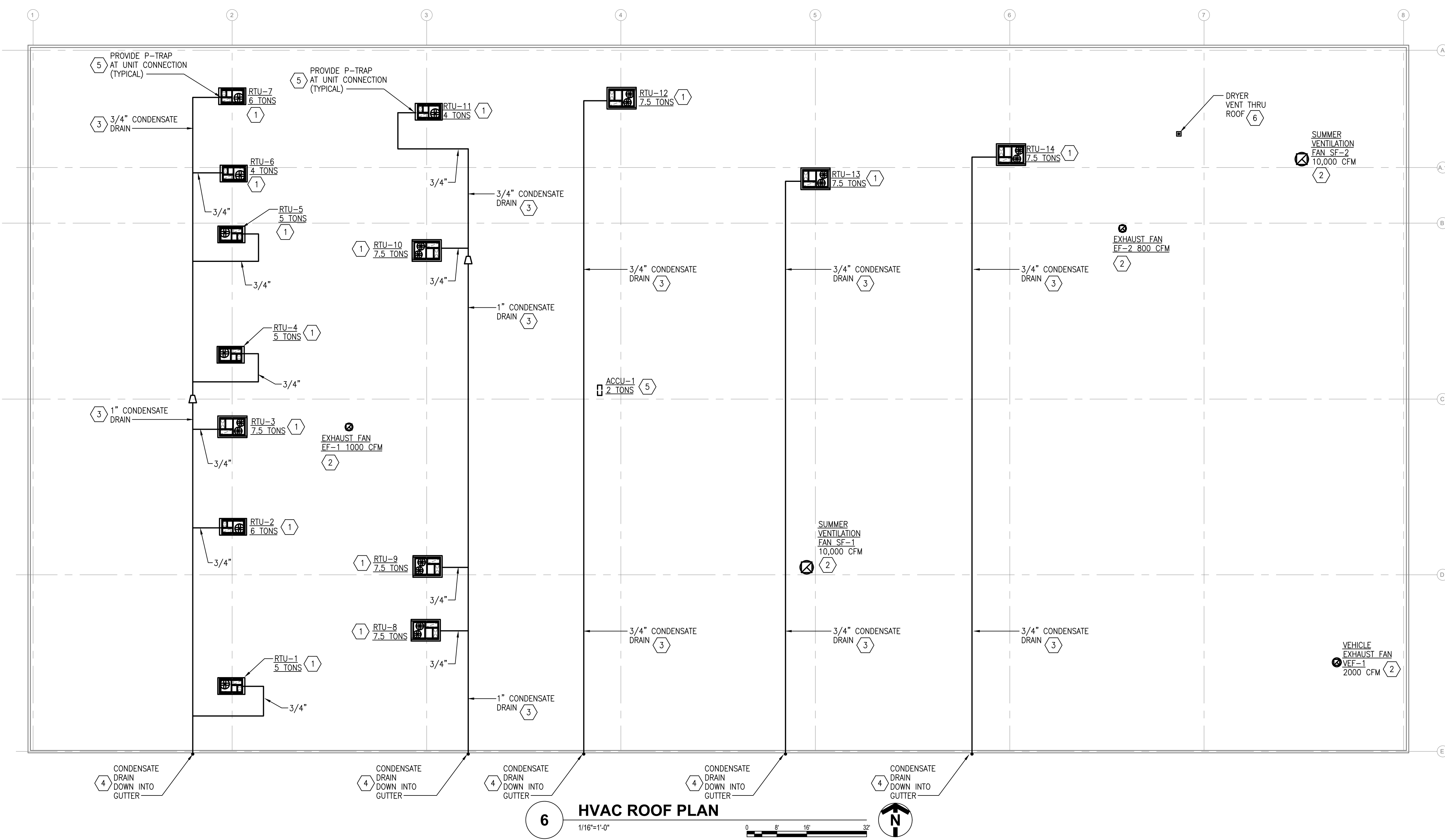
HVAC FLOOR PLAN
 HVAC RENOVATIONS FOR:
 PEOPLE WORKING COOPERATIVELY
 3470 EAST KEMPER RD
 SHARONVILLE, OHIO 45241

