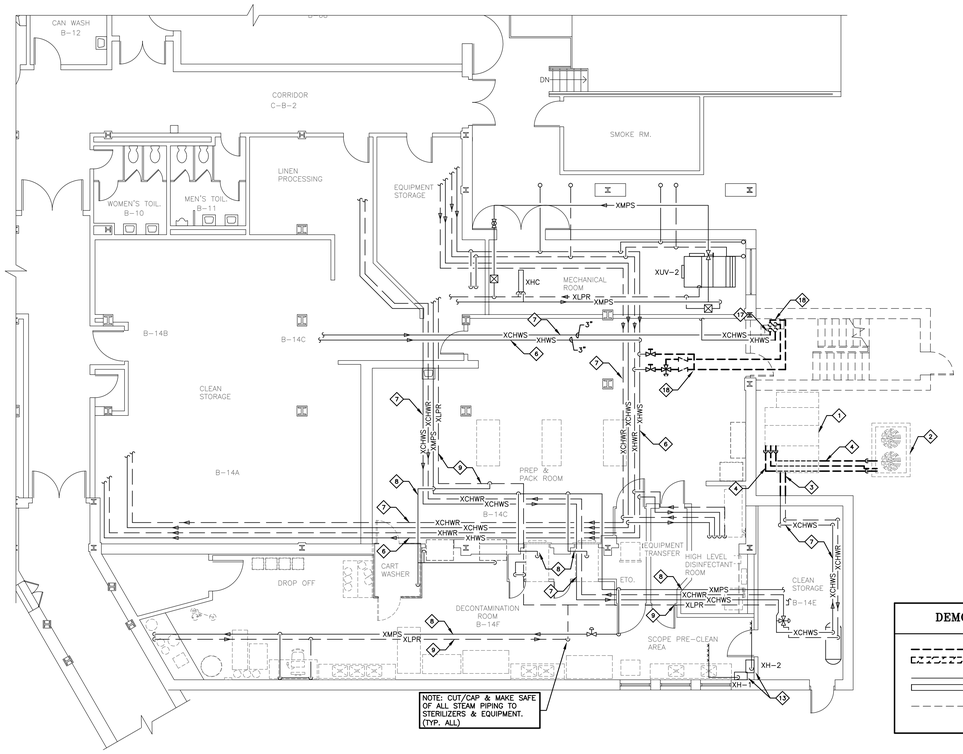
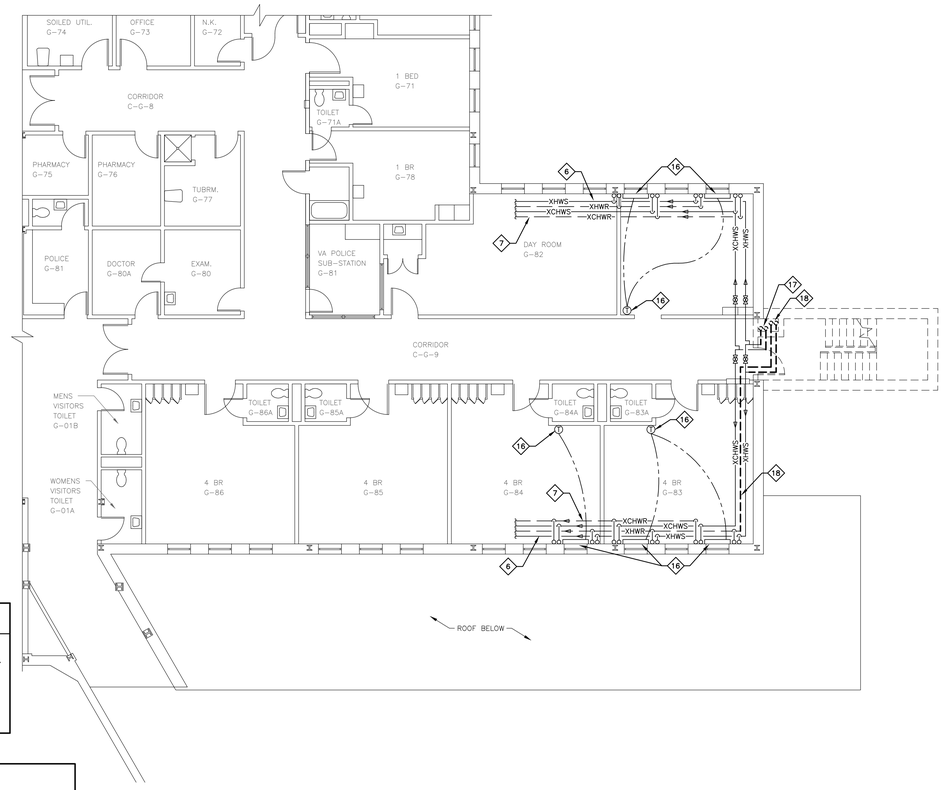


NOTE: CUT/CAP & MAKE SAFE OF ALL STEAM PIPING TO STERILIZERS & EQUIPMENT. (TYP. ALL)

BASEMENT FLOOR PLAN – PIPING DEMOLITION

SCALE: 1/8" = 1'-0"



GROUND FLOOR PLAN – PIPING DEMOLITION

SCALE: 1/8" = 1'-0"

DEMOLITION LINE TYPE LEGEND

- EXISTING EQUIPMENT, PIPING, DUCTWORK, ETC. TO BE REMOVED.
- EXISTING EQUIPMENT, PIPING, DUCTWORK, ETC. TO REMAIN.
- EXISTING GENERAL CONSTRUCTION TO BE REMOVED.

MECHANICAL DEMOLITION KEYNOTES '◇'

1. RELOCATE EXISTING XAHU-4 TO LOCATION SHOWN ON NEW WORK PLANS. CLEAN UNIT, CHANGE BELTS, LUBE AND PROVIDE NEW FILTERS. EXTEND PIPING, CONTROLS AND DUCTWORK AS REQUIRED TO ACCOMMODATE NEW LOCATION. VERIFY PROPER OPERATION.
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23. REMOVE EXISTING SUPPLY AND RETURN DUCTWORK AND ASSOCIATED GRILLES AND DIFFUSERS COMPLETE.
24. REMOVE EXISTING FRESH AIR INTAKE ASSEMBLY ASSOCIATED WITH XAHU-4 COMPLETE. REWORK WITH NEW AS INDICATED ON NEW WORK PLANS.

N

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

ADDENDUM #1 CLARIFICATIONS	08/1/2012
REVISIONS:	DATE

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KEY
EXISTING BUILDING 31
PROPOSED BUILDING 87

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JOHN D. VAN DYKE
No. 5915
LICENSED PROFESSIONAL ENGINEER

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Drawing Title: BASEMENT + GROUND FLOOR PLAN - PIPING DEMOLITION

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B31

Drawing Number: MD101

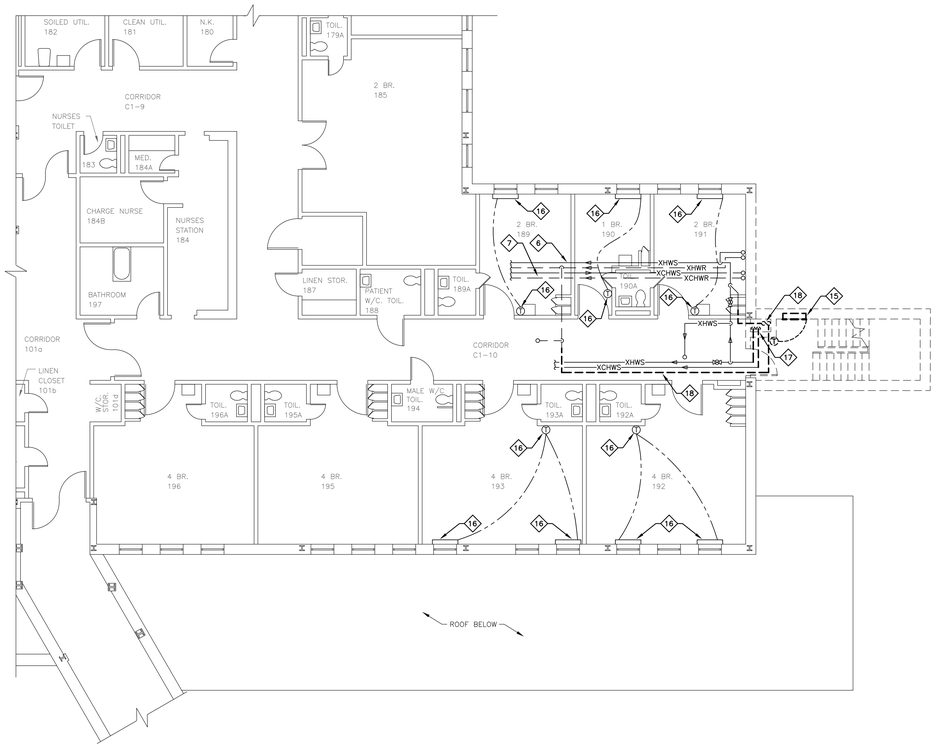
SHEET 1 OF 4

Office of Construction and Facilities Management

Department of Veterans Affairs

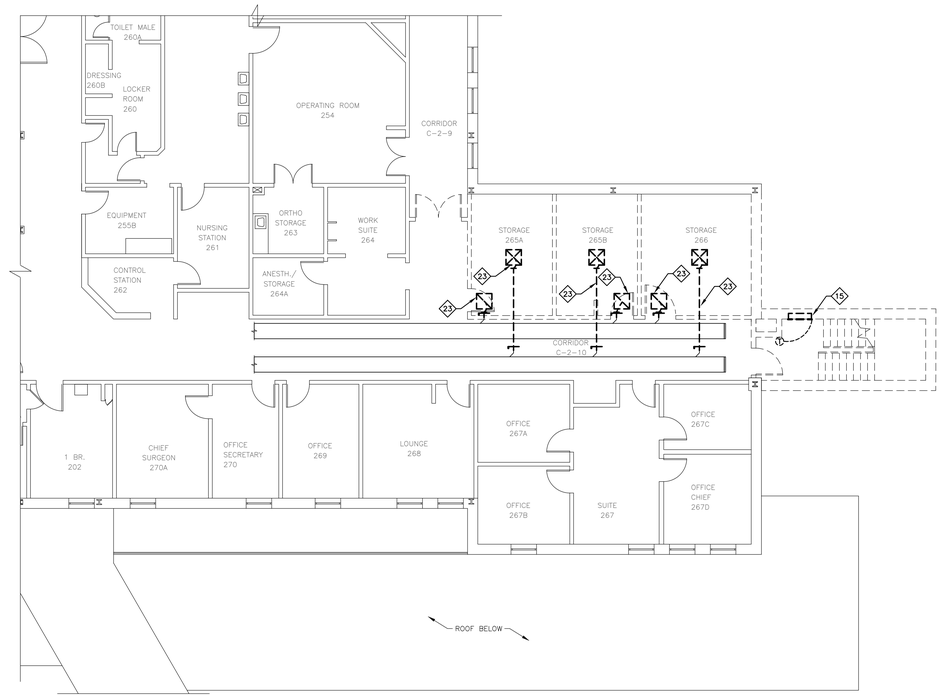
VA FORM 08-6231

Dwg: 10V28ME MD101.dwg, Tab: MD101, User: Rgammo



FIRST FLOOR PLAN – PIPING DEMOLITION

SCALE: 1/8" = 1'-0"



SECOND FLOOR PLAN – MECHANICAL DEMOLITION

SCALE: 1/8" = 1'-0"

MECHANICAL DEMOLITION KEYNOTES '◇'

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N

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ADDENDUM #1 CLARIFICATIONS	08/1/2012

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LOCUST

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EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP

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JOHN D. VEERMAN
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PROFESSIONAL ENGINEER

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www.warrenstreetarchitects.com

Drawing Title: FIRST + SECOND FLOOR PLAN - PIPING AND MECHANICAL DEMOLITION

Approved: Project Director
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U.S. Department of Veterans Affairs
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F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B31

Drawing Number: MD102

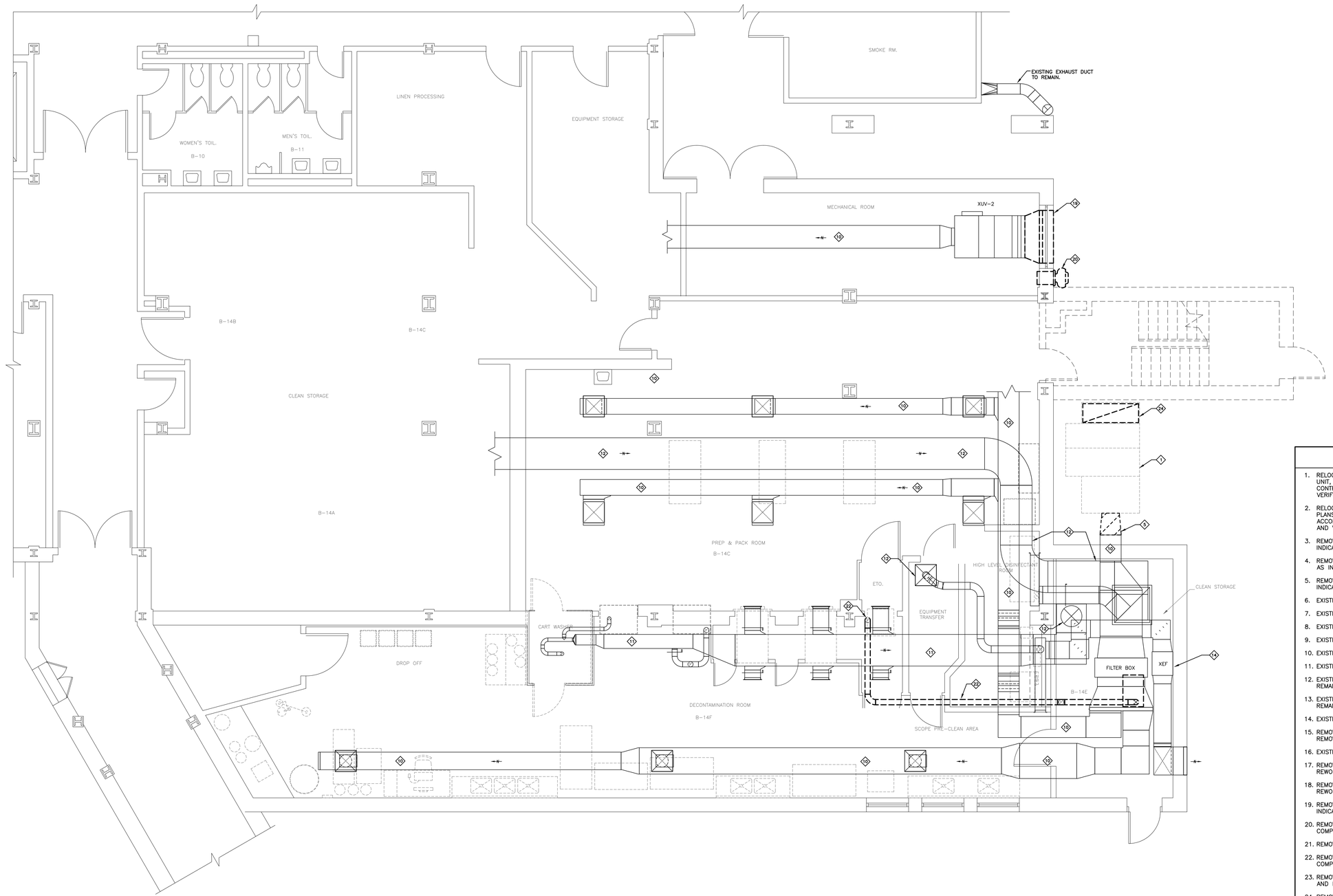
SHEET 2 OF 4

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

Dwg: 10V28ME MD102.dwg, Tab: MD102, User: Rgrammo



BASEMENT FLOOR PLAN – DUCTWORK DEMOLITION

SCALE: 1/4" = 1'-0"

MECHANICAL DEMOLITION KEYNOTES '◇'

1. RELOCATE EXISTING XAHU-4 TO LOCATION SHOWN ON NEW WORK PLANS. CLEAN UNIT, CHANGE BELTS, LUBE AND PROVIDE NEW FILTERS. EXTEND PIPING, CONTROLS AND DUCTWORK AS REQUIRED TO ACCOMMODATE NEW LOCATION. VERIFY PROPER OPERATION.
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24. REMOVE EXISTING FRESH AIR INTAKE ASSEMBLY ASSOCIATED WITH XAHU-4 COMPLETE. REWORK WITH NEW AS INDICATED ON NEW WORK PLANS.

N

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

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LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP
STATE OF NEW HAMPSHIRE
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LICENSED PROFESSIONAL ENGINEER

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Drawing Title: BASEMENT FLOOR PLAN - DUCTWORK DEMOLITION

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

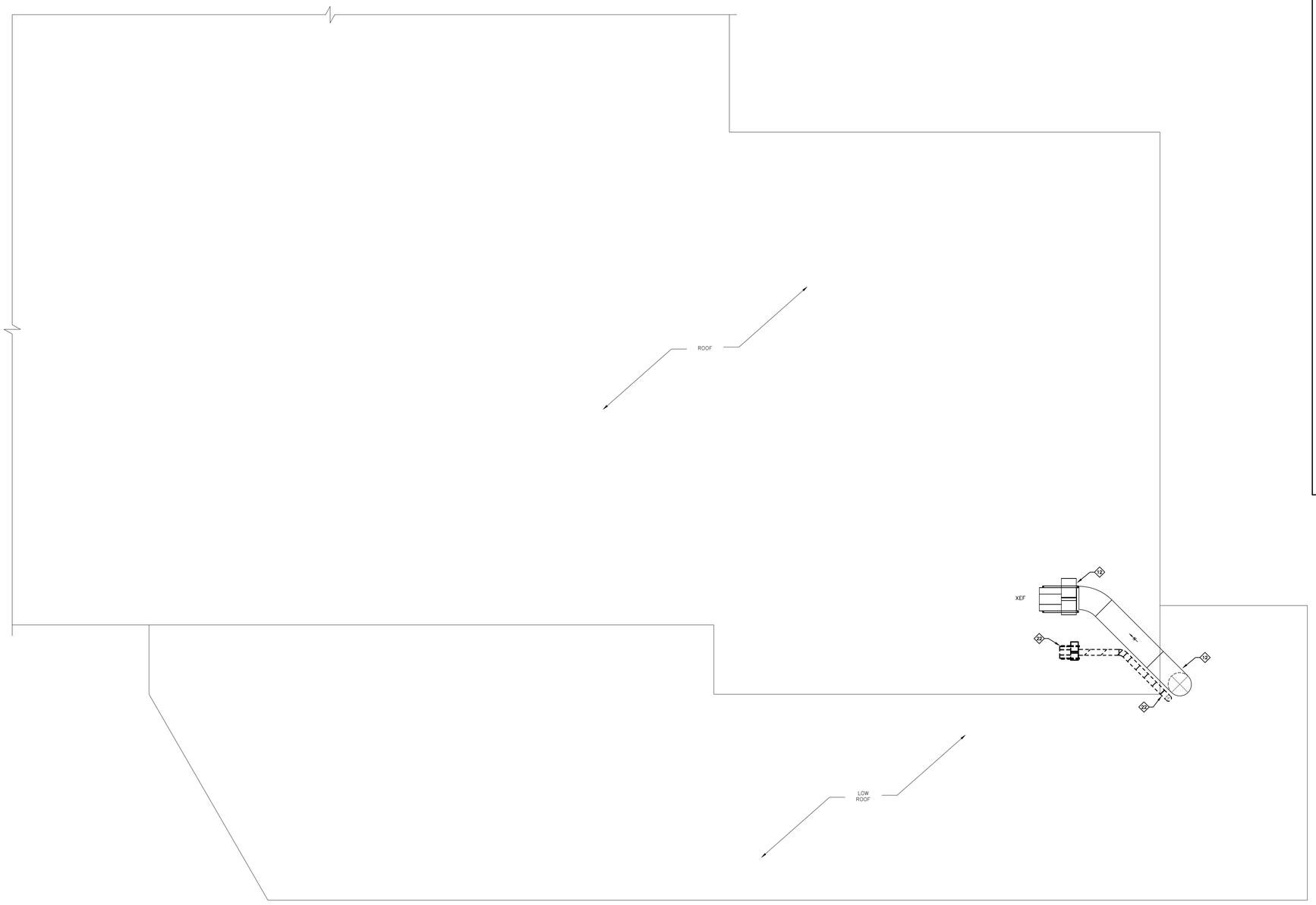
Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B31
Drawing Number: MD103
SHEET 3 OF 4

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

Dwg: 10VZ8MC MD103.dwg, Tab: MD103, User: Rgrammo



MECHANICAL DEMOLITION KEYNOTES '◇'

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24. REMOVE EXISTING FRESH AIR INTAKE ASSEMBLY ASSOCIATED WITH XAHU–4 COMPLETE. REWORK WITH NEW AS INDICATED ON NEW WORK PLANS.

ROOF PLAN – DUCTWORK DEMOLITION

SCALE: 1/4" = 1'–0"

N

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

ADDENDUM #1 CLARIFICATIONS	08/1/2012
REVISIONS:	DATE

VA FORM 08-6231

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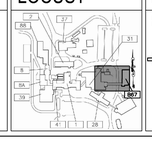
LOCUST



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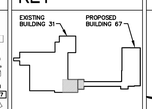

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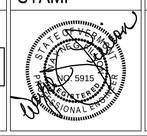

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Drawing Title: ROOF PLAN – DUCTWORK DEMOLITION

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B31

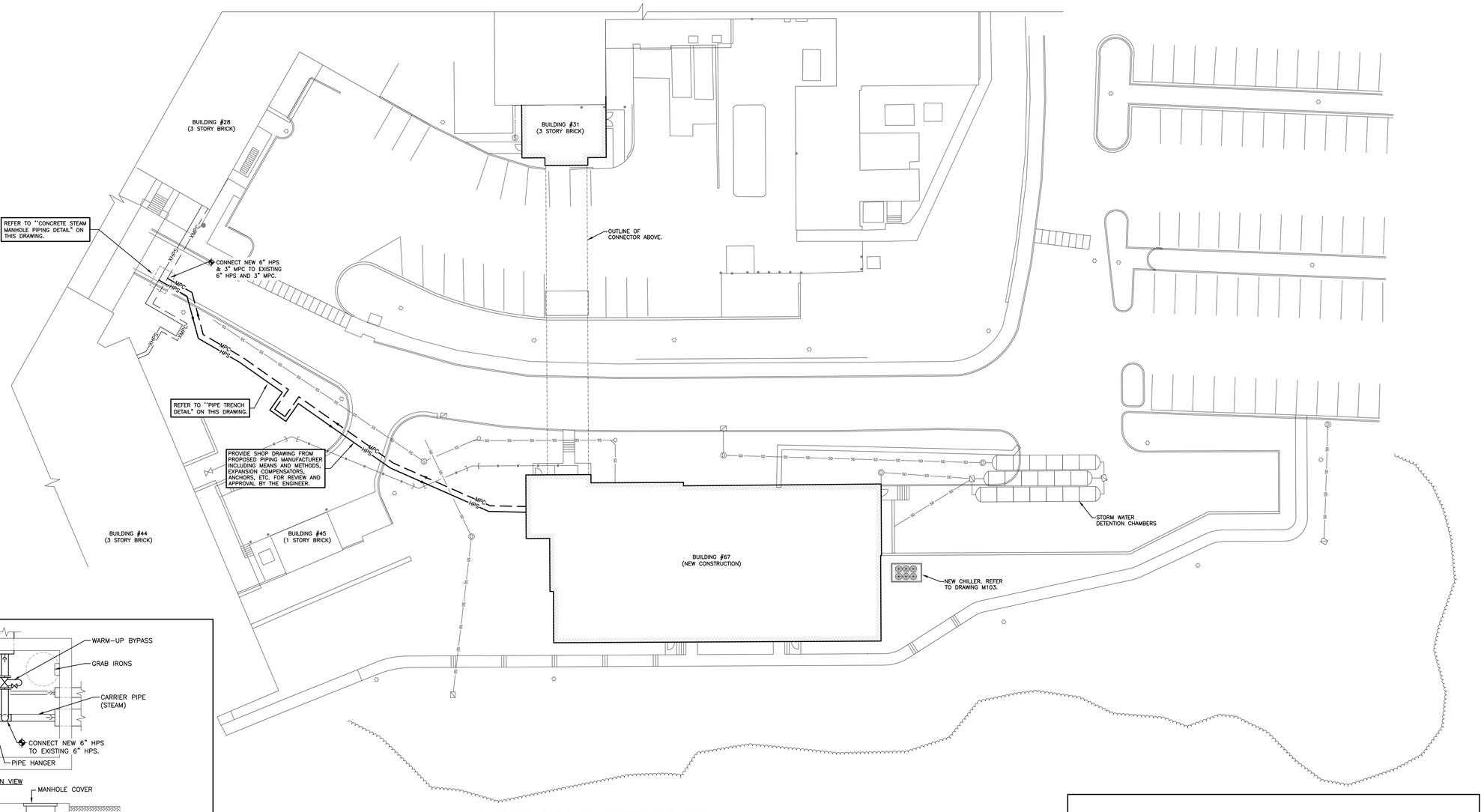
Drawing Number: MD104

SHEET 4 OF 4

Office of Construction and Facilities Management

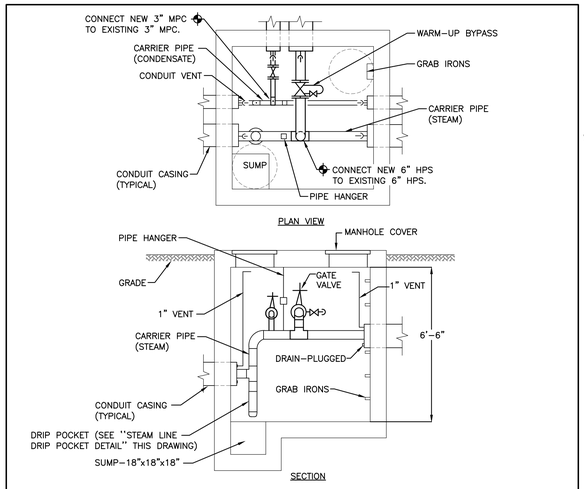
Department of Veterans Affairs

Dwg: 10V28ME MD104.dwg, Tab: MD104, User: Rgrammo



MECHANICAL SITE PLAN

SCALE: 1" = 20'-0"

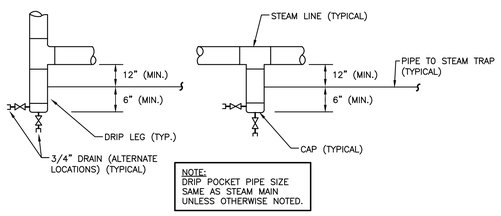


NOTES:

1. DIMENSIONS ARE MINIMUM UNLESS OTHERWISE NOTED.
2. MINIMUM FLOOR SPACE 6'x6'.

CONCRETE STEAM MANHOLE PIPING DETAIL

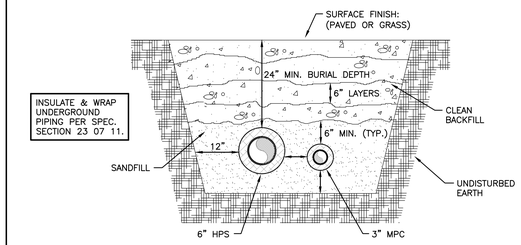
N.T.S.



NOTE:
DRIP POCKET PIPE SIZE SAME AS STEAM MAIN UNLESS OTHERWISE NOTED.

STEAM LINE DRIP POCKET DETAIL

N.T.S.



PIPE TRENCH DETAIL

N.T.S.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

ADDENDUM #1 CLARIFICATIONS	08/1/2012
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VA FORM 08-6231

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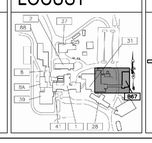

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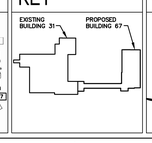

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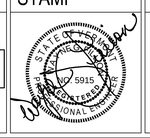

ARCHITECT:

WARRENSTREET ARCHITECTS
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T 603.225.0640 F 603.225.0621
www.warrenstreetarchitects.com

Drawing Title: MECHANICAL SITE PLAN

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

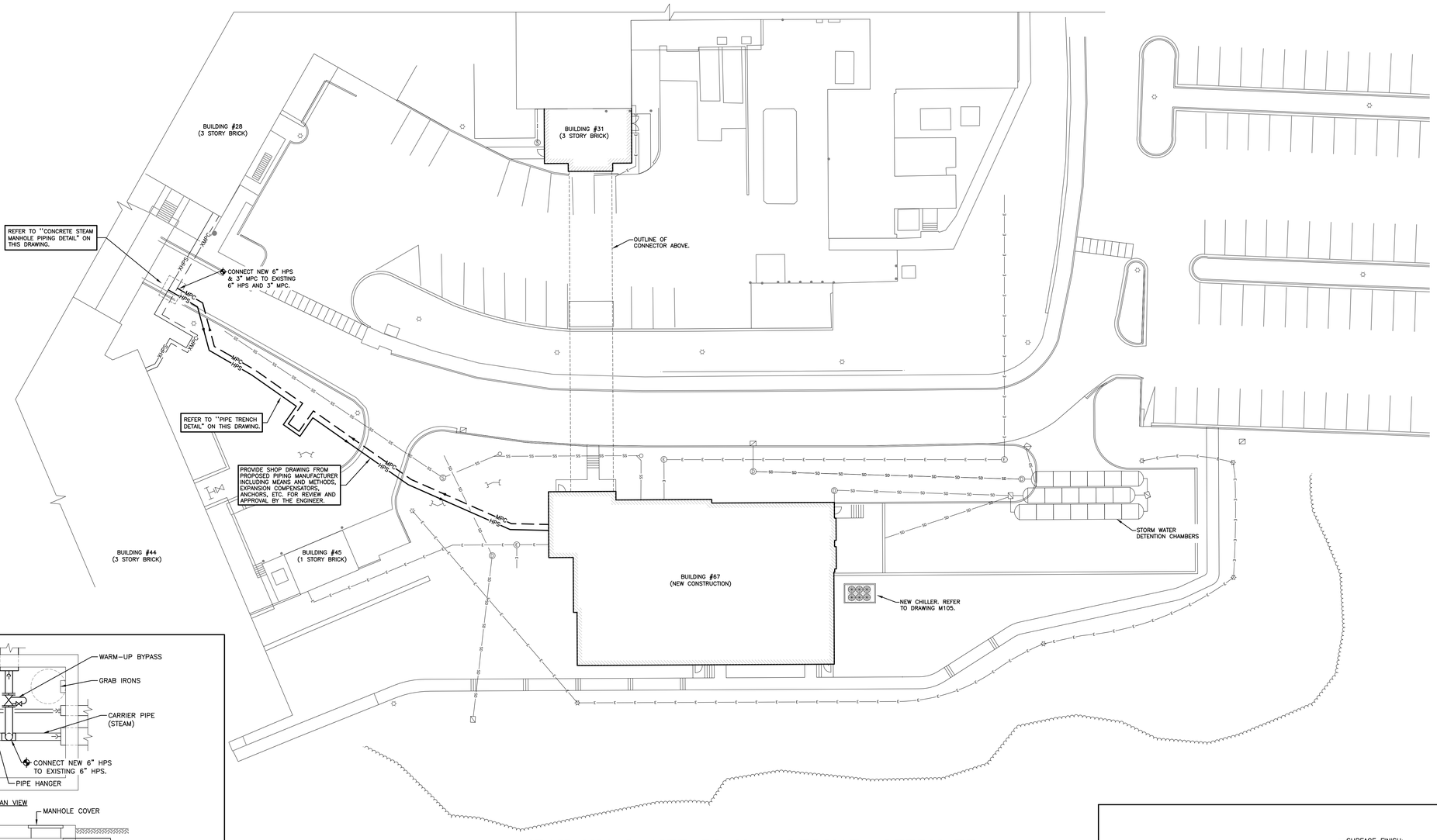
Building Number: B31 & B67

Drawing Number: MS101

SHEET 1 OF 2

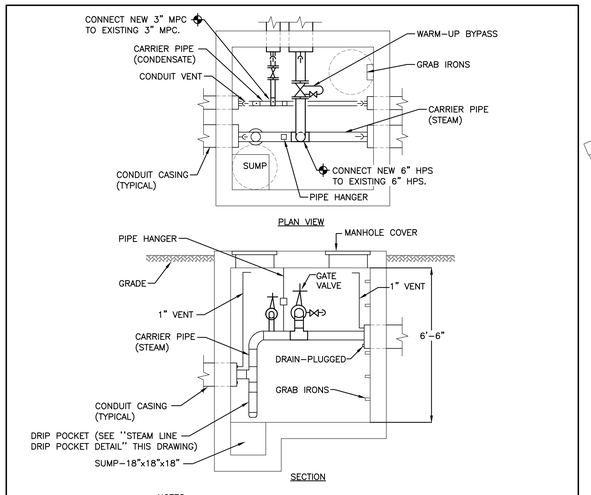
Office of Construction and Facilities Management

Department of Veterans Affairs



MECHANICAL SITE PLAN – DEDUCT ALTERNATE

SCALE: 1" = 20'-0"

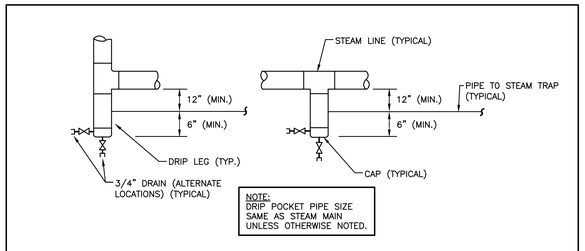


NOTES:

1. DIMENSIONS ARE MINIMUM UNLESS OTHERWISE NOTED.
2. MINIMUM FLOOR SPACE 6'x6'.

CONCRETE STEAM MANHOLE PIPING DETAIL

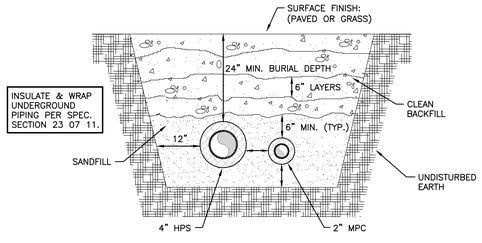
N.T.S.



NOTE:
DRIP POCKET PIPE SIZE SAME AS STEAM MAIN UNLESS OTHERWISE NOTED.

STEAM LINE DRIP POCKET DETAIL

N.T.S.



