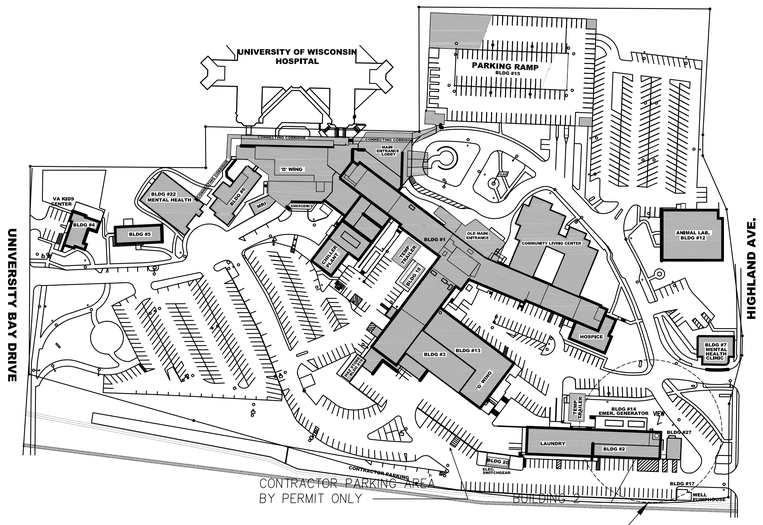
DEPARTMENT OF VETERANS AFFAIRS

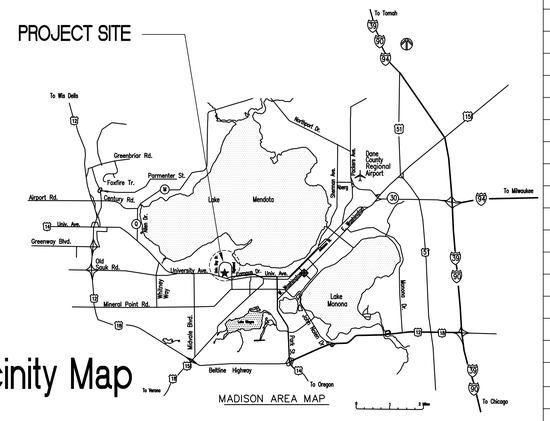
WILLIAM S. MIDDLETON MEMORIAL VETERANS HOSPITAL 2500 OVERLOOK TERRACE MADISON, WISCONSIN 53705

RENOVATE BUILDING 2 ADMINISTRATIVE SUPPORT.

VA PROJECT NUMBER 607-12-115
IDG PROJECT NUMBER 120901



VA Site Map



Vicinity Map

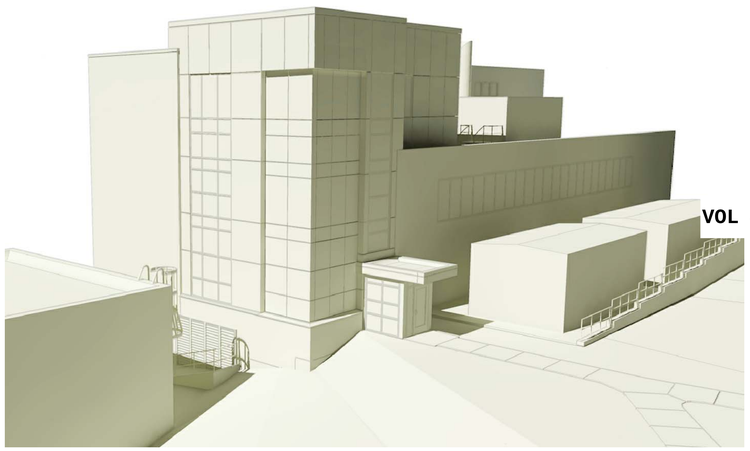
BUILDING INFORMATION

1BC, NFPA 101: LATEST ADDITION
OCCUPANCY: IBC B BUSINESS
CLASS OF CONSTRUCTION: IBC IIA NON-COMBUSTIBLE
BUILDING FULLY SPRINKLERED: UNLIMITED AREA

FIRE RATINGS	IN HOURS
BEARING WALLS & COLUMNS	1
TRUSSES, GIRDERS, BEAMS	1
FLOOR CONSTRUCTION	1 or 2
ROOF CONSTRUCTION	1
SHAFTS	2

AREA SQUARE FOOTAGE	RENOVATION AREA
BASEMENT FLOOR	1,570 SF
GROUND FLOOR	4,845 SF
FIRST FLOOR	4,224 SF
SECOND FLOOR	4,845 SF
THIRD FLOOR	2,383 SF
TOTAL	17,867 SF

VIEW



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EL200 EM	BASEMENT AND GROUND LEVEL ELECTRICAL EMERGENCY LIGHTING PLANS
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EL201 EM	FIRST LEVEL ELECTRICAL EMERGENCY LIGHTING PLAN
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EL202 EM	SECOND LEVEL ELECTRICAL EMERGENCY LIGHTING PLAN
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EL203 EM	THIRD LEVEL ELECTRICAL EMERGENCY LIGHTING PLAN
EP200	BASEMENT AND GROUND LEVEL ELECTRICAL POWER PLANS
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VOL 5

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

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Drawing Title: Cover Sheet

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Project Number: 607-12-115

Building Number: 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: SAM | Drawn: REG

Drawing Number: G100

Dwg. of

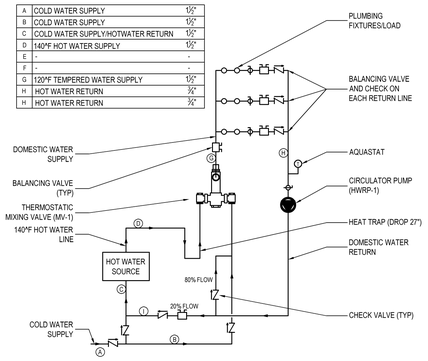
Office of Construction and Facilities Management

Depar ment of Veterans Affairs

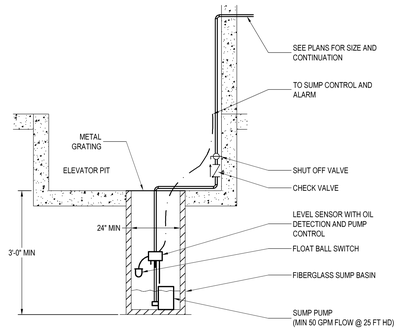
VA FORM 08–6231

NOTE: PIPE ROUTING IS BASED ON A LAWLER MIXING VALVE. MODIFY PIPE ROUTING AS NEEDED FOR DIFFERENT MIXING VALVE MANUFACTURERS.

A	COLD WATER SUPPLY	1½"
B	COLD WATER SUPPLY	1½"
C	COLD WATER SUPPLY/HOTWATER RETURN	1½"
D	140°F HOT WATER SUPPLY	1½"
E	-	-
F	-	-
G	120°F TEMPERED WATER SUPPLY	1½"
H	HOT WATER RETURN	¾"
H	HOT WATER RETURN	¾"

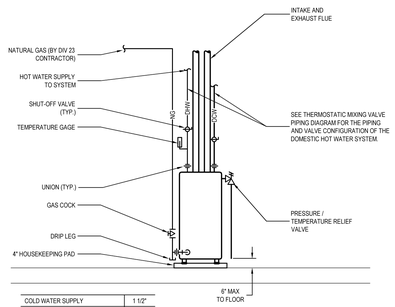


4 THERMOSTATIC MIXING VALVE WITH HOT WATER PIPING DIAGRAM
NTS



1 ELEVATOR SUMP
NTS

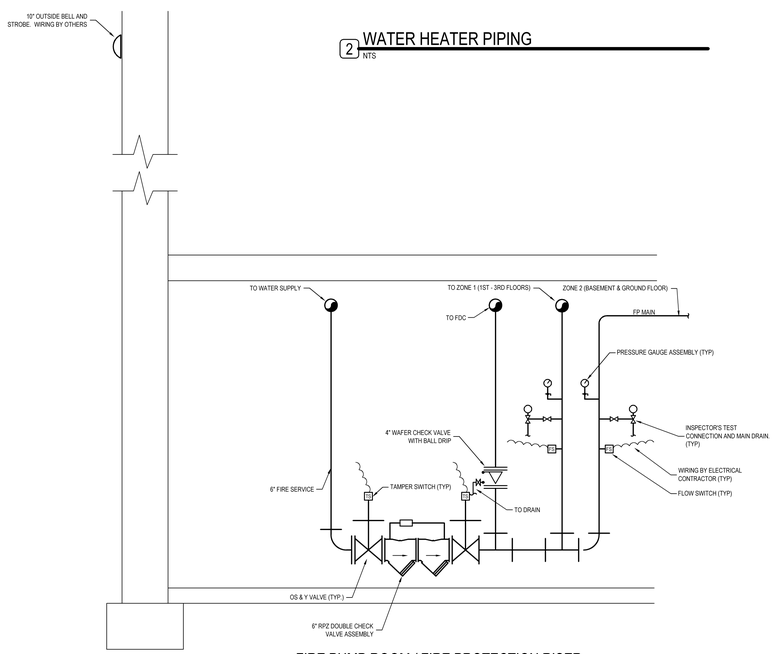
P-001.dwg



COLD WATER SUPPLY	1 1/2"
HOT WATER SUPPLY	1 1/2"
HOT WATER RETURN	3/4"
NATURAL GAS	3/4"
FLUE	4"

SEE PLANS FOR ROUTING OF WATER PIPING AND FLUE.

NATURAL GAS PIPING IS PIPED TO THE UNIT BY MECHANICAL CONTRACTOR. FINAL CONNECTION TO HEATER IS BY PLUMBING CONTRACTOR.



2 WATER HEATER PIPING
NTS

3 FIRE PUMP ROOM / FIRE PROTECTION RISER
N.T.S.

PLUMBING FIXTURE SCHEDULE

MARK	MANUFACTURER	MODEL	DESCRIPTION
L-1 LAVATORY	SLOAN	ETF-80	FAUCET: SLOAN ETF-80 ELECTRONIC OPERATED, CAST BRASS SPOUT WITH CHROME PLATED FINISH, 0.5 GPM FLOW, REMOTE TRANSFORMER DRAIN: KOHLER MODEL #K7125, BRASS GRID DRAIN AND 1.25" TAILPIECE KOHLER MODEL #K-8999 CAST BRASS ADJUSTABLE P-TRAP WITH CLEANOUT PLUG CHICAGO FAUCET MODEL #1006 ANGLE VALVE WITH LOOSE KEY HANDLE, 0.5" FEMALE INLET, 0.5" O.D. AND 12" RISER HANDI-SHIELD EXPOSED PIPING INSULATION KIT ADA COMPLIANT
LR-1 URINAL	KOHLER	K-4904-ET	WALL MOUNTED, WASHOUT, VITREOUS CHINA, WHITE, ¾" TOP SPUD FLUSH VALVE: SLOAN ROYAL 186-0.125-HEU, MANUAL OPERATED, CHROME PLATED, 0.125 GPF, STANDARD RIM HEIGHT 24", ADA RIM HEIGHT 17"
WC-1 WATER CLOSET	KOHLER	K-4325 KINGSTON	WALL MOUNT, SIPHON JET, ELONGATED BOWL, WHITE, 1 ½" TOP SPUD, 1.28 GPF FLUSH VAVLE: MANUAL OPERATED, CHROME PLATED, 1.6 GPF DOWN, 1.1 GPF UP SEAT: CHURCH MODEL #19555SSTFR, SOLID PLASTIC, WHITE, OPEN FRONT, STAINLESS STEEL SELF-SUSTAINING CHECK HINGE AND ANTI-MICROBIAL AGENT. ADJUST MOUNTING HEIGHT FOR ADA OR NON-ADA COMPLIANT HEIGHT.
FD-1 FLOOR DRAIN	JOSAM	3000-A SERIES	ADJUSTABLE CAST IRON 3" FLOOR DRAIN, 2 PIECE BODY WITH DOUBLE DRAINAGE FLANGE, FLASHING COLLAR, WEEPHOLES, BOTTOM OUTLET, ADJUSTABLE CHROME PLATED SATIN ROUND STRAINER.
EWC-1 ELECTRIC WATER COOLER	ELKAY	LVRC-GRNTL8WSK	BI-LEVEL BARRIER-FREE, SELF-CONTAINED, WALL HUNG, ELECTRIC REFRIGERATED WATER COOLER AND BOTTLE FILLING STATION, WITH NO TOUCH, SENSOR ACTIVATION CONTROL WITH AUTO 20 SECOND SHUT OFF TIMER. TRAP: 1 1/2" x 1 1/2" PVC TRAP WITH C.O. PLUG STOP/SUPPLY: 3 PIECE BALL VALVE - NIBCO T-595-Y WITH COMPRESSION ADAPTER ON OUTLET OF VALVE. COORDINATE FINISH AND MOUNTING HEIGHT WITH ARCHITECT. *** 36" MAXIMUM SPOUT OUTLET HEIGHT FOR ADA DESIGNATED UNITS ***
MB-1 MOP BASIN	STERN WILLIAMS	HL-1800	MOP BASIN: 24"x24"x12" MOP BASIN WITH 6" DROP, STAINLESS STEEL CAP ON THRESHOLD, STAINLESS STEEL CAST-IN DRAIN BODY FOR 3" PIPE. HOSE & STAINLESS STEEL HOSE BRACKET (T-35), STAINLESS STEEL STRAINER, STAINLESS STEEL MOP HANGER WITH (3) RUBBER TOOL GRIPS (T-40), STAINLESS STEEL CORNER GUARD (BP) FAUCET: CHICAGO FAUCET 897-CP ELEVATED VACUUM BREAKER SPOUT, 3/4" HOSE THREAD, WALL BRACE, PAIL HOOK & 3 FOOT HOSE. INCLUDE VACUUM BREAKER ON FAUCET (WATTS 189).
MV-1 MIXING VALVE	LAWLER	SERIES 61 UNIT NO. 8400B	MIXING VALVE: THERMOSTATIC TYPE WITH LIQUID FILLED MOTOR. UNIT SHALL BE CAPABLE OF PROVIDING 10 GPM AT A PRESSURE LOSS OF 10 PSI. IN AN EVENT OF A FAILURE IN THE COLD OR HOT WATER SYSTEM, VALVE SHALL RESTRICT FLOW BY USE OF A SLIDING PISTON CONTROL MECHANISM WITH REVERSE SEAT CLOSURE. UNIT TO INCLUDE DIAL THERMOMETER AND SHUT-OFF VALVE ON TEMPERED WATER OUTLET.
SH-1 SHOWER	POWERS	e/707 HYDRO-GUARD	METAL TRIM WITH TYPE G, CP ADJUSTABLE SHOWER HEAD TYPE 6, HANDSHOWER, WITH 24" GLIDE RAILS, METAL HOSE, DELUXE HANDSHOWER, CONCEALED DIVERTER VALVE AND ELEVATED INLINE BACKLOW PREVENTER. ALL MATERIALS SHALL BE CHROME PLATED BRASS. COORDINATE SHOWERHEAD HEIGHT WITH ARCHITECT. INSTALLATION SHALL COMPLY WITH ADA GUIDELINES. VALVE TYPE: ANTI-SCALDING THERMOSTATIC/PRESSURE BALANCED MIXING VALVE SHOWER HEAD: DELUX CHROME PLATED. FLOW CONTROL: 1.5 GPM SUPPLIES AND STOPS: NSF 61 LISTED TWO-PIECE BODY BRASS BALL VALVES. (SIMILAR TO NIBCO S-FP-600A)
RD-1	JOSAM	21500-3-26-VP-Z	CAST IRON ROOF DRAIN WITH COMBINED CLAMP RING AND GRAVEL STOP, ALUMINUM DOME AND NO-HUB OUTLET, VANDAL PROOF DOME, DRAIN RECEIVER AND DECK CLAMP ASSEMBLY. SEE PLANS FOR DRAIN SIZE.
OD-1	JOSAM	21500-3-16-26-VP-Z	CAST IRON ROOF DRAIN WITH COMBINED CLAMP RING AND GRAVEL STOP. INTERNAL WATERGAURD, ALUMINUM DOME AND NO-HUB OUTLET, VANDAL PROOF DOME, DRAIN RECEIVER AND DECK CLAMP ASSEMBLY. SEE PLANS FOR DRAIN SIZE.
S-1 SINK	ELKAY	LRAD - 2922	DOUBLE BOWL SINK 18 GA STAINLESS STEEL (TYPE 304), SINGLE FAUCET OPENING, CHICAGO FAUCET 50-317CP, MANUAL OPERATED, CHROME PLATED, 5 1/4" RIDGED/SWING GOOSENECK FAUCET AERATOR: CHICAGO FAUCETS E26-5, 1.0 GPM CHICAGO FAUCET MODEL #1006 ANGLE VALVE WITH LOOSE KEY HANDLE, 0.5" FEMALE INLET, 0.5" O.D. AND 12" RISER

NOTES:
1. PROVIDE ALL DRAIN COVERS, ESCUTCHEONS, AND MISCELLANEOUS TRIM ITEMS FOR A NEAT APPEARANCE.
2. ALL EXPOSED SUPPLIES SHALL BE CHROME PLATED.
3. USE WALL STANDOFFS TO SECURE DRAIN LINES UNDER EQUIPMENT. ALLOW 6" CLEARANCE FROM FLOOR FOR CLEANING.
4. MANUFACTURER'S MODEL NUMBERS ARE SPECIFIED TO INDICATE TYPE, QUALITY AND CONSTRUCTIONS. SIMILAR OR EQUAL PRODUCTS OF APPROVED MANUFACTURERS MAY BE SUBSTITUTED FOR THOSE SPECIFIED MODEL NUMBERS.