JOB NO.: 25108
 SCALE: AS NOTED
 DATE: 9-15-25
 DRAWN BY: CKB
 APPROVED BY: CSL
 DRAWING NUMBER:
M-3
 REVISION NO.: 0

5
ENLARGED HVAC FLOOR PLAN
 1/8"=1'-0"

KEYNOTES

- 1 RTU MOUNTED ON 14" TALL ROOF CURB. COORDINATE CURB WITH STANDING SEAM METAL ROOF AND FLASH TO ROOF AS REQUIRED. PROVIDE P-TRAP ON CONDENSATE CONNECTION. ROUTE TO GUTTER AS SHOWN. SEE GAS PIPING PLANS FOR GAS SUPPLY TO RTU.
- 2 EXHAUST FAN MOUNTED ON 14" TALL ROOF CURB. COORDINATE CURB WITH STANDING SEAM METAL ROOF AND FLASH TO ROOF AS REQUIRED.
- 3 CONDENSATE DRAIN ROUTED DOWN ROOF SLOPE TO GUTTER AS SHOWN.
- 4 ELBOW CONDENSATE DRAIN DOWN INTO GUTTER.
- 5 MOUNT ON ROOF RAILS.
- 6 PROVIDE ROOF CURB. TERMINATE 36" ABOVE ROOF WITH VENT CAP AND BIRDSCREEN.

