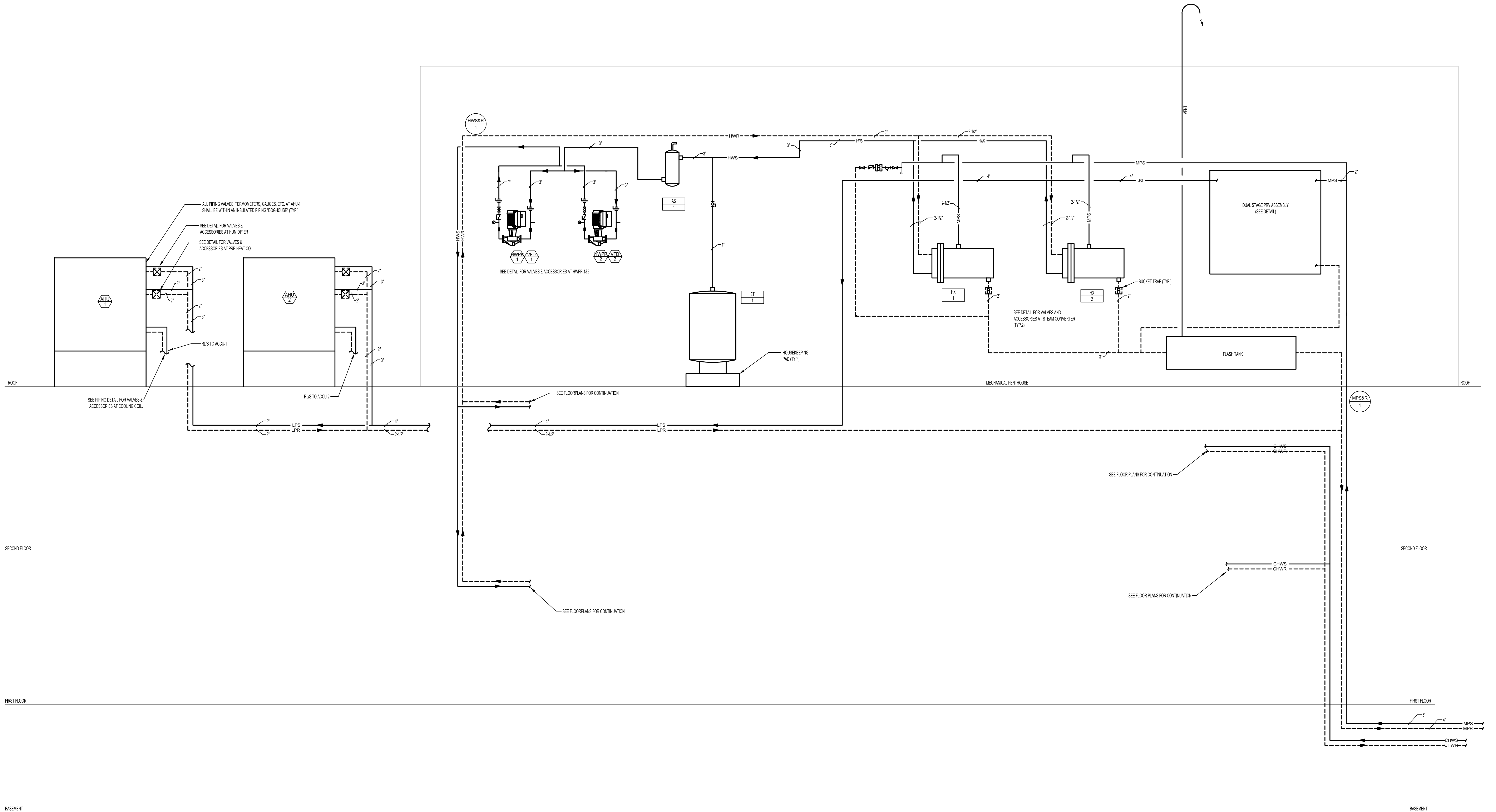






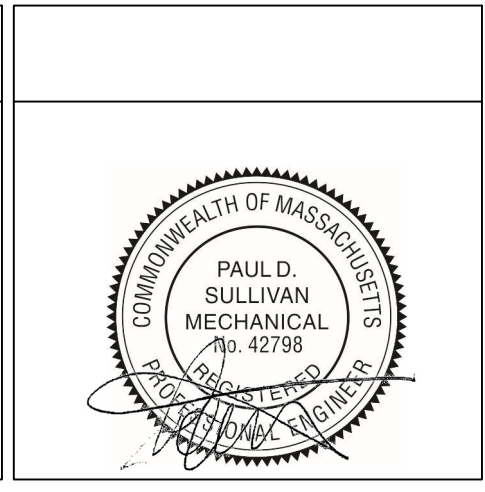
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one half inch = one foot  
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one quarter inch = one foot  
one eighth inch = one foot



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

**CONSULTANTS:**

**RWS** R. W. Sullivan Engineering  
MEP / FF Engineering, Cook, Consulting  
The Schmitt Center, 525 North St., Suite 203  
Boston, Massachusetts 02210-1101  
Phone: 617/534-6227 www.rwsullivan.com  
RWS 208 s 1107132