PIPE TRENCH DETAIL

N.T.S.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

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F: (603) 472-9747

MECHANICAL/ELECTRICAL:
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F: (603) 444-2364
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LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP

ARCHITECT:
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Drawing Title: MECHANICAL SITE PLAN - DEDUCT ALTERNATE

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

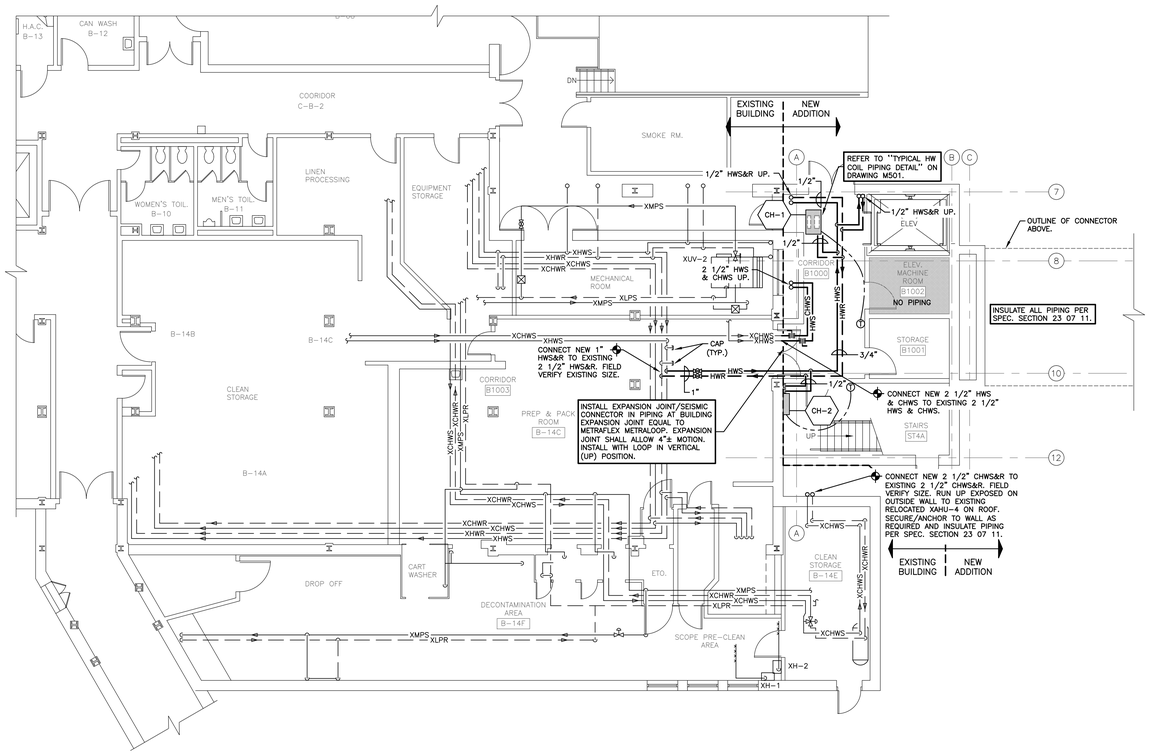
Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B31 & B67
Drawing Number: MS102
SHEET 2 OF 2

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



BASEMENT FLOOR PLAN – PIPING

SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. ALL EQUIPMENT AND PIPING SHOWN DIAGRAMMATICALLY ONLY. EXACT LOCATION TO BE DETERMINED AND COORDINATED IN THE FIELD BY ALL TRADES INVOLVED.
2. ALL ROUGH OPENINGS THRU EXTERIOR WALLS SHALL BE SEALED/CAULKED WATERTIGHT WITH ELASTOMERIC SEALANT.
3. HOT WATER/CHILLED WATER RUNOUTS TO HYDRONIC TERMINALS SHALL BE MADE WITH NO BULLHEAD TEES.
4. DO NOT SCALE FIN-TUBE RADIATION LENGTHS. REFER TO LINEAR FOOT LISTED IN IDENTIFICATION SYMBOL. (TYPICAL ALL RADIATION)
5. MOUNTING HEIGHTS FOR THERMOSTATS, EQUIPMENT ON/OFF SWITCHES, ETC., LOCATED IN HANDICAP ACCESSIBLE SPACES SHALL BE 48" TO TOP OF CONTROL UNLESS NOTED OTHERWISE BY ARCHITECT. REFER TO ARCHITECTURAL ELEVATIONS FOR FURTHER DETAILS.
6. SEAL ALL PIPE PENETRATIONS THRU RATED PARTITIONS, WALLS AND FLOORS WITH NELSON CLK FIRESTOP, HILTI OR 3M SILICONE BASE ELASTOMERIC UL 1479 SEALANT.

LEGEND

ACD	AUTOMATIC CONTROL DAMPER
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
A.L.	ACOUSTICALLY LINED
APD	AIR PRESSURE DROP
ATC	AUTOMATIC TEMPERATURE CONTROL
CFM	CUBIC FEET PER MINUTE
EA	ENTERING AIR
EAT	ENTERING AIR TEMPERATURE
E.C.	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
FC	FLEX CONNECTION
FD	FIRE DAMPER
FPM	FEET PER MINUTE
FTR	FIN-TUBE RADIATION
G.C.	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MBH	THOUSAND BTU'S PER HOUR
MOD	MOTOR OPERATED DAMPER
M.C.	MECHANICAL CONTRACTOR
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
O.A.	OUTSIDE AIR
P.C.	PLUMBING CONTRACTOR
R.A.	RETURN AIR
RPM	REVOLUTIONS PER MINUTE
S.A.	SUPPLY AIR
TSP	TOTAL STATIC PRESSURE
TYP.	TYPICAL
U/C	UNDER CUT DOOR
UH	UNIT HEATER
VD	VOLUME DAMPER
WPD	WATER PRESSURE DROP
WTD	WATER TEMPERATURE DROP
WTR	WATER TEMPERATURE RISE
S	SMOKE DETECTOR (FOR EQUIP. SHUTDOWN)
T	THERMOSTAT
DP	DIFFERENTIAL PRESSURE SENSOR
	CONN. POINT OF NEW WORK TO EXISTING
	SUPPLY DUCT
	RETURN DUCT
	EXHAUST DUCT
	GRILLE, DIFF. & LOUVER SYMBOL

	SQUARE ELBOW W/TURNING VANES (T.V.)
	EQUIPMENT TAG / MBH HEAT
	PIPE RISE
	PIPE DROP
	DIRECTION OF FLOW (WATER)
	DIRECTION OF FLOW (AIR)
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	UNION
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	AUTO BALANCING VALVE
	CIRCUIT SETTER (C.S./SHUTOFF VALVE)
ACV	AUTOMATIC CONTROL VALVE (2-WAY)
	THERMOMETER
	STRAINER WITH BLOWDOWN
	PRESSURE RELIEF VALVE
	PRESSURE REDUCING VALVE
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
XHWS	EXISTING HOT WATER SUPPLY
XHWR	EXISTING HOT WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
XCHWS	EXISTING CHILLED WATER SUPPLY
XCHWR	EXISTING CHILLED WATER RETURN
GWS	GLYCOL WATER SUPPLY
GWR	GLYCOL WATER RETURN
MPS	MEDIUM PRESSURE STEAM PIPING
MPC	MEDIUM PRESSURE CONDENSATE PIPING
LPS	LOW PRESSURE STEAM PIPING
LPC	LOW PRESSURE CONDENSATE PIPING
XMPS	EXISTING MEDIUM PRESSURE STEAM
XLPR	EXISTING LOW PRESSURE RETURN
L	LIQUID PIPING (REFRIGERANT)
S	SUCTION PIPING (REFRIGERANT)
XL	EXISTING LIQUID PIPING (REFRIGERANT)
XS	EXISTING SUCTION PIPING (REFRIGERANT)

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

ADDENDUM #1 CLARIFICATIONS	08/1/2012
REVISIONS:	DATE

CONSULTANTS:

CIVIL:
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YA10V28ME

LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP
STATE OF VERMONT
JOHN D. VAN DEUSEN
NO. 5915
REGISTERED PROFESSIONAL ENGINEER

ARCHITECT:
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Drawing Title: BASEMENT FLOOR PLAN - PIPING

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B31

Drawing Number: M101

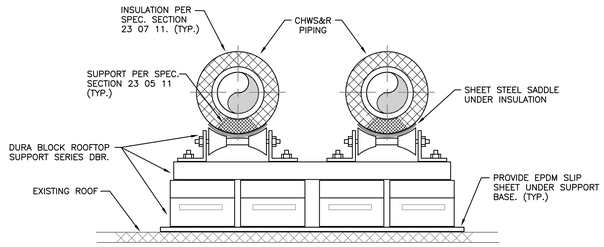
SHEET 1 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

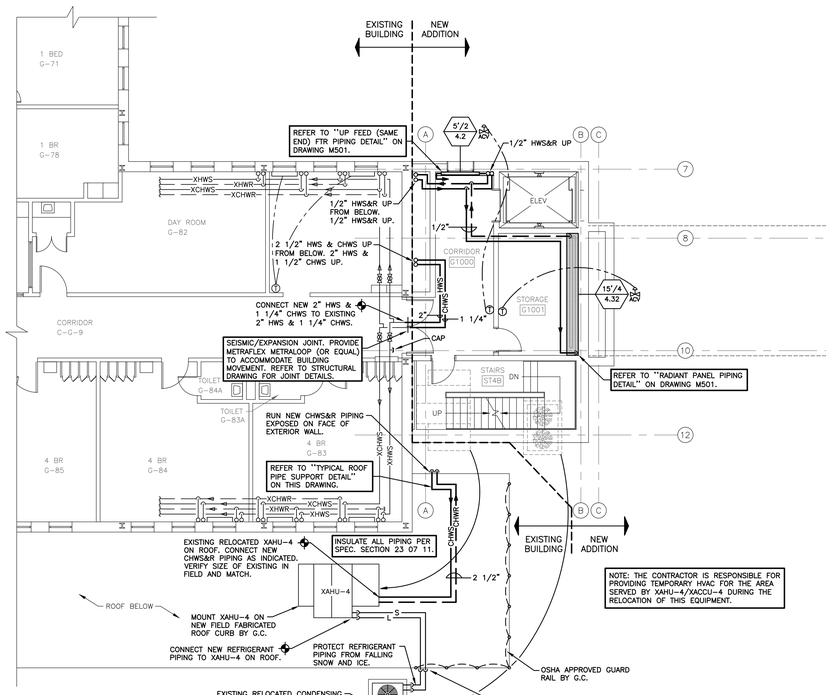
VA FORM 08-6231

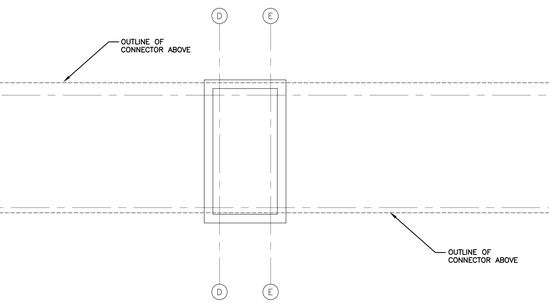
Dwg: \\V28ME M101.dwg, Tab: M101, User: Rgrammo

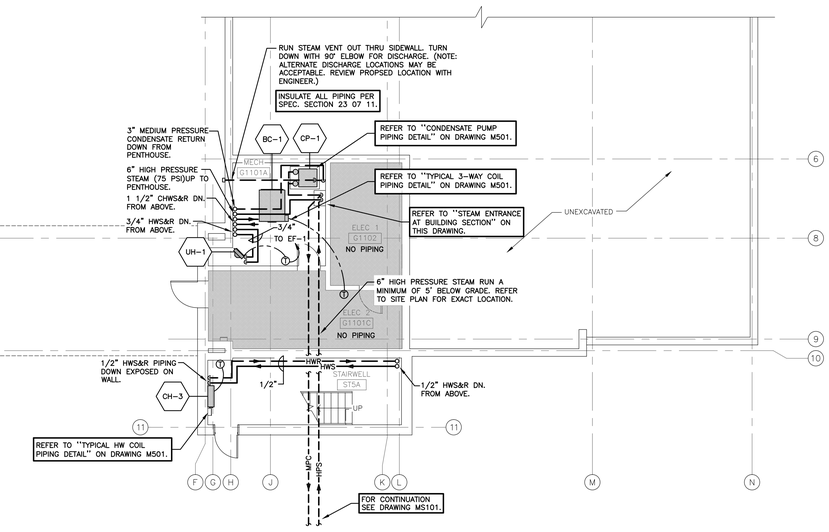


TYPICAL ROOF PIPE SUPPORT DETAIL

N.T.S.





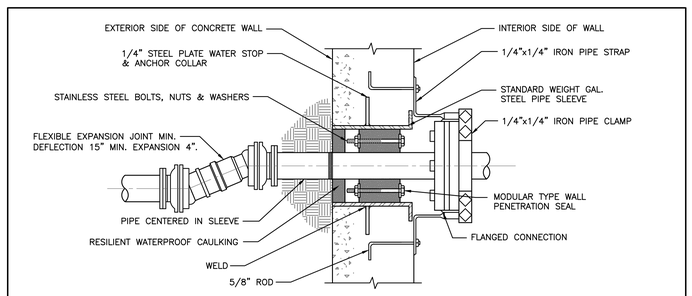


GROUND FLOOR PLAN – PIPING

SCALE: 1/8" = 1'-0"

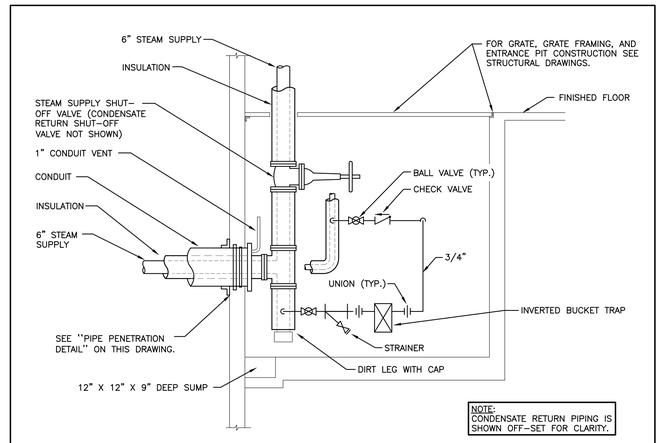
REFRIGERANT PIPING NOTE

THIS CONTRACTOR, IN COOPERATION WITH THE A.C. EQUIPMENT MANUFACTURER, SHALL SUBMIT PROPOSED REFRIGERANT PIPING LAYOUTS FOR REVIEW AND APPROVAL. SAID SUBMISSION SHALL INCLUDE LINE DIAGRAMS, PIPE SIZES AND SYSTEM SPECIALTIES SUCH AS TRAPS, ACCUMULATORS, VALVES, HANGERS, ETC. ALSO REFER TO SPECIFICATION SECTION 23 23 00.



PIPE PENETRATION DETAIL

N.T.S.



STEAM ENTRANCE AT BUILDING SECTION

N.T.S.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

CIVIL:
McFarland-Johnson
53 Regional Drive
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P: (603) 225-2978
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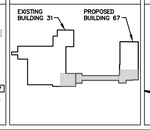
66 Jackson Street
Littleton, NH 03561
P: (603) 444-6578
F: (603) 444-2364
YA10V28ME

LOCUST

KEY



STAMP

ARCHITECT:

WARRENSTREET ARCHITECTS
27 Warren Street Concord NH 03301
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Drawing Title: GROUND FLOOR PLAN - PIPING

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B31 & B67

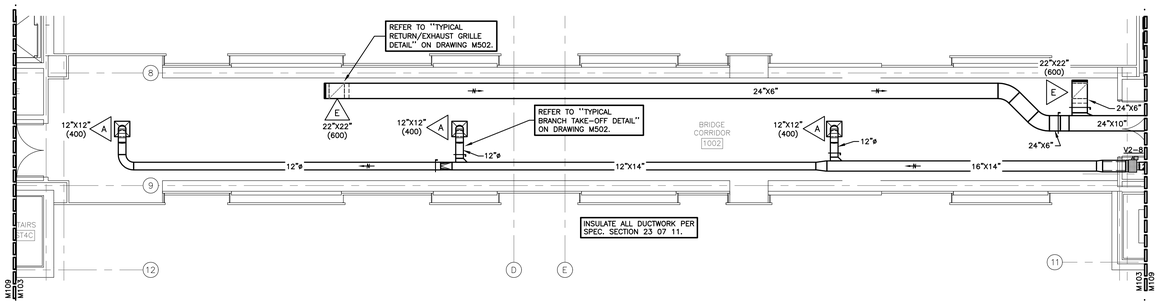
Drawing Number: M102

SHEET 2 OF 27

Office of Construction and Facilities Management

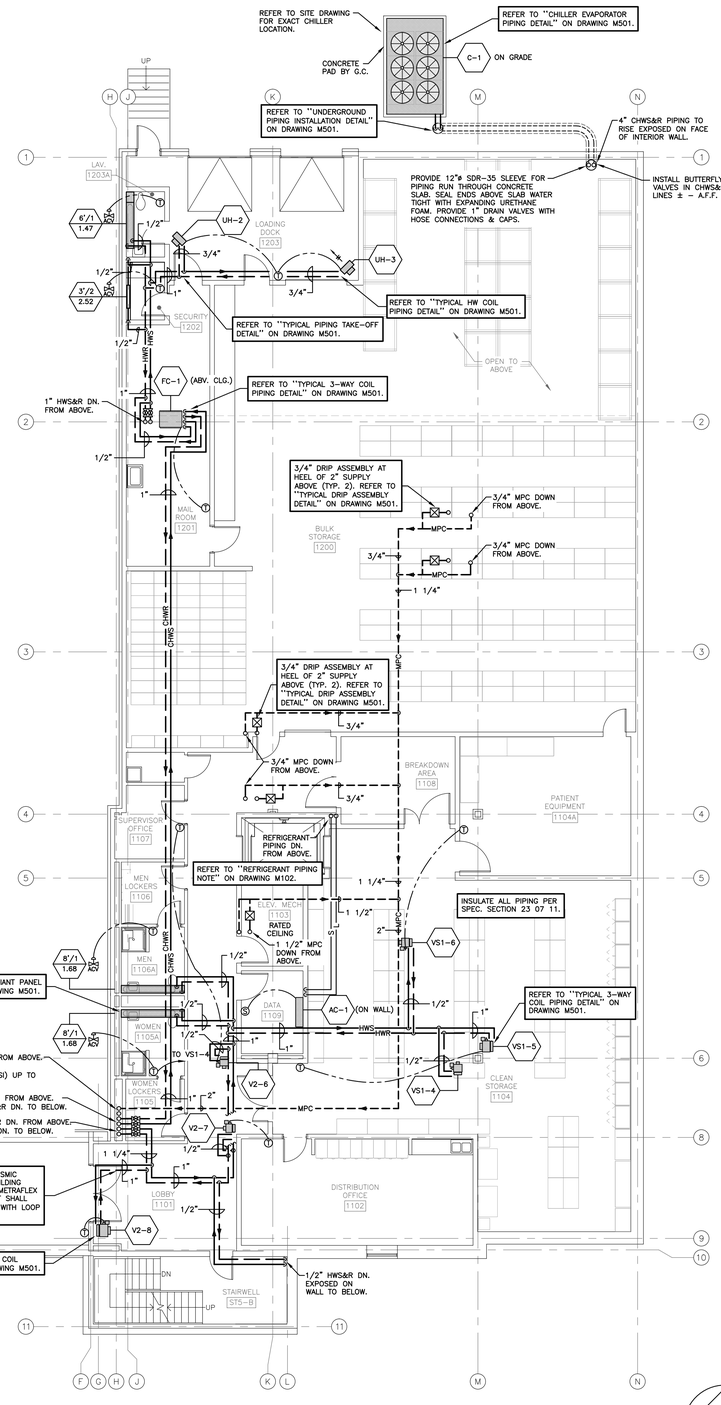
Department of Veterans Affairs

VA FORM 08-6231



FIRST FLOOR CONNECTOR PLAN – DUCTWORK

SCALE: 1/8" = 1'-0"



REFRIGERANT PIPING NOTE

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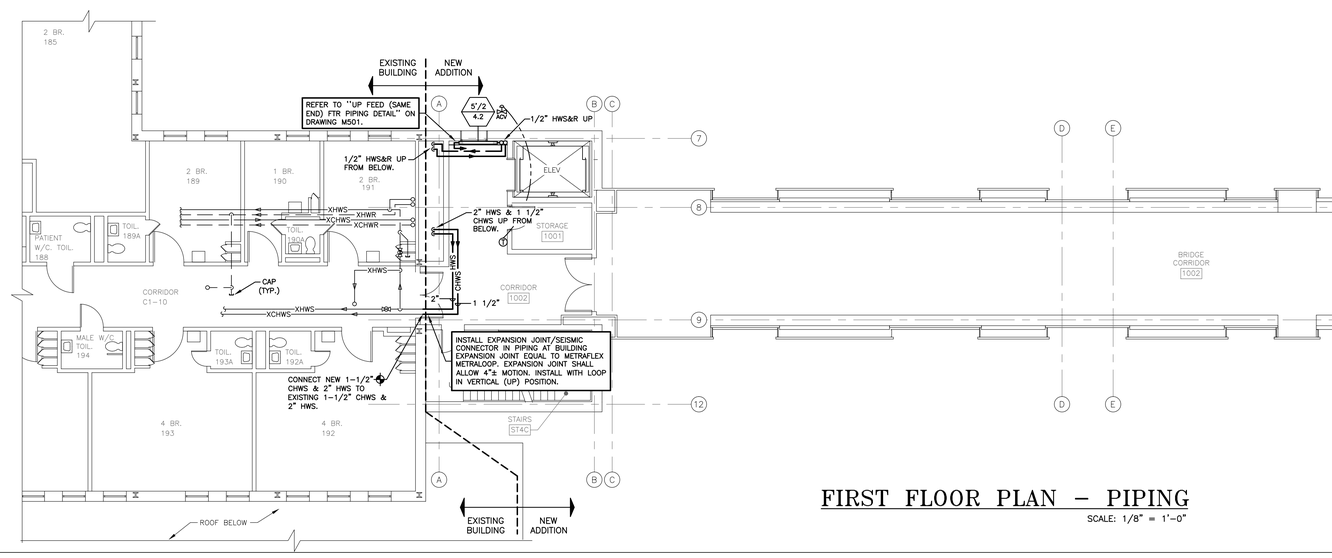

FIRST FLOOR PLAN – PIPING

SCALE: 1/8" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

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F: (603) 444-2364
YA10V28ME

LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP

ARCHITECT:

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Drawing Title: FIRST FLOOR PLAN – PIPING AND DUCTWORK

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

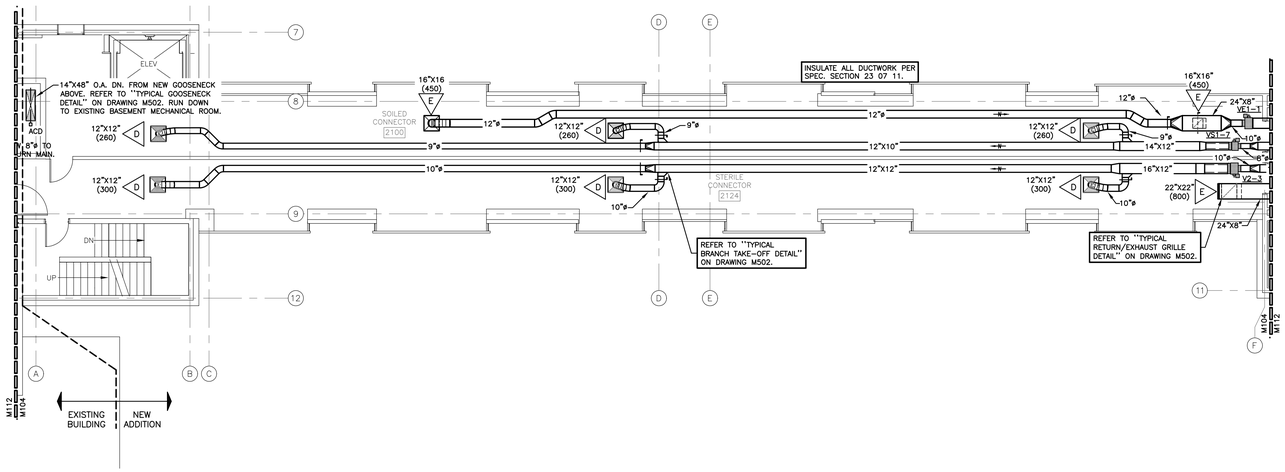
Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B31 & B67
Drawing Number: M103
SHEET 3 OF 27

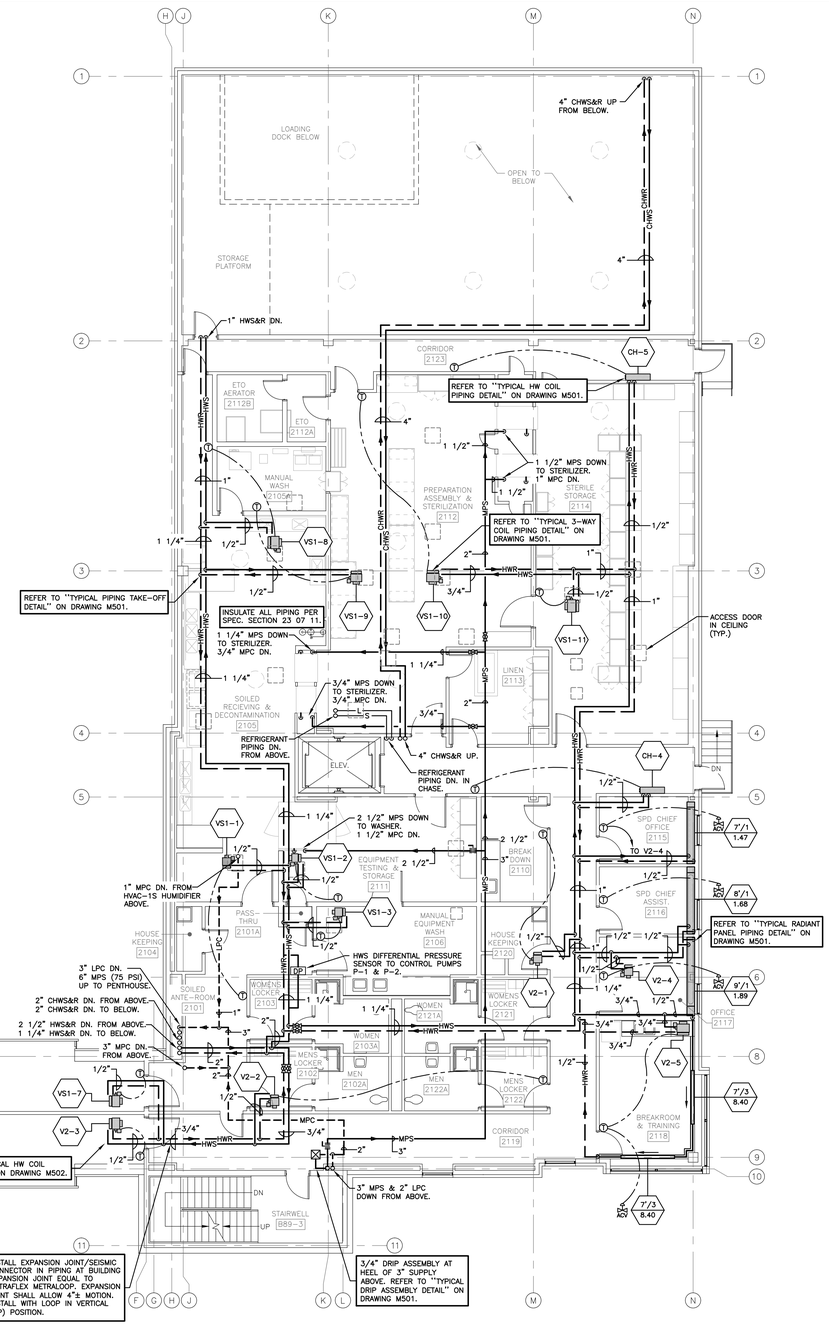
Office of Construction and Facilities Management
Department of Veterans Affairs

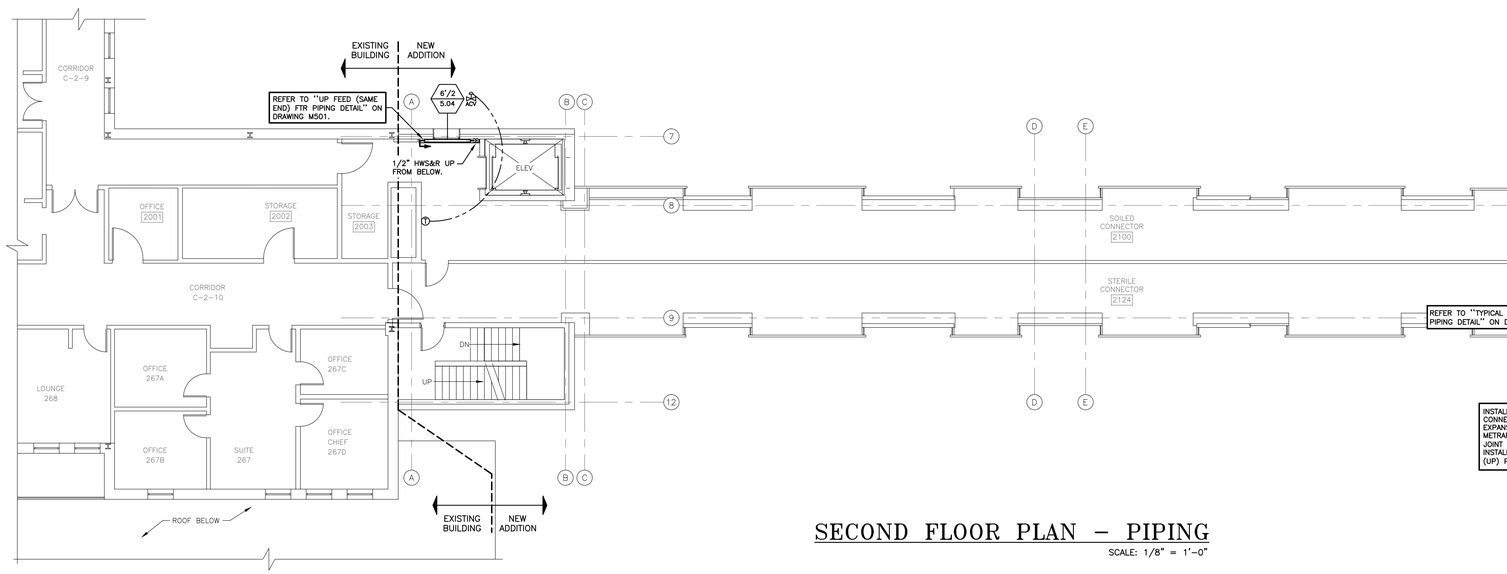
VA FORM 08-6231



SECOND FLOOR CONNECTOR PLAN – DUCTWORK

SCALE: 1/8" = 1'-0"





SECOND FLOOR PLAN – PIPING

SCALE: 1/8" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

CIVIL:
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F: (603) 444-2364
YA10V28ME

LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP
STATE OF VERMONT
REGISTERED PROFESSIONAL ENGINEER
JOHN D. VOSTERS
No. 5915

ARCHITECT:
WARRENSTREET ARCHITECTS
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Drawing Title: SECOND FLOOR PLAN - PIPING AND DUCTWORK

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B31 & B67
Drawing Number: M104
SHEET 4 OF 27

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

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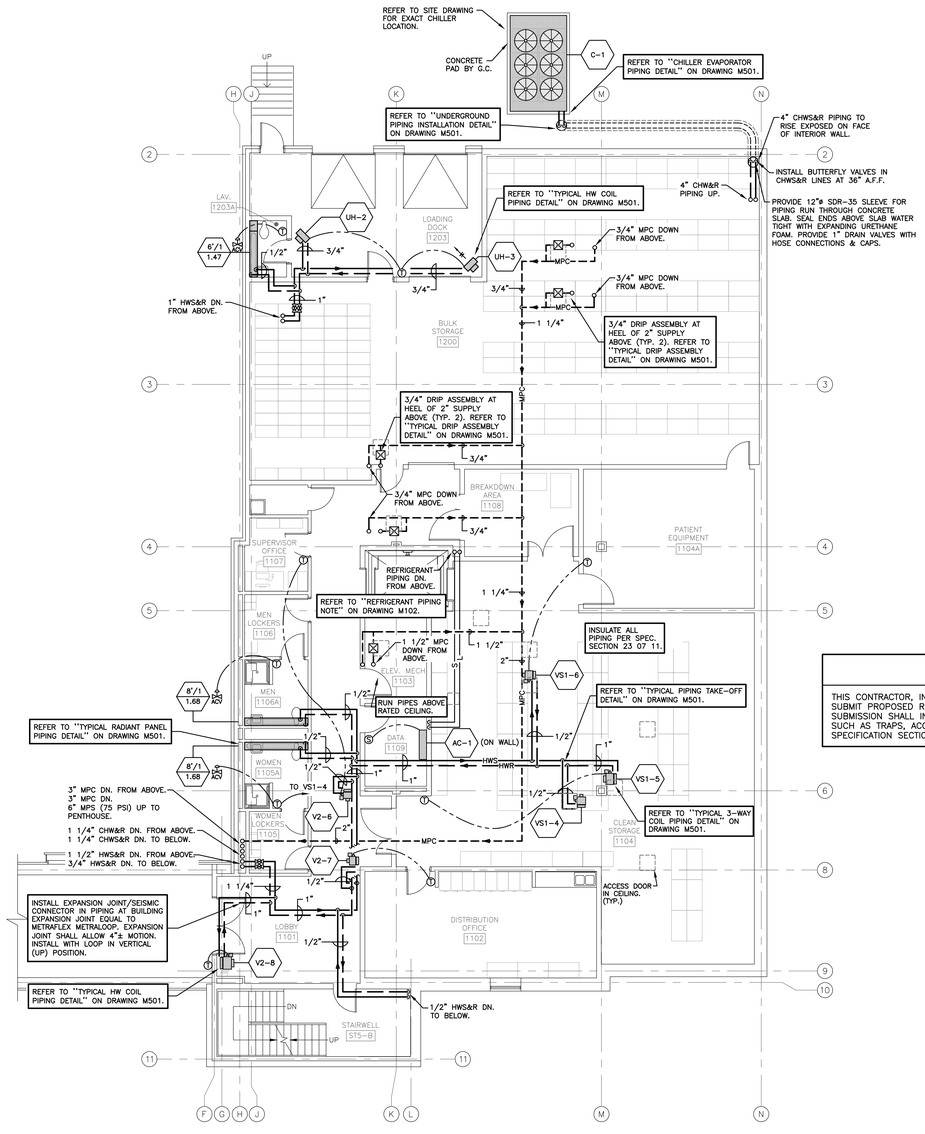

FIRST FLOOR PLAN – PIPING – DEDUCT ALTERNATE

SCALE: 1/8" = 1'-0"

REFRIGERANT PIPING NOTE

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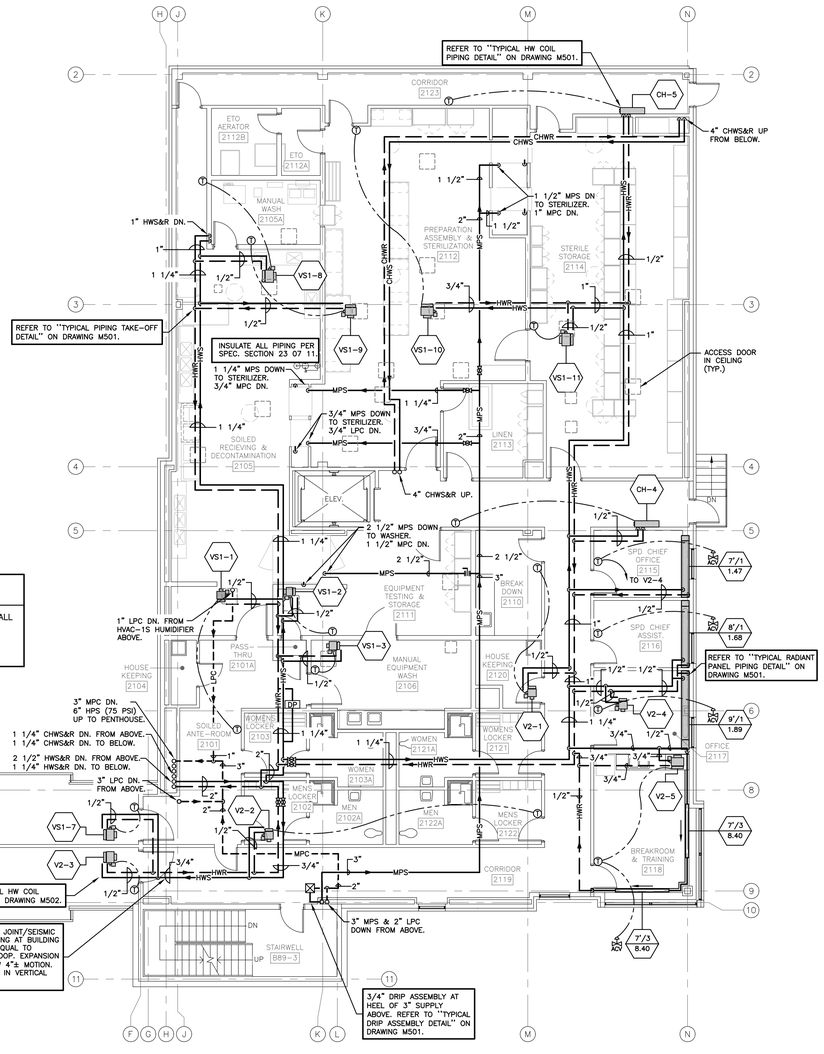