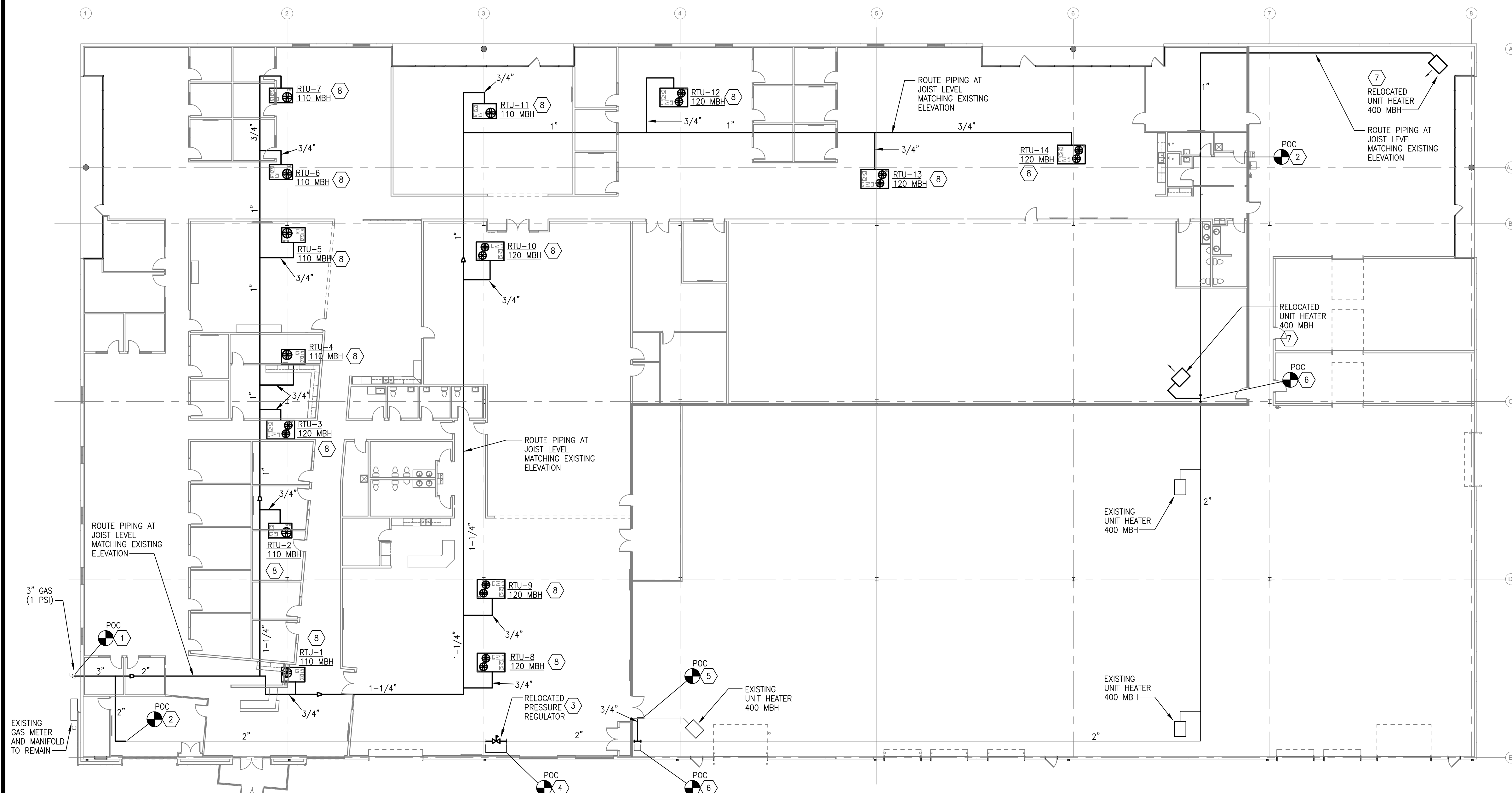


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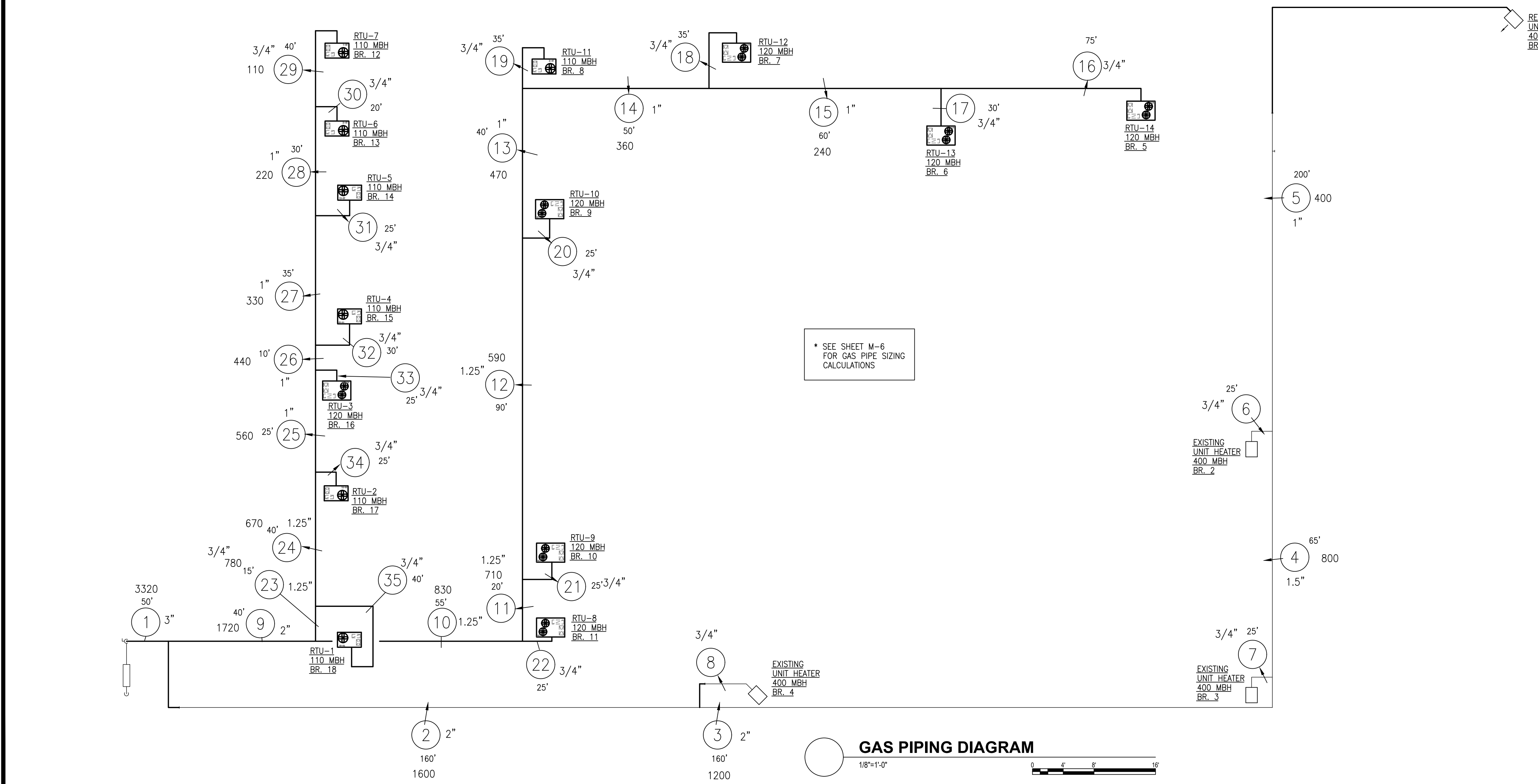
	STATE OF OHIO WILLIAM JOHN ALBRECHT, JR. LICENSE NO. 10865 MECHANICAL ENGINEER
ESTD 1951 PERFECTION GROUP	
HVAC ROOF PLAN HVAC RENOVATIONS FOR: PEOPLE WORKING COOPERATIVELY 3470 EAST KEMPER RD SHARONVILLE, OHIO 45241	
JOB NO.: 25108 SCALE: AS NOTED DATE: 9-15-25 DRAWN BY: CKB APPROVED BY: CSL DRAWING NUMBER: <div style="font-size: 2em; font-weight: bold; text-align: center;">M-4</div> REVISION NO.: 0	