**ARCHITECT/ENGINEERS:**

**moser pilon nelson**  
architects  
30 - 200001 - 0000  
90 TRINITY STREET, CT 06103  
(860) 542-9164

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**

Building Number  
**3**

Drawing Number  
**H0-03**  
Dwg. 75 of 145

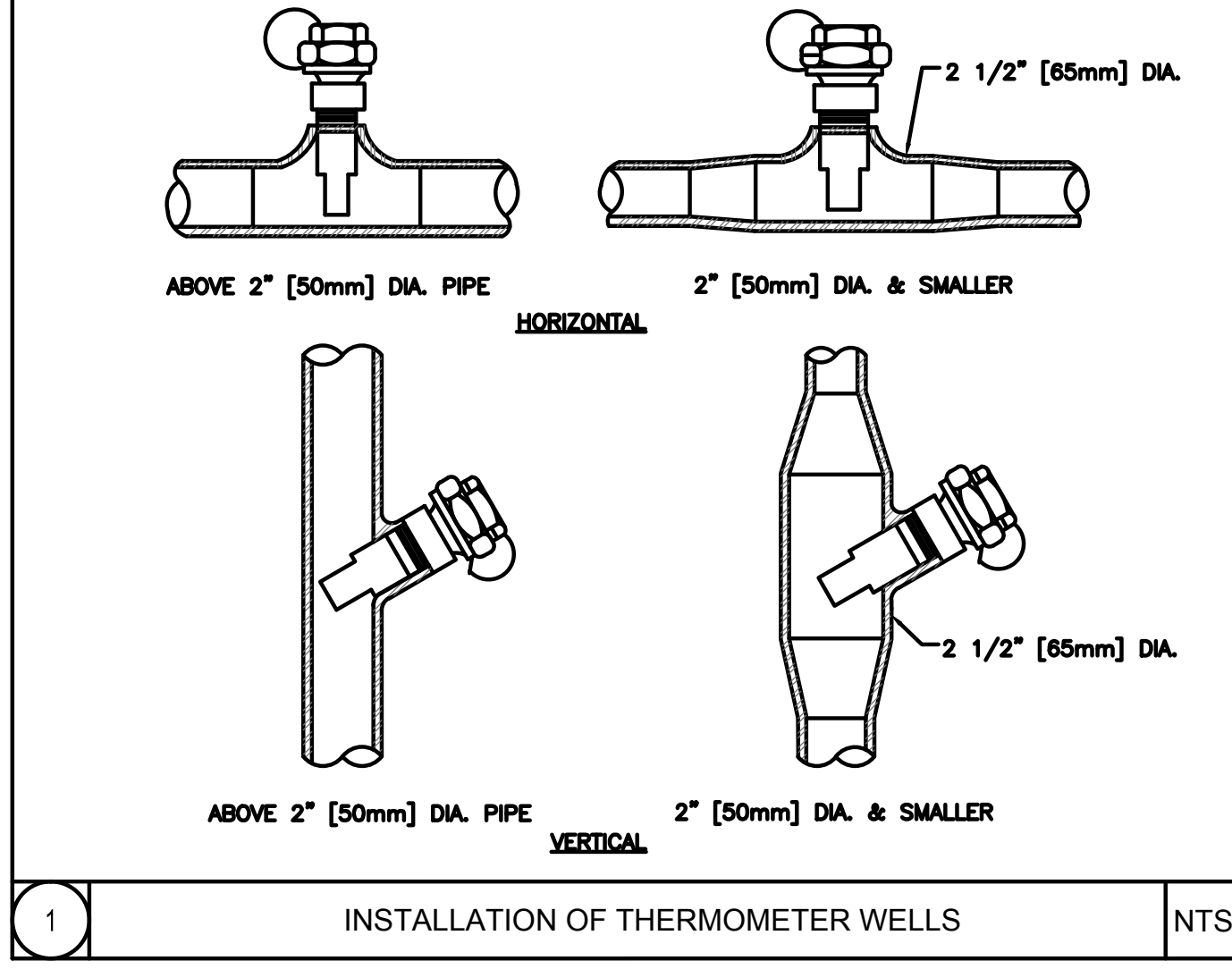
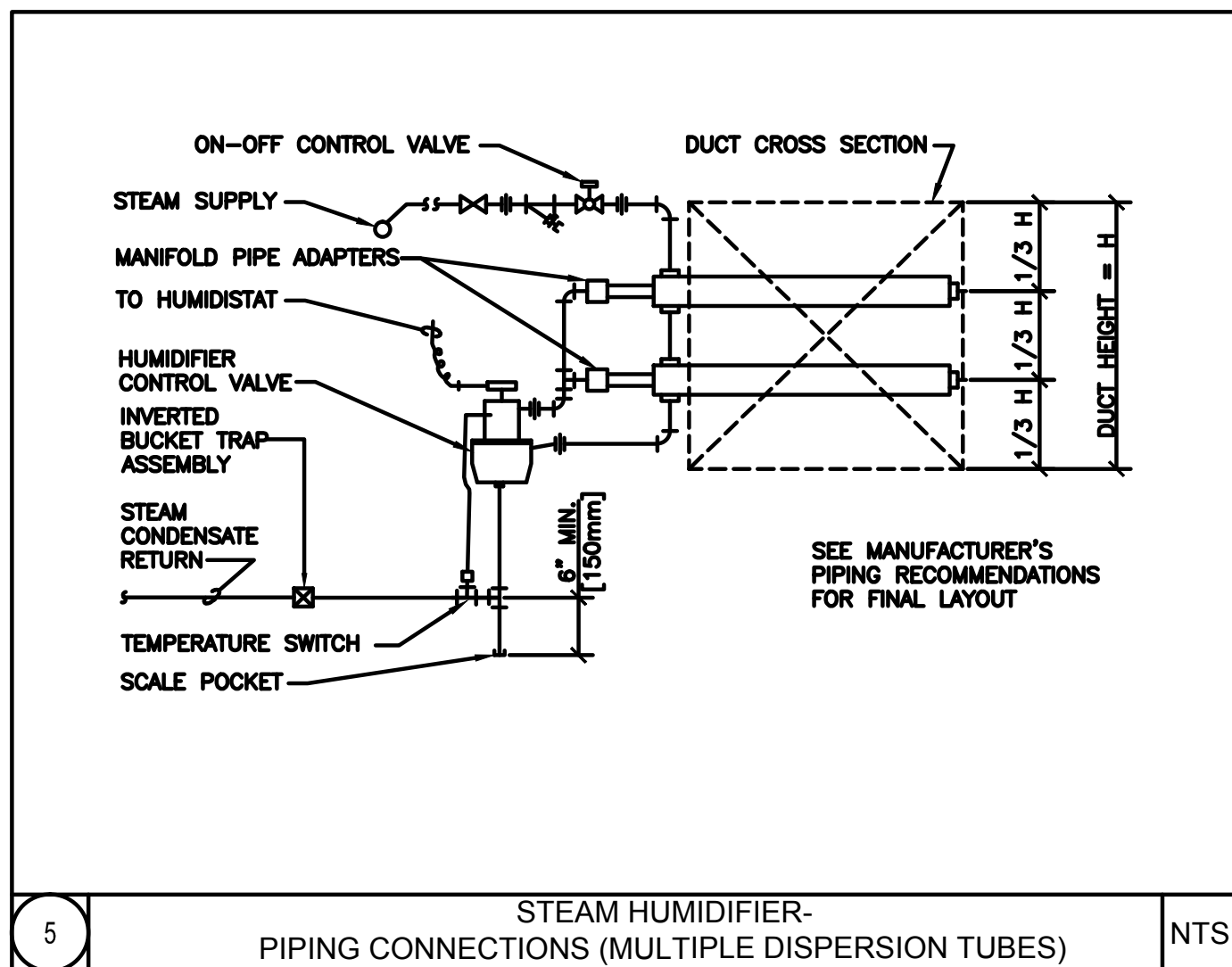
