

MECHANICAL GENERAL NOTES:

MECHANICAL EQUIPMENT NOTES:

MECHANICAL SYMBOLS AND ABBREVIATIONS

- 1. THIS CONTRACTOR SHALL REVIEW ENTIRE SET OF CONTRACT DOCUMENTS: INCLUDING BUT NOT NECESSARILY LIMITED TO ALL ARCHITECTURAL, ALL STRUCTURAL, ALL MECHANICAL, ALL ELECTRICAL DRAWINGS AND ENTIRE PROJECT MANUAL...

- EMPLOY OTHER SUBCONTRACTOR(S) AS REQUIRED BY ROOF MANUFACTURER'S REPRESENTATIVE SO AS NOT TO VOID VA'S ROOF WARRANTY.)

- 1. ALL EQUIPMENT/DEVICES SHALL BE AND OF FIRST RATE QUALITY (UNLESS OTHERWISE SPECIFIED) AND IS TO BEAR THE APPROPRIATE AGA, CSA OR UL APPROVED LABELS, LISTINGS, AND CERTIFICATIONS FOR THE SPECIFIC DESIGN PURPOSE.

- AD ACCESS DOOR
- A.F.F. ABOVE FINISHED FLOOR
- BAS BUILDING AUTOMATION SYSTEM

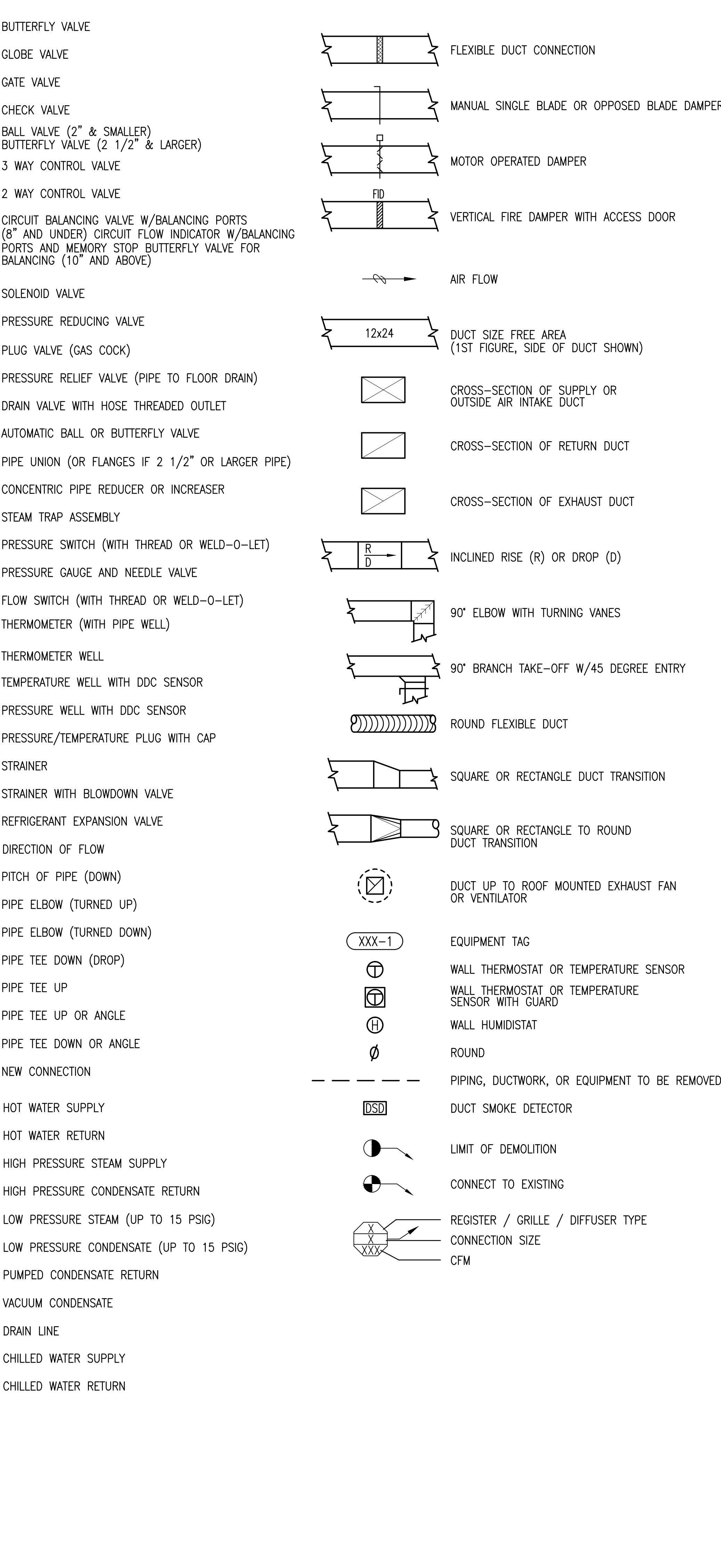


Table with 2 columns: Category and Date. Rows include ISSUED FOR BID, 100% CONSTRUCTION DOCUMENTS, 95% CONSTRUCTION DOCUMENTS, 90% CONSTRUCTION DOCUMENTS, 85% CONSTRUCTION DOCUMENTS, and Revisions.

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ARCHITECT + ENGINEERS: Bancroft Architects + Engineers. 700 Nicholas Blvd., Suite 300, Elk Grove Village, IL 60007. Includes website and phone numbers.

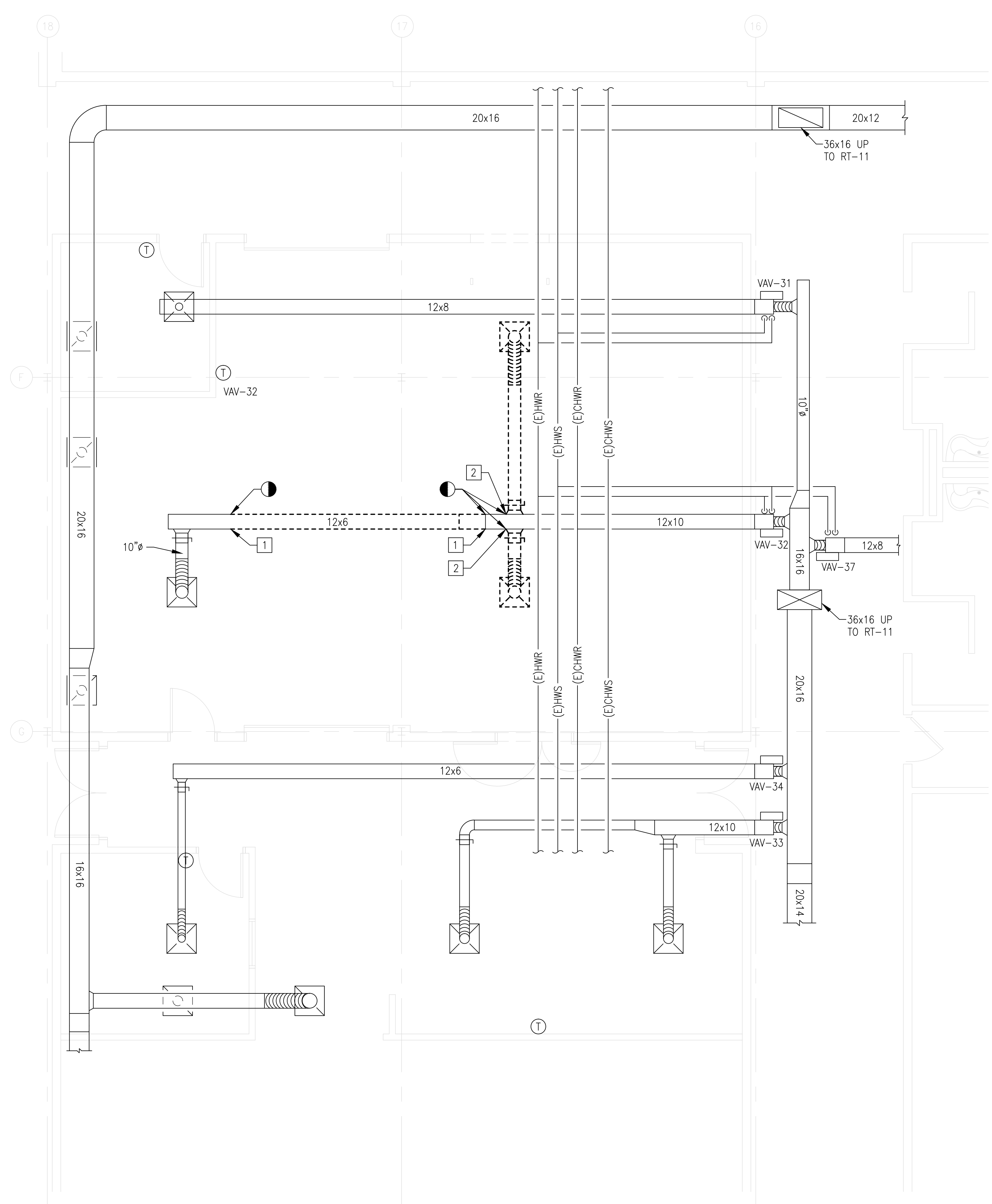
Table with 2 columns: Drawing Title and Project Title. Drawing Title: MECHANICAL NOTES, SYMBOLS, AND ABBREVIATIONS. Project Title: VA - HINES, CONSOLIDATED MAIL OUTPATIENT PHARMACY NEW SERVER ROOM.

Table with 2 columns: Drawing Number and Project Number. Drawing Number: M-001. Project Number: 796-16-018.

Table with 2 columns: Date and Checked/Drawn. Date: 05/05/2017. Checked: SAT, Drawn: JWK.

Office of Construction and Facilities Management. Department of Veterans Affairs.

one eighth inch = one foot  
 one quarter inch = one foot  
 three eighths inch = one foot  
 one half inch = one foot  
 three quarters inch = one foot  
 one inch = one foot  
 one and one half inches = one foot  
 three inches = one foot  
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 10:15:25 AM  
 5-05-17  
 10:15:25 AM  
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1 MECHANICAL DEMOLITION PLAN  
 1/4"=1'-0" 0 1' 2' 4' 8'

**MECHANICAL DEMOLITION GENERAL NOTES**

- CONTRACTOR SHALL REPAIR AND/OR REPLACE ALL INSULATION AT EXISTING SHEET METAL DUCTWORK WHICH BECOMES DAMAGED DURING CONSTRUCTION ACTIVITIES.
- REMOVE ALL ASSOCIATED CLAMPS, HANGERS, SUPPORTS, ETC., ASSOCIATED WITH MECHANICAL DUCTWORK AND PIPING REMOVAL.

**X MECHANICAL DEMOLITION KEY NOTES**

- DEMO AND REMOVE SUPPLY DIFFUSERS, ALL ASSOCIATED COMPONENTS, AND DUCTWORK AS SHOWN AND PREPARE FOR NEW CONNECTION.
- DEMO AND REMOVE SUPPLY DIFFUSERS, ALL ASSOCIATED COMPONENTS, AND DUCTWORK AS SHOWN CAP AND SEAL DUCTWORK AT MAIN.