KEYNOTES

- CONNECT NEW 3" GAS PIPING TO EXISTING SHUT-OFF VALVE. ROUTE UP WALL AND INTO BUILDING AT MIN. 15'-0" AFF.
- CONNECT NEW GAS PIPING TO EXISTING AT THIS POINT.
- INSTALL RELOCATED PRESSURE REGULATOR IN EXISTING GAS PIPING AT THIS LOCATION.
- CONNECT PIPING AS REQUIRED FOR REGULATOR INSTALLATION.
- CONNECT NEW GAS PIPING TO EXISTING AT THIS POINT.
- CONNECT NEW GAS PIPING TO EXISTING AT THIS LOCATION. CUT OUT SECTION OF EXISTING PIPE AS REQUIRED TO MAKE CONNECTION.
- UNIT HEATER RELOCATED FROM DEMO PHASE. MATCH EXISTING MOUNTING HEIGHT. CONNECT GAS PIPING AS REQUIRED. ROUTE RE-PURPOSED B-VENT FLUE THRU ROOF. MATCH EXISTING SIZE. TERMINATE MIN. 36" ABOVE ROOF LEVEL WITH EXISTING B-VENT CAP.
- ROUTE GAS PIPING UP TO RTU THRU ROOF WITH PITCH POCKET. FLASH TO ROOF WATER TIGHT. PROVIDE PRESSURE REGULATOR ON ROOF. SEE GAS CONNECTION DETAIL ON SHEET M-7.



7 GAS PIPING FLOOR PLAN
1/8"=1'-0"



GAS PIPING DIAGRAM
1/8"=1'-0"

DATE	ISSUE/REVISION
9-23-25	CKB
	ISSUED FOR PERMIT



MODEL CONTRACT FOR MECHANICAL WORK. THIS CONTRACT IS SUBJECT TO THE STANDARD CONTRACT CONDITIONS OF PRACTICE FOR MECHANICAL WORK, WHICH ARE AVAILABLE FROM THE NATIONAL ASSOCIATION OF MECHANICAL CONTRACTORS (NACM) AT WWW.NACM.ORG. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS WITHOUT WAIVER.



GAS PIPING FLOOR PLAN
HVAC RENOVATIONS FOR:
PEOPLE WORKING COOPERATIVELY
3470 EAST KEMPER RD
SHARONVILLE, OHIO 45241

JOB NO.: 25108
SCALE: AS NOTED
DATE: 9-15-25
DRAWN BY: CKB
APPROVED BY: CSL
M-5
REVISION NO.: 0

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SECTION	MBH	FEET	PIPE SIZE
1	3320	50	3
2	1600	160	2
3	1200	160	2
4	800	65	1.5
5	400	200	1
6	400	25	0.75
7	400	25	0.75
8	400	25	0.75
9	1720	40	2
10	830	55	1.25
11	710	20	1.25
12	590	90	1.25
13	470	40	1
14	360	50	1
15	240	60	1
16	120	75	0.75
17	120	30	0.75
18	120	35	0.75
19	110	35	0.75
20	120	25	0.75
21	120	25	0.75
22	120	25	0.75
23	780	15	1.25
24	670	40	1.25
25	560	25	1
26	440	10	1
27	330	35	1
28	220	30	1
29	110	40	0.75
30	110	20	0.75
31	110	25	0.75
32	110	30	0.75
33	120	25	0.75
34	110	25	0.75
35	110	40	0.75

Perfection Mechanical Services, Inc.