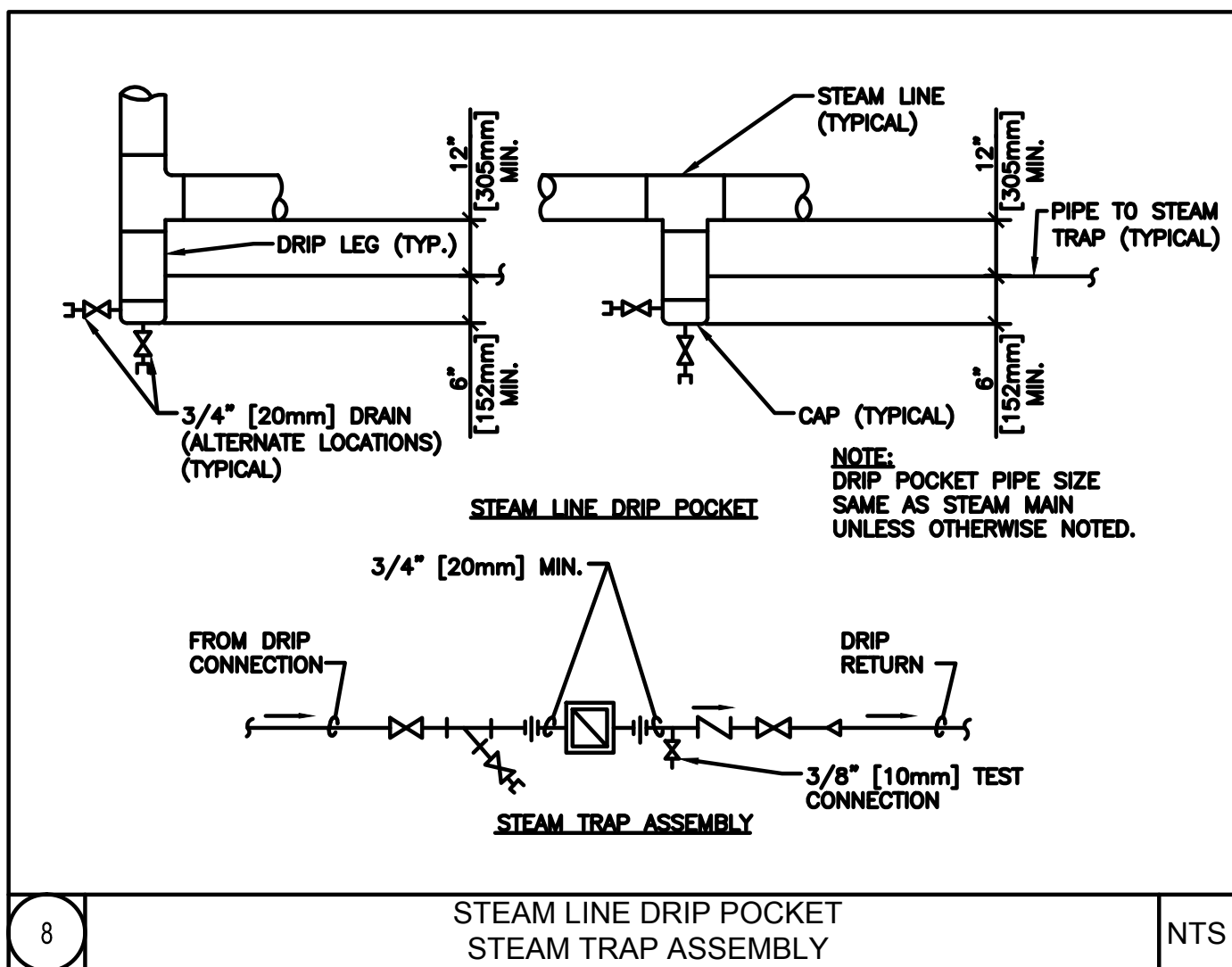
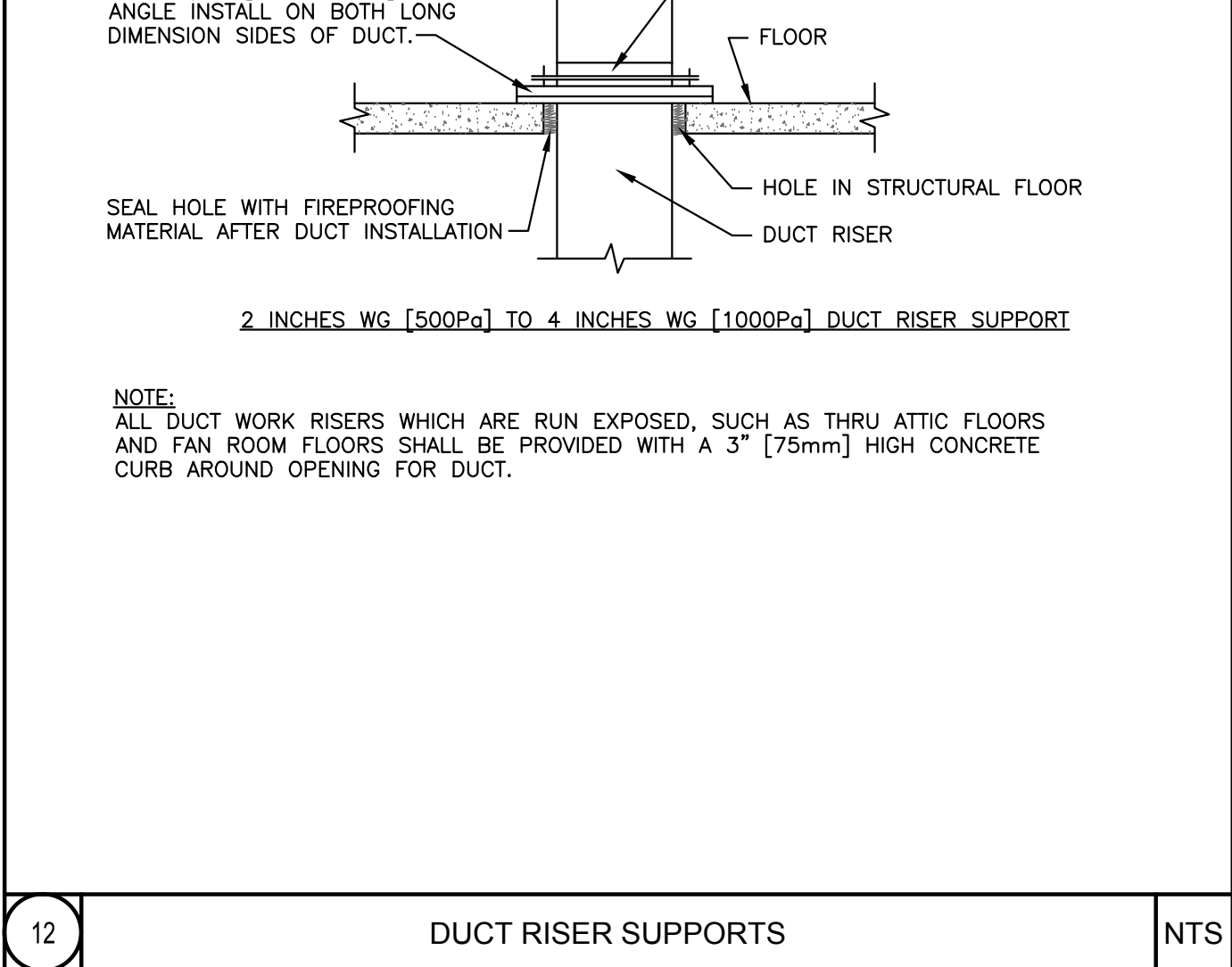
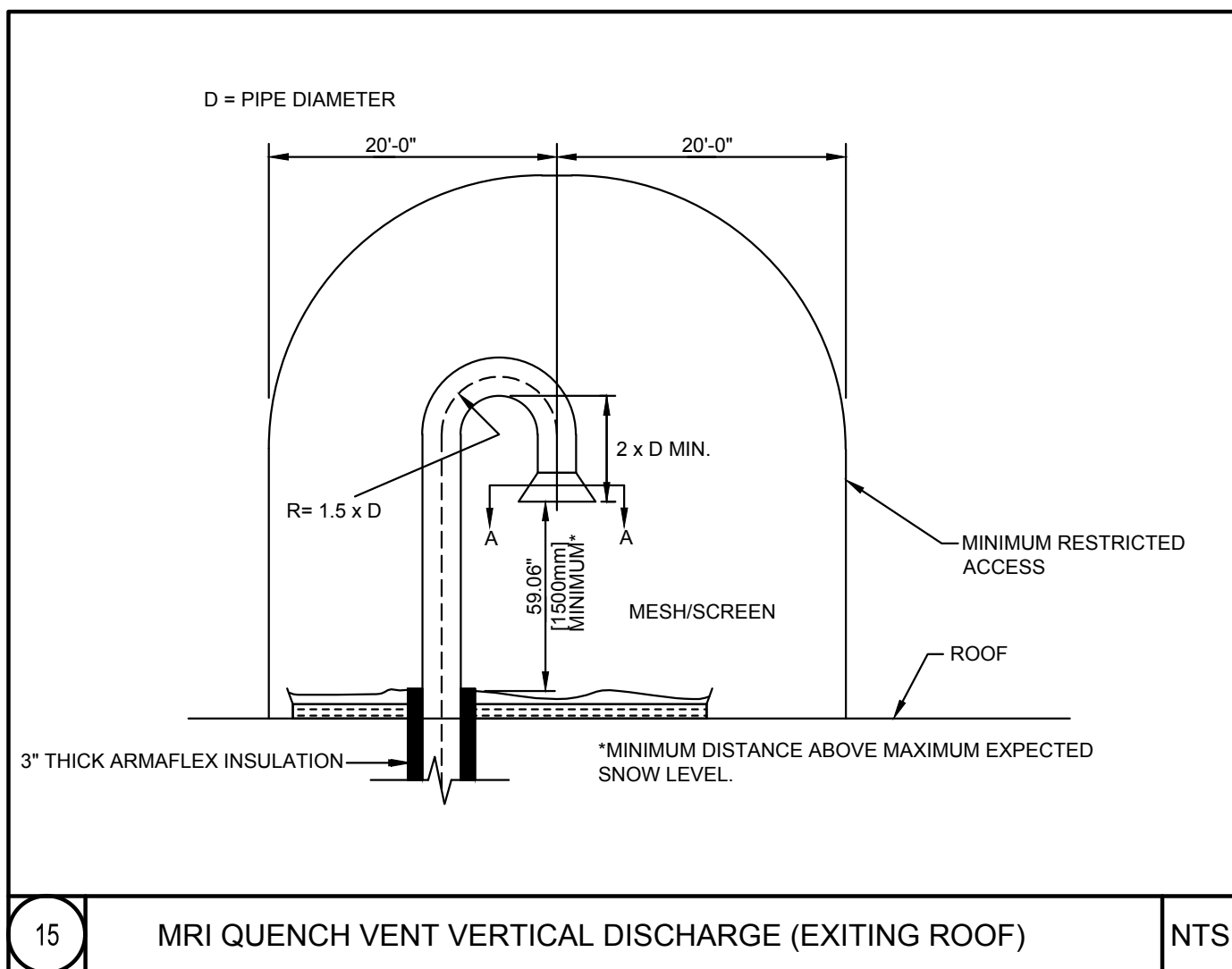
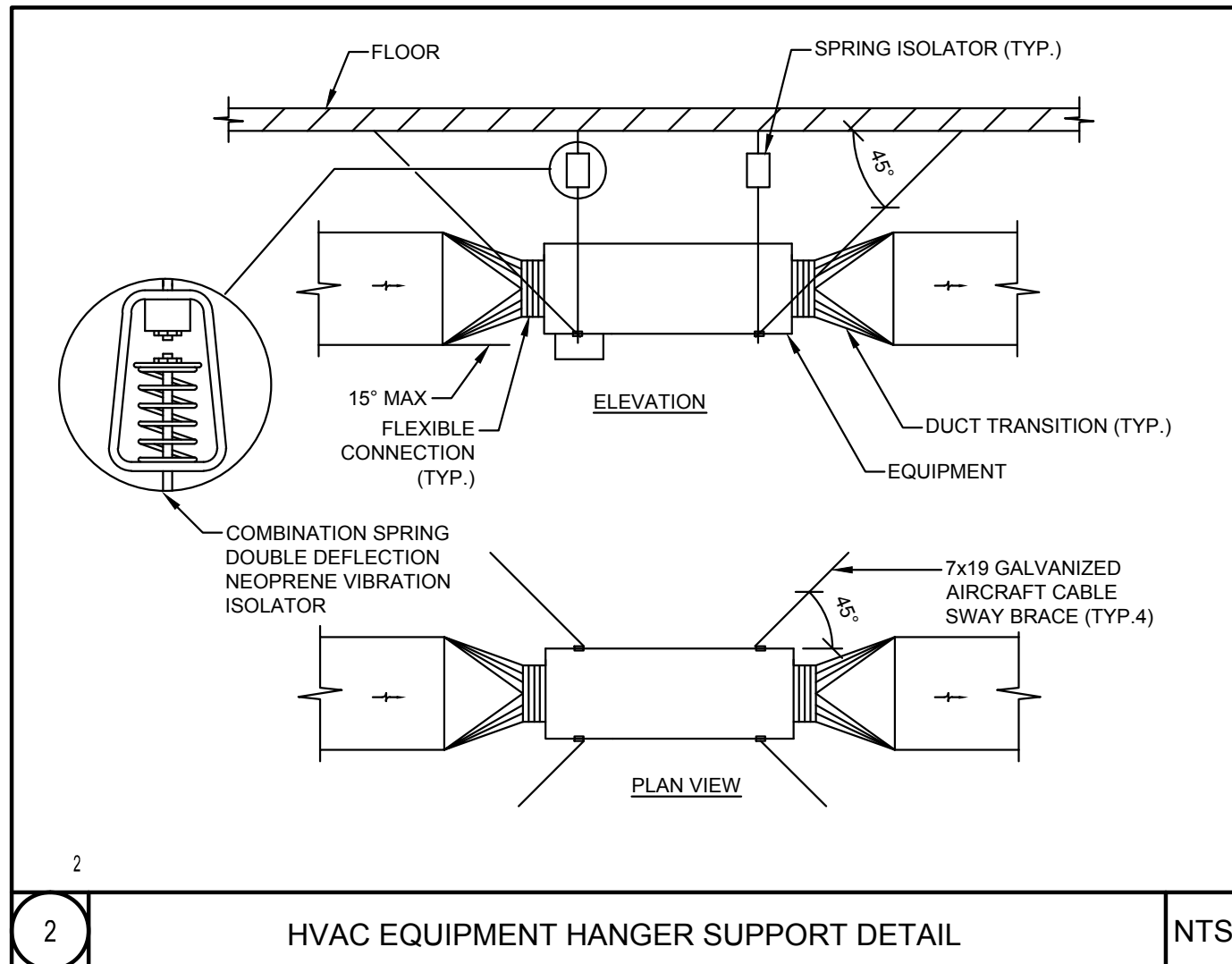
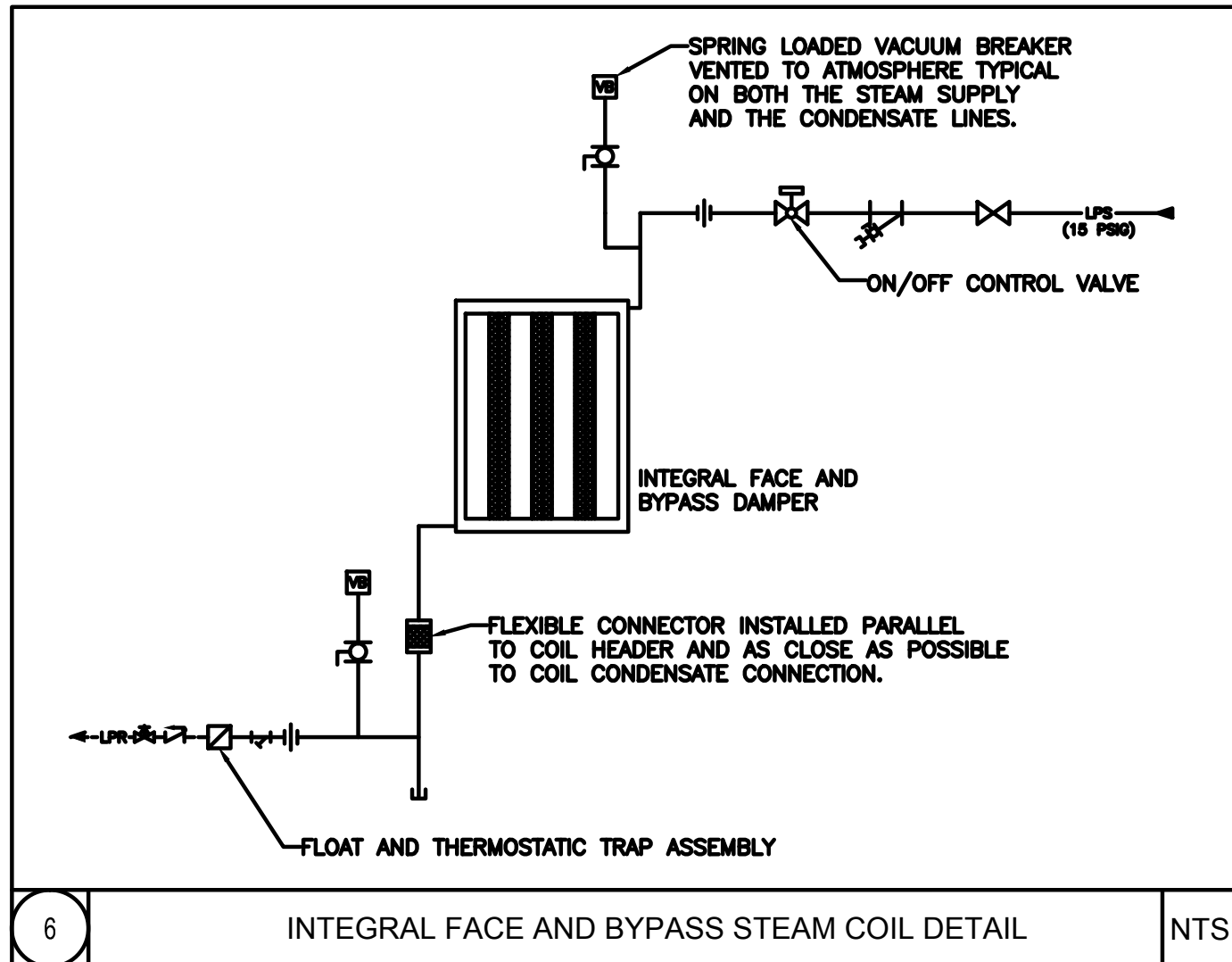
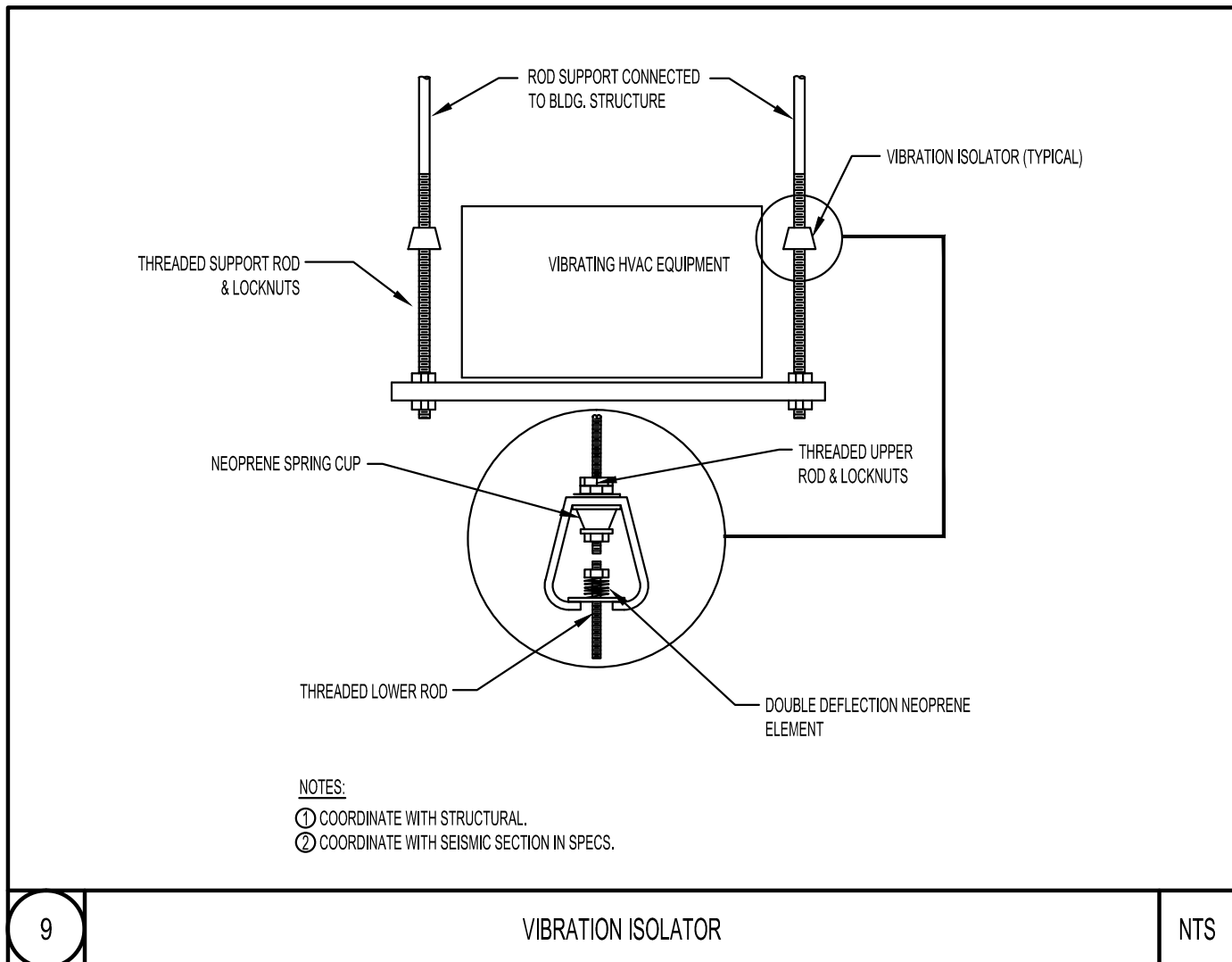
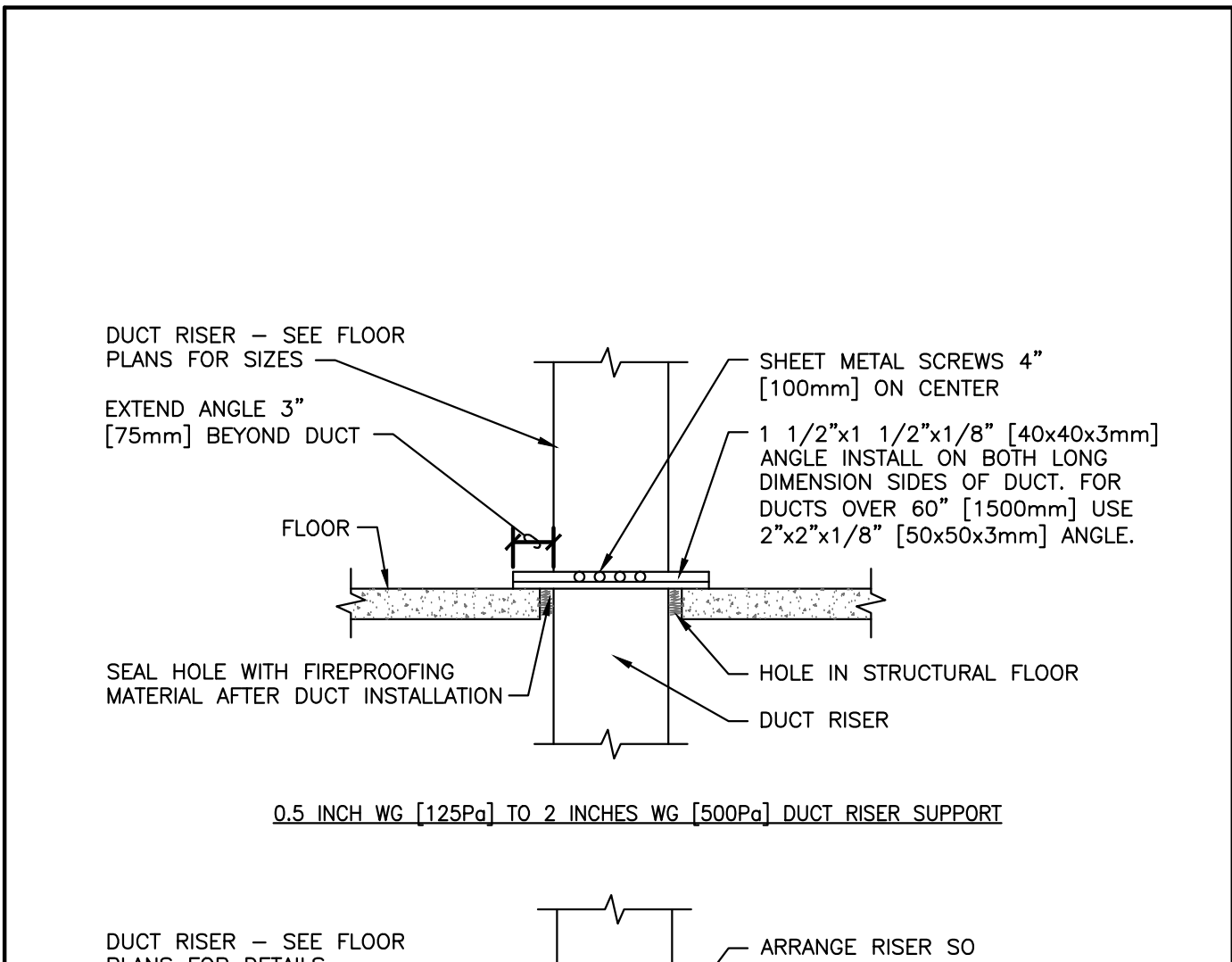
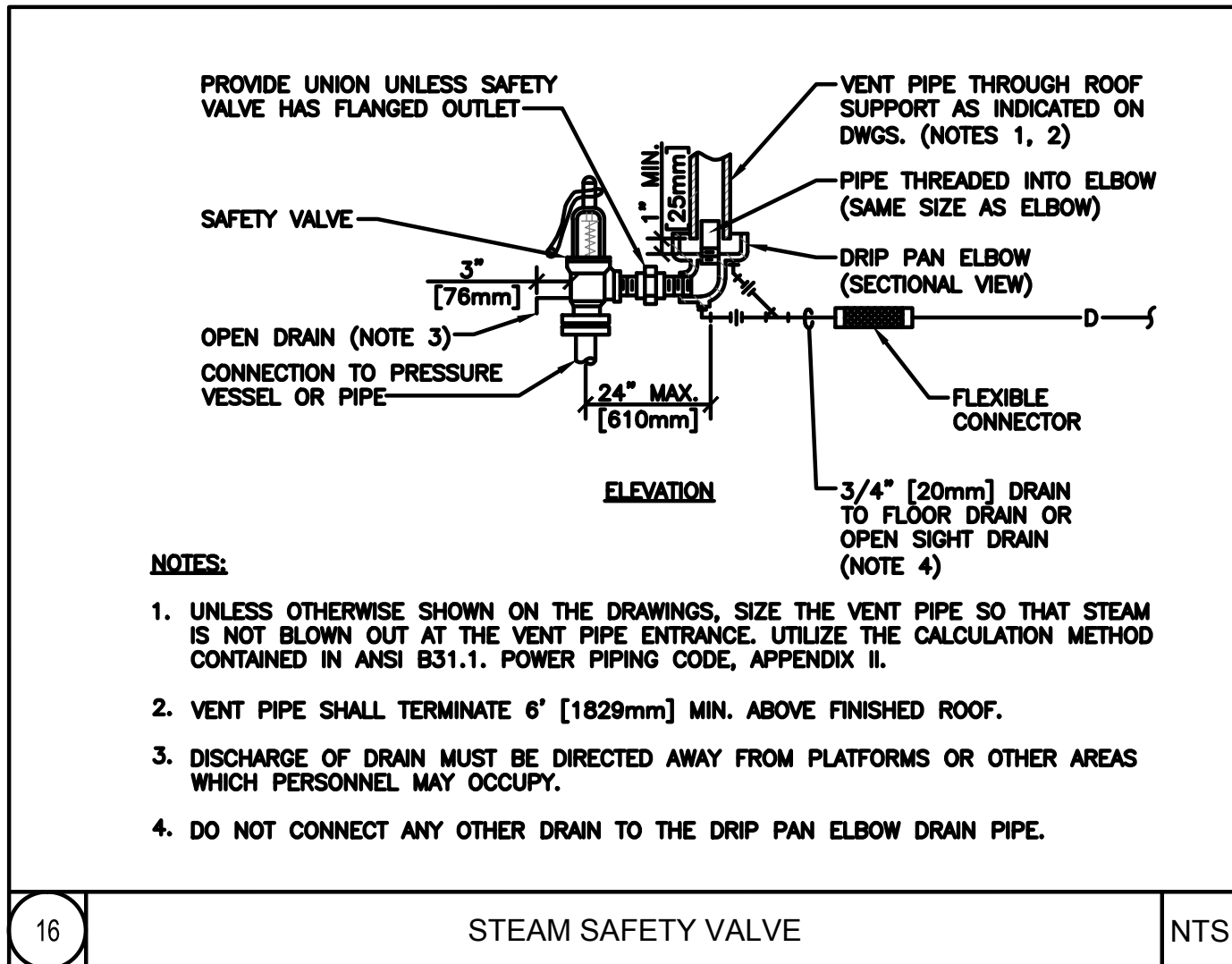
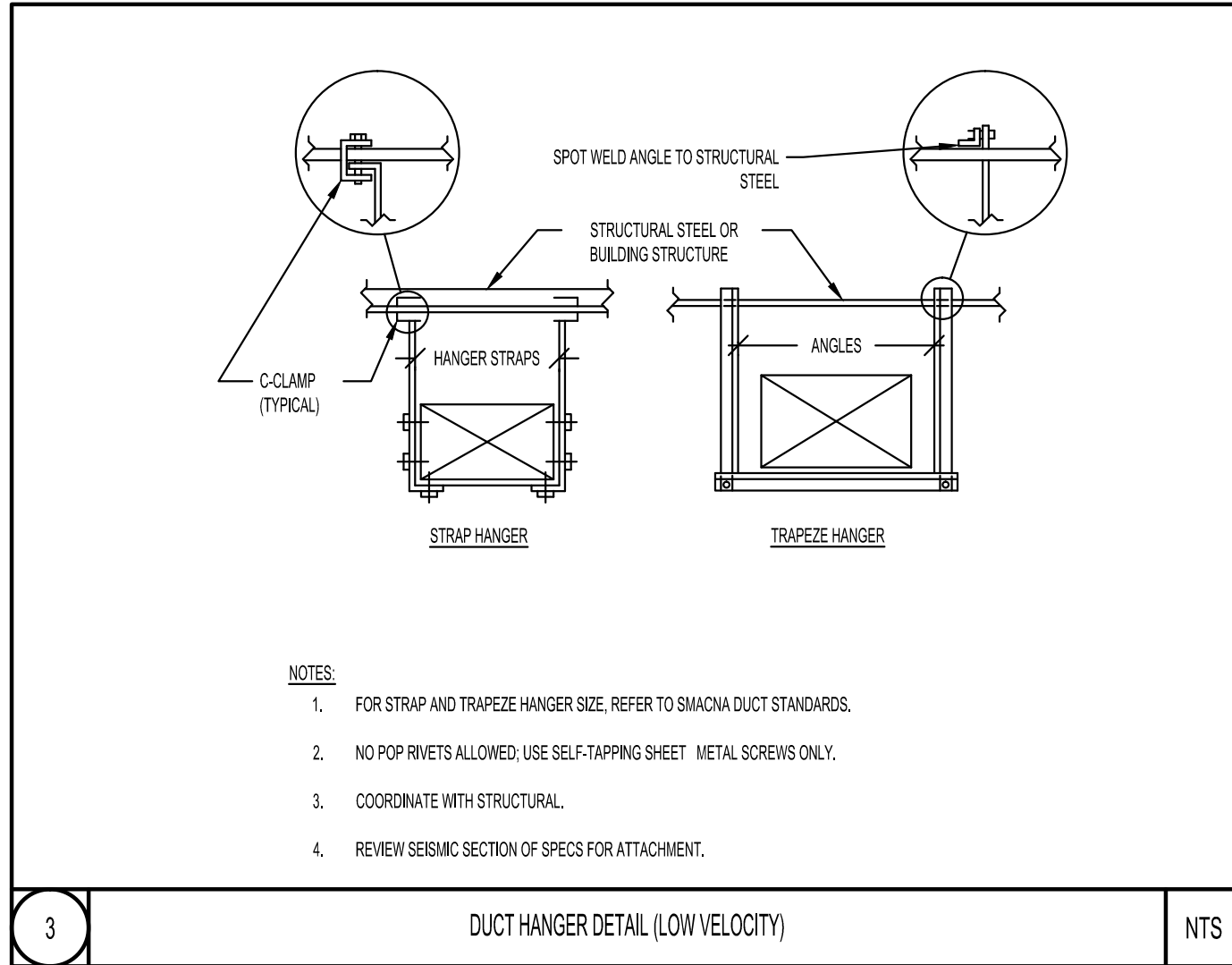