SECOND FLOOR PLAN – PIPING – DEDUCT ALTERNATE

SCALE: 1/8" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

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YA10V28ME

LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP

ARCHITECT:
WARRENSTREET ARCHITECTS
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Drawing Title: FIRST AND SECOND FLOOR PLAN - PIPING - DEDUCT ALTERNATE

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

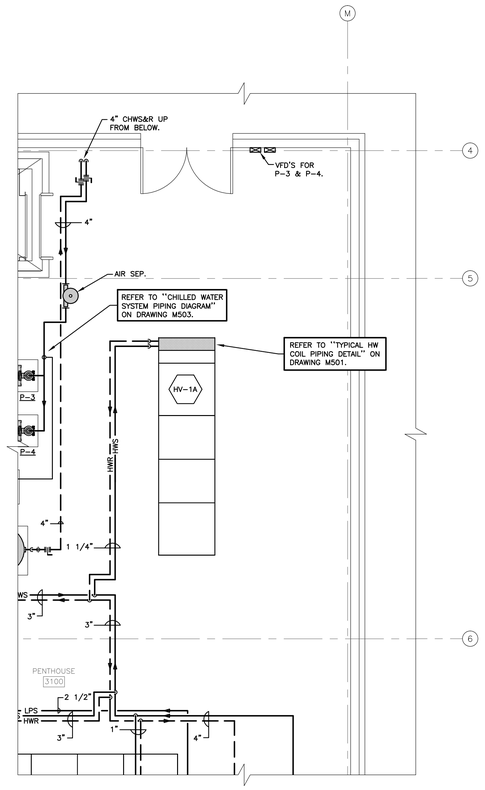
Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B31 & B67
Drawing Number: M105
SHEET 5 OF 27

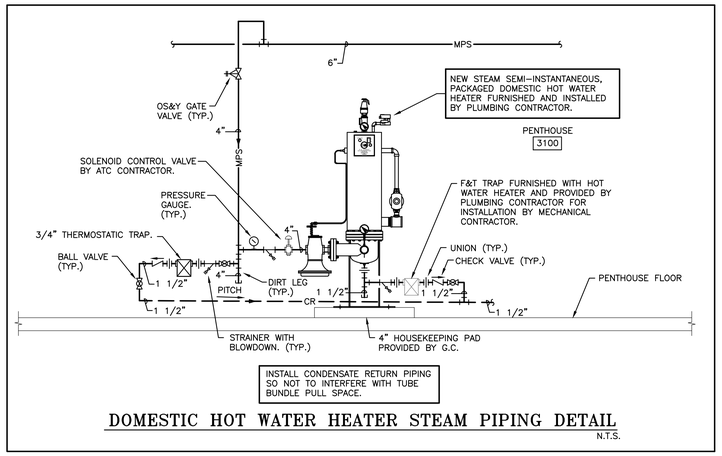
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



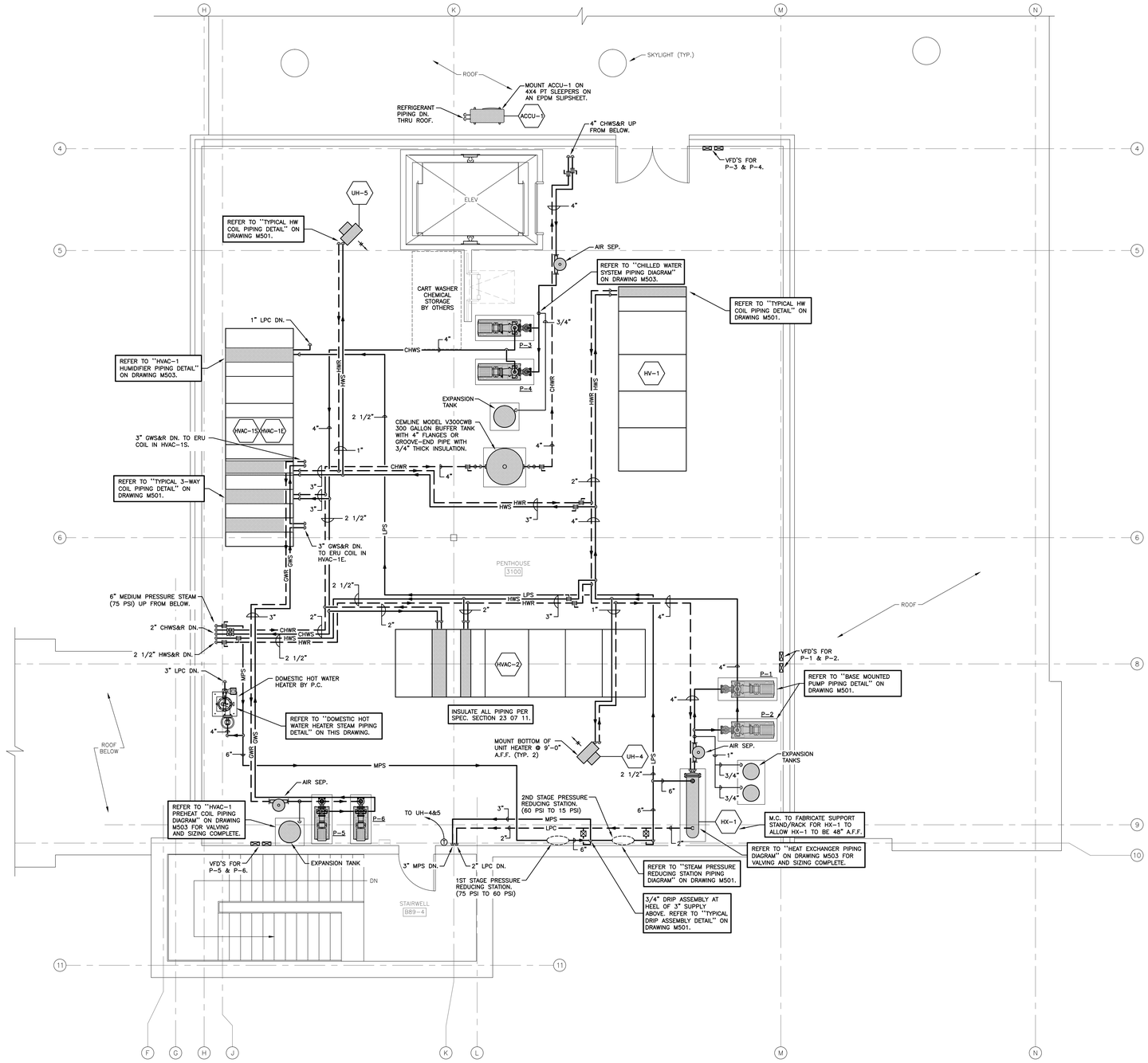
PENTHOUSE FLOOR PLAN - PIPING - DEDUCT ALTERNATE

SCALE: 1/4" = 1'-0"



DOMESTIC HOT WATER HEATER STEAM PIPING DETAIL

N.T.S.



PENTHOUSE FLOOR PLAN - PIPING

SCALE: 1/4" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

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LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP

ARCHITECT:

WARRENSTREET ARCHITECTS
27 Warren Street Concord NH 03301
T 603.225.0640 F 603.225.0621
www.warrenstreetarchitects.com

Drawing Title: PENTHOUSE FLOOR PLAN - PIPING

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B67

Drawing Number: M106

SHEET 6 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

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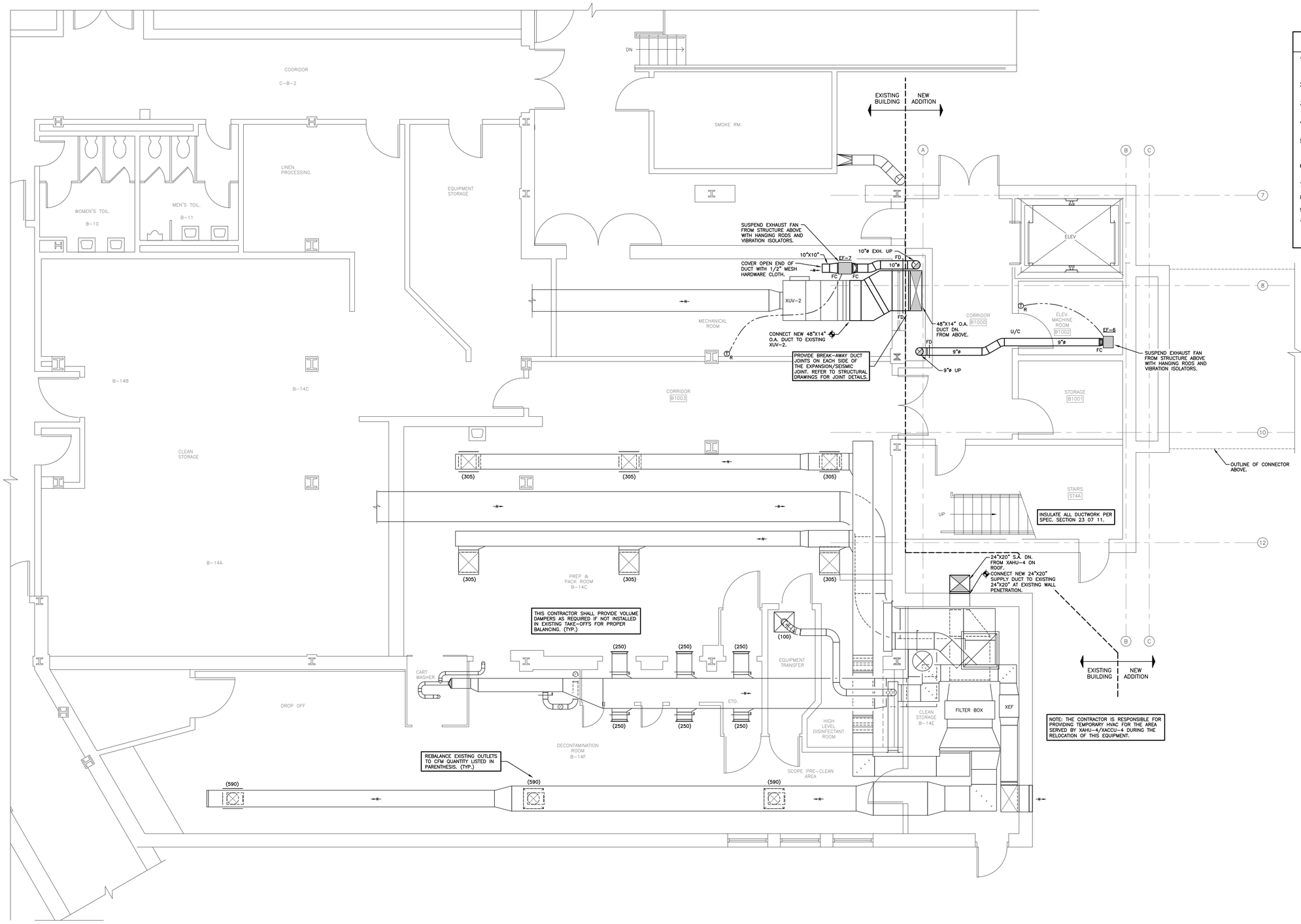

GENERAL NOTES

1. ALL EQUIPMENT AND DUCTWORK SHOWN DIAGRAMMATICALLY ONLY. EXACT LOCATION TO BE DETERMINED AND COORDINATED IN THE FIELD BY ALL TRADES INVOLVED.
2. COORDINATE ALL GRILLE AND DIFFUSER LOCATIONS WITH ARCHITECT'S REFLECTED CEILING PLANS.
3. WATERPROOF BOTTOM AND SIDES OF ALL INTAKE, EXHAUST AND RELIEF PLENUMS.
4. ALL ROUGH OPENINGS THRU EXTERIOR WALLS SHALL BE SEALED/CAULKED WATERTIGHT WITH ELASTOMERIC SEALANT.
5. SEAL ALL DUCTWORK PENETRATIONS THRU FIRE RATED PARTITIONS, WALLS AND FLOORS WITH NELSON CLK FIRESTOP, HILTI OR 3M SILICONE BASE ELASTOMERIC UL 1479 SEALANT.
6. FLEXIBLE DUCTS NOT TO BE OVER 6 FEET LONG WITH APPROVED TRANSITIONS AND SMOOTH BENDS TO TERMINAL CONNECTIONS.
7. PITCH DUCT CONNECTIONS TO LOUVERS TO DRAIN TOWARD LOUVER.
8. FLEX DUCT TO MATCH RUNOUT SIZE UNLESS NOTED OTHERWISE.
9. DUCT DIMENSIONS ARE TO INSIDE OF LINER WHERE APPLICABLE.
10. MOUNTING HEIGHTS FOR THERMOSTATS, EQUIPMENT ON/OFF SWITCHES, ETC., LOCATED IN HANDICAP ACCESSIBLE SPACES SHALL BE 48" TO TOP OF CONTROL UNLESS NOTED OTHERWISE BY ARCHITECT. REFER TO ARCHITECTURAL ELEVATIONS FOR FURTHER DETAILS.

BASEMENT FLOOR PLAN – DUCTWORK

SCALE: 1/4" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

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YA10V28ME

LOCUST

KEY: EXISTING BUILDING 31 — PROPOSED BUILDING 67

STAMP: STATE OF NEW HAMPSHIRE — JOHN D. VEGHTE — NO. 5915 — PROFESSIONAL ENGINEER

ARCHITECT:
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Drawing Title: BASEMENT FLOOR PLAN - DUCTWORK

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B31

Drawing Number: M107

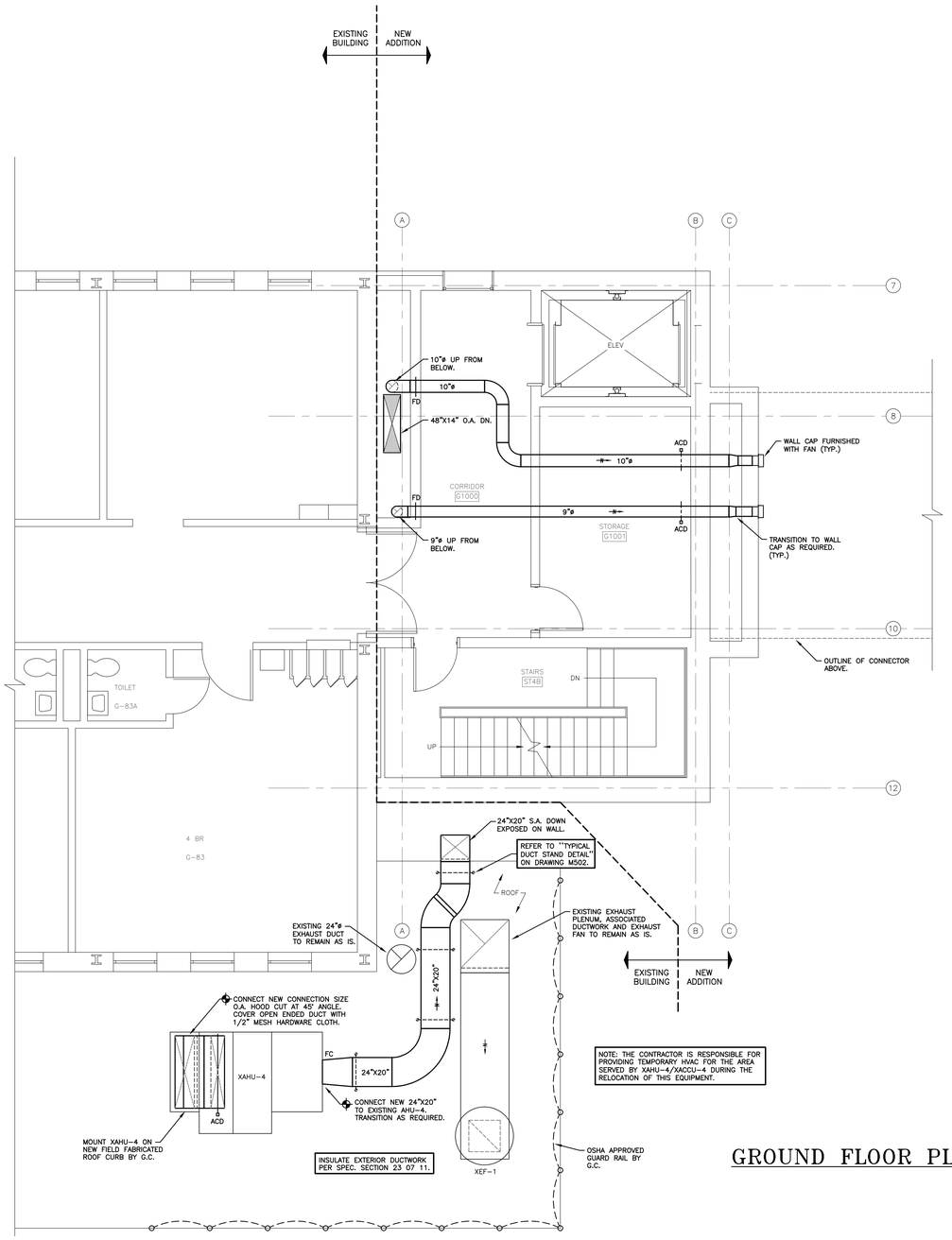
SHEET 7 OF 27

Office of Construction and Facilities Management

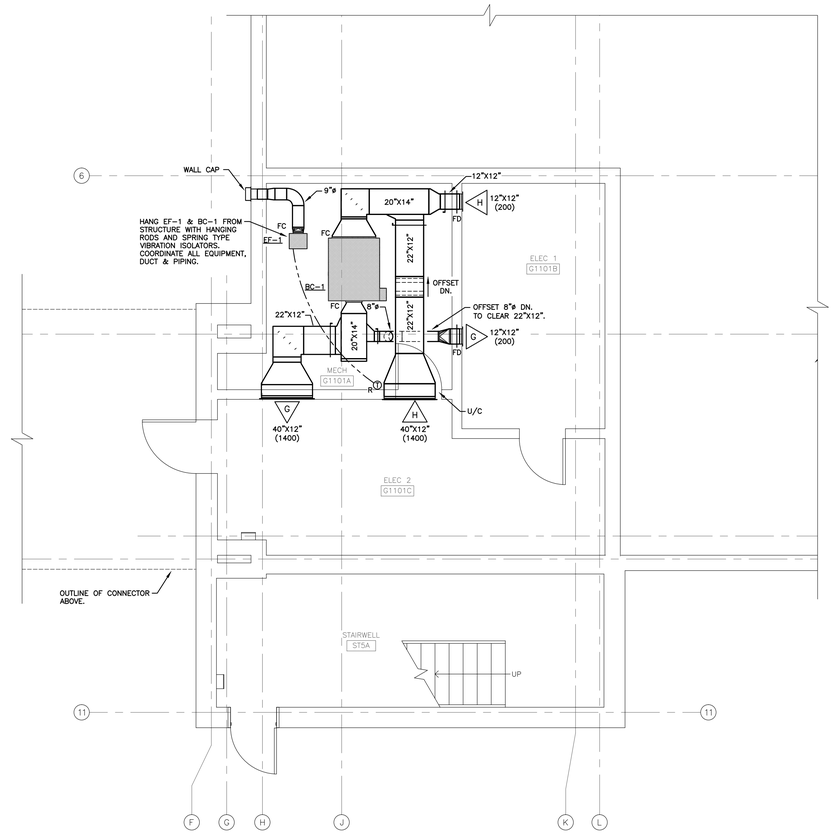
Department of Veterans Affairs

VA FORM 08-6231

Dwg: \\VZ0ME M107.dwg, Tab: M107, User: Rgremmo



NOTE: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY HVAC FOR THE AREA SERVED BY XAHU-4/XACCU-4 DURING THE RELOCATION OF THIS EQUIPMENT.



GROUND FLOOR PLAN – DUCTWORK

SCALE: 1/4" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

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LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP

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Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Drawing Title: GROUND FLOOR PLAN - DUCTWORK

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: MRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B31 & B67

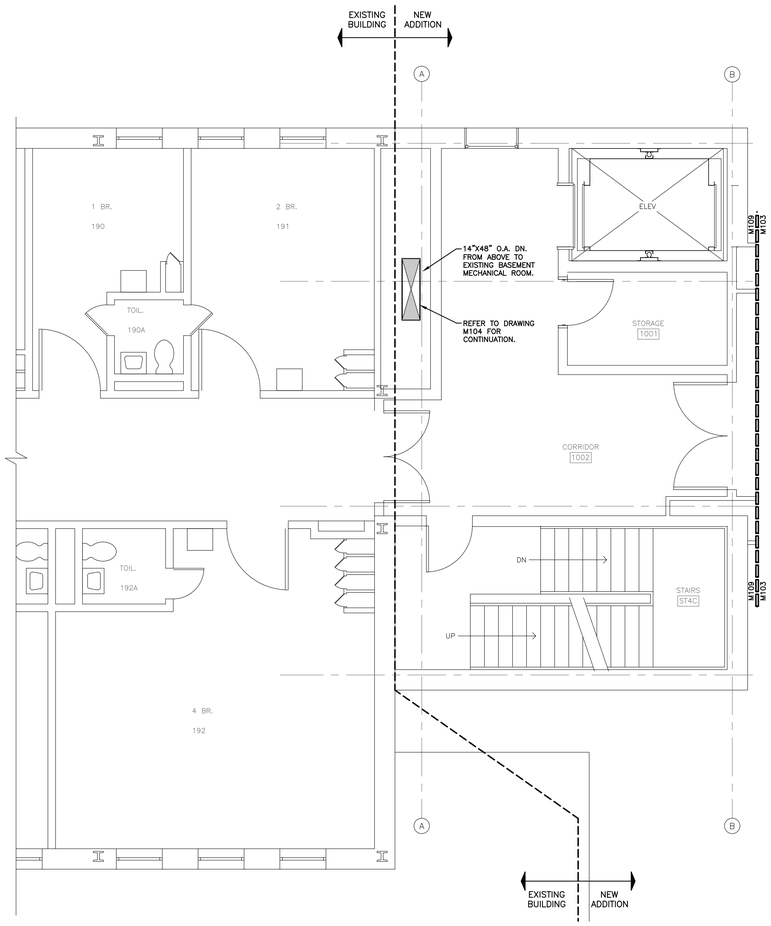
Drawing Number: M108

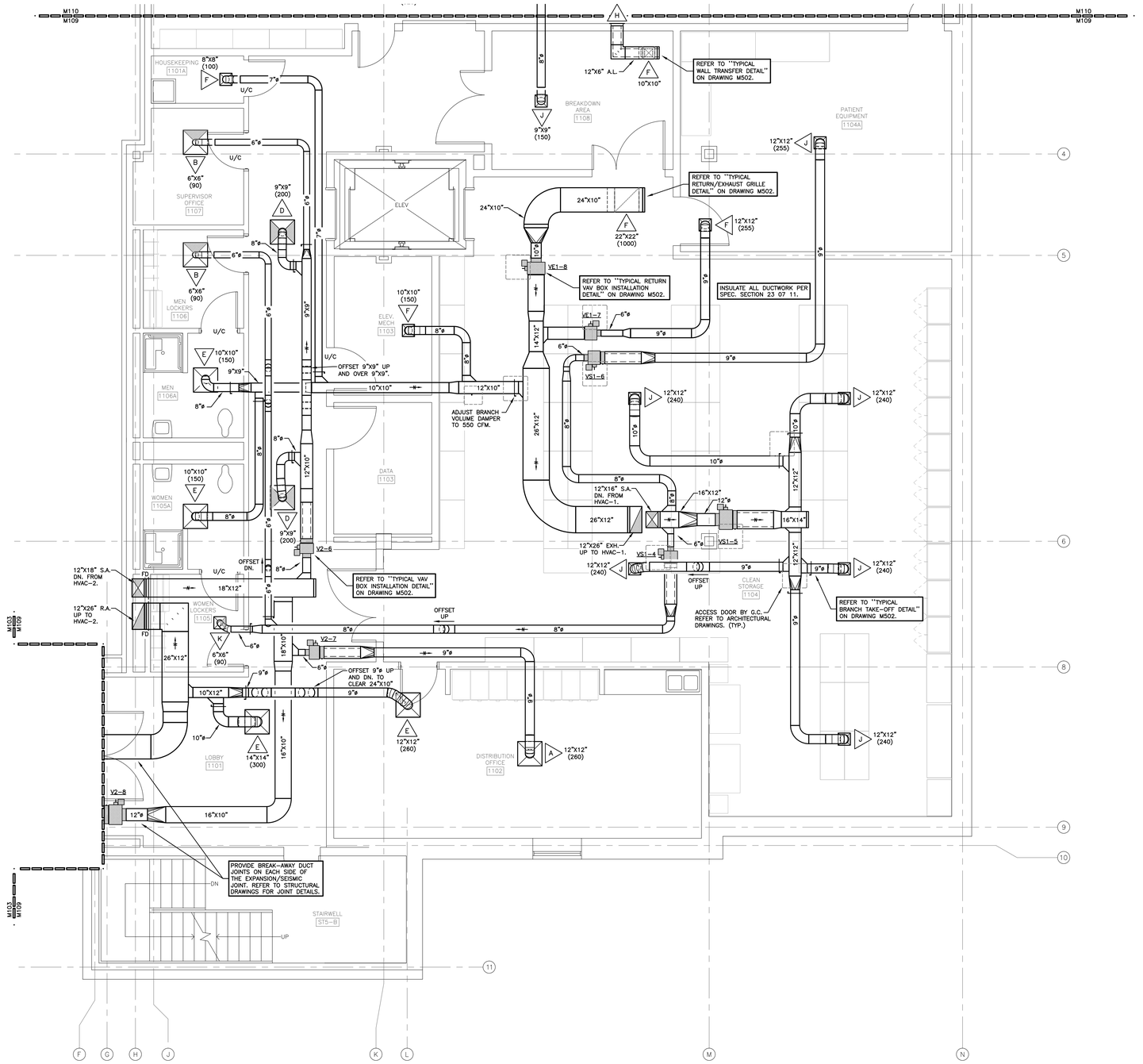
SHEET 8 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231





FIRST FLOOR PLAN - DUCTWORK

SCALE: 1/4" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

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LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP

ARCHITECT:

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Drawing Title: FIRST FLOOR PLAN - DUCTWORK

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

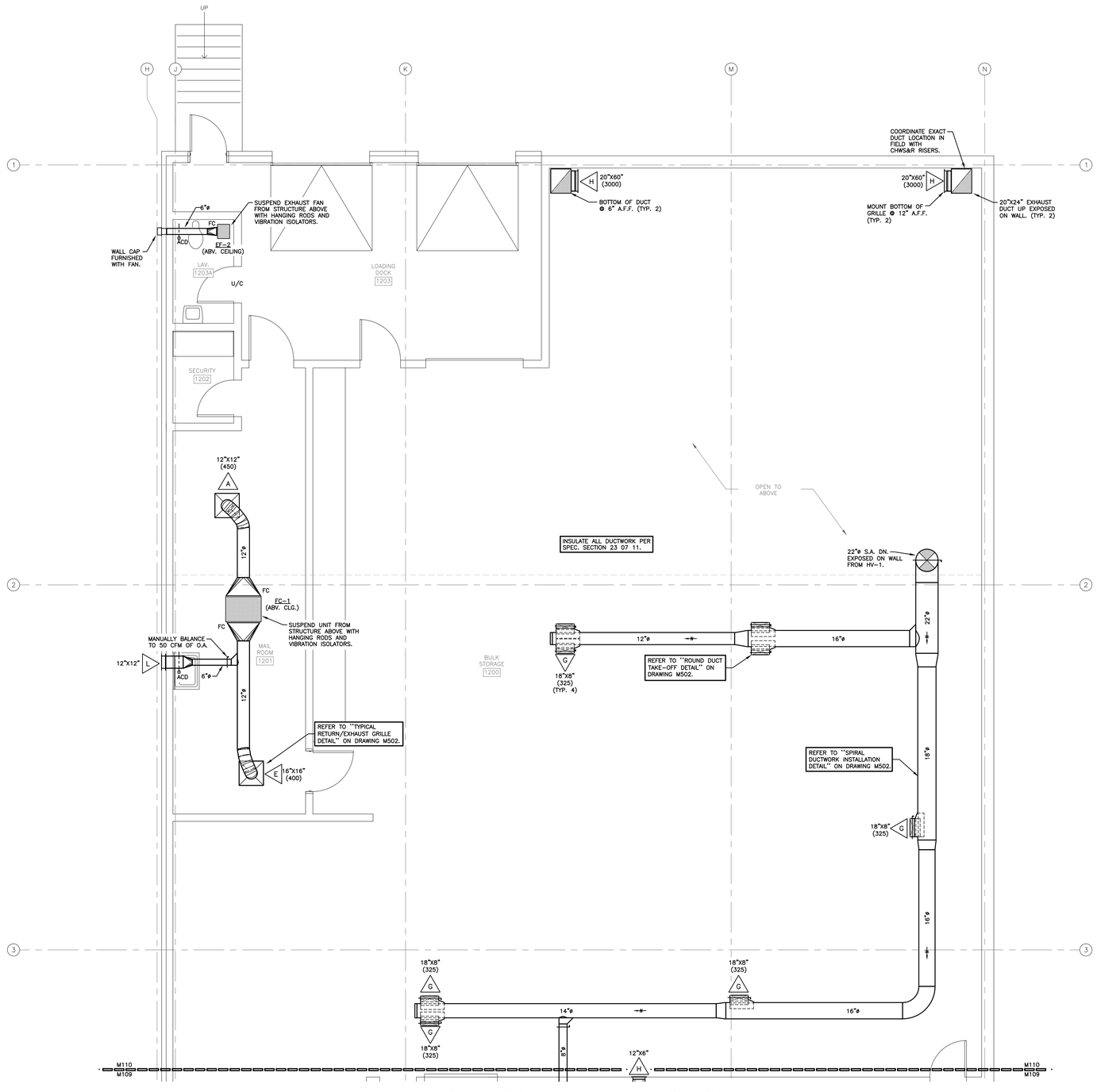
Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B31 & B67
Drawing Number: M109
SHEET 9 OF 27

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

Dwg: 10V28ME M109-10.dwg, Tab: M109, User: fgrommo



FIRST FLOOR PLAN – DUCTWORK

SCALE: 1/4" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

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LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP

ARCHITECT:

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www.warrenstreetarchitects.com

Drawing Title: FIRST FLOOR PLAN - DUCTWORK

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B67

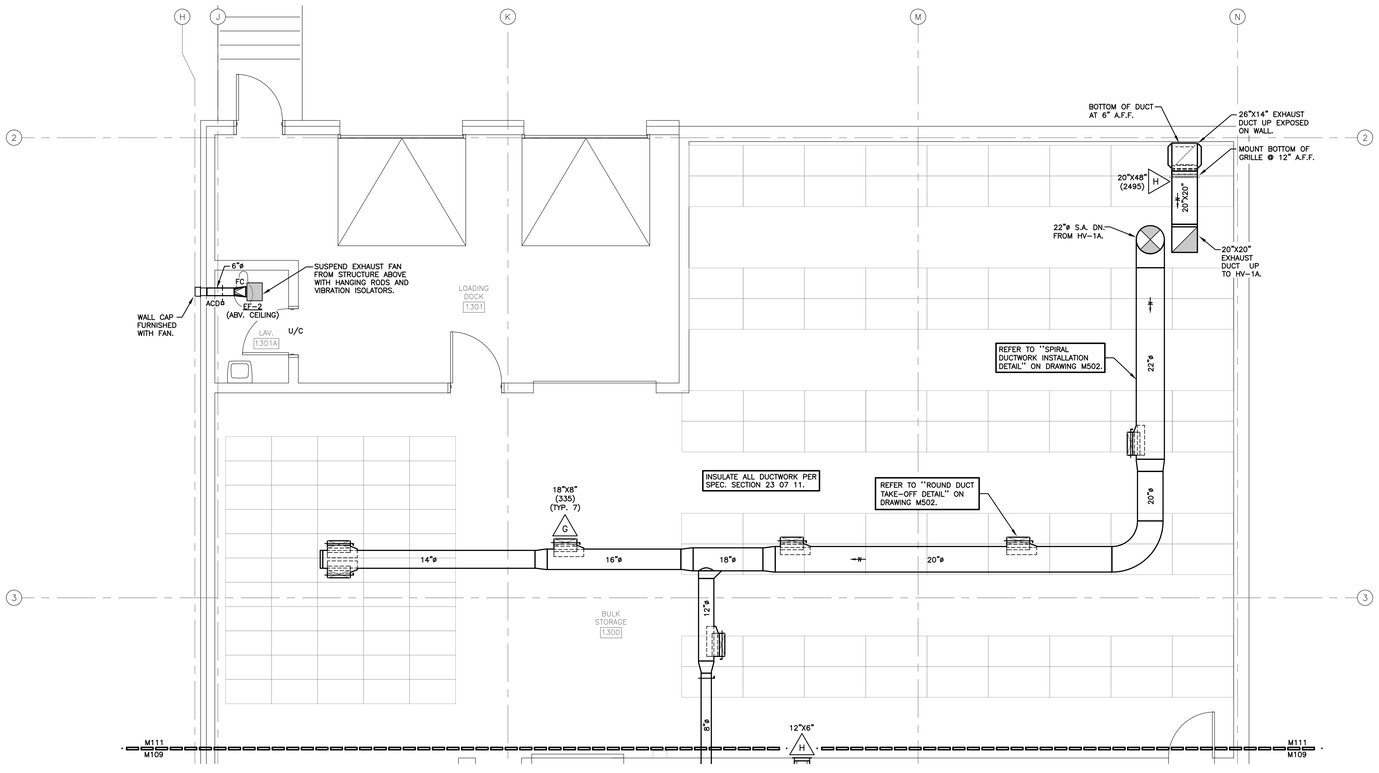
Drawing Number: M110

SHEET 10 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



FIRST FLOOR PLAN – DUCTWORK – DEDUCT ALTERNATE

SCALE: 1/4" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

ADDENDUM #1 CLARIFICATIONS	08/1/2012
REVISIONS:	DATE

CONSULTANTS:

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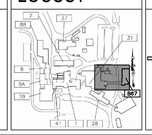
YA10V28ME

LOCUST



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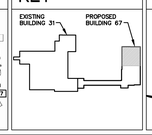

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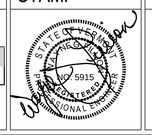

ARCHITECT:

WARRENSTREET ARCHITECTS
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Drawing Title: FIRST FLOOR PLAN - DUCTWORK - DEDUCT ALTERNATE

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date	Drawn By	Checked By
06/24/2011	WRG	JDV/MDW

