

AIR HANDLING UNIT SCHEDULE

ITEM	SERVICE	LOCATION	UNIT TOTAL CFM	MIN. O.A. CFM	MIN. EXT. S.P. (IN. WG.)	SUPPLY FAN						RETURN FAN						INTEGRAL COIL & BYPASS PREHEAT COIL PERFORMANCE						COIL COOLING PERFORMANCE						HUMIDIFIER NOTE		FILTERS						ELECTRICAL DATA						SOUND CRITERIA (DBA)	EMERG. POWER	SPEED CONTROL	OPERATING WEIGHT (LBS)	MANUFACTURER / MODEL NUMBER	REMARKS										
						FAN TYPE	E.S.P. (IN. WG.)	T.S.P. (IN. WG.)	MAX. BPH	MOTOR HP	FAN RPM	MOTOR RPM	FAN TYPE	E.S.P. (IN. WG.)	T.S.P. (IN. WG.)	MAX. BPH	MOTOR HP	FAN RPM	MOTOR RPM	MAX. FPM	EAT (°F)	STEAM PRESS. (PSIG)	STEAM FLOW (LB/HR)	TOTAL MBH	LAT (°F)	APD (IN. WG.)	FLUID	CAPACITY #/HR	STEAM PRESS. (PSIG)	PRE-FILTER 1 (THROWAWAY)			PRE-FILTER 2 (RIGID)			FINAL (RIGID)			V	PH	HZ	FLA	MCA							MOCP									
																														SIZE	EFFICIENCY	VEL. FPM	SIZE	EFFICIENCY	VEL. FPM	SIZE	EFFICIENCY	VEL. FPM													SIZE	EFFICIENCY	VEL. FPM						
AH4-1	LEVEL 1	ROOF	750	250	2.0	AF	2.2	4.4	9.8	10	1401	1800	AF	1.0	1.4	3.8	5	1058	1800	331	38	15	364	310	80	0.034	STEAM	300	8066	325	231	5251	0.25	R410A	144	2	2"	MERV 8	288	0.57	6"	MERV 11	288	0.66	12"	MERV 15	288	0.69	400	3	60	30	38	68	YES	VFD	7121	TRANE	
AH4-2	LEVEL 2	ROOF	750	250	2.0	AF	2.2	4.4	9.8	10	1401	1800	AF	1.0	1.4	3.8	5	1058	1800	331	38	15	364	310	80	0.034	STEAM	300	8066	325	231	5251	0.25	R410A	144	2	2"	MERV 8	288	0.57	6"	MERV 11	288	0.66	12"	MERV 15	288	0.69	400	3	60	30	38	68	YES	VFD	7121	TRANE	

NOTES:
 1. UNIT TOTAL CFM IS THE SUM OF SUPPLY AND RETURN CFM.
 2. MIN. O.A. CFM IS THE MINIMUM OUTDOOR AIR FLOW RATE.
 3. MIN. EXT. S.P. IS THE MINIMUM EXTERNAL STATIC PRESSURE.
 4. FAN TYPE: AF = AIR FLOW, R = RETURN, S = SUPPLY, F = FAN.
 5. E.S.P. IS THE EXTERNAL STATIC PRESSURE.
 6. T.S.P. IS THE TOTAL STATIC PRESSURE.
 7. MAX. BPH IS THE MAXIMUM BHP PER HOUR.
 8. MOTOR HP IS THE MOTOR HORSEPOWER.
 9. FAN RPM IS THE FAN REVS PER MINUTE.
 10. MOTOR RPM IS THE MOTOR REVS PER MINUTE.
 11. MAX. FPM IS THE MAXIMUM FEET PER MINUTE.
 12. EAT IS THE EXHAUST AIR TEMPERATURE.
 13. STEAM PRESS. IS THE STEAM PRESSURE.
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 15. TOTAL MBH IS THE TOTAL MECHANICAL BRHP.
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 25. SOUND CRITERIA (DBA) IS THE SOUND LEVEL IN DECIBELS A-WEIGHTED.
 26. EMERG. POWER IS THE EMERGENCY POWER REQUIREMENT.
 27. SPEED CONTROL IS THE SPEED CONTROL TYPE.
 28. OPERATING WEIGHT (LBS) IS THE OPERATING WEIGHT IN POUNDS.
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VARIABLE FREQUENCY DRIVE SCHEDULE

DESIGNATION	LOCATION	SERVICE	UNIT HP	EQUIP. TYPE	ELECTRICAL DATA	EMERG. POWER	A/C RATINGS	BY-PASS	PULSE	MANUFACTURER / MODEL NUMBER	REMARKS		
V	Ø	HZ	V	Ø	HZ	V	Ø	HZ	V	Ø	HZ		
AH4-1 SUPPLY			10		480	3	60	YES	100K	-	6	ABBACH550	
AH4-1 RETURN			5		480	3	60	YES	100K	-	6	ABBACH550	
AH4-2 SUPPLY			10		480	3	60	YES	100K	-	6	ABBACH550	
AH4-2 RETURN			5		480	3	60	YES	100K	-	6	ABBACH550	
HMPR-1			480	3	60	YES	100K	-	18	ABBACH550	⓪		
HMPR-2			480	3	60	YES	100K	-	6	ABBACH550	⓪		

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TYPICAL VARIABLE & CONSTANT VOLUME BOX SCHEDULE (WITH INTEGRAL SOUND ATTENUATOR)

DESIGNATION	TYPE	SERVICE (ROOM NUMBERS)	DESIGN RANGE (CFM)	Δ PRESS IN. H ₂ O (MAX)	HOT WATER COIL						INLET STATIC PRESSURE (IN.)	NOISE CRITERIA (AT LISTED INLET SP) MAX RAW SOUND POWER LEVEL (AR) (RADIATED OR DISCHARGE)						INLET DUCT SIZE (IN.)	INLET DUCT SIZE (IN.)	OUTLET DUCT SIZE (IN.)	OUTLET DUCT SIZE (IN.)	MAX BOX DEPTH (IN.)	SILENCER INTEGRAL	LINING THICKNESS	LINING HOSPITAL GRADE	ACCESS DOOR BEFORE COIL	ACCESS DOOR AFTER COIL	MANUFACTURER / MODEL NUMBER	REMARKS		
					AIR @ MAX CFM			WATER @ MAX CFM				125DB	250DB	500DB	1KDB	2KDB	4KDB														
					MBH	EAT (°F)	Δ P IN. H ₂ O	GPM	MAX Δ P FT. H ₂ O	COIL ROWS																					
VAV-6	VARIABLE VOLUME W/ HOT WATER RE-HEAT	SEE PLAN	75-400	0.7	15.2	55	0.5	10	180	0.8	8	1	1.5	48	48	45	37	28	28	60	70	12X12	12X10	13	YES	1"	YES	BY HIAC	YES	ENVIRO-TEC / ISRW-CA	⓪ ⓪ ⓪ ⓪ ⓪
VAV-8	VARIABLE VOLUME W/ HOT WATER RE-HEAT	SEE PLAN	150-700	0.7	26.5	55	0.5	10	180	1.4	8	1	1.5	54	53	51	41	31	30	80	90	14X12	12X12	13	YES	1"	YES	BY HIAC	YES	ENVIRO-TEC / ISRW-CA	⓪ ⓪ ⓪ ⓪ ⓪
VAV-10	VARIABLE VOLUME W/ HOT WATER RE-HEAT	SEE PLAN	250-1000	0.7	37.8	55	0.5	10	180	1.9	8	1	1.5	53	55	54	46	37	36	100	110	18X12	18X12	13	YES	1"	YES	BY HIAC	YES	ENVIRO-TEC / ISRW-CA	⓪ ⓪ ⓪ ⓪ ⓪
VAV-12	VARIABLE VOLUME W/ HOT WATER RE-HEAT	SEE PLAN	350-1500	0.7	56.7	55	0.5	10	180	2.9	8	1	1.5	58	58	52	45	41	38	148	130	18X12	20X12	13	YES	1"	YES	BY HIAC	YES	ENVIRO-TEC / ISRW-CA	⓪ ⓪ ⓪ ⓪ ⓪
VAV-14	VARIABLE VOLUME W/ HOT WATER RE-HEAT	SEE PLAN	475-1950	0.7	73.7	55	0.5	10	180	3.7	8	1	1.5	58	56	51	48	41	36	178	140	24X12	24X12	13	YES	1"	YES	BY HIAC	YES	ENVIRO-TEC / ISRW-CA	⓪ ⓪ ⓪ ⓪ ⓪
VAV-16	VARIABLE VOLUME W/ HOT WATER RE-HEAT	SEE PLAN	650-2800	0.7	105.8	55	0.5	10	180	5.3	8	1	1.5	68	65	62	57	51	44	16	180	24X17	24X18	-	YES	1"	YES	BY HIAC	YES	ENVIRO-TEC / ISRW-CA	⓪ ⓪ ⓪ ⓪ ⓪

NOTES:
 1. SCHEDULED AIR AND WATER FLOWS ARE MAXIMUM FOR EACH TYPE. REFER TO FLOORPLANS FOR BALANCING CFM.
 2. GPM BASED UPON 120°F LEAVING WATER TEMPERATURE.
 3. MBH BASED UPON 80°F LEAVING AIR TEMPERATURE.
 4. ADJUST COIL FACE AREA TO ACHIEVE SCHEDULED HEATING PERFORMANCE AND PRESSURE DROPS WITH 2-ROW COILS.
 5. COORDINATE CONTROL BOX AND PIPING OR WIRING CONNECTION SIDE WITH FLOOR PLANS.
 6. REFER TO VAV BALANCING SCHEDULE ON EACH FLOOR PLAN.

AIR SEPARATOR SCHEDULE

DESIGNATION	LOCATION	SERVICE	FLOW (GPM)	SIZE (IN.)	STRAINER	MANUFACTURER / MODEL NUMBER	REMARKS
AS-1	MECH. PENTHOUSE	HOT WATER	75		NO	SPROVENT	⓪ ⓪

NOTES:
 1. ASME RATED
 2. MICRO BUBBLE TYPE

COMPUTER ROOM AIR CONDITIONER SCHEDULE

TAG	LOCATION	SERVICE	CFM	COOLING COIL PERFORMANCE				ELECTRICAL REHEAT COIL PERFORMANCE		HUMIDIFIER PERFORMANCE		FAN PERFORMANCE		CONDENSER PERFORMANCE				FILTER	ELECTRICAL DATA						EMERG. POWER	OPERATING WEIGHT (LBS)	MANUFACTURER / MODEL NUMBER	NOTE(S)	
				EA OB (°F)	EA WB (°F)	TOTAL MBH	SENSIBLE MBH	KW	TYPE	CAPACITY (LB/HR)	KW	DRIVE	ESP (IN. HD)	MOTOR HP	GPM	PD (FT)	GLYCOL %		EFT (°F)	THR (MBH)	V	Ø	HZ	MCA					MOCP
AC-101	MRI EQUIP ROOM	MRI EQUIP	4900	72	60	110	98	15	NOTE 1	84	30	NOTE 6	0.5	3	35	24	40	110	159	MERV 8	480	3	60	42.0	45	YES	1,500	DATA-ARE / DAGU-1034	1, 2, 3, 4, 5, 6
AC-102	CT EQUIP ROOM	CT EQUIP	800	72	60	21	17	6	NOTE 1	15	5	NOTE 6	0.5	12	7	10	40	110	32	MERV 8	480	3	60	16.1	20	YES	1,500	DATA-ARE / DTOL-0234	1, 2, 3, 4, 5, 6

ACCESSORIES:
 1. RESISTANCE CANISTER STYLE HUMIDIFIER
 2. UNIT MOUNTED CONDENSATE PUMP AND LEAK DETECTION
 3. SEE PLAN FOR RETURN AND SUPPLY DUCT ARRANGEMENT
 4. VARIABLE CAPACITY COMPRESSOR (VARIABLE SPEED OR DIGITAL SCROLL W/ ACOUSTIC BLANKET)
 5. FILTER BOX
 6. DIRECT DRIVE ECM FAN