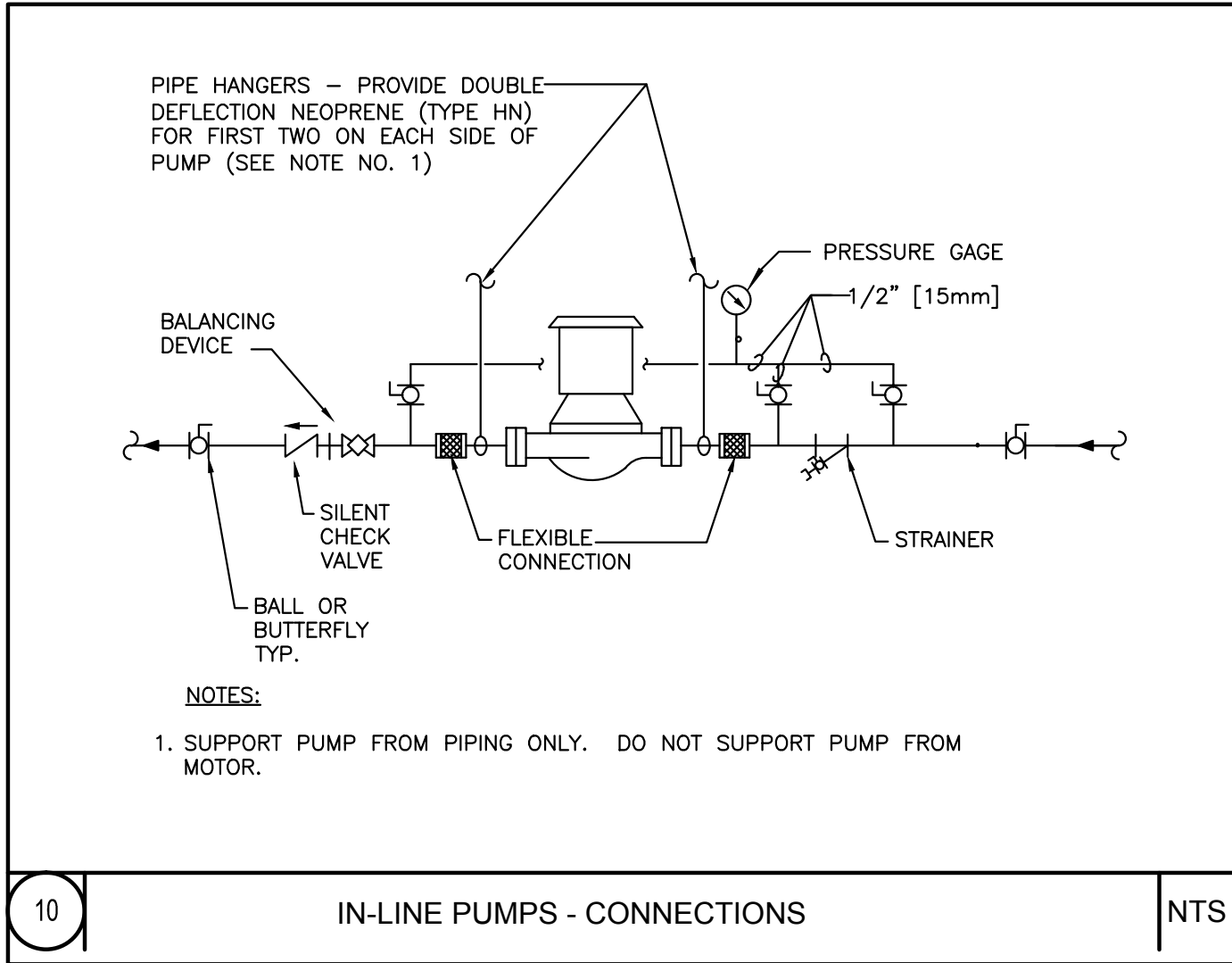
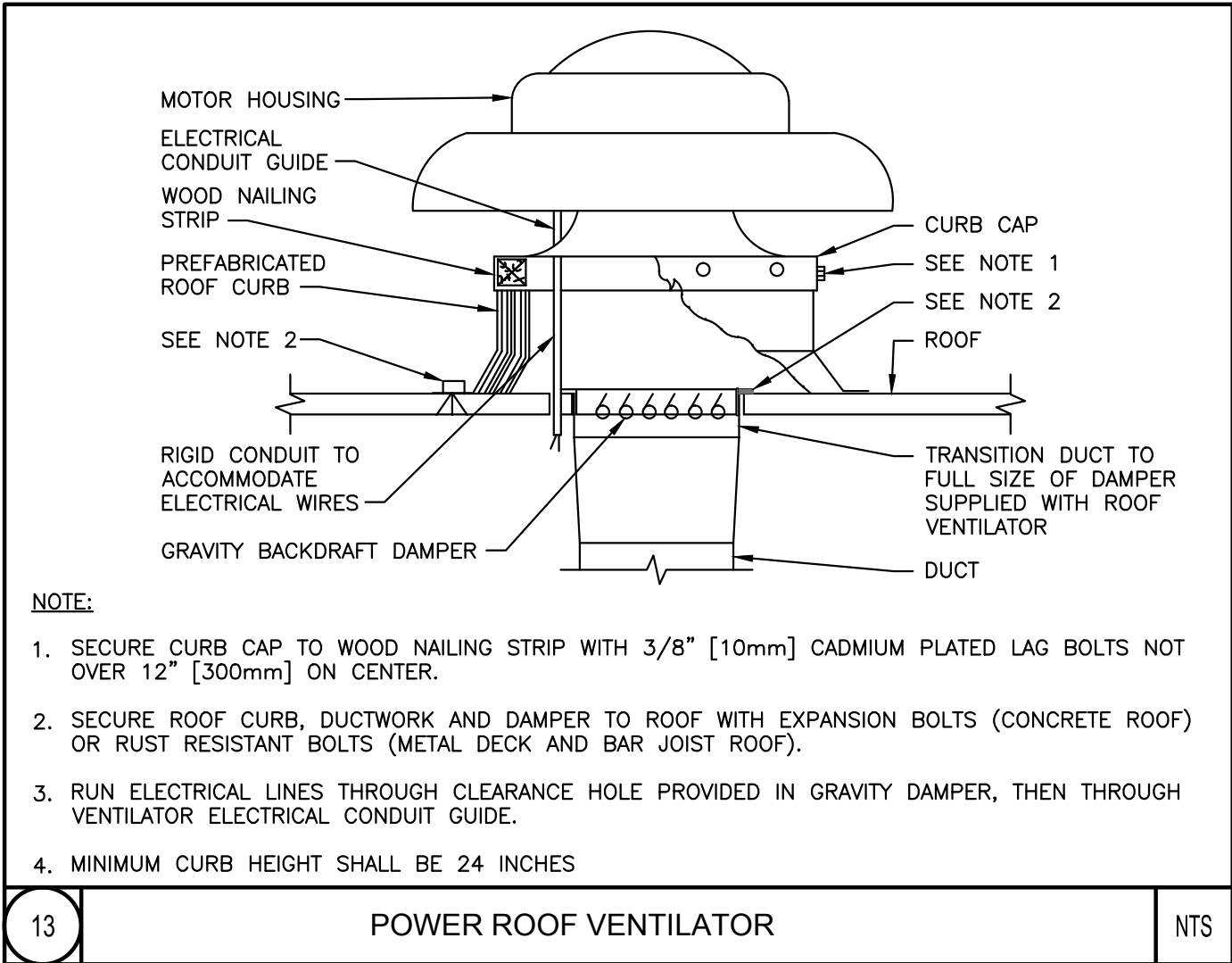
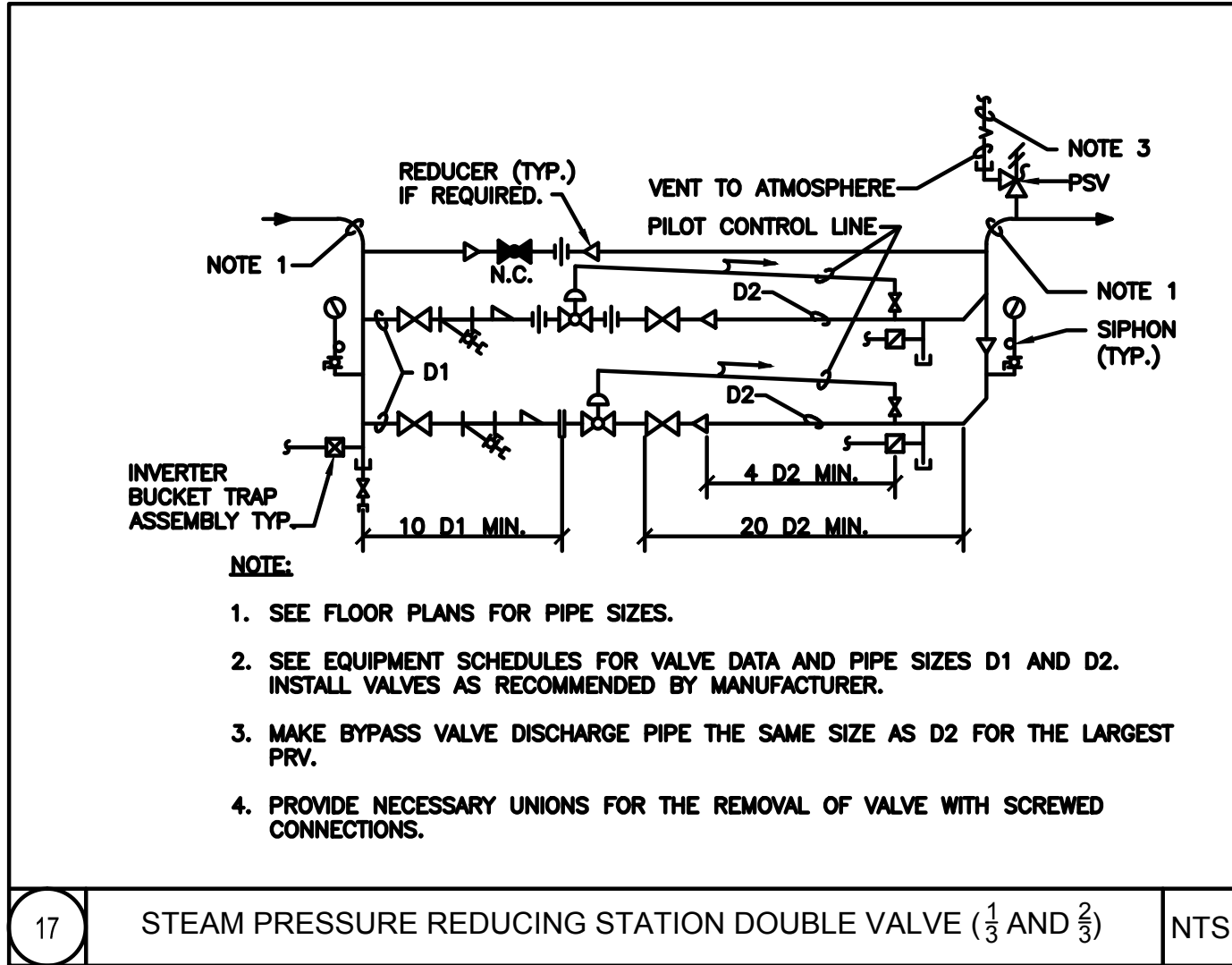
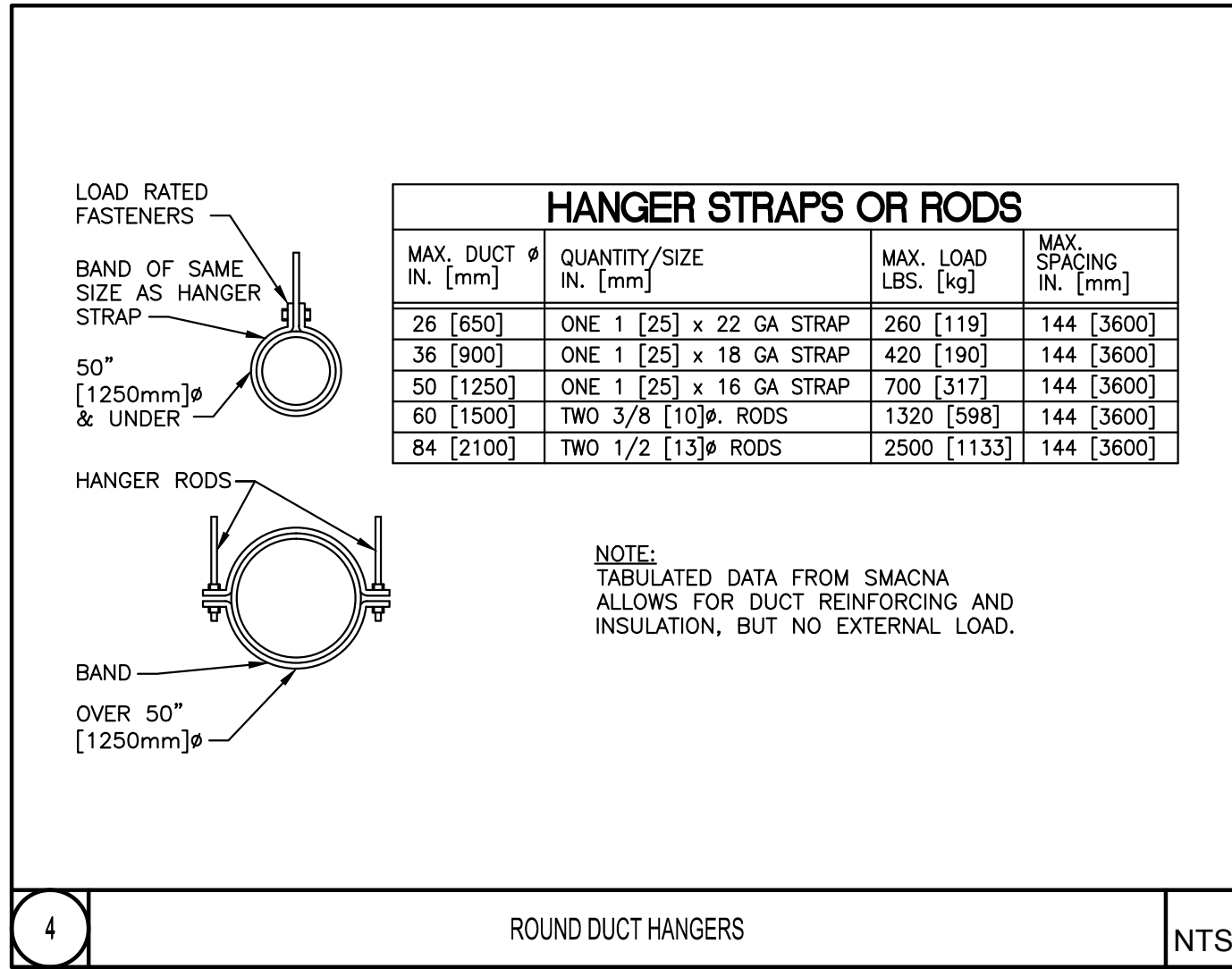
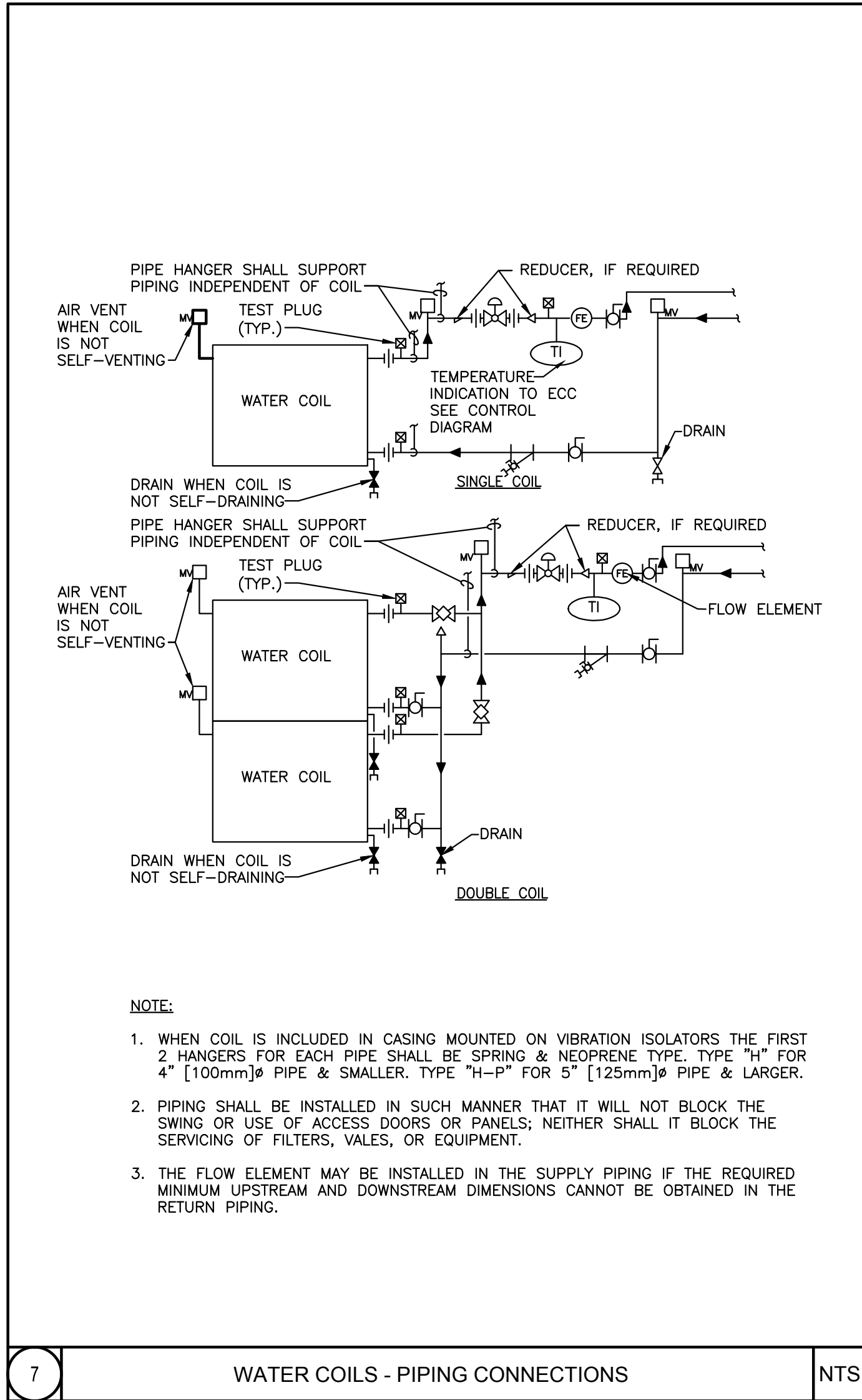
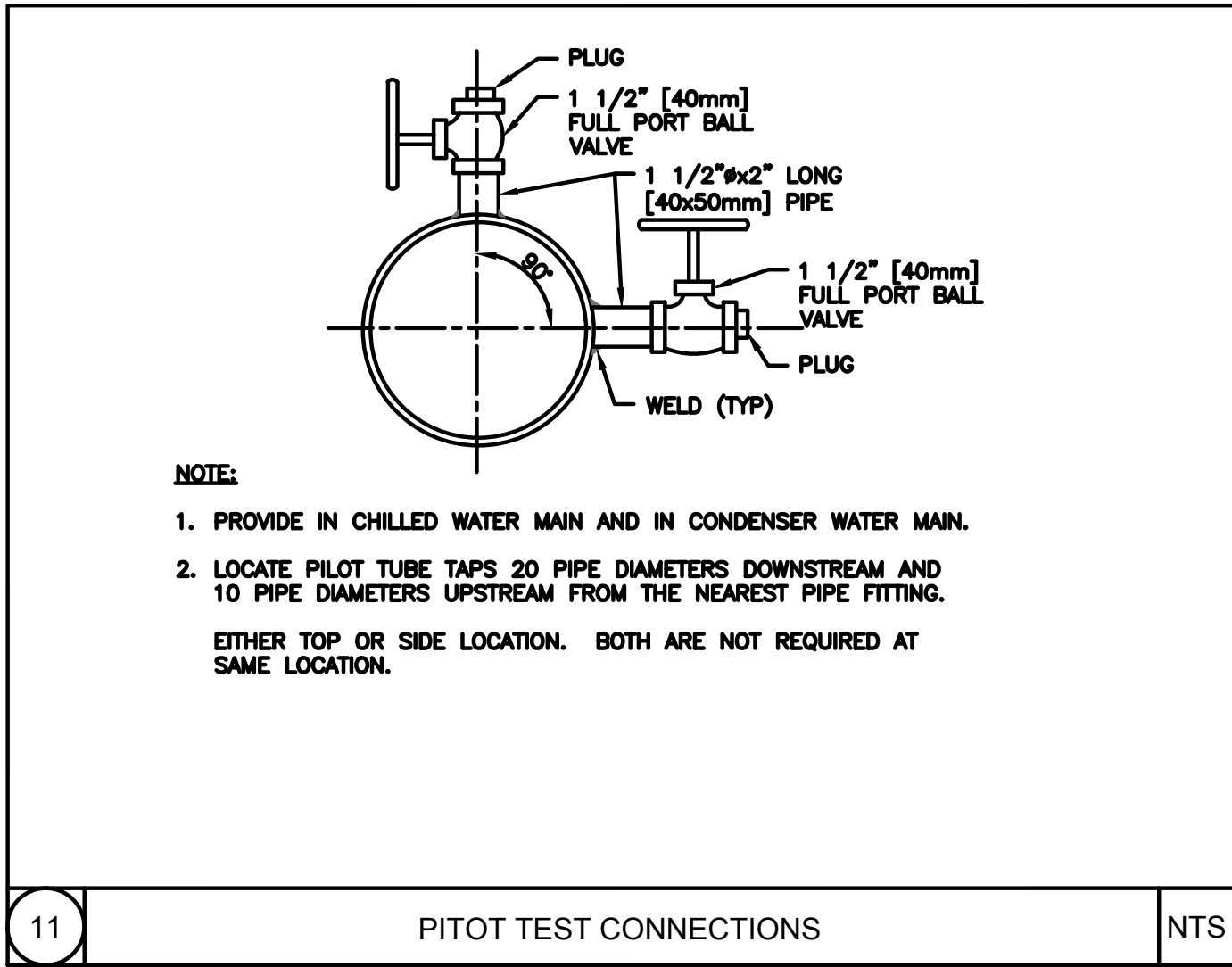
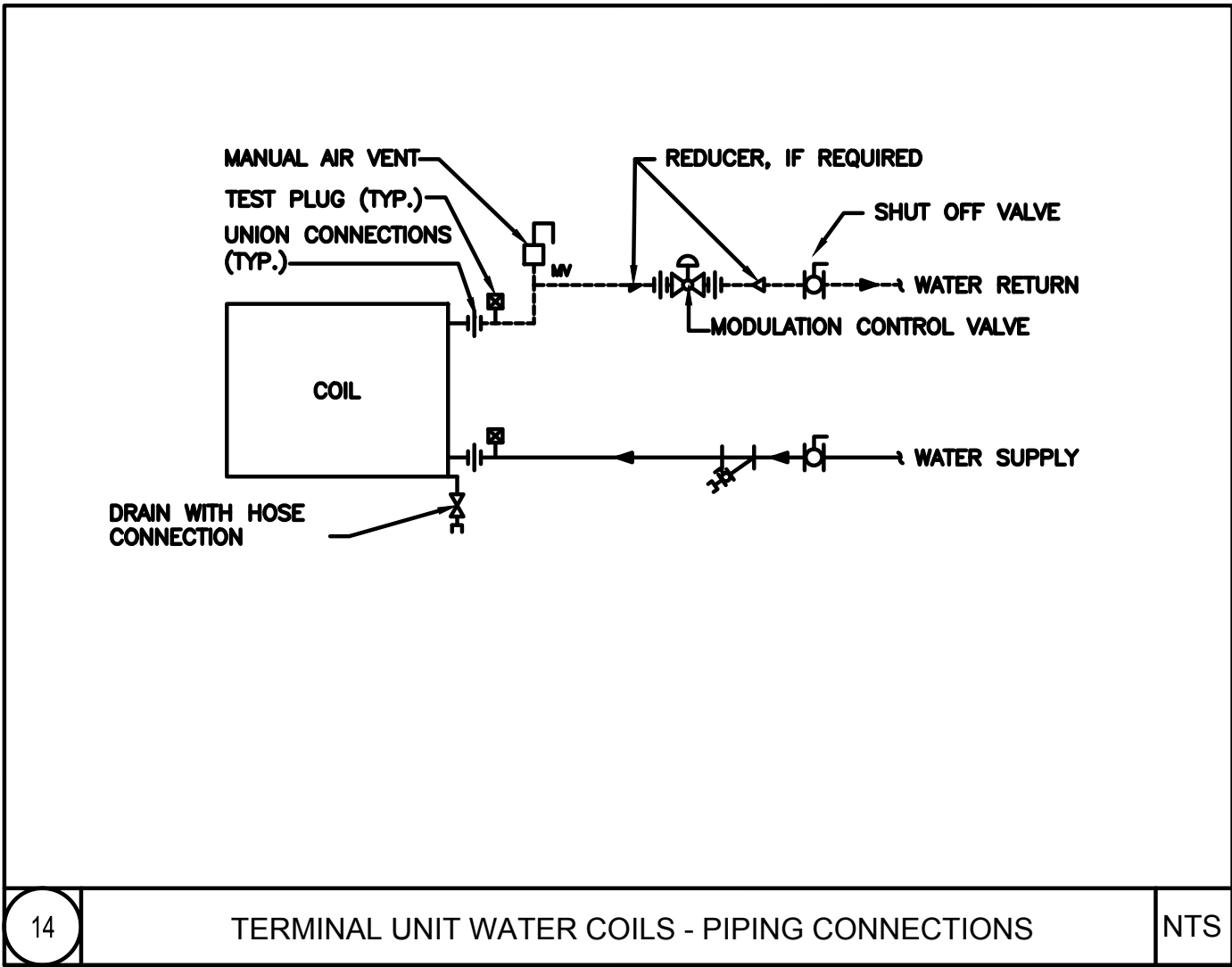
**Office of Facilities Management**