PLUMBING ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
BOP	BOTTOM OF PIPE
DN	DOWN
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
VFD	VARIABLE FREQUENCY DRIVE
CO	CLEANOUT
FCO	FLOOR CLEANOUT
WCO	WALL CLEANOUT
COMP	COMPRESSED AIR
CA	COMBUSTION AIR
FLUE	FLUE
ET-*	EXPANSION TANK
EWC-*	ELECTRIC WATER COOLER
FD-*	FLOOR DRAIN
HB-*	HOSE BIBB
HWRP-*	HOT WATER RECIRCULATION PUMP
L-*	LAVATORY
MB-*	MOP BASIN
S-*	SINK
RD-*	ROOF DRAIN
OD-*	OVERFLOW DRAIN
SH-*	SHOWER
SP-*	SUMP PUMP
SPD	SUMP PUMP DISCHARGE
SS-*	SERVICE SINK
TD-*	TRENCH DRAIN
UR-*	URINAL
WC-*	WATER CLOSET
WH-*	WATER HEATER
X-*	EXISTING

GENERAL NOTES

1. PLUMBING CONTRACTOR SHALL COORDINATE HIS WORK WITH EXISTING CONDITIONS AND WITH THE WORK OF OTHER TRADES.
2. THESE DRAWINGS ARE A DIAGRAMMATIC REPRESENTATION OF WORK TO BE ACCOMPLISHED AND AS SUCH DO NOT SHOW ALL REQUIRED OFFSETS OF PIPING. PLUMBING CONTRACTOR SHALL INSTALL MATERIAL AND EQUIPMENT AS TO CONFORM TO THE STRUCTURE. EQUIPMENT CONNECTIONS AND MAINTAIN HEADROOM AND PASSAGEWAY.
3. FIRE PROTECTION ROUTING AND SPRINKLER HEAD PLACEMENT SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES (I.E. LIGHTING). LIGHTING PLACEMENT TAKES PRECEDENCE OVER HEAD LOCATION. FIRE PROTECTION PIPING AND HEADS SHALL FIT INTO CEILING SPACES BASED ON THE ARCHITECTURAL PLANS.
4. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN NOON ON FRIDAYS TO 7:00 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTION SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS' NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.

PLUMBING LEGEND

	NEW PLUMBING EQUIPMENT
	EXISTING PLUMBING COMPONENT
	DEMOLISHED PLUMBING COMPONENT
	PLUMBING EQUIPMENT SERVICE AREA
DCW	NEW DOMESTIC COLD WATER
DCW-X	EXISTING DOMESTIC COLD WATER
DHW	NEW DOMESTIC HOT WATER
DHW-X	EXISTING DOMESTIC HOT WATER
DHWR	NEW DOMESTIC HOT WATER RETURN
DHWR-X	EXISTING DOMESTIC HOT WATER RETURN
FPW	NEW FIRE PROTECTION - WET PIPE
FP-X	EXISTING FIRE PROTECTION
IRR-X	EXISTING IRRIGATION
SS	NEW SANITARY SEWER
SS-X	EXISTING SANITARY SEWER
V	NEW SANITARY VENT
V-X	EXISTING SANITARY VENT
SDOF	NEW STORM OVERFLOW
SDOF-X	EXISTING STORM OVERFLOW
STRM	NEW STORM SEWER
STRM-X	EXISTING STORM SEWER
1	KEY NOTE
1	DEMO NOTE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	CIRCUIT SETTER
	GATE VALVE
	HOSEBIBB/DRAIN VALVE
	OS&Y VALVE
	PLUG VALVE
	PRESSURE & TEMPERATURE RELIEF VALVE
	PRESSURE REGULATING VALVE
	AIR VENT
	FLOOR DRAIN/ROOF DRAIN
	PIPE BREAK
	PIPE CAPPED END
	PIPE CLEANOUT
	PIPE ELBOW/TEE DOWN
	PIPE ELBOW/TEE UP
	POINT OF CONNECTION
	PUMP
	UNION
	UPRIGHT SPRINKLER HEAD
	SEMI RECESSED SPRINKLER HEAD
	CONCEALED SPRINKLER HEAD
	EXTENDED COVERAGE SPRINKLER HEAD
	SPRING UPRIGHT SPRINKLER HEAD
	SIDE WALL SPRINKLER HEAD
	SEMI RECESSED SIDE WALL SPRINKLER HEAD

GAS WATER HEATER

MARK	MANUF.	MODEL	STORAGE CAPACITY	BTUH (INPUT)	BTUH (OUTPUT)	BURNER	HEIGHT	WIDTH	DEPTH	REMARKS
WH-1	AO SMITH	BTH-120	60	120	114	NAT GAS	56"	28"	28"	4" VENT PIPING

PUMPS

MARK	MANUFACT	MODEL	TYPE	SERVICE	WATER TEMP	GPM	HEAD FT WC	MOTOR HP	MOTOR RPM	MOTOR VOLTS	REMARKS
HWRP-1	B & G	NBF-12/LW	RECIRC.	DOM. HOT WATER	120	3	10	FRAC.	2800	115V/1Ø	

SUMP PUMP

MARK	MANUFACT	MODEL	TYPE	SERVICE	SOLIDS SIZE	GPM	HEAD FT WC	MOTOR HP	MOTOR PHASE	MOTOR VOLTS	REMARKS
SP-1	LIBERTY	ELV250	SUBMERSIBLE	ELEVATOR	3/4"	50	25	3/4	1	115	1 THRU 4

1. PROVIDE OIL DETECTOR CONTROL AND REMOTE ALARM. COORDINATE ALARM TIE-IN TO BMS WITH DIV 23 09 23 CONTRACTOR.
2. PROVIDE 24"DIA x 30"DEEP FIBERGLASS BASIN WITH BOTTOM FLANGE.
3. PROVIDE REMOTE CONTROL PANEL.
4. PROVIDE WITH METAL GRATING OVER SUMP BASIN.

SPRINKLER GENERAL NOTES

1. SPRINKLER PIPING AND VALVES SHOWN ON THESE DRAWINGS ARE A DIAGRAMMATIC REPRESENTATION OF WORK TO BE ACCOMPLISHED AND AS SUCH DO NOT SHOW ALL REQUIRED OFFSETS OF PIPING. FIRE PROTECTION CONTRACTOR SHALL INSTALL MATERIAL AND EQUIPMENT AS TO CONFORM TO THE STRUCTURE. EQUIPMENT CONNECTIONS AND MAINTAIN HEADROOM AND PASSAGEWAY. CONTRACTOR SHALL PROVIDE COMPLETE DESIGN OF FULL FUNCTIONING, APPROVED SYSTEM AS REQUIRED BY NFPA 13 AND AUTHORITY HAVING JURISDICTION.
2. CONTRACTOR MAY PENETRATE WALLS, CEILINGS, OR FLOORS AS REQUIRED FOR THE INSTALLATION OF THIS WORK. ALL HOLES MADE BY THE CONTRACTOR TO INSTALL NEW WORK MUST BE PATCHED, RESTORING THE WALLS, CEILINGS OR FLOORS TO THEIR ORIGINAL CONDITION AND INTEGRITY. ALL PATCH WORK IN FINISHED AREAS SHALL BE PAINTED OR FINISHED TO MATCH EXISTING/NEW CONDITIONS.
3. ALL PIPES AND CONDUITS PENETRATING THE FLOOR SLAB OR A SMOKE BARRIER SHALL BE SEALED TIGHT WITH AN APPROVED FIRESTOP SEALANT RESTORING THE FLOOR SLAB OR SMOKE BARRIER TO ITS ORIGINAL FIRE RESISTANCE.
4. CONTRACTOR SHALL MAINTAIN A CLEAN WORKING ENVIRONMENT. EQUIPMENT, PARTS AND TOOLS SHALL BE SECURED AND MONITORED.
5. WATER SYSTEM SHUTDOWNS SHALL BE SCHEDULED AT LEAST 48 HOURS IN ADVANCE WITH COTR.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

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nagel architects
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N8 W22195 JOHNSON DR, STE 180 WAUKESHA, WI 53186
262.549.1190
fx 262.549.1620

Drawing Title: Plumbing General Notes, Legend Schedules, and Details

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

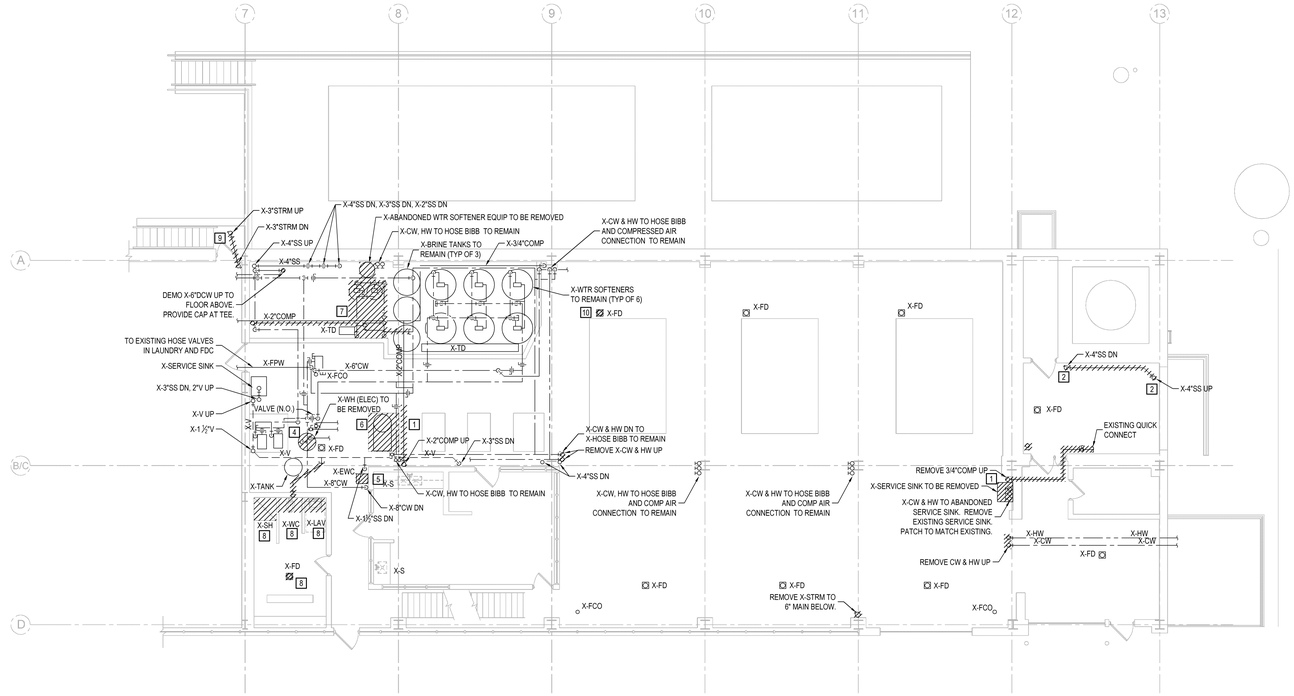
Drawing Number: P-001

Dwg. * of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

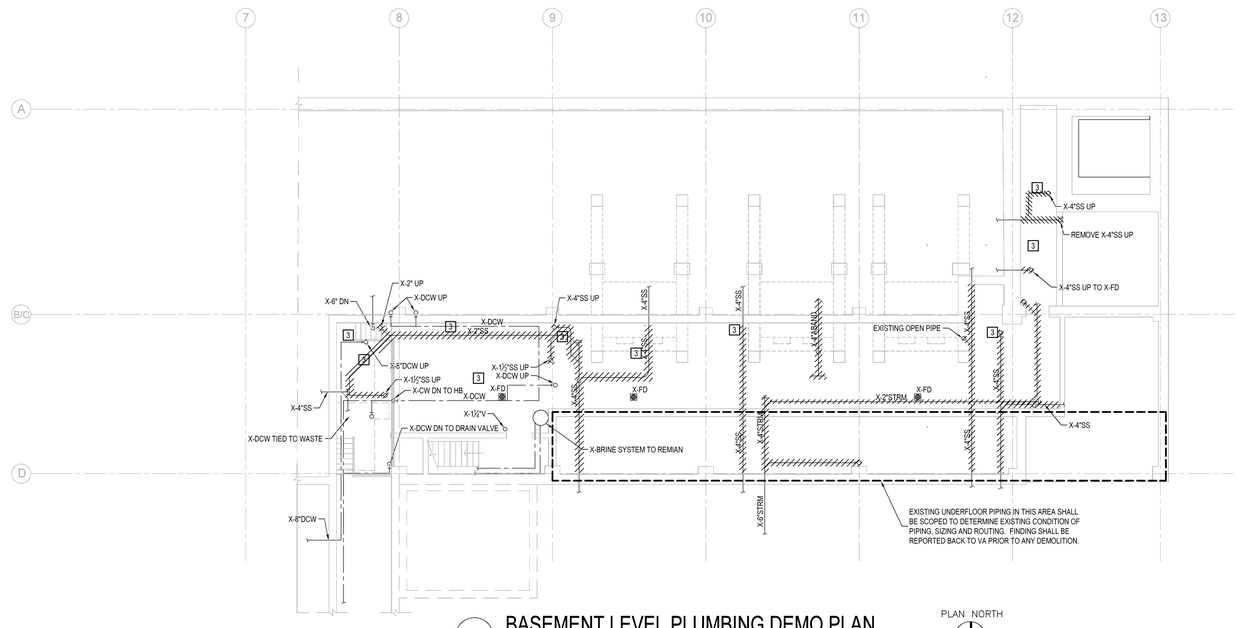
VA FORM 08-6231



C4 GROUND LEVEL PLUMBING DEMO PLAN

1/8" = 1'-0"

PLAN NORTH



F4 BASEMENT LEVEL PLUMBING DEMO PLAN

1/8" = 1'-0"