AIR COOLED CONDENSING UNIT SCHEDULE

ITEM	LOCATION	SERVICE	TYPE	MBH	REFRIGERANT TYPE	SATURATED CONDENSER TEMP (°F)	CONDENSER EAT		MIN. O.A. TEMP. (°F)	COMPRESSOR				FANS			ELECTRICAL DATA						OPERATING WEIGHT (LBS)	MANUFACTURER / MODEL NUMBER	REMARKS		
							(DB) (°F)	(WB) (°F)		NUMBER	KW	V	Ø	HZ	NUMBER	HP (EACH)	V	Ø	HZ	MCA	MOCP	V				Ø	HZ
ACCU-1	ROOF	AH4-1	SCROLL	360	R410A	41	80	67	95	2	31.7	480	3	60	3	1	480	3	60	83	80	480	3	60	1936	TRANE / RAUC20-1	
ACCU-2	ROOF	AH4-2	SCROLL	360	R410A	41	80	67	95	2	31.7	480	3	60	3	1	480	3	60	83	80	480	3	60	1936	TRANE / RAUC20-1	

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PUMP SCHEDULE

DESIGNATION	LOCATION	SERVICE	TYPE	GPM	TOTAL HEAD (FT.)	MAX NPSH	HOUSING				MOTOR				OPERATING WEIGHT (LBS)	VFD	EMERG. POWER	MANUFACTURER / MODEL NUMBER	REMARKS
							INLET (IN)	IMPELLER Ø (IN)	DISCH. (IN)	MAX BHP	MOTOR HP	RPM	V	Ø					
HMPR-142	PENTHOUSE	RADIOLOGY WING	INLINE	40	55		1.5	8.0	1.5	-	2.0	1800	480	3	60	YES		TACO / AV 3008	1, 2, 3, 4, 5

NOTES:
 1. PROVIDE W/ PREMIUM EFFICIENCY TEC MOTOR
 2. FURNISH WITH VFD & PROVIDE PREMIUM EFFICIENCY INVERTER DUTY TEC MOTORS
 3. PROVIDE 2-WAY DIFFERENTIAL PRESSURE AUTOMATIC CONTROL VALVE ASSEMBLY ACROSS SUPPLY & RETURN LINES
 4. P-1 & P-2 SHALL OPERATE AS A "LEAD-LAG" PAIR
 5. PUMP SHALL RUN ON SIGNAL FROM ASSOCIATED BOILER

FAN COIL UNIT SCHEDULE

ITEM	LOCATION	SERVICE	CFM	FAN RPM	DRIVE	TYPE	S.P. (IN.)	SOUND CRITERIA (INLET SONES)	OPERATING WEIGHT (LBS)	MANUFACTURER / MODEL NUMBER	REMARKS
EF-1	ROOF	TOILET (SOLED)	1300	1335	BELT	NOTE 1	1.0	1/2	120	1	60
EF-2	ROOF	MRI EXHAUST	1100	1482	BELT	NOTE 1	1.0	1/3	120	1	60

NOTES:
 1. CENTRIFUGAL ROOF EXHAUSTER

EXPANSION TANK SCHEDULE

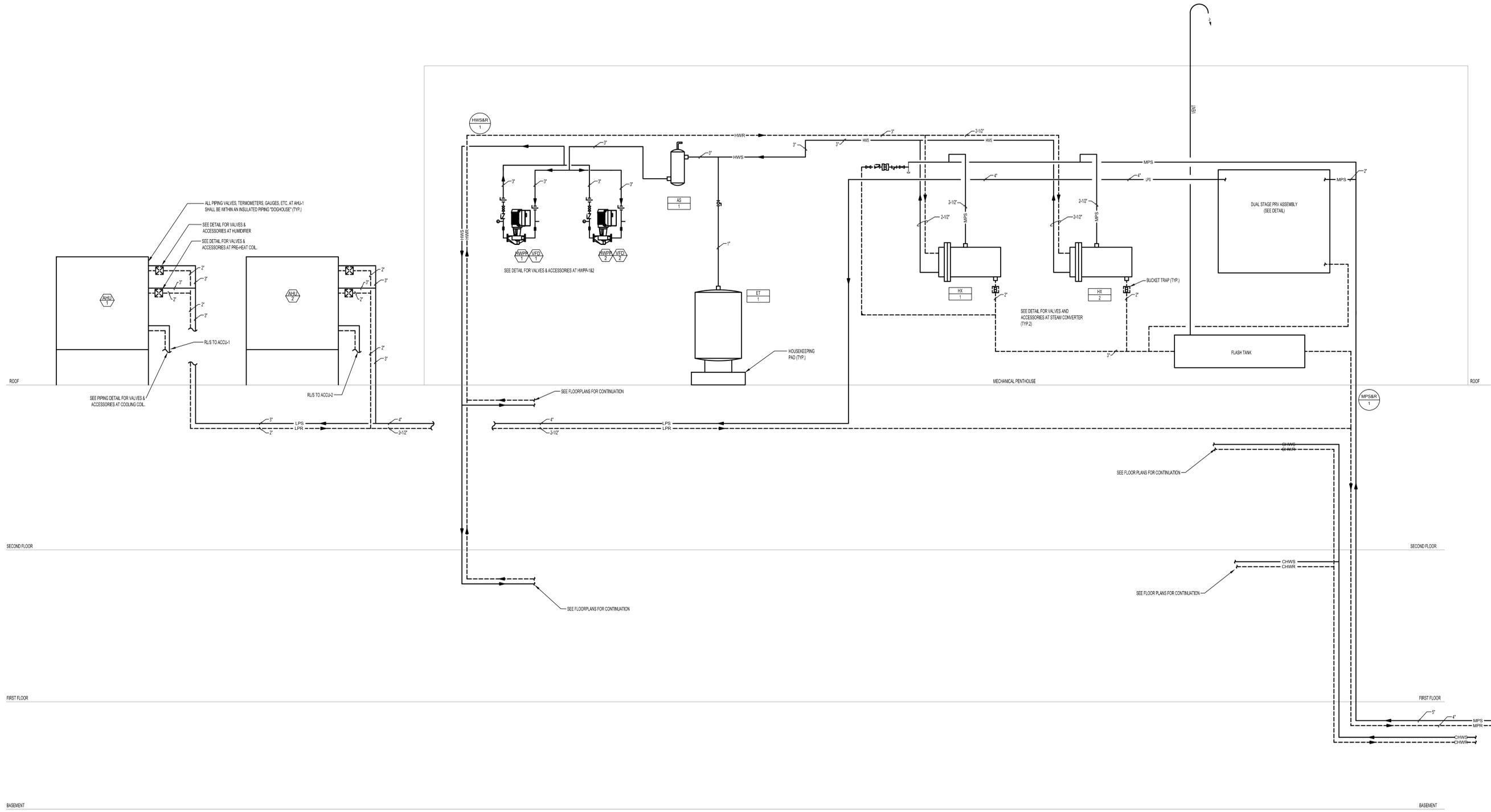
DESIGNATION	LOCATION	SERVICE	TANK RATING (PSIG)	TANK DIA. (IN.)	TANK HEIGHT (IN.)	TANK CAP.	TANK ACCEPT.	MANUFACTURER / MODEL NUMBER	REMARKS
ET-1	PENTHOUSE	HOT WATER	20	4 1/2"	37 GAL.	37 GAL.		TACO / CAH4-125	

NOTES:
 1. PROVIDE W/ PREMIUM EFFICIENCY TEC MOTOR
 2. FURNISH WITH VFD & PROVIDE PREMIUM EFFICIENCY INVERTER DUTY TEC MOTORS
 3. PROVIDE 2-WAY DIFFERENTIAL PRESSURE AUTOMATIC CONTROL VALVE ASSEMBLY ACROSS SUPPLY & RETURN LINES
 4. P-1 & P-2 SHALL OPERATE AS A "LEAD-LAG" PAIR
 5. PUMP SHALL RUN ON SIGNAL FROM ASSOCIATED BOILER

AIR DISTRIBUTION DEVICE SCHEDULE

ITEM	SERVICE	TYPE	NECK SIZE	AIR PATTERN	MANUFACTURER / MODEL NUMBER	REMARKS
A	SUPPLY	CEILING DIFFUSER	SEE PLANS	1-WAY	TITUS TD-4A	⓪ ⓪
B	SUPPLY	CEILING DIFFUSER	SEE PLANS	2-WAY (90°)	TITUS TD-4A	⓪ ⓪
C	SUPPLY	CEILING DIFFUSER	SEE PLANS	2-WAY (180°)	TITUS TD-4A	⓪ ⓪
D	SUPPLY	CEILING DIFFUSER	SEE PLANS	3-WAY	TITUS TD-4A	⓪ ⓪
E	SUPPLY	CEILING DIFFUSER	SEE PLANS	4-WAY	TITUS TD-4A	⓪ ⓪

three eighths inch = one foot
 one half inch = one foot
 one quarter inch = one foot
 one eighth inch = one foot
 one sixteenth inch = one foot
 one thirty-second inch = one foot
 one sixty-fourth inch = one foot
 one one-hundredth inch = one foot
 one two-hundredth inch = one foot
 one four-hundredth inch = one foot
 one eight-hundredth inch = one foot
 one thousandth inch = one foot

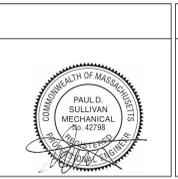


100% CONSTRUCTION DOCUMENT SUBMISSION
"FULLY SPRINKLERED"

1 - 100% CONSTRUCTION DOCUMENT SUBMISSION	04/08/2016
Revisions:	Date:

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Drawing Title
HVAC PIPING SCHEMATIC DIAGRAM

Approved: Project Director

Project Title
BUILDING 3
MRI/CT Radiology Addition
Boston Healthcare System - Brockton Campus