Department of Veterans Affairs

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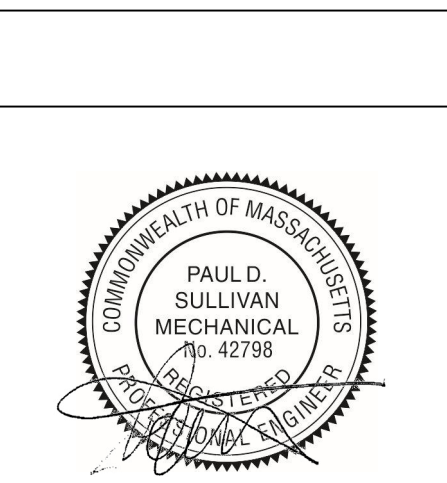
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three eighths inch = one foot  
one quarter inch = one foot  
one eighth inch = one foot  
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**CONSULTANTS:**

**RWS** R. W. Sullivan Engineering  
MEP/FP Engineering, Cook, Consulting  
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Phone: 617/553-6657 www.rwsusa.com  
RWS 208 x 1107512



**ARCHITECT/ENGINEERS:**

**moser pilon nelson architects**  
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(617) 552-1101

Drawing Title  
HVAC DETAILS

Approved: Project Director

Date  
02/12/2016

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

Location  
940 Belmont Street Brockton, MA 02301

Building Number  
3

Drawing Number  
H0-04

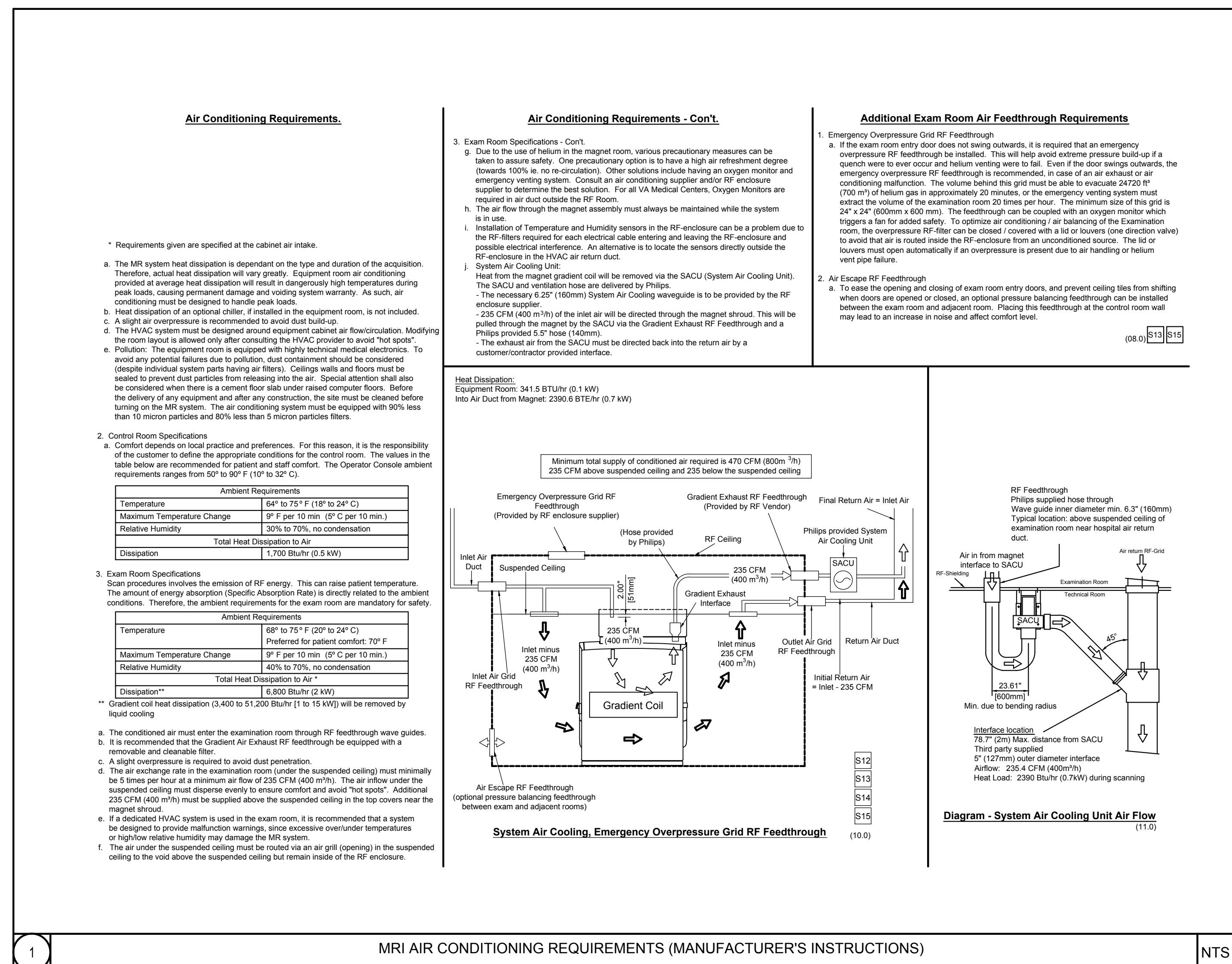
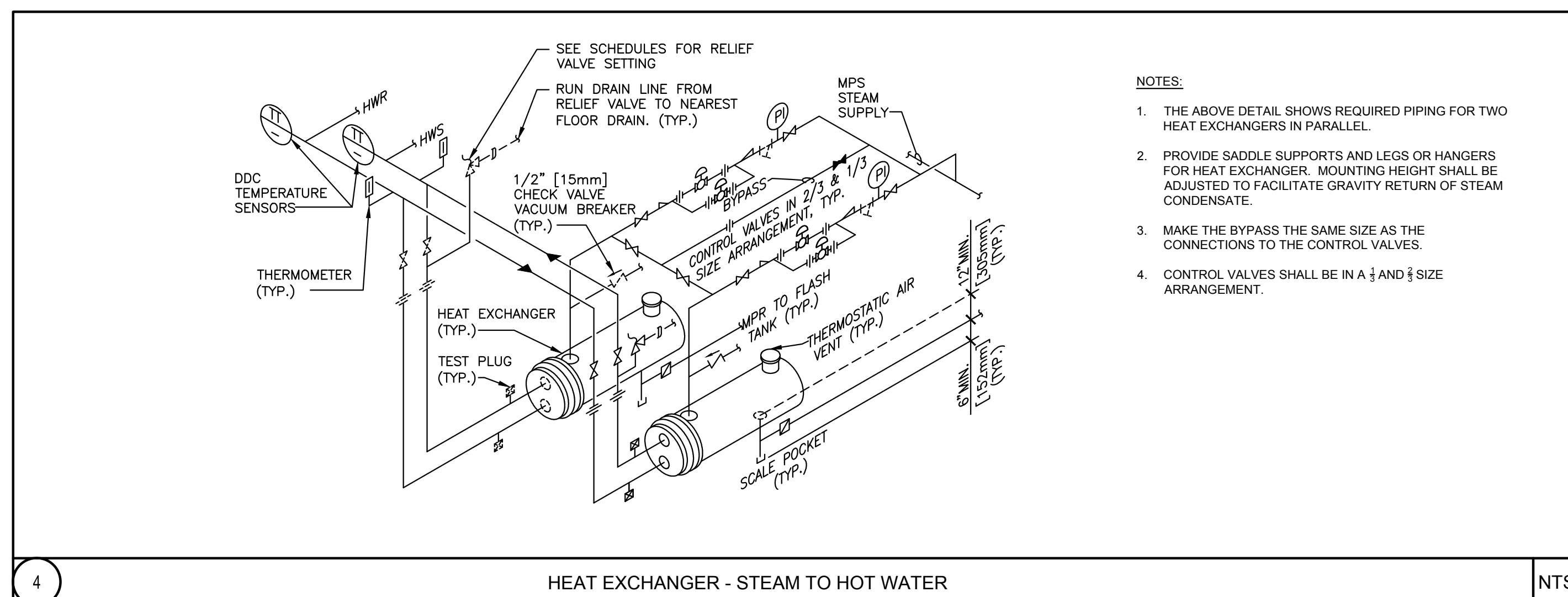
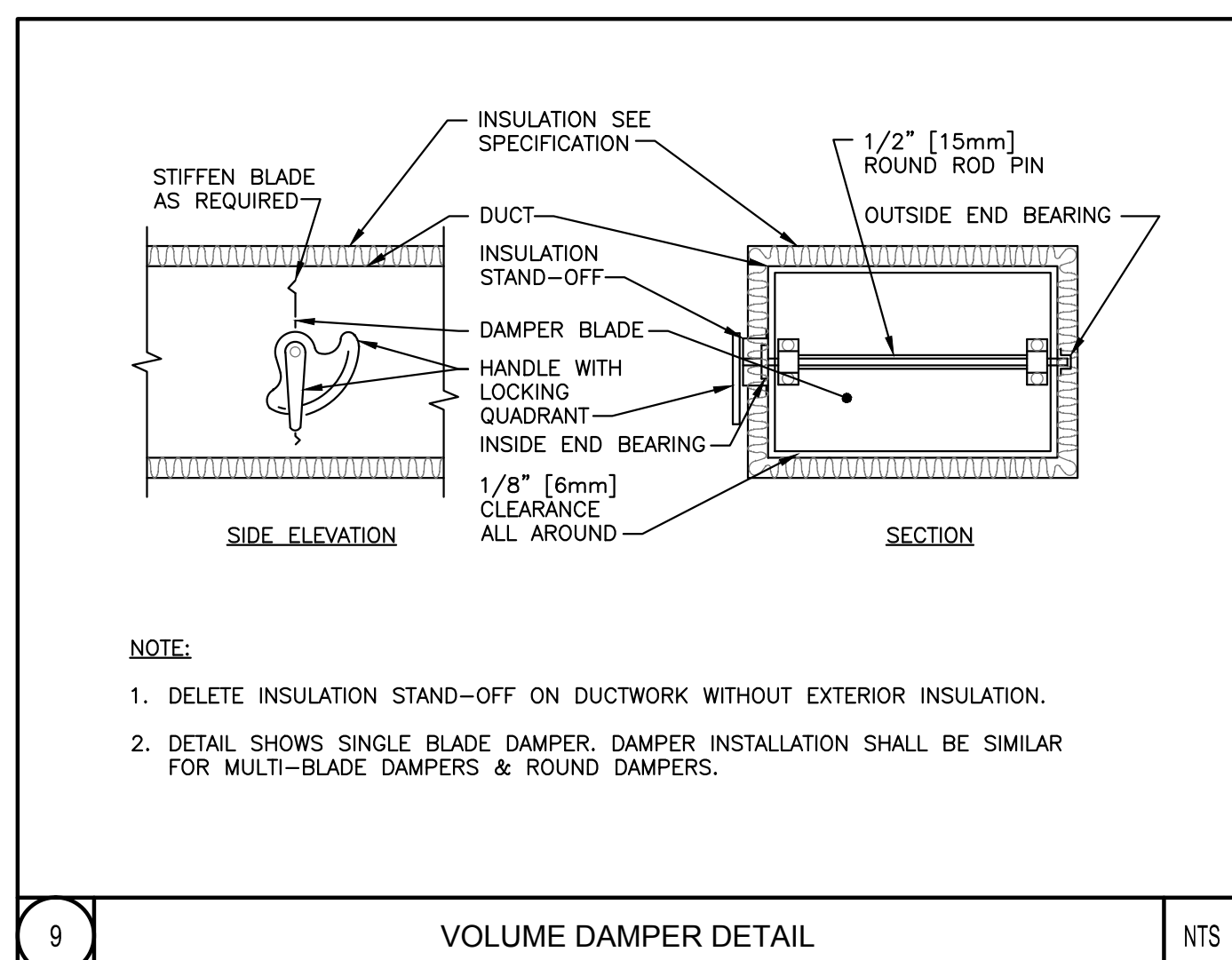
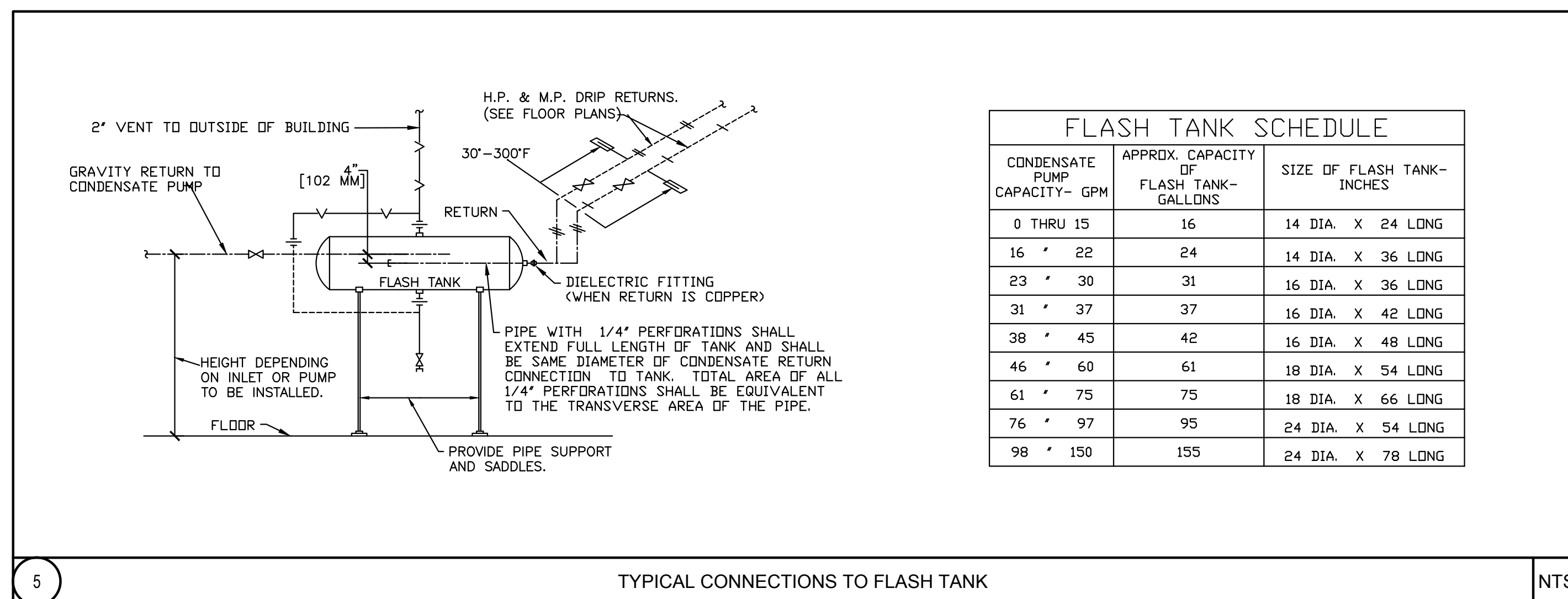
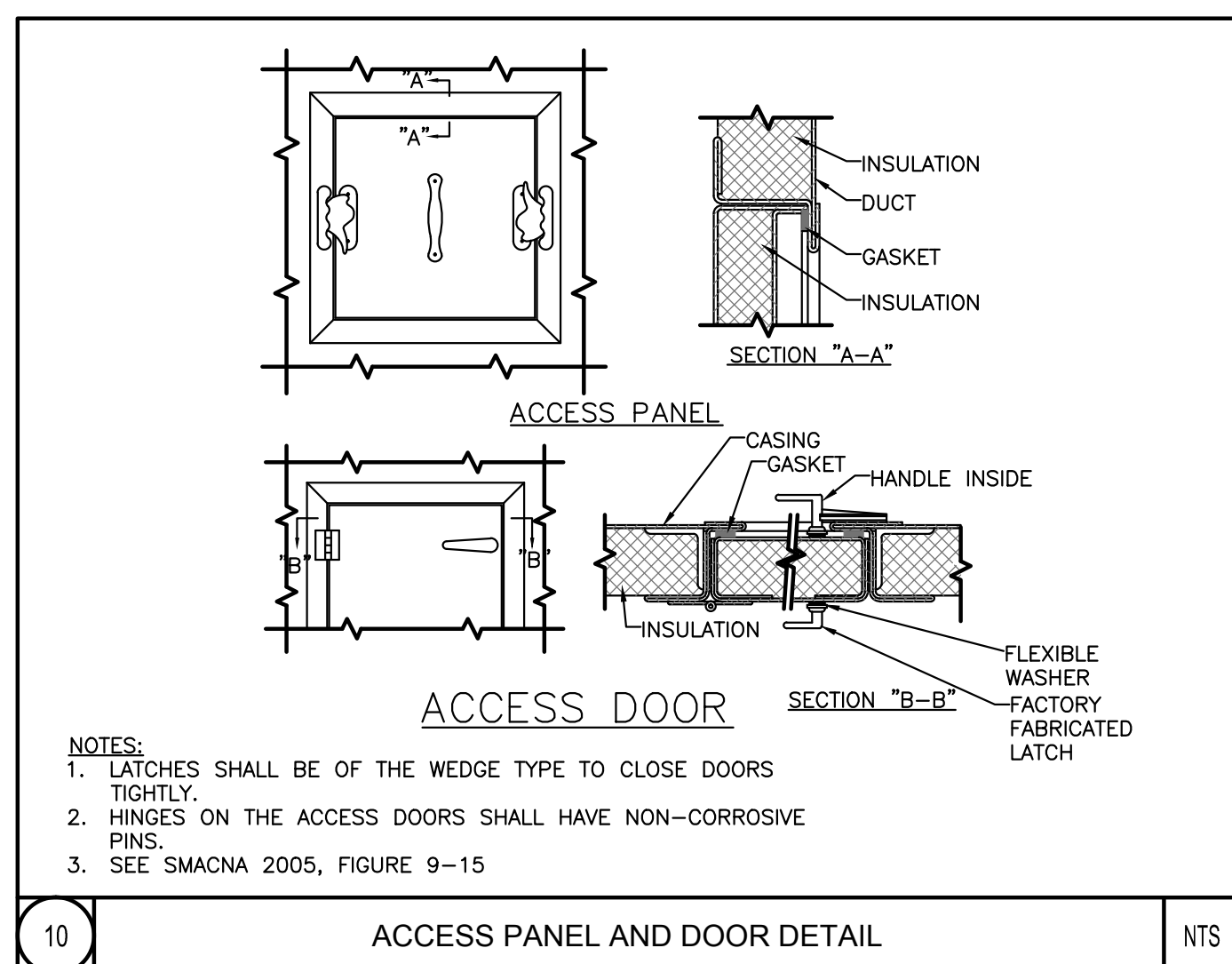
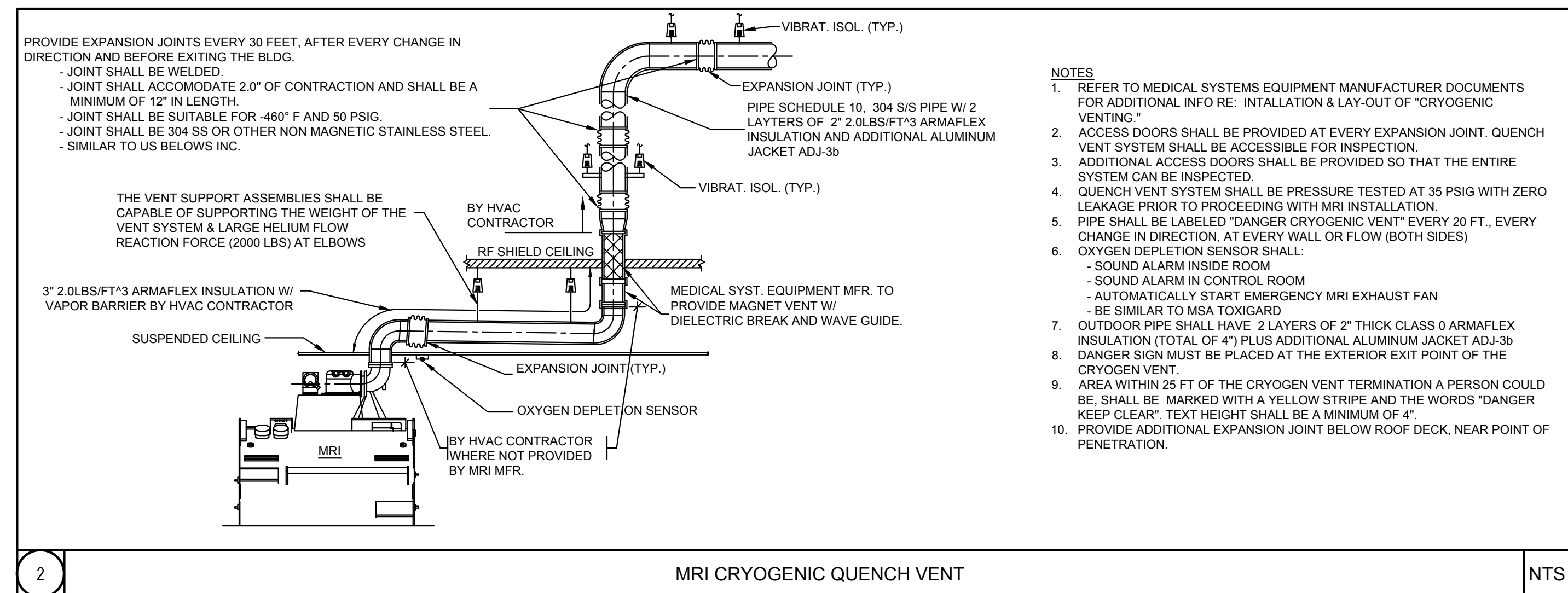
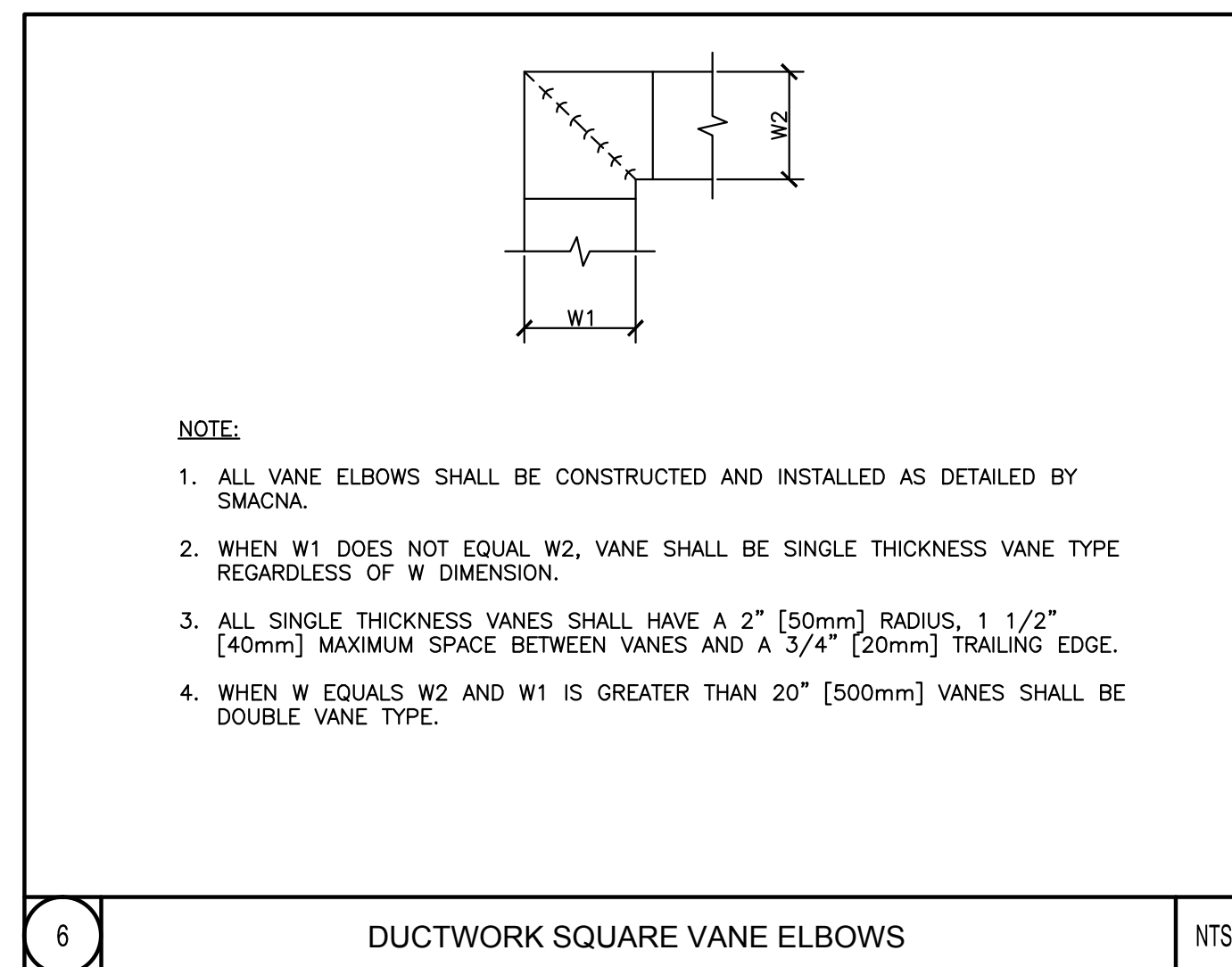
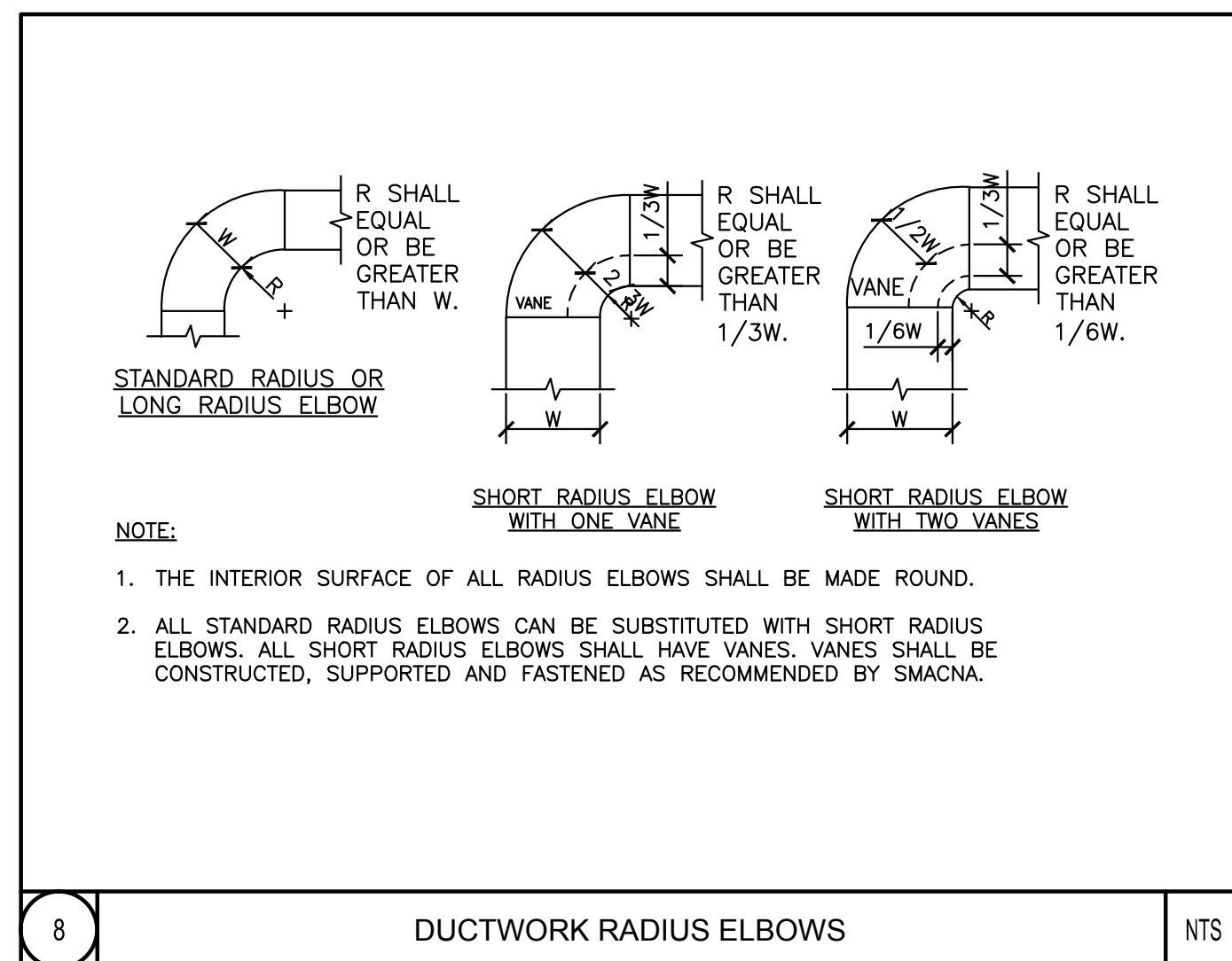
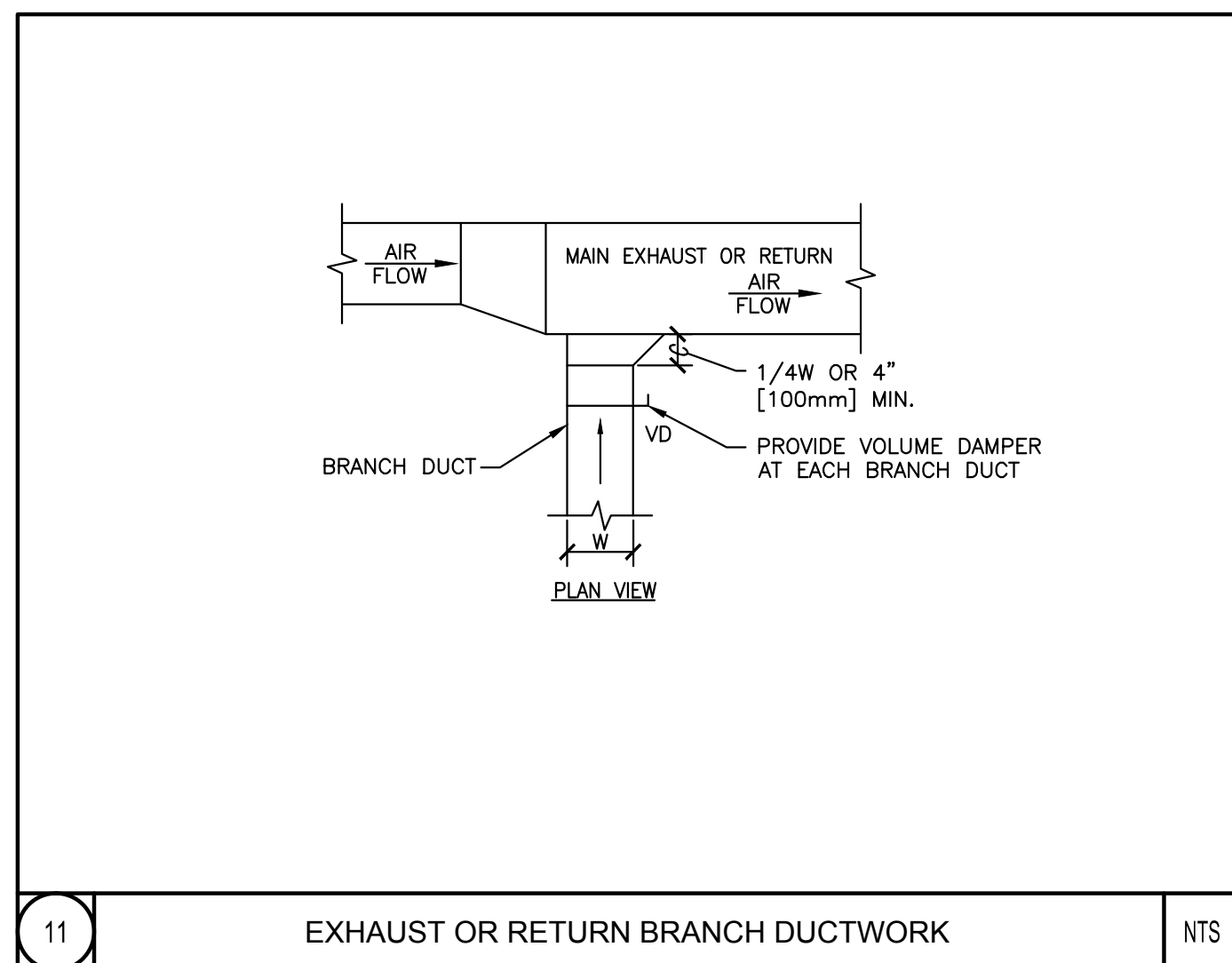
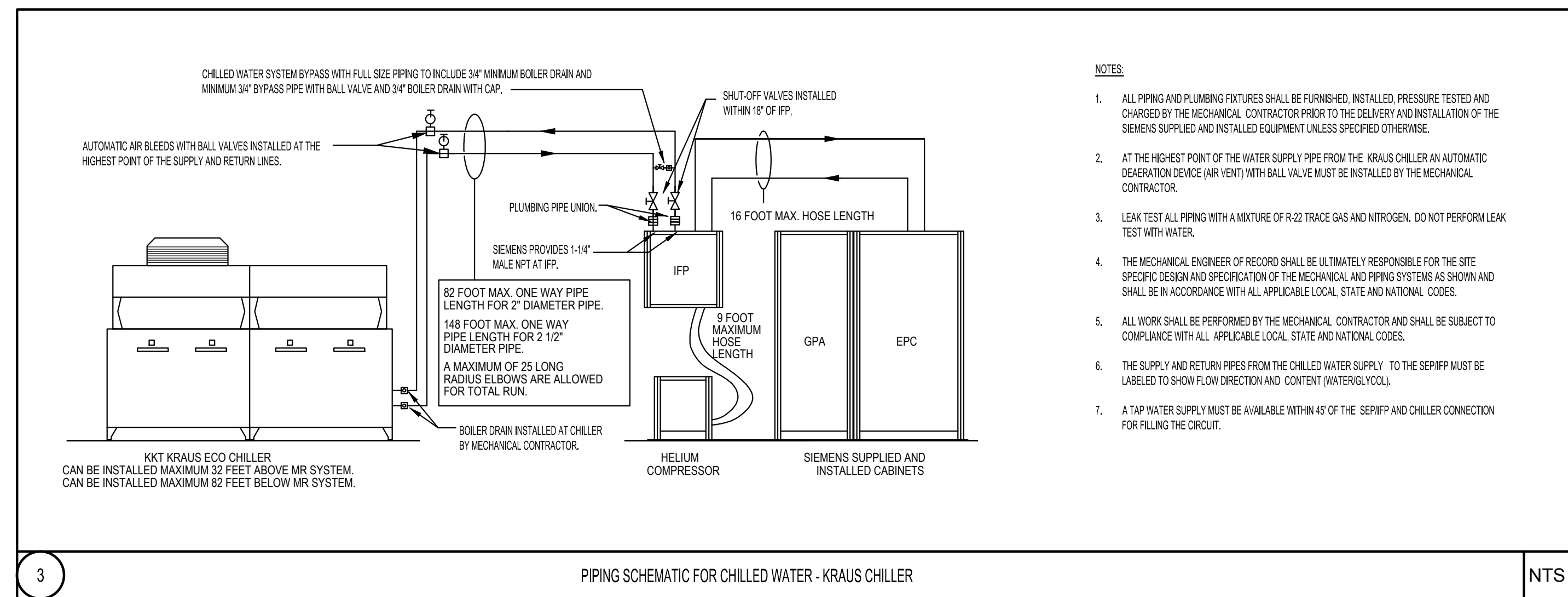
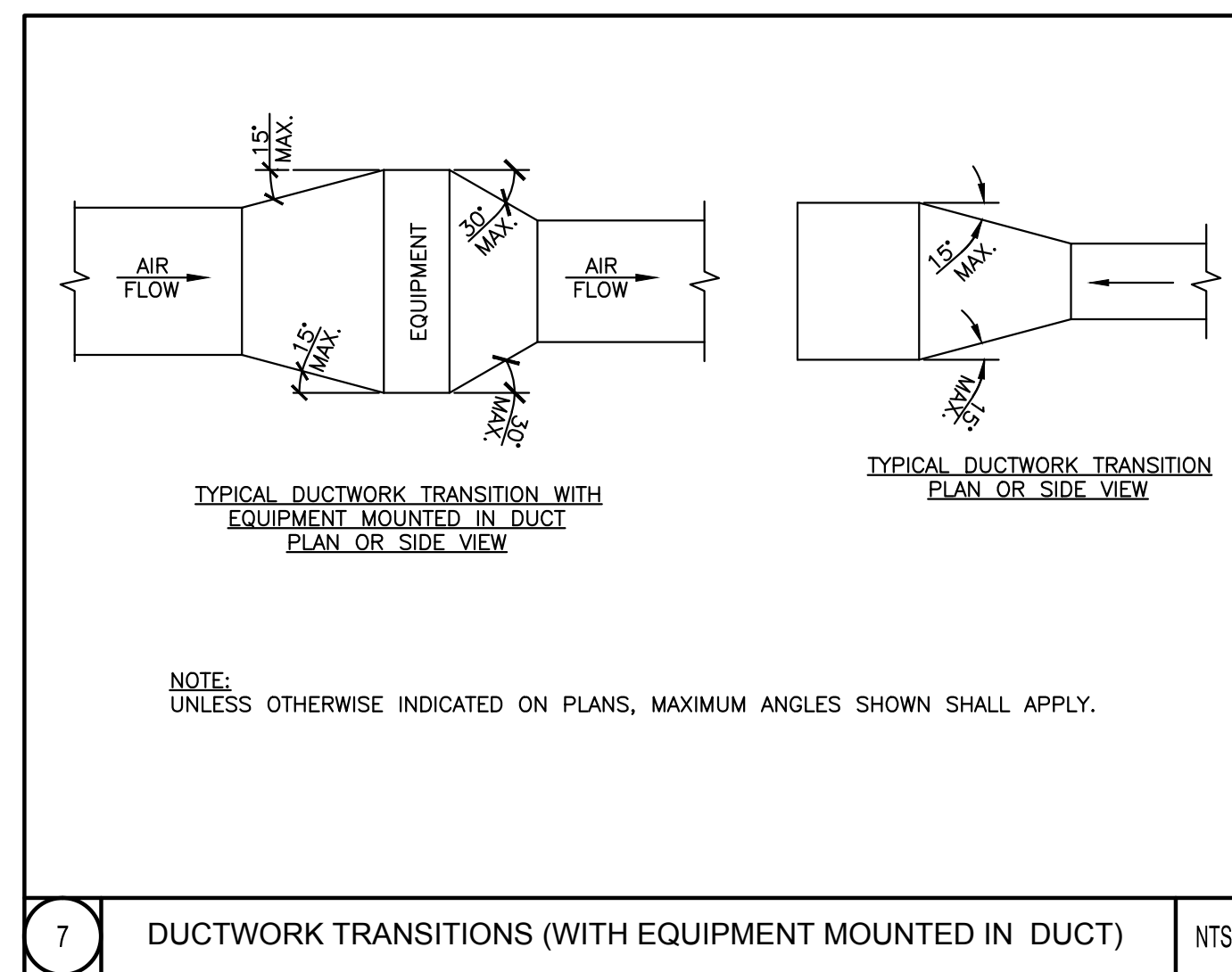
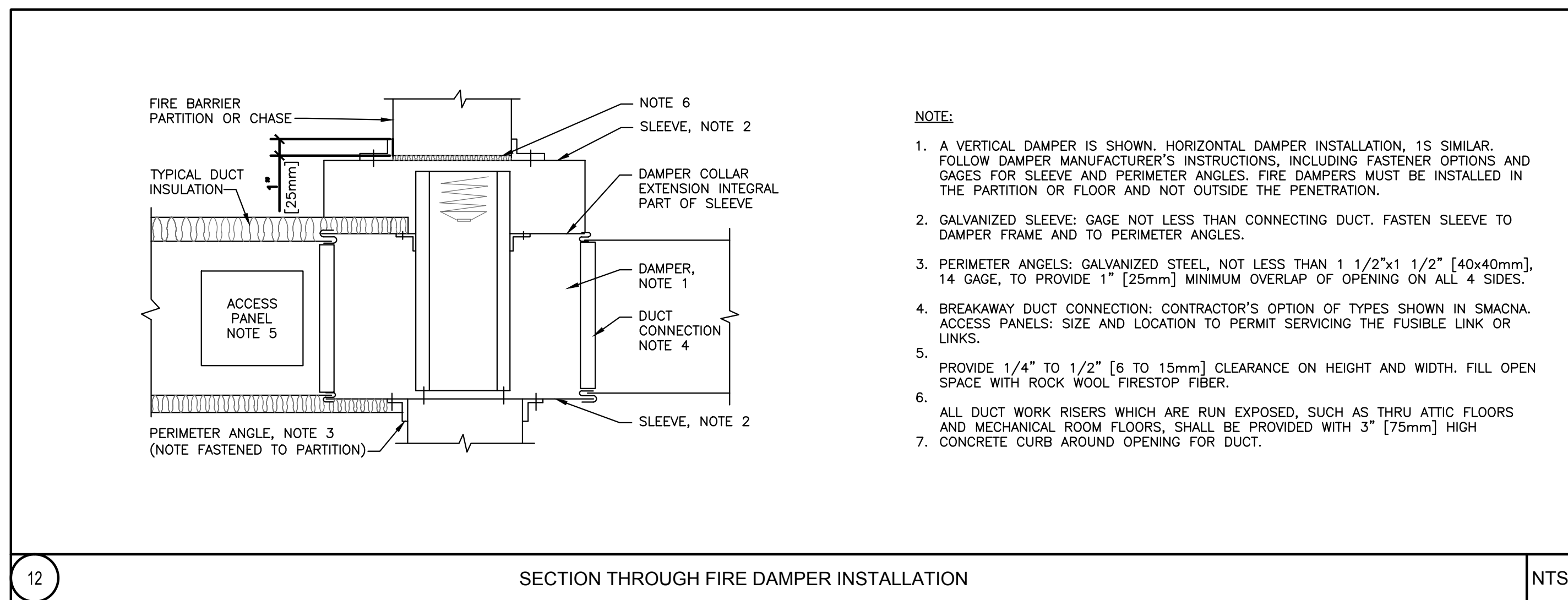
Dwg. 76 of 145