DELTA P Calculations:

JOB NAME: PWC

DATE: 8/19/2025

BY: CKB

Note: Keep Delta P Below 0.3 For Low Pressure Gas Pipe Below 2" and 5 PSIG Can Be Screwed Vs. Welded

FILL OUT ALL CELLS IN YELLOW

House Pressure: PSIG 1 Inches water column 27.70
 Maximum allowable drop = 6.93
 Note: pressure drops are given in inches of water column

Section #	Branch #	MBH	Pipe Length (feet)	Pipe Size (inches)	Gas Pressure (Delta P) BRANCH 1	Gas Pressure (Delta P) BRANCH 2	Gas Pressure (Delta P) BRANCH 3	Gas Pressure (Delta P) BRANCH 4	Gas Pressure (Delta P) BRANCH 5	Gas Pressure (Delta P) BRANCH 6	Gas Pressure (Delta P) BRANCH 7	Gas Pressure (Delta P) BRANCH 8	Gas Pressure (Delta P) BRANCH 9	Gas Pressure (Delta P) BRANCH 10	Gas Pressure (Delta P) BRANCH 11	Gas Pressure (Delta P) BRANCH 12	Gas Pressure (Delta P) BRANCH 13	Gas Pressure (Delta P) BRANCH 14	Gas Pressure (Delta P) BRANCH 15	Gas Pressure (Delta P) BRANCH 16	Gas Pressure (Delta P) BRANCH 17	Gas Pressure (Delta P) BRANCH 18	
1	1	3,320	50	3	5.8798	4.3894	3.8503	3.1417	5.4397	5.1710	4.8607	4.1896	3.2937	2.2834	1.9583	3.1413	3.0409	2.9231	2.5731	2.3813	1.5859	1.0821	
2	1	1,600	160	2	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	
3	1	1,200	160	2	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
4	1	800	65	1.5	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
5	1	400	200	1	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
6	2	1,600	160	2	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198
7	2	1,200	160	2	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
8	2	800	65	1.5	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
9	2	400	25	0.75	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
10	2	1,600	160	2	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198
11	2	1,200	160	2	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
12	2	800	65	1.5	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
13	2	400	25	0.75	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
14	3	1,600	160	2	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198
15	3	1,200	160	2	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
16	3	800	65	1.5	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
17	3	400	25	0.75	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
18	3	1,600	160	2	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198
19	3	1,200	160	2	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
20	3	800	65	1.5	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
21	3	400	25	0.75	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
22	3	1,600	160	2	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198
23	3	1,200	160	2	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
24	3	800	65	1.5	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
25	3	400	25	0.75	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
26	4	1,600	160	2	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198
27	4	1,200	160	2	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
28	4	800	65	1.5	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
29	4	400	25	0.75	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
30	4	1,600	160	2	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198
31	4	1,200	160	2	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
32	4	800	65	1.5	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
33	4	400	25	0.75	3.149206	1.259683	0.708571	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
34	4	1,600	160	2	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198	0.223198
35	4	1,200	160	2	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123	1.658841	1.259683	0.708571	0.539123
Totals	35	18	3,320		5.87982	4.38947	3.850294	3.141722	5.439691	5.170959	4.860704	4.189605	3.293697	2.283403	1.958280	3.141263	3.040903	2.923098	2.573088	2.381317			

ROOM NUMBER	ROOM NAME	Az AREA	OCCUPANCY CLASSIFICATION	TABLE 6.2.2.1 OCCUPANT DENSITY PEOPLE/1000 SF	Pz POPULATION	TABLE 6.2.2.1 Rp PEOPLE OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR CALC	Vbz OUTSIDE AIR CFM	Voz OUTSIDE AIR REQUIRED	DESIGN CFM	OUTSIDE AIR % REQUIRED	SYSTEM % OUTSIDE AIR	ACTUAL OUTSIDE AIR CFM
0	OFFICE	105	OFFICE SPACE	5	1	5	0.06	6.3	11	12	175	7%	11%	20
	OFFICE	105	OFFICE SPACE	5	1	5	0.06	6.3	11	12	150	8%	11%	17
	OPEN OFFICE	2,180	OFFICE SPACE	5	11	5	0.06	130.8	186	186	1650	11%	11%	186
	OFFICE	105	OFFICE SPACE	5	1	5	0.06	6.3	11	12	175	7%	11%	20
	OFFICE	105	OFFICE SPACE	5	1	5	0.06	6.3	11	12	150	8%	11%	17
	OFFICE	235	OFFICE SPACE	5	2	5	0.06	14.1	24	25	350	7%	11%	36
	OFFICE	225	OFFICE SPACE	5	2	5	0.06	13.5	24	24	300	7%	11%	36
TOTALS	WORKROOM	3,060			19				279	283	3,000			338