PLAN NORTH

DEMOLITION NOTES

1. REMOVE COMPRESSED AIR PIPING TO POINT SHOWN ON PLAN. PROVIDE TEMPORARY CAPS DURING CONSTRUCTION.
2. REMOVE EXISTING 4"SS PIPING. PATCH FLOOR AND CEILING/ROOF PENETRATIONS TO MATCH EXISTING CONDITIONS.
3. REMOVE ACCESSIBLE SANITARY AND STORM PLUMBING PIPING IN BASEMENT. PREP FOR REPLACEMENT WITH NEW PIPING TO MATCH EXISTING SIZES UNLESS NOTED OTHERWISE.
4. REMOVE EXISTING ELECTRIC WATER HEATER. CAP PIPING AT MAINS.
5. REMOVE EXISTING ELECTRIC WATER COOLER AND ALL ASSOCIATED PIPING BACK TO MAINS. PROVIDE PERMANENT CAPS ON PIPING.
6. REMOVE EXISTING ABANDONED VACUUM SYSTEM AND ALL ASSOCIATED PIPING.
7. REMOVE EXISTING ABANDONED WATER SOFTENER SYSTEM AND ALL ASSOCIATED PIPING BACK TO MAINS. PROVIDE CAP AT MAINS.
8. REMOVE EXISTING BATHROOM FIXTURES AND ALL ASSOCIATED PIPING BACK TO MAINS. PROVIDE PERMANENT CAPS ON PIPING.
9. REMOVE EXISTING AREA DRAIN AND STORM PIPING DOWN TO FLOOR PENETRATION. COORDINATE REMOVAL OF DRAIN PIPING TO PREVENT DRAINAGE INTO THE BUILDING DURING CONSTRUCTION. PROVIDE TEMPORARY MEANS OF DRAINAGE AS NECESSARY TO ACCOMMODATE NEW CONSTRUCTION.
10. REMOVE EXISTING FLOOR DRAIN AND PIPING TO BELOW EXISTING SLAB. PATCH FLOOR TO MATCH EXISTING.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

13100 watertown plank road
suite 200
elm grove, wi 53122
p 262.641.0746
f 262.641.0584
nagel architects

IBC ENGINEERING SERVICES INC.
N8 W22195 JOHNSON DR, STE 180 WAUKESHA, WI 53186
262.549.1190 fx 262.549.1620

Drawing Title: Basement and Ground Level Plumbing Demolition Plan

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: P-100

Dwg. * of

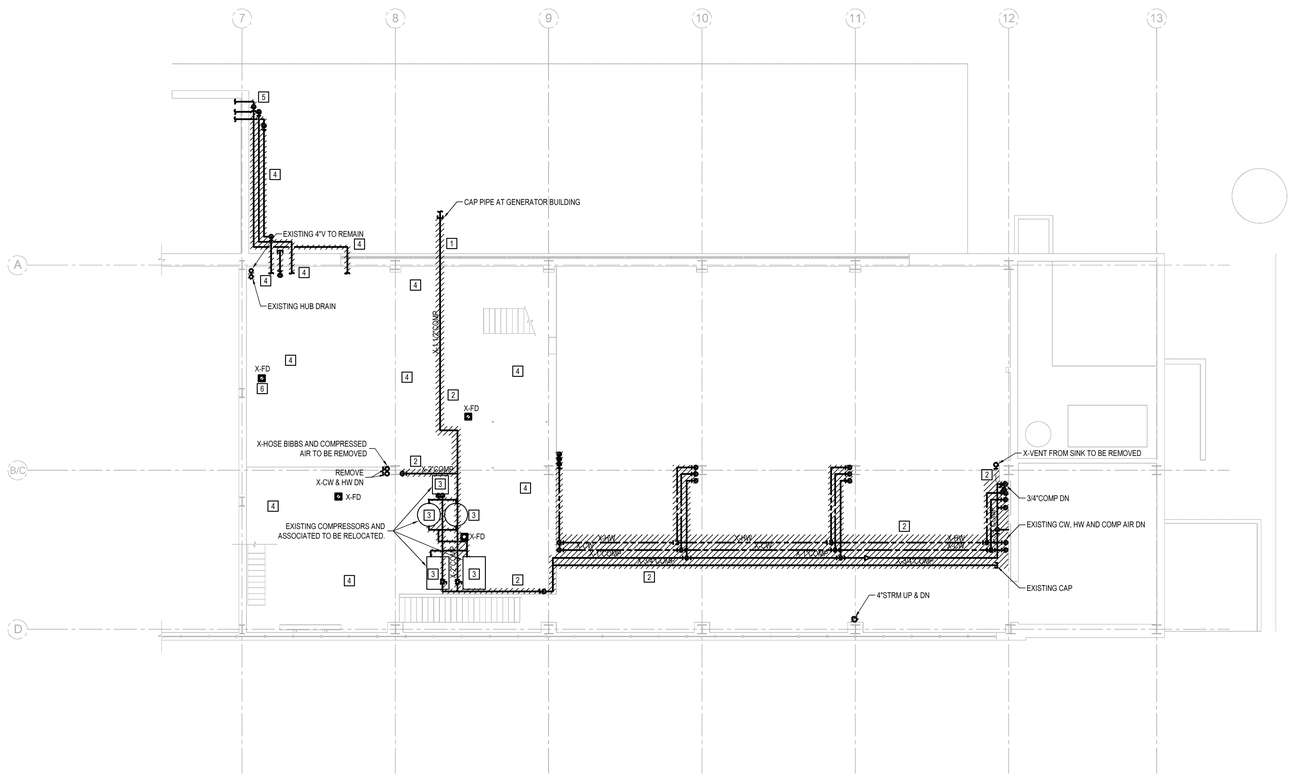
Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231

DEMOLITION NOTES

1. PROVIDE CAP AT EXISTING GENERATOR BUILDING. PATCH WALL PENETRATION TO MATCH EXISTING CONSTRUCTION.
2. DEMO EXISTING PIPING.
3. REMOVE EXISTING COMPRESSED AIR EQUIPMENT. COORDINATE RELOCATION OOF EQUIPMENT IN A SEQUENCE THAT PREVENTS ANY LOSS OF COMPRESSED AIR DURING THE CONSTRUCTION PERIOD.
4. REMOVE ALL EXISTING PLUMBING FIXTURES (I.E. FLOOR DRAINS, HUB DRAINS, HOSE BIBS) AND PIPING THAT HAS BEEN ABANDONED OR IS NOT IN ACTIVE SERVICE. REMOVE PIPING BACK TO MAINS AND CAP. REROUTE EXISTING VENT PIPING THAT SERVES FIXTURES BELOW TO ACCOMMODATE NEW CONSTRUCTION FLOOR LAYOUTS. PATCH ALL FLOOR AND WALL PENETRATIONS TO MATCH EXISTING CONSTRUCTION AND NEW FIRE RATINGS. SEE ARCHITECTURAL PLANS FOR LOCATIONS OF FIRE RATED WALLS AND FLOORS.
5. PROVIDE WEATHERPROOF CAP AT RETAINING WALL ON EXISTING ABANDONED PIPING.
6. REMOVE EXISTING FLOOR DRAIN. EXISTING PIPING BELOW EXISTING SLAB TO REMAIN. PREP AREA FOR NEW FLOOR DRAIN INSTALLATION AFTER NEW TOP COAT OVER EXISTING FLOORING HAS BEEN POURED.



F4 FIRST LEVEL PLUMBING DEMO PLAN

1/8" = 1'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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IBC ENGINEERING SERVICES INC.
NB W22195 JOHNSON DR. STE 180 262.549.1190
WAUKESHA, WI 53186 fx 262.549.1620

Drawing Title: First Level Plumbing Demolition Plan

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: P-101

Dwg. * of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

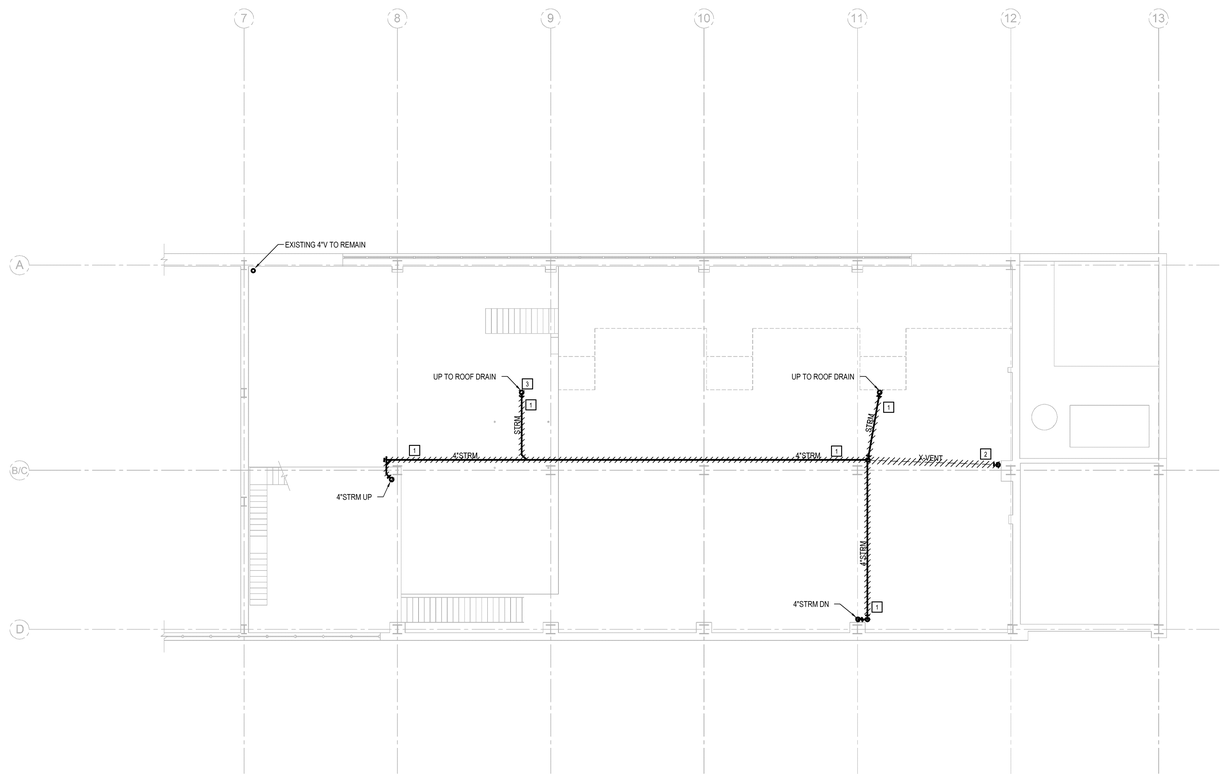
VA FORM 08-6231

GENERAL NOTES

1. ROOF DRAIN AND PIPING REMOVAL MUST BE SEQUENCED TO PREVENT DRAINAGE INTO THE BUILDING DURING CONSTRUCTION. PROVIDE TEMPORARY MEANS FOR DRAINAGE AS NECESSARY TO ACCOMMODATE NEW CONSTRUCTION.

DEMOLITION NOTES

1. REMOVE EXISTING ROOF DRAIN AND ASSOCIATED PIPING BACK TO GROUND FLOOR.
2. REMOVE EXISTING ABANDONED VENT PIPING.
3. REMOVE EXISTING ROOF DRAIN. PREP AREA FOR INSTALLATION OF NEW ROOF DRAIN.



F4 SECOND LEVEL PLUMBING DEMO PLAN

1/8" = 1'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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Drawing Title: Second Level Plumbing Demolition Plan

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: P-102

Dwg. * of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

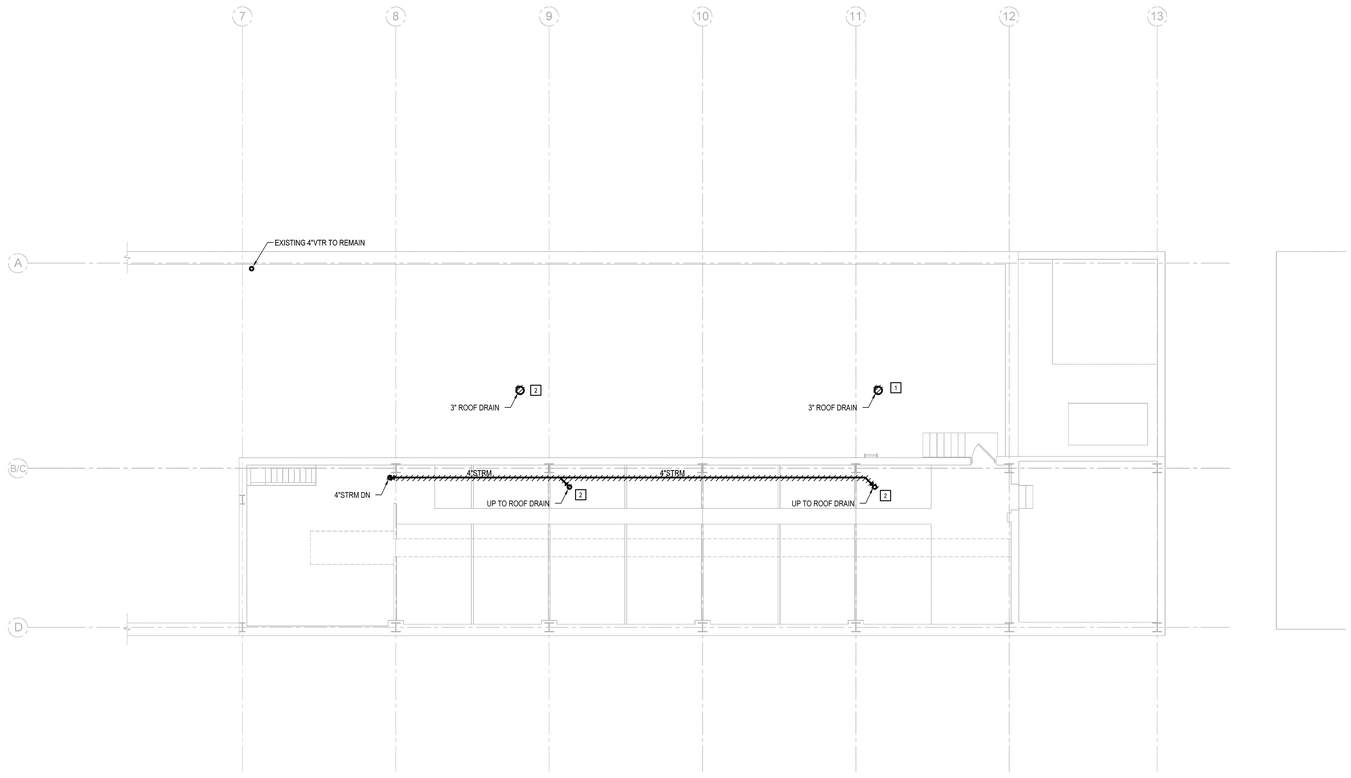
VA FORM 08-6231

GENERAL NOTES

1. ROOF DRAIN AND PIPING REMOVAL MUST BE SEQUENCED TO PREVENT DRAINAGE INTO THE BUILDING DURING CONSTRUCTION. PROVIDE TEMPORARY MEANS FOR DRAINAGE AS NECESSARY T0 ACCOMMODATE NEW CONSTRUCTION.

DEMOLITION NOTES

1. REMOVE EXISTING ROOF DRAIN AND ASSOCIATED PIPING BACK TO GROUND FLOOR.
2. REMOVE EXISTING ROOF DRAIN AND ASSOCIATED PIPING BACK TO GROUND FLOOR. PREP AREA FOR INSTALLATION OF NEW ROOF DRAIN. SEE SHEET P-001 FOR MORE INFORMATION.