ISSUED FOR BID	05/05/17
100% CONSTRUCTION DOCUMENTS	03/09/17
95% CONSTRUCTION DOCUMENTS	02/01/17
95% CONSTRUCTION DOCUMENTS	12/01/16
65% CONSTRUCTION DOCUMENTS	09/02/16
Revisions:	Date


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 Bancroft-AE Project No. 16-114

Drawing Title <b>MECHANICAL DEMOLITION PLAN</b>
Approved Project Director

Project Title <b>VA - HINES, CONSOLIDATED MAIL OUTPATIENT PHARMACY NEW SERVER ROOM</b>
Location 1ST AVENUE, HINES, IL 60141
Date 05/05/2017
Checked SAT
Drawn JWK

Project Number 796-16-018
Building Number 37
Drawing Number <b>MD-101</b>

VA CONTRACT NO. VA7975-16-O-0024

Office of Construction and Facilities Management

Department of Veterans Affairs

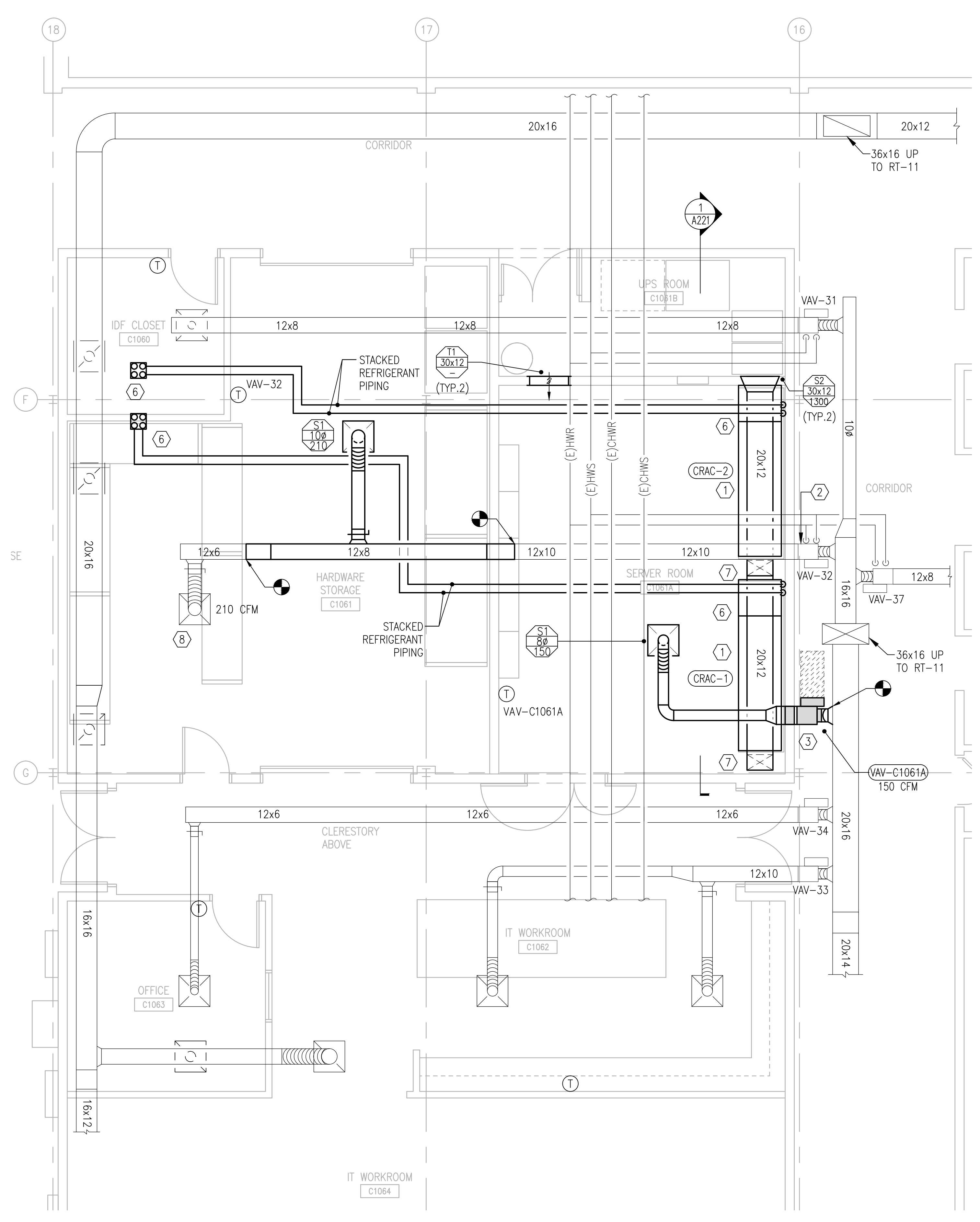
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one inch = one foot  
three quarters inch = one foot  
one half inch = one foot  
three eighths inch = one foot  
one quarter inch = one foot  
three eighths inch = one foot  
one eighth inch = one foot  
one eighth inch = one foot

### MECHANICAL GENERAL NOTES

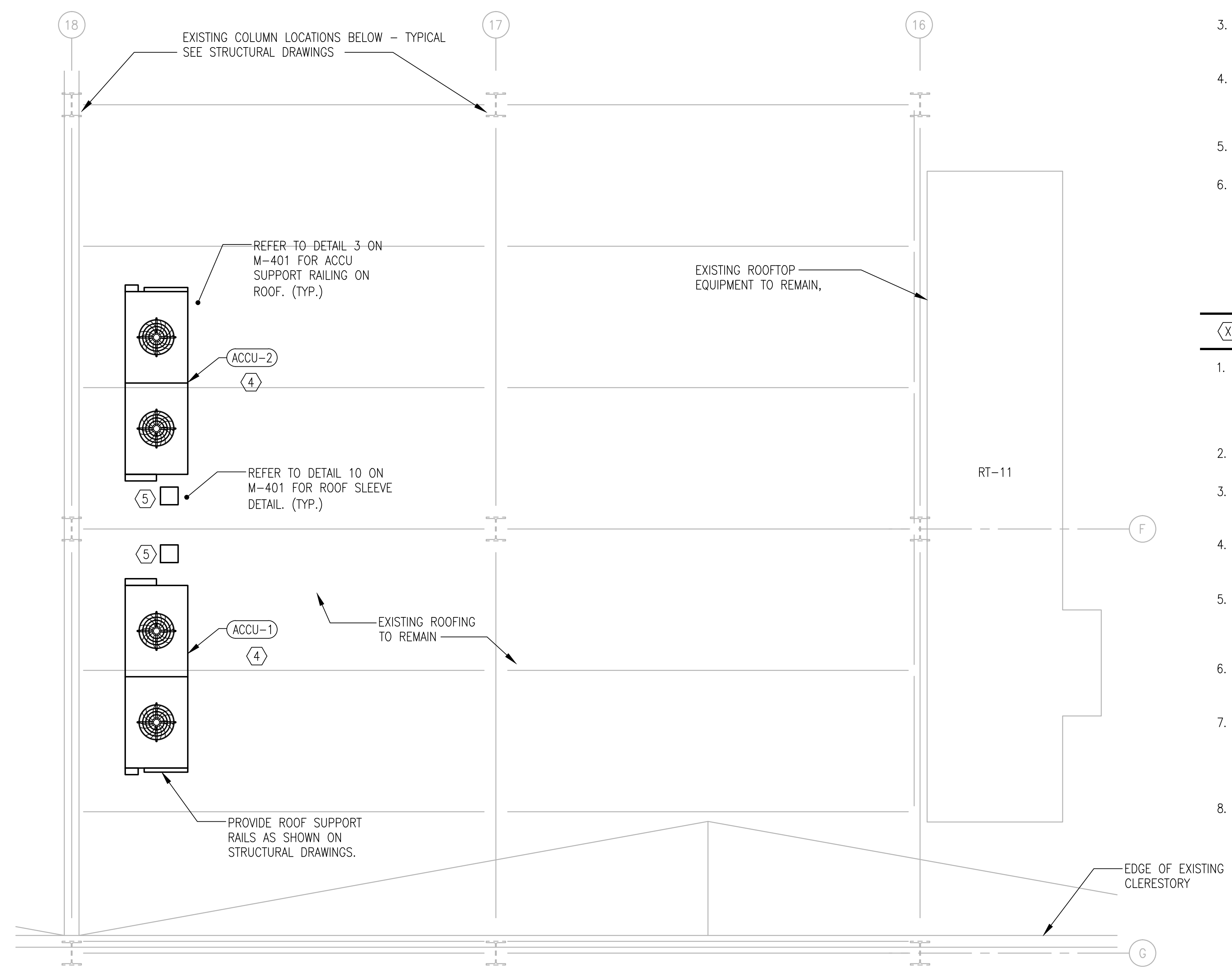
- COORDINATE CEILING MOUNTED GRILLS AND DIFFUSERS WITH SPRINKLER HEADS, LIGHTING FIXTURES AND ALL CEILING MOUNTED DEVICES. REFER TO ARCHITECTURAL CEILING GRID DRAWINGS FOR LOCATIONS.
- CLEAN AND SEAL ALL EXISTING DUCTWORK THAT WILL BE REUSED.
- CONTRACTOR SHALL REPAIR AND/OR REPLACE ALL INSULATION AT EXISTING SHEET METAL DUCTWORK WHICH BECOMES DAMAGED DURING CONSTRUCTION ACTIVITIES.
- CEILING ACCESS SHALL BE PROVIDED FOR ALL HVAC EQUIPMENT AND COMPONENTS LOCATED ABOVE THE CEILING THAT REQUIRE OPERATING, CLEANING, SERVICING, MAINTENANCE, AND CALIBRATION.
- PROVIDE BALANCING DAMPERS AT ALL SUPPLY DIFFUSER AND RETURN GRILLES TAKE-OFF.
- FURNISH AND INSTALL DRAIN PAN FROM 20 GAUGE STAINLESS STEEL. INSTALL DRAIN PAN UNDER ALL PIPING LOCATED IN SERVER ROOM. EXTEND DRAIN PAN THE ENTIRE WIDTH OF PIPE. PITCH DRAIN PAN IN TWO DIRECTIONS TOWARDS OUTLET WITH A SLOPE OF 1/8" PER FOOT. ROUTE PIPE DRAIN TO NEARBY FLOOR DRAIN.

### (X) MECHANICAL KEY NOTES

- FURNISH AND INSTALL COMPUTER ROOM AIR CONDITIONER UNIT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES. ROUTE 3/4" CONDENSATE LINE FROM CRAC UNIT TO NEARBY FLOOR DRAIN APPROXIMATELY 80 FEET.
- VAV-32 WILL BE ADJUSTED TO DELIVER THE AIRFLOWS SHOWN.
- FURNISH AND INSTALL LOW LEAK DAMPERS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. DAMPERS SHALL BE INTERLOCKED WITH FIRE SYSTEM.
- FURNISH AND INSTALL AIR COOLED CONDENSING UNITS PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES. (TYP.)
- ROUTE DUAL CIRCUIT REFRIGERANT LINES FROM AIR COOLED CONDENSING UNIT DOWN TO ITS ASSOCIATED CRAC UNIT INSIDE PIPE PORTAL. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATION.
- STACK DUAL REFRIGERANT LINE AND ROUTE FROM AIR COOLED CONDENSING UNIT TO ITS ASSOCIATED CRAC UNIT. INSULATE PER SPECIFICATION.
- PROVIDE 24" HIGH PLENUM WITH FRONT AND SIDE DISCHARGE FROM CRAC UNIT MANUFACTURER. CONTRACTOR TO FABRICATE 20x12 DUCT TO CONNECT TO SIDE OF 36" HIGH PLENUM. PROVIDE ALL NECESSARY TRANSITION TO ACCOMMODATE CONNECTION.
- EXISTING REGISTER/GRILLE TO REMAIN BALANCE CFM AS INDICATED.