OUTSIDE VENTILATION AIR DESIGN PER ASHRAE STANDARD 62.1-2016 IN ACCORDANCE WITH OMC SECTION 403.3 AND IMC SECTION 403.3

Vbz = BREATHING ZONE OUTDOOR AIR FLOW
 Rp = OUTDOOR AIR FLOW RATE PER PERSON (TABLE 6-1)
 Pz = ZONE POPULATION - MAXIMUM OCCUPANCY (TABLE 6-1)
 Ra = OUTDOOR AIR FLOW RATE PER UNIT AREA (TABLE 6-1)
 Az = ZONE FLOOR AREA

Voz = ZONE OUTDOOR AIR FLOW
 Vbz = BREATHING ZONE OUTDOOR AIR FLOW (CALCULATED)
 Ez = ZONE AIR DISTRIBUTION EFFECTIVENESS (TABLE 6-2)
 Ez = 0.80 (BASED ON CEILING SUPPLY, CEILING RETURN)
 Ez = 1.0 (BASED ON CEILING SUPPLY, LOW RETURN)

** TRANSFER AIR IS PERMITTED TO PROVIDE MAKE-UP AIR TO KITCHENS, BATHS, TOILET ROOMS, ELEVATORS, AND SMOKING LOUNGES. THE AMOUNT OF TRANSFER AIR AND EXHAUST AIR SHALL BE SUFFICIENT TO PROVIDE FLOW RATES AS SPECIFIED IN TABLE 403.3. DOORS SHALL BE UNDERCUT 1", OR DOOR GRILLES OF SUFFICIENT SIZE SHALL BE PROVIDED BY GENERAL CONTRACTOR.

ROOM NUMBER	ROOM NAME	Az AREA	OCCUPANCY CLASSIFICATION	TABLE 6.2.2.1 OCCUPANT DENSITY PEOPLE/1000 SF	Pz POPULATION	TABLE 6.2.2.1 Rp PEOPLE OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR CALC	Vbz OUTSIDE AIR CFM	Voz OUTSIDE AIR REQUIRED	DESIGN CFM	OUTSIDE AIR % REQUIRED	SYSTEM % OUTSIDE AIR	ACTUAL OUTSIDE AIR CFM
0	MEETING	100	CONFERENCE/MEETING	50	4	5	0.06	6	26	26	300	9%	19%	56
	MEETING	100	CONFERENCE/MEETING	50	6	5	0.06	6	36	36	400	9%	19%	74
	STORAGE	185	STORAGE ROOMS	0	0	0	0.12	22.2	22	23	150	15%	19%	28
	WORKROOM	330	OFFICE SPACE	5	2	5	0.06	19.8	30	30	500	6%	19%	93
	BREAK ROOM	745	BREAK ROOM	25	30	5	0.06	44.7	195	195	1050	19%	19%	195
TOTALS		1,460			42				309	310	2,400			446

OUTSIDE VENTILATION AIR DESIGN PER ASHRAE STANDARD 62.1-2016 IN ACCORDANCE WITH OMC SECTION 403.3 AND IMC SECTION 403.3

Vbz = BREATHING ZONE OUTDOOR AIR FLOW
 Rp = OUTDOOR AIR FLOW RATE PER PERSON (TABLE 6-1)
 Pz = ZONE POPULATION - MAXIMUM OCCUPANCY (TABLE 6-1)
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 Az = ZONE FLOOR AREA

Voz = ZONE OUTDOOR AIR FLOW
 Vbz = BREATHING ZONE OUTDOOR AIR FLOW (CALCULATED)
 Ez = ZONE AIR DISTRIBUTION EFFECTIVENESS (TABLE 6-2)
 Ez = 0.80 (BASED ON CEILING SUPPLY, CEILING RETURN)
 Ez = 1.0 (BASED ON CEILING SUPPLY, LOW RETURN)

** TRANSFER AIR IS PERMITTED TO PROVIDE MAKE-UP AIR TO KITCHENS, BATHS, TOILET ROOMS, ELEVATORS, AND SMOKING LOUNGES. THE AMOUNT OF TRANSFER AIR AND EXHAUST AIR SHALL BE SUFFICIENT TO PROVIDE FLOW RATES AS SPECIFIED IN TABLE 403.3. DOORS SHALL BE UNDERCUT 1", OR DOOR GRILLES OF SUFFICIENT SIZE SHALL BE PROVIDED BY GENERAL CONTRACTOR.