Office of Facilities Management

Department of Veterans Affairs

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 Department of  
Veterans Affairs

Revisions:	Date:
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**R. W. Sullivan Engineering**  
MEP / FP Engineering, Code, Commissioning  
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Boston, Massachusetts 02129-1107  
Phone: (617) 523-6227 [www.rsullivan.com](http://www.rsullivan.com)  
FAX: (617) 523-6228



## HVAC DETAILS

Approved: Project Director

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

940 Belmont Street Brockton, MA 02301

Date 02/12/2016

**Checked**

H0-07

Dwg. 79 of 145





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

**KEYNOTES:**

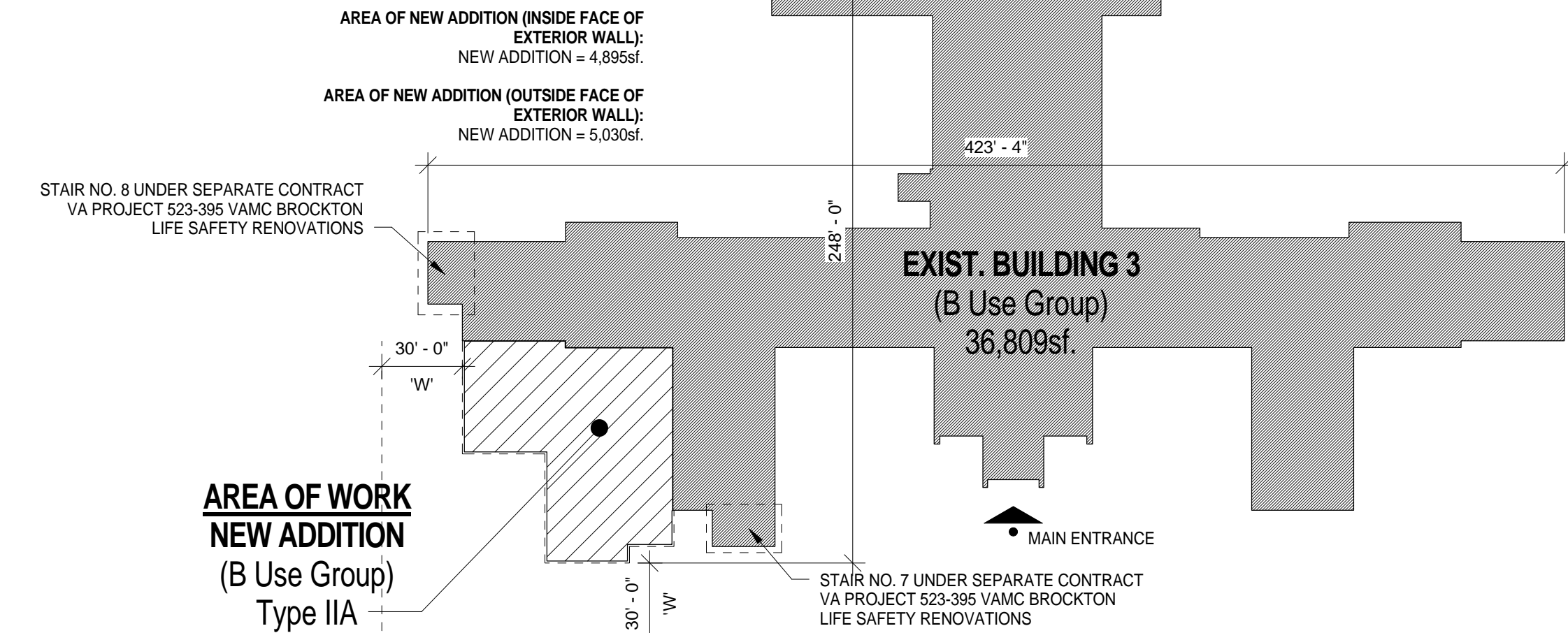
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② ELECTROSTATIC DUCT CONNECTION, SEE GENERAL NOTES & SPECIFICATIONS

① LEAD COVERED DUCT, SEE GENERAL NOTES & SPECIFICATIONS

② ELECTROSTATIC DUCT CONNECTION, SEE GENERAL NOTES & SPECIFICATIONS

## Key Plan



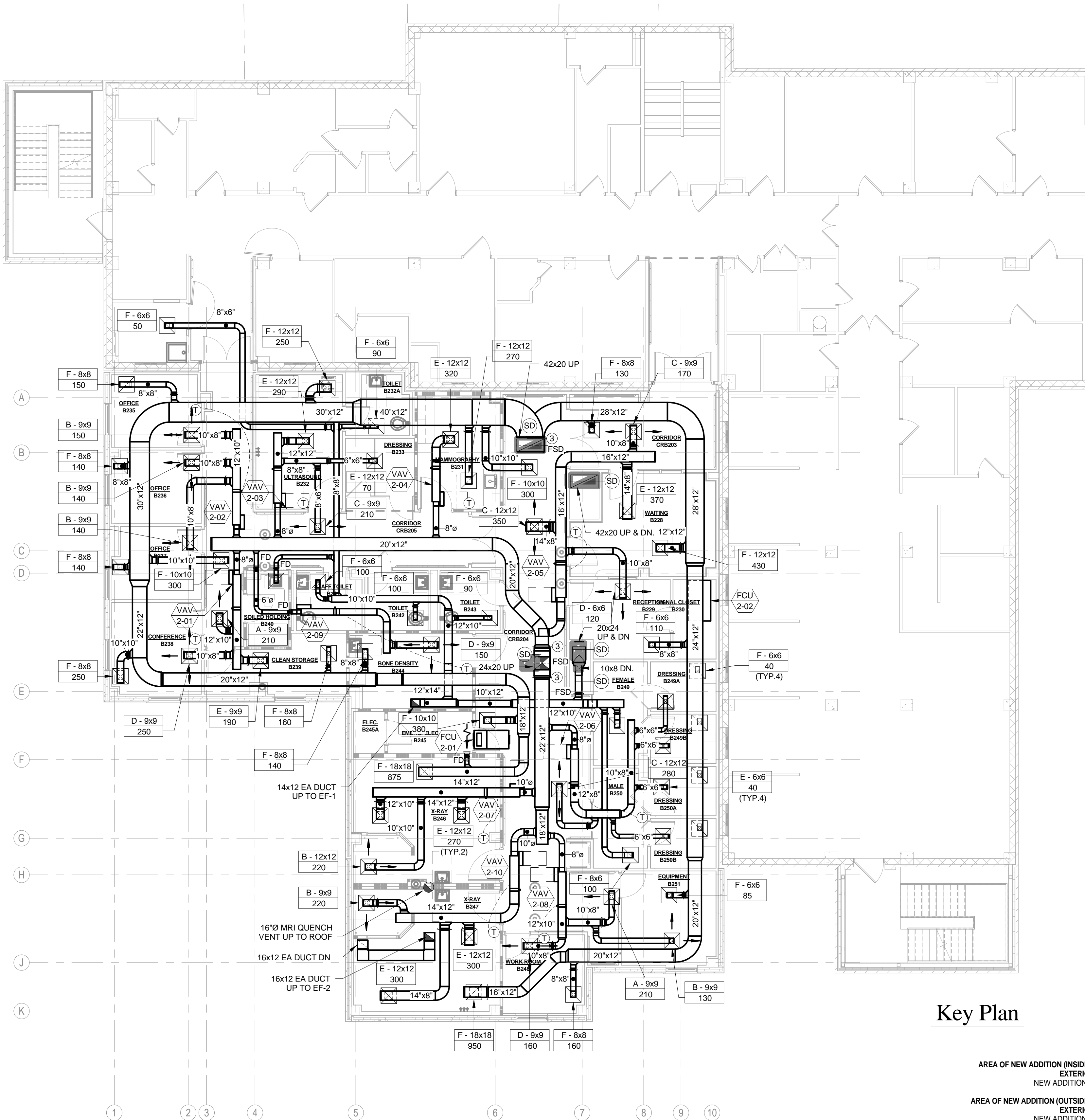
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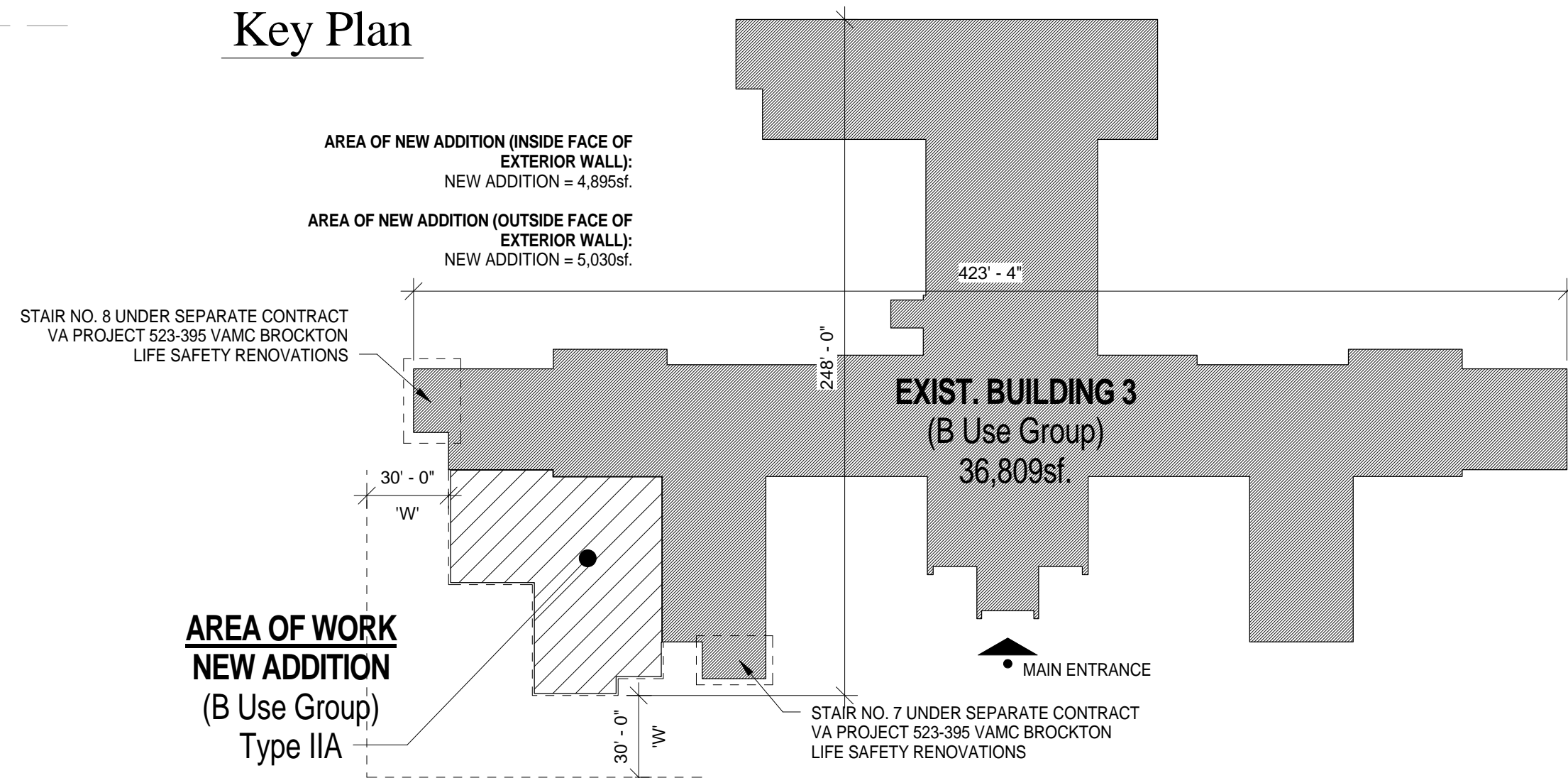
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one quarter inch = one foot  
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VAV BALANCING SCHEDULE LEVEL 2								
DSGNTN	NUMBER	TYPE	MBH	GPM	CFM MIN	CFM MAX	CFM HEAT	Level
VAV	2-01	SAV-10	22.5	2.2	650	650	650	Level 2
VAV	2-02	SAV-8	13.8	1.4	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



HVAC LEVEL 2  
DUCTWORK PLAN

Key Plan



- 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.

100% CONSTRUCTION DOCUMENT SUBMISSION  
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<div>1 - 100% CONSTRUCTION DOCUMENT SUBMISSION</div> <div>Revisions:</div>		<div>CONSULTANTS:</div> <div><div>RWS</div><div>R. W. Sullivan Engineering MEP / FF Engineering, Cook Consulting The Shattuck Center, 525 Main St., Suite 201 Boston, Massachusetts 02109-1157 Phone: 617-534-8227 www.rwsd.com RWS, DB # 11675.0</div></div>		<div>ARCHITECT/ENGINEERS:</div> <div><div>moser pilon nelson architects</div><div>30 JORDAN LANE WILMINGTON, CT 06013 (860) 263-0164</div></div>	<div>Drawing Title</div> <div>HVAC LEVEL 2 DUCTWORK PLAN</div>	<div>Project Title</div> <div>BUILDING 3 MRI/CT Radiology Addition Boston Healthcare System - Brockton Campus</div>	<div>Project Number</div> <div>523-398</div>	<div>Office of Facilities Management</div>			
<div>Date</div> <div>02/12/2016</div>		<div>Approved: Project Director</div>		<div>Location</div> <div>940 Belmont Street Brockton, MA 02301</div>		<div>Building Number</div> <div>3</div>		<div>Drawing Number</div> <div>H1.02</div>			
<div>Date</div> <div>02/12/2016</div>		<div>Checked</div> <div>JWS</div>		<div>Date</div> <div>02/12/2016</div>		<div>Drawn</div> <div>DO</div>		<div>Dwg. 81 of 145</div>			
<div>Date</div> <div>04/08/2016</div>		<div>Date</div> <div>04/08/2016</div>		<div>Date</div> <div>04/08/2016</div>		<div>Date</div> <div>04/08/2016</div>		<div>Date</div> <div>04/08/2016</div>			





## KEYNOTES:

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

## Key Plan

AREA OF NEW ADDITION (INSIDE FACE OF  
EXTERIOR WALL):  
NEW ADDITION = 4,895sf.