Location
940 Belmont Street Brockton, MA 02301

Date
02/12/2016

Checked
JWS

Drawn
DO

Project Number
523-398

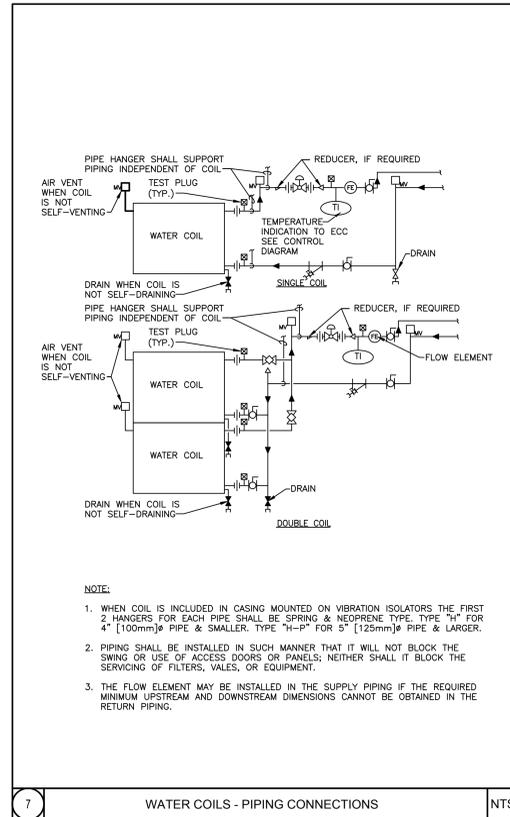
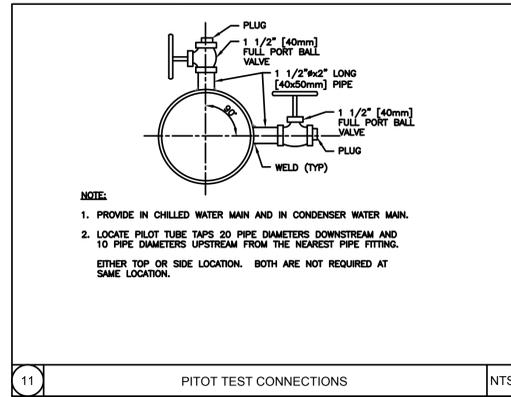
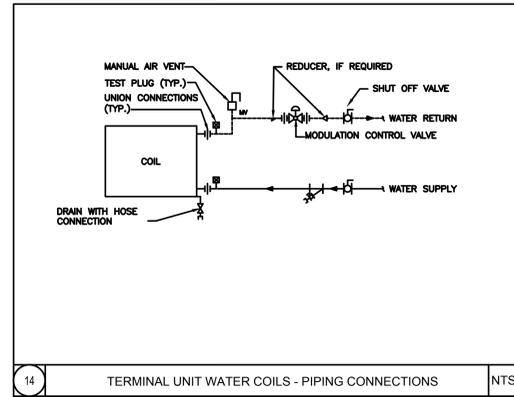
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Drawing Number
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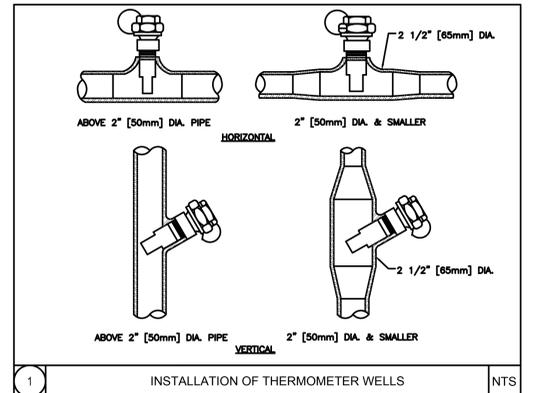
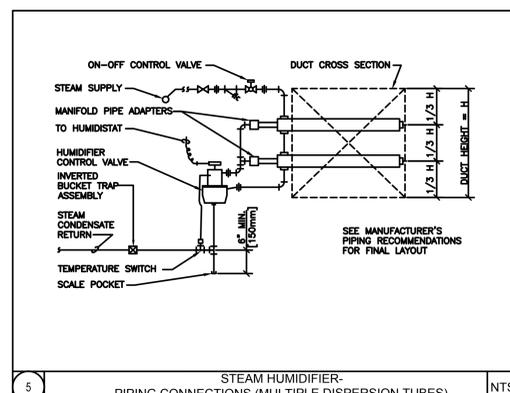
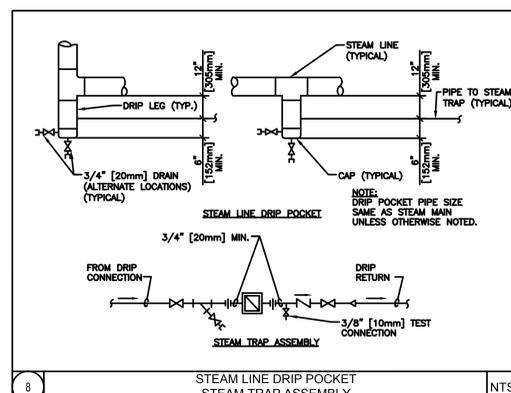
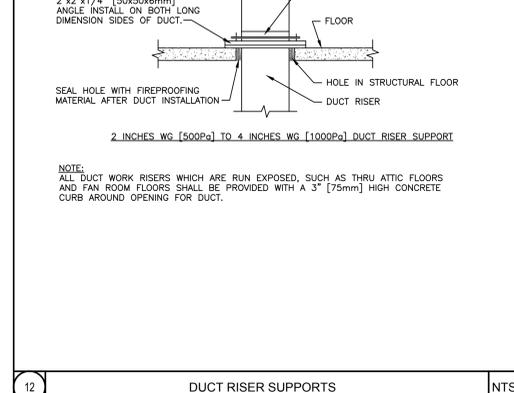
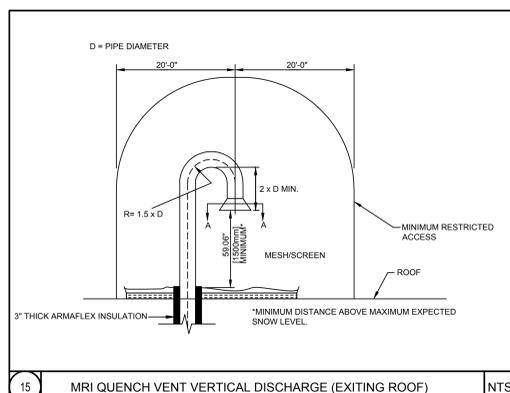
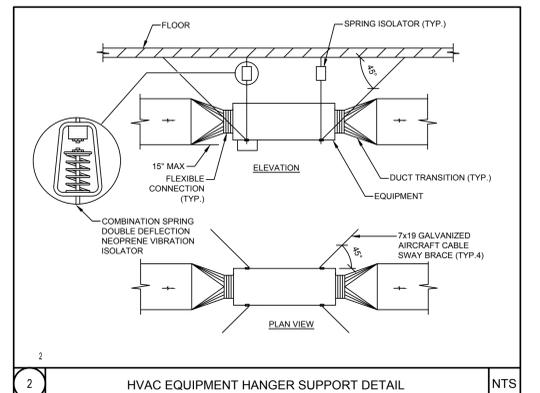
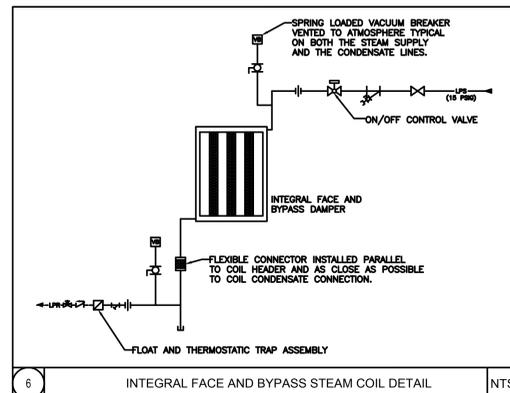
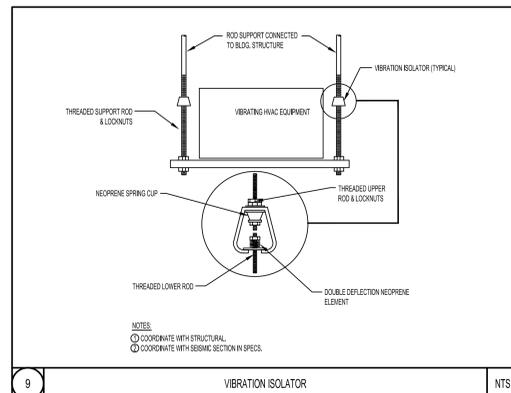
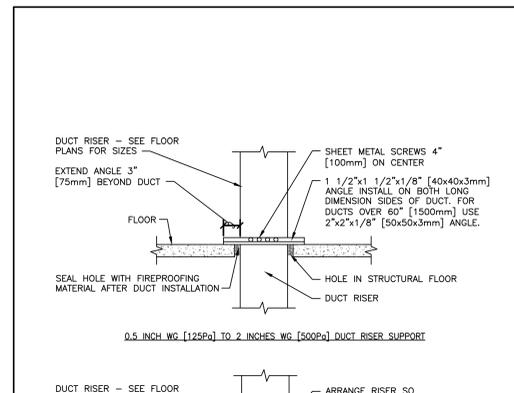
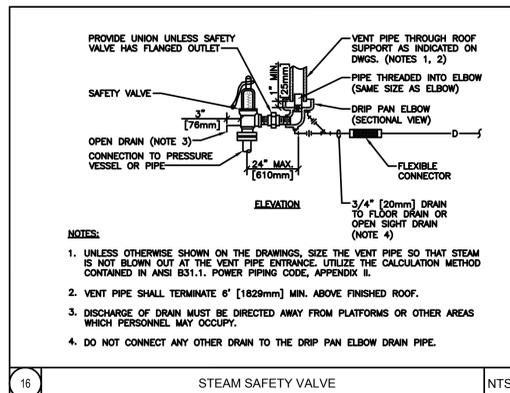
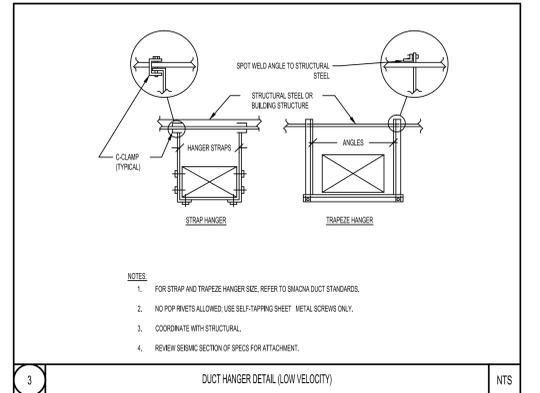
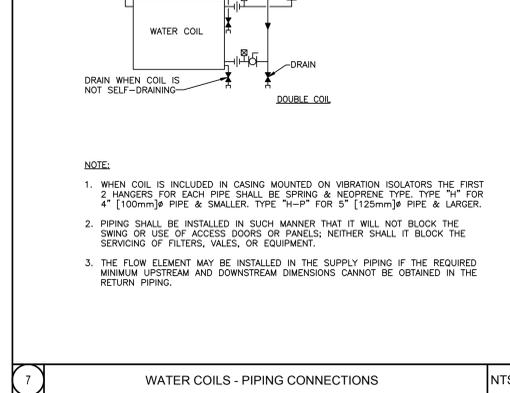
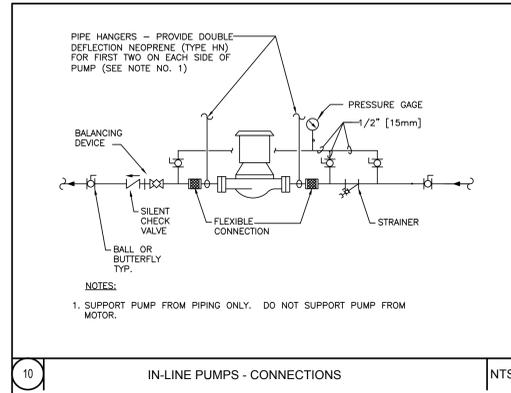
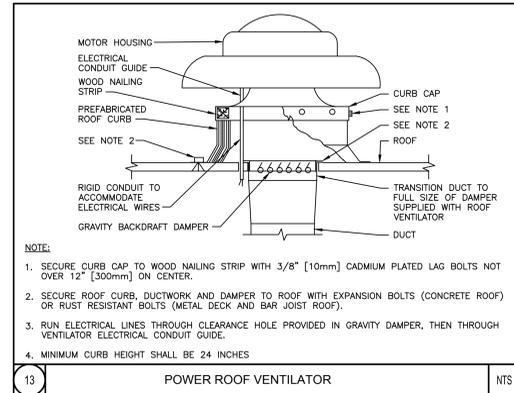
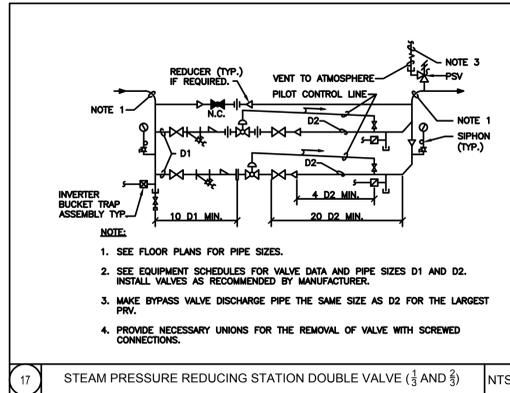
Department of Veterans Affairs



4 ROUND DUCT HANGERS NTS

HANGER STRAPS OR RODS				
MAX. DUCT Ø 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	1300 [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.