ROOM NUMBER	ROOM NAME	Az AREA	OCCUPANCY CLASSIFICATION	TABLE 6.2.2.1 OCCUPANT DENSITY PEOPLE/1000 SF	Pz POPULATION	TABLE 6.2.2.1 Rp PEOPLE OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR CALC	Vbz OUTSIDE AIR CFM	Voz OUTSIDE AIR REQUIRED	DESIGN CFM	OUTSIDE AIR % REQUIRED	SYSTEM % OUTSIDE AIR	ACTUAL OUTSIDE AIR CFM
0	TRAINING ROOM	1,075	CONFERENCE/MEETING	50	30	5	0.06	64.5	215	215	2,000	11%	11%	215
TOTALS		1,075			30				215	215	2,000			215

OUTSIDE VENTILATION AIR DESIGN PER ASHRAE STANDARD 62.1-2016 IN ACCORDANCE WITH OMC SECTION 403.3 AND IMC SECTION 403.3

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 Rp = OUTDOOR AIR FLOW RATE PER PERSON (TABLE 6-1)
 Pz = ZONE POPULATION - MAXIMUM OCCUPANCY (TABLE 6-1)
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ROOM NUMBER	ROOM NAME	Az AREA	OCCUPANCY CLASSIFICATION	TABLE 6.2.2.1 OCCUPANT DENSITY PEOPLE/1000 SF	Pz POPULATION	TABLE 6.2.2.1 Rp PEOPLE OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR CALC	Vbz OUTSIDE AIR CFM	Voz OUTSIDE AIR REQUIRED	DESIGN CFM	OUTSIDE AIR % REQUIRED	SYSTEM % OUTSIDE AIR	ACTUAL OUTSIDE AIR CFM
0	OPEN OFFICE/HUDDLE	1,375	OFFICE SPACE	5	7	5	0.06	82.5	118	118	1800	7%	9%	156
	OFFICE	120	OFFICE SPACE	5	1	5	0.06	7.2	12	13	150	9%	13	13
	OFFICE	120	OFFICE SPACE	5	1	5	0.06	7.2	12	13	150	9%	13	13
	OFFICE	120	OFFICE SPACE	5	1	5	0.06	7.2	12	13	150	9%	13	13
	OFFICE	120	OFFICE SPACE	5	1	5	0.06	7.2	12	13	150	9%	13	13
TOTALS		1,855			11				166	170	2,400			208

OUTSIDE VENTILATION AIR DESIGN PER ASHRAE STANDARD 62.1-2016 IN ACCORDANCE WITH OMC SECTION 403.3 AND IMC SECTION 403.3

Vbz = BREATHING ZONE OUTDOOR AIR FLOW
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ROOM NUMBER	ROOM NAME	Az AREA	OCCUPANCY CLASSIFICATION	TABLE 6.2.2.1 OCCUPANT DENSITY PEOPLE/1000 SF	Pz POPULATION	TABLE 6.2.2.1 Rp PEOPLE OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR CALC	Vbz OUTSIDE AIR CFM	Voz OUTSIDE AIR REQUIRED	DESIGN CFM	OUTSIDE AIR % REQUIRED	SYSTEM % OUTSIDE AIR	ACTUAL OUTSIDE AIR CFM
0	OPEN OFFICE	1,050	OFFICE SPACE	5	6	5	0.06	63	93	93	1440	6%	7%	102
	OPEN OFFICE	390	OFFICE SPACE	5	2	5	0.06	23.4	33	34	480	7%	7%	34
	OFFICE	120	OFFICE SPACE	5	1	5	0.06	7.2	12	13	240	5%	7%	17
	OFFICE	120	OFFICE SPACE	5	1	5	0.06	7.2	12	13	240	5%	7%	17
TOTALS		1,680			10				151	153	2,400			170