AREA OF NEW ADDITION (OUTSIDE FACE OF  
EXTERIOR WALL):  
NEW ADDITION = 5,030sf

STAIR NO. 8 UNDER SEPARATE CONTRACT  
VA PROJECT 523-395 VAMC BROCKTON  
LIFE SAFETY RENOVATIONS

**EXIST. BUILDING**  
(B Use Group)  
36,809sf.

● MAIN ENTRANCE

STAIR NO. 7 UNDER SEPARATE CONTRACT  
VA PROJECT 523-395 VAMC BROCKTON  
LIFE SAFETY RENOVATIONS

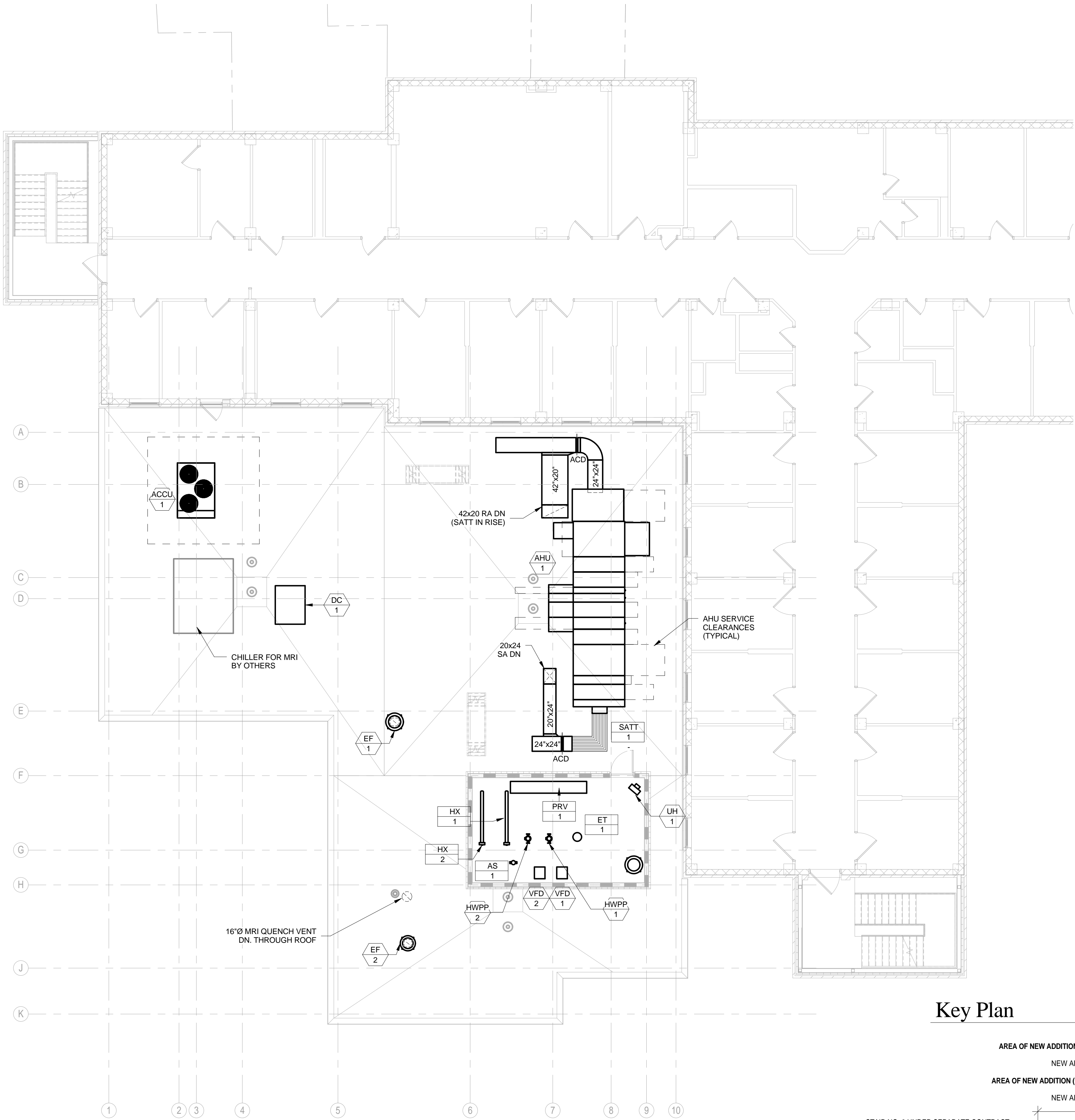
**AREA OF WORK**  
**NEW ADDITION**  
(B Use Group)  
Type IIA

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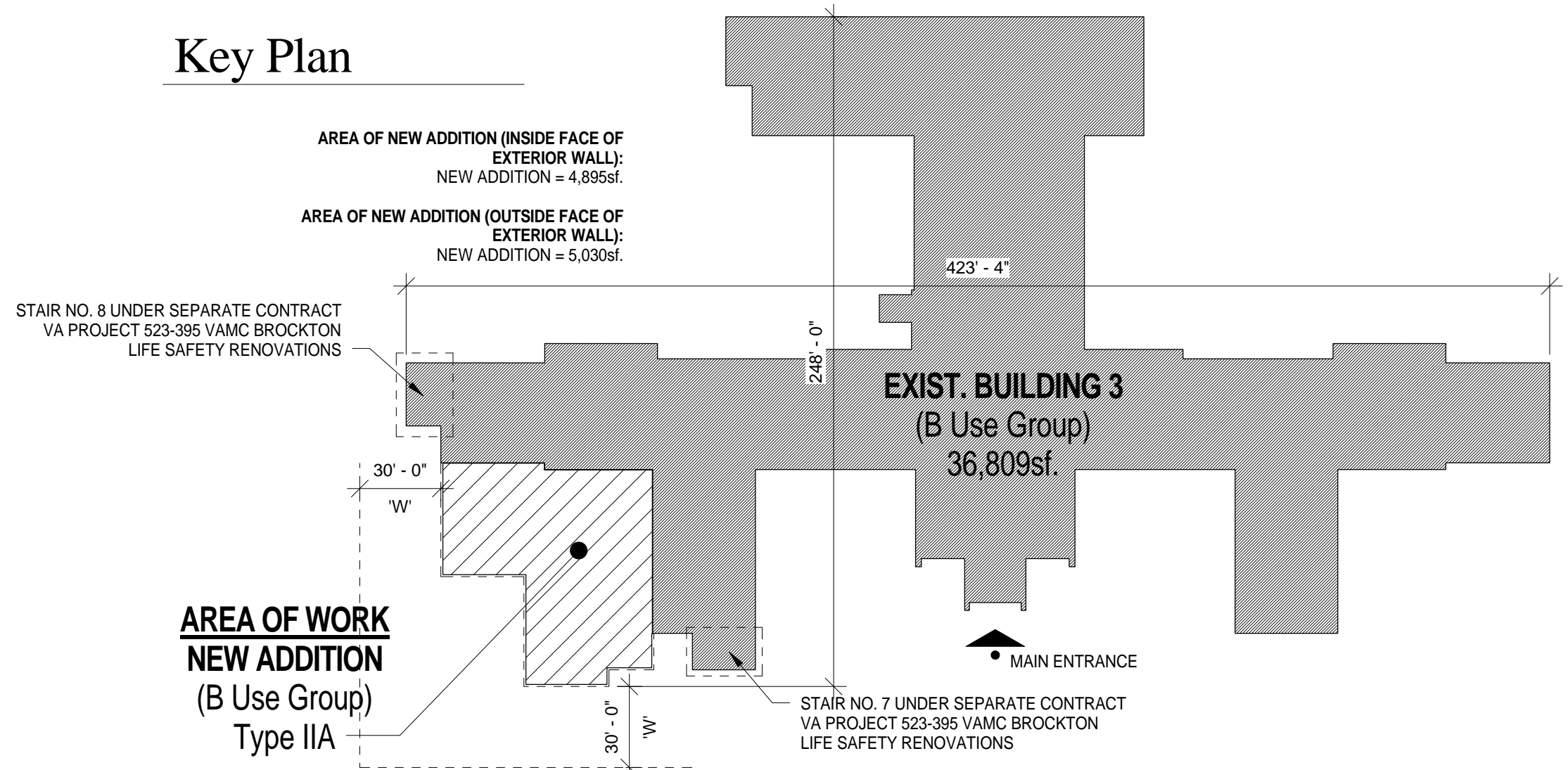


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ninety nine inches = one foot  
one hundred inches = one foot



HVAC DEDUCT  
ALTERNATE ROOF  
DUCTWORK PLAN

Key Plan

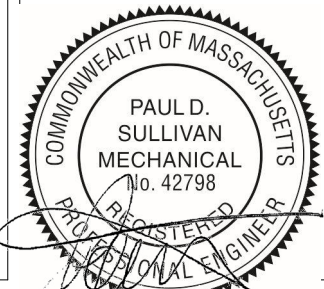


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1 - 100% CONSTRUCTION DOCUMENT SUBMISSION	04/08/2016
Revisions:	Date:

**CONSULTANTS:**

**RWS** R. W. Sullivan Engineering  
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The South Center, 525 Main St., Suite 205  
Boston, Massachusetts 02109-1157  
Phone: 617-524-8227 www.rws-engineering.com  
RWS, DB #11675.00



**ARCHITECT/ENGINEERS:**

**moser pilon nelson architects**  
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WILMINGTON, CT 06103  
(860) 263-0164

Drawing Title  
**HVAC DEDUCT 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**

Drawing Number  
**H1.03A**

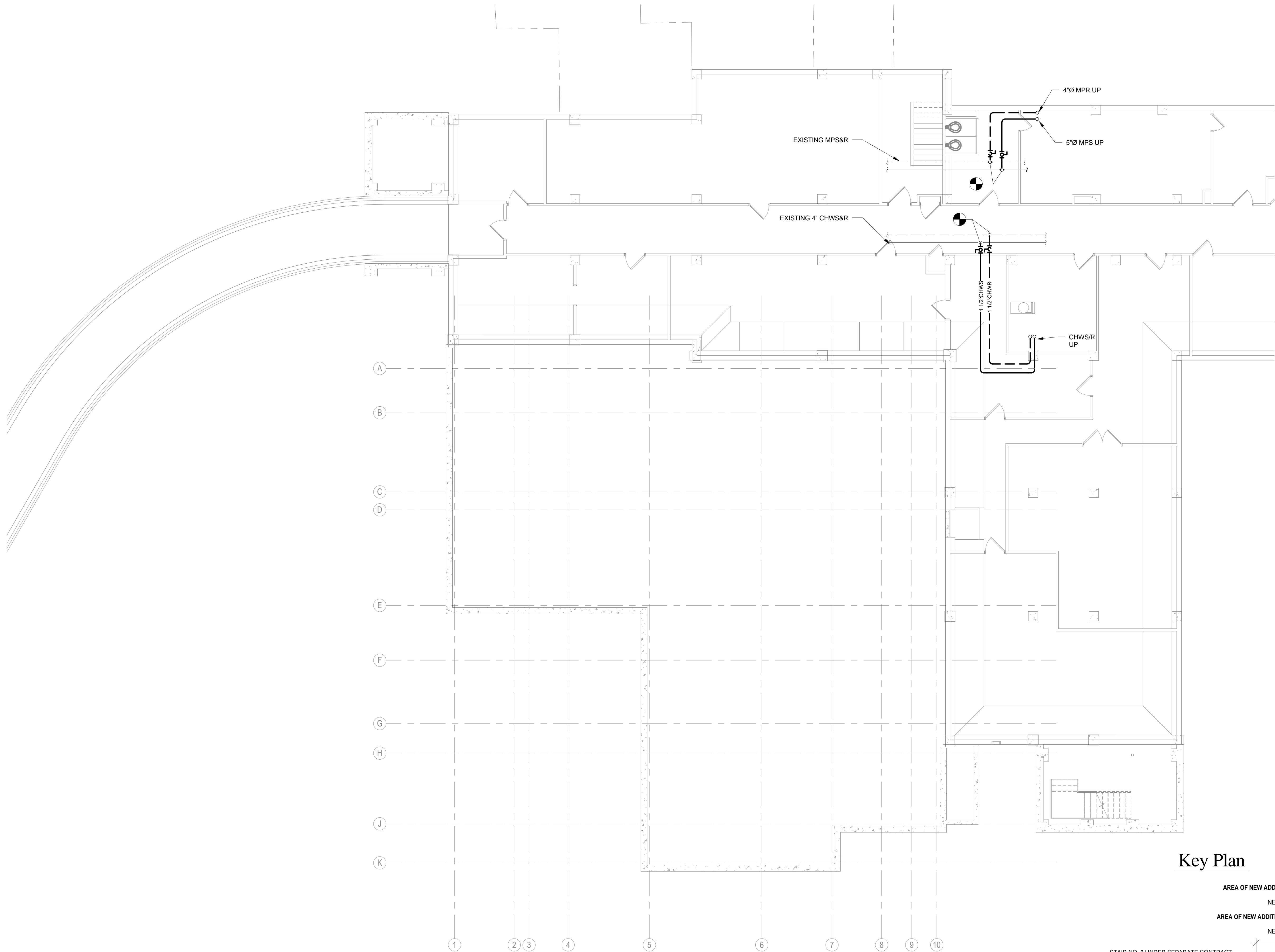
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**Office of  
Facilities  
Management**

**Department of  
Veterans Affairs**



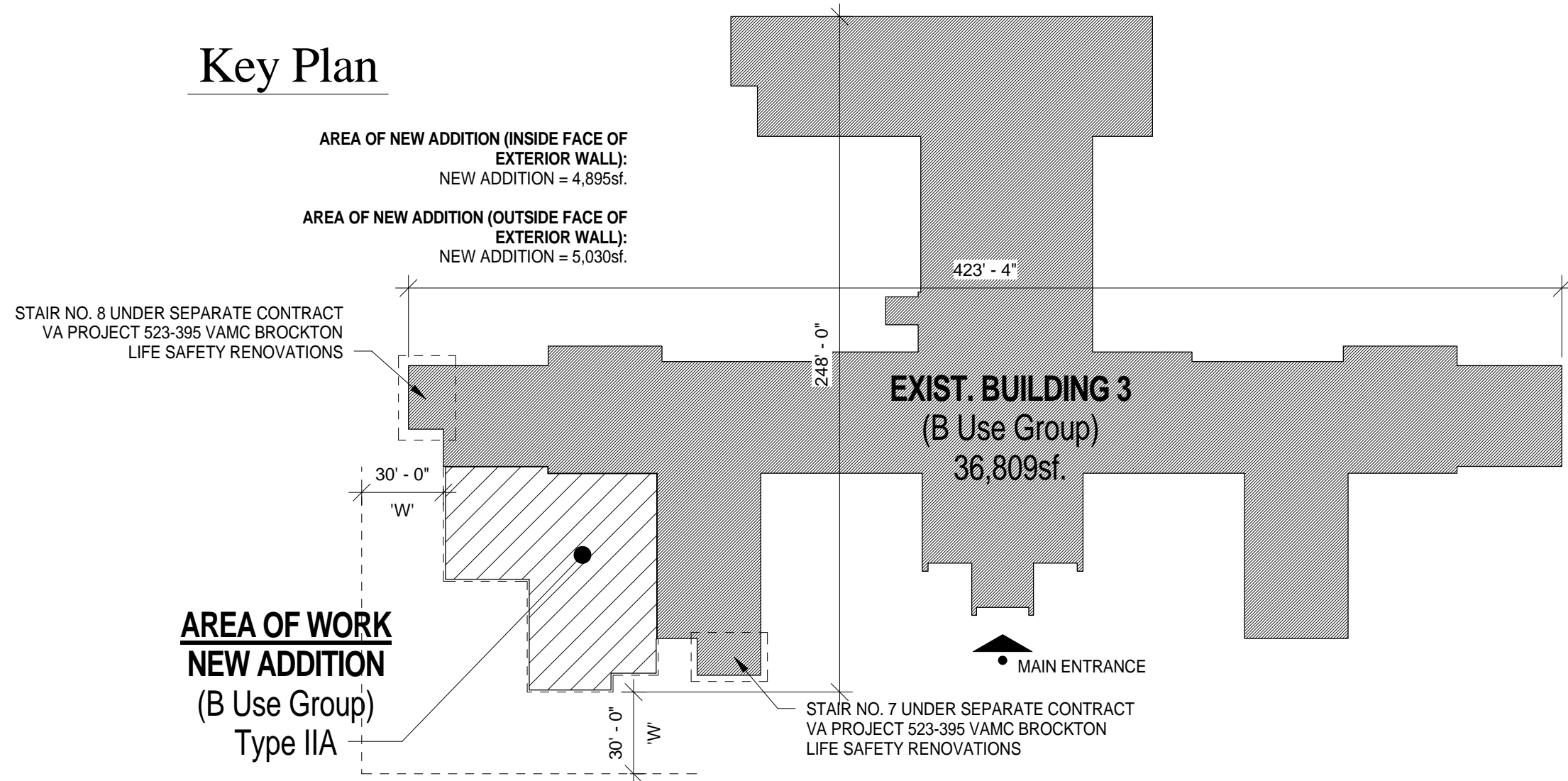
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three quarters inch = one foot  
three eighths inch = one foot  
three sixteenths inch = one foot  
one eighth inch = one foot  
one quarter inch = one foot  
one half inch = one foot  
one inch = one foot  
one and one half inches = one foot  
two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



HVAC BASEMENT  
PIPING PLAN

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

Key Plan



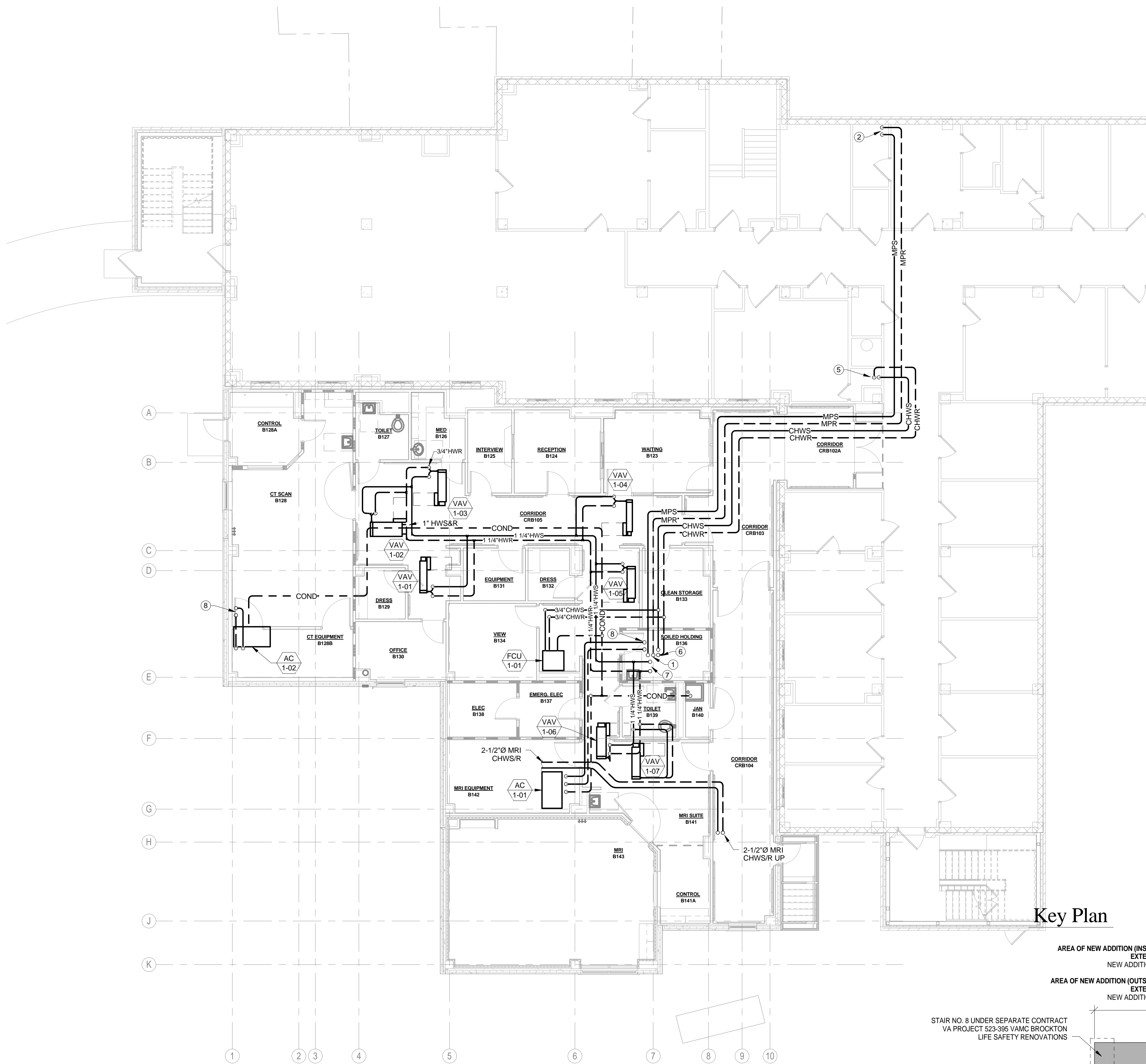
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		<div>CONSULTANTS:</div> <div><div></div><div>R. W. Sullivan Engineering MEP / FF Engineering, Cook Consulting The Shattuck Center, 525 Main St., Suite 203 Boston, Massachusetts 02109-1157 Phone: 617-524-8227 www.rwsullivan.com RWS, DB # 11675.00</div></div>		<div>ARCHITECT/ENGINEERS:</div> <div><div></div><div>moser pilon nelson architects <small>30 JORDAN LANE WILMINGTON, CT 06019 (860) 263-0164</small></div></div>		<div>Drawing Title</div> <div>HVAC BASEMENT PIPING PLAN</div> <div>Approved: Project Director</div>		<div>Project Title</div> <div>BUILDING 3 MRI/CT Radiology Addition Boston Healthcare System - Brockton Campus</div> <div>Location 940 Belmont Street Brockton, MA 02301</div> <div>Date 02/12/2016</div> <div>Checked JWS</div> <div>Drawn DO</div>		<div>Project Number 523-398</div> <div>Building Number 3</div> <div>Drawing Number H2.00</div> <div>Dwg. 84 of 145</div>		<div>Office of Facilities Management</div> <div> Department of Veterans Affairs</div>	
1 - 100% CONSTRUCTION DOCUMENT SUBMISSION		04/08/2016											
Revisions:		Date:											



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one quarter inch = one foot  
one eighth inch = one foot  
one eighth inch = one foot

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

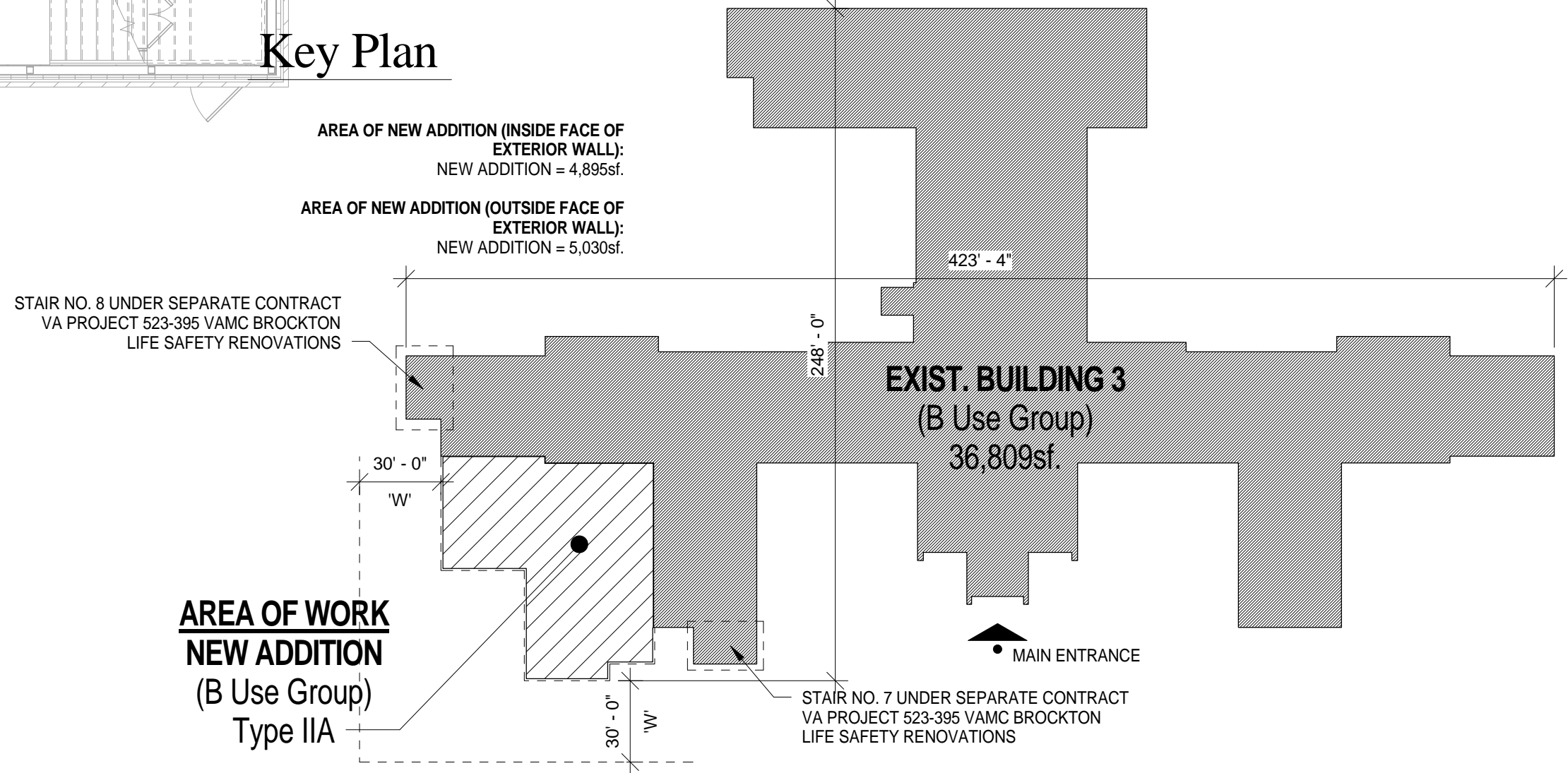


HVAC LEVEL 1 PIPING  
PLAN

- 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  
5" MPS UP
  - 2 4" MPR DN. TO UTILITY CRAWLSPACE  
5" MPS 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