1 PARTIAL MECHANICAL FLOOR PLAN  
1/4"=1'-0"



2 PARTIAL MECHANICAL ROOF PLAN  
1/4"=1'-0"

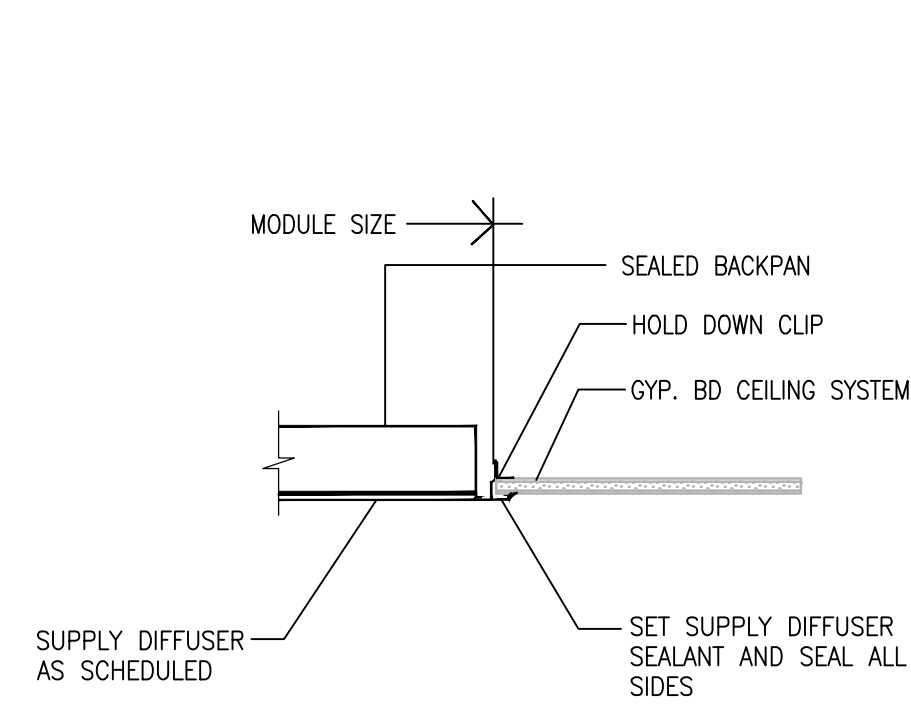
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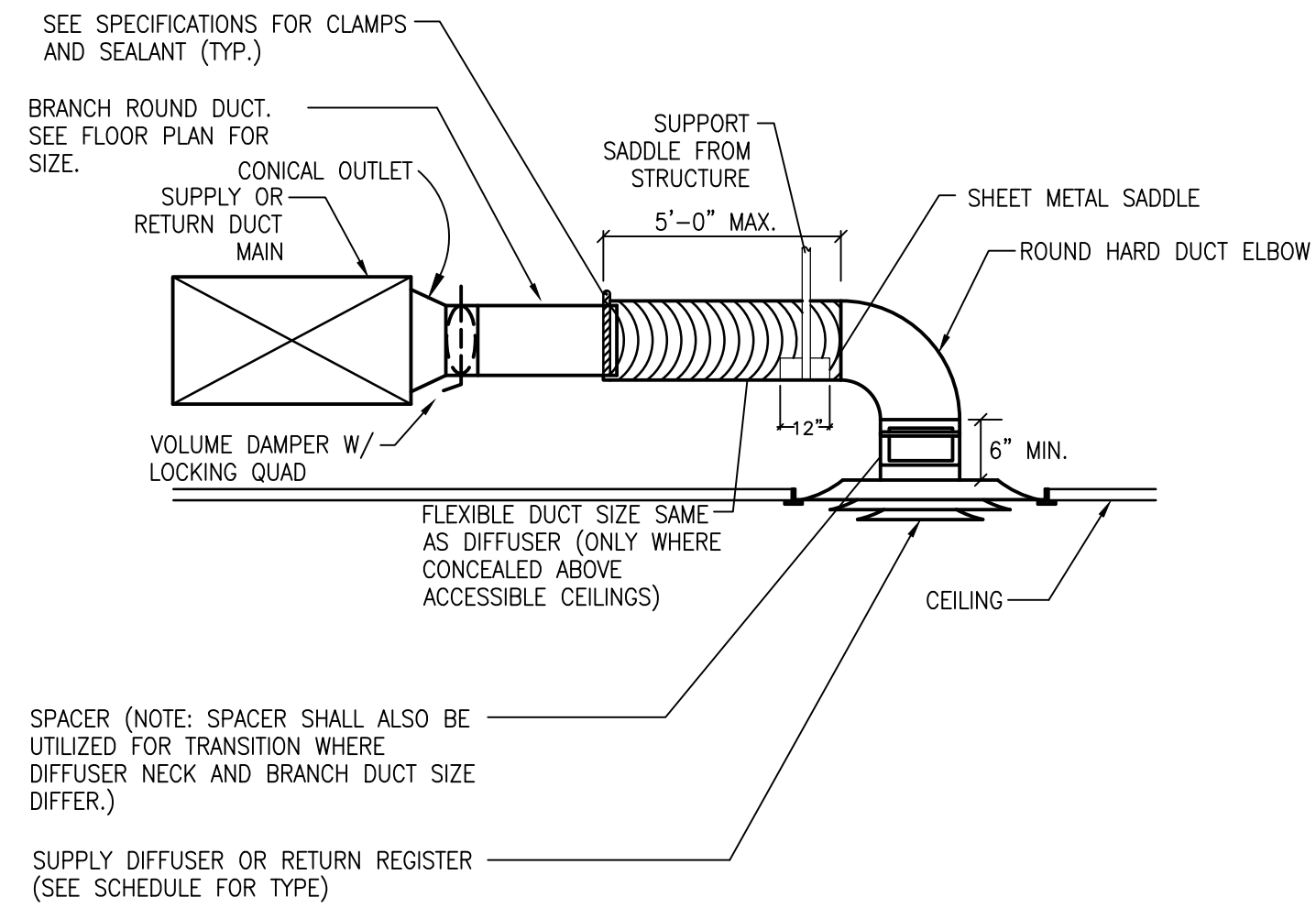
Drawing Title	
MECHANICAL VENTILATION PLAN	
Approved Project Director	

Project Title		
VA - HINES, CONSOLIDATED MAIL OUTPATIENT PHARMACY NEW SERVER ROOM		
Location		
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Date	Checked	Drawn
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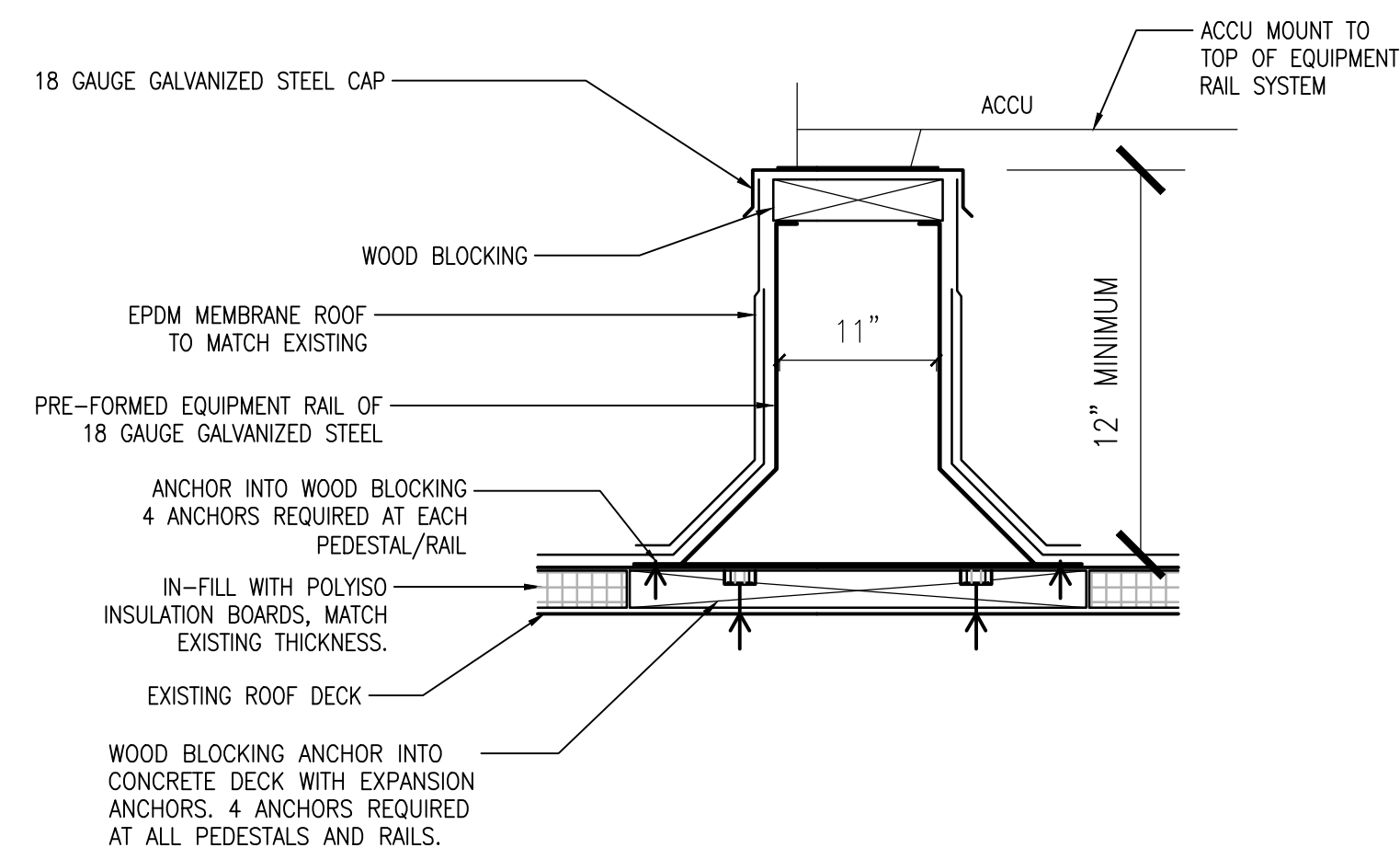
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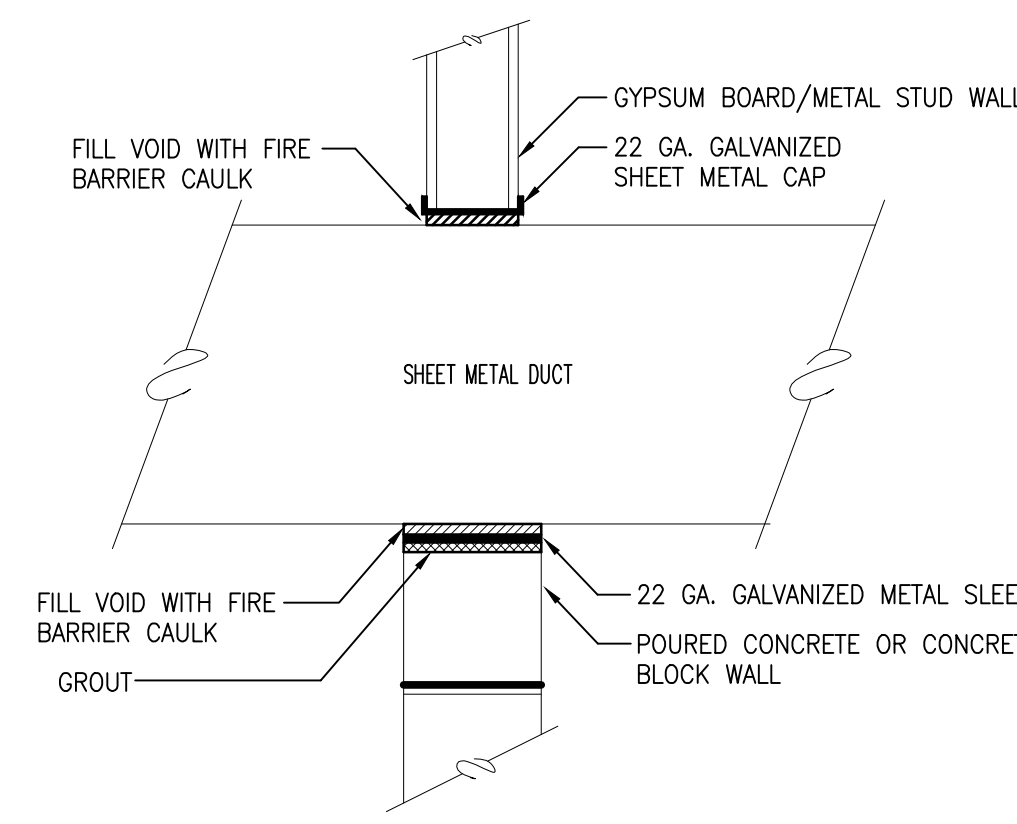
**1 DIFFUSER SEALANT DETAIL**  
NTS