Project Number: 405-304

Building Number: B67

Drawing Number: M111

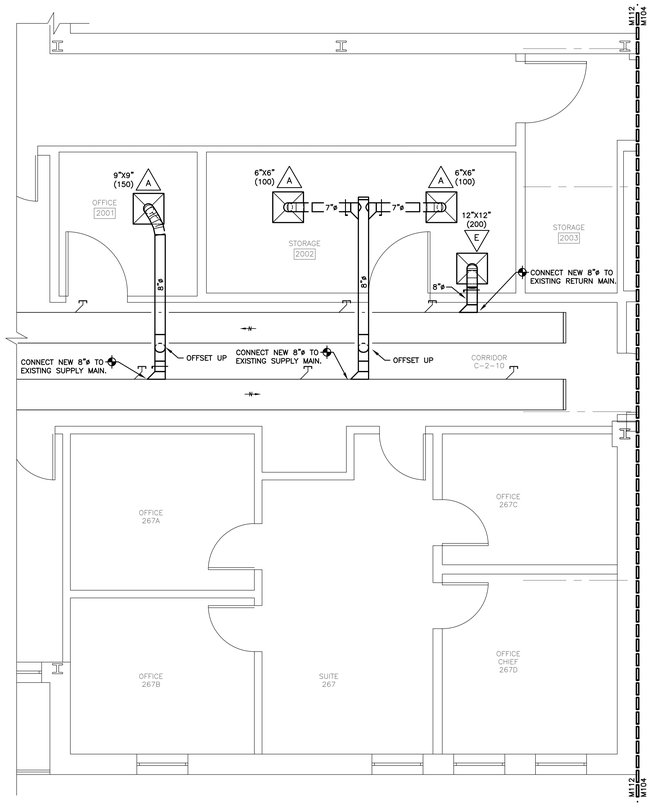
SHEET 11 OF 27

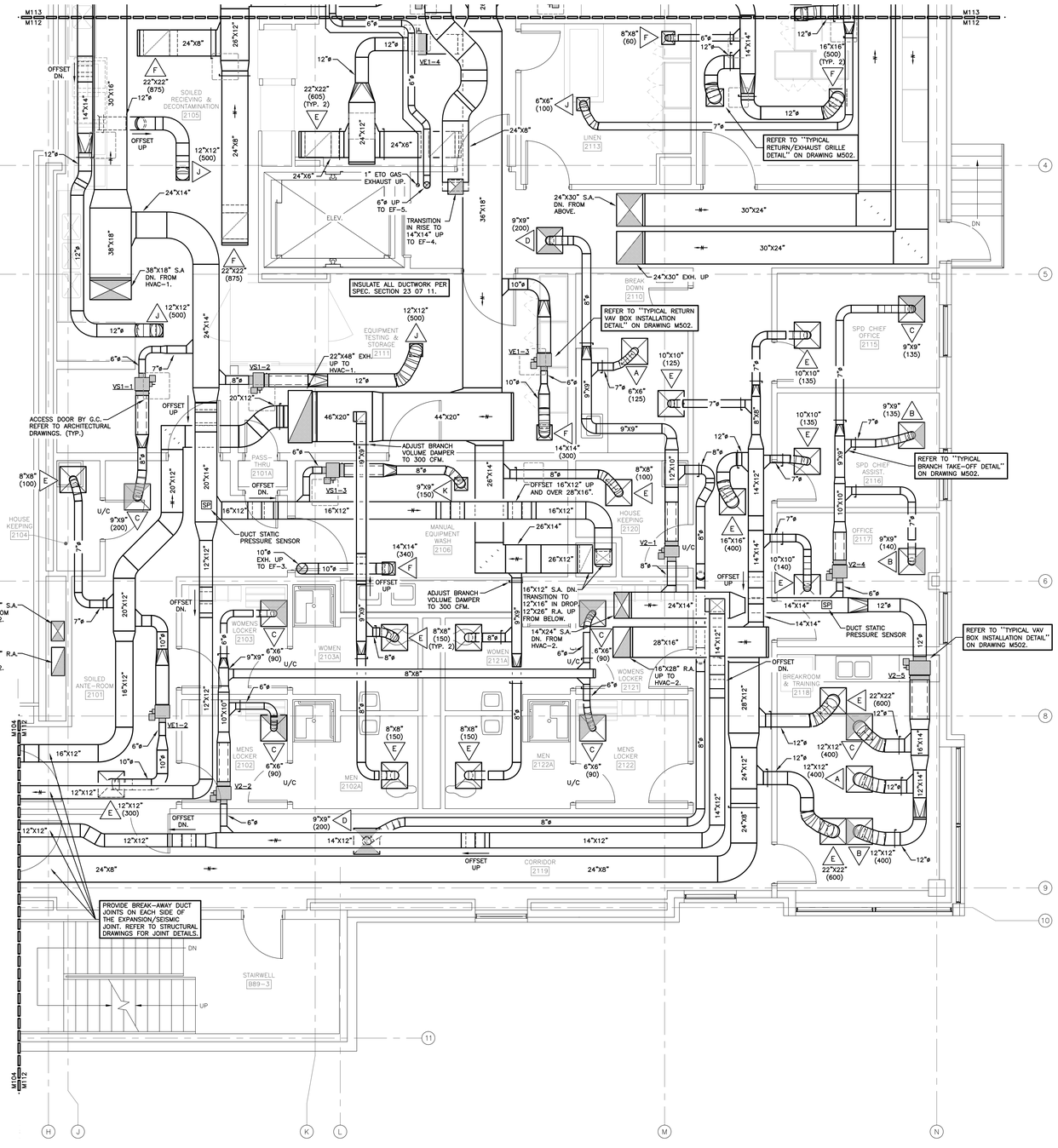
Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

Dwg: 10V28ME M111.dwg, Tab: M111, User: Rgrammo





SECOND FLOOR PLAN – DUCTWORK

SCALE: 1/4" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

CIVIL:
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LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP

ARCHITECT:

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Drawing Title: SECOND FLOOR PLAN - DUCTWORK

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

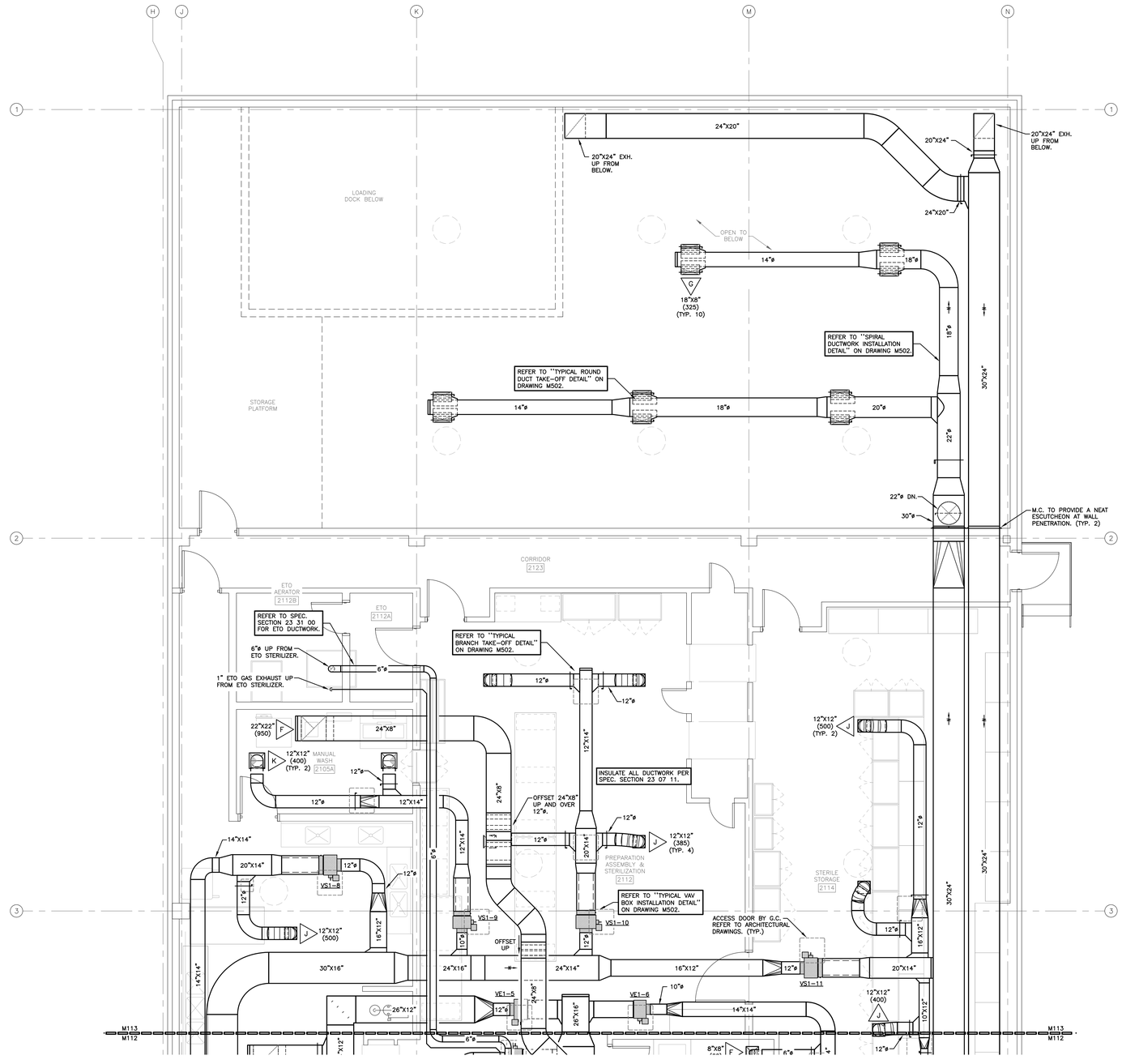
Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B31 & B67
Drawing Number: M112
SHEET 12 OF 27

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



SECOND FLOOR PLAN – DUCTWORK

SCALE: 1/4" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

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LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP
STATE OF NEW HAMPSHIRE
JOHN D. VOLK
No. 5915
LICENSED PROFESSIONAL ARCHITECT

ARCHITECT:
WARRENSTREET ARCHITECTS
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Drawing Title: SECOND FLOOR PLAN - DUCTWORK

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

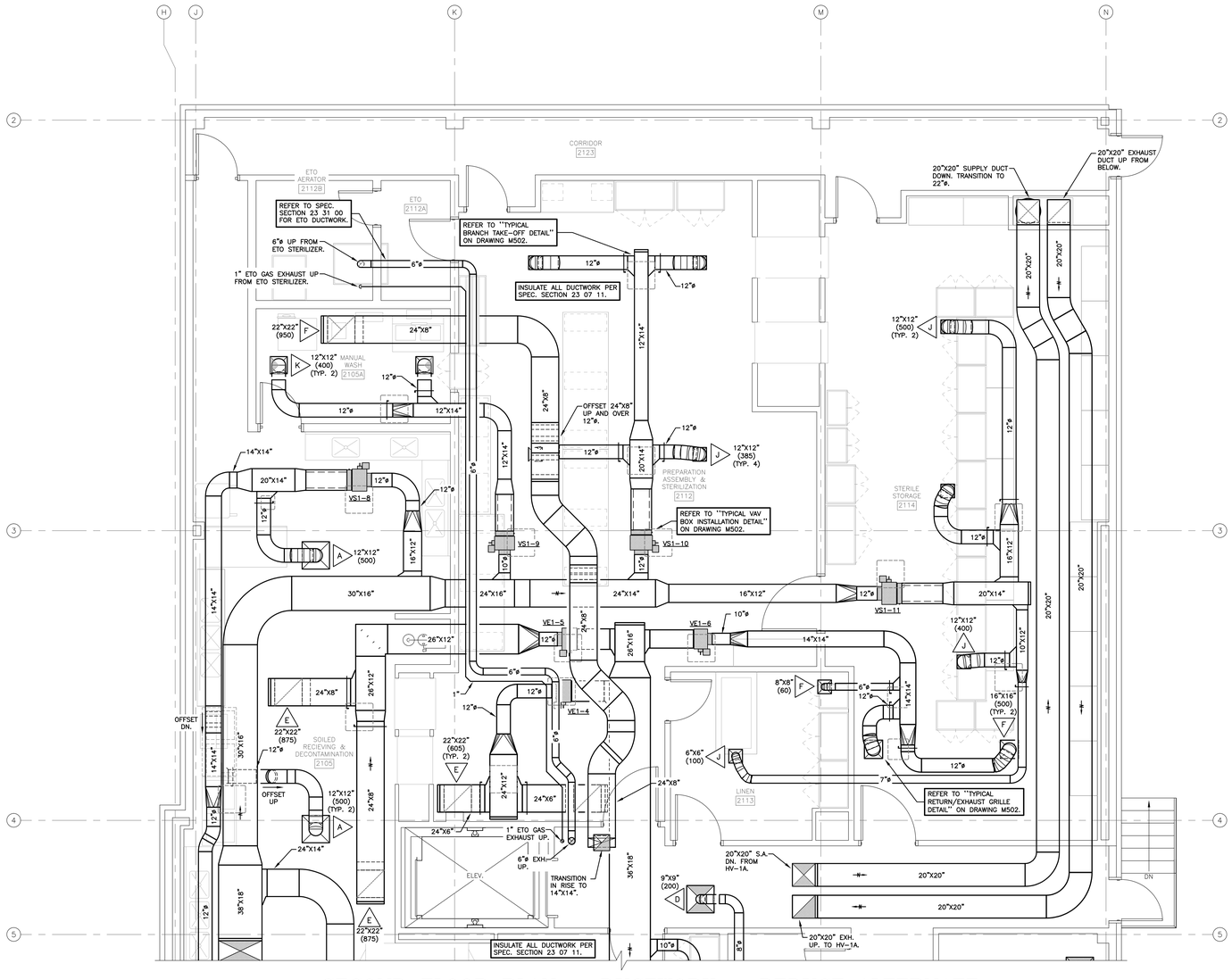
Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B67
Drawing Number: M113
SHEET 13 OF 27

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

Dwg: 10V28ME M112-13.dwg, Tab: M113, User: rbyrnmno



SECOND FLOOR PLAN – DUCTWORK – DEDUCT ALTERNATE

SCALE: 1/4" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

ADDENDUM #1 CLARIFICATIONS	08/1/2012
REVISIONS:	DATE

CONSULTANTS:

CIVIL:
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YA10V28ME

LOCUST

KEY
EXISTING BUILDING 31
PROPOSED BUILDING 67

STAMP

ARCHITECT:

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Drawing Title: SECOND FLOOR PLAN - DUCTWORK - DEDUCT ALTERNATE

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

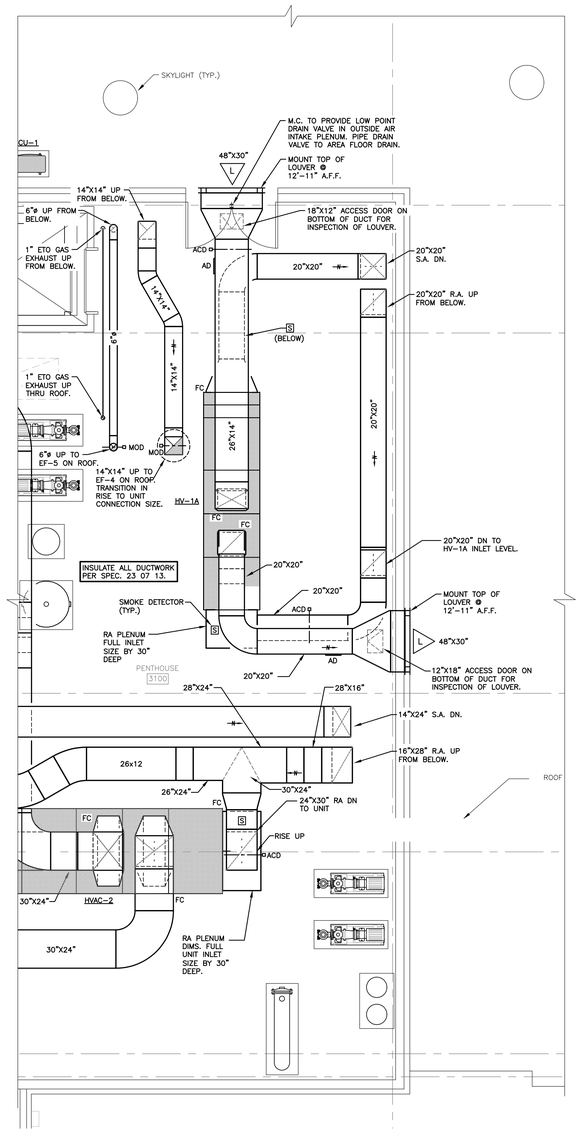
Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B67
Drawing Number: M114
SHEET 14 OF 27

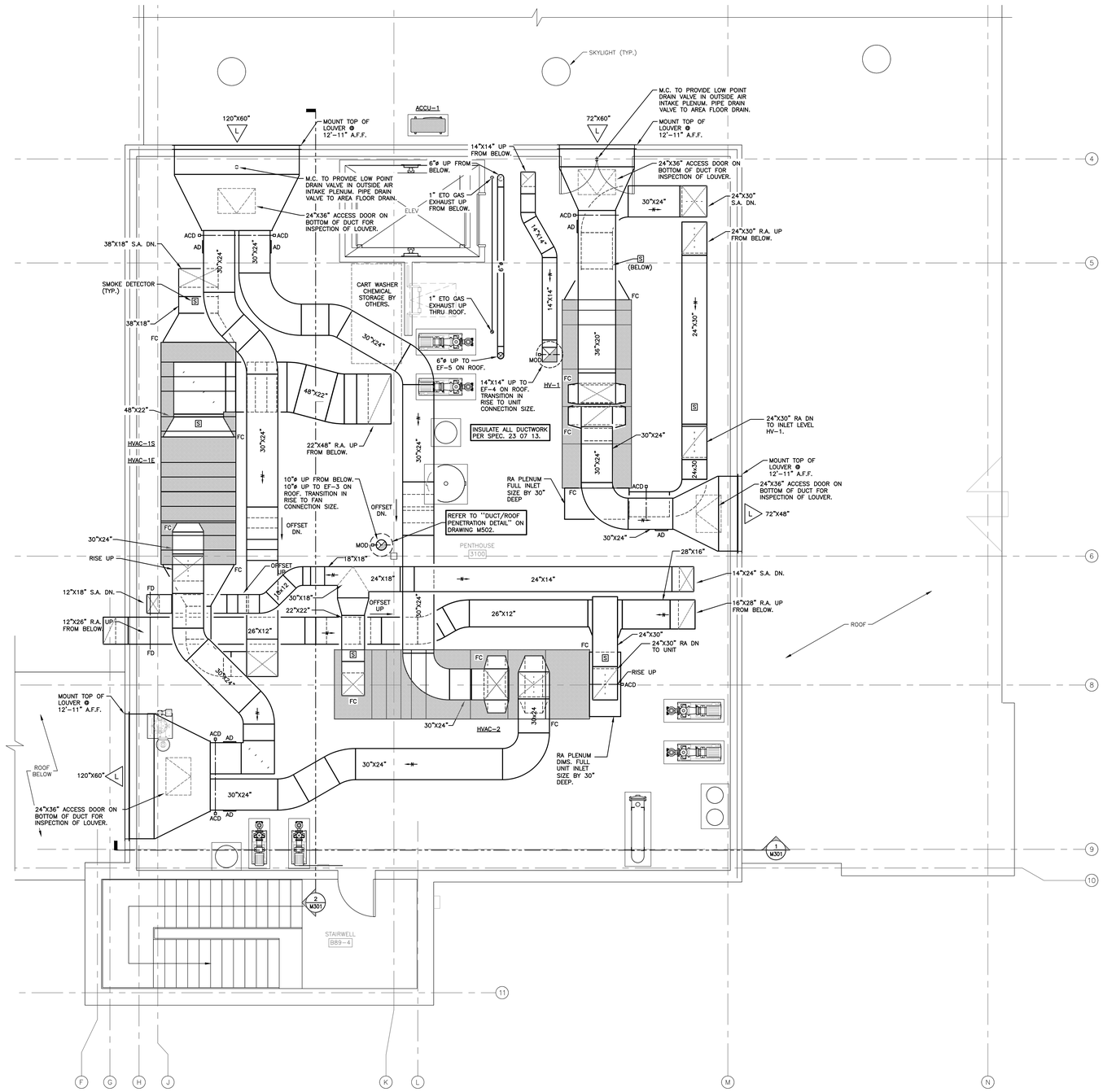
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



PENTHOUSE FLOOR PLAN – DUCTWORK – DEDUCT ALTERNATE

SCALE: 1/4" = 1'-0"



PENTHOUSE FLOOR PLAN – DUCTWORK

SCALE: 1/4" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

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LOCUST

KEY

EXISTING BUILDING 31 — PROPOSED BUILDING 67

STAMP

STATE OF NEW HAMPSHIRE — JOHN D. VEREN — No. 5915 — REGISTERED PROFESSIONAL ENGINEER

ARCHITECT:

WARRENSTREET ARCHITECTS
27 Warren Street Concord NH 03301
T 603.225.0640 F 603.225.0621
www.warrenstreetarchitects.com

Drawing Title: PENTHOUSE FLOOR PLANS - DUCTWORK

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B67

Drawing Number: M115

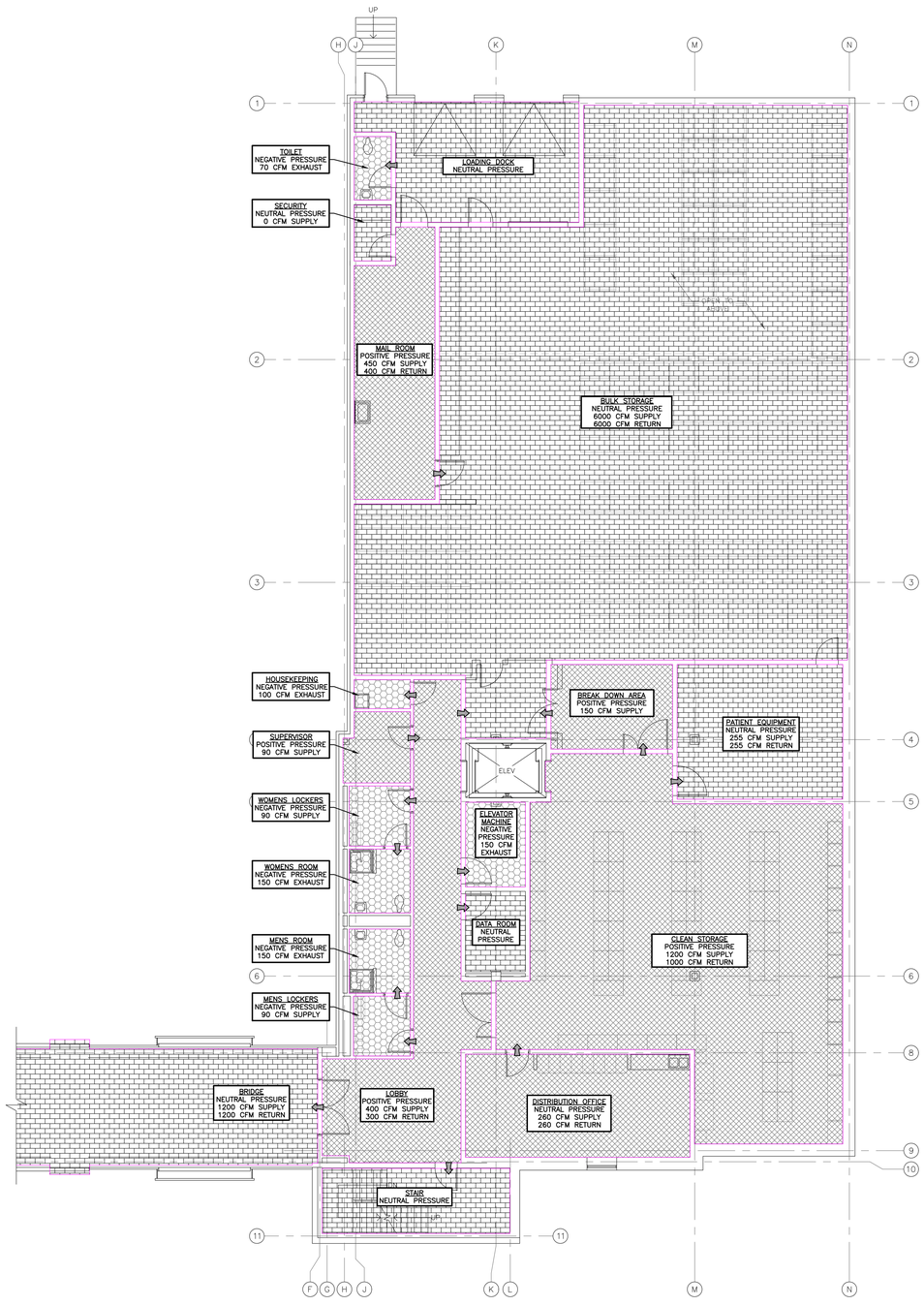
SHEET 15 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

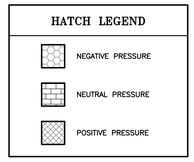
VA FORM 08-6231

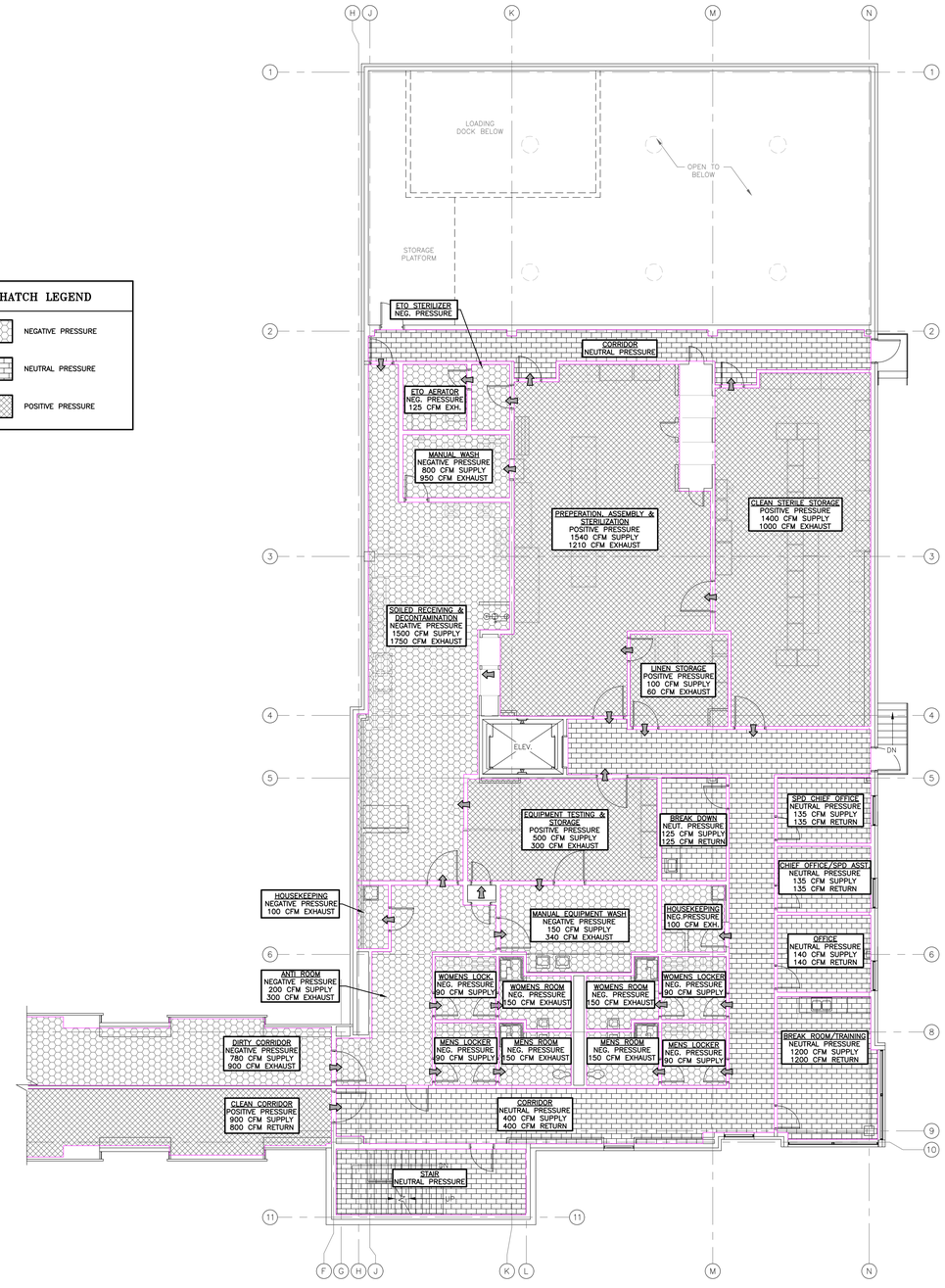
Dwg: 10V28ME M115.dwg, Tab: M115, User: fgrommo



FIRST FLOOR PLAN – PRESSURIZATION

SCALE: 1/8" = 1'–0"





SECOND FLOOR PLAN – PRESSURIZATION

SCALE: 1/8" = 1'–0"

N

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

CIVIL:
McFarland-Johnson
53 Regional Drive
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P: (603) 225-2978
F: (603) 225-0095

STRUCTURE:
TF Moran
48 Constitution Dr.
Bedford, NH 03110
P: (603) 472-4488
F: (603) 472-9747

MECHANICAL/ELECTRICAL:
Yeaton Assoc.
66 Jackson Street
Littleton, NH 03561
P: (603) 444-6578
F: (603) 444-2364
YA10V28ME

LOCUST

KEY

EXISTING BUILDING 31 — PROPOSED BUILDING 67

STAMP

STATE OF NEW HAMPSHIRE — MICHAEL J. STEFFEN — No. 5915 — PROFESSIONAL ENGINEER

ARCHITECT:

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www.warrenstreetarchitects.com

Drawing Title: FIRST AND SECOND FLOOR PLANS - PRESSURIZATION

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B67

Drawing Number: M116

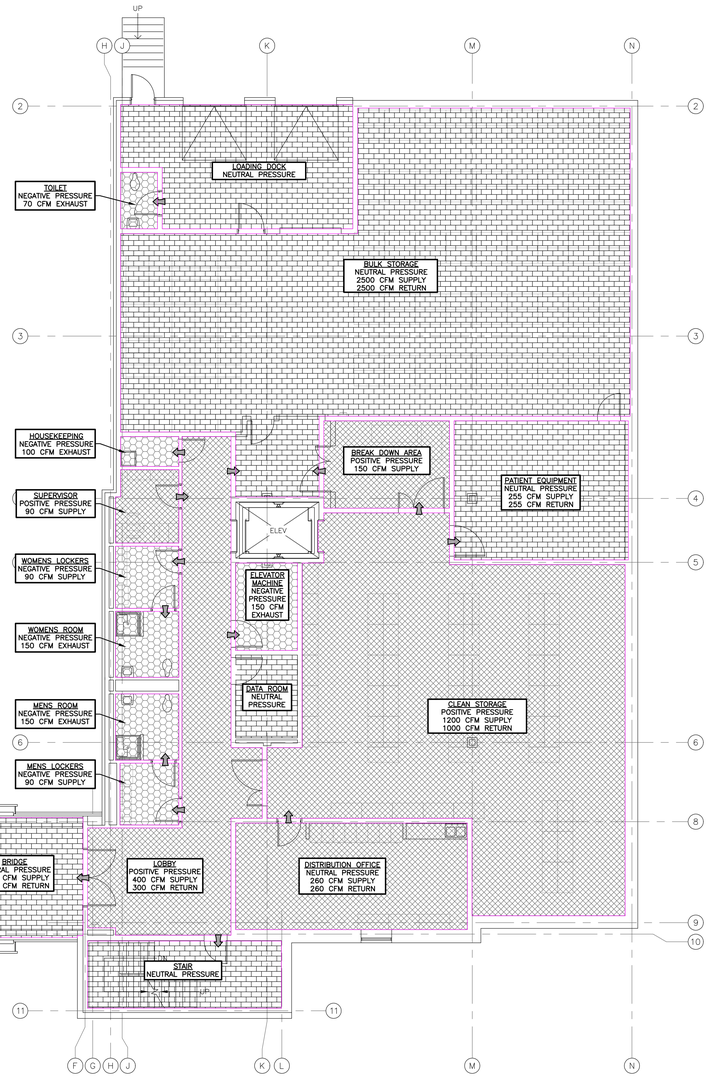
SHEET 16 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

Dwg: 10V28ME M116.dwg, Tab: M116, User: Rgnomno

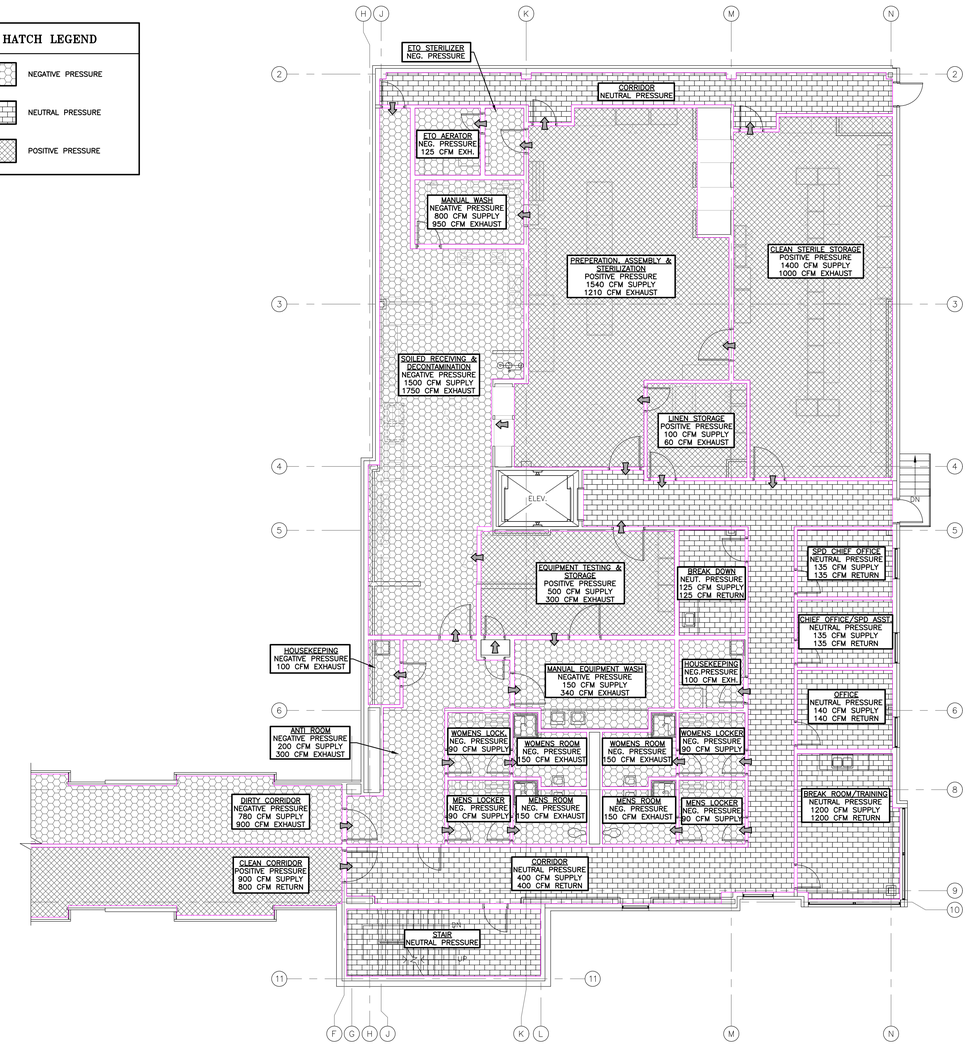


FIRST FLOOR PLAN – PRESSURIZATION – DEDUCT ALTERNATE

SCALE: 1/8" = 1'-0"

HATCH LEGEND

- NEGATIVE PRESSURE
- NEUTRAL PRESSURE
- POSITIVE PRESSURE



SECOND FLOOR PLAN – PRESSURIZATION – DEDUCT ALTERNATE

SCALE: 1/8" = 1'-0"