F4 THIRD LEVEL PLUMBING DEMO PLAN

1/8" = 1'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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IBC ENGINEERING SERVICES INC.
N8 W22195 JOHNSON DR. STE 180 WAUKESHA, WI 53186
262.549.1190
fx 262.549.1620

Drawing Title: Third Level Plumbing Demolition Plan

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013

Checked: TK/LHZ

Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: P-103

Dwg. * of

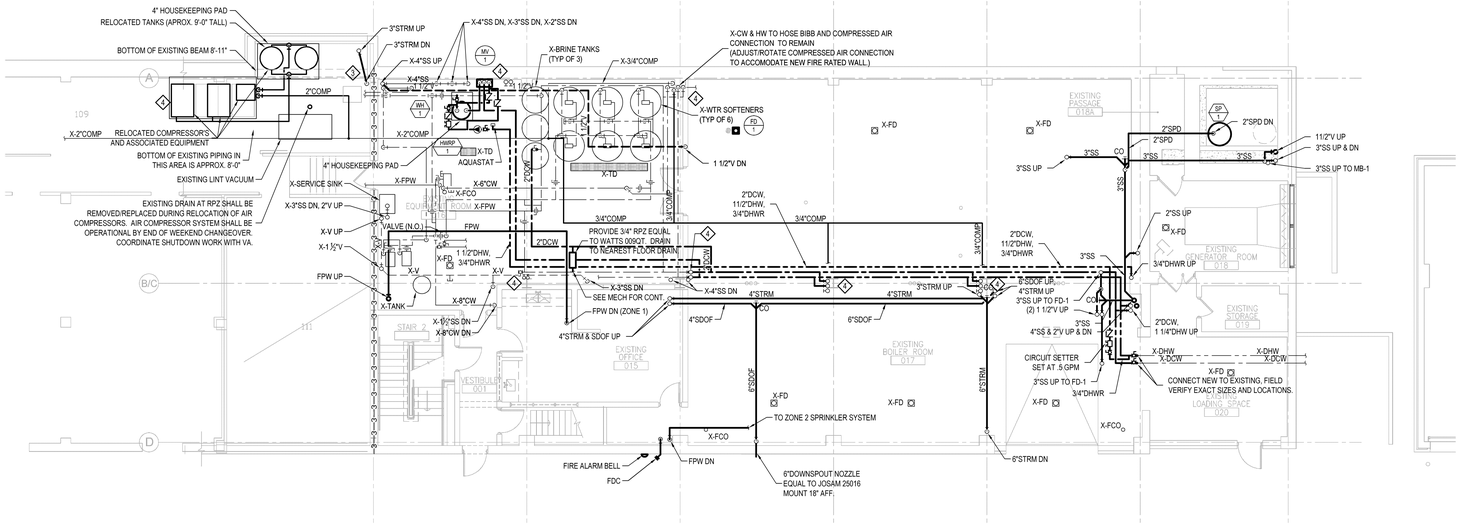
Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231

KEY NOTES

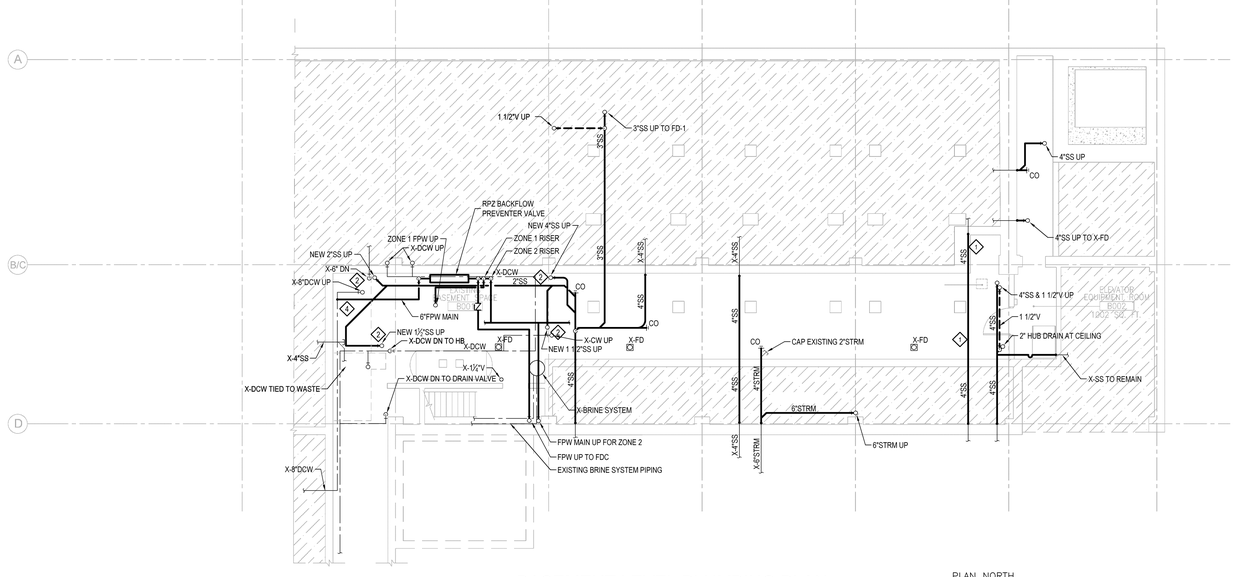
1. REPLACE EXISTING PIPING WITH NEW.
2. CONNECT NEW PIPING TO EXISTING PIPING AT FLOOR ABOVE.
3. REPLACE EXISTING STORM PIPING AND AREA DRAIN WITH NEW. NEW AREA DRAIN SHALL MATCH EXISTING. CONNECT PIPING TO NEW AREA DRAIN FIXTURE ABOVE AND AT THE EXISTING FLOOR PENETRATION BELOW.
4. EXISTING DROPS TO DCW & DHW HOSE BIBBS TO REMAIN. EXISTING DROP TO COMPRESSED AIR CONNECTION TO REMAIN. PROVIDE NEW PIPING AS NECESSARY TO ACCOMMODATE EXISTING DROPS. MATCH EXISTING PIPE SIZES.



C4 GROUND LEVEL PLUMBING PLAN

1/8" = 1'-0" F.F. = 100'-0"

PLAN NORTH



F4 BASEMENT LEVEL PLUMBING PLAN

1/8" = 1'-0" F.F. = 90'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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Drawing Title	Basement and Ground Level Plumbing Plans
Approved: Project Director	
Project Title	William S. Middleton VA Hospital Renovate Building 2
Location	Madison, WI
Date	MARCH 29, 2013
Checked	TK/LHZ
Drawn	JWS
Project Number	607-12-115
Building Number	2
Drawing Number	P-200
Dwg. * of	

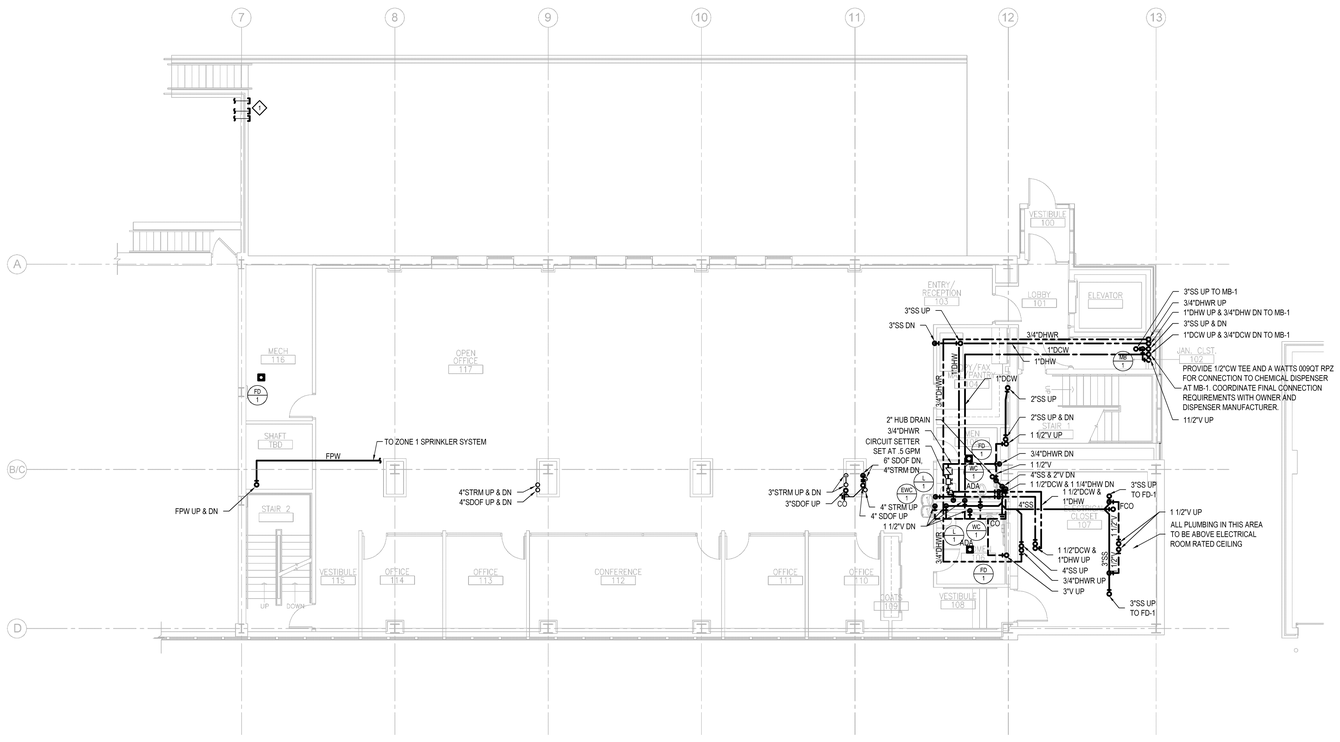
Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231

KEY NOTES

1. PROVIDE WEATHERPROOF CAP AT RETAINING WALL ON EXISTING ABANDONED PIPING.



F4 FIRST LEVEL PLUMBING PLAN

1/8" = 1'-0"

F.F. = 114'-0'

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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262.549.1190 fx 262.549.1620

Drawing Title	First Level Plumbing Plan
Approved: Project Director	
Project Title	William S. Middleton VA Hospital Renovate Building 2
Location	Madison, WI
Date	MARCH 29, 2013
Checked	TK/LHZ
Drawn	JWS
Project Number	607-12-115
Building Number	2
Drawing Number	P-201
Dwg. * of	

Office of Construction and Facilities Management

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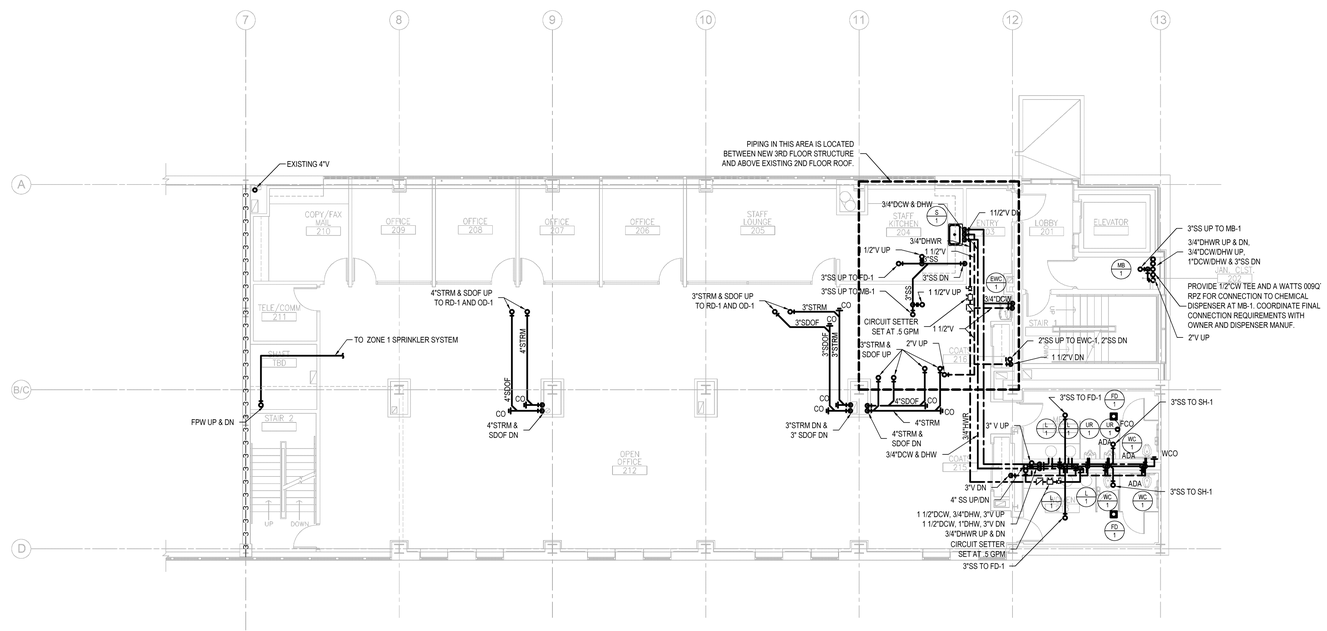

F4 SECOND LEVEL PLUMBING PLAN

1/8" = 1'-0"

F.F. = 122'-4'

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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nagel architects

IBC ENGINEERING SERVICES INC.
N8 W22195 JOHNSON DR, STE 180 WAUKESHA, WI 53186
262.549.1190
fx 262.549.1620

Drawing Title: Second Level Plumbing Plan

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013

Checked: TK/LHZ

Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: P-202

Dwg. * of

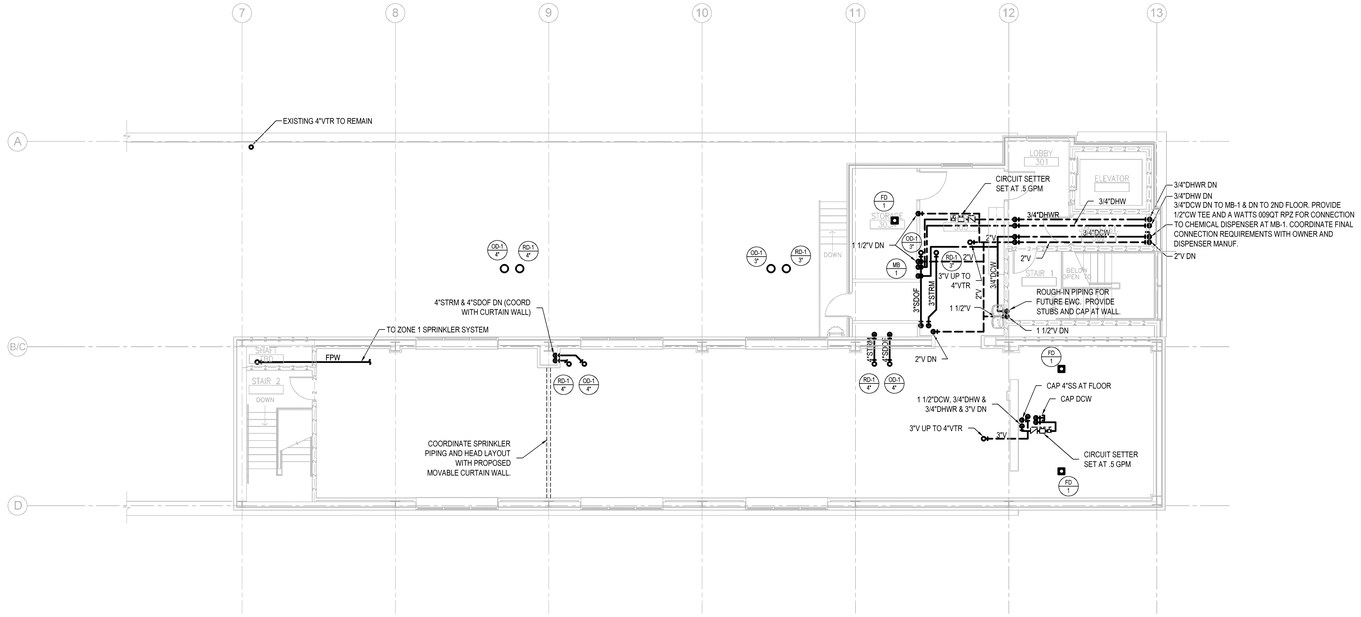
Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231