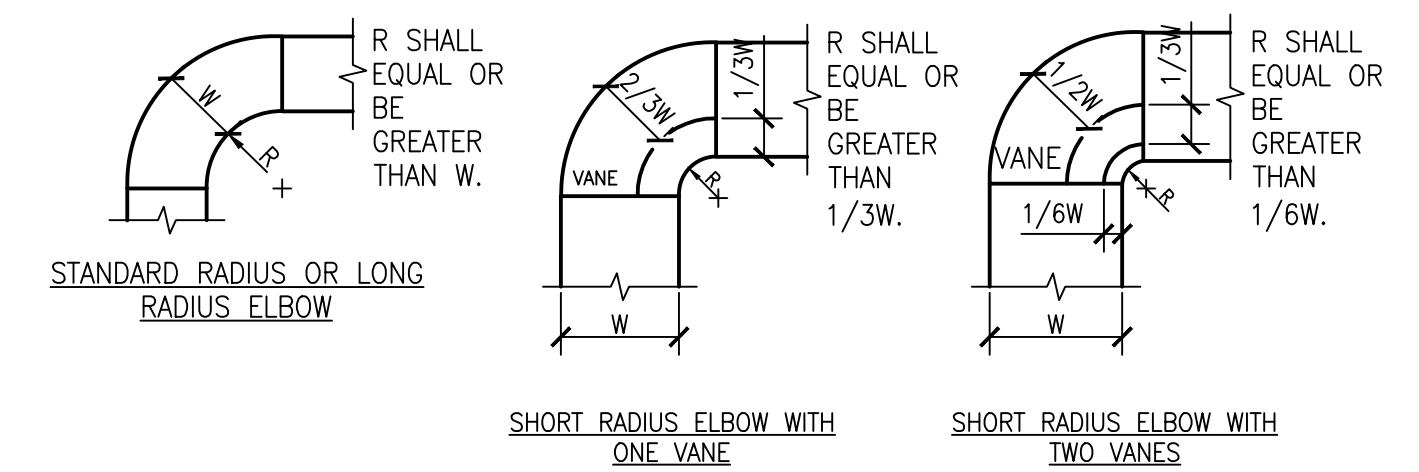
**2 DIFFUSER INSTALLATION DETAIL**  
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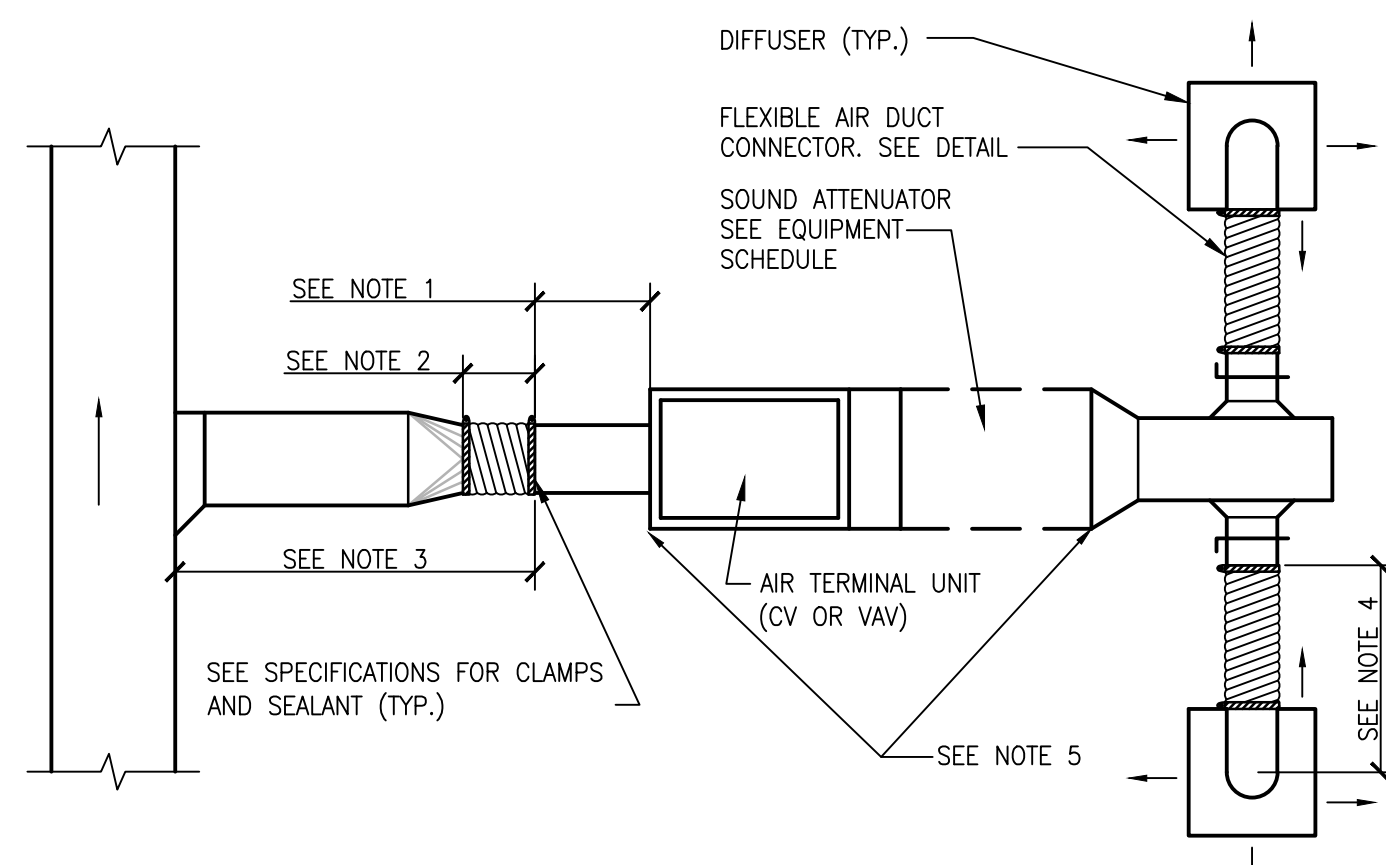
**3 ACCU SUPPORT RAILING ON ROOF**  
NTS



**4 DUCT SLEEVE THRU INTERIOR WALL DETAIL**  
NTS

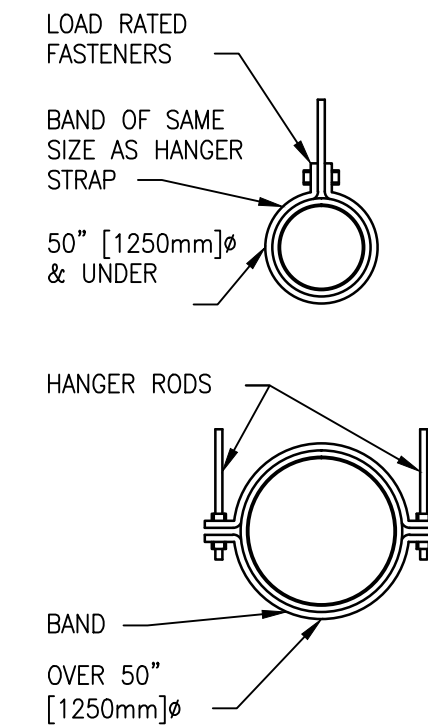


**5 DUCTWORK RADIUS ELBOWS**  
NTS



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

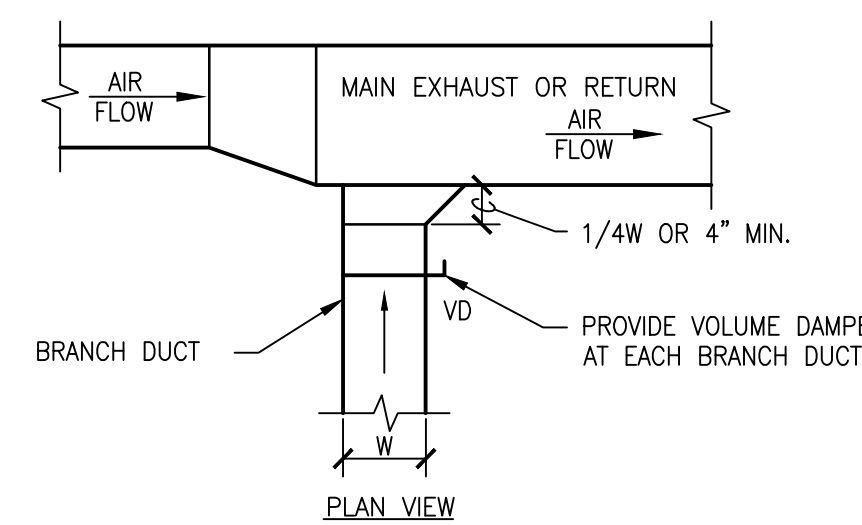
**6 DUCT CONNECTIONS - AIR TERMINAL UNITS**  
NTS



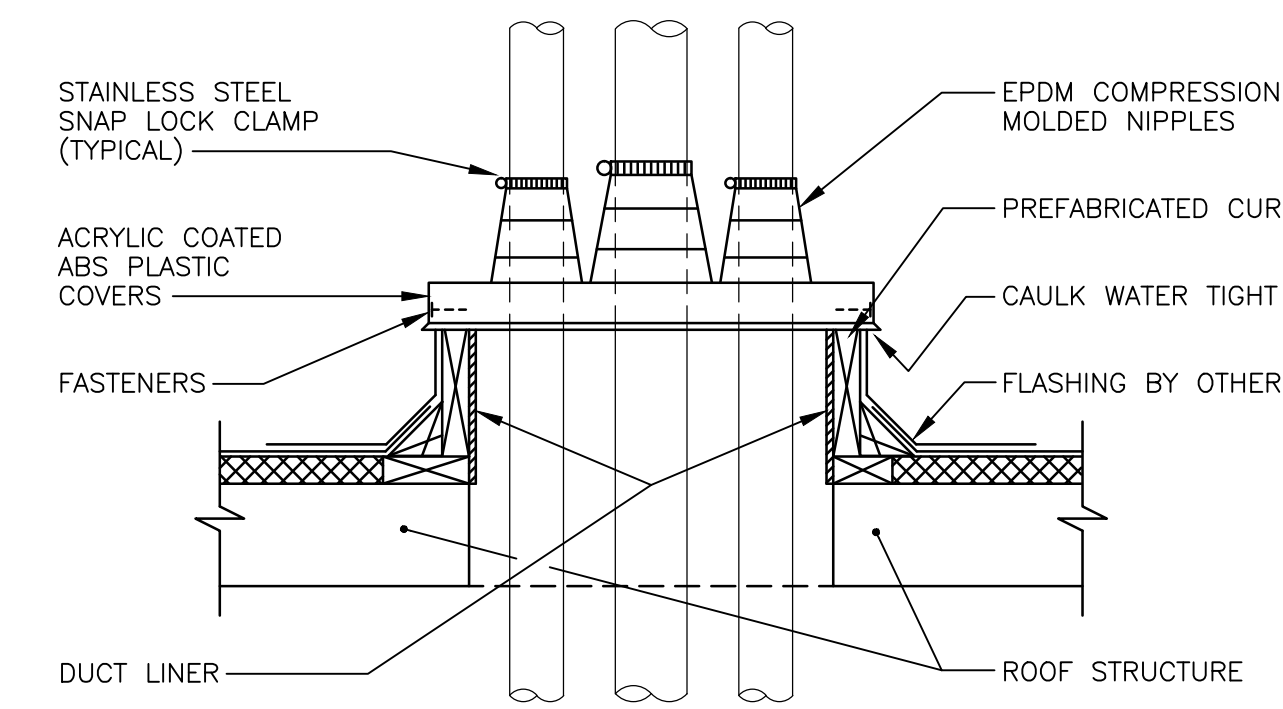
HANGER STRAPS OR RODS			
MAX. DUCT IN. [mm]	QUANTITY/SIZE IN. [mm]	MAX. LOAD LBS. [kg]	MAX. SPACING IN. [mm]
26 [650]	ONE 1 [25] x 22 GA STRAP	260 [119]	144 [3600]
36 [900]	ONE 1 [25] x 18 GA STRAP	420 [190]	144 [3600]
50 [1250]	ONE 1 [25] x 16 GA STRAP	700 [317]	144 [3600]
60 [1500]	TWO 3/8 [10] RODS	1320 [598]	144 [3600]
84 [2100]	TWO 1/2 [13] RODS	2500 [1133]	144 [3600]