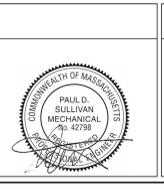


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1 - 100% CONSTRUCTION DOCUMENT SUBMISSION	04/08/2016
Revisions:	Date:

CONSULTANTS:

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Drawing Title: HVAC DETAILS

Approved: Project Director

Project Title: BUILDING 3 MRI/CT Radiology Addition Boston Healthcare System - Brockton Campus

Project Number: 523-398
Building Number: 3

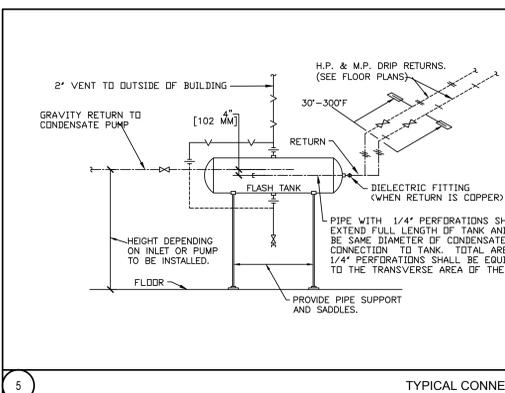
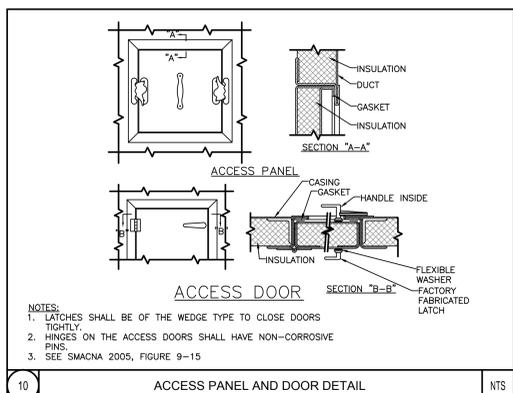
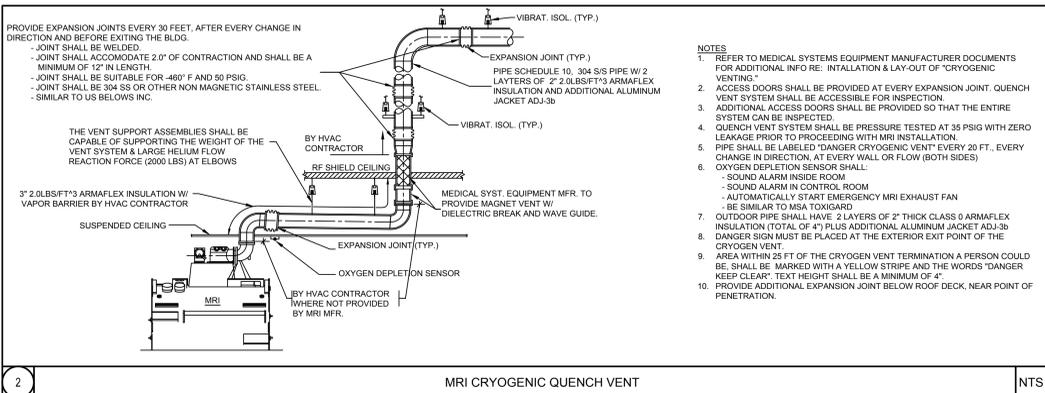
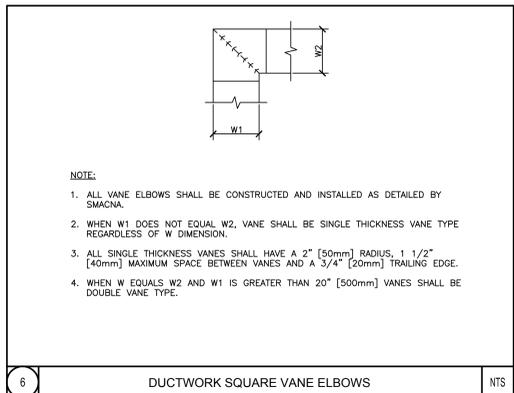
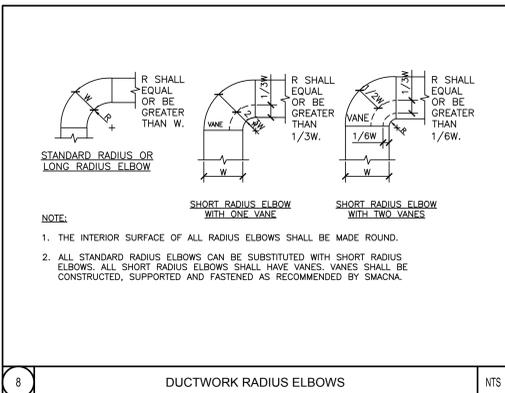
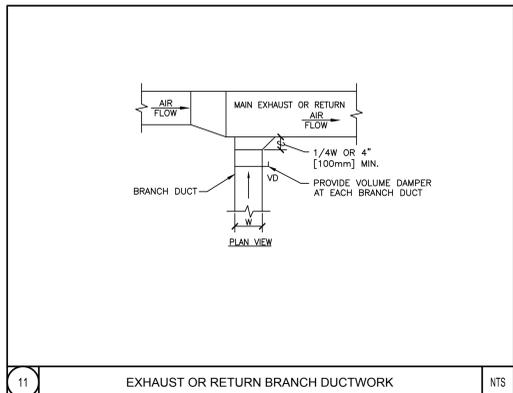
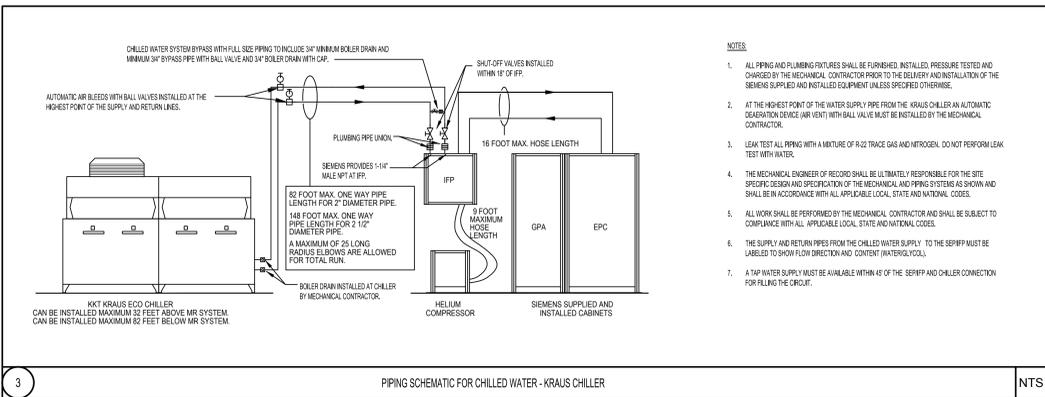
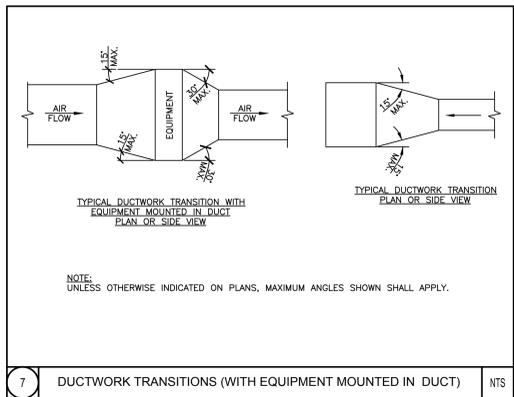
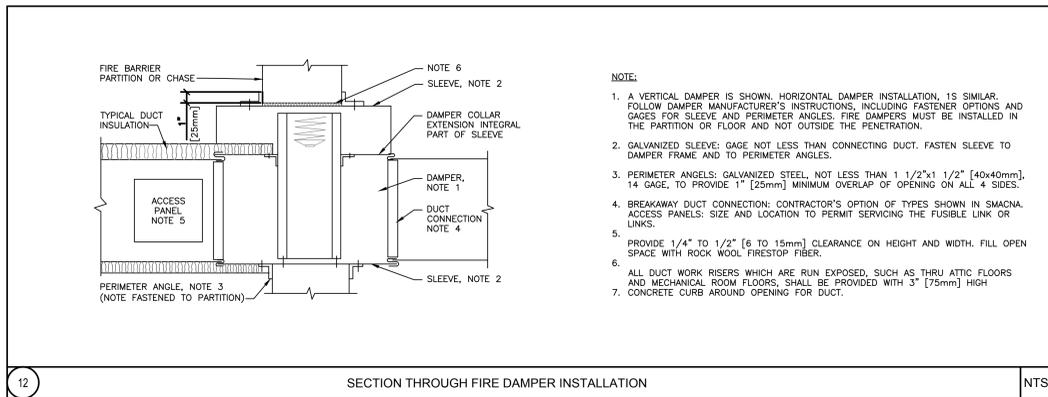
Location: 940 Belmont Street Brockton, MA 02301

Date: 02/12/2016
Checked: JWS
Drawn: DO

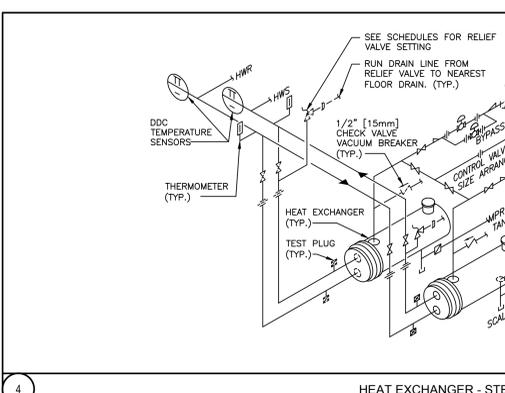
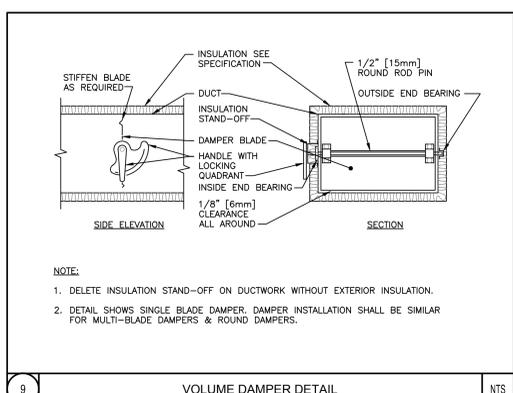
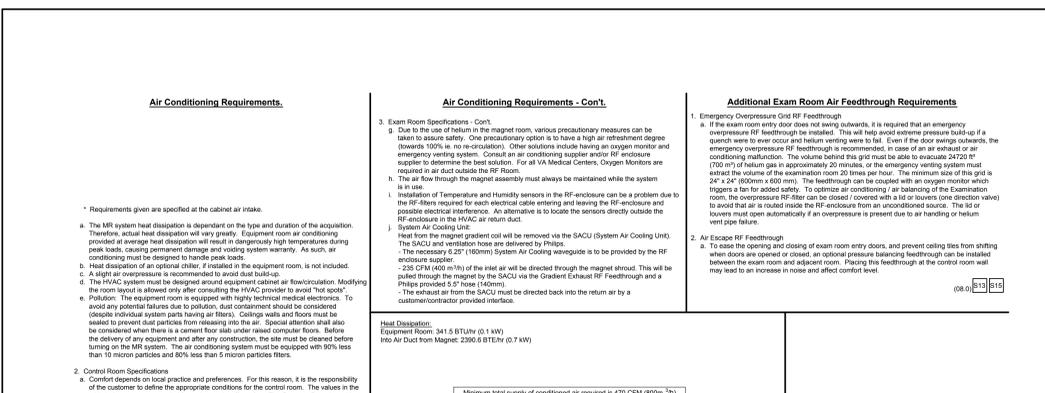
Drawing Number: H0-04
Dwg. 76 of 145

Office of Facilities Management

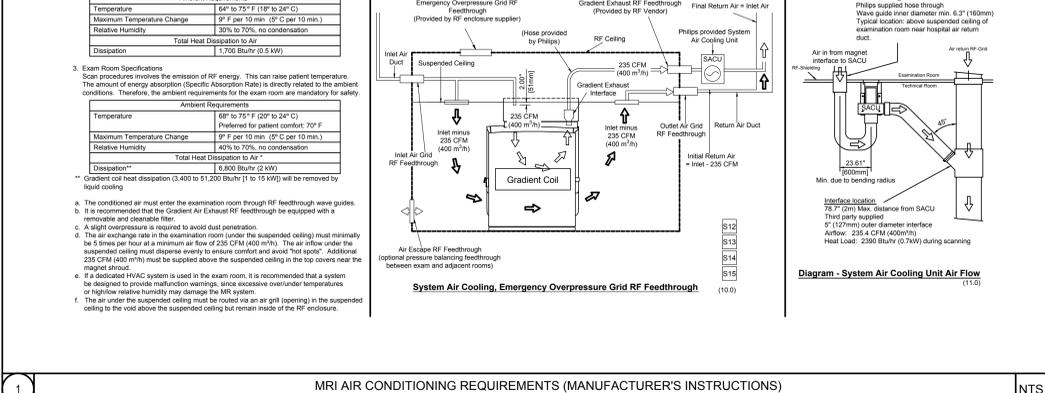
Department of Veterans Affairs



CONDENSATE PUMP CAPACITY - GPM	APPROX. CAPACITY OF FLASH TANK - GALLONS	SIZE OF FLASH TANK - INCHES
0 THRU 15	16	14 DIA. X 24 LONG
16 * 22	24	14 DIA. X 36 LONG
23 * 30	31	16 DIA. X 36 LONG
31 * 37	37	16 DIA. X 42 LONG
38 * 45	42	16 DIA. X 48 LONG
46 * 60	61	18 DIA. X 54 LONG
61 * 75	75	18 DIA. X 66 LONG
76 * 97	95	24 DIA. X 54 LONG
98 * 150	155	24 DIA. X 78 LONG