GENERAL NOTES

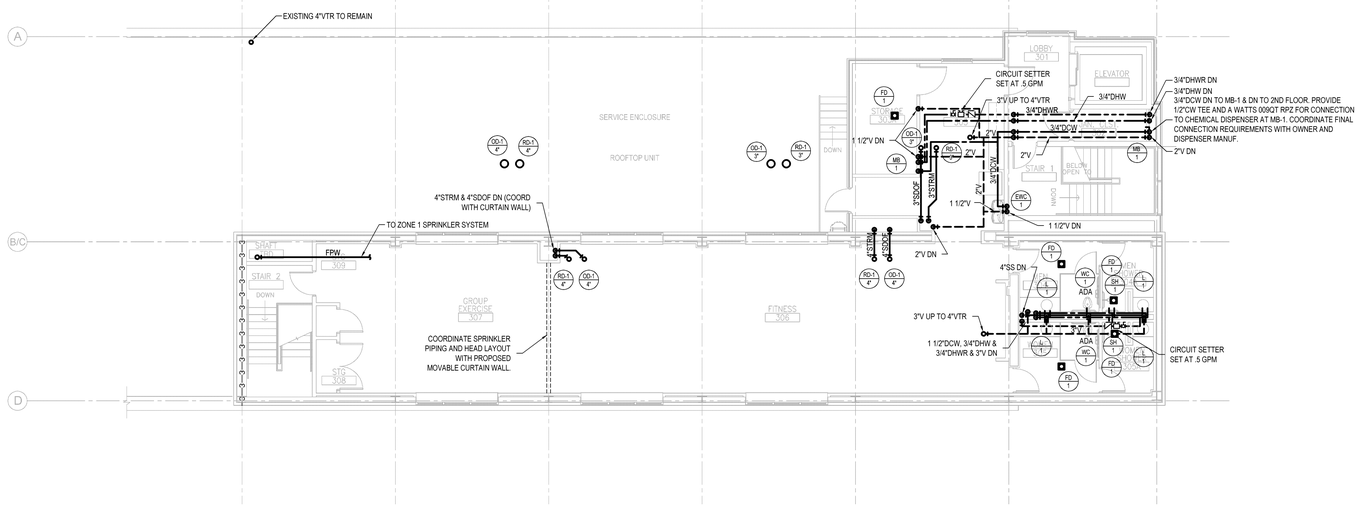
1. ROOF DRAIN REMOVAL AND INSTALLATION MUST BE SEQUENCED TO PREVENT DRAINAGE INTO THE BUILDING DURING CONSTRUCTION.



C4 THIRD LEVEL PLUMBING PLAN - ALTERNATE #1

1/8" = 1'-0" F.F. = 141'-8'

PLAN NORTH



F4 THIRD LEVEL PLUMBING PLAN

1/8" = 1'-0" F.F. = 141'-8'

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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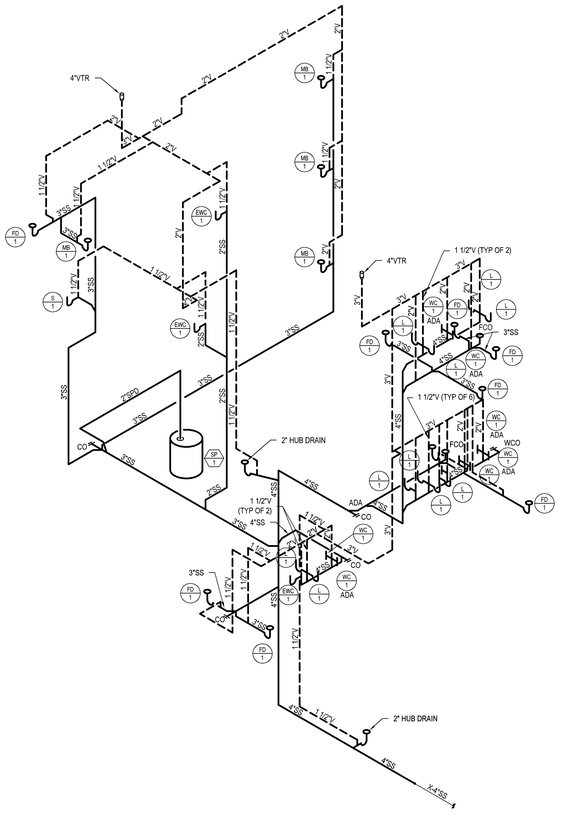
262.549.1190 fx 262.549.1620

Drawing Title	Third Level Plumbing Plan
Approved: Project Director	
Project Title	William S. Middleton VA Hospital Renovate Building 2
Location	Madison, WI
Date	MARCH 29, 2013
Checked	TK/LHZ
Drawn	JWS
Project Number	607-12-115
Building Number	2
Drawing Number	P-203
Dwg. * of	

Office of Construction and Facilities Management

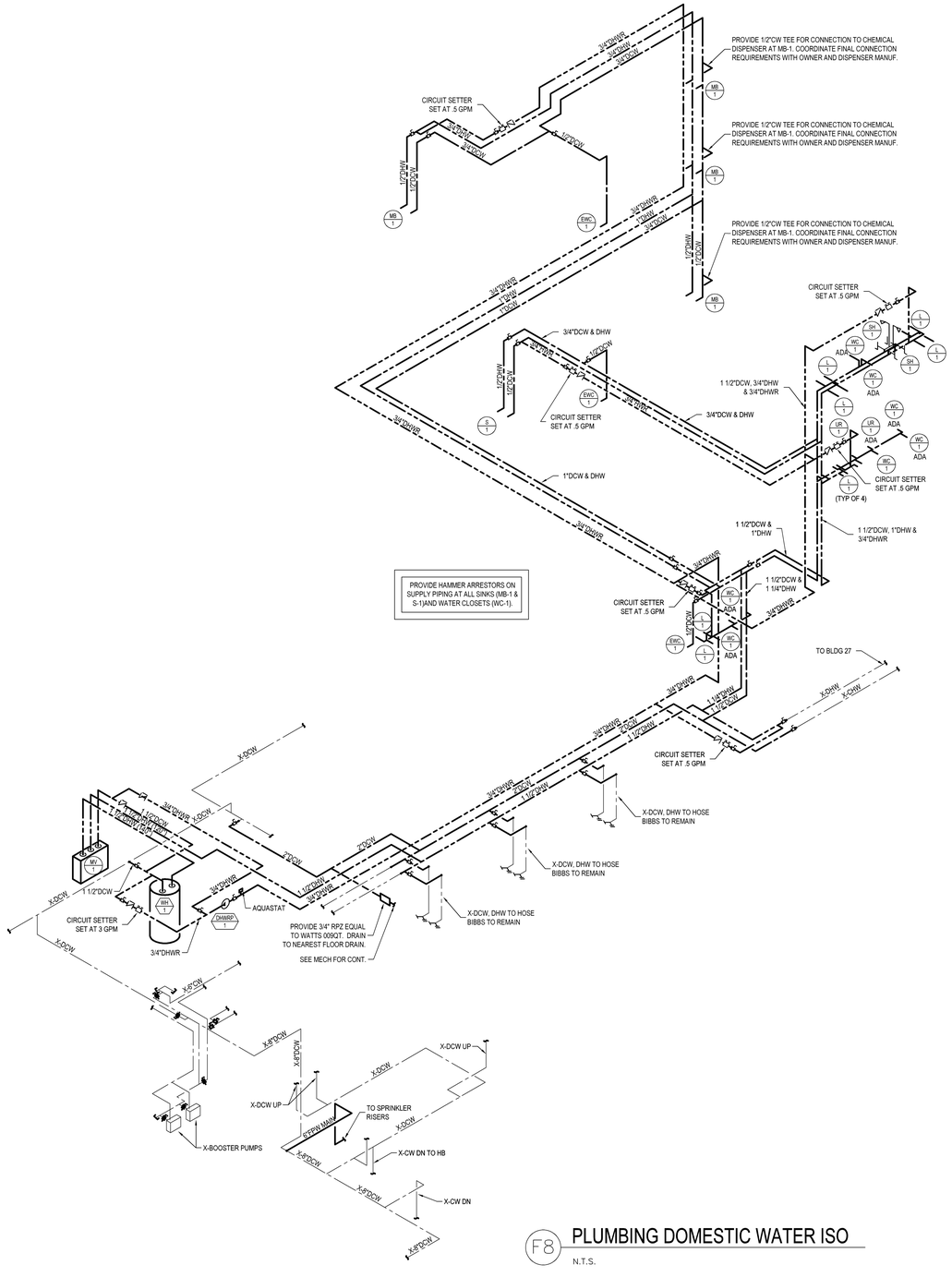
Depar ment of Veterans Affairs

VA FORM 08-6231



F1 PLUMBING SANITARY AND VENT ISO

N.T.S.



F8 PLUMBING DOMESTIC WATER ISO

N.T.S.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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nagel architects

IBC ENGINEERING SERVICES INC.
N8 W22195 JOHNSON DR, STE 180 WAUKESHA, WI 53186
262.549.1190 fx 262.549.1620

Drawing Title: Plumbing Isometric Drawings	Project Title: William S. Middleton VA Hospital Renovate Building 2	Project Number: 607-12-115	Office of Construction and Facilities Management
Approved: Project Director	Location: Madison, WI	Building Number: 2	
	Date: MARCH 29, 2013 / Checked: TK/LHZ / Drawn: JWS	Drawing Number: P-300	Depar ment of Veterans Affairs
		Dwg. * of	

VA FORM 08-6231

VAV BOXES

PLAN DESIGNATION		VAV-1-1	VAV-1-2	VAV-1-3	VAV-1-4	VAV-1-5	VAV-1-6	VAV-1-7	VAV-1-8	VAV-1-9	VAV-1-10	VAV-2-1	VAV-2-2	VAV-2-3	VAV-2-4	VAV-2-5	VAV-2-6	VAV-2-7	VAV-2-8	VAV-2-9	VAV-2-10	VAV-3-1	VAV-3-2	VAV-3-3	VAV-3-4	VAV-3-5	VAV-3-6
MANUFACTURER		TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE
MODEL		VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF	VCWF
INLET SIZE		4"	5"	10"	6"	10"	6"	8"	6"	12"	12"	4"	10"	4"	4"	4"	4"	5"	14"	14"	6"	4"	5"	10"	10"	10"	5"
AIRFLOW	MAX - CFM	150	250	1,000	450	1,200	450	700	350	1,800	1,800	100	900	175	175	175	175	300	2,000	2,500	200	100	300	1,050	1,260	1,260	200
	MIN - CFM	75	100	350	150	400	150	250	125	600	600	50	300	75	75	75	75	100	700	875	100	50	100	375	450	450	100
	MAX PRESSURE DROP - IN WC	0.1	0.1	0.4	0.7	0.4	0.7	0.3	0.3	0.5	0.5	0.1	0.3	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.1	0.1	0.3	0.4	0.6	0.6	0.1
	MIN INLET PRESSURE - IN WC	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"
COIL OUTPUT @ MIN AIRFLOW	CAPACITY - MBH	3.2	4.3	15.2	6.5	17.3	6.5	10.8	5.5	26	26	2.1	13	3.2	3.2	3.2	3.2	4.3	30.3	37.9	4.3	2.1	4.3	16.2	19.5	19.5	4.3
	ENTERING AIR TEMP - °F	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
	LEAVING AIR TEMP - °F	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
	ENTERING WATER TEMP - °F	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180
	LEAVING WATER TEMP - °F	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
	ROWS	2	2	3	2	3	2	3	2	4	4	2	3	2	2	2	2	2	2	4	2	2	2	3	3	3	2
	FLOW RATE - GPM	0.5	0.5	1.6	0.7	1.8	0.7	1.1	0.7	2.7	2.7	0.5	1.3	0.5	0.5	0.5	0.5	0.5	3.1	3.8	0.5	0.5	0.5	1.7	2	2	0.5
	MAX PRESSURE DROP - FT	2	2	7.5	2	11	2	2.5	2	5	5	2	6.5	2	2	2	2	2	4.5	4.5	2	2	2	7.5	11	11	2

GENERAL NOTES:
1. MULTI-ROW HOT WATER RE-HEAT COILS SHALL BE PROVIDED FOR ALL VAV BOXES AS INDICATED ON SCHEDULE FOR FUTURE CONVERSION TO 120°F ENTERING WATER TEMPERATURE.

LOUVERS

PLAN DESIGNATION		L-1	L-2			
MANUFACTURER		GREENHECK	GREENHECK			
MODEL		ESD-435	ESD-435			
CONSTRUCTION	TYPE	INTAKE	EXHAUST			
	MATERIAL	ALUMINUM	ALUMINUM			
CFM		4,700	4,700			
SIZE	WIDTH	42"	42"			
	HEIGHT	60"	60"			
	DEPTH	4"	4"			
MAX FREE AREA VELOCITY		500	800			
MAX PRESSURE DROP - IN WC		0.10	0.10			
FINISH		ANODIZED	ANODIZED			
ACCESSORIES	EXTENDED SILL	X	X			
	HINGED FRAME					
	SECURITY BARS					
	FILTER RACKS					
	INSECT SCREEN	X	X			
REMARKS		1, 2, 3, 4	1, 2, 3, 4			

1. PROVIDE WITH INSECT SCREEN.
2. COORDINATE COLOR WITH ARCHITECT.
3. LOUVER TO BE MOUNTED IN EXISTING WINDOW OPENING. PROVIDE WINDOW GLAZING ADAPTER AS REQUIRED.
4. PROVIDE INSULATED BLANK-OFF PANEL OVER BOTTOM 20" OF LOUVER. ACTIVE LOUVER DIMENSIONS TO BE 42"x 40".