**NOTE:** TABULATED DATA FROM SMACNA ALLOWS FOR DUCT REINFORCING AND INSULATION, BUT NO EXTERNAL LOAD.

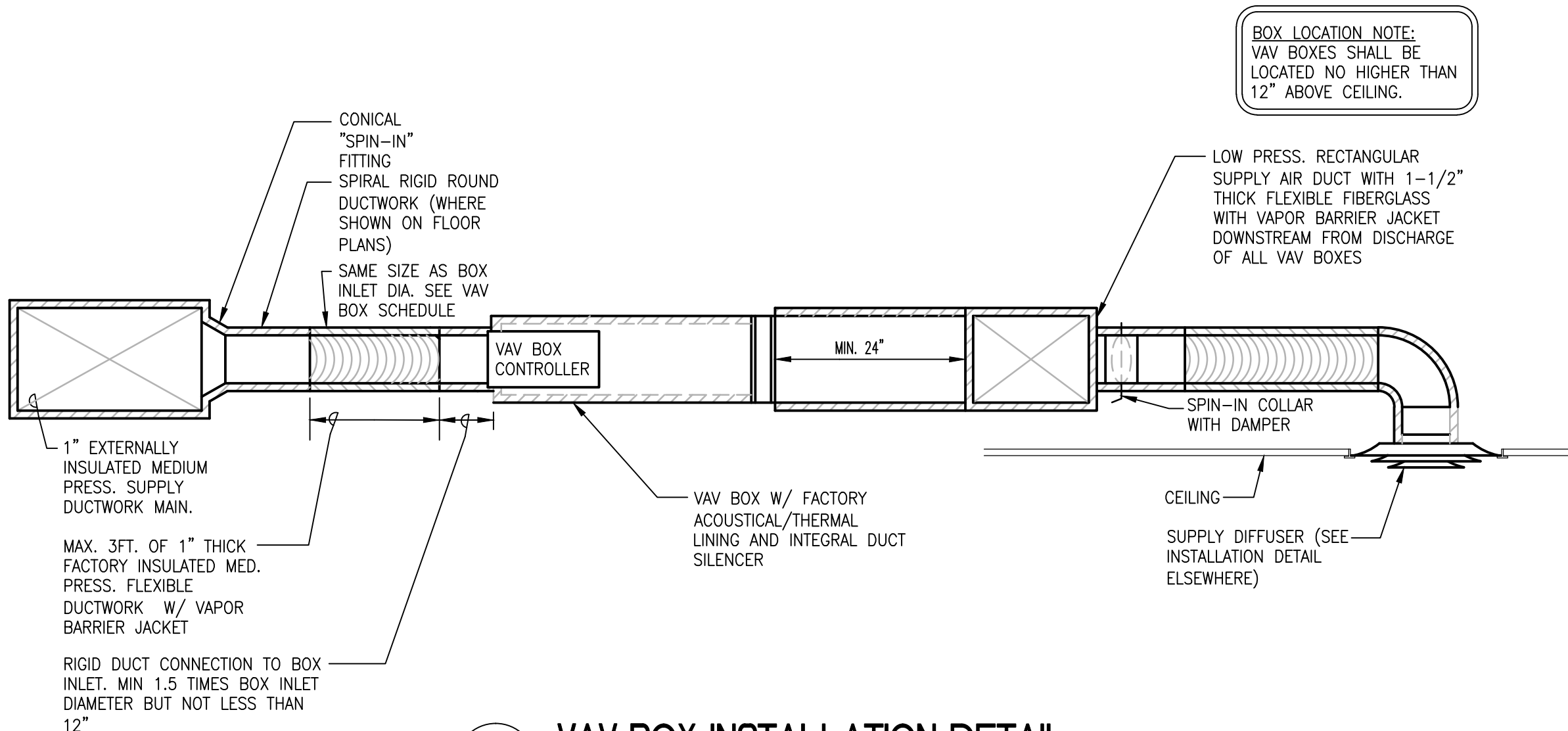
**7 ROUND DUCT HANGERS**  
NTS



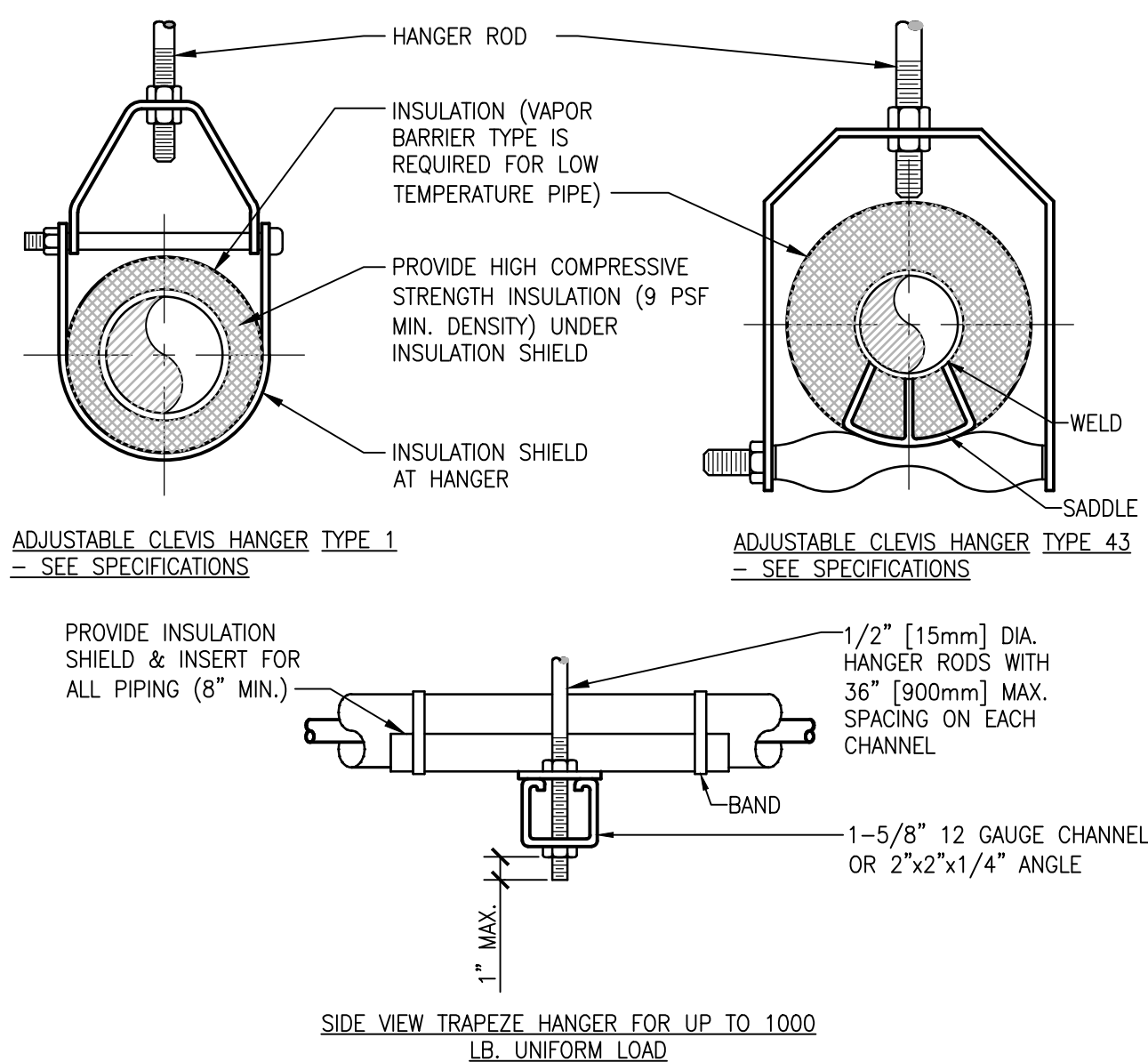
**8 EXHAUST OR RETURN BRANCH DUCTWORK**  
NTS



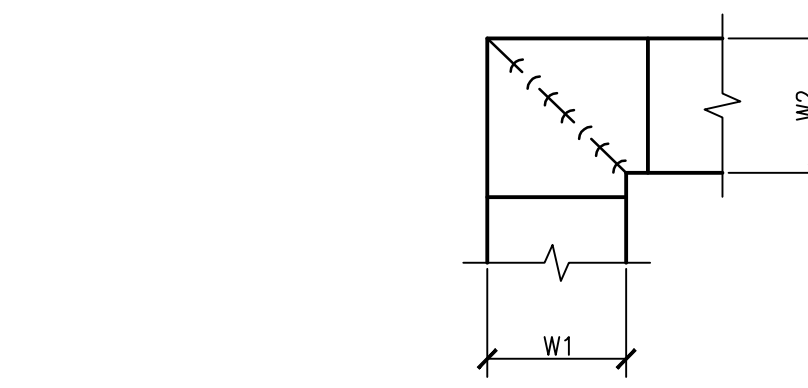
**9 ROOF SLEEVE DETAIL**  
NTS



**10 VAV BOX INSTALLATION DETAIL**  
NTS

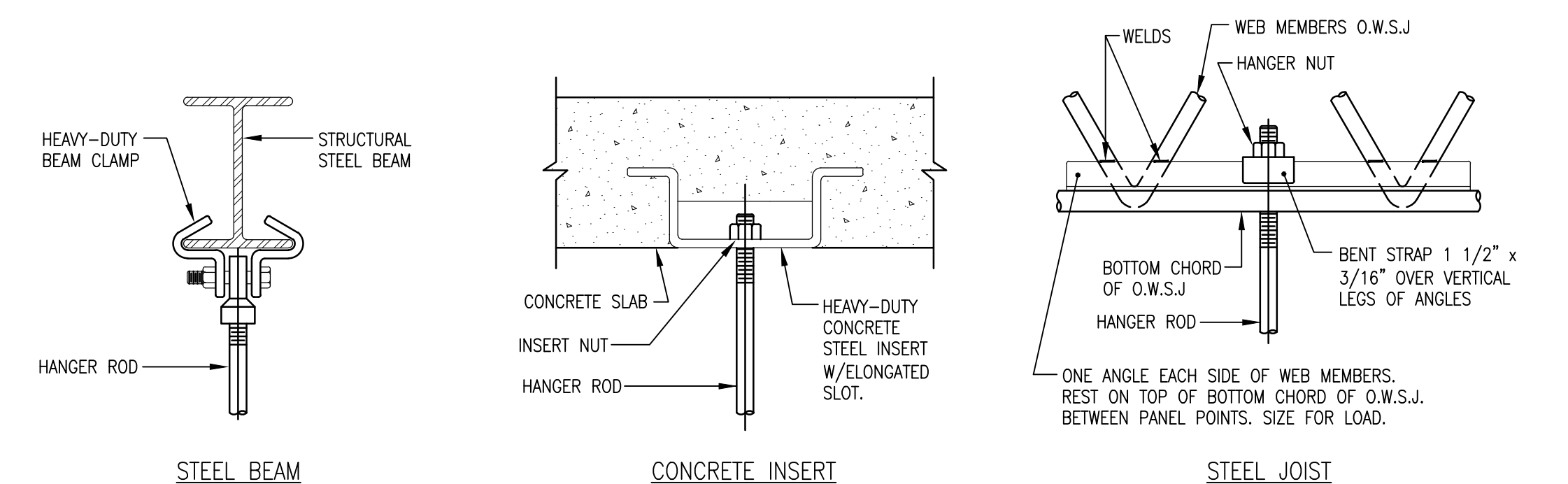


**11 PIPE HANGERS**  
NTS



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

**12 DUCTWORK SQUARE VANE ELBOWS**  
NTS



**PIPE HANGERS AND SUPPORTS**

SUPPORT HORIZONTAL STEEL AND COPPER PIPING AS FOLLOWS:

NOMINAL PIPE SIZE	DISTANCE BETWEEN SUPPORTS	HANGER ROD DIAMETERS
1/2"	6'	3/8"
3/4 TO 1-1/2"	6'	1/2"
2" TO 2-1/2"	10'	1/2"
3" AND 4"	12'	5/8"
6" TO 12"	14'	7/8"

- PLACE HANGER WITHIN 1 FOOT OF EACH HORIZONTAL ELBOW. SUPPORT HORIZONTAL SOIL WASTE AND STORM PIPE NEAR HUB, WITH 5 FEET MAXIMUM SPACING BETWEEN HANGERS.
- VERTICAL PIPING:**
- SUPPORT VERTICAL WATER PIPING AT EVERY FLOOR.
  - SUPPORT VERTICAL SOIL PIPE AT HUB.
- WHERE SEVERAL PIPES CAN BE INSTALLED IN PARALLEL AND AT SAME ELEVATION PROVIDE MULTIPLE OR TRAPEZE HANGERS. WHERE PRACTICAL, SUPPORT RISER PIPING INDEPENDENTLY OF CONNECTED HORIZONTAL PIPING.