OUTSIDE VENTILATION AIR DESIGN PER ASHRAE STANDARD 62.1-2016 IN ACCORDANCE WITH OMC SECTION 403.3 AND IMC SECTION 403.3

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 Rp = OUTDOOR AIR FLOW RATE PER PERSON (TABLE 6-1)
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 Vbz = BREATHING ZONE OUTDOOR AIR FLOW (CALCULATED)
 Ez = ZONE AIR DISTRIBUTION EFFECTIVENESS (TABLE 6-2)
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 Ez = 1.0 (BASED ON CEILING SUPPLY, LOW RETURN)

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ROOM NUMBER	ROOM NAME	Az AREA	OCCUPANCY CLASSIFICATION	TABLE 6.2.2.1 OCCUPANT DENSITY PEOPLE/1000 SF	Pz POPULATION	TABLE 6.2.2.1 Rp PEOPLE OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR	TABLE 6.2.2.1 Ra AREA OUTSIDE AIR CALC	Vbz OUTSIDE AIR CFM	Voz OUTSIDE AIR REQUIRED	DESIGN CFM	OUTSIDE AIR % REQUIRED	SYSTEM % OUTSIDE AIR	ACTUAL OUTSIDE AIR CFM
0	COMMUNITY ROOM	4,500	CONFERENCE/MEETING	50	180	5	0.06	270	1170	1170	5900	20%	20%	1170
	PANTRY	140	STORAGE ROOMS	0	0	0	0.12	16.8	17	17	100	17%	20%	20
TOTALS		4,640			180				1,187	1,187	6,000			1,190

OUTSIDE VENTILATION AIR DESIGN PER ASHRAE STANDARD 62.1-2016 IN ACCORDANCE WITH OMC SECTION 403.3 AND IMC SECTION 403.3

Vbz = BREATHING ZONE OUTDOOR AIR FLOW
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0	INNOVATION CENTER	3,650	CONFERENCE/MEETING	50	60	5	0.06	219	519	519	3000	17%	17%	519
TOTALS		3,650			60				519	519	3,000			519

OUTSIDE VENTILATION AIR DESIGN PER ASHRAE STANDARD 62.1-2016 IN ACCORDANCE WITH OMC SECTION 403.3 AND IMC SECTION 403.3

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0	WHOLE HOME SHOWROOM	1,600	CONFERENCE/MEETING	50	20	5	0.06	96	196	196	1600	12%	12%	196
TOTALS		1,600			20				196	196	1,600			196

OUTSIDE VENTILATION AIR DESIGN PER ASHRAE STANDARD 62.1-2016 IN ACCORDANCE WITH OMC SECTION 403.3 AND IMC SECTION 403.3

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0	OFFICE	175	OFFICE SPACE	5	1	5	0.06	10.3	16	16	300	5%	12%	37
	OPEN OFFICE	430	OFFICE SPACE	5	3	5	0.06	25.8	41	41	1000	4%	12%	124
	OFFICE	100	OFFICE SPACE	5	1	5	0.06	6	11	11	250	4%	12%	31
	MEETING	100	CONFERENCE/MEETING	50	5	5	0.06	6	31	31	250	12%	12%	31
	OPEN OFFICE	615	OFFICE SPACE	5	4	5	0.06	36.9	57	57	1200	5%	12%	149
TOTALS		1,420			14				155	156	3,000			372

OUTSIDE VENTILATION AIR DESIGN PER ASHRAE STANDARD 62.1-2016 IN ACCORDANCE WITH OMC SECTION 403.3 AND IMC SECTION 403.3

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0	OFFICE	120	OFFICE SPACE	5	1	5	0.06	7.2	12	13	150	9%	19%	28
	MEETING	120	CONFERENCE/MEETING	50	4	5	0.06	7.2	27	28	150	19%	19%	28
	OPEN OFFICE/HUDDLE	3,545	OFFICE SPACE	5	18	5	0.06	212.7	303	303	1800	17%	19%	338
	OFFICE	120	OFFICE SPACE	5	1	5	0.06	7.2	12	13	150	9%	19%	28
	OFFICE	120	OFFICE SPACE	5	1	5	0.06	7.2	12	13	150	9%	19%	28
	MEETING	120	CONFERENCE/MEETING	50	4	5	0.06	7.2	27	28	150	19%	19%	28
	MEETING	120	CONFERENCE/MEETING	50	4	5	0.06	7.2	27	28	150	19%	19%	28
	CONFERENCE	200	CONFERENCE/MEETING	50	8	5	0.06	12	52	52	300	17%	16%	56
TOTALS		4,465			41									