N

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

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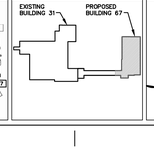
YA10V28ME

LOCUST

KEY



STAMP

ARCHITECT:

WARRENSTREET ARCHITECTS
27 Warren Street Concord NH 03301
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www.warrenstreetarchitects.com

Drawing Title
FIRST AND SECOND FLOOR PLANS - PRESSURIZATION - DEDUCT ALTERNATE

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name
Sterile Processing & Distribution Center

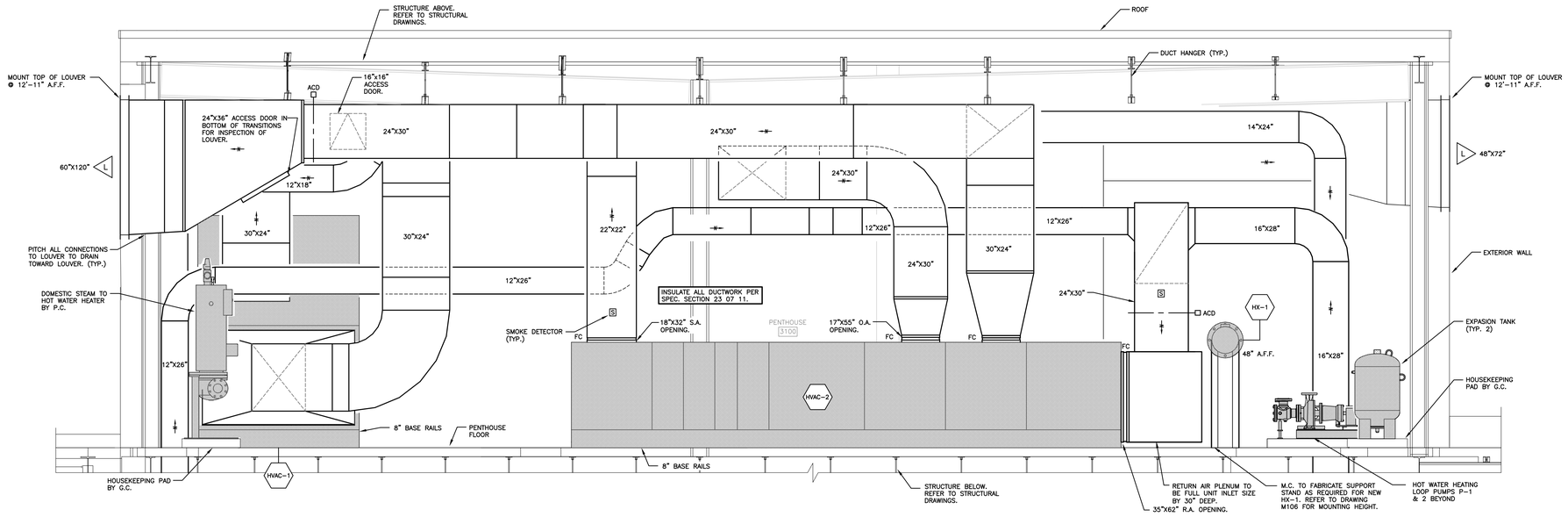
Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011
Drawn By: WRG
Checked By: JDV/MDW

Project Number: 405-304
Building Number: B67
Drawing Number: M117
SHEET 17 OF 27

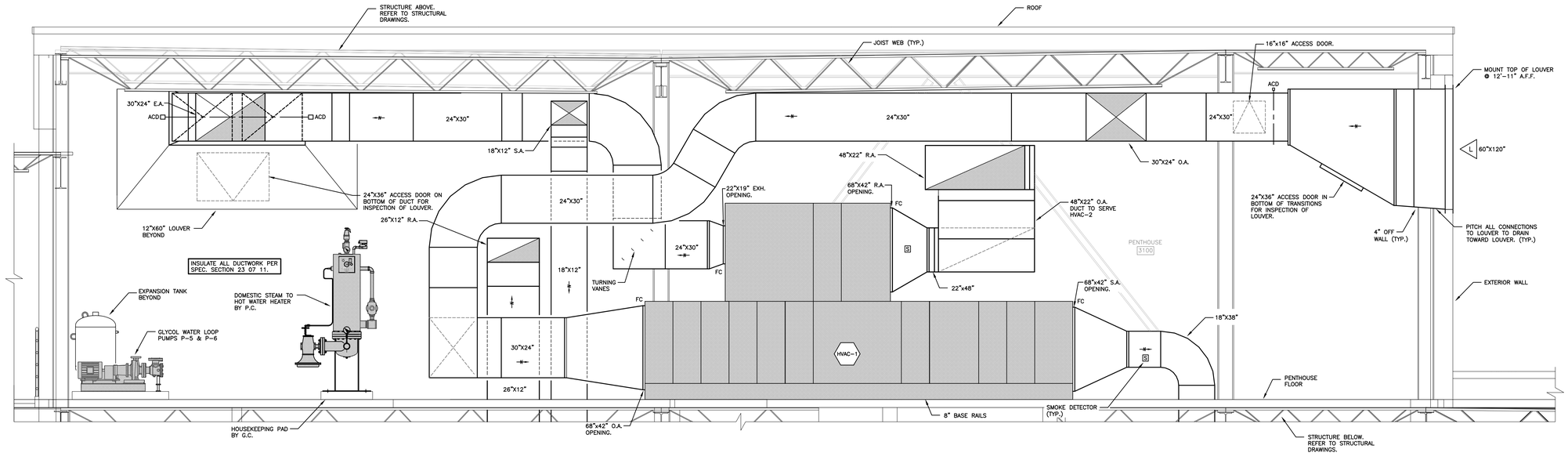
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



1 M301 PENTHOUSE SECTION

SCALE: 1/2" = 1'-0"



2 M301 PENTHOUSE SECTION

SCALE: 1/2" = 1'-0"

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

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YA10V28ME

LOCUST

KEY

STAMP

ARCHITECT:

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www.warrenstreetarchitects.com

Drawing Title: PENTHOUSE SECTIONS

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B67

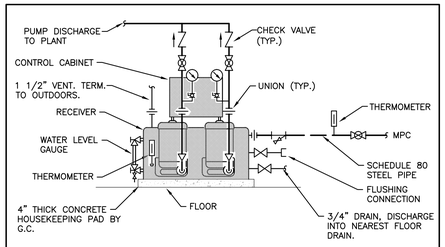
Drawing Number: M301

SHEET 18 OF 27

Office of Construction and Facilities Management

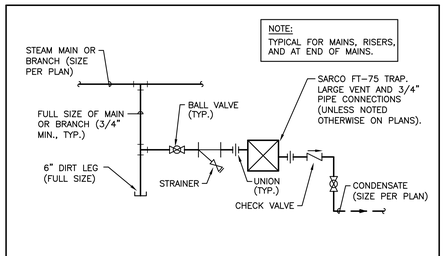
Department of Veterans Affairs

VA FORM 08-6231



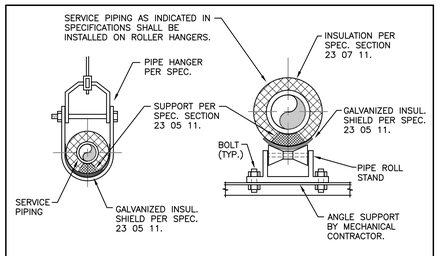
CONDENSATE PUMP PIPING DETAIL

N.T.S.



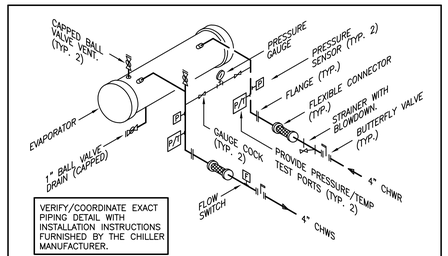
TYPICAL DRIP ASSEMBLY DETAIL

N.T.S.



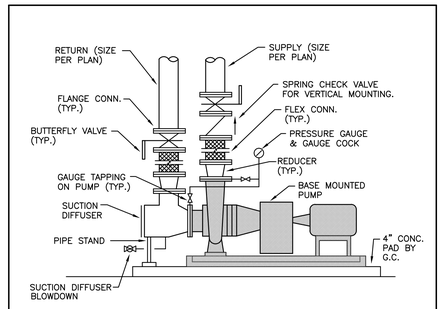
TYPICAL PIPE HANGER & ROLLER DETAIL

N.T.S.



CHILLER EVAPORATOR PIPING DETAIL

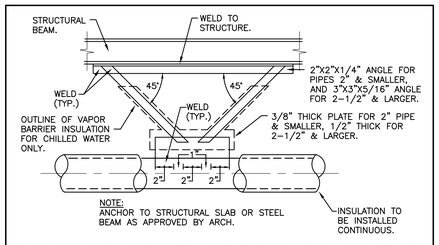
N.T.S.



BASE MOUNTED PUMP PIPING DETAIL

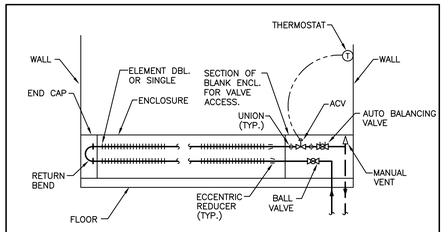
(TYP. P-1 THRU P-6)

N.T.S.



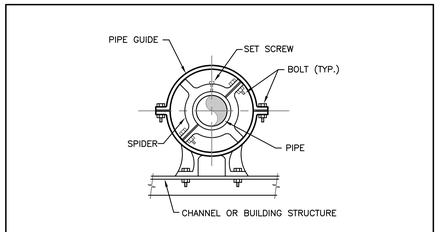
TYPICAL HORIZONTAL PIPE ANCHOR DETAIL

N.T.S.



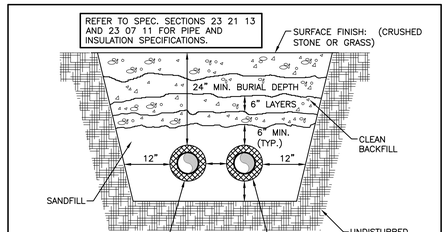
UP FEED (SAME END) FTR PIPING DETAIL

N.T.S.



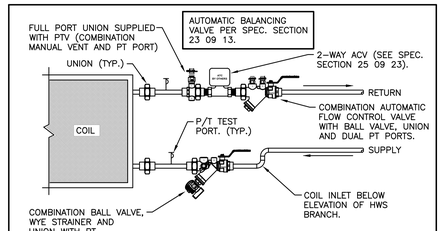
HORIZ. & VERT. PIPE GUIDE DETAIL

N.T.S.



UNDERGROUND PIPING INSTALLATION DETAIL

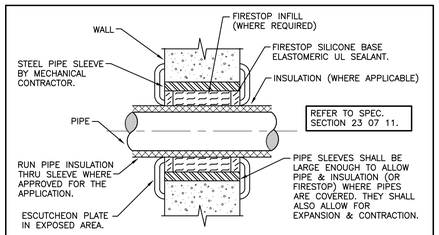
N.T.S.



TYPICAL HW COIL PIPING DETAIL

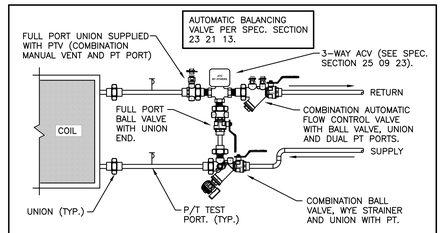
(TYP. FOR VAV'S, HV-1A, HVAC-1S, HVAC-1E & HVAC-2)

N.T.S.



PIPE SLEEVE THROUGH WALL

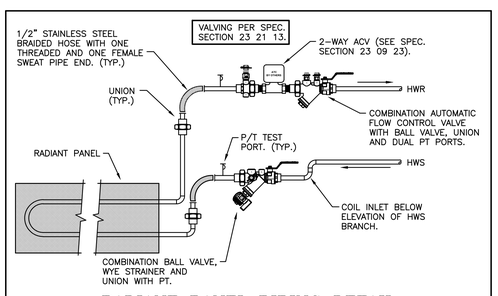
N.T.S.



TYPICAL 3-WAY COIL PIPING DETAIL

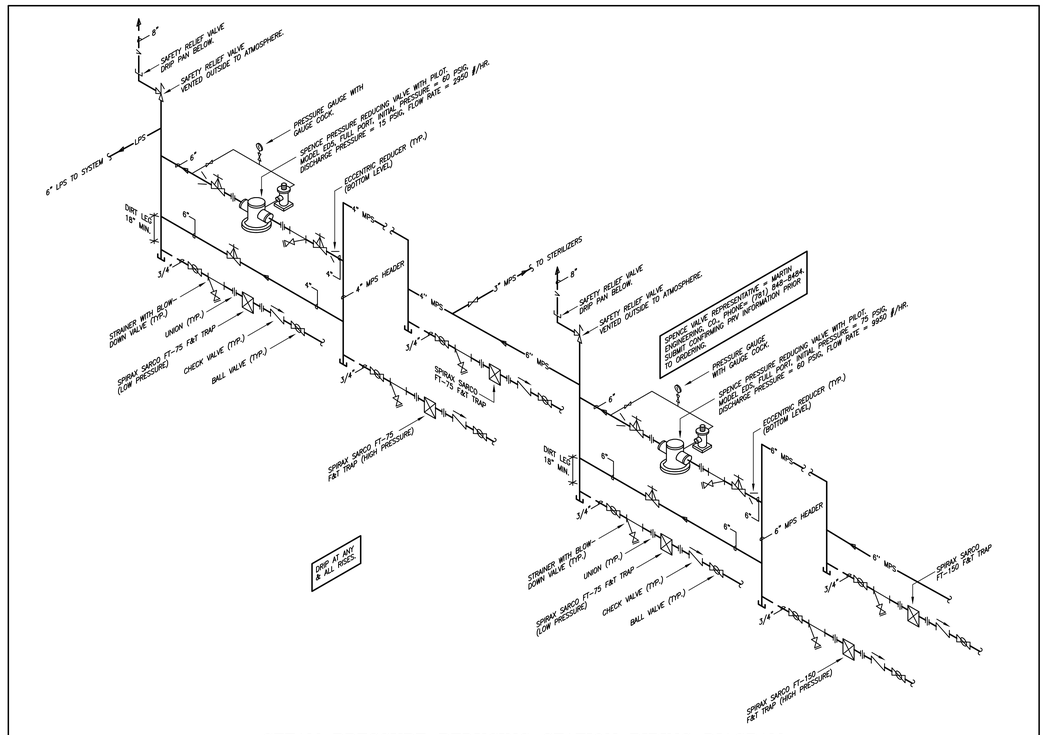
(TYP. CHW COILS FC-1, BC-1, VAV VSI-5 & VSI-10) (TYP. HEATING COILS, UH'S, CH'S, & HV-1)

N.T.S.



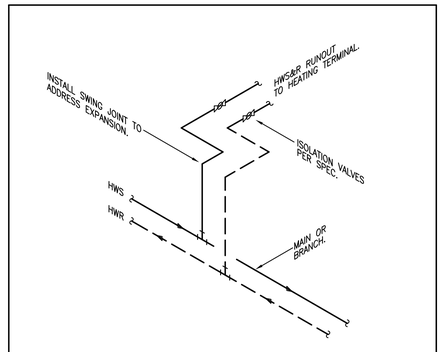
RADIANT PANEL PIPING DETAIL

N.T.S.



STEAM PRESSURE REDUCING STATION PIPING DIAGRAM

N.T.S.



TYPICAL PIPING TAKE-OFF DETAIL

N.T.S.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

CONSULTANTS:

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MECHANICAL/ELECTRICAL:
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YA10V28ME

LOCUST

KEY

STAMP

ARCHITECT:
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Drawing Title: MECHANICAL DETAILS

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

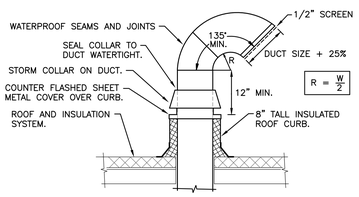
Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B67
Drawing Number: M501
SHEET 19 OF 27

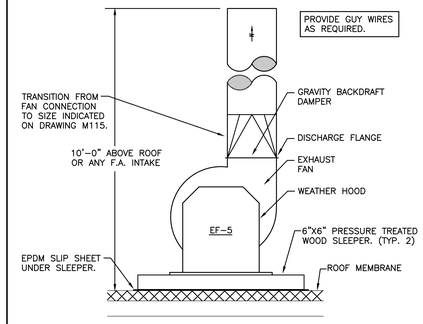
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

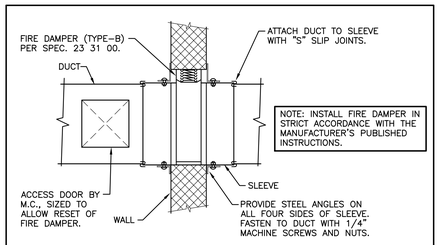
Dwg: 10V28ME M501-3.dwg, Tab: M501, User: Rgremmo



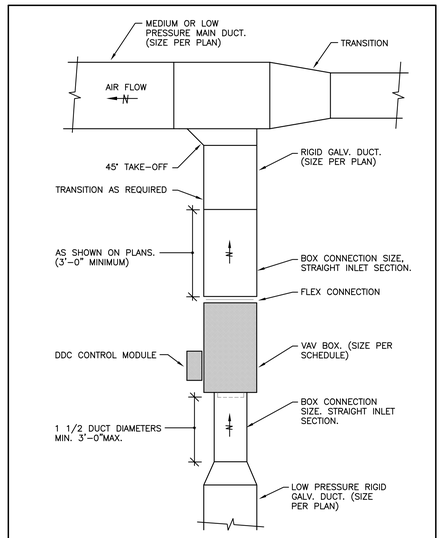
TYPICAL GOOSENECK DETAIL
N.T.S.



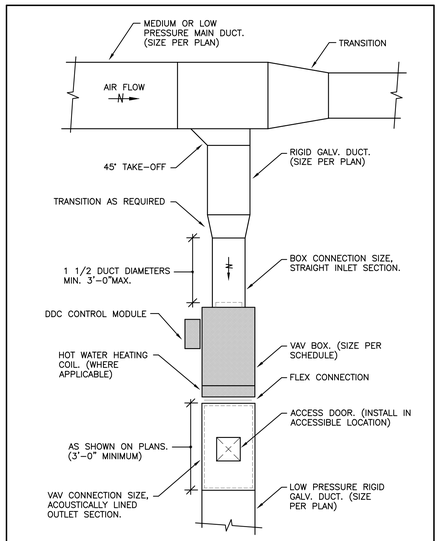
EXHAUST FAN DISCHARGE DETAIL
N.T.S.



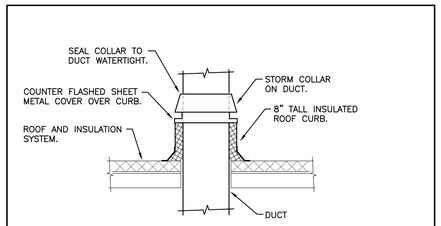
VERTICAL FIRE DAMPER DETAIL
N.T.S.



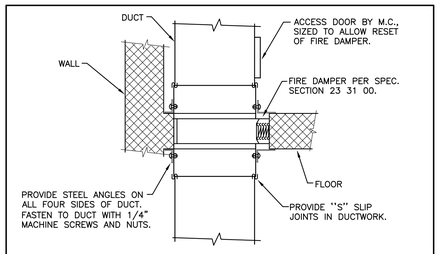
TYP. RETURN VAV BOX INSTALLATION DETAIL
(RETURN VAV ONLY) N.T.S.



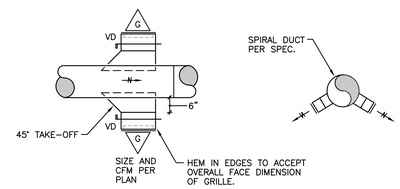
TYPICAL VAV BOX INSTALLATION DETAIL
(SUPPLY VAV ONLY) N.T.S.



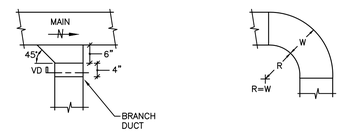
DUCT/ROOF PENETRATION DETAIL
N.T.S.



HORIZONTAL FIRE DAMPER DETAIL
N.T.S.

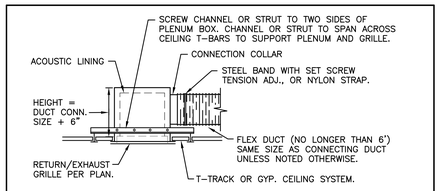


ROUND DUCT TAKE-OFF DETAIL
N.T.S.

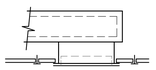


TYPICAL TAKE-OFF DETAIL
N.T.S.

RADIUS ELBOW
N.T.S.



TYP. FLEX CONN.



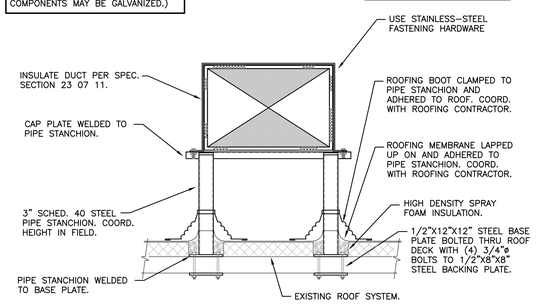
TYP. HARD CONN.

NOTES:
1. DOUBLE STRAPS ARE REQUIRED ON INSULATED FLEX DUCT. ONE OVER THE ACTUAL DUCT AND ONE OVER THE EXTERIOR INSULATION. TRIM EXCESS INSULATION TO PROVIDE A NEAT FINISHED PRODUCT.
2. FLEX DUCT MUST BE SUPPORTED AT INTERVALS NECESSARY TO AVOID EXCESSIVE SAGS WITH SHEET METAL BAND HANGERS.
3. GRILLES MUST BE SUPPORTED SEPARATE OF THE CEILING TILE IN WHICH PLACED TO AVOID WEIGHT INFLUENCE ON THE TILE.

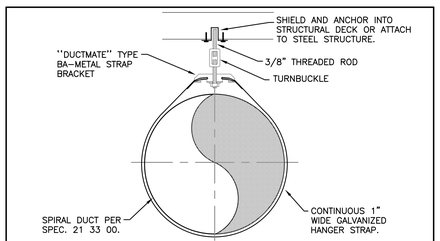
TYPICAL RETURN/EXHAUST GRILLE DETAIL
N.T.S.

ENTIRE ASSEMBLY SHALL BE PRIMED & PAINTED WITH 2 COATS OF RUST INHIBITIVE PAINT. (ALTERNATIVELY, ALL COMPONENTS MAY BE GALVANIZED.)

M.C. SHALL PROVIDE SHOP DRAWINGS OF PROPOSED DUCT STAND PRIOR TO FABRICATION.



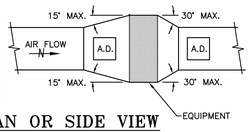
TYPICAL DUCT STAND DETAIL
(TYPICAL FOR SUPPLY AND RETURN DUCT) N.T.S.



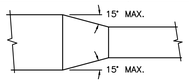
EXPOSED SPIRAL DUCT HANGER DETAIL
N.T.S.

NOTE:
UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.

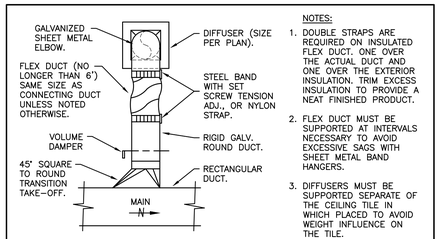
ACCESS DOOR (A.D.) FOR COIL MAINTENANCE IN BOTTOM OF DUCT. ACCESS DOOR SIZE SHALL BE PER SPECIFICATION SECTION 23 31 00.



PLAN OR SIDE VIEW DUCT TRANSFORMATION W/EQUIP. IN DUCT
N.T.S.

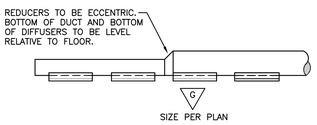


PLAN OR SIDE VIEW OF DUCT TRANSITION
N.T.S.

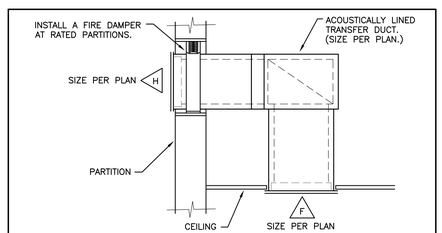


NOTES:
1. DOUBLE STRAPS ARE REQUIRED ON INSULATED FLEX DUCT. ONE OVER THE ACTUAL DUCT AND ONE OVER THE EXTERIOR INSULATION. TRIM EXCESS INSULATION TO PROVIDE A NEAT FINISHED PRODUCT.
2. FLEX DUCT MUST BE SUPPORTED AT INTERVALS NECESSARY TO AVOID EXCESSIVE SAGS WITH SHEET METAL BAND HANGERS.
3. DIFFUSERS MUST BE SUPPORTED SEPARATE OF THE CEILING TILE IN WHICH PLACED TO AVOID WEIGHT INFLUENCE ON THE TILE.

TYPICAL BRANCH TAKE-OFF DETAIL
N.T.S.



SPIRAL DUCTWORK INSTALLATION DETAIL
N.T.S.



TYPICAL WALL TRANSFER DETAIL
N.T.S.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

ADDENDUM #1 CLARIFICATIONS	08/1/2012
REVISIONS:	DATE

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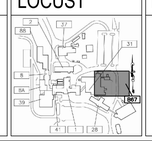

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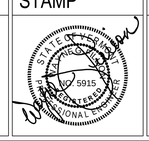

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Drawing Title: MECHANICAL DETAILS

Approved: Project Director
Timothy Adams, Facilities Management Service
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F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B67

Drawing Number: M502

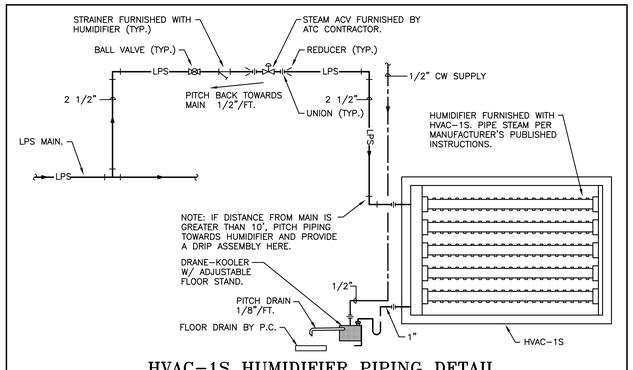
SHEET 20 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

Dwg: 10V28ME M201-3.dwg, Tab: M502, User: fgrammo



HVAC-1S HUMIDIFIER PIPING DETAIL

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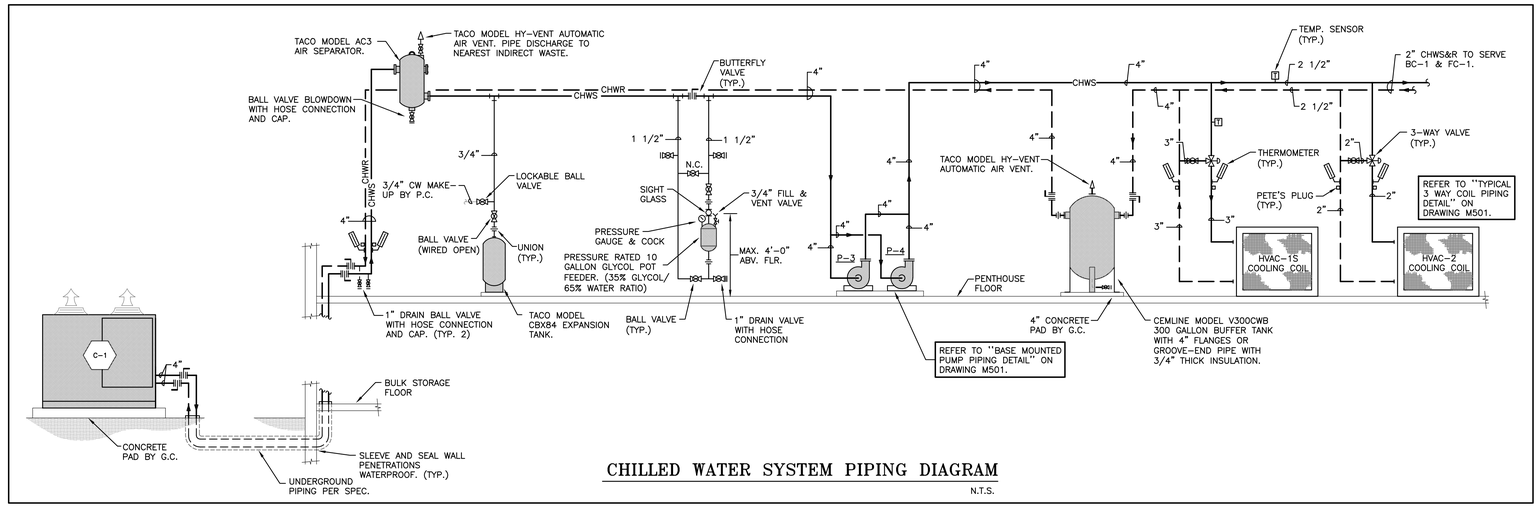
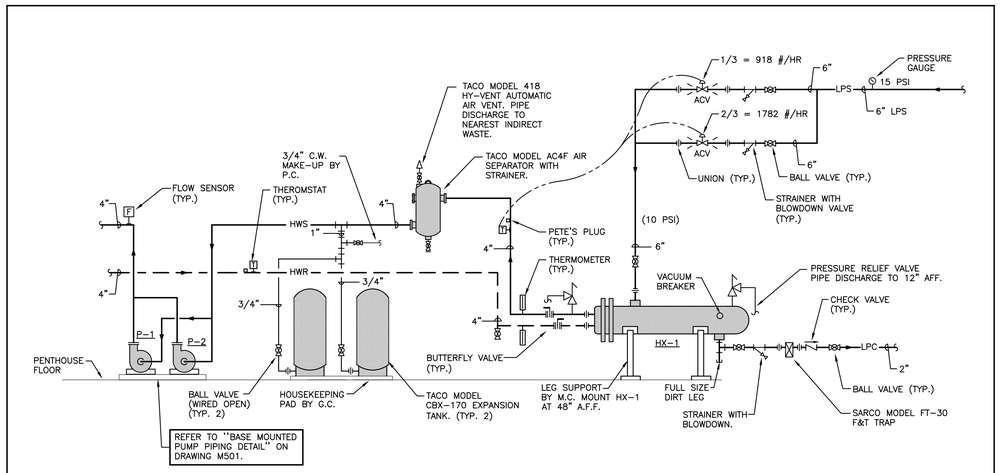


CHILLED WATER SYSTEM PIPING DIAGRAM

N.T.S.



HEAT EXCHANGER PIPING DIAGRAM

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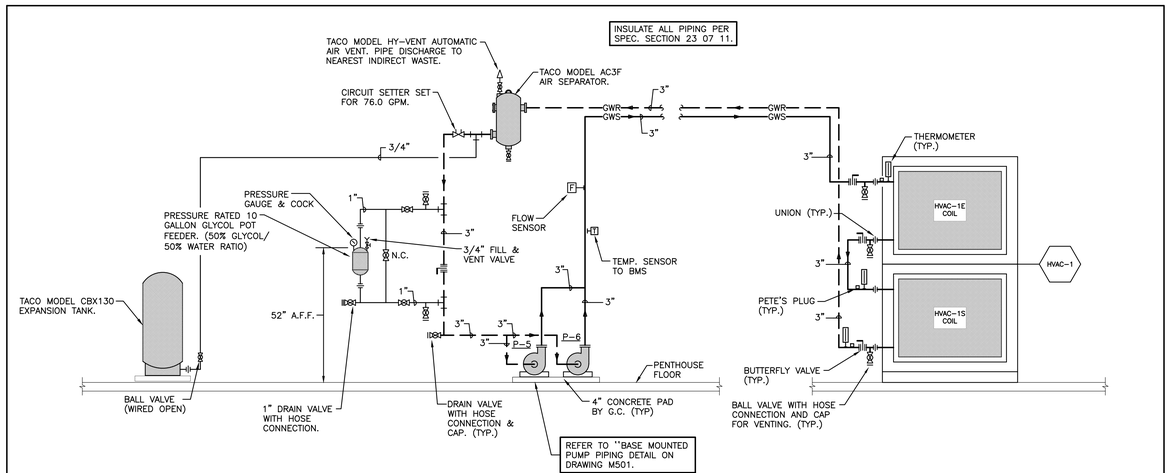

HVAC-1 PREHEAT ENERGY RECOVERY COIL PIPING DIAGRAM

N.T.S.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

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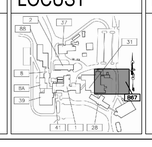

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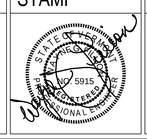

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Drawing Title: MECHANICAL DETAILS

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Project Number: 405-304

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Drawing Number: M503

SHEET 21 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

CIRCUIT SETTER SCHEDULE

GPM	CIRCUIT SETTER SIZE
UP TO 3.8	1/2"
3.8 TO 5.5	3/4"
5.5 TO 9.5	1"
9.5 TO 14.0	1 1/4"
14.0 TO 20.0	1 1/2"
20.0 TO 33.0	2"
33.0 TO 100.0	2 1/2"
100.0 TO 117.0	3"
117.0 TO 200.0	4"

NOTE:

BASED ON MACON BALANCING GLOBE STYLE MODEL STVL. TO RETAIN FULL CALIBRATED ACCURACY, A LENGTH OF UNRESTRICTED PIPE EQUIVALENT TO 3 PIPE DIAMETERS UPSTREAM AND DOWNSTREAM SHOULD BE MAINTAINED IMMEDIATELY ADJACENT TO CIRCUIT SETTER BALANCE VALVES. CIRCUIT SETTERS TO BE SIZED PER SCHEDULE EXCEPT WHERE SIZED ON PLANS.

SMOKE DETECTOR SCHEDULE

THE FOLLOWING UNITS SHALL HAVE SMOKE DETECTORS FOR AUTO SHUT DOWN:

HV-1, HVAC-1S & HVAC-2

SMOKE DETECTOR SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED WHERE SHOWN IN THE SUPPLY AND RETURN/EXHAUST DUCTWORK BY THE MECHANICAL CONTRACTOR. LOW VOLTAGE WIRING BETWEEN SUPPLY AND RETURN FAN STARTERS AND SMOKE DETECTORS BY ATC CONTRACTOR. NOTE: BOTH SUPPLY AND RETURN FANS SHALL BE DEENERGIZED UPON SENSING OF SMOKE IN EITHER AIRSTREAM.

PLAN SYMBOL = S

FIN-TUBE RADIATION SCHEDULE

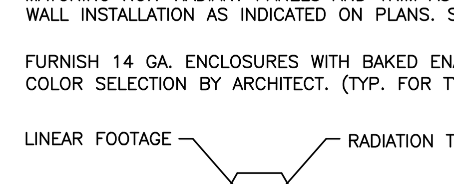
TYPE-1 AIRTITE MODEL AR-X EXTRUDED PANEL 12" WIDE (LENGTH PER PLANS), 212 BTUH/LF @ 170° AWT, 20° WTD. LENGTHS SHALL PERMIT THE FULL EXTENT OF ANTICIPATED LINEAR EXPANSION WITHIN CEILING GRID. FURNISH MATCHING NON-RADIANT PANELS AND TRIM AS REQUIRED FOR WALL TO WALL INSTALLATION AS INDICATED ON PLANS. STANDARD WHITE FINISH.