**13 PIPE HANGER DETAILS**  
NTS

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 Bancroft-AE Project No. 16-114

**Drawing Title**  
MECHANICAL DETAILS

**Approved Project Director**

**Project Title**  
VA - HINES, CONSOLIDATED MAIL OUTPATIENT PHARMACY NEW SERVER ROOM

**Location**  
1ST AVENUE, HINES, IL 60141

**Date**  
05/05/2017

**Checked**  
SAT

**Drawn**  
JWK

**VA CONTRACT NO. VA7975-16-O-0024**

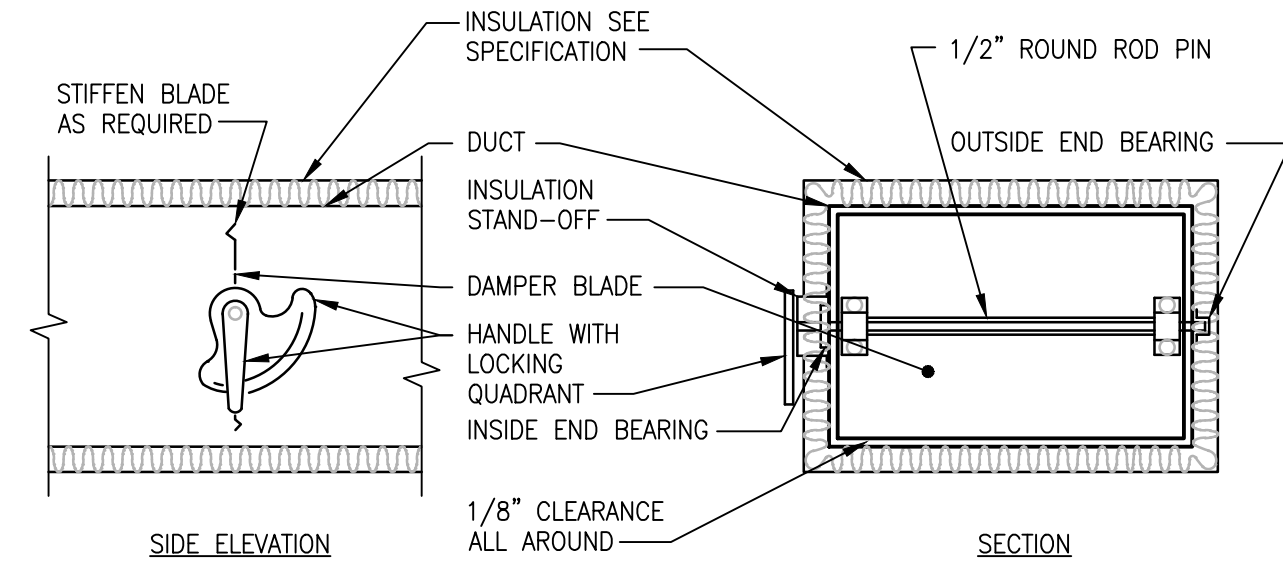
**Project Number**  
796-16-018

**Building Number**  
37

**Drawing Number**  
M-401

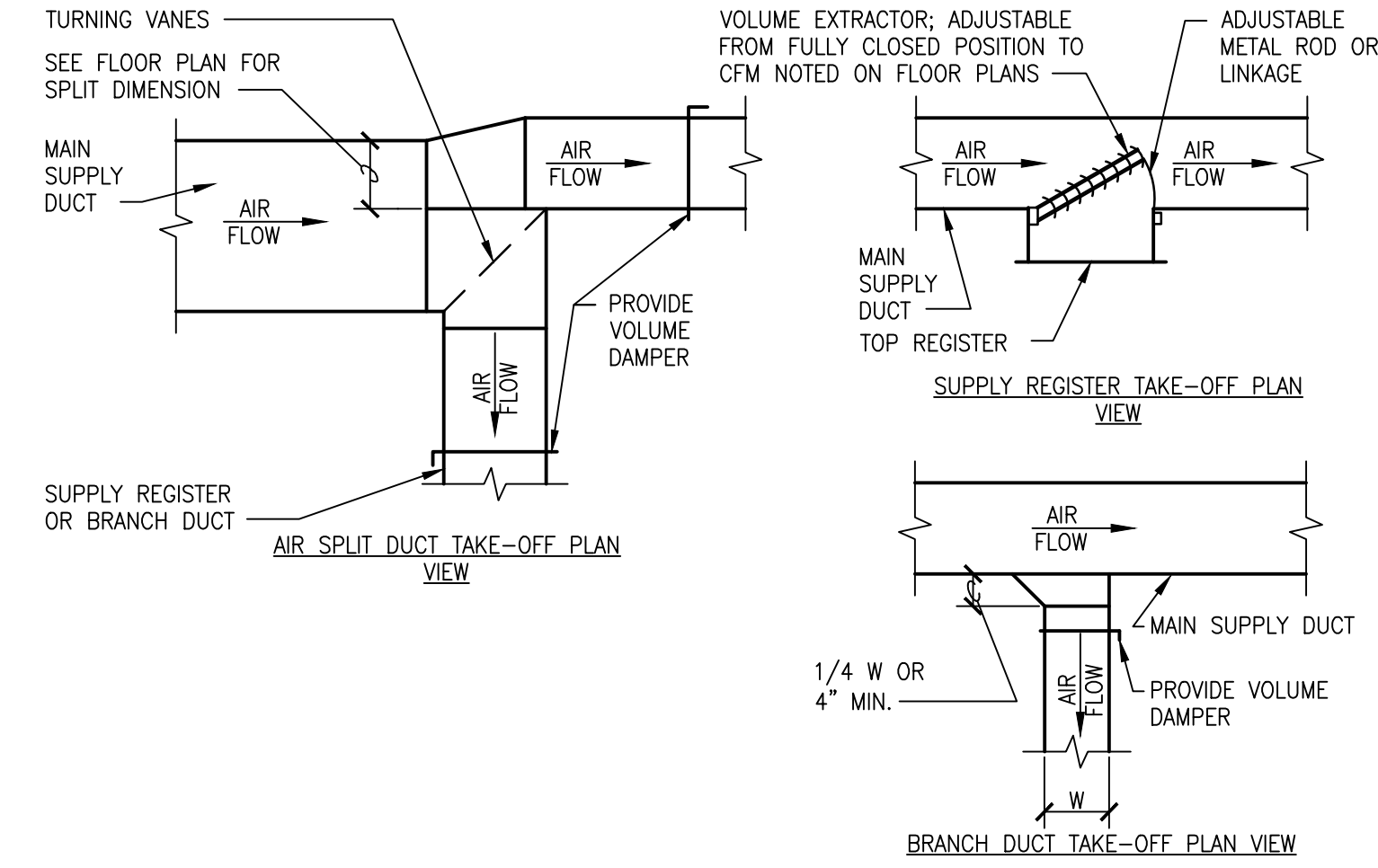
**Office of Construction and Facilities Management**

**Department of Veterans Affairs**

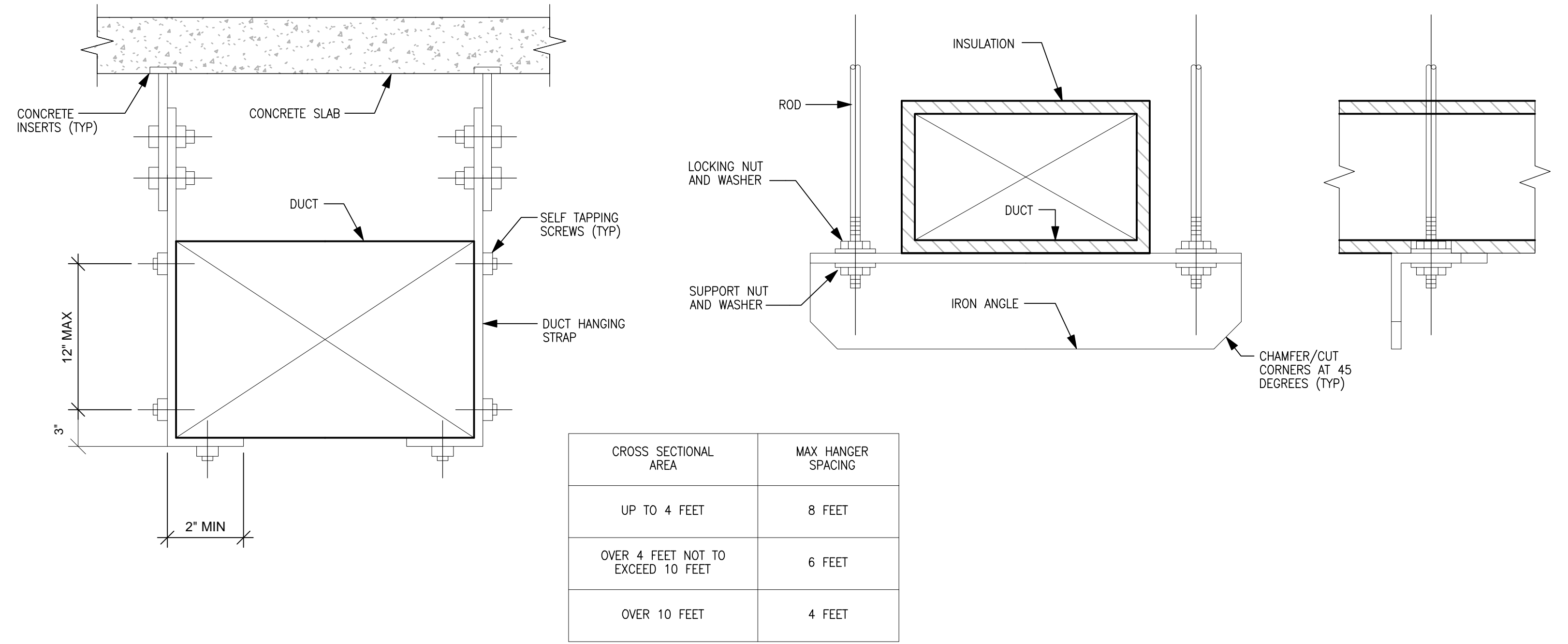


- NOTE:**
- DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
  - DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