Ambient Requirements	
Temperature	64° to 75° F (18° to 24° C)
Maximum Temperature Change	5° F per 10 min. (5° C per 10 min.)
Relative Humidity	30% to 70%, no condensation
Total Heat Dissipation to Air	1,700 Btu/hr (0.5 kW)



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100% CONSTRUCTION DOCUMENT SUBMISSION

"FULLY SPRINKLERED"

Drawing Title: HVAC DETAILS

Project Title: BUILDING 3 MRI/CT Radiology Addition Boston Healthcare System - Brockton Campus

Location: 940 Belmont Street Brockton, MA 02301

Date: 02/12/2016

Checked: JWS
Drawn: DD

Project Number: 523-398

Building Number: 3

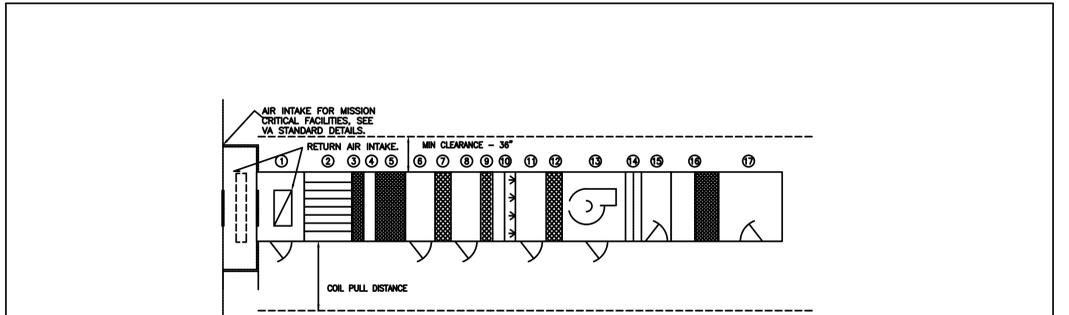
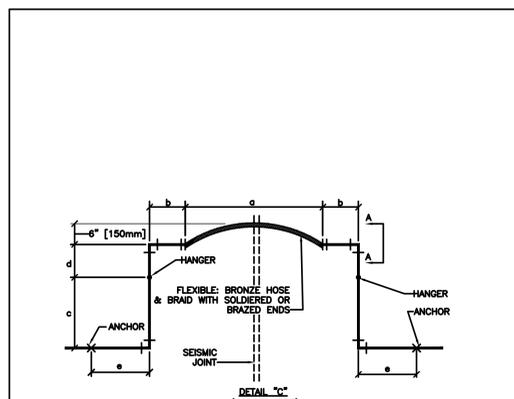
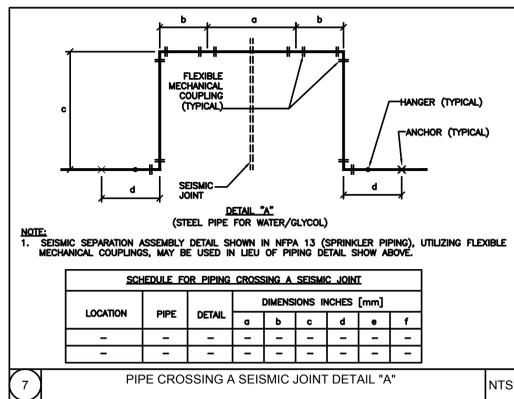
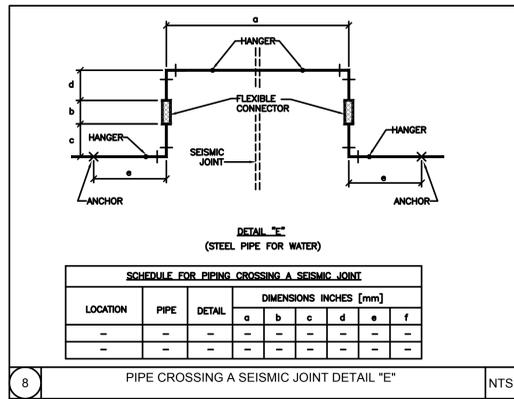
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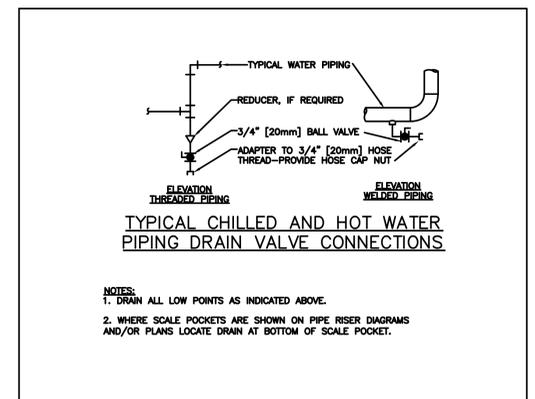
Department of Veterans Affairs

three inches = one foot
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 one eighth inch = one foot
 one sixteenth inch = one foot

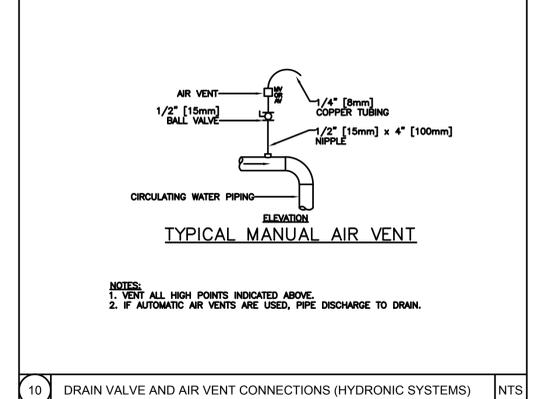


AIR HANDLING UNIT	ITEM	MINIMUM OUTSIDE AIR TWO BEDS OF FILTERS VAV	MINIMUM OUTSIDE AIR THREE BEDS OF FILTERS CV	100% OUTSIDE AIR TWO BEDS OF FILTERS CV	100% OUTSIDE AIR THREE BEDS OF FILTERS CV
MIXING BOX	1	YES	YES	NO	NO
BLENDER SECTION	2	YES	YES	NO	NO
PRE-FILTERS (SIDE ACCESS)	3	YES	YES	YES	YES
INSPECTION SECTION, SMALL	4	YES	YES	YES	YES
AFTER FILTER SECTION, SMALL (SIDE ACCESS)	5	YES	YES	YES	YES
HEAT RECOVERY SECTION, MED-LARGE	6	YES	YES	YES	YES
HEAT RECOVERY SECTION, MED-LARGE	7	NO	NO	YES	YES
PRE-HEAT COIL SECTION, SMALL	8	NO	NO	YES	YES
PRE-HEAT COIL SECTION, SMALL	9	YES	YES	YES	YES
HUMIDIFIER	10	YES	YES	YES	YES
COOLING COIL	11	YES	YES	YES	YES
FAN	12	YES	YES	YES	YES
DIP FUSER ACCESS	13	NO	NO	NO	NO
INSPECTION, MED-LARGE	14	NO	NO	YES	YES
HEPA FILTER (PLENUM OVERHEAD)	15	NO	NO	NO	NO
PLENUM	16	YES	YES	YES	YES
AS REQUIRED	17	YES	YES	YES	YES

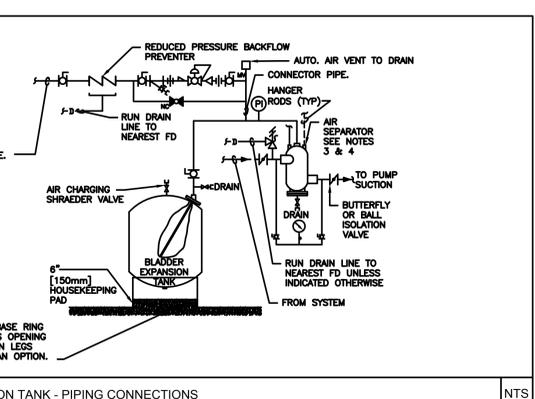
- NOTE:
- ACCESS DOORS SHALL BE GASKETED AND HINGED TO OPEN AGAINST FAN OPERATING PRESSURE TO PREVENT AIR LEAKAGE.
 - MINIMUM ACCESS DOOR WIDTH SHALL BE 24" (600mm).
 - ACCESS DOOR HEIGHT SHALL BE DETERMINED BY UNIT CASING BUT NOT TO EXCEED 6'-0" (1800mm).
 - ACCESS DOORS ON FAN SUCTION SHALL OPEN OUTWARD.
 - ACCESS DOORS ON FAN DISCHARGE SIZE SHALL OPEN INWARD.



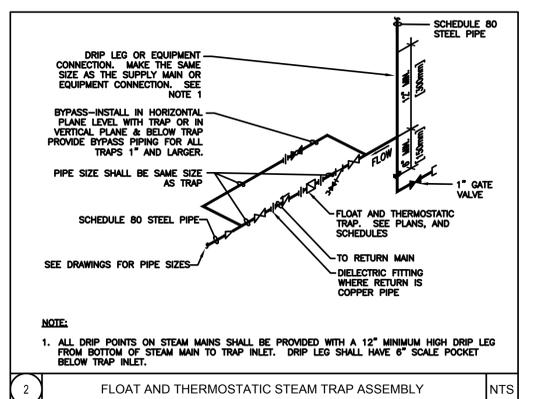
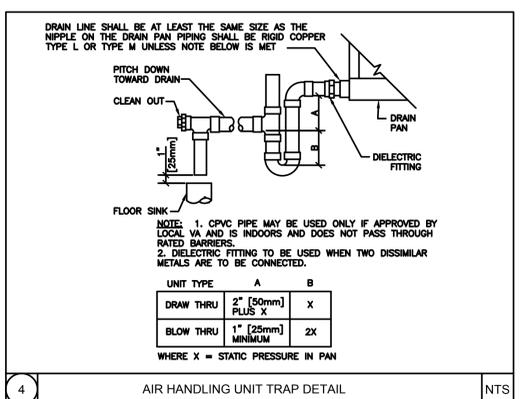
- NOTES:
- DRAIN ALL LOW POINTS AS INDICATED ABOVE.
 - WHERE SCALE POCKETS ARE SHOWN ON PIPE RISER DIAGRAMS AND/OR PLANS LOCATE DRAIN AT BOTTOM OF SCALE POCKET.



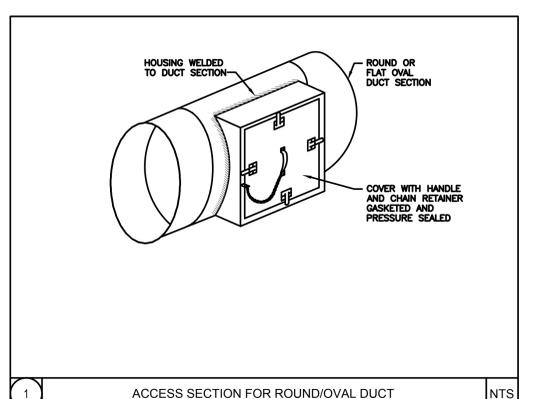
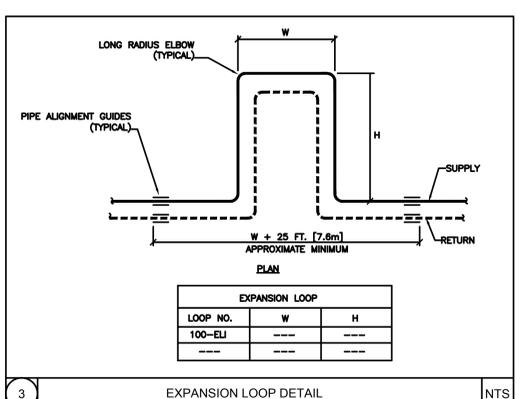
- NOTES:
- VENT ALL HIGH POINTS INDICATED ABOVE.
 - IF AUTOMATIC AIR VENTS ARE USED, PIPE DISCHARGE TO DRAIN.



