

HVAC SYMBOLS & ABBREVIATIONS

AB	AIR BLENDER	G	GRILLE
ACC	AIR COOLED CONDENSER	GC	GENERAL CONTRACTOR
ACCU	AIR COOLED CONDENSING UNIT	H	HUMIDIFIER
AD	ACCESS DOOR IN DUCT	HC	HEATING COIL
AFF	ABOVE FINISH FLOOR	HX	HEAT EXCHANGER
AHU	AIR HANDLING UNIT	HP	HEAT PUMP
AP	ACCESS PANEL IN WALL OR CLG.	HR	HEATING WATER RETURN
AS	AIR SEPARATOR	HS	HEATING WATER SUPPLY
ATT	ATTENUATOR	L	LOUVER
B	BOILER	MAU	MAKE-UP AIR UNIT
BB	BASEBOARD	MC	MECHANICAL CONTRACTOR
BC	BOOSTER COIL	MD	MOTORIZED DAMPER
BDD	BACKDRAFT DAMPER	NC	NORMALLY CLOSED
BMS	BUILDING MANAGEMENT SYSTEM	NO	NORMALLY OPEN
C	CONVECTOR	OA	OUTSIDE AIR
CC	COOLING COIL	DAH	OUTSIDE AIR HOOD
CD	CONDENSATE DRAIN	P	PUMP
CH	CHILLER	PC	PLUMBING CONTRACTOR
CIS	CIRCUIT SETTER	PCR	PUMPED CONDENSATE RETURN
COND	CONDENSATE	PE	PIPING ENCLOSURE
CR	CHILLED WATER RETURN	PRV	PRESSURE REDUCING VALVE
CS	CHILLED WATER SUPPLY	PT	PRESSURE TEMPERATURE PLUG
CT	COOLING TOWER	PTAC	PACKAGED TERMINAL AIR CONDITIONER
CTR	COOLING TOWER RETURN	R	REGISTER
CTS	COOLING TOWER SUPPLY	RA	RETURN AIR
CUH	CABINET UNIT HEATER	RAF	RETURN AIR FAN
CVB(R)	CONSTANT VOLUME BOX (W/REHEAT)	RAH	RELIEF AIR HOOD
D	DIFFUSER	RTU	ROOF-TOP UNIT
D&T	DRIP & TRAP	SA	SUPPLY AIR
DSC	DUCTLESS SPLIT SYSTEM CONDENSER	SAF	SUPPLY AIR FAN
DSE	DUCTLESS SPLIT SYSTEM EVAPORATOR	S/D	SMOKE DAMPER
EA	EACH	SEC	SPECIAL EQUIPMENT CONTRACTOR
EC	ELECTRICAL CONTRACTOR	SHC	STEAM HEATING COIL
EF	EXHAUST FAN	SMR	SNOWMELT RETURN
EUH	ELECTRIC UNIT HEATER	SMS	SNOWMELT SUPPLY
EX	EXISTING	STM (#)	STEAM (PSIG)
EXH	EXHAUST AIR	TCC	TEMPERATURE CONTROL CONTRACTOR
F	FILTER	TCP	TEMPERATURE CONTROL PANEL
FCU	FAN COIL UNIT	TD	TRANSFER DUCT
FD	FLOOR DRAIN	UH	UNIT HEATER
F/D	FIRE DAMPER	UV	UNIT VENTILATOR
FMB	FILTER MIXING BOX	VCD	VOLUME CONTROL DAMPER
FPV(R)	FAN POWERED VARIABLE VOLUME BOX (WITH REHEAT)	VB	VARIABLE VOLUME BOX
F/S	FIRE / SMOKE DAMPER	VER	VARIABLE VOLUME BOX WITH REHEAT
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR	VFD	VARIABLE FREQUENCY DRIVE
FT	FIN TUBE	VOC	VOLATILE ORGANIC COMPOUND

PIPING SYMBOLS

	AIR VENT
	ANCHOR
	EXPANSION JOINT
	FLEXIBLE JOINT
	GUIDE
	PRESSURE GAUGE
	STEAM PRESSURE SENSOR
	SUPPLY PIPING
	RETURN PIPING
	STRAINER
	PETE'S PLUG
	THERMOMETER
	UNION
	METER (TYPE, SEE PLANS)
	STEAM TRAP (TYPE, SEE PLANS)
	CONNECT NEW TO EXISTING