TYPE-2 VULCAN LINOVECTOR-II STYLE ''LV3-S'' SLOPE TOP ENCLOSURE, MODEL VC35, 1" C-3 1/4"X3 1/4"-50 FPF, .020 FIN, 840 BTUH/LF @ 170° AWT, 65° EAT, 1 ROW, 14"X4 3/8" ENCLOSURE, 18" MOUNTING HEIGHT, 20° WTD. FURNISH WITH PARTIAL BACKPLATES, WATER BRACKETS WITH SLIDE CRADLES, ACCESS DOORS OR SECTIONS AND ENCLOSURE TRIM AS REQUIRED.

TYPE-3 VULCAN CLASSIC ARCHITECTURAL STYLE ''V3-AR-LP7'' ENCLOSURE, MODEL VC35, 1" C-3 1/4"X3 1/4"-50 FPF, .020 FIN, 600 BTUH/LF @ 170° AWT, 65° EAT, 1 ROW, 7 1/4"X5 5/16" ENCLOSURE, 11 1/4" MOUNTING HEIGHT, 20° WTD. FURNISH WITH PARTIAL BACKPLATES, WATER BRACKETS WITH SLIDE CRADLES, ACCESS DOORS OR SECTIONS AND ENCLOSURE TRIM AS REQUIRED.

TYPE-4 AIRTITE MODEL AR-X EXTRUDED PANEL 18" WIDE (LENGTH PER PLANS), 288 BTUH/LF @ 170° AWT, 20° WTD. LENGTHS SHALL PERMIT THE FULL EXTENT OF ANTICIPATED LINEAR EXPANSION WITHIN CEILING GRID. FURNISH MATCHING NON-RADIANT PANELS AND TRIM AS REQUIRED FOR WALL TO WALL INSTALLATION AS INDICATED ON PLANS. STANDARD WHITE FINISH.

FURNISH 14 GA. ENCLOSURES WITH BAKED ENAMEL FINISH. COLOR SELECTION BY ARCHITECT. (TYP. FOR TYPE 2 & 3)



CABINET HEATER SCHEDULE

EWT=180°

NO.	MAKE & MODEL	CFM	EAT	LAT	MBH	GPM	WTD	WPD	FAN RPM	HP	COIL	ELECTRICAL VOLTS	PH	CY	REMARKS
CH-1	TRANE FFEB03	223	60°	132°	17.2	1.14	30°	5.96'	831	0.04	2 ROW	120	1	60	(1)
CH-2, 3, 4 & 5	TRANE FFBB03	166	60°	135°	13.6	0.91	30°	3.94'	636	0.04	2 ROW	120	1	60	(2)

(1) FURNISH WITH THERMALLY PROTECTED MOTOR, BOTTOM STAMPED INLET AND OUTLET LOUVER, UNIT MOUNTED DISCONNECT SWITCH, SPEED SWITCH AND 1" T.A. FILTER. COLOR SELECTION BY ARCHITECT. G.C. TO INSTALL CEILING TO ALLOW FOR ACCESS TO UNIT.

(2) FURNISH WITH THERMALLY PROTECTED MOTOR, FRONT TOE SPACE INLET, TOP BAR GRILLE DISCHARGE, UNIT MOUNTED DISCONNECT SWITCH, SPEED SWITCH AND 1" T.A. FILTER. COLOR SELECTION BY ARCHITECT.

PUMP SCHEDULE

NO.	SERVES	MAKE & MODEL	GPM @ FT. OF HEAD	RPM	HP	ELECTRICAL VOLTS	PH	CY	STARTER BY M.C.	PUMP EFF.	REMARKS
P-1 P-2	HOT WATER LOOP	TACO MODEL FI2508	175 @ 46'	1760	5	480	3	60	COMBINATION VFD WITH DISCONNECT	70%	(1)
P-3 P-4	CHILLED WATER LOOP	TACO MODEL FI2009	149 @ 42'	1750	3	480	3	60	COMBINATION VFD WITH DISCONNECT	62%	(1) (2)
P-5 P-6	GLYCOL WATER LOOP	TACO MODEL FI1507	76 @ 50'	1760	2	480	3	60	COMBINATION VFD WITH DISCONNECT	62%	(1) (3)

(1) SEE CONTROLS DIAGRAMS FOR SEQUENCE OF OPERATION.

(2) 65%/35% WATER/PROPYLENE GLYCOL SOLUTION

(3) 50%/50% WATER/PROPYLENE GLYCOL SOLUTION

AIR-COOLED CHILLER SCHEDULE

NO.	MAKE & MODEL	CAP. (TONS) ACTUAL	NOMINAL	EAT	EWT	LWT	GPM	WPD	OPERATING WEIGHT	SOUND	ELECTRICAL VOLTS	PH	CY	MCA	MOP	KW	REMARKS
C-1	TRANE CGAM 70	64.6	70	95.0°	56.1°	44.0°	149.0	8.5'	4751 LBS.	91 DBA	480	3	60	147.8	175.0	77.8	(1)

(1) FURNISH WITH LON BASED MICROPROCESSOR CONTROL, UNIT MOUNTED INTERFACE PANEL, UNIT MOUNTED DISCONNECT, SINGLE POINT POWER CONNECTION, (4) COMPRESSORS, DIRECT DRIVE SCROLL COMPRESSORS, R410A REFRIGERANT, FULL ARCHITECTURAL LOUVERS, COMPRESSOR SOUND ATTENUATOR BLANKETS, FACTORY INSTALLED FLOW SWITCH, REFRIGERANT ISOLATION VALVES AND PHASE REVERSAL PROTECTION, COMPREHENSIVE SOUND PACKAGE CONSISTING OF LOW NOISE CONDENSER FANS. FULL LOAD EFFICIENCY = 10.0 EER, PART LOAD = 15.3 EER.

(2) 65% WATER/35% PROPYLENE GLYCOL.

CONDENSATE PUMP SCHEDULE

NO.	MAKE & MODEL	CAPACITY SQ. FT. E.D.R.	GPM	RECEIVER	DISCH. P.S.I.G.	HP	RPM	ELECTRICAL DATA VOLTS	PH	CY	REMARKS
CP-1	SKIDMORE MODEL VCS 401	40,000	60	65	10	3/4	1750	480	3	60	(1)

(1) ASME CONSTRUCTION AND STAMPED FOR 125 PSIG DESIGN PRESSURE @ 375°F. PROVIDE STEEL SHELL, 3/4" O.D. COPPER TUBES, CAST IRON HEAD, STEEL TUBE SHEETS AND SUPPORTS.

BLOWER COIL SCHEDULE

NO.	AREA SERVED	MAKE & MODEL	CFM	COOLING 45° EWT TOTAL MBH	SENS. MBH	WTR	GPM	WPD	FAN SPEED	HP	REMARKS
BC-1	ELEC. RM. 1 & 2 G1101B & G1101C	TRANE BCHC054A	1600	53.7	40.6	7.4°	16.33	12.3'	878	1/2	(1)

(1) FURNISH COMPLETE WITH THREE BELT DRIVE, THERMALLY PROTECTED PSC MOTOR, UNIT MOUNTED DISCONNECT SWITCH, BACK DUCT COLLAR INLET, FRONT DUCT COLLAR OUTLET, 6-ROW COOLING COIL, HEAVY DENSITY INSULATED CHASSIS, REMOVABLE BOTTOM PANEL WITH SPEED NUTS, HANGING SPRING VIBRATION ISOLATORS AND FILTER RACK WITH 2" TA MERV 8 FILTERS. (2 SETS) (120V-1PH-60CY.)

SPLIT SYSTEM AIR CONDITIONING SCHEDULE

AC-1/ACCU-1 SYSTEM CAPACITY: COOLING = 34.2 MBH NET TOTAL CAPACITY @ 80°/67° EAT & 95° OAT.

AC-1 (INDOOR UNIT): MITSUBISHI WALL MOUNTED, MODEL PKA-A36HA, 920 CFM, (HIGH SPEED), 56 WATTS, 1.0 MCA, 208V-1PH-60CY. FURNISH WITH INTERNAL CONDENSATE PUMP ACCESSORY, WIRED COOLING ONLY THERMOSTAT AND ALL STANDARD EQUIPMENT REQUIRED FOR PROPER INSTALLATION. PROVIDE SPECIALTIES AS REQUIRED FOR LONG LINE APPLICATION. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

ACCU-1 (OUTDOOR UNIT): MITSUBISHI MODEL PUY-A36NHA, 208V-1PH-60CY, 25 MCA, 40 MOCP. FURNISH UNIT WITH WIND BAFFLE (FOR LOW AMBIENT OPERATION) AND ALL STANDARD EQUIPMENT FOR PROPER INSTALLATION.

GRILLE, LOUVER & DIFFUSER SCHEDULE

SYMBOL	MANUFACTURER	TYPE & MODEL	REMARKS (SIZE AND CFM AS SHOWN ON PLANS)
A	PRICE	SUPPLY DIFFUSER MODEL AMD-3P-4A	ALUMINUM CONSTRUCTION, WHITE FINISH
B	PRICE	SUPPLY DIFFUSER MODEL AMD-3P-3A	ALUMINUM CONSTRUCTION, WHITE FINISH
C	PRICE	SUPPLY DIFFUSER MODEL AMD-3P-2G	ALUMINUM CONSTRUCTION, WHITE FINISH
D	PRICE	SUPPLY DIFFUSER MODEL AMD-3P-2S	ALUMINUM CONSTRUCTION, WHITE FINISH
E	PRICE	RETURN/EXHAUST GRILLE (LAY-IN) MODEL 81-TB	ALUMINUM CONSTRUCTION, WHITE FINISH
F	PRICE	RETURN/EXHAUST GRILLE (SURFACE MOUNT) MODEL 81-F	ALUMINUM CONSTRUCTION, WHITE FINISH
G	PRICE	DOUBLE DEFLECTION SUPPLY GRILLE MODEL 620-F (SURFACE MOUNT)	ALUMINUM CONSTRUCTION, 45° BLADES, WHITE FINISH
H	PRICE	RETURN/EXHAUST GRILLE MODEL 630-F (SURFACE MOUNT)	ALUMINUM CONSTRUCTION, WHITE FINISH
J	PRICE	SUPPLY DIFFUSER MODEL AMD-1-4A	ALUMINUM CONSTRUCTION, WHITE FINISH
K	PRICE	SUPPLY DIFFUSER MODEL AMD-1-3A	ALUMINUM CONSTRUCTION, WHITE FINISH
L	GREENHECK	LOUVER MODEL EDJ-401 W/BIRDSCREEN	ALUMINUM CONSTRUCTION, BAKED ENAMEL FINISH, COLOR SELECTION BY ARCHITECT

HVAC-2 SUPPLY VAV UNIT SCHEDULE

EAT=55° EWT=180°

NO.	AREA SERVED	INLET DIA.	MAX. CFM	HEATING CFM	MIN. CFM	HOT WATER COIL MBH	GPM	WTD	LAT	ROWS	REMARKS
V2-1	BREAKDOWN/CORRIDOR 2110/2119	8"	525	350	175	13.3	1.0	27°	90°	1	(1)
V2-2	LOCKER ROOMS 2102, 2103, 2121, 2122	6"	360	240	120	9.1	0.7	26°	90°	1	(1)
V2-3	STERILE CONNECTOR 2124	10"	900	665	335	25.2	0.9	60°	90°	2	(1)
V2-4	OFFICES 2115, 2116, 2117	6"	410	275	140	10.4	1.1	20°	90°	1	(1)
V2-5	BREAKROOM & TRAINING 2118	12"	1200	800	400	30.4	2.4	25°	90°	1	(1)
V2-6	LOBBY/SUPERVISORS OFFICE 1101/1107	8"	490	325	165	12.3	0.8	30°	90°	1	(1)
V2-7	DISTRIBUTION OFFICE 1102	6"	260	175	90	7.4	0.5	30°	94°	1	(1)
V2-8	BRIDGE CORRIDOR 1002	12"	1200	800	660	30.4	2.4	25°	90°	1	(1)

(1) BASED ON TRANE VCWF WITH DOUBLE WALL INSULATED CONSTRUCTION, INTEGRAL DISCONNECT AND CONTROL TRANSFORMER 120V/24V. SEE CONTROLS DIAGRAMS FOR SEQUENCE OF OPERATION. UNITS ARE SELECTED FOR RADIATED AND DISCHARGE NC LEVELS <35 AND WPD <6'.

HVAC-1 SUPPLY VAV UNIT SCHEDULE

EAT=55° EWT=180°

NO.	AREA SERVED	INLET DIA.	MAX. CFM	HEATING CFM	MIN. CFM	HOT WATER COIL MBH	GPM	WTD	LAT	ROWS	REMARKS
VS1-1	SOILED ANTE-ROOM 2101	6"	200	200	200	7.8	0.5	31°	91°	1	(1)
VS1-2	EQUIPMENT TESTING & STORAGE 2111	8"	500	500	500	16.3	1.2	26°	85°	1	(1)
VS1-3	MANUAL EQUIPMENT WASH 2106	6"	150	150	150	7.0	0.5	28°	98°	1	(1)
VS1-4	WOMEN/MEN LOCKERS 1105/1106	6"	180	180	180	7.5	0.5	30°	93°	1	(1)
VS1-5	CLEAN STORAGE 1104	12"	1200	1200	1200	39.0	3.5	23°	85°	1	(1)
VS1-6	PATIENT EQUIPMENT 1104A	6"	255	255	255	8.9	0.5	34°	86°	1	(1)
VS1-7	SOILED CONNECTOR 2100	8"	780	780	780	25.4	1.4	37°	85°	2	(1)
VS1-8	SOILED RECEIVING & DECONTAMINATION 2105	12"	1500	1500	1500	48.8	1.9	51°	85°	2	(1)
VS1-9	MANUAL WASH 2105A	10"	800	800	800	26.0	1.8	28°	85°	1	(1)
VS1-10	PREPARATION ASSEMBLY & STERILIZATION 2112	12"	1540	1540	1540	50.1	2.0	50°	85°	2	(1)
VS1-11	STERILE STORAGE & LINEN 2114	12"	1500	1500	1500	48.8	1.9	51°	85°	2	(1)

(1) BASED ON TRANE VCWF WITH DOUBLE WALL INSULATED CONSTRUCTION, INTEGRAL DISCONNECT AND CONTROL TRANSFORMER 120V/24V. SEE CONTROLS DIAGRAMS FOR SEQUENCE OF OPERATION. UNITS ARE SELECTED FOR RADIATED AND DISCHARGE NC LEVELS <35 AND WPD <6'.

FAN COIL SCHEDULE

NO.	AREA SERVED	MAKE & MODEL	CFM	COOLING 45° EWT TOTAL MBH	SENS. MBH	WTR	GPM	WPD	HEATING 180° EWT TOTAL MBH	WTD	GPM	WPD	FAN SPEED	HP	REMARKS
FC-1	MAIL ROOM 1201	TRANE FCCB06	487	11.0	9.7	5.5°	4.5	9.2'	20.3	32°	1.35	7.1'	1213	0.24	(1)(2)

NOTE: COOLING PERFORMANCE BASED ON 80°Db/67°Wb ENTERING AIR TEMPERATURE.

(1) FURNISH COMPLETE WITH HIGH ESP, THERMALLY PROTECTED EC MOTOR, UNIT MOUNTED DISCONNECT SWITCH, WALL MOUNTED MANUAL FAN MODE SWITCH, BACK DUCT COLLAR INLET, FRONT DUCT COLLAR OUTLET, 3-ROW COOLING COIL, HEAVY DENSITY INSULATED CHASSIS, REMOVABLE BOTTOM PANEL WITH SPEED NUTS, HANGING SPRING VIBRATION ISOLATORS AND FILTER RACK. 1" TA FILTERS (2 SETS). (120V-1PH-60CY.)

(2) REMOVE THIS PIECE OF EQUIPMENT UNDER DEDUCT ALTERNATE.

EXHAUST FAN SCHEDULE

NO.	AREA SERVED	MAKE & MODEL	CFM	RPM	SP	HP	ELECTRICAL DATA VOLTS	PH	CY	MOTOR STARTER	SONES	REMARKS
EF-1	MECH G1101A	GREENHECK SP-A290	250	1027	0.25"	81 WATTS	120	1	60	REVERSE ACTING THERMOSTAT	2.5	(1)
EF-2	LAVATORY 1203A	GREENHECK SP-B90	70	596	0.125"	50 WATTS	120	1	60	OCC./UNOCC. RELAY	1.1	(2)
EF-3	MANUAL EQUIPMENT WASH 2106	GREENHECK GB-081-6	340	1190	0.5"	1/16	120	1	60	OCC./UNOCC. RELAY	5.9	(3)
EF-4	MANUAL WASH 2105A	GREENHECK GB-101-4	950	1436	0.5"	1/6	120	1	60	OCC./UNOCC. RELAY	8.1	(3)
EF-5	ETO AERATOR 2112B	GREENHECK SWB-106-4	100	1273	0.5"	1/4	120	1	60	MAG. STARTER W/ H.O.A.	6.8	(4)
EF-6	ELEV. MACHINE ROOM B1002	GREENHECK SP-A510	250	1012	0.5"	224 WATTS	120	1	60	REVERSE ACTING THERMOSTAT	3.0	(2)
EF-7	EXISTING MECHANICAL ROOM	GREENHECK CSP-A390	300	1279	0.625"	143 WATTS	120	1	60	REVERSE ACTING THERMOSTAT	4.0	(1)

(1) FURNISH WITH THERMALLY PROTECTED MOTOR, UNIT MOUNTED DISCONNECT SWITCH, INSULATED HOUSING, HANGING NEOPRENE VIBRATION ISOLATORS, INTEGRAL BACK DRAFT DAMPER AND MODEL WC-8 WALL CAP.

(2) FURNISH WITH THERMALLY PROTECTED MOTOR, UNIT MOUNTED DISCONNECT SWITCH, INSULATED HOUSING, HANGING NEOPRENE VIBRATION ISOLATORS, INTEGRAL BACK DRAFT DAMPER AND MODEL WC-6 WALL CAP.

(3) FURNISH MOTOR WITH INTEGRAL OVERLOAD PROTECTION, UNIT MOUNTED DISCONNECT SWITCH, 18" PREFAB INSULATED ROOF CURB AND MOTOR OPERATED DAMPER WITH REQUIRED MOTOR PACK. (MOTOR OPERATED DAMPER TO OPEN WHEN FAN STARTS AND CLOSE WHEN FAN STOPS. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR WIRED BY ELECTRICAL CONTRACTOR.)

(4) FURNISH WITH MAG. STARTER, WITH H.O.A. SWITCH, CW UB DISCHARGE POSITION, FLANGED OUTLET CONNECTION, SPRING TYPE VIBRATION ISOLATORS, BELT GUARD, ETO COMPATIBLE EXPLOSION PROOF CONSTRUCTION AND MOTOR OPERATED DAMPER WITH REQUIRED MOTOR PACK (120V-1PH) (MOTOR OPERATED DAMPER TO OPEN WHEN FAN STARTS AND CLOSE WHEN FAN STOPS. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR.)

HEAT EXCHANGER SCHEDULE

NO.	MAKE & MODEL	SERVES	STEAM @ 10 PSI	MBH	WATER GPM	EWT	LWT	WPD	REMARKS
HX-1	TACO E08208-S	HEATING LOOP	2691.3 LBS/HR	2583.6	150	180°	1.72	1.72'	ASME RATED

UNIT HEATER SCHEDULE

EWT=180°

NO.	MAKE & MODEL	CFM	EAT	LAT	MBH	GPM	WTD	WPD	FAN RPM	H.P.	ELECTRICAL VOLTS	PH	CY	REMARKS
UH-1	TRANE MODEL S-A18	500	60°	90°	15.8	1.6	20°	2.2'	1550	16W	120	1	60	(1)
UH-2 UH-3	TRANE MODEL S-36	550	60°	98°	22.4	2.2	20°	0.9'	1550	25W	120	1	60	(1)
UH-4 UH-5	TRANE MODEL S-84	1400	60°	94°	52.3	5.2	20°	0.2'	1000	1/12	120	1	60	(1)

(1) FURNISH WITH THERMALLY PROTECTED MOTOR, HANGING RODS AND VIBRATION ISOLATORS. SERVICE DISCONNECT SWITCH BY ELECTRICAL CONTRACTOR.

HVAC-1 EXHAUST VAV UNIT SCHEDULE

NO.	AREA SERVED	INLET DIA.	MAX. CFM	REMARKS
VE1-1	SOILED CONNECTOR 2100	10"	900	(1)
VE1-2	SOILED ANTE-ROOM 2101	6"	300	(1)
VE1-3	EQUIPMENT TESTING & STORAGE 2111	6"	300	(1)
VE1-4	PREPARATION ASSEMBLY & STERILIZATION 2112	12"	1210	(1)
VE1-5	SOILED RECEIVING & DECONTAMINATION 2105	12"	1750	(1)
VE1-6	LINEN/STERILE STORAGE 2113/2114	10"	1060	(1)
VE1-7	PATIENT EQUIPMENT 1104A	6"	255	(1)
VE1-8	CLEAN STORAGE 1104	10"	1000	(1)

(1) BASED ON TRANE VCCF WITH DOUBLE WALL INSULATED CONSTRUCTION, INTEGRAL DISCONNECT AND CONTROL TRANSFORMER 120V/24V. SEE CONTROLS DIAGRAMS FOR SEQUENCE OF OPERATION. UNITS ARE SELECTED FOR RADIATED AND DISCHARGE NC LEVELS <35 AND WPD <6'.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

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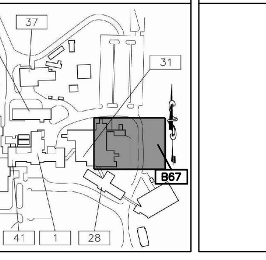
STRUCTURE: TF Moran, 48 Constitution Dr., Bedford, NH 03110, P: (603) 472-4488, F: (603) 472-9747

MECHANICAL/ELECTRICAL: Yeaton Assoc., 66 Jackson Street, Littleton, NH 03561, P: (603) 444-6578, F: (603) 444-2364, YA10V28ME

LOCUST



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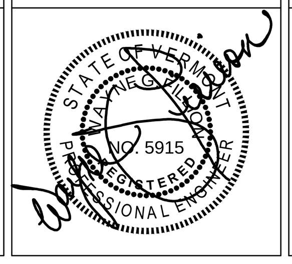

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Drawing Title: MECHANICAL SCHEDULES

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
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F 802.296.6374

Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B31 & B67

Drawing Number: M601

SHEET 22 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

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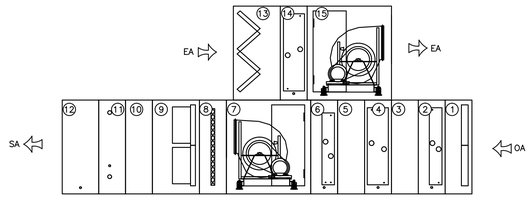
AIR HANDLING UNIT SCHEDULE

NO.	MANUFACTURER & MODEL	ELECTRICAL			CFM	HP	BHP	TYPE	ESP	TSP	RPM	ERU COIL – 50% PROPYLENE GLYCOL									HOT WATER COIL – 180° EWT									CHILLED WATER COIL – 45° EWT, 35% PROPYLENE GLYCOL									HUMIDIFIER			REMARKS
		V	PH	CY								MBH	GPM	WTD	EAT	LAT	APD	WPD	COIL F.V.	TYPE	MBH	GPM	WTD	EAT	LAT	APD	WPD	COIL F.V.	TYPE	MBH	GPM	WTR	EAT DB/WB	LAT DB/WB	APD	WPD	COIL F.V.	TYPE	#/HR.	PSI	EAT DB @ RH	
HVAC–1S	TRANE MODEL PCC SIZE 17	480	3	60	8700	15	8.0	20" AF	2.5"	5.9"	2000	267.1	76.0	10°	–9.0°/–9.0°	19.3°/13.8°	0.48"	10.3'	518 FPM	UW, 4 ROW, 120 FPF, DF–E, WITH TURBS	707.6	47.1	30°	15.0°	90°	0.23"	2.21'	580 FPM	5W, 2 ROW, 118 FPF, PF–H, W/ TURBS	524.1	96.1	12°	91.2°/72.1°	55.0°/54.9°	1.18"	9.4'	518 FPM	UU, 8 ROW, 141 FPF, DF–H, WITH TURBS	246.7	15	78°/20%	1
HVAC–1E	TRANE MODEL PCC SIZE 17	480	3	60	8200	10	7.6	18" AF	2.5"	3.9"	1684	267.1	76.0	10°	72.0°/54.4°	42.2°/40.6°	0.86"	5.9'	488 FPM	UU, 8 ROW, 120 FPF, DF–E WITH TURBS	NO COIL									NO COIL									–	–	–	–

1 FURNISH STACKED UNIT WITH DOUBLE WALL INSULATED CONSTRUCTION, 8" SUPPORT RAILS, ULTRA–LOW LEAKAGE DAMPERS, O.A. TRAQ DAMPER, FAN FLOW STATION, STAINLESS STEEL DRAIN PANS AT COOLING COIL AND HUMIDIFIER SECTIONS, FAN SECTIONS WITH INTERNAL SPRING VIBRATION ISOLATION, PREMIUM EFFICIENCY (TEFC) MOTORS, WITH SERVICE LIGHTS IN FAN SECTIONS AND UNIT MOUNTED COMBINATION VFD/DISCONNECTS (SEE SPEC. SECTION 26 29 11). REFER TO CONTROLS DIAGRAMS FOR SEQUENCE OF OPERATION. THE UNIT SHALL BE COMPRISED OF THE FOLLOWING SECTIONS:

1. FILTER SECTION WITH FLAT FILTER
2. PREHEAT COIL MODULE
3. ACCESS MODULE
4. CHILLED WATER COIL MODULE
5. ACCESS MODULE
6. HOT WATER COIL MODULE
7. SUPPLY FAN MODULE WITH VFD & INLET AIRFLOW MEASURING STATION
8. DIFFUSER MODULE
9. FILTER MODULE WITH MERV 15 FILTERS
10. ACCESS MODULE
11. HUMIDIFIER MODULE
12. ACCESS MODULE
13. FILTER MODULE WITH MERV 8 FILTERS
14. REHEAT COIL MODULE
15. EXHAUST FAN MODULE WITH VFD & INLET AIRFLOW MEASURING STATION

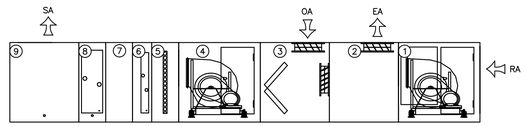


AIR HANDLING UNIT SCHEDULE

NO.	MANUFACTURER & MODEL	ELECTRICAL			SUPPLY FAN							RETURN FAN							HOT WATER COIL – 180° EWT									CHILLED WATER COIL – 42° EWT, 35% PROPYLENE GLYCOL									OA CFM	REMARKS
		V	PH	CY	CFM	HP	BHP	TYPE	ESP	TSP	RPM	CFM	HP	BHP	TYPE	ESP	TSP	RPM	MBH	GPM	WTD	EAT	LAT	APD	WPD	COIL F.V.	TYPE	MBH	GPM	WTR	EAT DB/WB	LAT DB/WB	APD	WPD	COIL F.V.	TYPE		
HVAC–2	TRANE MODEL PCC SIZE 12	480	3	60	5400	7.5	5.5	18" AF	2.5"	4.2"	1912	5400	3	2.6	15" AF	1.5"	1.75"	1419	234.3	15.6	30°	50°	90°	0.10"	1.62'	480 FPM	5W, 1 ROW, 120 FPF, PF–H, W/ TURBS	204.6	32.1	14°	80.0°/67.0°	55.0°/54.8°	0.66"	9.24'	439 FPM	UW, 8 ROW, 97 FPF, DF–E, W/ TURBS	1100	1
HV–1	TRANE MODEL PCC SIZE 12	480	3	60	6000	5	4.7	18" AF	2.0"	3.1"	1745	6000	5	3.2	18" AF	1.5"	1.8"	1509	260.3	17.3	30°	50°	90°	0.13"	1.90'	533 FPM	5W, 1 ROW, 129 FPF, PF–H, W/ TURBS	NO COIL									1500	2
HV–1A	TRANE MODEL PCC SIZE 6	480	3	60	2500	2	1.8	12" FC	2.0"	2.79"	1800	2500	1.5	1.2	12" FC	1.5"	1.75"	1899	108.5	7.2	30°	50°	90°	0.25"	1.26'	409 FPM	UA, 2 ROWS, 128 FPF, DF–E, NO TURBS	NO COIL									500	2

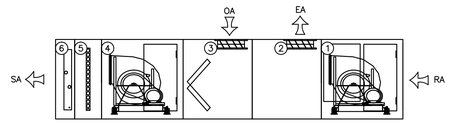
1 FURNISH UNIT WITH DOUBLE WALL INSULATED CONSTRUCTION, 8" SUPPORT RAILS, ULTRA–LOW LEAKAGE DAMPERS, FAN SECTIONS WITH INTERNAL SPRING VIBRATION ISOLATION, PREMIUM EFFICIENCY (E+3) MOTORS, SINGLE POINT ELECTRICAL CONNECTION WITH SERVICE LIGHTS IN FAN SECTIONS AND UNIT MOUNTED COMBINATION VFD/DISCONNECTS (SEE SPEC. SECTION 23 09 13). REFER TO CONTROLS DIAGRAMS FOR SEQUENCE OF OPERATION. THE UNIT SHALL BE COMPRISED OF THE FOLLOWING SECTIONS:

1. RETURN FAN MODULE WITH VFD & INLET AIRFLOW MEASURING STATION
2. AIR MIXING MODULE
3. AIR MIXING MODULE WITH TRAQ DAMPER AIRFLOW MEASURING STATION & MERV 8 FILTERS (2 SETS)
4. SUPPLY FAN MODULE WITH VFD & INLET AIRFLOW MEASURING STATION
5. DIFFUSER MODULE
6. HOT WATER MODULE
7. ACCESS SECTION
8. CHILLED WATER MODULE
9. SUPPLY PLENUM



2 FURNISH UNIT WITH DOUBLE WALL INSULATED CONSTRUCTION, 8" SUPPORT RAILS, ULTRA–LOW LEAKAGE DAMPERS, O.A. TRAQ DAMPER, FAN FLOW STATIONS, FAN SECTIONS WITH INTERNAL SPRING VIBRATION ISOLATION, PREMIUM EFFICIENCY (TEFC) MOTORS, SINGLE POINT ELECTRICAL CONNECTION WITH SERVICE LIGHTS IN FAN SECTIONS AND UNIT MOUNTED COMBINATION VFD/DISCONNECTS. REFER TO CONTROL DIAGRAMS FOR SEQUENCE OF OPERATION. THE UNIT SHALL BE COMPRISED OF THE FOLLOWING SECTIONS:

1. RETURN FAN MODULE WITH VFD & INLET AIRFLOW MEASURING STATION
2. AIR MIXING MODULE
3. AIR MIXING MODULE WITH TRAQ DAMPER AIRFLOW MEASURING STATION & MERV 8 FILTERS (2 SETS)
4. SUPPLY FAN MODULE WITH VFD & INLET AIRFLOW MEASURING STATION
5. DIFFUSER MODULE
6. HOT WATER MODULE



ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

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Drawing Title: MECHANICAL SCHEDULES

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
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Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B31 & B67

Drawing Number: M602

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Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

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VAV TERMINAL UNITS SEQUENCE OF OPERATION:
THE BMS SYSTEM WILL SEND THE CONTROLLER OCCUPIED AND UNOCCUPIED COMMANDS. THE BMS SYSTEM MAY ALSO SEND A HEAT/COOL MODE, PRIORITY SHUTDOWN COMMANDS, SPACE TEMPERATURE AND/OR SPACE TEMPERATURE SETPOINT. IF COMMUNICATION IS LOST WITH THE BMS SYSTEM, THE CONTROLLER WILL OPERATE USING ITS LOCAL SETPOINTS.

HEAT/COOL MODE:
THE HEAT/COOL MODE WILL BE SET BY A COMMUNICATED VALUE OR AUTOMATICALLY BY THE VAV. IN STANDALONE OR AUTO MODE THE VAV WILL COMPARE THE PRIMARY AIR TEMPERATURE WITH THE CONFIGURED AUTO CHANGEOVER SETPOINT TO DETERMINE IF THE AIR IS "HOT" OR "COLD". HEATING MODE WILL COMMAND THE VAV TO HEAT ONLY; IT IMPLIES THE PRIMARY AIR TEMPERATURE IS HOT. COOLING MODE COMMANDS THE VAV TO COOL ONLY; IT IMPLIES THE PRIMARY AIR TEMPERATURE IS COLD. A MINIMUM OF 4.0°F DEADBAND BETWEEN HEATING & COOLING SHALL BE PROVIDED.

HEAT/COOL SETPOINT:
THE SPACE TEMPERATURE SETPOINT WILL BE DETERMINED EITHER BY A LOCAL HARDWIRED SETPOINT, THE VAV DEFAULT SETPOINT OR A COMMUNICATED VALUE. THE VAV USES THE LOCALLY STORED DEFAULT SETPOINTS WHEN NEITHER A LOCAL HARDWIRED SETPOINT NOR COMMUNICATED SETPOINT IS PRESENT. IF BOTH A HARDWIRED SETPOINT AND COMMUNICATED SETPOINT EXIST, THE VAV WILL USE THE COMMUNICATED VALUE.

OCCUPANCY MODE:
THE OCCUPANCY MODE CAN BE COMMUNICATED OR HARDWIRED TO THE VAV VIA A BINARY INPUT. VALID OCCUPANCY MODES FOR THE VAV WILL BE:

OCCUPIED:
NORMAL OPERATING MODE FOR OCCUPIED SPACES OR DAYTIME OPERATION. WHEN THE UNIT IS IN THE OCCUPIED MODE THE VAV WILL MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE OCCUPIED HEATING OR COOLING SETPOINT. APPLICABLE VENTILATION AND AIRFLOW SETPOINTS WILL BE ENFORCED. THE OCCUPIED MODE WILL BE THE DEFAULT MODE OF THE VAV.

UNOCCUPIED:
NORMAL OPERATING MODE FOR UNOCCUPIED SPACES OR NIGHTTIME OPERATION. WHEN THE UNIT IS IN UNOCCUPIED MODE THE VAV WILL MAINTAIN THE SPACE TEMPERATURE AT THE STORED UNOCCUPIED HEATING OR COOLING SETPOINT REGARDLESS OF THE PRESENCE OF A HARDWIRED OR COMMUNICATED SETPOINT. WHEN THE SPACE TEMPERATURE EXCEEDS THE ACTIVE UNOCCUPIED SETPOINT THE VAV WILL MODULATE TO MIN. SETPOINT.

OCCUPIED BYPASS:
MODE USED TO TEMPORARILY PLACE THE UNIT INTO THE OCCUPIED OPERATION. TENANTS WILL BE ABLE TO OVERRIDE THE UNOCCUPIED MODE FROM THE SPACE SENSOR. THE OVERRIDE WILL LAST FOR A MAXIMUM OF 4 HOURS (ADJ.). DURING THE OVERRIDE THE UNIT WILL RUN IN OCCUPIED MODE.