- NOTE:
- SEE EXPANSION TANK SYSTEM SCHEDULE FOR COMPONENT SIZES.
 - FOR HOT WATER SYSTEMS 2" (50mm) AND SMALLER AND CHILLED WATER SYSTEMS USE IN-LINE AIR PURGER IN LIEU OF AIR SEPARATOR.
 - SET PRESSURE REDUCING VALVE SO PRESSURE AT HIGHEST POINT IN SYSTEM HAS A MINIMUM OF 4 PSIG (28kPa).



- NOTE:
- ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 1/2" MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 6" SCALE POCKET BELOW TRAP INLET.



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Revisions:	Date:

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Drawing Title: HVAC DETAILS

Approved: Project Director

Project Title: BUILDING 3 MRI/CT Radiology Addition Boston Healthcare System - Brockton Campus

Project Number: 523-398

Building Number: 3

Location: 940 Belmont Street Brockton, MA 02301

Date: 02/12/2016

Checked: JWS

Drawn: DO

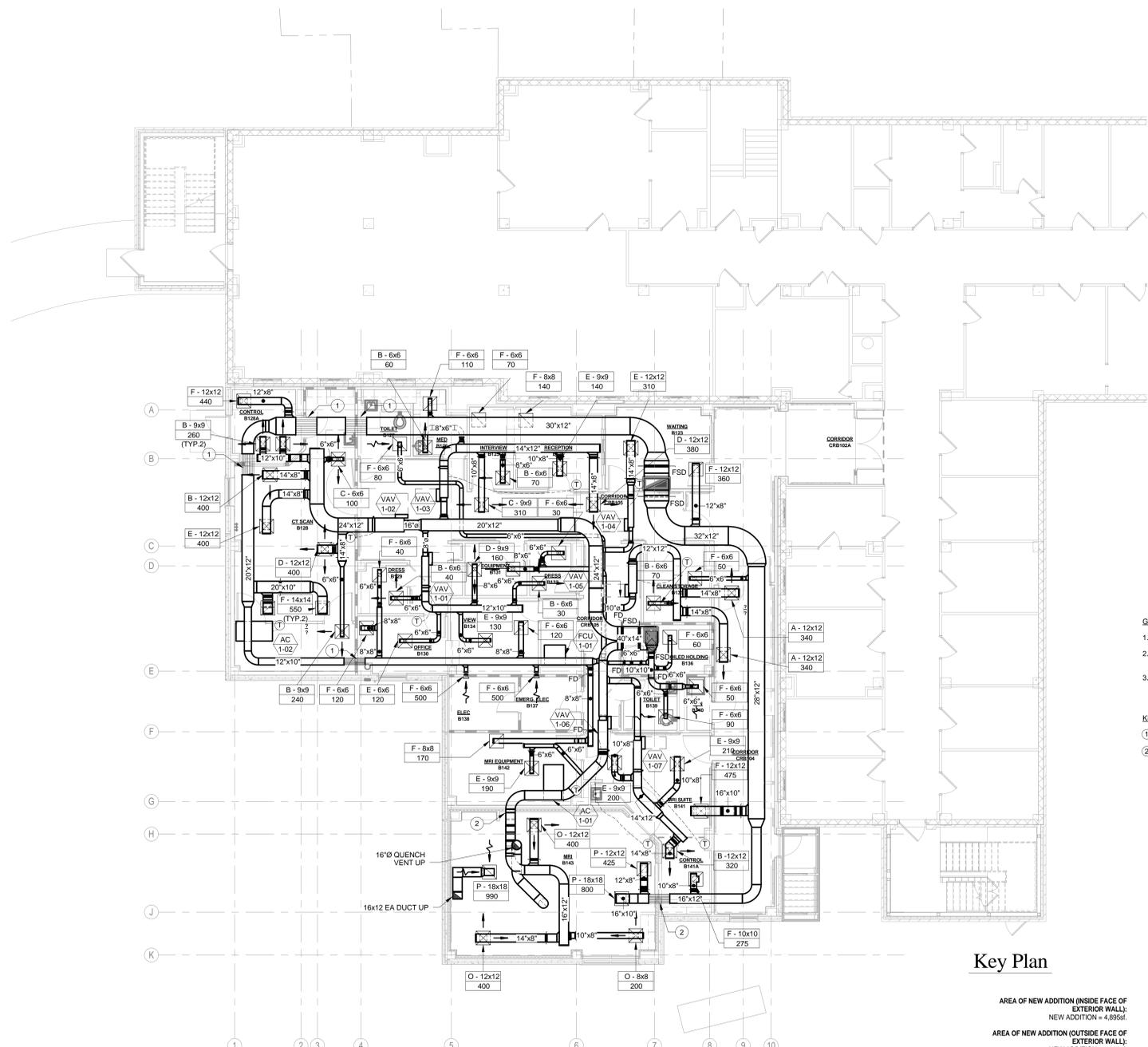
Drawing Number: HQ-07

Dwg. 79 of 145

Office of Facilities Management

Department of Veterans Affairs

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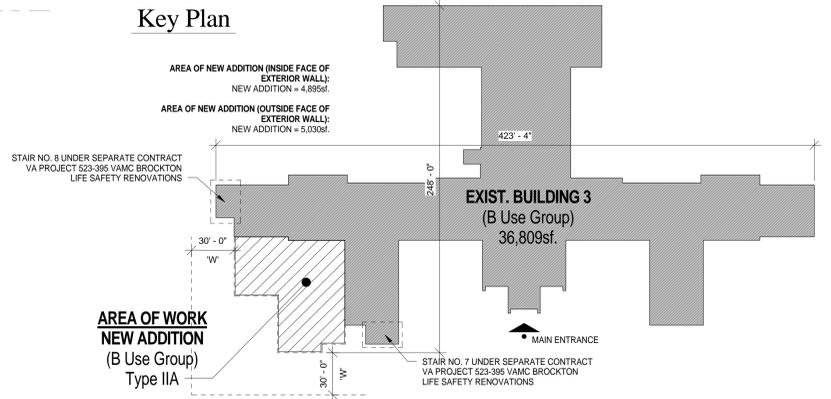


VAV BALANCING SCHEDULE LEVEL 1							
DSGNTN	NUMBER	TYPE	MBH	GPM	CFM MIN	CFM MAX	CFM HEAT
VAV	1-01	SAV-8	16.6	1.7	480	480	480
VAV	1-02	SAV-16	41.8	4.2	1290	2060	1290
VAV	1-03	SAV-12	33.2	3.3	960	960	960
VAV	1-04	SAV-6	10.7	1.1	310	310	310
VAV	1-05	SAV-10	25.9	2.6	750	750	750
VAV	1-06	SAV-12	41.1	4.1	1190	1190	1190
VAV	1-07	SAV-10	25.2	2.5	730	730	730

**HVAC LEVEL 1
DUCTWORK**

- GENERAL NOTES:**
1. PROVIDE LEAD COVERING ON EACH DUCT PENETRATING LEAD LINED WALLS PER SPEC SECTION 23-31-00-2-16
 2. PROVIDE ELECTROMAGNETIC SHIELDING DUCT CONNECTIONS ON EACH DUCT PASSING THROUGH SHIELDED ROOMS PER SPEC SECTION 23-31-00-2-19
 3. PROVIDE 4" PRESSURES CLASS DUCTWORK FROM AHU TO VAV BOXES ANY OTHER DUCTWORK 2" PRESSURE CLASS, SEE SPECIFICATIONS.
- KEYNOTES:**
- 1 LEAD COVERED DUCT, SEE GENERAL NOTES & SPECIFICATIONS
 - 2 ELECTROSTATIC DUCT CONNECTION, SEE GENERAL NOTES & SPECIFICATIONS

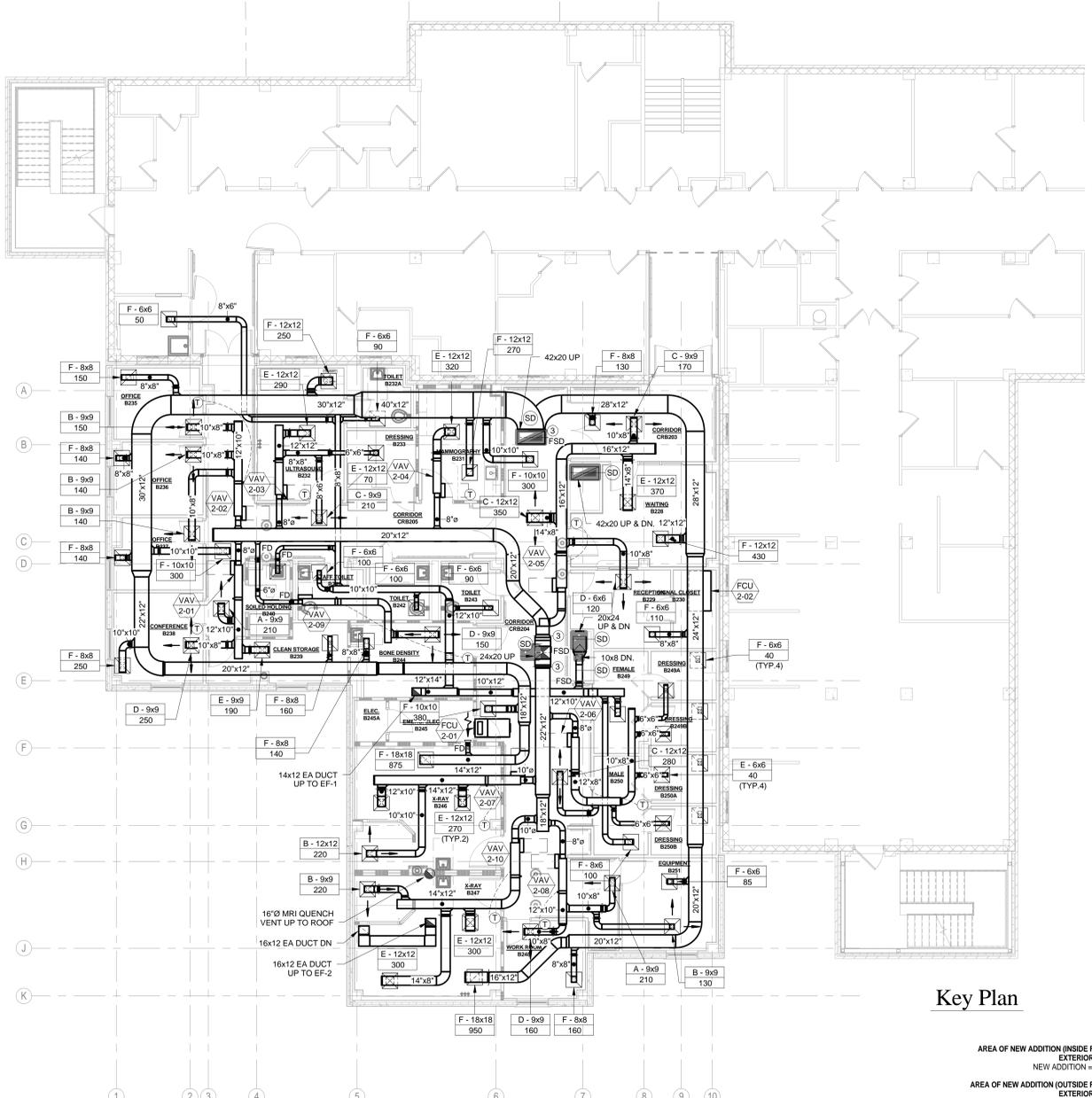
Key Plan



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CONSULTANTS: R. W. Sullivan Engineering MEP, FF Engineering, Civil, Consulting 70 Beverly Street, Suite 201 Boston, Massachusetts 02215-1157 Phone: 617-534-8227 www.rwsusa.com RWS 25611075.00		ARCHITECT/ENGINEERS: moser pilon nelson architects 30 JORDAN LANE BROCKTON, MA 01930 (508) 583-8164	Drawing Title HVAC LEVEL 1 DUCTWORK PLAN	Project Title BUILDING 3 MRI/CT Radiology Addition Boston Healthcare System - Brockton Campus	Project Number 523-398	Office of Facilities Management Department of Veterans Affairs	
			Approved: Project Director	Location 940 Belmont Street Brockton, MA 02301	Building Number 3		Drawing Number H1.01
1 - 100% CONSTRUCTION DOCUMENT SUBMISSION Revisions:	04/08/2016 Date:			Date 02/12/2016	Checked JWS	Drawn DO	Dwg. 80 of 145