Key Plan



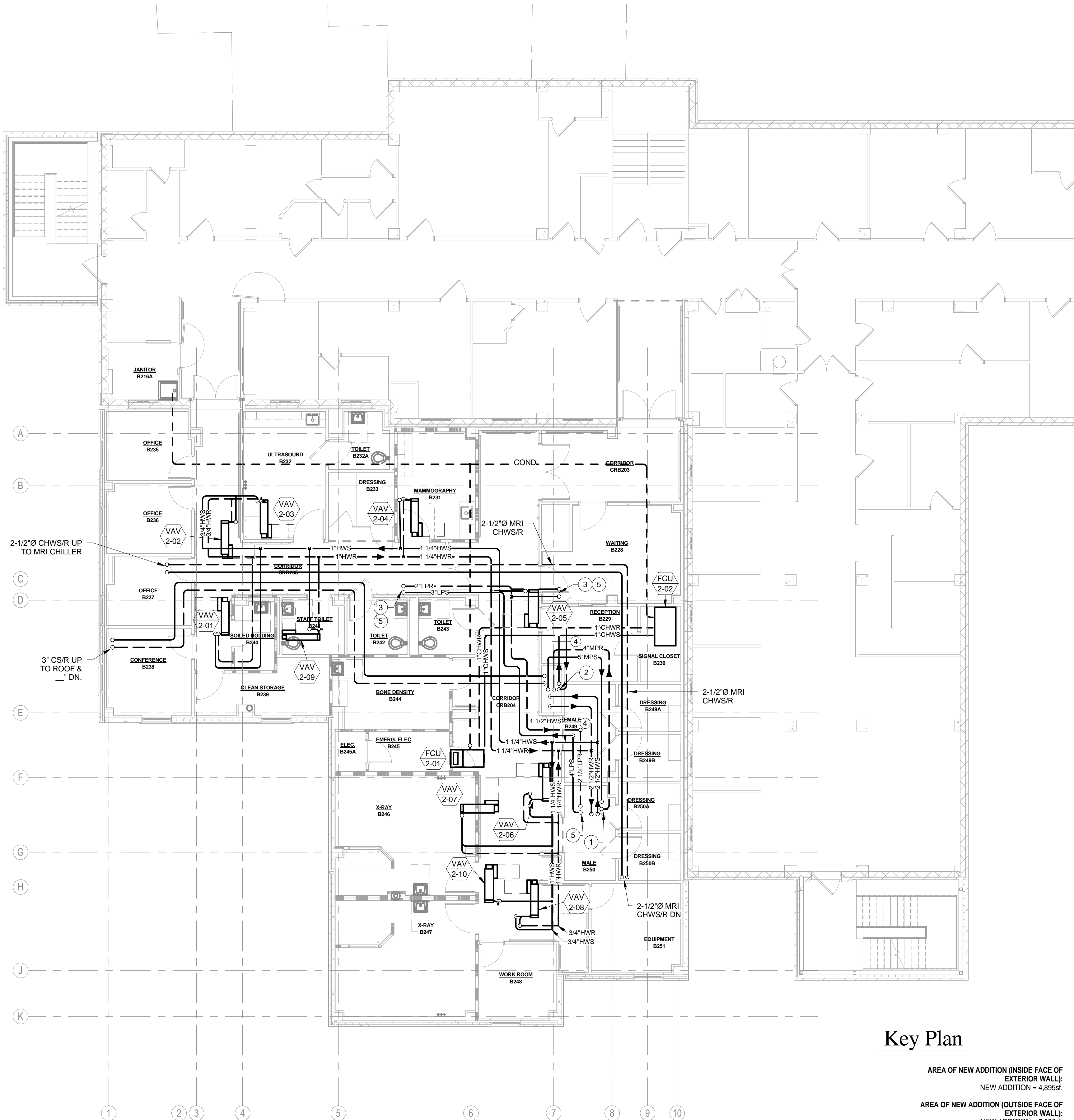
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<b>CONSULTANTS:</b>  R. W. Sullivan Engineering MEP/FP Engineering, Cook Consulting The South Center, 525 Main St., Suite 203 Boston, Massachusetts 02129-1157 Phone: 617-524-8227 www.rwsusa.com RWS, DB #11675.0	<b>ARCHITECT/ENGINEERS:</b>  30 JORDAN LANE WILMINGTON, CT 06103 (860) 263-0164	Drawing Title <b>HVAC LEVEL 1 PIPING PLAN</b>	Project Title <b>BUILDING 3 MRI/CT Radiology Addition Boston Healthcare System - Brockton Campus</b>	Project Number <b>523-398</b> Building Number <b>3</b>	<b>Office of Facilities Management</b> 		
1 - 100% CONSTRUCTION DOCUMENT SUBMISSION Revisions:	04/08/2016 Date:	Approved: Project Director	Location <b>940 Belmont Street Brockton, MA 02301</b>	Drawing Number <b>H2.01</b>			
			Date <b>02/12/2016</b>	Checked <b>JWS</b>	Drawn <b>DO</b>	Dwg. 85 of 145	



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  
one eighth inch = one foot

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



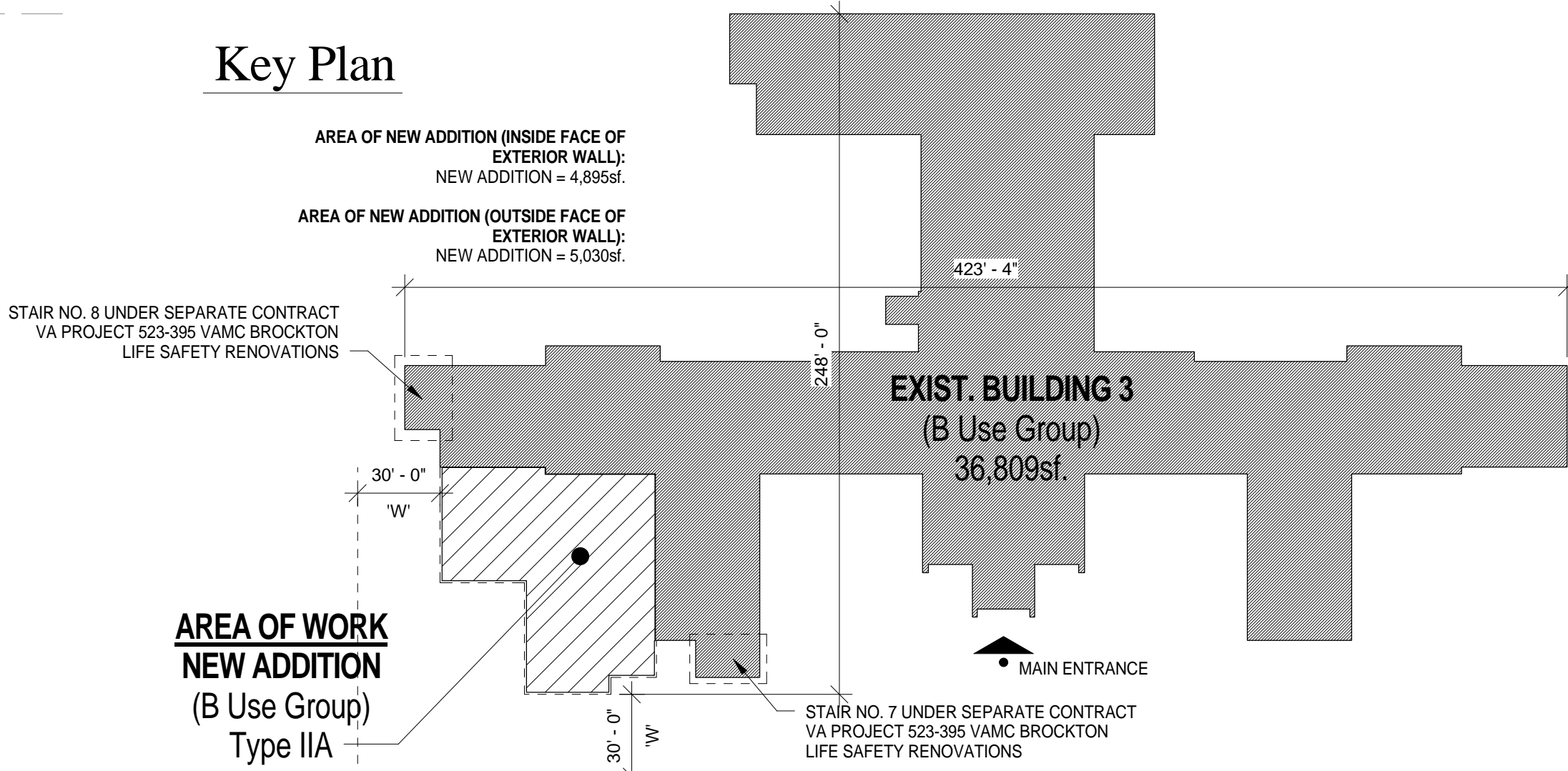
HVAC LEVEL 2 PIPING  
PLAN

- GENERAL NOTES:
1. DEDUCT ALTERNATE #4 ALL WORK FOR THIS FLOOR FOR FUTURE U.N.O.
  2. DEDUCT ALTERNATE WHOLE FLOOR. THIS FLOOR NOT BUILT.
  3. ALL PIPING BEYOND THIS POINT FUTURE FOR DEDUCT ALTERNATE.
  4. LPS FROM PRV TO AHU'S SHALL BE PART OF CORE AND SHELL WORK.
  5. ANY UNSIZED HW/SR SHALL BE 3/4"
  6. PROVIDE CLEAN-OUTS AT EACH CHANGE IN DIRECTION ON CONDENSATE PIPING.

KEYNOTE LEGEND

- 1 2" HW/SR UP  
5" MPS UP  
4" MPR UP  
4" LPS UP  
2-1/2" LPR UP
- 2 4" MPR DN  
5" MPS DN  
1-1/2" HW/SR DN  
1-1/4" CHWS/R DN  
X" CS/R DN
- 3 3" LPS UP  
2" LPR UP
- 4 ALL PIPING BEYOND THIS POINT FUTURE FOR DEDUCT ALTERNATE #X.
- 5 LPS FROM PRV TO AHU'S SHALL BE PART OF CORE AND SHELL WORK.

Key Plan

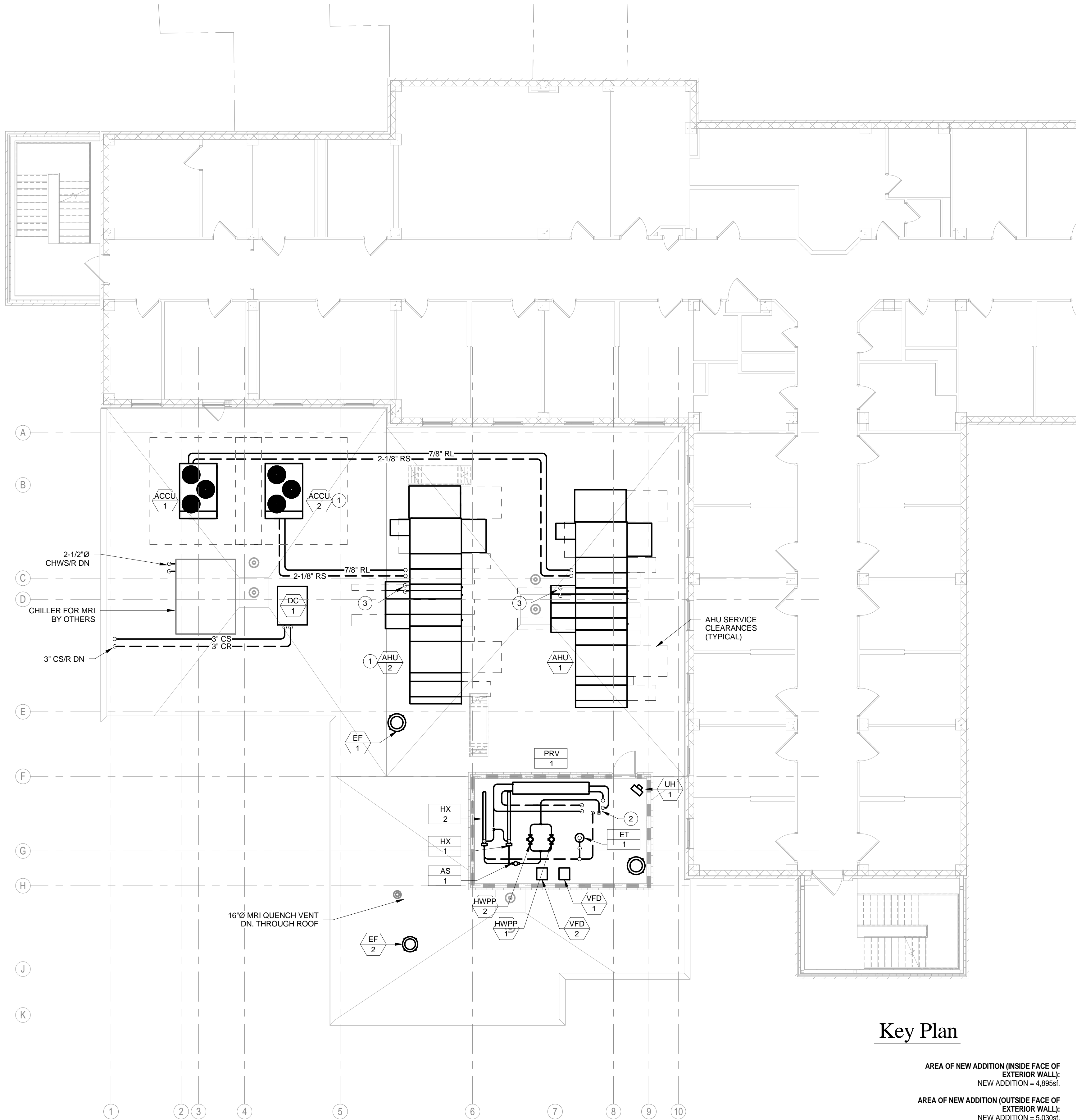


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<div>Approved: Project Director</div>	<div>Location</div> <div>940 Belmont Street Brockton, MA 02301</div>	<div>Drawing Number</div> <div>H2.02</div>	<div>Dwg. 86 of 145</div>	<div>Department of Veterans Affairs</div>	
<div>1 - 100% CONSTRUCTION DOCUMENT SUBMISSION</div> <div>Revisions:</div>	<div>04/08/2016</div> <div>Date:</div>	<div>02/12/2016</div> <div>Date</div>	<div>JWS</div> <div>Checked</div>	<div>DO</div> <div>Drawn</div>	



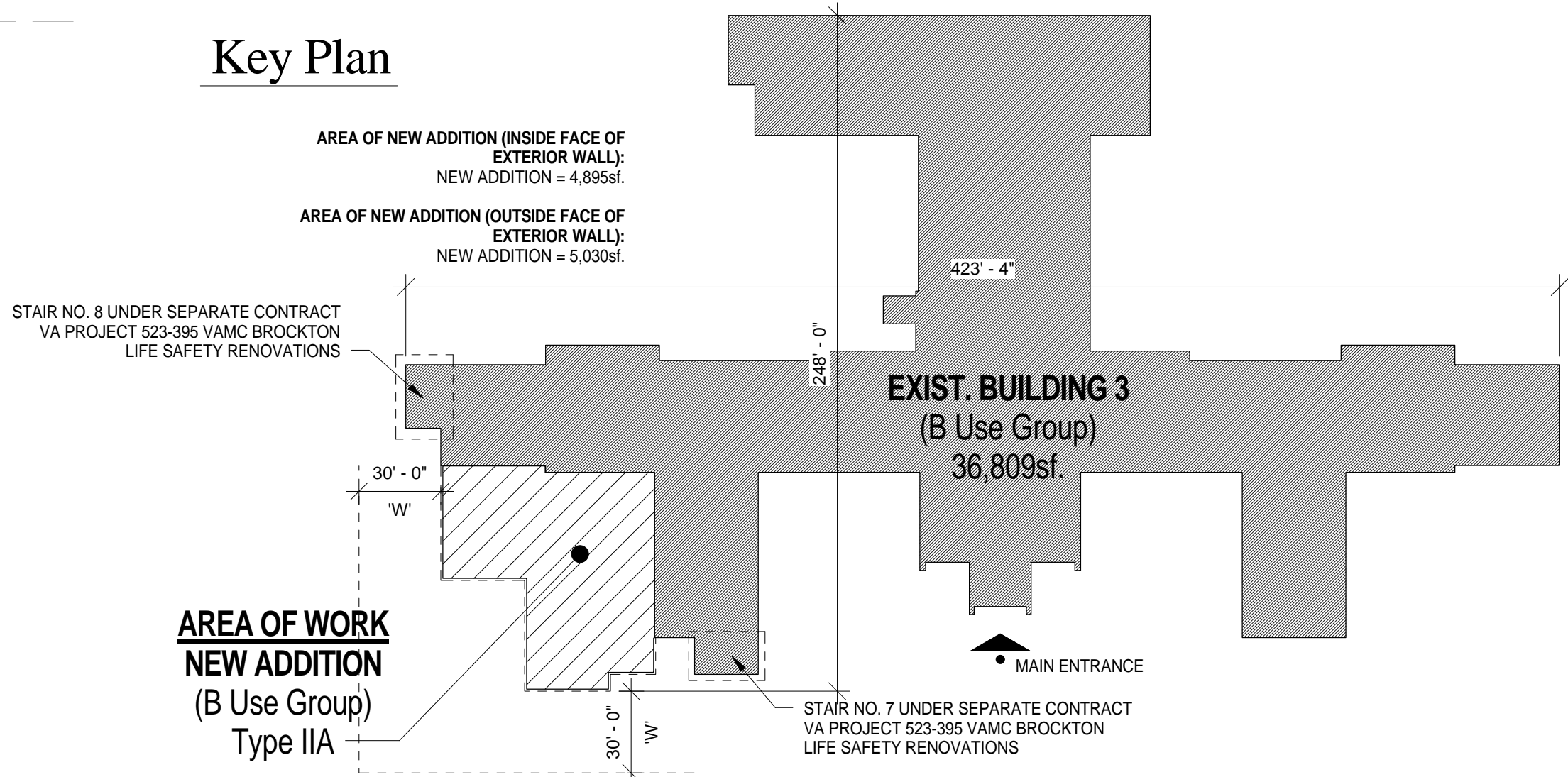
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ninety four inches = one foot  
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ninety seven inches = one foot  
ninety eight inches = one foot  
ninety nine inches = one foot  
one hundred inches = one foot



HVAC ROOF PIPING PLAN

- GENERAL NOTES:
- SUPPORT ALL PIPING ABOVE ROOF PER DETAILS.
  - REFRIGERANT LINE SIZING IS FOR BASIS OF DESIGN AHU/ACCU'S ONLY. CONTRACTOR SHALL SIZE FOR EQUIPMENT MFG'S RECOMMENDATIONS & REQUIREMENTS FOR ALTERNATE MANUFACTURERS.
- KEYNOTES:
- THIS EQUIPMENT AND ASSOCIATED PIPING & DUCTWORK ARE ELIMINATED UNDER DEDUCT ALTERNATE WHICH ELIMINATES THE 2ND FLOOR
  - 2" HWS&R DN  
5" MPS DN  
4" MPR DN  
4" LPS DN  
2-1/2" LPR DN
  - 3" LPS DN  
2" LPR DN

Key Plan

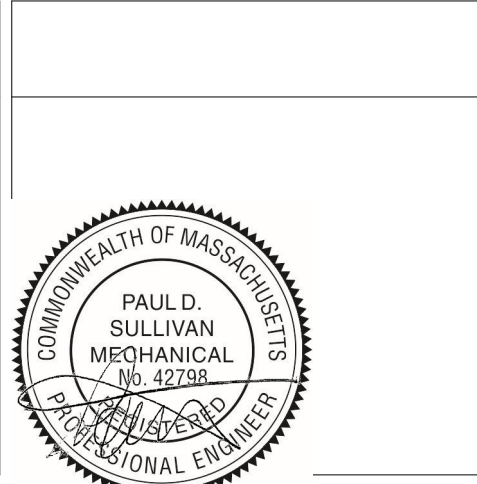


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RWS, DB # 11675.00



**ARCHITECT/ENGINEERS:**

**moser pilon nelson architects**  
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WILMINGTON, CT 06019  
(860) 263-0164

Drawing Title  
**HVAC ROOF 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  
**3**

Drawing Number  
**H2.03**

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**Office of  
Facilities  
Management**

**Department of  
Veterans Affairs**