**1 VOLUME DAMPER DETAIL**  
NTS



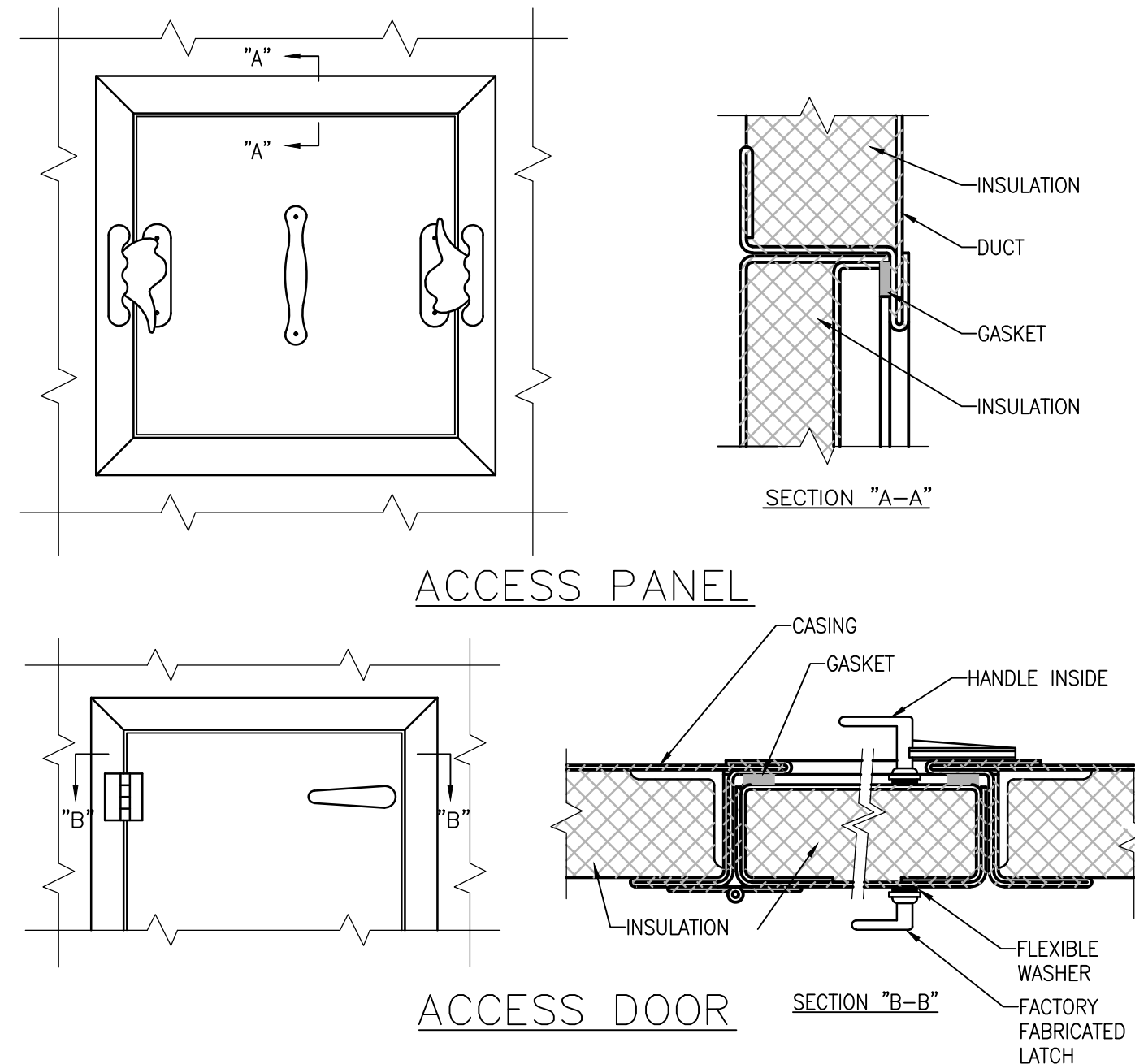
**2 SUPPLY DUCTWORK TAKE-OFFS**  
NTS



CROSS SECTIONAL AREA	MAX HANGER SPACING
UP TO 4 FEET	8 FEET
OVER 4 FEET NOT TO EXCEED 10 FEET	6 FEET
OVER 10 FEET	4 FEET

**3 RECTANGULAR DUCT HANGER**  
NTS

- NOTES:**
- DUCT SHALL BE SUSPENDED WITH GALVANIZED BAND IRON STRAPS SECURELY FASTENED TO THE BOTTOM AND SIDE OF THE DUCT. STRAPS SHALL BE SIZED IN ACCORDANCE WITH SMACNA TABLE 4-1 OR ACCORDING TO LOCAL CODES, WHICHEVER IS MORE STRINGENT.
  - DUCTS WIDER THAN 60 INCHES SHALL BE SUPPORTED BY TRAPEZE ANGLES IN ACCORDANCE WITH SMACNA TABLE 4-1.



**4 ACCESS PANEL AND DOOR DETAIL**  
NTS

- NOTES:**
- LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
  - HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS.
  - SEE SMACNA 2005, FIGURE 9-15

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one inch = one foot  
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Location	1ST AVENUE, HINES, IL 60141
Date	05/05/2017
Checked	SAT
Drawn	JWK

Project Number	796-16-018
Building Number	37
Drawing Number	M-402

Office of Construction and Facilities Management

Department of Veterans Affairs

**COMPUTER ROOM AIR CONDITION UNIT SCHEDULE**

TAG	AREA SERVED	CFM	ESP	COOLING CAPACITY							EVAPORATOR COIL			HEATING SECTION			HUMIDIFIER		AIR FILTERS			ELECTRICAL DATA						UNIT WEIGHT (lbs)	MANUFACTURER	MODEL	NOTES		
				NOMINAL TONS	REFRIGERATION		EAT		LAT			FACE AREA	ROWS OF COILS	FACE VELOCITY FPM	CAPACITY		STAGES	TYPE	lbs/hr	THICKNESS	MERV	MOTOR (HP)	QUANTITY OF FANS	VOLT	PH	HZ	FLA					MCA	MOCP
					TOTAL (MBH)	SENSIBLE (MBH)	DB (°F)	WB (°F)	DB (°F)	% RH	MBH				KW																		
CRAC-1	SERVER ROOM C1061A	14,600	0.2	30	321.3	267.9	73	61.1	52.3	50	32.3	3	409	ELECTRIC	102.4	30	3	INFRARED	22	4"	8	15	3	460	3	60	83.7	97.4	110	3040	LIEBERT	VS105A	1, 2, 3, AND 4
CRAC-2	SERVER ROOM C1061A	14,600	0.2	30	321.3	267.9	73	61.1	52.3	50	32.3	3	409	ELECTRIC	102.4	30	3	INFRARED	22	4"	8	15	3	460	3	60	83.7	97.4	110	3040	LIEBERT	VS105A	1, 2, 3, AND 4

**NOTES:**  
 1. BASE OF DESIGN: LIEBERT OR VA APPROVED EQUAL.  
 2. PROVIDE LOCKING DISCONNECT, STARTER, AND CONTROLLER BY MANUFACTURER.  
 3. FURNISH UNIT WITH SEMI-HERMETIC COMPRESSOR W/4-STEP UNLOADING, 9" FLOORSTAND ADJUSTABLE, SMOKE DETECTOR, LEAK DETECTION SENSOR, AND CONDENSATE PUMP.  
 4. PROVIDE BLOWER CONFIGURATION - UPFLOW, 36" FRONT PLENUM SUPPLY AND FRONT RETURN, AND CENTRIFUGAL FAN.

**AIR COOLED CONDENSING UNIT SCHEDULE**

TAG	LOCATION	SERVING UNIT	NOMINAL TONS	ELECTRIC DATA				AMBIENT TEMP (°F)	MIN. AMBIENT TEMP (°F)	REFRIGERANT	UNIT WEIGHT (LBS)	MANUFACTURER	MODEL	NOTES	
				VOLTAGE	PH	HZ	FLA								MOCP
ACCU-1	ROOF	CRAC-1	24	460	3	60	5.6	15	95	-20	R407-C	602	LIEBERT	MCL110E	1 AND 2
ACCU-2	ROOF	CRAC-2	24	460	3	60	5.6	15	95	-20	R407-C	602	LIEBERT	MCL110E	1 AND 2

**NOTES:**  
 1. BASE OF DESIGN: LIEBERT OR VA APPROVED EQUAL.  
 2. PROVIDE EC FAN, FACTORY DISCONNECT, DUAL CIRCUIT, AND 18" LEGS.

**DIFFUSER, REGISTER, AND GRILLE SCHEDULE**

REF	TYPE	MATERIAL	MOUNTING	PANEL / FRAME SIZE inx in	NECK SIZE (in)	DAMPER	FINISH	MODEL (TITUS)	NOTE
S1	LOUVER FACE	STEEL	LAY-IN	SEE DWG	24x24	NONE	WHITE	TMSA	1
S2	DOUBLE DEFLECTION	STEEL	LAY-IN	SEE DWG	SEE DWG	NONE	WHITE	300RL	1
T1	35 DEFLECTION	STEEL	LAY-IN	SEE DWG	SEE DWG	NONE	WHITE	350FL	1

**NOTE:**  
 1. BASIS OF DESIGN: TITUS-HVAC OR VA APPROVED EQUAL.

**VAV BOX SCHEDULE**

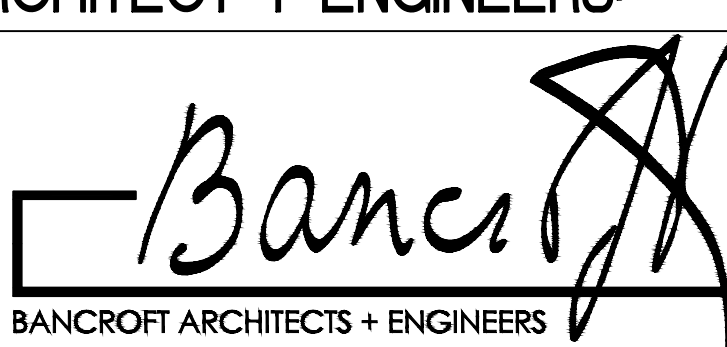
TAG	ROOM SERVED	INLET SIZE	AIRFLOW			MANUFACTURER	MODEL	NOTES
			INLET Δp in-wg	MINIMUM AIRFLOW	MAX AIRFLOW			
VAV-C1061A	SERVER ROOM C1061A	6	0.75	150	150	TITUS	DESV	1 AND 2

**NOTES:**  
 1. NEITHER RADIATED NOR DISCHARGE SOUND LEVELS SHALL EXCEED NC 35 AT 1.5" INLET STATIC PRESSURE WHEN TESTED PER ARI STANDARD 885-98 USING 5/8" 20-LB DENSITY MINERAL FIBER CEILING TILE.  
 2. SEE DRAWINGS FOR MECHANICAL SCHEMATIC CONTROL AND SEQUENCES.