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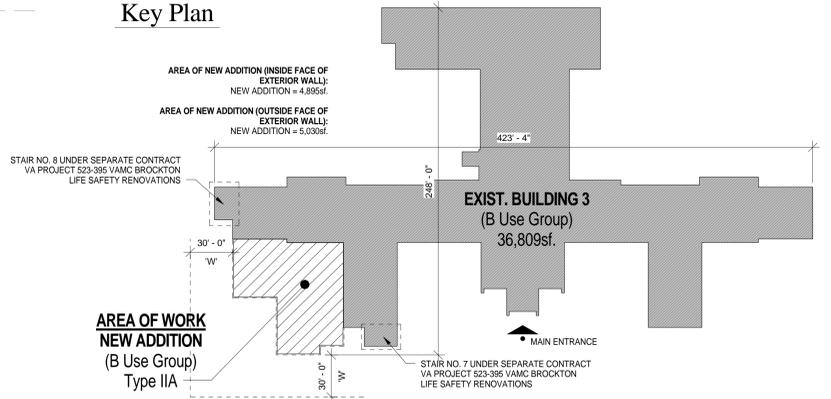


**HVAC LEVEL 2
 DUCTWORK PLAN**

VAV BALANCING SCHEDULE LEVEL 2								
DSGNTN	NUMBER	TYPE	MBH	GPM	CFM MIN	CFM MAX	CFM HEAT	Level
VAV	2-01	SAV-10	22.5	2.2	650	650	650	Level 2
VAV	2-02	SAV-8	13.8	1.4	340	430	400	Level 2
VAV	2-03	SAV-8	19.7	2.0	570	570	570	Level 2
VAV	2-04	SAV-6	5.5	0.6	160	320	160	Level 2
VAV	2-05	SAV-12	34.9	3.5	1010	1010	1010	Level 2
VAV	2-06	SAV-8	15.2	1.5	440	440	440	Level 2
VAV	2-07	SAV-10	10.4	1.0	300	760	300	Level 2
VAV	2-08	SAV-8	17.3	1.7	500	500	500	Level 2
VAV	2-09	SAV-4	4.8	0.5	140	140	140	Level 2
VAV	2-10	SAV-12	14.2	1.4	410	920	410	Level 2

- GENERAL NOTES:**
1. PROVIDE LEAD COVERING ON EACH DUCT PENETRATING LEAD LINED WALLS PER SPEC SECTION 23-31-00-2.18
 2. PROVIDE ELECTROMAGNETIC SHIELDING DUCT CONNECTIONS ON EACH DUCT PASSING THROUGH SHIELDED ROOMS PER SPEC SECTION 23-31-00-2.19
 3. PROVIDE 4" PRESSURES CLASS DUCTWORK FROM AHU TO VAV BOXES ANY OTHER DUCTWORK 2" PRESSURE CLASS. SEE SPECIFICATIONS.
 4. DEDUCT ALTERNATE ALL WORK THIS FLOOR FOR FUTURE U.N.O.
 5. DEDUCT ALTERNATE THIS FLOOR NOT BUILT.
- KEYNOTES:**
- ① LEAD COVERED DUCT, SEE GENERAL NOTES & SPECIFICATIONS
 - ② ELECTROSTATIC DUCT CONNECTION, SEE GENERAL NOTES & SPECIFICATIONS
 - ③ ALL DUCTWORK BEYOND THIS POINT FOR FUTURE UNDER DEDUCT ALTERNATE X.

Key Plan



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Drawing Title
HVAC LEVEL 2 DUCTWORK PLAN

Approved: Project Director

Project Title
**BUILDING 3
 MRI/CT Radiology Addition
 Boston Healthcare System - Brockton Campus**

Location
940 Belmont Street Brockton, MA 02301

Date
02/12/2016

Checked
JWS

Drawn
DO

Project Number
523-398

Building Number
3

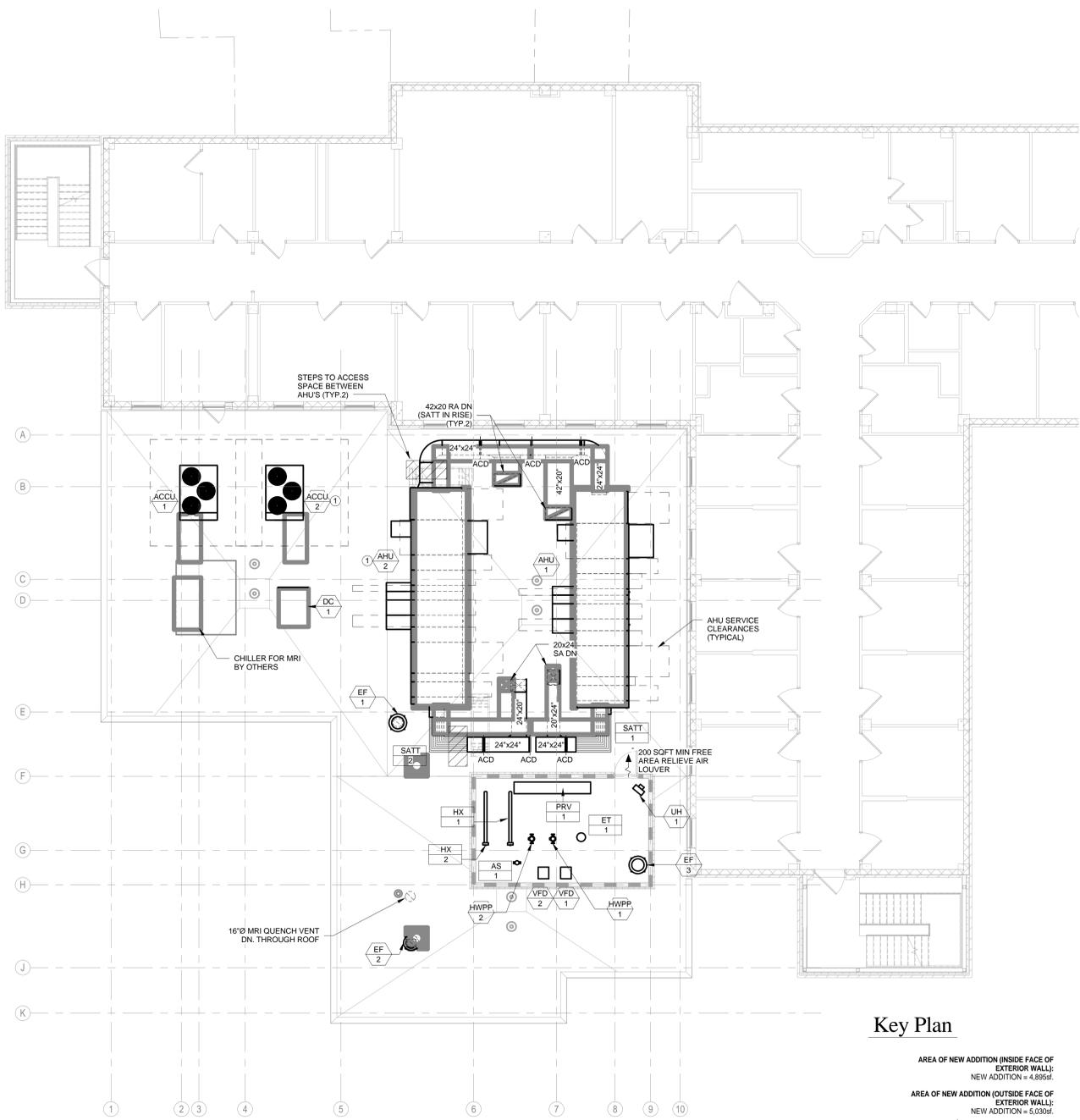
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H1.02

Dwg. 81 of 145

**Office of
 Facilities
 Management**

Department of
 Veterans Affairs

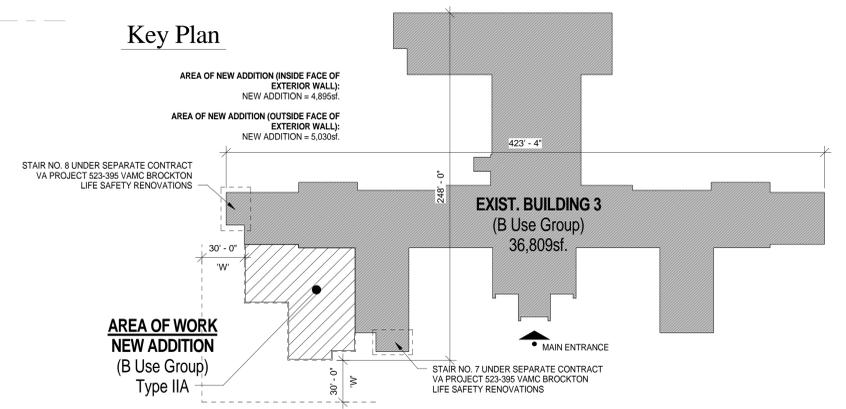
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HVAC ROOF DUCTWORK PLAN

KEYNOTES:
 ① THIS EQUIPMENT AND ASSOCIATED PIPING & DUCTWORK ARE ELIMINATED UNDER DEDUCT ALTERNATE #X WHICH ELIMINATES THE 2ND FLOOR.

Key Plan

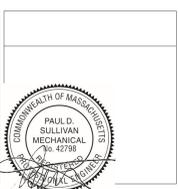


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Approved: Project Director

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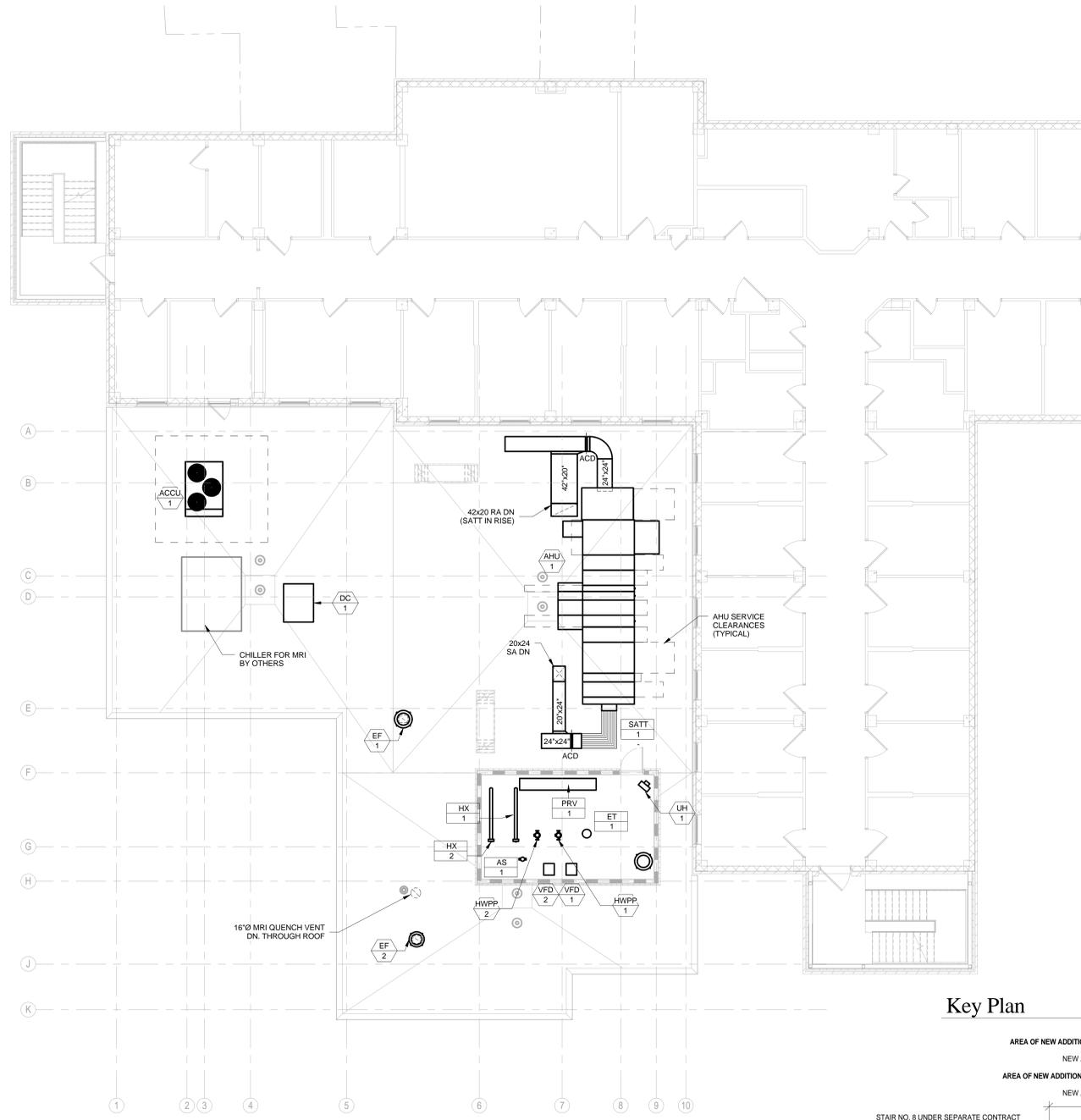
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Office of Facilities Management