VALVE SYMBOLS

	BALANCING COCK OR PLUG VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CIRCUIT SETTER OR CALIBRATED BALANCING VALVE
	CHECK VALVE
	CONTROL VALVE
	GATE VALVE
	GLOBE VALVE
	PRESSURE REDUCING VALVE
	PRESSURE RELIEF VALVE
	3-WAY CONTROL VALVE
	MOTORIZED BUTTERFLY CONTROL VALVE

NOTE: DUCTWORK SHOWN ON DRAWINGS MAY BE DRAWN SINGLE LINE IN LIEU OF DOUBLE LINE.

DUCT SYMBOLS

	EXHAUST FAN ON ROOF
	OAH OR RAH ON ROOF
	CEILING MOUNT EXHAUST FAN
	ACOUSTICALLY LINED DUCT (ALSO SEE SPECIFICATIONS)
	FLEXIBLE CONNECTION
	EXHAUST OR RETURN DUCT SECTION
	SUPPLY DUCT SECTION
	TURNING VANES
	MOTORIZED CONTROL DAMPER
	VOLUME CONTROL DAMPER
	BACKDRAFT DAMPER
	FIRE DAMPER IN HORIZONTAL DUCT
	FIRE DAMPER IN VERTICAL DUCT
	COMBINATION FIRE/SMOKE DAMPER IN HORIZ. DUCT
	COMBINATION FIRE/SMOKE DAMPER IN VERTICAL DUCT
	SMOKE DAMPER IN HORIZONTAL DUCT
	SMOKE DAMPER IN VERTICAL DUCT

CONTROL SYMBOLS

	CARBON MONOXIDE SENSOR
	HUMIDISTAT
	TEMPERATURE SENSOR (ELECTRONIC)
	THERMOSTAT (ELECTRIC)
	REVERSE-ACTING THERMOSTAT (ELECTRIC)
	THERMOSTAT (PNEUMATIC)
	VOC SENSOR
	SWITCH - WALL MOUNT
	DIFFERENTIAL PRESSURE SENSOR
	VELOCITY PROBE
	DUCT SMOKE DETECTOR BY OTHERS
	TCP - JUNCTION BOX
	TCP - PANEL
	PHONE JACK FOR BMS COMMUNICATION
	LAN/WAN JACK FOR BMS COMMUNICATION

ADD.#1 THE MECHANICAL CONTRACTOR SHALL SUPPLY ALL THE MATERIALS AND DEVICES TO MONITOR AND DOCUMENT NEGATIVE PRESSURE WITHIN THE CONSTRUCTION ZONE THROUGH THE FACILITY'S BUILDING AUTOMATION SYSTEM. ALL CONTROLS WORK ON THE FACILITY'S BUILDING AUTOMATION SYSTEM SHALL BE PROVIDED BY ENERGY CONTROL AND DESIGN COMPANY, CONTACT STEVE MARTHALER AT 906.739.6885.

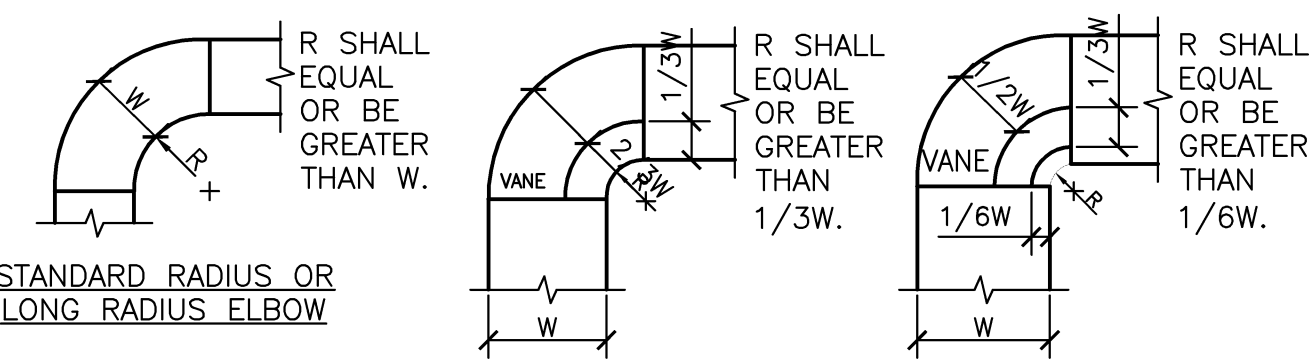
General Notes

NOTE:

- ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.
- WHEN W1 DOES NOT EQUAL W2, USE MANUFACTURED VANED ELBOW.
- ALL SINGLE THICKNESS VANES SHALL HAVE A 2" [50mm] RADIUS, 1 1/2" [40mm] MAXIMUM SPACE BETWEEN VANES AND A 3/4" [20mm] TRAILING EDGE.
- WHEN W EQUALS W2 AND W1 IS GREATER THAN 20" [500mm] VANES SHALL BE DOUBLE VANE TYPE.

DUCTWORK SQUARE VANE ELBOWS

NTS

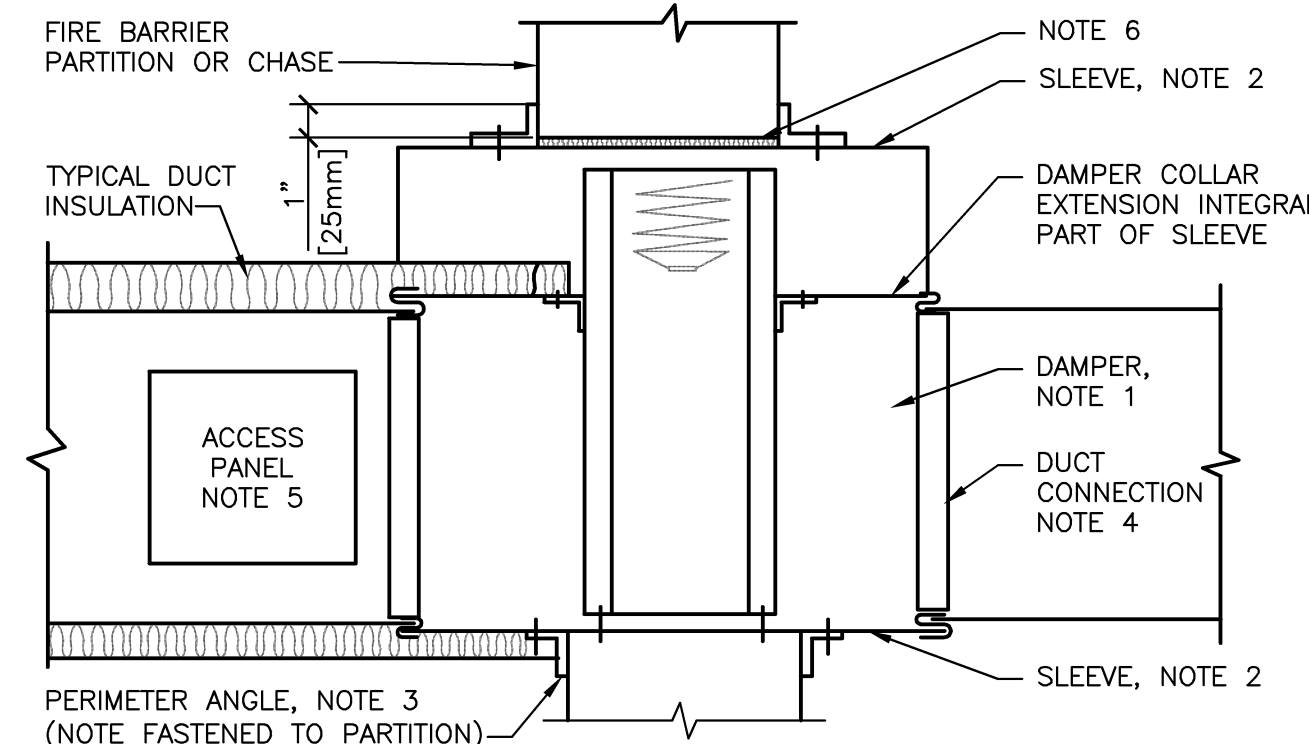


NOTE:

- THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
- ALL STANDARD RADIUS ELBOWS CAN BE SUBSTITUTED WITH SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.