VA CONTRACT NO. VA7975-16-O-0024

ISSUED FOR BID	05/05/17
100% CONSTRUCTION DOCUMENTS	03/09/17
95% CONSTRUCTION DOCUMENTS	02/01/17
95% CONSTRUCTION DOCUMENTS	12/01/16
65% CONSTRUCTION DOCUMENTS	09/02/16
Revisions:	Date

**ARCHITECT + ENGINEERS:**




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 Bancroft-AE Project No. 16-114

Drawing Title <b>MECHANICAL EQUIPMENT SCHEDULES</b>
Approved Project Director

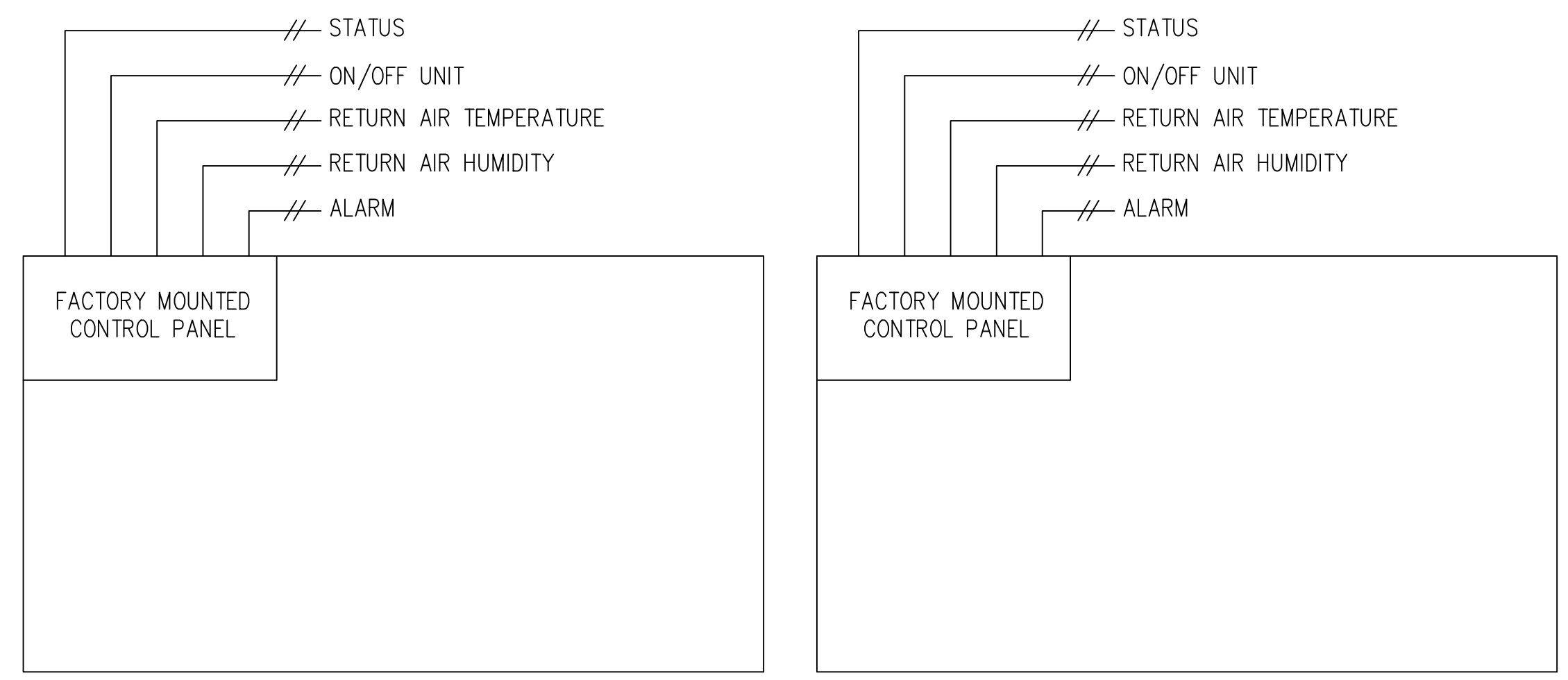
Project Title <b>VA - HINES, CONSOLIDATED MAIL OUTPATIENT PHARMACY NEW SERVER ROOM</b>
Location 1ST AVENUE, HINES, IL 60141
Date 05/05/2017
Checked SAT
Drawn JWK

Project Number 796-16-018
Building Number 37
Drawing Number <b>M-501</b>

Office of Construction and Facilities Management  


three inches = one foot  
 one and one half inches = one foot  
 one inch = one foot  
 one and one half inches = one foot  
 one inch = one foot  
 one and one half inches = one foot  
 three quarters inch = one foot  
 one half inch = one foot  
 three eighths inch = one foot  
 one quarter inch = one foot  
 one eighth inch = one foot  
 one eighth inch = one foot

A three inches = one foot  
 B one and one half inches = one foot  
 C one inch = one foot  
 D three quarters inch = one foot  
 E one half inch = one foot  
 F three eighths inch = one foot  
 G one quarter inch = one foot  
 H one eighth inch = one foot  
 I one eighth inch = one foot



**SEQUENCE OF OPERATION**

**GENERAL (CONTROLS PROVIDED WITH UNIT BY MANUFACTURERS)**

TWO 100% CAPACITY COMPUTER ROOM AIR CONDITIONING UNIT (CRAC) ARE PROVIDED IN THE SYSTEM (ONE CRAC IS REDUNDANT). THE CRAC IS CONTROLLED BY A FACTORY MOUNTED CONTROL SYSTEM AND CONNECT TO THE BAS FOR MONITORING PURPOSES. THE BAS SHALL ALTERNATE THE LEAD CRAC ON A MONTHLY BASIS TO EQUALIZE RUN TIME. THE LEAD CRAC SHALL RUN FIRST, ON FAILURE OF THE LEAD CRAC THE STANDBY CRAC SHALL RUN AND THE LEAD CRAC SHALL TURN OFF.

THE UNIT SHALL MAINTAIN

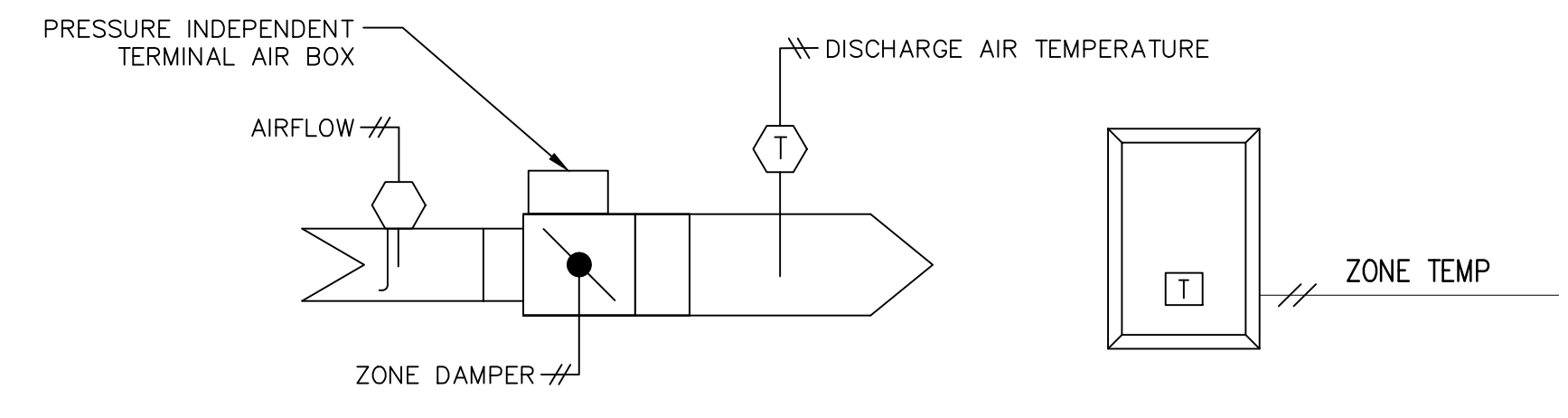
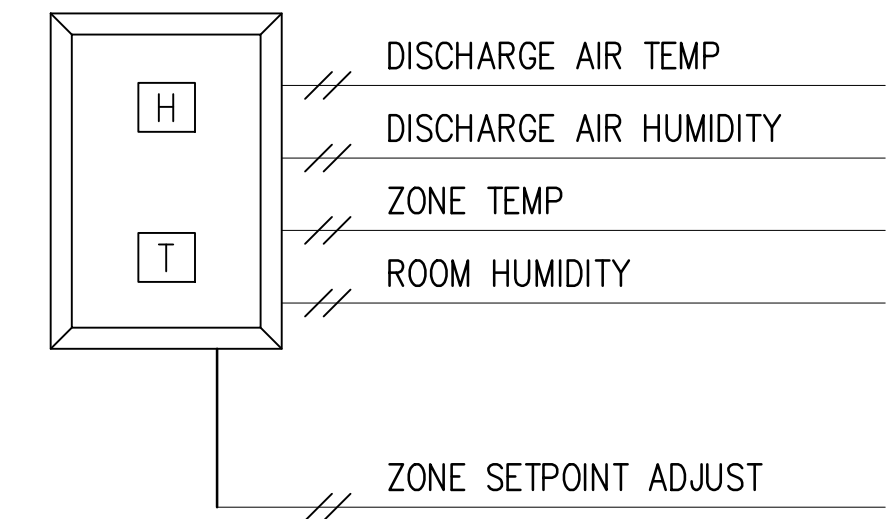
- A 70°F (ADJ.) COOLING SETPOINT AND 40% RELATIVE HUMIDITY (ADJ.)

THE MANUFACTURER CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE AND HUMIDITY. THE CONTROLLER SHALL AUTOMATICALLY HEAT, COOL, REHEAT, HUMIDIFY, AND DEHUMIDIFY AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AND HUMIDIFY SETPOINTS.

**ALARMS**  
 PROVIDE AN AUDIO ALARM FOR THE FOLLOWING CONDITIONS:

- HIGH TEMPERATURE
- LOW TEMPERATURE
- HIGH HUMIDITY
- LOW HUMIDITY

**1 COMPUTER ROOM AIR CONDITION UNIT**  
NTS



**SEQUENCE OF OPERATION: VARIABLE TERMINAL AIR BOX**

**1. GENERAL**  
 THE VARIABLE TERMINAL AIR BOX SHALL ACCORDING TO USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:

**2. TEMPERATURE CONTROL**  
 OCCUPIED/UNOCCUPIED MODE: THE UNIT SHALL MAINTAIN A 70°F (ADJ.) COOLING SETPOINT.

THE UNIT SHALL MAINTAIN ZONE SETPOINTS BY CONTROLLING THE AIRFLOW THROUGH ONE OF THE FOLLOWING.

**OCCUPIED:**

WHEN THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM OCCUPIED AIRFLOW (ADJ) AND THE MAXIMUM COOLING AIRFLOW (ADJ) UNTIL THE ZONE IS SATISFIED.

WHEN THE ZONE TEMPERATURE IS LESS THAN THE COOLING SETPOINT, THE ZONE DAMPER SHALL MAINTAIN THE REQUIRED ZONE VENTILATION (ADJ.)

**UNOCCUPIED:**

WHEN THE ZONE IS UNOCCUPIED THE ZONE DAMPER SHALL CONTROL TO ITS MINIMUM UNOCCUPIED AIRFLOW (ADJ.)

WHEN THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM UNOCCUPIED AIRFLOW (ADJ) AND THE MAXIMUM COOLING AIRFLOW (ADJ) UNTIL THE ZONE IS SATISFIED.

**DISCHARGE AIR TEMPERATURE:**  
 THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.

**ALARMS SHALL BE PROVIDED AS FOLLOWS:**

**HIGH ZONE TEMPERATURE:** IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY 10°F (ADJ.) ABOVE SETPOINT.

**2 VARIABLE TERMINAL AIR BOX**  
NTS

**SEQUENCE OF OPERATION:**  
 PROVIDE LOW LEAK DAMPER IN THE SUPPLY AND EXHAUST AIR DUCT WHERE SHOWN ON THE DRAWINGS. HARDWIRE LOW LEAK DAMPER TO CLOSE UPON A SIGNAL FROM THE FIRE SYSTEM AND OPEN WHEN FIRE SYSTEM HAS BEEN CLEARED. LOW LEAK DAMPER SHALL OPEN/CLOSE WITHOUT BAS SUPPORT.

**3 LOW LEAK DAMER CONTROL**  
NTS

<b>ISSUED FOR BID</b> 05/05/17 <b>100% CONSTRUCTION DOCUMENTS</b> 03/09/17 <b>95% CONSTRUCTION DOCUMENTS</b> 02/01/17 <b>95% CONSTRUCTION DOCUMENTS</b> 12/01/16 <b>65% CONSTRUCTION DOCUMENTS</b> 09/02/16 <b>Revisions:</b> Date		<b>ARCHITECT + ENGINEERS:</b>  700 Nicholas Blvd., Suite 300 Elk Grove Village, IL 60007 T: 847.952.9362 F: 847.952.9403 www.bancroft-ae.com Bancroft-AE Project No. 16-114		<b>Drawing Title</b> MECHANICAL CONTROLS Approved Project Director		<b>Project Title</b> VA - HINES, CONSOLIDATED MAIL OUTPATIENT PHARMACY NEW SERVER ROOM Location 1ST AVENUE, HINES, IL 60141 Date 05/05/2017		<b>Project Number</b> 796-16-018 <b>Building Number</b> 37 <b>Drawing Number</b> M-601 Checked SAT Drawn JWK		Office of Construction and Facilities Management Department of Veterans Affairs	
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VA CONTRACT NO. VA7975-16-O-0024