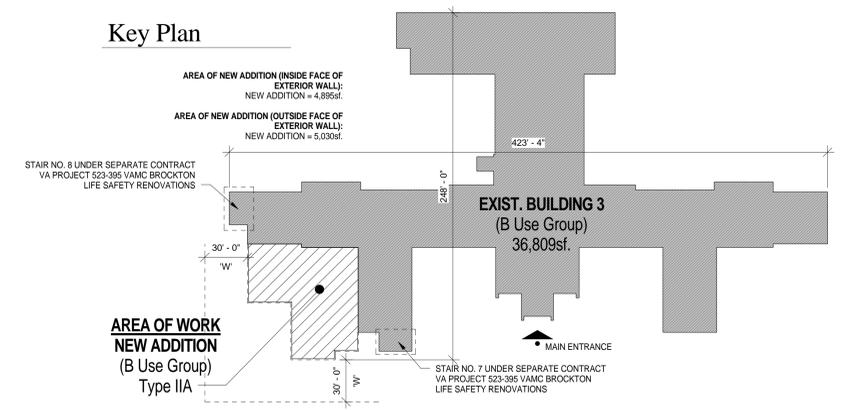
Department of Veterans Affairs

three inches = one foot
 one and one half inches = one foot
 one inch = 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



**HVAC DUCT
 ALTERNATE ROOF
 DUCTWORK PLAN**

Key Plan



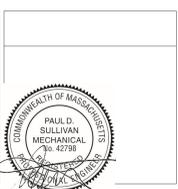
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1 - 100% CONSTRUCTION DOCUMENT SUBMISSION	04/08/2016
Revisions:	Date:

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Drawing Title
 HVAC DUCTWORK ALTERNATE ROOF DUCTWORK PLAN

Approved: Project Director

Project Title
 BUILDING 3
 MRI/CT Radiology Addition
 Boston Healthcare System - Brockton Campus

Location
 940 Belmont Street Brockton, MA 02301

Date
 02/12/2016

Checked
 JWS

Drawn
 DO

Project Number
 523-398

Building Number
 3

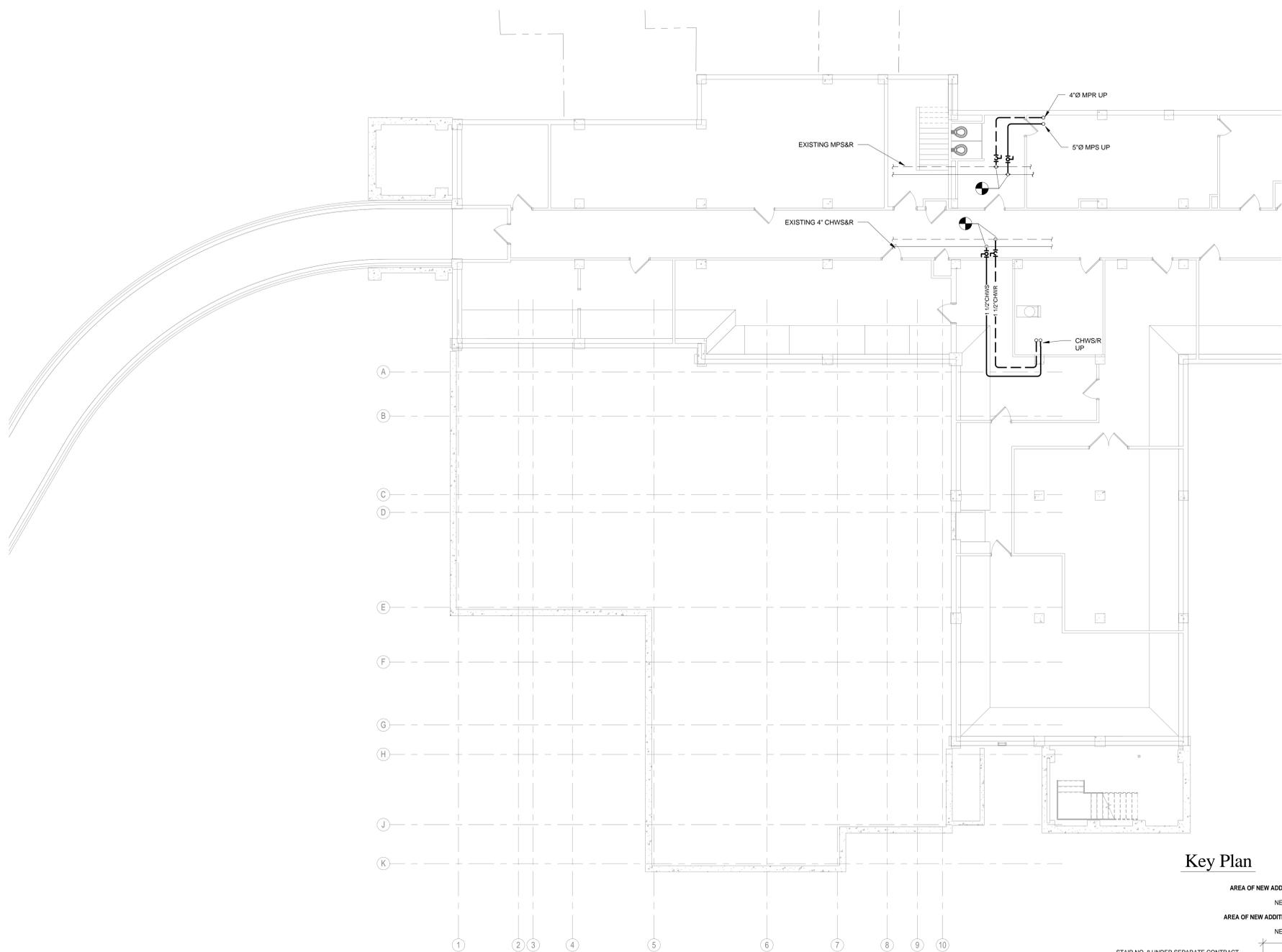
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**Office of
 Facilities
 Management**

**Department of
 Veterans Affairs**

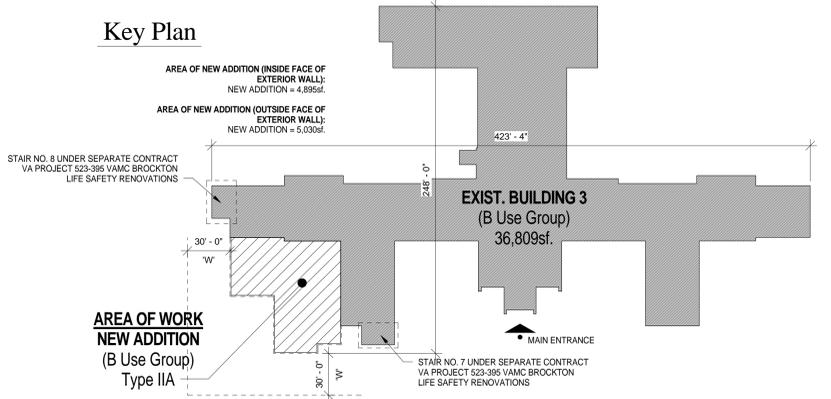
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HVAC BASEMENT PIPING PLAN

GENERAL NOTES:
 1. ALL WORK THIS DRAWING IN UTILITY CRAWLSPACE BELOW BASEMENT

Key Plan

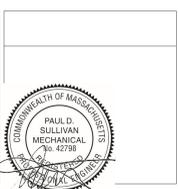


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Drawing Title
HVAC BASEMENT PIPING PLAN

Approved: Project Director

Project Title
**BUILDING 3
 MRI/CT Radiology Addition
 Boston Healthcare System - Brockton Campus**

Location
940 Belmont Street Brockton, MA 02301

Date
 02/12/2016

Checked
 JWS

Drawn
 DO

Project Number
523-398

Building Number
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Drawing Number
H2.00

Dwg. 84 of 145

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GENERAL NOTES:

1. ANY UNSIZED HWS&R PIPING IS 3/4"
2. PROVIDE CLEANOUTS AT EACH CHANGE OF DIRECTION IN CONDENSATE PIPING.

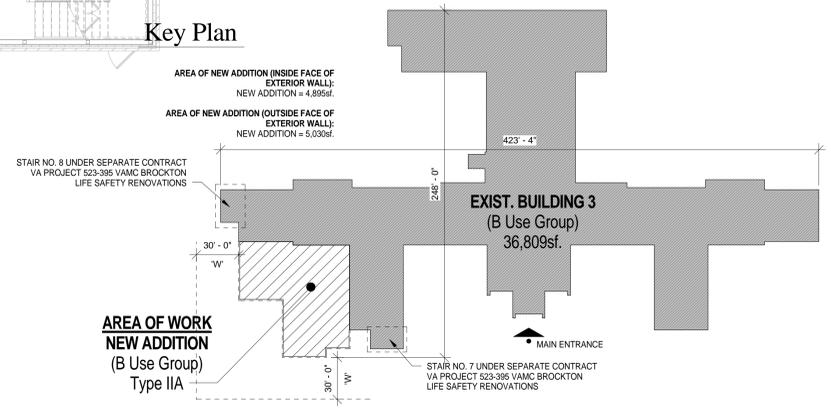
KEYNOTES

- 1 4" MPR UP
- 2 4" MPR DN TO UTILITY CRAWLSPACE
- 3 NOT USED
- 4 NOT USED
- 5 1-1/2" CHILLED WATER SUPPLY & RETURN DN.
- 6 1-1/4" CHWS&R UP
- 7 1-1/2" HWS&R UP
- 8 CS/R UP

VAV BALANCING SCHEDULE LEVEL 1							
DSGNTN	NUMBER	TYPE	MBH	GPM	CFM MIN	CFM MAX	CFM HEAT
VAV	1-01	SAV-8	16.6	1.7	480	480	480
VAV	1-02	SAV-16	41.8	4.2	1290	2060	1290
VAV	1-03	SAV-12	33.2	3.3	960	960	960
VAV	1-04	SAV-6	10.7	1.1	310	310	310
VAV	1-05	SAV-10	25.9	2.6	750	750	750
VAV	1-06	SAV-12	41.1	4.1	1190	1190	1190
VAV	1-07	SAV-10	25.2	2.5	730	730	730

HVAC LEVEL 1 PIPING PLAN

Key Plan

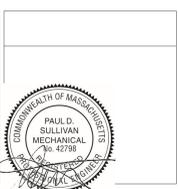


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Dwg. 85 of 145

Office of Facilities Management

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