DIFFUSERS & GRILLES

PLAN DESIGNATION		A		B		B1		C		D		E		E1	
MANUFACTURER		TITUS		TITUS		TITUS		TITUS		TITUS		TITUS		TITUS	
MODEL		ML-39		PAS		PAR		TBF-AA		CT-PP-0		300		350	
SERVICE		SUPPLY		SUPPLY		RETURN /EXHAUST / TRANSFER		SUPPLY		SUPPLY		SUPPLY		RETURN /EXHAUST / TRANSFER	
CONSTRUCTION	FACE SIZE	–		24" x 24"		24" x 24"		–		–		SEE DUCT SIZE BELOW		SEE DUCT SIZE BELOW	
	TYPE	4" LINEAR SLOT		PERFORATED		PERFORATED		SINGLE NOZZLE DIFFUSER		LINEAR BAR		39° BLADES		39° BLADES	
	BLADE SPACING - INCHES	–		–		–		–		–		3/4		3/4	
	SLOT SIZE - INCHES	1"		–		–		–		–		–		–	
	NUMBER OF SLOTS	SEE BELOW		–		–		–		–		–		–	
	MOUNTING	LAY-IN		LAY-IN		LAY-IN		SURFACE MOUNT		SURFACE MOUNT		SIDEWALL		SIDEWALL	
	MATERIAL	ALUMINUM		ALUMINUM		ALUMINUM		ALUMINUM		ALUMINUM		ALUMINUM		ALUMINUM	
NECK / DUCT SIZE		0 - 175	2 SLOTS	0 - 150	6" Ø	0 - 200	6" Ø	0 - 300	8" Ø	0 - 210	24" x 3"	0 - 150	6" x 6"	0 - 150	6" x 6"
		175 - 250	3 SLOTS	151 - 225	8" Ø	201 - 300	8" Ø					151 - 205	8" x 6"	151 - 205	8" x 6"
		251 - 400	4 SLOTS	226 - 300	10" Ø	301 - 400	10" Ø					206 - 250	10" x 6"	206 - 250	10" x 6"
		401 - 500	5 SLOTS	301 - 400	12" Ø	401 - 550	12" Ø					251 - 300	12" x 6"	251 - 300	12" x 6"
		501 - 600	6 SLOTS	401 - 550	14" Ø	551 - 650	14" Ø					301 - 350	14" x 6"	301 - 350	14" x 6"
MAX NC		25		25		25		25		25		25		25	
ACCESSORIES	OPPOSED BLADE DAMPERS	–		–		–		–		–		–		–	
	FILTERS	–		–		–		–		–		–		–	

EXHAUST FANS

PLAN DESIGNATION		EF-1	EF-2			
MANUFACTURER		GREENHECK	GREENHECK			
MODEL		SQ-160-A	GB-141-5			
SERVICE		GARAGE	EX. EXHAUST			
LOCATION		GARAGE	ROOF			
CONSTRUCTION	TYPE	INLINE	PRV			
	CASING MATERIAL	GALV. STEEL	ALUMINUM			
	FAN MATERIAL	ALUMINUM	ALUMINUM			
	DRIVE	DIRECT	BELT			
AIR	CFM	4,700	1,500			
	EXT STATIC PRESS - IN WC	0.25	0.75			
	FAN RPM	1,673	1,206			
ELECTRICAL	FAN MOTOR HP	2	1/2			
	FAN MOTOR BHP	1.54	0.4			
	VOLTS/PHASE	460V / 3Ø	460V / 3Ø			
INLET dBA		75	59			
INLET SONES		23.0	9.6			
REMARKS		1, 2, 3, 4, 5	1, 2, 6			

1. PROVIDE FACTORY MOUNTED AND WIRED DISCONNECT.
2. PROVIDE MOTORIZED BACKDRAFT DAMPER.
3. PROVIDE VIBRATION ISOLATION HANGERS. SEE SPECIFICATION SECTION 23 05 41.
4. PROVIDE INVERTER DUTY FAN MOTOR AND VFD.
5. PROVIDE INLET GUARD ON FAN INLET.
6. PROVIDE AND INSTALL FACTORY SUPPLIED 18" TALL ROOF CURB.

DUCTLESS SPLIT AC SYSTEMS

PLAN DESIGNATION		DSS-1	DSS-2
MANUFACTURER		MITSUBISHI	MITSUBISHI
COOLING CAPACITY - BTUH		18,000	30,000
COOLING EFFICIENCY - SEER		20.2	14.5
TOTAL INPUT POWER - WATTS		1,540	3,360
OUTDOOR UNIT (ACU-)	MODEL	MUZFE18NA	MUZD30NA
	MCA	17.1	21
	MOP	20	25
	VOLTS/PHASE	208 / 1	208 / 1
	WEIGHT - LBS	119	141
	DIMENSIONS - H x W x D	33" x 35" x 13"	34" x 33" x 13"
INDOOR UNIT (DSS-)	MODEL	MSZFE18NA	MSZD30NA
	MCA	1	1
	FAN MOTOR FLA	0.76	0.76
	WEIGHT - LBS	37	23
	DIMENSIONS - H x W x D	13" x 44" x 10"	15" x 47" x 12"
REMARKS		1, 2	1, 2

1. PROVIDE WITH CONDENSATE PUMP & WALL-MOUNTED WIRED REMOTE CONTROLLER.
2. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.

GAS FIRED MAKE-UP AIR UNIT

PLAN DESIGNATION		MAU-1	
MANUFACTURER		GREENHECK	
MODEL		DGX-112-H22	
NATURAL GAS INPUT - MBH		400	
BURNER STAGES		MODULATING	
CFM		4,700	
EXTERNAL STATIC PRESSURE		0.4	
MOTOR	HP	3	
	RPM	1,074	
	VOLTS/PHASE	460V / 3Ø	
OPERATING WEIGHT		1,200 LBS	
REMARKS		1, 2, 3, 4, 5, 6	

1. PROVIDE DISCONNECT SWITCH.
2. LOCATE CONTROLS ON ACCESSIBLE SIDE OF UNIT.
3. UNIT TO BE HUNG FROM CEILING WITH VIBRATION ISOLATION HANGERS.
4. PROVIDE REMOTE INDUSTRIAL CONTROL PANEL MOUNTED ON WALL NEAR UNIT.
5. PROVIDE WITH INLET DAMPER.
6. PROVIDE WITH INVERTER DUTY SUPPLY FAN MOTOR AND VFD.
7. PROVIDE GAS PRESSURE REDUCING VALVE TO REDUCE GAS PRESS FROM 10 PSI DN TO 7"-11"WC

PUMPS

PLAN DESIGNATION		HWP-1	HWP-2			
MANUFACTURER		BELL & GOSSETT	BELL & GOSSETT			
SERIES		80	80			
MODEL		2x2x9-1/2B	2x2x5-1/2B			
SYSTEM		HOT WATER	HOT WATER			
LOCATION		EQUIP. RM	EQUIP. RM			
TYPE		VERT. INLINE	VERT. INLINE			
FLOW RATE - GPM		80	80			
HEAD PRESSURE - FT WC		50	50			
INLET SIZE - NPS		2	2			
OUTLET SIZE - NPS		2	2			
FLUID		WATER	WATER			
OPERATING TEMPERATURE		180°F	180°F			
MOTOR	HP	3	3			
	MAX BHP	1.8	1.8			
	RPM	1,750	1,750			
	MIN EFFICIENCY	55%	55%			
	VOLTS/PHASE	460V / 3Ø	460V / 3Ø			
CONTROL		VFD	VFD			

GENERAL NOTES:
1. HWP-1 AND HWP-2 SHALL BE OPERATED IN LEAD/LAG ARRANGEMENT WITH ONE PUMP ACTING AS STAND-BY.

HEAT RECOVERY WHEEL

PLAN DESIGNATION		HRW-1	
MANUFACTURER		SGAMERICA	
MODEL		HPC-1300T20	
SERVICE		AHU-152	
LOCATION		AHU-152	
TYPE		ENTHALPY	
SUMMER EFFECTIVENESS		80%	
WINTER EFFECTIVENESS		71.0%	
EXHAUST AIR	AIRFLOW - CFM	4,100	
	FACE VELOCITY - FPM	530	
	PRESSURE DROP - IN WC	0.48	
	SUMMER EDB TEMP - °F	75.0	
	SUMMER EWB TEMP - °F	65.3	
	SUMMER LDB TEMP - °F	93.4	
	SUMMER LWB TEMP - °F	73.4	
	WINTER EDB TEMP - °F	75.0	
	WINTER EWB TEMP - °F	53.3	
	WINTER LDB TEMP - °F	14.7	
	WINTER LWB TEMP - °F	13.7	
OUTSIDE AIR	AIRFLOW - CFM	4,100	
	FACE VELOCITY - FPM	576	
	PRESSURE DROP - IN WC	0.53	
	SUMMER EDB TEMP - °F	97.0	
	SUMMER EWB TEMP - °F	75.0	
	SUMMER LDB TEMP - °F	78.8	
	SUMMER LWB TEMP - °F	67.3	
	WINTER EDB TEMP - °F	-10.0	
	WINTER EWB TEMP - °F	-10.1	
	WINTER LDB TEMP - °F	50.4	
	WINTER LWB TEMP - °F	39.8	
WHEEL DRIVE	HP	1/4	
	VOLTS/PHASE	460V / 3Ø	

HEAT EXCHANGERS

PLAN DESIGNATION		HX-1	HX-2			
MANUFACTURER		BELL & GOSSETT	BELL & GOSSETT			
MODEL		SU83-2	SU83-2			
CAPACITY - BTUH		781,767	781,767			
STEAM	PRESSURE - PSIG	5	5			
	FLOW - LBS/HR	813.9	813.9			
WATER	FLOW - GPM	40.0	40.0			
	PRESS DROP - FT WC	0.5	0.5			
	ENTERING WATER TEMP - °F	160	160			
	LEAVING WATER TEMP - °F	200	200			
	FOULING FACTOR	0.00045	0.00045			
LENGTH - INCHES		42"	42"			
DIAMETER - INCHES		8-5/8"	8-5/8"			
NUMBER OF PASSES		2	2			

GENERAL NOTES:
1. HEAT EXCHANGER SHALL BE OPERATED IN A LEAD/LAG ARRANGEMENT WITH ONE HEAT EXCHANGER ACTING AS STAND-BY.
2. PROVIDE STAND FOR FLOOR MOUNTING.

HOT WATER UNIT HEATERS

PLAN DESIGNATION		UH-1	UH-2			
MANUFACTURER		MODINE	MODINE			
MODEL		HSB-121	HSB-121			
BTUH @ 180°F EWT, 160°F LWT, 60°F EAT		79,701	79,701			
GPM		9.7	9.7			
WATER PRESSURE DROP - FT WC		3.3	3.3			
CFM		1,775	1,775			
MOTOR	HP	1/5	1/5			
	RPM	1,075	1,075			
ELECTRICAL	AMPS	2.8	2.8			
	VOLTS / PHASE	115V / 1Ø	115V / 1Ø			
OPERATING WEIGHT		90	90			
REMARKS		1, 2, 3	1, 2, 3			

1. PROVIDE MOTORIZED 2-WAY CONTROL VALVE PACKAGE WITH CIRCUIT SETTERS AND P/T PLUGS.
2. PROVIDE UNIT MOUNTED FAN SWITCH AND DISCONNECT SWITCH.
3. PROVIDE VIBRATION ISOLATION HANGERS. MOUNT A MINIMUM OF 8'-0" AFF.

CABINET UNIT HEATERS

PLAN DESIGNATION		CUH-1	CUH-2	CUH-3	CUH-4	CUH-5	CUH-6
MANUFACTURER		MODINE	MODINE	MODINE	MODINE	MODINE	MODINE
MODEL		CW	CW	CW	CW	CW	CW
LOCATION		VESTIBULE 001	VESTIBULE 100	STAIR 2	STAIR 2	STAIR 1	STAIR 1
MOUNTING		RECESSED	RECESSED	RECESSED	SURFACE	SURFACE	SURFACE
CAPACITY - BTUH		12,400	12,400	12,400	12,400	12,400	12,400
AIR	CFM	250	250	250	250	250	250
	ENTERING AIR TEMP - °F	60	60	60	60	60	60
	LEAVING AIR TEMP - °F	105	105	105	105	105	105
WATER	GPM	1.5	1.5	1.5	1.5	1.5	1.5
	MAX PRESS DROP - FT WC	0.2	0.2	0.2	0.2	0.2	0.2
	ENTERING TEMPERATURE - °F	180	180	180	180	180	180
	LEAVING TEMPERATURE - °F	160	160	160	160	160	160
FAN	RPM	N/A	N/A	N/A	N/A	N/A	N/A
	MOTOR HP	1/30	1/30	1/30	1/30	1/30	1/30
	VOLTS/PHASE	115/1 PH/60 HZ	115/1 PH/60 HZ	115/1 PH/60 HZ	115/1 PH/60 HZ	115/1 PH/60 HZ	115/1 PH/60 HZ
INLET CONFIGURATION		INT. GRILLE	INT. GRILLE	INT. GRILLE	INT. GRILLE	INT. GRILLE	INT. GRILLE
OUTLET CONFIGURATION		INT. GRILLE	INT. GRILLE	INT. GRILLE	INT. GRILLE	INT. GRILLE	INT. GRILLE
CABINET SIZE (H x W x D)		38" X 25" X 10"	38" X 25" X 10"	38" X 25" X 10"	38" X 25" X 10"	38" X 25" X 10"	38" X 25" X 10"
REMARKS		1, 2, 3	1, 2, 3	1, 2, 4	1, 2	1, 2	1, 2

1. PROVIDE MOTORIZED 2-WAY CONTROL VALVE PACKAGE WITH CIRCUIT SETTERS AND P/T PLUGS.
2. PROVIDE UNIT MOUNTED FAN SWITCH AND DISCONNECT SWITCH.
3. PROVIDE VIBRATION ISOLATION HANGERS. MOUNT IN CEILING.
4. UNIT SHALL BE RECESSED IN WALL AT STAIR LANDING.

RADIANT PANELS

PLAN DESIGNATION		RCP-1	RCP-2
MANUFACTURER		RITTLING	RITTLING
MODEL		LINEAR RADIANT	LINEAR RADIANT
LENGTH		48"	24"
WIDTH		24"	24"
MEAN WATER TEMPERATURE		170	170
FLOW RATE - GPM		0.5	0.5
MAX PRESSURE DROP - FT WC		5	5
FLUID		WATER	WATER

GENERAL NOTES:
1. COORDINATE COLOR WITH ARCHITECT.
2. CONTRACTOR SHALL INSULATE RADIANT PANEL WITH MIN. 1"FOIL BACK BATT INSULATION.
3. CONTRACTOR SHALL REINFORCE CEILING GRID TO SUPPORT PANEL.
4. PROVIDE 2-WAY CONTROL VALVE PACKAGE WITH CIRCUIT SETTERS AND P/T PLUGS.

FIN TUBE RADIATION

PLAN DESIGNATION		FT-1	
MANUFACTURER		RITTLING	
MODEL		SBG-SLOPE TOP	
PIPE SIZE		3/4"	
MOUNTING		4" AFF	
BTU PER LINEAR FOOT @ 170°F AWT, 65°F EAT		800	
FINS	MATERIAL	COPPER	
	PER FOOT	40	
	LENGTH	SEE PLANS	
	ROWS	1	
ENCLOSURE		SLOPE TOP	

GENERAL NOTES:
1. PROVIDE 2-WAY CONTROL VALVE PACKAGE WITH CIRCUIT SETTERS AND P/T PLUGS.