DUCTWORK RADIUS ELBOWS

NTS

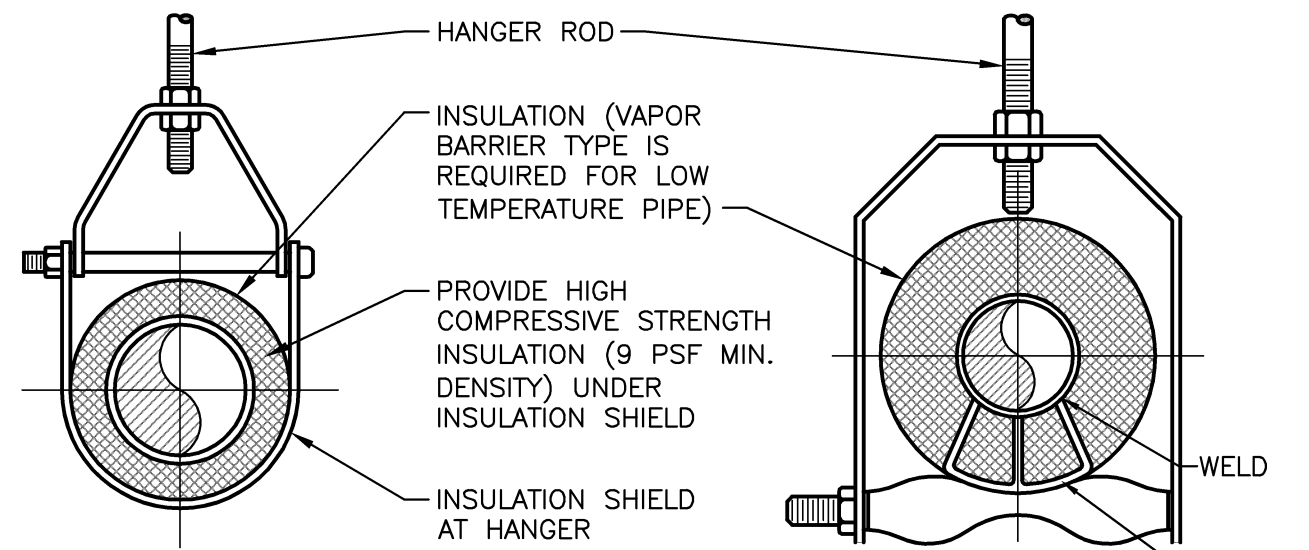


NOTE:

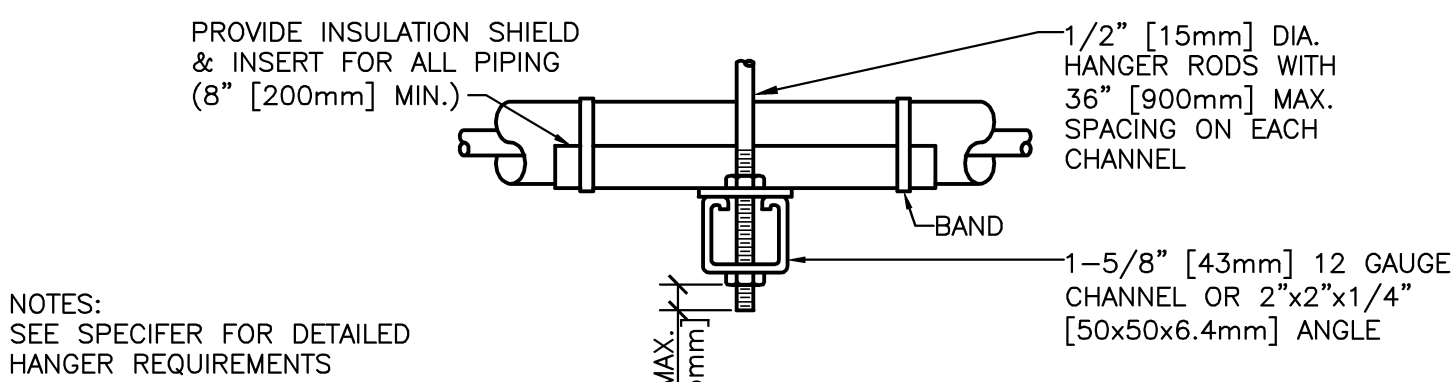
- A VERTICAL DAMPER IS SHOWN. HORIZONTAL DAMPER INSTALLATION, IS SIMILAR. FOLLOW DAMPER MANUFACTURER'S INSTRUCTIONS, INCLUDING FASTENER OPTIONS AND GAGES FOR SLEEVE AND PERIMETER ANGLES. FIRE DAMPERS MUST BE INSTALLED IN THE PARTITION OR FLOOR AND NOT OUTSIDE THE PENETRATION.
- GALVANIZED SLEEVE: GAGE NOT LESS THAN CONNECTING DUCT. FASTEN SLEEVE TO DAMPER FRAME AND TO PERIMETER ANGLES.
- PERIMETER ANGLES: GALVANIZED STEEL, NOT LESS THAN 1 1/2"x1 1/2" [40x40mm], 14 GAGE, TO PROVIDE 1" [25mm] MINIMUM OVERLAP OF OPENING ON ALL 4 SIDES.
- BREAKAWAY DUCT CONNECTION: CONTRACTOR'S OPTION OF TYPES SHOWN IN SMACNA. ACCESS PANELS: SIZE AND LOCATION TO PERMIT SERVICING THE FUSIBLE LINK OR LINKS.
- PROVIDE 1/4" TO 1/2" [6 TO 15mm] CLEARANCE ON HEIGHT AND WIDTH. FILL OPEN SPACE WITH ROCK WOOL FIRESTOP FIBER.
- ALL DUCT WORK RISERS WHICH ARE RUN EXPOSED, SUCH AS THRU ATTIC FLOORS AND MECHANICAL ROOM FLOORS, SHALL BE PROVIDED WITH 3" [75mm] HIGH CONCRETE CURB AROUND OPENING FOR DUCT.

SECTION THRU FIRE DAMPER INSTALLATION

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ADJUSTABLE CLEVIS HANGER TYPE 1 - SEE SPECIFICATIONS
ADJUSTABLE CLEVIS HANGER TYPE 4.3 - SEE SPECIFICATIONS