COOLING MODE:
WHEN THE UNIT IS IN COOLING MODE, THE VAV WILL MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE COOLING SETPOINT BY MODULATING THE AIRFLOW BETWEEN THE ACTIVE COOLING MINIMUM AIRFLOW SETPOINT TO THE MAXIMUM COOLING AIRFLOW SETPOINT. BASED ON THE VAV OCCUPANCY MODE, THE ACTIVE COOLING SETPOINT WILL BE ONE OF THE FOLLOWING:

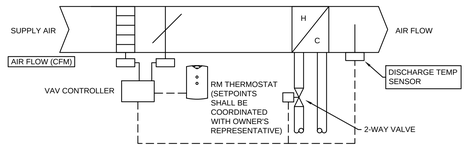
SETPOINT	DEFAULT VALUE
OCCUPIED COOLING SETPOINT	74°F (ADJ.)
UNOCCUPIED COOLING SETPOINT	85°F (ADJ.)
OCCUPIED MIN COOLING AIRFLOW SETPOINT	SEE VAV SCHEDULE
OCCUPIED MAX COOLING AIRFLOW SETPOINT	SEE VAV SCHEDULE

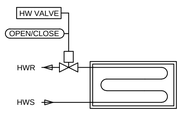
HEATING MODE:
WHEN THE UNIT IS IN HEATING MODE, THE CONTROLLER WILL MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE HEATING SETPOINT BY MODULATING THE AIRFLOW BETWEEN THE ACTIVE HEATING MINIMUM AIRFLOW SETPOINT TO THE MAXIMUM HEATING AIRFLOW SETPOINT. BASED ON THE CONTROLLER OCCUPANCY MODE, THE ACTIVE HEATING SETPOINT WILL BE ONE OF THE FOLLOWING:

SETPOINT	DEFAULT VALUE
OCCUPIED HEATING SETPOINT	68°F (ADJ.)
UNOCCUPIED HEATING SETPOINT	60°F (ADJ.)
OCCUPIED MIN HEATING AIRFLOW SETPOINT	SEE VAV SCHEDULE
OCCUPIED MAX HEATING AIRFLOW SETPOINT	SEE VAV SCHEDULE

REHEAT CONTROL:
THE REHEAT WILL BE ENABLED WHEN THE SPACE TEMPERATURE DROPS BELOW THE ACTIVE HEATING SETPOINT AND THE AIRFLOW IS IN THE MINIMUM AIRFLOW SETPOINT. DURING REHEAT THE VAV WILL OPERATE AT ITS MINIMUM HEATING AIRFLOW SETPOINT AND ENERGIZE THE HEAT AS FOLLOWS:

PROPORTIONAL HOT WATER REHEAT:
IF THE SPACE TEMPERATURE IS BELOW THE HEATING SETPOINT THE HOT WATER REHEAT VALVE WILL ACT AS FIRST STAGE OF HEAT AND MODULATE AS REQUIRED TO MAINTAIN THE ACTIVE HEATING SETPOINT. WITH MAXIMUM CONTRIBUTION FROM THE VAV AND INTEGRAL HOT WATER COIL, IF THE SPACE TEMPERATURE SHOULD CONTINUE TO DROP, THEN THE ASSOCIATED RADIANT PANELS (WHERE APPLICABLE) WILL OPEN/CLOSE AND ACT AS SECOND STAGE OF HEAT TO MAINTAIN SPACE TEMPERATURE. TRANSITION BETWEEN FIRST AND SECOND STAGE OF HEAT SHALL BE BASED ON TEMPERATURE DEVIATION FROM SETPOINT WITH APPROPRIATE DEADBANDS.



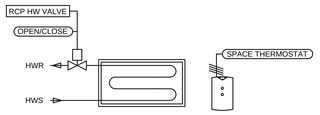


VAV WITH ASSOCIATED RADIATION CONTROLS
N.T.S.

UNASSOCIATED RADIATION SEQUENCE OF OPERATION:
THE UNIT WILL OPERATE BASED ON OCCUPANCY SCHEDULES AS SET FORTH BY THE BUILDING OWNER.

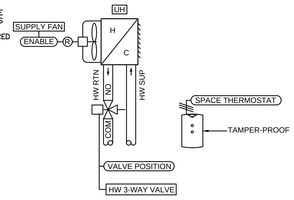
OCCUPIED:
WHEN THE SPACE TEMPERATURE FALLS BELOW SET POINT, THE HOT WATER CONTROL VALVE WILL OPEN AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SET POINT. WHEN THE SPACE TEMPERATURE IS SATISFIED, THE CONTROL VALVE WILL CLOSE.

UNOCCUPIED:
THE HOT WATER CONTROL VALVE WILL ONLY OPERATE IN THIS MODE AS REQUIRED TO MAINTAIN NIGHT SETBACK TEMPERATURE SET POINT. WHEN THE SPACE TEMPERATURE FALLS BELOW THE NIGHT SETBACK TEMPERATURE SET POINT, THE HOT WATER CONTROL VALVE WILL OPEN AS REQUIRED TO MAINTAIN NIGHT SETBACK TEMPERATURE SET POINT. WHEN THE NIGHT SETBACK TEMPERATURE SET POINT IS SATISFIED, THE CONTROL VALVE WILL CLOSE.

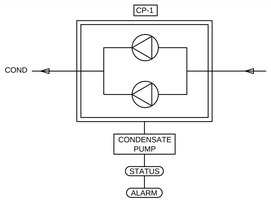


UNASSOCIATED RADIATION CONTROLS
N.T.S.

UNIT HEATERS SEQUENCE OF OPERATION:
THE UNIT SHALL ONLY OPERATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SET POINT. WHEN THE SPACE TEMPERATURE FALLS BELOW THE SET POINT, THE HOT WATER CONTROL VALVE SHALL MODULATE OPEN AND THE SUPPLY FAN WILL OPERATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SET POINT. WHEN THE TEMPERATURE SET POINT IS SATISFIED, THE CONTROL VALVE WILL CLOSE AND THE FAN WILL BE DISABLED.



UNIT HEATER CONTROLS DIAGRAM
N.T.S.

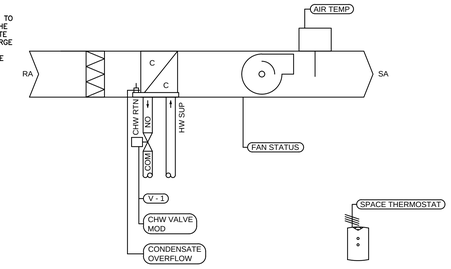


SEQUENCE OF OPERATION:

CONDENSATE PUMP
THE DUPLEX PUMP SYSTEM OPERATES PER ITS PACKAGED CONTROLS. STATUS AND FAILURE ALARM ARE MONITORED THROUGH THE OPERATOR WORKSTATION.

CONDENSATE PUMP CONTROLS DIAGRAM
N.T.S.

BLOWER COIL UNIT SEQUENCE OF OPERATION:
THE UNIT SHALL ONLY OPERATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SET POINT. THE CHILLED WATER CONTROL VALVE WILL MODULATE AS REQUIRED TO PROVIDE SUFFICIENT DISCHARGE AIR TEMPERATURE TO MAINTAIN SPACE TEMPERATURE SET POINT. SPACE TEMPERATURE SET POINT SHALL BE 80°F (ADJ.)

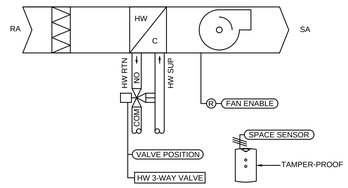


BLOWER COIL BC-1 CONTROLS DIAGRAM
N.T.S.

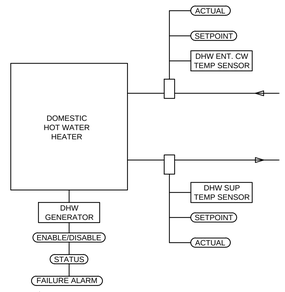
CABINET UNIT HEATERS SEQUENCE OF OPERATION:
THE UNIT WILL OPERATE BASED ON THE BUILDING OCCUPANCY SCHEDULES.

OCCUPIED:
WHEN THE SPACE TEMPERATURE FALLS BELOW SET POINT, THE HOT WATER CONTROL VALVE SHALL MODULATE OPEN AND THE SUPPLY FAN WILL OPERATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SET POINT. WHEN THE SPACE TEMPERATURE IS SATISFIED, THE CONTROL VALVE WILL CLOSE AND THE FAN WILL BE DISABLED.

UNOCCUPIED:
THE UNIT WILL ONLY OPERATE IN THIS MODE AS REQUIRED TO MAINTAIN NIGHT SETBACK TEMPERATURE SET POINT. WHEN THE SPACE TEMPERATURE FALLS BELOW THE NIGHT SETBACK TEMPERATURE SET POINT, THE HOT WATER CONTROL VALVE SHALL MODULATE OPEN AND THE SUPPLY FAN WILL OPERATE AS REQUIRED TO MAINTAIN NIGHT SETBACK TEMPERATURE SET POINT. WHEN THE NIGHT SETBACK TEMPERATURE SET POINT IS SATISFIED, THE CONTROL VALVE WILL CLOSE AND THE FAN WILL BE DISABLED.



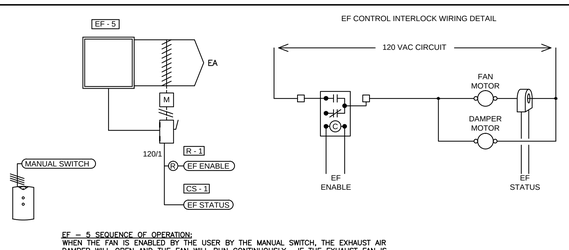
CABINET UNIT HEATER CONTROLS DIAGRAM
N.T.S.



SEQUENCE OF OPERATION:

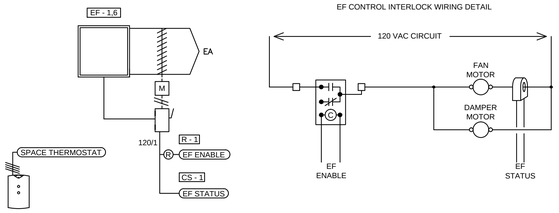
STEAM/DOMESTIC HOT WATER HEATER
HOT WATER HEATER OPERATES PER PACKAGED CONTROLS AND SAFETIES. LEAVING WATER TEMPERATURE ALARM IS MONITORED THROUGH THE OPERATOR WORKSTATION.

STEAM/DOMESTIC HOT WATER SYSTEM CONTROLS DIAGRAM
N.T.S.



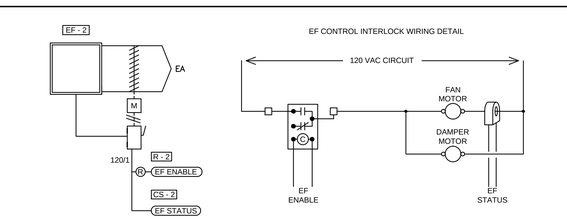
EF – 5 SEQUENCE OF OPERATION:
WHEN THE FAN IS ENABLED BY THE USER BY THE MANUAL SWITCH, THE EXHAUST AIR DAMPER WILL OPEN AND THE FAN WILL RUN CONTINUOUSLY. IF THE EXHAUST FAN IS ENABLED BUT STATUS IS NOT CONFIRMED AFTER A TIME DELAY, AN ALARM WILL BE INITIATED.

EF-5 CONTROLS DIAGRAM
N.T.S.



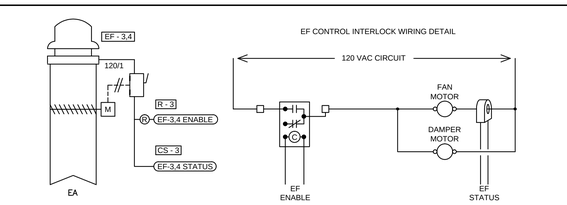
EF – 1,6 SEQUENCE OF OPERATION:
WHEN THE SPACE TEMPERATURE OF THE ROOM RISES ABOVE 80 DEG. F (ADJ.), THE EXHAUST AIR DAMPER WILL OPEN AND THE FAN WILL RUN CONTINUOUSLY. WHEN THE SPACE TEMPERATURE FALLS BELOW 80 DEG. F (ADJ.), THE EXHAUST FAN WILL BE DISABLED AND THE EXHAUST AIR DAMPER WILL CLOSE. IF THE EXHAUST FAN IS ENABLED BUT STATUS IS NOT CONFIRMED AFTER A TIME DELAY, AN ALARM WILL BE INITIATED.

EF-1,6 CONTROLS DIAGRAM
N.T.S.



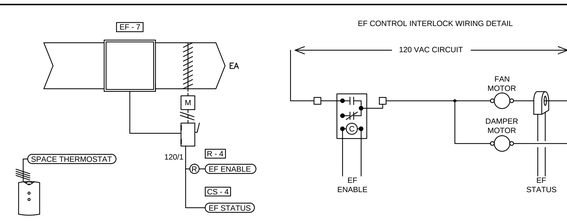
EF – 2 SEQUENCE OF OPERATION:
THE EXHAUST FAN WILL BE ENABLED AND DISABLED BASED ON OCCUPANCY SCHEDULES AS SET FORTH BY THE BUILDING OWNER. WHEN IN THE OCCUPIED MODE, THE EXHAUST AIR DAMPER WILL OPEN AND THE FAN WILL RUN CONTINUOUSLY. WHEN IN THE UNOCCUPIED MODE, THE EXHAUST FAN WILL BE DISABLED AND THE EXHAUST AIR DAMPER WILL CLOSE. IF THE EXHAUST FAN IS ENABLED BUT STATUS IS NOT CONFIRMED AFTER A TIME DELAY, AN ALARM WILL BE INITIATED.

EF-2 CONTROLS DIAGRAM
N.T.S.



EF – 3,4 SEQUENCE OF OPERATION:
THE EXHAUST FAN WILL BE ENABLED AND DISABLED BASED ON OCCUPANCY SCHEDULES AS SET FORTH BY THE BUILDING OWNER. WHEN IN THE OCCUPIED MODE, THE EXHAUST AIR DAMPER WILL OPEN AND THE FAN WILL RUN CONTINUOUSLY. WHEN IN THE UNOCCUPIED MODE, THE EXHAUST FAN WILL BE DISABLED AND THE EXHAUST AIR DAMPER WILL CLOSE. IF THE EXHAUST FAN IS ENABLED BUT STATUS IS NOT CONFIRMED AFTER A TIME DELAY, AN ALARM WILL BE INITIATED.

EF-3,4 CONTROLS DIAGRAM
N.T.S.



EF – 7 SEQUENCE OF OPERATION:
WHEN THE SPACE TEMPERATURE OF THE ROOM RISES ABOVE 80 DEG. F (ADJ.), THE EXHAUST AIR DAMPER WILL OPEN AND THE FAN WILL RUN CONTINUOUSLY. WHEN THE SPACE TEMPERATURE FALLS BELOW 80 DEG. F (ADJ.), THE EXHAUST FAN WILL BE DISABLED AND THE EXHAUST AIR DAMPER WILL CLOSE. IF THE EXHAUST FAN IS ENABLED BUT STATUS IS NOT CONFIRMED AFTER A TIME DELAY, AN ALARM WILL BE INITIATED.

EF-7 CONTROLS DIAGRAM
N.T.S.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

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Drawing Title: CONTROLS DIAGRAMS

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
P 802.295.9363 x5969
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Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B67
Drawing Number: M701
SHEET 24 OF 27

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

HVAC–1E SEQUENCE OF OPERATION:
HVAC – 1E IS PROVIDED WITH AN EXHAUST FAN, PREHEAT COIL, AND AIR FLOW MEASURING DEVICES PROVIDED AT THE EXHAUST FAN INLET. FURNISH UNIT WITH A UNITARY DDC CONTROLLER TO OPERATE AS DESCRIBED IN THE FOLLOWING PARAGRAPHS:

UNIT SHUTDOWN:
THE UNIT WILL NORMALLY OPERATE 24–HOURS PER DAY, 7–DAYS PER WEEK, WITH THE ABILITY TO BE DISABLED MANUALLY AT THE FRONT–END WORKSTATION, OR AUTOMATICALLY BY THE BMS SYSTEM IF AN ALARM CONDITION EXISTS. WHEN THE UNIT IS DISABLED, THE FOLLOWING WILL OCCUR:
A. EXHAUST FAN VFD WILL BE DISABLED.
B. NORMALLY–CLOSED, SPRING–RETURN, EXHAUST AIR DAMPER WILL CLOSE.
C. NORMALLY–OPEN, SPRING–RETURN, BUILDING EXHAUST AIR DAMPER WILL OPEN.
D. TWO–WAY, NORMALLY–OPEN, SPRING–RETURN, HOT WATER VALVE WILL POSITION TO MAINTAIN 60 DEG. F (ADJ.) MIXED AIR TEMPERATURE.

UNIT START–UP:
START–UP OF THE AIR HANDLER WILL BE ACCOMPLISHED MANUALLY THROUGH THE FRONT–END WORKSTATION. WHEN THE UNIT IS DISABLED ON A SAFETY ALARM OR LIMIT, THE UNIT MUST BE MANUALLY–RESET FOR OPERATION TO RESUME. WHEN THE UNIT IS ENABLED TO OPERATE, THE FOLLOWING WILL OCCUR:
DURING THE OCCUPIED CYCLE, THE EXHAUST FAN VFD WILL BE ENABLED AT MINIMUM SPEED, AND WILL GRADUALLY INCREASE SPEED AS DESCRIBED IN THE EXHAUST FAN SPEED CONTROL SECTION.

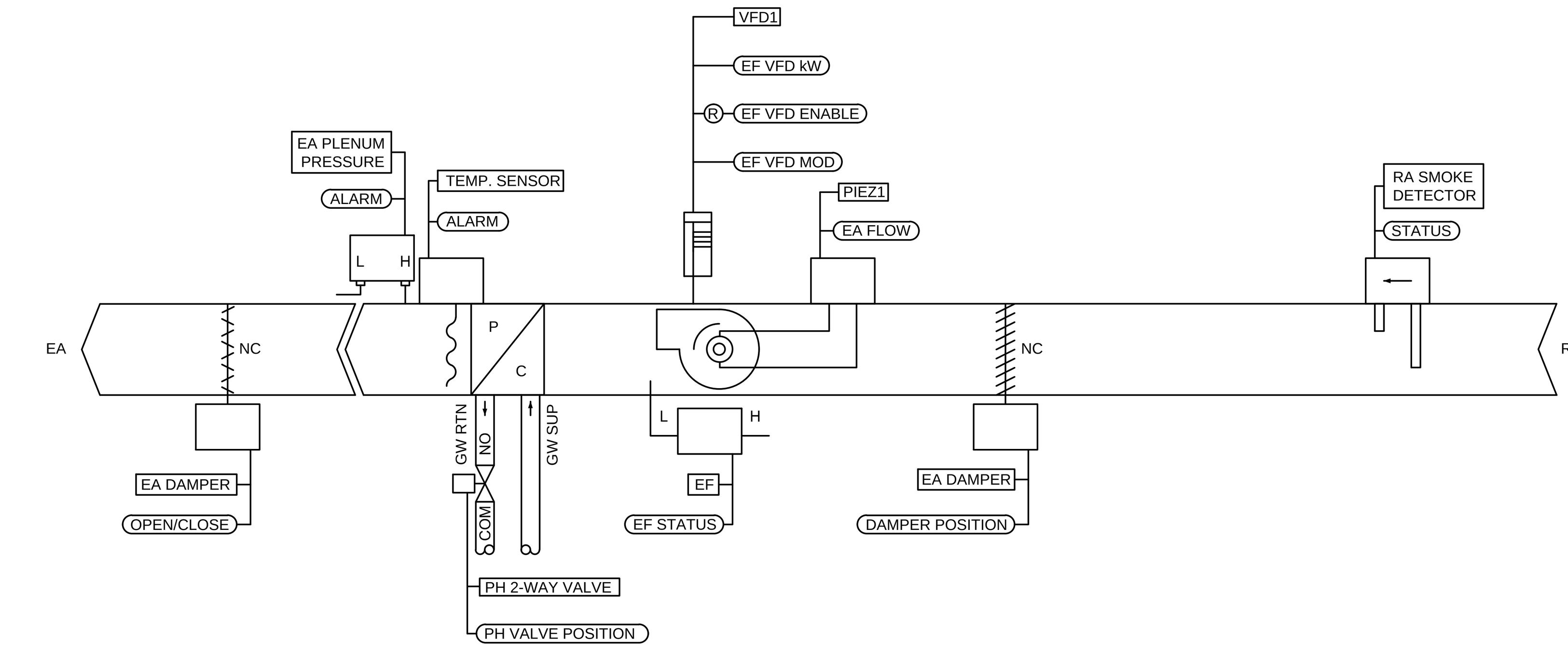
EXHAUST FAN SPEED CONTROL:
THE EXHAUST FAN WILL BE CONTROLLED TO MAINTAIN AN AIR QUANTITY EQUAL TO THE SUPPLY FAN MEASURED AIR QUANTITY MINUS 500 CFM.
IN THE EVENT OF FAILURE OF HVAC–1S FAN, THE EXHAUST FAN SHALL BE DISABLED.

FREEZE PROTECTION:
A FREEZESTAT WILL BE FACTORY–INSTALLED ON THE LEAVING SIDE OF THE HOT WATER COIL TO AUTOMATICALLY SHUTDOWN THE UNIT IF THE TEMPERATURE DROPS BELOW 38 DEG. F (ADJ.).
UPON ACTIVATION OF THE FREEZESTAT, AN ALARM WILL BE INDICATED AT THE FRONT–END WORKSTATION.

SMOKE DETECTORS:
SMOKE DETECTORS WILL BE FURNISHED BY THE ELECTRICAL CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR IN THE SUPPLY AND RETURN DUCTWORK WHERE SHOWN ON THE PLANS. POWER WIRING AND INTERCONNECTION OF THE SMOKE DETECTORS TO THE FIRE ALARM SYSTEM WILL BE DONE BY THE ELECTRICAL CONTRACTOR. THIS CONTRACTOR SHALL INSTALL LOW VOLTAGE WIRING BETWEEN THE SMOKE DETECTORS AND VFD'S TO AUTOMATICALLY SHUTDOWN THE UNIT UPON SENSING SMOKE BY ANY ASSOCIATED SMOKE DETECTOR. ADDITIONALLY, AN ALARM SHALL BE INDICATED AT THE FRONT–END WORKSTATION.

IF THE EXHAUST AIR PLENUM PRESSURE SENSOR SHOULD INDICATE A STATIC PRESSURE ABOVE 4.0ôW.C. (ADJ.), THE UNIT WILL AUTOMATICALLY SHUTDOWN AND AN ALARM SHALL BE INITIATED AT THE FRONT–END WORKSTATION.

A DIFFERENTIAL PRESSURE TRANSMITTER WILL MONITOR THE FILTER SECTION AND INDICATE A ŕDIRTY FILTERôALARM WHEN THE DIFFERENTIAL PRESSURE EXCEEDS THE MANUFACTURER'S RECOMMENDED SET POINT.



HVAC–1E AUTOMATIC TEMPERATURE CONTROLS

N.T.S.

HVAC–1S SEQUENCE OF OPERATION:
HVAC – 1S IS PROVIDED WITH A SUPPLY FAN, PREHEAT COIL, CHILLED WATER COOLING COIL, HOT WATER HEATING COIL, AND AIR FLOW MEASURING DEVICES PROVIDED AT THE OUTSIDE AIR INLET DAMPER &, SUPPLY FAN INLET. FURNISH UNIT WITH A UNITARY DDC CONTROLLER TO OPERATE AS DESCRIBED IN THE FOLLOWING PARAGRAPHS:

UNIT SHUTDOWN:
THE UNIT WILL NORMALLY OPERATE 24–HOURS PER DAY, 7–DAYS PER WEEK, WITH THE ABILITY TO BE DISABLED MANUALLY AT THE FRONT–END WORKSTATION, OR AUTOMATICALLY BY THE BMS SYSTEM IF AN ALARM CONDITION EXISTS. WHEN THE UNIT IS DISABLED, THE FOLLOWING WILL OCCUR:
A. SUPPLY FAN VFD WILL BE DISABLED.
B. NORMALLY–CLOSED, SPRING–RETURN, OUTSIDE AIR DAMPERS WILL CLOSE USING SWITCHES.
C. NORMALLY–CLOSED, SPRING–RETURN, EXHAUST AIR DAMPER WILL CLOSE USING SWITCHES..
D. TWO–WAY, NORMALLY–OPEN, SPRING–RETURN, HOT WATER VALVE WILL POSITION TO MAINTAIN 60 DEG. F (ADJ.) MIXED AIR TEMPERATURE.
E. THREE–WAY, NORMALLY–CLOSED, SPRING–RETURN, CHILLED WATER VALVE WILL CLOSE.

UNIT START–UP:
START–UP OF THE AIR HANDLER WILL BE ACCOMPLISHED MANUALLY THROUGH THE FRONT–END WORKSTATION. WHEN THE UNIT IS DISABLED ON A SAFETY ALARM OR LIMIT, THE UNIT MUST BE MANUALLY–RESET FOR OPERATION TO RESUME. WHEN THE UNIT IS ENABLED TO OPERATE, THE FOLLOWING WILL OCCUR:
A. DURING THE OCCUPIED CYCLE, THE SUPPLY FAN VFD WILL BE ENABLED AT MINIMUM SPEED, AND WILL GRADUALLY INCREASE SPEED AS DESCRIBED IN THE SUPPLY FAN SPEED CONTROL SECTION. THE OUTSIDE AIR DAMPER SHALL OPEN 100% SO THAT THE OA = SUPPLY FAN CFM.

SUPPLY AIR TEMPERATURE CONTROL:
THE UNIT WILL OPERATE TO MAINTAIN A SUPPLY AIR TEMPERATURE SET POINT. THE SUPPLY AIR TEMPERATURE SET POINT WILL BE RESET LINEARLY BASED ON OUTSIDE AIR TEMPERATURE SO THAT WHEN THE OUTSIDE AIR TEMPERATURE IS 70 DEG. F (ADJ.) THE SUPPLY AIR TEMPERATURE WILL BE 55 DEG. F (ADJ.), AND WHEN THE OUTSIDE AIR TEMPERATURE IS 40 DEG. F (ADJ.) THE SUPPLY AIR TEMPERATURE WILL 65 DEG. F (ADJ.).

A. IF THE ACTUAL SUPPLY AIR TEMPERATURE VARIES BY MORE THAN 2 DEG. F (ADJ.) FROM THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT FOR A PERIOD OF 5 MINUTES (ADJ.), AN ALARM WILL BE INDICATED AT THE FRONT–END WORKSTATION.
B. NOTE: CHILLED WATER VALVE SHALL NOT BE PERMITTED TO MODULATE UNLESS THE CHILLER IN ENABLED.

HUMIDIFIER CONTROL:
WHEN THE SUPPLY AIRFLOW IS PROVEN, THE STEAM HUMIDIFIER VALVE MODULATES TO MAINTAIN A RETURN AIR RELATIVE HUMIDITY SETPOINT OF 35% (ADJ.). ACCOMPLISHED BY CASCADING PID CONTROL LOOP AS FOLLOWS:
A. BASED ON DEVIATION OF RETURN AIR RH FROM RA RH SETPOINT, THE 1ST PID LOOP GENERATES A SUPPLY AIR RH SETPOINT COMMAND, WHERE THE SUPPLY AIR RH SETPOINT IS NO GREATER THAN 85% RH (ADJ.).
B. BASED ON DEVIATION OF ACTUAL SUPPLY AIR RH FROM SETPOINT GENERATED BY THE 1ST PID LOOP, THE 2ND PID LOOP GENERATES A SETPOINT FOR THE POSITION OF THE HUMIDIFIER VALVE AND MODULATE ACCORDINGLY.
C. THE HUMIDIFIER IS DISABLED IF THE HUMIDITY AT THE HIGH–LIMIT HUMIDITY SENSOR RISES ABOVE 90% (ADJ.) OR IS AIRFLOW IS NOT PROVEN.
D. IF THE CHILLED WATER COIL VALVE IS OPEN, THE HUMIDIFIER SHALL BE DISABLED.

SUPPLY FAN SPEED CONTROL:
THE SPEED OF THE SUPPLY FAN WILL BE CONTROLLED TO MAINTAIN A DEFAULT STATIC PRESSURE OF 1.0ôW.C. (ADJ.) AT A LOCATION IN THE DUCTWORK. SEE DRAWINGS FOR LOCATION. WHENEVER POSSIBLE, THE DUCT STATIC PRESSURE SET POINT WILL BE REDUCED TO MINIMIZE FAN POWER AND MAXIMIZE ENERGY SAVINGS. THIS WILL BE ACCOMPLISHED AS FOLLOWS:
A. THE DDC SYSTEM WILL SURVEY THE DAMPER POSITIONS OF ALL VAV TERMINALS DOWNSTREAM. IF ALL VAV DAMPERS ARE LESS THAN 90% (ADJ.) OPEN, THEN THE DUCT STATIC PRESSURE SET POINT WILL BE REDUCED AT A RATE OF 0.1ôW.C. EVERY 5 MINUTES (ADJ.) UNTIL ONE VAV DAMPER HAS OPENED GREATER THAN 90% (ADJ.) OR UNTIL THE SUPPLY FAN VFD HAS REACHED A PREDETERMINED MINIMUM SPEED COMMAND. MINIMUM SPEED COMMAND WILL INITIALLY BE SET TO 20% OF MAXIMUM SPEED.
B. CONVERSELY, IF ANY VAV DAMPER HAS MODULATED TO 95% (ADJ.) OPEN OR GREATER, THEN THE SUPPLY DUCT STATIC PRESSURE SET POINT WILL BE INCREASED AT A RATE OF 0.1ôW.C. EVERY MINUTE (ADJ.) UNTIL ALL VAV DAMPERS HAVE MODULATED TO LESS THAN 95% OPEN, OR THE SUPPLY FAN VFD SPEED COMMAND HAS REACHED MAXIMUM (60HZ).
C. UPON A LOSS OF COMMUNICATIONS WITH THE VAV TERMINALS, THE SUPPLY FAN SPEED WILL BE CONTROLLED TO MAINTAIN THE DEFAULT STATIC PRESSURE SET POINT.
D. IN THE EVENT OF FAILURE OF HVAC–1E FAN, THE SUPPLY FAN SHALL BE DISABLED.
E. SEQUENCE SHALL BE CONFIGURED SO THE USER CAN RESET THE SEQUENCE TO IGNORE A ROGUE TERMINAL.

ENERGY RECOVERY:
AS PREHEAT COIL AIR TEMPERATURE FALLS BELOW SET POINT, <60 DEG. F (OWNER ADJ.), THE HEAT RECOVERY PUMP WILL BE ENABLED TO EXCHANGE EXHAUST AIR ENERGY TO OUTSIDE AIR INTAKE ENERGY. CONVERSELY, IF ENTERING AIR TEMPERATURE IS >60 DEG. F, THE PUMP WILL BE DISABLED.

GLYCOL WATER LOOP PUMP CONTROL
THE LEAD PUMP IS SELECTED THROUGH THE BMS. ON FAILURE OF THE LEAD PUMP, THE LAG PUMP IS STARTED AND AN ALARM IS SET.

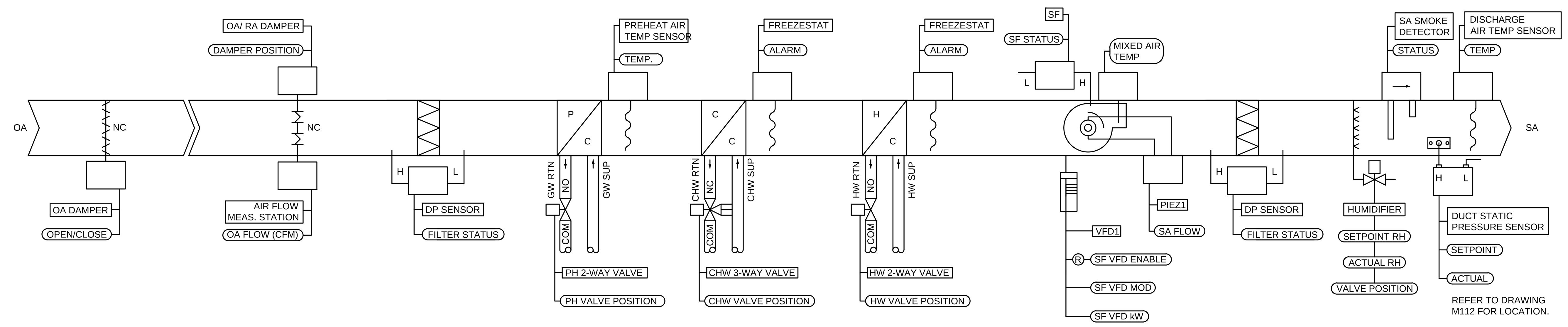
FREEZE PROTECTION:
A FREEZESTAT WILL BE FACTORY–INSTALLED ON THE LEAVING SIDE OF THE HOT WATER COIL TO AUTOMATICALLY SHUTDOWN THE UNIT IF THE TEMPERATURE DROPS BELOW 38 DEG. F (ADJ.).
UPON ACTIVATION OF THE FREEZESTAT, AN ALARM WILL BE INDICATED AT THE FRONT–END WORKSTATION.

SMOKE DETECTORS:
SMOKE DETECTORS WILL BE FURNISHED BY THE ELECTRICAL CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR IN THE SUPPLY AND RETURN DUCTWORK WHERE SHOWN ON THE PLANS. POWER WIRING AND INTERCONNECTION OF THE SMOKE DETECTORS TO THE FIRE ALARM SYSTEM WILL BE DONE BY THE ELECTRICAL CONTRACTOR. THIS CONTRACTOR SHALL INSTALL LOW VOLTAGE WIRING BETWEEN THE SMOKE DETECTORS AND VFD'S TO AUTOMATICALLY SHUTDOWN THE UNIT UPON SENSING SMOKE BY ANY ASSOCIATED SMOKE DETECTOR. ADDITIONALLY, AN ALARM SHALL BE INDICATED AT THE FRONT–END WORKSTATION.

IF THE EXHAUST AIR PLENUM PRESSURE SENSOR SHOULD INDICATE A STATIC PRESSURE ABOVE 4.0ôW.C. (ADJ.), THE UNIT WILL AUTOMATICALLY SHUTDOWN AND AN ALARM SHALL BE INITIATED AT THE FRONT–END WORKSTATION.

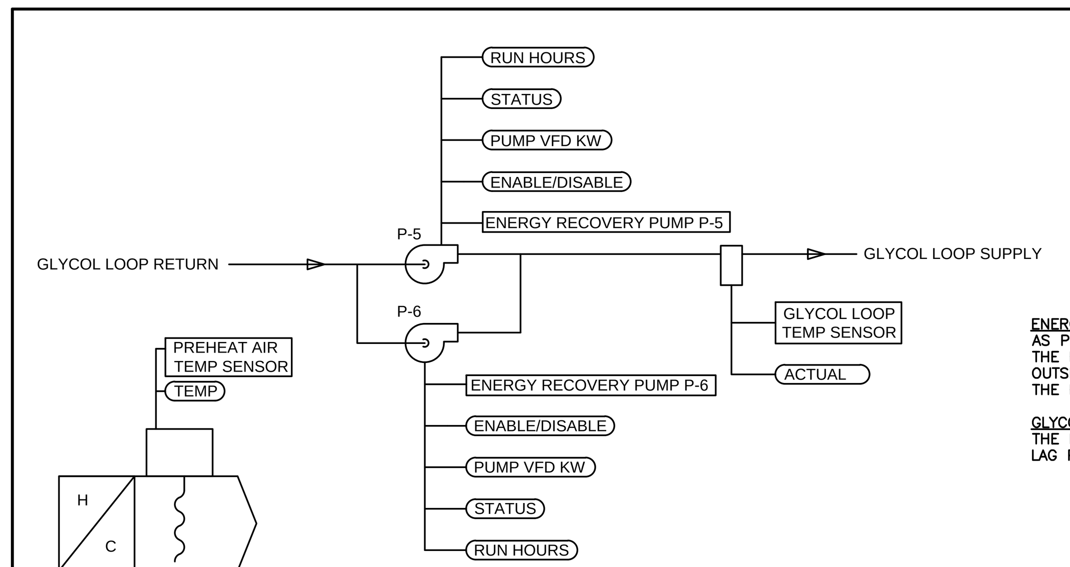
IF THE SUPPLY AIR DUCT STATIC PRESSURE SENSOR SHOULD INDICATE A STATIC PRESSURE ABOVE 4.0ôW.C. (ADJ.), THE UNIT WILL AUTOMATICALLY SHUTDOWN AND AN ALARM SHALL BE INITIATED AT THE FRONT–END WORKSTATION.