LEGEND

- NEW HVAC EQUIPMENT
- EXISTING HVAC EQUIPMENT
- NEW DUCTWORK
- EXISTING DUCTWORK
- NEW SUPPLY DIFFUSER
- EXISTING SUPPLY DIFFUSER
- NEW RETURN/EXHAUST/TRANSFER GRILLE
- EXISTING RETURN/EXHAUST/TRANSFER GRILLE
- THERMOSTAT
- HWS — NEW HOT WATER SUPPLY PIPING
- X-HWS — EXISTING HOT WATER SUPPLY PIPING
- HWR — NEW HOT WATER RETURN PIPING
- X-HWR — EXISTING HOT WATER RETURN PIPING
- CHWS — NEW CHILLED WATER SUPPLY PIPING
- X-CHWS — EXISTING CHILLED WATER SUPPLY PIPING
- CHWR — NEW CHILLED WATER RETURN PIPING
- X-CHWR — EXISTING CHILLED WATER RETURN PIPING
- NG — NEW NATURAL GAS PIPING
- X-NG — EXISTING NATURAL GAS PIPING
- HPS — NEW HIGH PRESSURE STEAM PIPING
- X-HPS — EXISTING HIGH PRESSURE STEAM PIPING
- LPS — NEW LOW PRESSURE STEAM PIPING
- X-LPS — EXISTING LOW PRESSURE STEAM PIPING
- LP CR — NEW LP STEAM CONDENSATE RETURN PIPING
- X-LP CR — EXISTING LP STEAM CONDENSATE RETURN PIPING
- HP CR — NEW HP STEAM CONDENSATE RETURN PIPING
- X-HP CR — EXISTING HP STEAM CONDENSATE RETURN PIPING
- CR — NEW PUMPED STEAM CONDENSATE RETURN PIPING
- X-CR — EXIST. PUMPED STEAM CONDENSATE RETURN PIPING
- CD — CONDENSATE DRAIN PIPING
- RL/RS — REFRIGERANT LIQUID/SUCTION PIPING
- DUCT UP
- DUCT DOWN
- FLEX DUCT
- MOTORIZED DAMPER
- FIRE DAMPER
- FIRE/SMOKE DAMPER
- BALANCING DAMPER
- DUCT SMOKE DETECTOR
- ELBOW WITH TURNING VANES
- AIR FLOW INDICATOR
- UC — DOOR UNDER CUT
- DUCT, PIPING, EQUIPMENT TO BE REMOVED
- KEY NOTE
- DEMO NOTE
- METER
- BALL VALVE
- GATE VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- CIRCUIT SETTER
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- PRESSURE REGULATING VALVE
- TRIPLE DUTY VALVE
- AIR VENT
- P/T RELIEF VALVE
- P/T PLUG
- PIPE ELBOW/TEE DOWN
- PIPE ELBOW/TEE UP
- CAPPED PIPE END

GENERAL NOTES

1. THESE DRAWINGS DO NOT ATTEMPT TO SHOW THE COMPLETE DETAILS OF BUILDING CONSTRUCTION, WHICH AFFECT THE MECHANICAL INSTALLATION. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND REFER TO OTHER TRADES DRAWINGS FOR ADDITIONAL DETAILS WHICH AFFECT THE PROPER INSTALLATION OF THIS WORK. NO EXTRA PAYMENT WILL BE ALLOWED FOR THE FAILURE TO OBTAIN THIS INFORMATION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING FIELD CONDITIONS. THE CONTRACTOR SHALL REVIEW EXISTING FIELD CONDITIONS PRIOR TO BID AND SHALL TAKE INTO ACCOUNT IN THE BID PROPOSAL. NO ADDITIONAL COMPENSATION WILL BE ALLOWED DUE TO THE CONTRACTOR'S FAILURE TO INCLUDE ALL NECESSARY WORK IN THE BID PROPOSAL.
3. MECHANICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF OTHER TRADES. RESOLVE ALL CONFLICTS AT NO ADDITIONAL COST TO THE OWNER, ARCHITECT OR ENGINEER.
4. THESE DRAWINGS ARE A DIAGRAMMATIC REPRESENTATION OF WORK TO BE ACCOMPLISHED AND AS SUCH DO NOT SHOW ALL REQUIRED OFFSETS OF DUCTWORK AND PIPING. MECHANICAL CONTRACTOR SHALL INSTALL MATERIAL AND EQUIPMENT AS TO CONFORM TO THE STRUCTURE, EQUIPMENT CONNECTIONS AND MAINTAIN HEADROOM AND PASSAGEWAY.
5. ALL CUTTING AND PATCHING OF EXISTING STRUCTURE TO ACCOMMODATE NEW HVAC IS BY MECHANICAL CONTRACTOR.
6. COORDINATE EXACT LOCATION OF CEILING DIFFUSERS AND GRILLES WITH REFLECTED CEILING PLAN.
7. KEYNOTES PERTAIN ONLY TO THE DRAWING THEY ARE LOCATED ON.
8. DUCT SIZES ARE CLEAR INSIDE DIMENSIONS.
9. ALL HOT WATER BRANCH LINES ARE 3/4" UNLESS NOTED OTHERWISE.
10. MECHANICAL CONTRACTOR SHALL CLEAN ALL EXISTING DUCTWORK, COILS AND DIFFUSERS THAT ARE DESIGNATED TO REMAIN WITHIN PROJECT LIMITS.
11. ALL BRANCH DUCTS SHALL MATCH DIFFUSER NECK SIZES UNLESS OTHERWISE NOTED.
12. ALL CONTROL WIRING SHALL BE RUN IN CONDUIT.
13. MAINTAIN 10' MINIMUM DISTANCE FROM OUTSIDE AIR INTAKE TO ANY EXHAUST OR TOILET VENTS.
14. FLEXIBLE DUCTWORK SHALL NOT EXCEED 5'-0" IN LENGTH.

ABBREVIATIONS

AFF	— ABOVE FINISHED FLOOR
AP	— ACCESS PANEL
BOD	— BOTTOM OF DUCT
CFM	— CUBIC FEET PER MINUTE
CP	— CONTROL PANEL
DN	— DOWN
EA	— EXHAUST AIR
ESP	— EXTERNAL STATIC PRESSURE
FD	— FIRE DAMPER
MIN	— MINIMUM
MAX	— MAXIMUM
MUA	— MAKE UP AIR
OA	— OUTSIDE AIR
OPG	— OPENING
OAD	— OUTSIDE AIR DAMPER
RA	— RETURN AIR
REA	— RELIEF AIR
SA	— SUPPLY AIR
WC	— WATER COLUMN
X-...	— EXISTING ...

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

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Drawing Title: HVAC General Notes, Legend and Schedules

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: H-001

Dwg. * of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231

AIR SEPARATOR

PLAN DESIGNATION	AS-1
MANUFACTURER	B&G
MODEL	R-3F
SIZE	3"
FLOW RATE - GPM	85
OPERATING TEMP - °F	180

EXPANSION TANK

PLAN DESIGNATION		ET-1
MANUFACTURER		B&G
MODEL		D-80
CONSTRUCTION	TYPE	DAPHRAGM
	MATERIAL	STEEL
SIZE (GALLONS)		44.4
ACCEPTANCE (GALLLONS)		22.6

PRE-CHARGE TANK TO 12 PSI

VENTILATION SCHEDULE (AHU-152)

ROOM NUMBER	ROOM NAME	ROOM USE	AREA SQ FT	OCCUPANT LOAD	ACH REQ'D SUPPLY	ACH REQ'D OUTDSIDE	ACH REQ'D EXHAUST	CFM REQ'D SUPPLY	CFM REQ'D OUTSIDE	CFM REQ'D EXHAUST	CFM REQ'D CALCS	CFM REQ'D HEATING	ROOM AIR BALANCE	CFM PROVIDED SUPPLY	CFM PROVIDED OUTSIDE AIR	CFM PROVIDED EXHAUST	REMARKS
100	VESTIBULE	VESTIBULE	40	NA	NA	NA	NA	38	0	0	141	141	POSITIVE	50	13	0	SPACE IS HEATED BY CUH-2
101	LOBBY	CORRIDOR	100	NA	4	2	NA	60	30	0	42	30	POSITIVE	100	25	0	
102	JANITORS CLOSET	HAC	40	NA	NA	NA	10	0	0	73	5	5	DBL NEGATIVE	0	0	100	
103	ENTRY/RECEPTION	OFFICE	102	1	4	2	NA	61	31	0	--	--	NEUTRAL	--	--	--	INCLUDED IN OPEN OFFICE 117
104	COPY/FAX/MAIL/PANTRY	COPY/PRINTING	116	NA	NA	NA	6	0	0	104	251	75	NEGATIVE	250	61	300	
105	MEN	TOILET	74	NA	NA	NA	10	0	0	111	11	11	DBL NEGATIVE	0	0	150	
106	WOMEN	TOILET	84	NA	NA	NA	10	0	0	126	11	11	DBL NEGATIVE	0	0	150	
107	ELECTRICAL CLOSET	ELEC. EQUIPMENT	364	NA	NA	NA	NA	0	0	0	--	--	NEUTRAL	0	0	0	SPACE IS COOLED BY DSS-2
108	VESTIBULE	CORRIDOR	112	NA	4	2	NA	67	34	0	553	166	POSITIVE	550	134	0	
109	COATS	STORAGE	20	NA	NA	NA	NA	0	0	0	--	--	NEUTRAL	0	0	0	
110	OFFICE	OFFICE	120	1	4	2	NA	72	36	0	467	140	NEUTRAL	450	110	0	
111	OFFICE	OFFICE	130	1	4	2	NA	78	39	0	467	140	NEUTRAL	450	110	0	
112	CONFERENCE	CONFERENCE ROOM	310	16	4	2	NA	186	93	0	1,168	350	NEUTRAL	1,200	293	0	
113	OFFICE	OFFICE	130	1	4	2	NA	78	39	0	467	140	NEUTRAL	450	110	0	
114	OFFICE	OFFICE	130	1	4	2	NA	78	39	0	467	140	NEUTRAL	450	110	0	
115	VESTIBULE	CORRIDOR	75	NA	4	2	NA	45	23	0	225	67	POSITIVE	250	61	0	
116	MECH	EQUIPMENT ROOM	180	NA	6	2	NA	198	66	0	313	94	NEUTRAL	350	86	350	
117	OPEN OFFICE	OFFICE	2,850	14	4	2	NA	1,710	855	0	3,559	1,071	NEUTRAL	3,600	877	0	
201	LOBBY	CORRIDOR	90	NA	4	2	NA	54	27	0	71	25	POSITIVE	100	25	0	
202	JANITORS CLOSET	HAC	40	NA	NA	NA	10	0	0	73	5	5	DBL NEGATIVE	0	0	100	
203	ENTRY	CORRIDOR	74	NA	4	2	NA	44	22	0	--	--	POSITIVE	--	--	--	INCLUDED IN OPEN OFFICE 212
204	STAFF KITCHEN	KITCHENETTE	185	5	NA	NA	6	0	0	167	429	159	DBL NEGATIVE	450	110	500	
205	STAFF LOUNGE	LOUNGE	245	6	4	2	4	147	74	147	341	102	NEGATIVE	450	110	500	
206	OFFICE	OFFICE	132	1	4	2	NA	79	40	0	170	51	NEUTRAL	175	43	0	
207	OFFICE	OFFICE	132	1	4	2	NA	79	40	0	170	51	NEUTRAL	175	43	0	
208	OFFICE	OFFICE	132	1	4	2	NA	79	40	0	170	51	NEUTRAL	175	43	0	
209	OFFICE	OFFICE	132	1	4	2	NA	79	40	0	170	51	NEUTRAL	175	43	0	
210	COPY/FAX/MAIL	COPY/PRINTING	145	NA	NA	NA	6	0	0	131	284	85	NEGATIVE	300	74	350	
211	TELE/COMM	ELEC. EQUIPMENT	62	NA	NA	NA	NA	0	0	0	145	43	NEUTRAL	200	49	200	
212	OPEN OFFICE	OFFICE	3,150	16	4	2	NA	1,890	945	0	4,407	1,377	NEUTRAL	4,500	1,096	0	
213	WOMEN	TOILET	164	NA	NA	NA	10	0	0	219	42	42	DBL NEGATIVE	0	0	250	
214	MEN	TOILET	156	NA	NA	NA	10	0	0	208	25	25	DBL NEGATIVE	0	0	250	
215	COATS	STORAGE	16	NA	NA	NA	NA	0	0	0	--	--	NEUTRAL	0	0	0	
216	COATS	STORAGE	12	NA	NA	NA	NA	0	0	0	--	--	NEUTRAL	0	0	0	
301	LOBBY	CORRIDOR	110	NA	4	2	NA	66	33	0	92	28	POSITIVE	100	25	0	
302	JANITORS CLOSET	HAC	40	NA	NA	NA	10	0	0	98	8	8	DBL NEGATIVE	0	0	100	
303	ENTRY	CORRIDOR	285	NA	4	2	NA	171	86	0	294	88	POSITIVE	300	74	0	
303A	STORAGE	HAC	122	NA	NA	NA	10	0	0	183	70	21	DBL NEGATIVE	200	49	300	
304	MEN	TOILET	100	NA	NA	NA	10	0	0	150	10	10	DBL NEGATIVE	0	0	175	
304A	MEN SHOWER	SHOWER	60	NA	NA	NA	4	0	0	36	22	22	DBL NEGATIVE	0	0	75	
305	WOMEN	TOILET	100	NA	NA	NA	10	0	0	150	20	20	DBL NEGATIVE	0	0	175	
305A	WOMEN SHOWER	SHOWER	60	NA	NA	NA	4	0	0	36	28	28	DBL NEGATIVE	0	0	75	
306	FITNESS	HEALTH CLUB	1,200	12	NA	NA	NA	NA	312	NA	2,317	695	NEUTRAL	2,310	563	0	PER ASHRAE 62.1
307	GROUP EXERCISE	HEALTH CLUB	550	22	NA	NA	NA	NA	495	NA	1,222	495	NEUTRAL	1,260	307	0	PER ASHRAE 62.1
308	STG	STORAGE	18	NA	NA	NA	NA	0	0	0	--	--	NEUTRAL	0	0	0	
309	STG	STORAGE	12	NA	NA	NA	NA	0	0	0	--	--	NEUTRAL	0	0	0	
NA=NOT APPLICABLE		TOTALS:	12501	96				5361	3435	2012	18669	6063		19020	4644	4100	

NOTE: AHU-152'S SUPPLY AIR VOLUME HAS BEEN SIZED FOR A 90% DIVERSITY FACTOR AND WILL PROVIDE A MAXIMUM SUPPLY AIR VOLUME OF 17,150 CFM.

CUSTOM OUTDOOR AHU

PLAN DESIGNATION		AHU-152	
MANUFACTURER		HAAKON	
MODEL		CUSTOM	
SERVICE		BUILDING 2	
LOCATION		ROOF	
SUPPLY FAN	MAX SUPPLY AIR - CFM	17,150	
	MIN SUPPLY AIR - CFM	6,750	
	MIN OUTSIDE AIR - CFM	4,100	
	EXT STATIC PRESS - IN WC	3.25"	
	SIZE & TYPE	30" PLENUM	
	BHP	26.7	
	MOTOR HP	30	
	RPM	1,750	
EXHAUST FAN	MAX EXHAUST AIR - CFM	4,100	
	EXT STATIC PRESS - IN WC	1.3"	
	SIZE & TYPE	13" BC	
	BHP	2.8	
	MOTOR HP	5	
	RPM	1,750	
SECTIONS	DISCHARGE PLENUM		
	SUPPLY FAN	X	
	FINAL FILTERS	X	
	ACCESS SECTION	X	
	HUMIDIFIER		
	COOLING COIL	X	
	HEAT WHEEL	X	
	STEAM COIL		
	FACE & BYPASS DAMPERS		
	PREFILTERS (30% EFF)	X	
	INTAKE DAMPER	X	
ACCESSORIES	ROOF CURB	X	
	VAIRIABLE SPEED DRIVE	X	
	DOUBLE WALL CASING	X	
SOUND POWER (RADIATED)	2ND OCTAVE	67	
	3RD OCTAVE	59	
	4TH OCTAVE	55	
	5TH OCTAVE	55	
	6TH OCTAVE	55	
	7TH OCTAVE	55	
SOUND POWER (DISCHARGE)	2ND OCTAVE	84	
	3RD OCTAVE	91	
	4TH OCTAVE	96	
	5TH OCTAVE	87	
	6TH OCTAVE	86	
	7TH OCTAVE	81	

GENERAL NOTES:
1. PROVIDE AIRFLOW MEASURING STATIONS ON MIN OUTSIDE AIR, EXHAUST AIR, AND SUPPLY AIR.
2. UNIT TO HAVE A MAX PHYSICAL SIZE OF 30'-6"L x 15'-0"W x 9'-0"H AND A MAX WEIGHT OF 19,000 LBS.
3. PROVIDE INVERTER DUTY MOTORS.