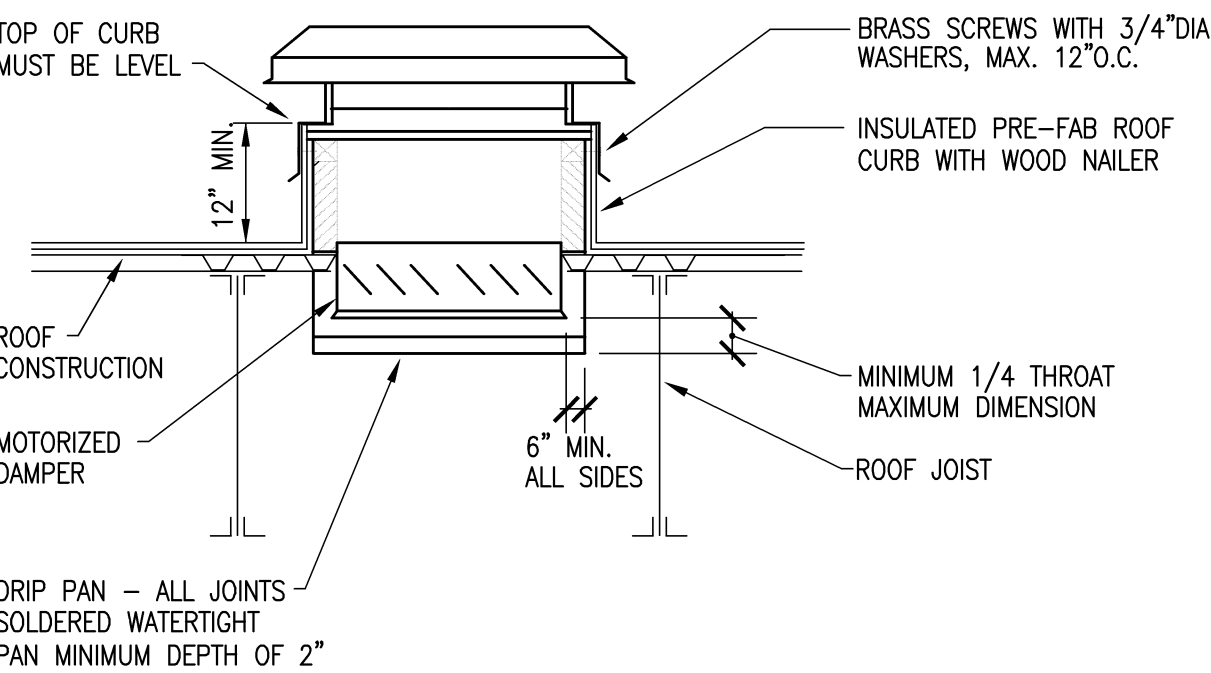
SIDE VIEW TRAPEZE HANGER FOR UP TO 1000 LB. [453KG] UNIFORM LOAD

MAXIMUM PIPE/TUBING SUPPORT SPACING																								
NOM. SIZE	IN.	THRU 3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24					
	FT.	[2100]	[2100]	[2100]	[2700]	[3000]	[3400]	[3700]	[4100]	[4900]	[5200]	[5800]	[6700]	[7000]	[7600]	[8200]	[8500]	[9100]	[9600]					
PIPE	FT.	[2100]	[2100]	[2100]	[2700]	[3000]	[3400]	[3700]	[4100]	[4900]	[5200]	[5800]	[6700]	[7000]	[7600]	[8200]	[8500]	[9100]	[9600]					
TUBING	FT.	5 FT	6	7	8	8	8	8	10	12	13	14	16	—	—	—	—	—	—					
	FT.	[1800]	[1800]	[2100]	[2400]	[2400]	[2700]	[3000]	[3700]	[4000]	[4100]	[4900]												
NOTE: FOR TRAPEZE HANGER TIE SPACING OF SMALLEST SIZE ON TRAPEZE.																								

NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.

PIPE HANGERS

NTS



ROOF RELIEF HOOD

NTS

DIFFUSER, REGISTER, & GRILLE SCHEDULE

MARK	TYPE	MODEL	CFM RANGE	NECK DIA.	FACE SIZE	CEILING MODULE SIZE	VOLUME CONTROL DAMPER	FINISH	REMARKS
D1	CEILING SUPPLY AIR	TMSA	50-125	6"	24"x24"	24"x24"	YES	WHITE	(1) (2) (3)
	CEILING SUPPLY AIR	TMSA	126-220	8"	24"x24"	24"x24"	YES	WHITE	(1) (2) (3)
R1	SIDE WALL SUPPLY	33R(4)1/2"SPACING,38" DEFL.	SEE PLAN	---	SEE PLAN	---	YES	WHITE	(1)(4)(5)(6)

- BASED ON TITUS
- REFER TO ROOM FINISH SCHEDULE FOR CEILING TYPE.
- PROVIDE AS 3-WAY THROW WHEN DIFFUSER IS LOCATED WITHIN 3 FEET OF A WALL.
- FACE BARS ALWAYS HORIZONTAL
- OPPOSED BLADE
- SURFACE MOUNT, GRILLE WITH BORDER MAY ALSO BE USED IN A LAY-IN CEILING.

ADD.#1

CONSULTANTS:

3950 SPARKS DRIVE SE
GRAND RAPIDS, MI 49546
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FAX: 616-574-8542

ARCHITECT/ENGINEERS:

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DESIGN
WORKS

420 RAIL STREET
NEGAUNEE, MI 49866
PHONE: 906-475-6616
FAX: 906-475-6954
NDW PROJECT NUMBER: 102

Drawing Title

HVAC Detail

Approved Project Director

Project Title

Renovate and Extend Elevator

Location

IRON MOUNTAIN, MICHIGAN

Date

-

Checked

-

Drawn

TWW

Project Number

585-12-102

Building Number

1

Drawing Number

M300

Dwg. 30 of 42

Office of
Construction
and Facilities
Management

Department of
Veterans Affairs