A DIFFERENTIAL PRESSURE TRANSMITTER WILL MONITOR THE FILTER SECTION AND INDICATE A ŕDIRTY FILTERôALARM WHEN THE DIFFERENTIAL PRESSURE EXCEEDS THE MANUFACTURER'S RECOMMENDED SET POINT.



HVAC–1S AUTOMATIC TEMPERATURE CONTROLS

N.T.S.



ENERGY RECOVERY GLYCOL WATER LOOP SEQUENCE OF OPERATION:
AS PREHEAT COIL AIR TEMPERATURE FALLS BELOW SET POINT, <60 DEG. F (OWNER ADJ.), THE HEAT RECOVERY PUMP WILL BE ENABLED TO EXCHANGE EXHAUST AIR ENERGY TO OUTSIDE AIR INTAKE ENERGY. CONVERSELY, IF ENTERING AIR TEMPERATURE IS >60 DEG. F, THE PUMP WILL BE DISABLED.

GLYCOL WATER LOOP PUMP CONTROL
THE LEAD PUMP IS SELECTED THROUGH THE BMS. ON FAILURE OF THE LEAD PUMP, THE LAG PUMP IS STARTED AND AN ALARM IS SET.

GLYCOL ENERGY RECOVERY LOOP FOR HVAC–1 CONTROLS DIAGRAM

N.T.S.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

ADDENDUM #1 CLARIFICATIONS	08/1/2012
REVISIONS:	DATE

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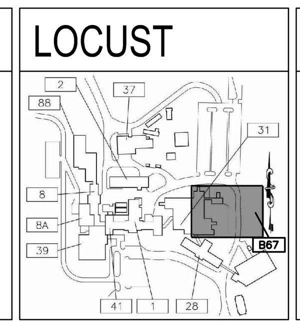

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Drawing Title: HVAC-1E AND HVAC-1S AUTOMATIC TEMPERATURE CONTROLS

Approved: Project Director
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Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304

Building Number: B67

Drawing Number: M702

SHEET 25 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

Dwg: 10V28ME M701–3 JUNK.dwg, Tab: M702, User: Rgrammo

HVAC–2 SEQUENCE OF OPERATION:
HVAC – 2 IS PROVIDED WITH A SUPPLY FAN, EXHAUST FAN, CHILLED WATER COOLING COIL, HOT WATER HEATING COIL, AND AIR FLOW MEASURING DEVICES PROVIDED AT THE OUTSIDE AIR INLET DAMPERS, SUPPLY FAN INLET, AND EXHAUST FAN INLET. FURNISH UNIT WITH A UNITARY DDC CONTROLLER TO OPERATE AS DESCRIBED IN THE FOLLOWING PARAGRAPHS:

UNIT SHUTDOWN:
THE UNIT WILL NORMALLY OPERATE 24–HOURS PER DAY, 7–DAYS PER WEEK, WITH THE ABILITY TO BE DISABLED MANUALLY AT THE FRONT–END WORKSTATION, OR AUTOMATICALLY BY THE BMS SYSTEM IF AN ALARM CONDITION EXISTS. WHEN THE UNIT IS DISABLED, THE FOLLOWING WILL OCCUR:
A. SUPPLY AND EXHAUST FAN VFD'S WILL BE DISABLED.
B. NORMALLY–CLOSED, SPRING–RETURN, OUTSIDE AIR DAMPERS WILL CLOSE.
C. NORMALLY–CLOSED, SPRING–RETURN, EXHAUST AIR DAMPER WILL CLOSE.
D. NORMALLY–OPEN, SPRING–RETURN, RETURN AIR DAMPER WILL OPEN.
E. TWO–WAY, NORMALLY–OPEN, SPRING–RETURN, HOT WATER VALVE WILL POSITION TO MAINTAIN 60 DEG. F (ADJ.) MIXED AIR TEMPERATURE.
F. THREE–WAY, NORMALLY–CLOSED, SPRING–RETURN, CHILLED WATER VALVE WILL CLOSE.

UNIT START–UP:
START–UP OF THE AIR HANDLER WILL BE ACCOMPLISHED MANUALLY THROUGH THE FRONT–END WORKSTATION. WHEN THE UNIT IS DISABLED ON A SAFETY ALARM OR LIMIT, THE UNIT MUST BE MANUALLY–RESET FOR OPERATION TO RESUME. WHEN THE UNIT IS ENABLED TO OPERATE, THE FOLLOWING WILL OCCUR:
A. DURING THE OCCUPIED CYCLE, THE SUPPLY FAN VFD WILL BE ENABLED AT MINIMUM SPEED, AND WILL GRADUALLY INCREASE SPEED AS DESCRIBED IN THE SUPPLY FAN SPEED CONTROL SECTION. THE EXHAUST AIR DAMPER WILL OPEN, AND THE EXHAUST FAN VFD WILL BE ENABLED AT MINIMUM SPEED, AND WILL GRADUALLY INCREASE SPEED AS DESCRIBED IN THE EXHAUST FAN SPEED CONTROL SECTION.
B. ONCE THE SUPPLY AND EXHAUST FAN VFD'S ARE UP TO SPEED, THE OUTSIDE AIR DAMPER WILL MODULATE OPEN AND THE RETURN AIR DAMPER WILL MODULATE CLOSED (IN UNIFORM) UNTIL THE OUTSIDE AIR QUANTITY EQUALS 25% OF THE SUPPLY AIR CFM FOR THE FIRST 15 MINUTES OF OPERATION, AFTER WHICH THE OUTSIDE AIR WILL BE THE VALUE CALCULATED BY THE VENTILATION OPTIMIZATION SEQUENCE OR GREATER IF IN ECONOMIZER MODE. TOTAL SUPPLY AIR QUANTITY WILL BE MEASURED AT THE SUPPLY FAN INLET AIRFLOW MEASURING DEVICE.
C. IN THE ABSENCE OF, OR UPON THE LOSS OF AIRFLOW MEASUREMENT FROM EITHER THE OUTSIDE AIR OR SUPPLY FAN AIRFLOW STATIONS, THE O.A./R.A. DAMPERS WILL POSITION TO A DEFAULT MINIMUM POSITION OF 25%/ 75% OPEN (ADJ.), AND AN ALARM WILL BE INDICATED AT THE FRONT–END WORKSTATION.

SUPPLY AIR TEMPERATURE CONTROL:
THE UNIT WILL OPERATE TO MAINTAIN A SUPPLY AIR TEMPERATURE SET POINT. THE SUPPLY AIR TEMPERATURE SET POINT WILL BE RESET LINEARLY BASED ON OUTSIDE AIR TEMPERATURE SO THAT WHEN THE OUTSIDE AIR TEMPERATURE IS 70 DEG. F (ADJ.) THE SUPPLY AIR TEMPERATURE WILL BE 55 DEG. F (ADJ.), AND WHEN THE OUTSIDE AIR TEMPERATURE IS 40 DEG. F (ADJ.) THE SUPPLY AIR TEMPERATURE WILL 65 DEG. F (ADJ.).

A. THE BMS SYSTEM WILL SURVEY THE ACTUAL DAMPER POSITIONS OF EACH VAV TERMINAL. IF THE MOST OPEN VAV DAMPER IS GREATER THAN 90% THEN THE SUPPLY AIR TEMPERATURE SET POINT WILL BE DECREASED UNTIL ONE ZONE APPROACHES ‹MAXIMUM COOLING›.
B. COOLING: IF THE ACTUAL SUPPLY AIR TEMPERATURE RISES ABOVE THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT, THEN COOLING WILL BE ACHIEVED BY MECHANICAL MEANS (CHILLED WATER) AND/ OR OUTSIDE AIR ECONOMIZER, AS DICTATED BY DIFFERENTIAL ENTHALPY CONTROL LOGIC. THE ECONOMIZER MODE WILL BE ENABLED WHENEVER COOLING IS REQUIRED AND THE ENTHALPY OF THE OUTSIDE AIR IS LESS THAN THE ENTHALPY OF THE RETURN AIR. THE HOT WATER CONTROL VALVE WILL BE CLOSED WHEN THE UNIT IS OPERATING IN THE COOLING MODE.
1) WHEN THE ECONOMIZER MODE IS ENABLED, THE OUTSIDE AIR DAMPER WILL MODULATE BEYOND THE MINIMUM POSITION (UP TO 100% OPEN), AND THE RETURN AIR DAMPER WILL MODULATE CLOSED SIMULTANEOUSLY (UP TO 100% CLOSED) AS REQUIRED TO MAINTAIN THE ACTUAL SUPPLY AIR TEMPERATURE SET POINT TO THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT. WHEN IN THE ECONOMIZER MODE, IF THE OUTSIDE AIR DAMPER IS 100% OPEN AND THE RETURN AIR DAMPER IS 100% CLOSED, AND THE SUPPLY AIR TEMPERATURE IS STILL GREATER THAN THE CALCULATED EQUAL TO THE CALCULATED OPTIMUM SET POINT.
2) IF THE ECONOMIZER MODE IS NOT ENABLED, THEN THE OUTSIDE AIR AND RETURN AIR DAMPERS WILL POSITION TO DELIVER THE MINIMUM OUTSIDE AIR QUANTITY AS DESCRIBED ABOVE (3 B.). AND THE CHILLED WATER COIL CONTROL VALVE WILL MODULATE OPEN AS REQUIRED TO MAINTAIN THE ACTUAL SUPPLY AIR TEMPERATURE EQUAL TO THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT.
D. HEATING: IF THE ACTUAL SUPPLY AIR TEMPERATURE DROPS BELOW THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT DUE TO COLD OUTSIDE AIR, THEN THE HOT WATER CONTROL VALVE WILL MODULATE OPEN AS REQUIRED TO MAINTAIN SET POINT. THE CHILLED WATER CONTROL VALVE WILL REMAIN CLOSED WHEN THE UNIT IS OPERATING IN THE HEATING MODE, AND THE OUTSIDE AIR DAMPER WILL BE AT MINIMUM POSITION.
E. RELATIVE HUMIDITY OVERRIDE: IF THE RELATIVE HUMIDITY OF THE RETURN AIR RISES ABOVE 55% (ADJ.) AS MEASURED UPSTREAM OF THE RETURN FAN, THE SUPPLY AIR TEMPERATURE SET POINT WILL BE RESET TO 55 DEG. F (ADJ.). RELATIVE HUMIDITY OVERRIDE WILL BE DISABLED, AND ‹NORMAL›SUPPLY AIR TEMPERATURE RESET CONTROL WILL RESUME, WHEN THE RELATIVE HUMIDITY OF THE RETURN
F. IF THE ACTUAL SUPPLY AIR TEMPERATURE VARIES BY MORE THAN 2 DEG. F (ADJ.) FROM THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT FOR A PERIOD OF 5 MINUTES (ADJ.), AN ALARM WILL BE INDICATED AT THE FRONT–END WORKSTATION.

SUPPLY FAN SPEED CONTROL:
THE SPEED OF THE SUPPLY FAN WILL BE CONTROLLED TO MAINTAIN A DEFAULT STATIC PRESSURE OF 1.0›W.C. (ADJ.) AT A LOCATION IN THE DUCTWORK. SEE DRAWINGS FOR LOCATION. WHENEVER POSSIBLE, THE DUCT STATIC PRESSURE SET POINT WILL BE REDUCED TO MINIMIZE FAN POWER AND MAXIMIZE ENERGY SAVINGS. THIS WILL BE ACCOMPLISHED AS FOLLOWS:
A. THE DDC SYSTEM WILL SURVEY THE DAMPER POSITIONS OF ALL VAV TERMINALS DOWNSTREAM. IF ALL VAV DAMPERS ARE LESS THAN 90% (ADJ.) OPEN, THEN THE DUCT STATIC PRESSURE SET POINT WILL BE REDUCED AT A RATE OF 0.1›W.C. EVERY 5 MINUTES (ADJ.) UNTIL ONE VAV DAMPER HAS OPENED GREATER THAN 90% (ADJ.) OR UNTIL THE SUPPLY FAN VFD HAS REACHED A PREDETERMINED MINIMUM SPEED COMMAND. MINIMUM SPEED COMMAND WILL INITIALLY BE SET TO 20% OF MAXIMUM SPEED.
B. CONVERSELY, IF ANY VAV DAMPER HAS MODULATED TO 95% (ADJ.) OPEN OR GREATER, THEN THE SUPPLY DUCT STATIC PRESSURE SET POINT WILL BE INCREASED AT A RATE OF 0.1›W.C. EVERY MINUTE (ADJ.) UNTIL ALL VAV DAMPERS HAVE MODULATED TO LESS THAN 95% OPEN, OR THE SUPPLY FAN VFD SPEED COMMAND HAS REACHED MAXIMUM (60HZ).
C. UPON A LOSS OF COMMUNICATIONS WITH THE VAV TERMINALS, THE SUPPLY FAN SPEED WILL BE CONTROLLED TO MAINTAIN THE DEFAULT STATIC PRESSURE SET POINT.

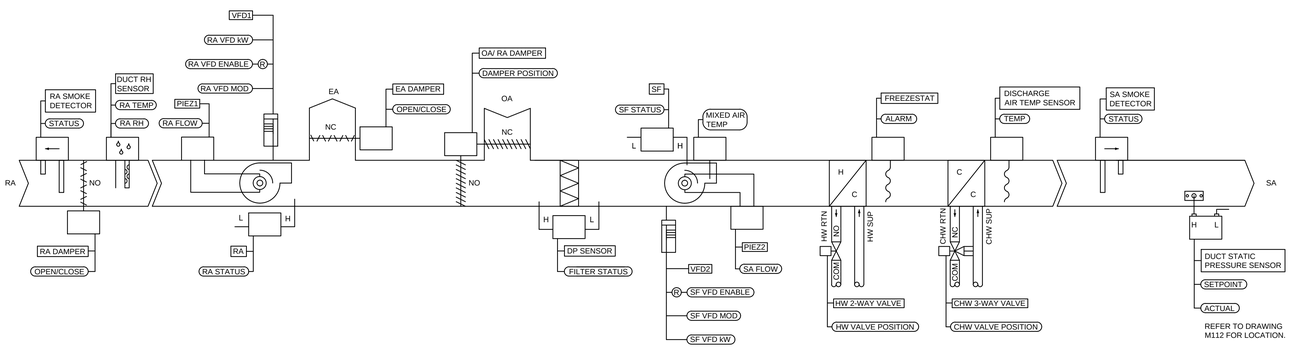
RETURN FAN SPEED CONTROL:
THE RETURN FAN WILL BE FURNISHED WITH AN INLET AIRFLOW MEASURING DEVICE. THE FAN WILL MODULATE TO MAINTAIN THE MEASURED RETURN AIR QUANTITY EQUAL TO THE MEASURED OUTSIDE AIR QUANTITY MINUS A ‹GENERAL EXHAUST OFFSET›EQUAL TO 500 CFM (ADJ.). THAT IS, E.A. CFM = O.A. CFM – 500, BUT NOT LESS THAN 0 CFM. IN THE ABSENCE OF AIRFLOW FROM EITHER MEASUREMENT DEVICE, THE RETURN FAN WILL TRACK THE OUTSIDE AIR DAMPER COMMANDED POSITION MINUS 15%.

FREEZE PROTECTION:
A FREEZESTAT WILL BE FACTORY–INSTALLED ON THE LEAVING SIDE OF THE HOT WATER COIL TO AUTOMATICALLY SHUTDOWN THE UNIT IF THE TEMPERATURE DROPS BELOW 38 DEG. F (ADJ.). UPON ACTIVATION OF THE FREEZESTAT, AN ALARM WILL BE INDICATED AT THE FRONT–END WORKSTATION.

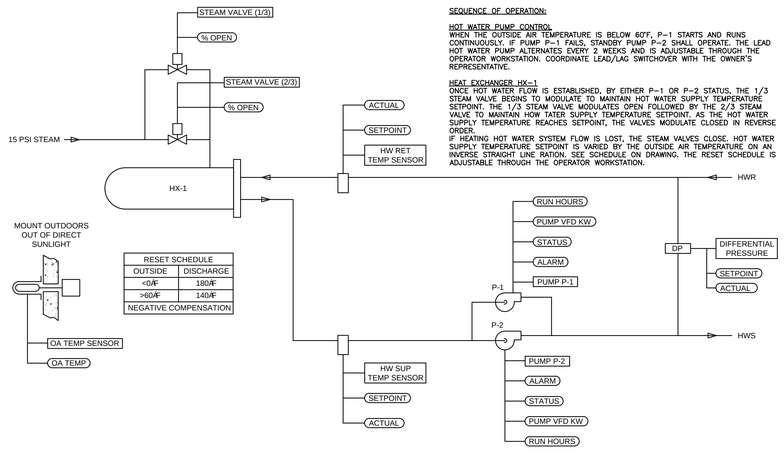
SMOKE DETECTORS:
SMOKE DETECTORS WILL BE FURNISHED BY THE ELECTRICAL CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR IN THE SUPPLY AND RETURN DUCTWORK WHERE SHOWN ON THE PLANS. POWER WIRING AND INTERCONNECTION OF THE SMOKE DETECTORS TO THE FIRE ALARM SYSTEM WILL BE DONE BY THE ELECTRICAL CONTRACTOR. THIS CONTRACTOR SHALL INSTALL LOW VOLTAGE WIRING BETWEEN THE SMOKE DETECTORS AND VFD'S TO AUTOMATICALLY SHUTDOWN THE UNIT UPON SENSING SMOKE BY ANY ASSOCIATED SMOKE DETECTOR. ADDITIONALLY, AN ALARM SHALL BE INDICATED AT THE FRONT–END WORKSTATION.

IF THE SUPPLY AIR DUCT STATIC PRESSURE SENSOR SHOULD INDICATE A STATIC PRESSURE ABOVE 4.0›W.C. (ADJ.), THE UNIT WILL AUTOMATICALLY SHUTDOWN AND AN ALARM SHALL BE INITIATED AT THE FRONT–END WORKSTATION.

A DIFFERENTIAL PRESSURE TRANSMITTER WILL MONITOR THE FILTER SECTION AND INDICATE A ‹DIRTY FILTER›ALARM WHEN THE DIFFERENTIAL PRESSURE EXCEEDS THE MANUFACTURER'S RECOMMENDED SET POINT.



HVAC–2 AUTOMATIC TEMPERATURE CONTROLS
N.T.S.



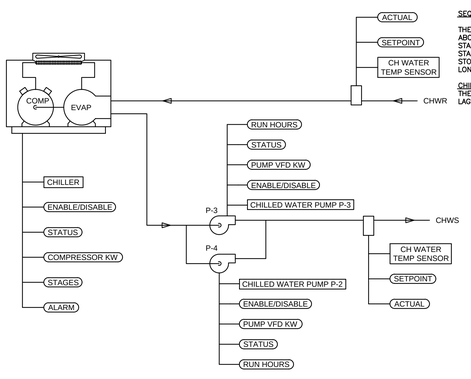
RESET SCHEDULE	
OUTSIDE	DISCHARGE
<0ÆF	180ÆF
>60ÆF	140ÆF
NEGATIVE COMPENSATION	

SEQUENCE OF OPERATION:

HOT WATER PUMP CONTROL
WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 60'F, P–1 OR P–2 STARTS AND RUNS CONTINUOUSLY. IF PUMP P–1 FAILS, STANDBY PUMP P–2 SHALL OPERATE. THE LEAD HOT WATER PUMP ALTERNATES EVERY 2 WEEKS AND IS ADJUSTABLE THROUGH THE OPERATOR WORKSTATION. COORDINATE LEAD/LAG SWITCHOVER WITH THE OWNER'S REPRESENTATIVE.

HEAT EXCHANGER HX–1
ONCE HOT WATER FLOW IS ESTABLISHED, BY EITHER P–1 OR P–2 STATUS, THE 1/3 STEAM VALVE BEGINS TO MODULATE TO MAINTAIN HOT WATER SUPPLY TEMPERATURE SETPOINT. THE 1/3 STEAM VALVE MODULATES OPEN FOLLOWED BY THE 2/3 STEAM VALVE TO MAINTAIN HOW TATER SUPPLY TEMPERATURE SETPOINT. AS THE HOT WATER SUPPLY TEMPERATURE REACHES SETPOINT, THE VALVES MODULATE CLOSED IN REVERSE ORDER.
IF HEATING HOT WATER SYSTEM FLOW IS LOST, THE STEAM VALVES CLOSE. HOT WATER SUPPLY TEMPERATURE SETPOINT IS VARIED BY THE OUTSIDE AIR TEMPERATURE ON AN INVERSE STRAIGHT LINE RATION. SEE SCHEDULE ON DRAWING. THE RESET SCHEDULE IS ADJUSTABLE THROUGH THE OPERATOR WORKSTATION.

HOT WATER SYSTEM CONTROLS DIAGRAM
N.T.S.

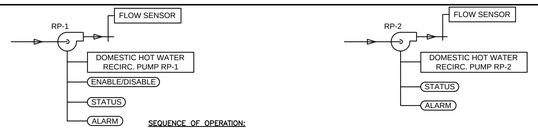


SEQUENCE OF OPERATION:

THE SYSTEM IS ENABLED THROUGH THE BMS. ON A RISE IN OUTSIDE AIR TEMPERATURE ABOVE SETPOINT (60'F) AND ON DEMAND ON COOLING, THE CHILLED WATER SYSTEM STARTED. THE LEAD PUMP IS STARTED AND UPON PROOF OF FLOW STATUS, THE CHILLER IS STARTED. THE LEAD PUMP RUNS FOR AN ADDITIONAL 90 SECONDS AFTER THE CHILLER IS STOPPED. THE CHILLER FACTORY CONTROL POINTS SHALL BE MONITORED BY THE BMS VIA LON OR BACNET.

CHILLED WATER PUMP CONTROL
THE LEAD PUMP IS SELECTED THROUGH THE BMS. ON A FAILURE OF THE LEAD PUMP, THE LAG PUMP IS STARTED AND AN ALARM IS SET.

CHILLED WATER SYSTEM CONTROLS DIAGRAM
N.T.S.



SEQUENCE OF OPERATION:

THE DHW RECIRCULATION PUMP SHALL OPERATE CONTINUOUSLY 24/7.
UPON DETECTION OF NO FLOW FROM FLOW SENSOR SHALL SEND ALARM TO B.M.S.

DHW RECIRC. PUMP CONTROLS DIAGRAM
N.T.S.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012

FULLY SPRINKLERED

REVISIONS:	DATE
ADDENDUM #1 CLARIFICATIONS	08/1/2012

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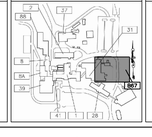

KEY

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Drawing Title: HVAC–2 AUTOMATIC TEMPERATURE CONTROLS AND CONTROLS DIAGRAMS

Approved: Project Director
Timothy Adams, Facilities Management Service
U.S. Department of Veterans Affairs
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Job Name: Sterile Processing & Distribution Center

Job Location: 215 North Main Street, White River Junction, VT 05009

Date: 06/24/2011 | Drawn By: WRG | Checked By: JDV/MDW

Project Number: 405-304
Building Number: B67
Drawing Number: M703
SHEET 26 OF 27

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

HV-1 SEQUENCE OF OPERATION:
HV-1 IS PROVIDED WITH A SUPPLY FAN, EXHAUST FAN, CHILLED WATER COOLING COIL, HOT WATER HEATING COIL, AND AIR FLOW MEASURING DEVICES PROVIDED AT THE OUTSIDE AIR INLET DAMPERS, SUPPLY FAN INLET, AND EXHAUST FAN INLET. FURNISH UNIT WITH A UNITARY DDC CONTROLLER TO OPERATE AS DESCRIBED IN THE FOLLOWING PARAGRAPHS:

UNIT SHUTDOWN:
THE UNIT WILL NORMALLY OPERATE 24-HOURS PER DAY, 7-DAYS PER WEEK, WITH THE ABILITY TO BE DISABLED MANUALLY AT THE FRONT-END WORKSTATION, OR AUTOMATICALLY BY THE BMS SYSTEM IF AN ALARM CONDITION EXISTS. WHEN THE UNIT IS DISABLED, THE FOLLOWING WILL OCCUR:
A. SUPPLY AND EXHAUST FAN VFD'S WILL BE DISABLED.
B. NORMALLY-CLOSED, SPRING-RETURN, OUTSIDE AIR DAMPERS WILL CLOSE.
C. NORMALLY-CLOSED, SPRING-RETURN, EXHAUST AIR DAMPER WILL CLOSE.
D. NORMALLY-OPEN, SPRING-RETURN, RETURN AIR DAMPER WILL OPEN.
E. THREE-WAY, NORMALLY-OPEN, SPRING-RETURN, HOT WATER VALVE WILL POSITION TO MAINTAIN 60 DEG. F (ADJ.) MIXED AIR TEMPERATURE.
F. THREE-WAY, NORMALLY-CLOSED, SPRING-RETURN, CHILLED WATER VALVE WILL CLOSE.

UNIT START-UP:
START-UP OF THE AIR HANDLER WILL BE ACCOMPLISHED MANUALLY THROUGH THE FRONT-END WORKSTATION. WHEN THE UNIT IS DISABLED ON A SAFETY ALARM OR LIMIT, THE UNIT MUST BE MANUALLY-RESET FOR OPERATION TO RESUME. WHEN THE UNIT IS ENABLED TO OPERATE, THE FOLLOWING WILL OCCUR:
A. DURING THE OCCUPIED CYCLE, THE SUPPLY FAN VFD WILL BE ENABLED AT MINIMUM SPEED, AND WILL GRADUALLY INCREASE SPEED AS DESCRIBED IN THE SUPPLY FAN SPEED CONTROL SECTION. THE EXHAUST AIR DAMPER WILL OPEN, AND THE EXHAUST FAN VFD WILL BE ENABLED AT MINIMUM SPEED, AND WILL GRADUALLY INCREASE SPEED AS DESCRIBED IN THE EXHAUST FAN SPEED CONTROL SECTION.
B. ONCE THE SUPPLY AND EXHAUST FAN VFD'S ARE UP TO SPEED, THE OUTSIDE AIR DAMPER WILL MODULATE OPEN AND THE RETURN AIR DAMPER WILL MODULATE CLOSED (IN UNIFORM) UNTIL THE OUTSIDE AIR QUANTITY EQUALS 1500 CFM OR GREATER IF IN ECONOMIZER MODE.
C. IN THE ABSENCE OF, OR UPON THE LOSS OF AIRFLOW MEASUREMENT FROM EITHER THE OUTSIDE AIR OR SUPPLY FAN AIRFLOW STATIONS, THE O.A./R.A. DAMPERS WILL POSITION TO A DEFAULT MINIMUM POSITION OF 15%/ 85% OPEN (ADJ.), AND AN ALARM WILL BE INDICATED AT THE FRONT-END WORKSTATION.

SUPPLY AIR TEMPERATURE CONTROL:
THE UNIT WILL OPERATE TO MAINTAIN A SUPPLY AIR TEMPERATURE SET POINT. THE SUPPLY AIR TEMPERATURE SET POINT WILL BE RESET LINEARLY BASED ON OUTSIDE AIR TEMPERATURE SO THAT WHEN THE OUTSIDE AIR TEMPERATURE IS 70 DEG. F (ADJ.) THE SUPPLY AIR TEMPERATURE WILL BE 55 DEG. F (ADJ.), AND WHEN THE OUTSIDE AIR TEMPERATURE IS 40 DEG. F (ADJ.) THE SUPPLY AIR TEMPERATURE WILL BE ALLOWED TO RESET UP TO 90 DEG. F (ADJ.).

A. COOLING: IF THE ACTUAL SUPPLY AIR TEMPERATURE RISES ABOVE THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT, THEN COOLING WILL BE ACHIEVED BY MECHANICAL MEANS (CHILLED WATER) AND/ OR OUTSIDE AIR ECONOMIZER, AS DICTATED BYDIFFERENTIAL ENTHALPY CONTROL LOGIC. THE ECONOMIZER MODE WILL BE ENABLED WHENEVER COOLING IS REQUIRED AND THE ENTHALPY OF THE OUTSIDE AIR IS LESS THAN THE ENTHALPY OF THE RETURN AIR. THE HOT WATER CONTROL VALVE WILL BE CLOSED WHEN THE UNIT IS OPERATING IN THE COOLING MODE.
1) WHEN THE ECONOMIZER MODE IS ENABLED, THE OUTSIDE AIR DAMPER WILL MODULATE BEYOND THE MINIMUM POSITION (UP TO 100% OPEN), AND THE RETURN AIR DAMPER WILL MODULATE CLOSED SIMULTANEOUSLY (UP TO 100% CLOSED) AS REQUIRED TO MAINTAIN THE ACTUAL SUPPLY AIR TEMPERATURE SET POINT TO THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT. WHEN IN THE ECONOMIZER MODE, IF THE OUTSIDE AIR DAMPER IS 100% OPEN AND THE RETURN AIR DAMPER IS STILL GREATER THAN THE CALCULATED EQUAL TO THE CALCULATED OPTIMUM SET POINT.
2) IF THE ECONOMIZER MODE IS NOT ENABLED, THEN THE OUTSIDE AIR AND RETURN AIR DAMPERS WILL POSITION TO DELIVER THE MINIMUM OUTSIDE AIR QUANTITY AS DESCRIBED ABOVE (3 B.), AND THE CHILLED WATER COIL CONTROL VALVE WILL MODULATE OPEN AS REQUIRED TO MAINTAIN THE ACTUAL SUPPLY AIR TEMPERATURE EQUAL TO THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT.
B. HEATING: IF THE ACTUAL SUPPLY AIR TEMPERATURE DROPS BELOW THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT DUE TO COLD OUTSIDE AIR, THEN THE HOT WATER CONTROL VALVE WILL MODULATE OPEN AS REQUIRED TO MAINTAIN SET POINT. THE CHILLED WATER CONTROL VALVE WILL REMAIN CLOSED WHEN THE UNIT IS OPERATING IN THE HEATING MODE, AND THE OUTSIDE AIR DAMPER WILL BE AT MINIMUM POSITION.
C. RELATIVE HUMIDITY OVERRIDE: IF THE RELATIVE HUMIDITY OF THE RETURN AIR RISES ABOVE 55% (ADJ.) AS MEASURED UPSTREAM OF THE RETURN FAN, THE SUPPLY AIR TEMPERATURE SET POINT WILL BE RESET TO 55 DEG. F (ADJ.). RELATIVE HUMIDITY OVERRIDE WILL BE DISABLED, AND ⅠNORMALⅡSUPPLY AIR TEMPERATURE RESET CONTROL WILL RESUME, WHEN THE RELATIVE HUMIDITY OF THE RETURN
D. IF THE ACTUAL SUPPLY AIR TEMPERATURE VARIES BY MORE THAN 2 DEG. F (ADJ.) FROM THE CALCULATED OPTIMUM SUPPLY AIR TEMPERATURE SET POINT FOR A PERIOD OF 5 MINUTES (ADJ.), AN ALARM WILL BE INDICATED AT THE FRONT-END WORKSTATION.

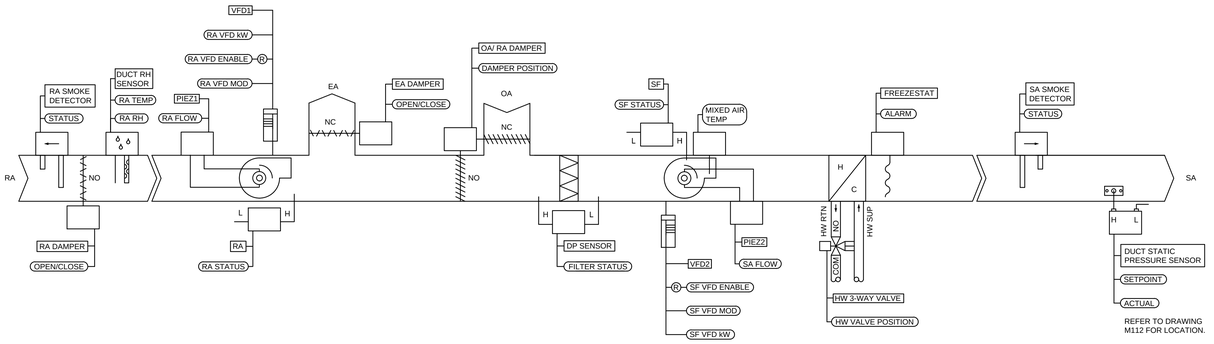
RETURN FAN SPEED CONTROL:
THE RETURN FAN WILL BE FURNISHED WITH AN INLET AIRFLOW MEASURING DEVICE. THE FAN WILL MODULATE TO MAINTAIN THE MEASURED RETURN AIR QUANTITY EQUAL TO THE MEASURED OUTSIDE AIR QUANTITY MINUS A ⅠGENERAL EXHAUST OFFSETⅡEQUAL TO 500 CFM (ADJ.). THAT IS, E.A. CFM = O.A. CFM – 500, BUT NOT LESS THAN 0 CFM. IN THE ABSENCE OF AIRFLOW FROM EITHER MEASUREMENT DEVICE, THE RETURN FAN WILL TRACK THE OUTSIDE AIR DAMPER COMMANDED POSITION MINUS 15%.

FREEZE PROTECTION:
A FREEZESTAT WILL BE FACTORY-INSTALLED ON THE LEAVING SIDE OF THE HOT WATER COIL TO AUTOMATICALLY SHUTDOWN THE UNIT IF THE TEMPERATURE DROPS BELOW 38 DEG. F (ADJ.). UPON ACTIVATION OF THE FREEZESTAT, AN ALARM WILL BE INDICATED AT THE FRONT-END WORKSTATION.

SMOKE DETECTORS:
SMOKE DETECTORS WILL BE FURNISHED BY THE ELECTRICAL CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR IN THE SUPPLY AND RETURN DUCTWORK WHERE SHOWN ON THE PLANS. POWER WIRING AND INTERCONNECTION OF THE SMOKE DETECTORS TO THE FIRE ALARM SYSTEM WILL BE DONE BY THE ELECTRICAL CONTRACTOR. THIS CONTRACTOR SHALL INSTALL LOW VOLTAGE WIRING BETWEEN THE SMOKE DETECTORS AND VFD'S TO AUTOMATICALLY SHUTDOWN THE UNIT UPON SENSING SMOKE BY ANY ASSOCIATED SMOKE DETECTOR. ADDITIONALLY, AN ALARM SHALL BE INDICATED AT THE FRONT-END WORKSTATION.

IF THE SUPPLY AIR DUCT STATIC PRESSURE SENSOR SHOULD INDICATE A STATIC PRESSURE ABOVE 4.0ⅠW.C. (ADJ.), THE UNIT WILL AUTOMATICALLY SHUTDOWN AND AN ALARM SHALL BE INITIATED AT THE FRONT-END WORKSTATION.

A DIFFERENTIAL PRESSURE TRANSMITTER WILL MONITOR THE FILTER SECTION AND INDICATE A ⅠDIRTY FILTERⅡALARM WHEN THE DIFFERENTIAL PRESSURE EXCEEDS THE MANUFACTURER'S RECOMMENDED SET POINT.



HV-1 & HV-1A AUTOMATIC TEMPERATURE CONTROLS

N.T.S.

ADDENDUM #1 CLARIFICATIONS - 8/1/2012 FULLY SPRINKLERED

REVISIONS:	DATE
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Project Number: 405-304

Building Number: B67

Drawing Number: M704

SHEET 27 OF 27

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

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