AIR COILS

PLAN DESIGNATION		CC-1	
MANUFACTURER		AEROFIN	
COIL TYPE		W	
SERVICE		AHU-152	
CONSTRUCTION	MAX FINS PER INCH (FPI)	9	
	ROWS	6	
	TURBULATORS		
	FACE/BYPASS (TYPE)		
	GLYCOL	N/A	
AIR	CFM	17,150	
	MAX VELOCITY - FPM	500	
	MAX PRESS DROP - IN WC	0.6	
	TOTAL CAPACITY - MBH	585	
	SENSIBLE CAPACITY - MBH	380	
	ENTERING DB TEMP - °F	75.6	
	ENTERING WB TEMP - °F	65.6	
	LEAVING DB TEMP - °F	54.6	
	LEAVING WB TEMP - °F	54.0	
WATER	GPM	118.0	
	MAX VELOCITY - FPM	3.6	
	MAX PRESS DROP - FT WC	9.4	
	ENTERING TEMP - °F	45	
	LEAVING TEMP - °F	55	
STEAM	PRESSURE		
	FLOW - LBS/HR		

STEAM TRAP

PLAN DESIGNATION	ST-1	ST-2	ST-3	ST-4	ST-5	ST-6 (EOL)	
SERVES	PRS 1/3 LEG	PRS 2/3 LEG	MAIN LPS	HX-1	HX-2	END OF LINE	
MANUFACTURER	ARMSTRONG	ARMSTRONG	ARMSTRONG	ARMSTRONG	ARMSTRONG	ARMSTRONG	
MODEL	A SERIES F&T	JD SERIES F&T	200 (INV BUCKET)	B SERIES F&T	B SERIES F&T	200 (INV BUCKET)	
SIZE	5/16	7/16	5/8	1/2	1/2	3/4	
CAPACITY - LBS/HR	800	2,250	2,900	1,900	1,900	420	
PRESSURE DIFFERENTIAL - PSI	1/2	1/2	1/2	1/2	1/2	1/2	
MAX OPERATING TEMPERATURE - F	375	650	450	400	400	450	
MAX OPERATING PRESSURE - PSIG	175	175	250	175	175	250	

VARIABLE FREQUENCY DRIVE

PLAN DESIGNATION		VFD-1	VFD-2	VFD-3	VFD-4	VFD-5	VFD-6	VFD-7
MANUFACTURER		ABB	ABB	ABB	ASB	ABB	ABB	ABB
MODEL		ACH550	ACH550	ACH550	ACH550	ACH550	ACH550	ACH550
SERVES		AHU-152 SF	AHU-152 EF	AHU-152 ERV	P-1	P-2	MAU SF-1	EF-1
LOCATION		MECH B202A	MECH B202A	MECH B202A	MECH B202A	MECH B202A	MECH B202A	MECH B202A
NOMINAL RATINGS	HP	30	5	1	3	3	3	2
	OUTPUT CURRENT	5.4	2.4	2.4	2.4	2.4	2.4	2.4
	VOLTS/PHASE	460 / 3Ø	460 / 3Ø	460 / 3Ø	460 / 3Ø	460 / 3Ø	460 / 3Ø	460 / 3Ø
ENCLOSURE TYPE		NEMA 12	NEMA 12	NEMA 12	NEMA 12	NEMA 12	NEMA 12	NEMA 12
CABINET SIZE (H x W x D IN INCHES)		R4 -27 x 8 x 10.5	R1 -15 x 5 x 9	R1 -15 x 5 x 9	R1 -15 x 5 x 9	R1 -15 x 5 x 9	R1 -15 x 5 x 9	R1 -15 x 5 x 9
WEIGHT		60	19	19	19	19	19	19

NOTES: NO BYPASS REQUIRED

CONDENSATE RETURN UNIT

PLAN DESIGNATION		CRU-1	
MANUFACTURER		SHIPCO	
MODEL		CSEC	
CONDENSATE RECEIVER	MOUNTING	STAND	
	MATERIAL	STEEL	
	VOLUME - GAL.	432	
	HEIGHT TO COND. INLET - IN.	68"	
	MIN. INLET SIZE - NPS	6"	
CONDENSATE PUMPS	MANUFACTURER	SHIPCO	
	MODEL	D	
	QUANTITY	2	
	FLOW CAPACITY - GPM (EACH)	30	
	DISCHARGE PRESSURE - PSIG	50	
	OPERATING TEMP - °F	212°F	
	HP (EACH)	3	
	SPEED - RPM	3,500	
	VOLTS / PHASE	460V / 3Ø	

1. PROVIDE W/ FRESH WATER SOLENOID MAKEUP VALVE.
2. PROVIDE W/ GAUGE GLASS AND THERMOMETER.
3. PUMPS TO BE LOW (2.0 FT) NPSH TYPE.
4. PROVIDE FACTORY MOUNTED CONTROL PANEL WITH STARTER/DISCONNECT.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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Drawing Title: HVAC Schedules

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

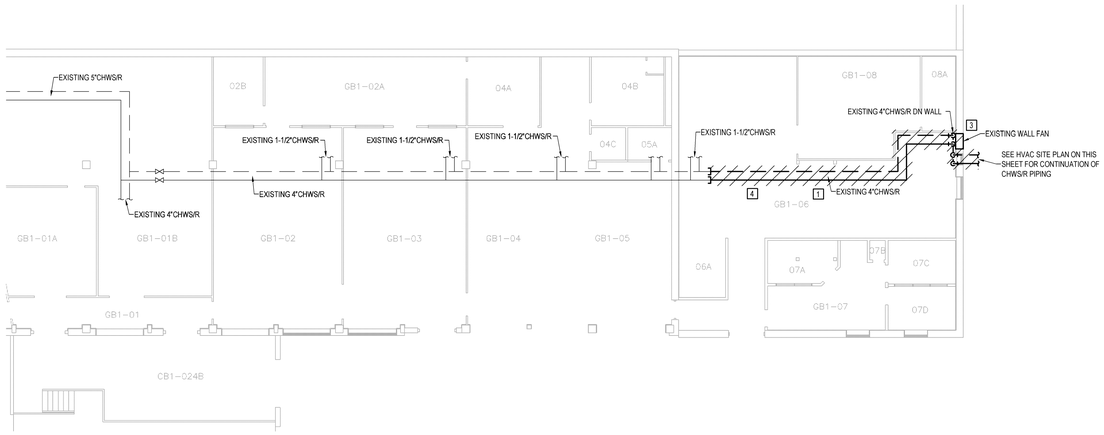
Drawing Number: H-002

Dwg. * of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

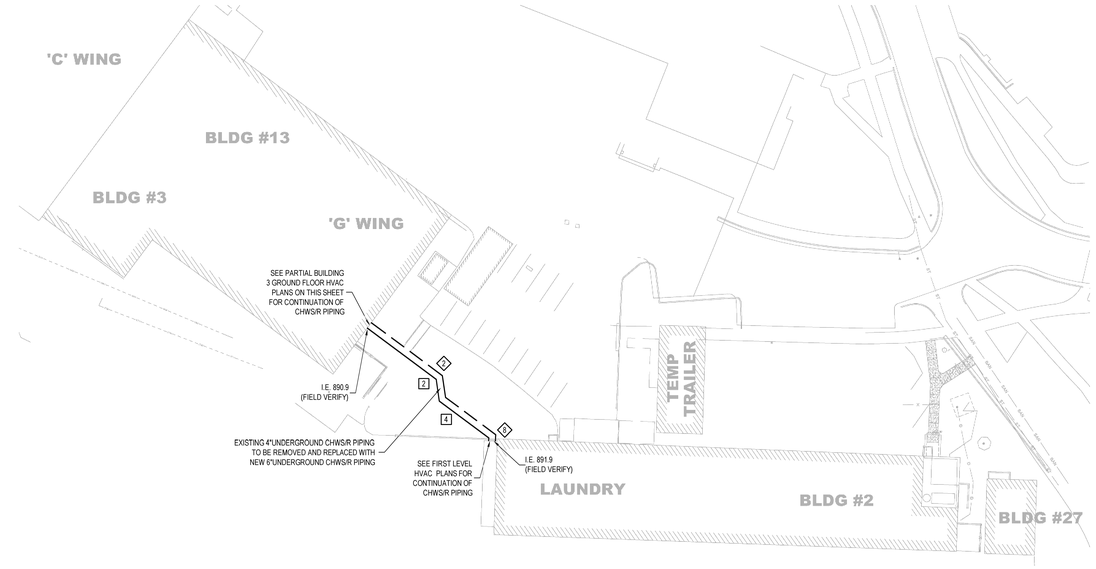
VA FORM 08-6231



F2 PARTIAL BUILDING 3 GROUND FLOOR HVAC DEMO PLAN

3/32" = 1'-0"

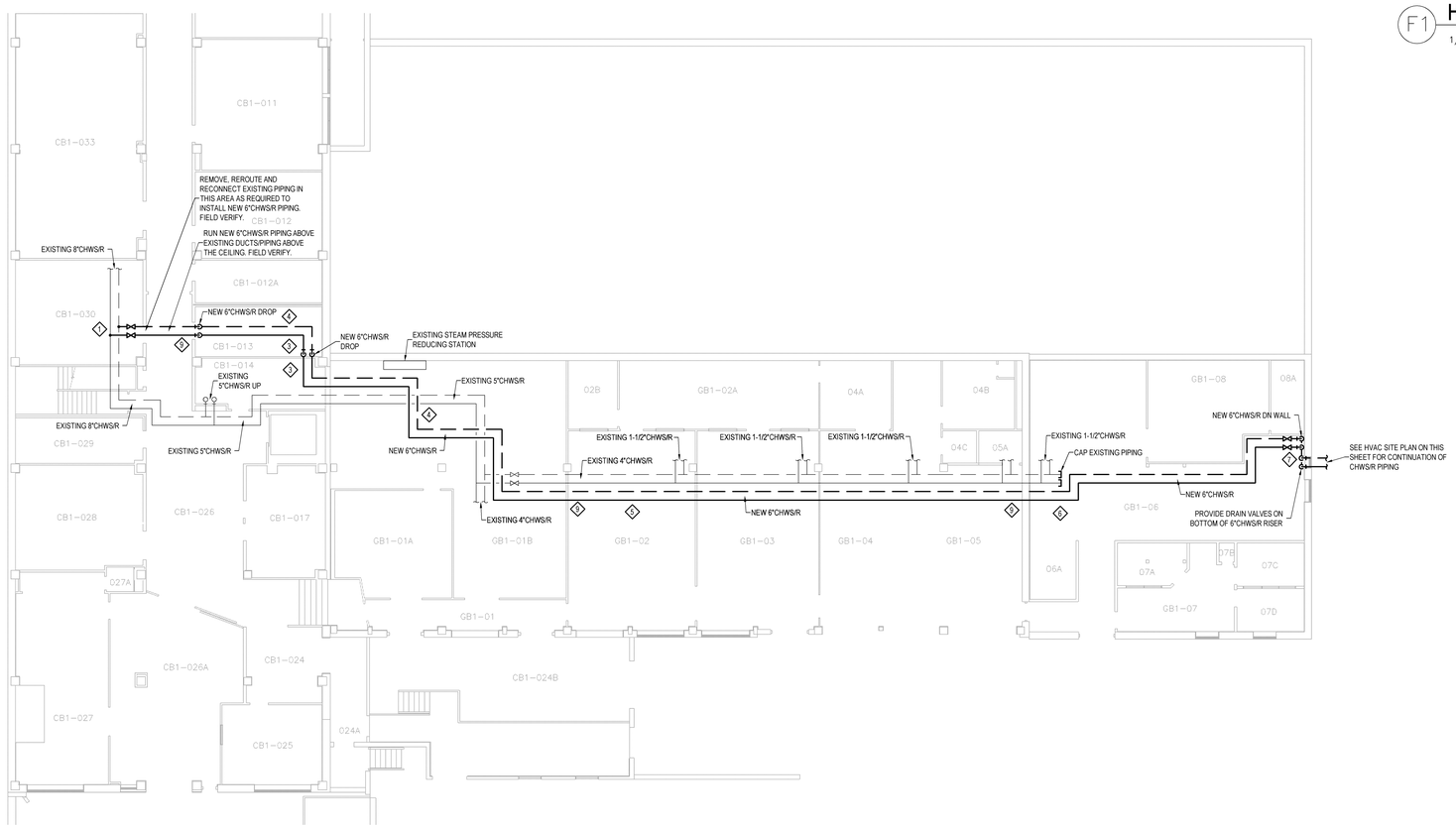
PLAN NORTH



F1 HVAC Site Plan

1/32" = 1'-0"

PLAN NORTH



F3 PARTIAL BUILDING 3 GROUND FLOOR HVAC PLAN

3/32" = 1'-0"

PLAN NORTH

HVAC SITE PLAN NOTES

1. CONTRACTOR SHALL PROVIDE DETAILED LAYOUT DRAWINGS FOR EXTERIOR CHILLED WATER PIPING. DOCUMENTS TO INCLUDE VERIFICATION OF EXISTING CHILLED WATER PIPING AND OTHER SURROUNDING UTILITIES, INVERT ELEVATIONS OF NEW PIPING, TRENCHING DETAILS, PIPING FABRICATION DETAILS AND COORDINATION AND SEQUENCING OF ALL DEMOLITION AND NEW WORK. ALL WORK SHALL BE COORDINATED WITH DIVISION 26/27 CONTRACTOR TO PREVENT CONFLICTS WITH EXISTING AND NEW DUCT BANK WORK. A COORDINATED SCHEDULE OF ALL WORK SHALL BE PROVIDED FOR REVIEW ALONG WITH THE DOCUMENTATION NOTED ABOVE. NO DEMOLITION OR NEW WORK SHALL BEGIN UNTIL ALL ITEMS ABOVE HAVE BEEN SUBMITTED AND APPROVED BY THE VA.

DEMOLITION NOTES

1. REMOVE EXISTING 4"CHWS/R PIPING AS SHOWN. CAP EXISTING 4"CHWS/R PIPING AFTER LAST BRANCH TAKE-OFF BEFORE THE CHWS/R EXITS BUILDING 3. FIELD VERIFY.
2. REMOVE ALL EXISTING 4"UNDERGROUND CHWS/R PIPING. PIPING TO BE REPLACED WITH NEW 6"CHWS/R PIPING.
3. REMOVE EXISTING WALL FAN ALONG WITH ALL ASSOCIATED WIRING AND CONTROL. EXISTING WALL OPENING TO BE USED FOR NEW DATA PULL BOX.
4. COORDINATE DRAINING OF CHILLED WATER SYSTEM WITH VA.

KEY NOTES

1. CONNECT NEW 6"CHWS/R PIPING TO EXISTING 8"CHWS/R PIPING AS REQUIRED. FIELD VERIFY EXACT SIZE AND LOCATION.
2. REPLACE EXISTING 4" UNDERGROUND CHWS/R PIPING WITH NEW 6" CHWS/R PIPING. NEW 6"CHWS/R PIPING TO BE LAID IN EXISTING TRENCH AFTER THE EXISTING 4"CHWS/R PIPING HAS BEEN REMOVED.
3. REMOVE AND RE-INSTALL EXISTING TANK RACKS AND SHELVING ETC., AS REQUIRED TO INSTALL NEW 6"CHWS/R PIPING. FIELD VERIFY.
4. REMOVE, RELOCATE AND RE-INSTALL EXISTING LIGHT FIXTURES AS REQUIRED TO INSTALL NEW 6"CHWS/R PIPING. FIELD VERIFY.
5. ROUTE NEW 6"CHWS/R PIPING UNDER HOOD EA DUCT AND DUST COLLECTION DUCTS. FIELD VERIFY.
6. RE-ROUTE EXISTING CONDENSATE DRAIN FROM EXISTING FAN COIL AS REQUIRED TO INSTALL NEW 6"CHWS/R PIPING. FIELD VERIFY.
7. REMOVE AND RE-INSTALL EXISTING CASEWORK AS REQUIRED TO INSTALL NEW 6"CHWS/R PIPING. FIELD VERIFY.
8. REMOVE AND RE-INSTALL EXISTING PIPE CHASE/ENCLOSURE AS REQUIRED TO INSTALL NEW 6"CHWS/R PIPING. FIELD VERIFY.
9. FIELD VERIFY EXACT ROUTING OF NEW CHWS/R PIPING. NEW CHWS/R PIPE ROUTING MUST BE APPROVED BY VA ENGINEERS PRIOR TO PIPING INSTALLATION.

GENERAL NOTES

1. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN 12 NOON ON FRIDAYS TO 7 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTIONS SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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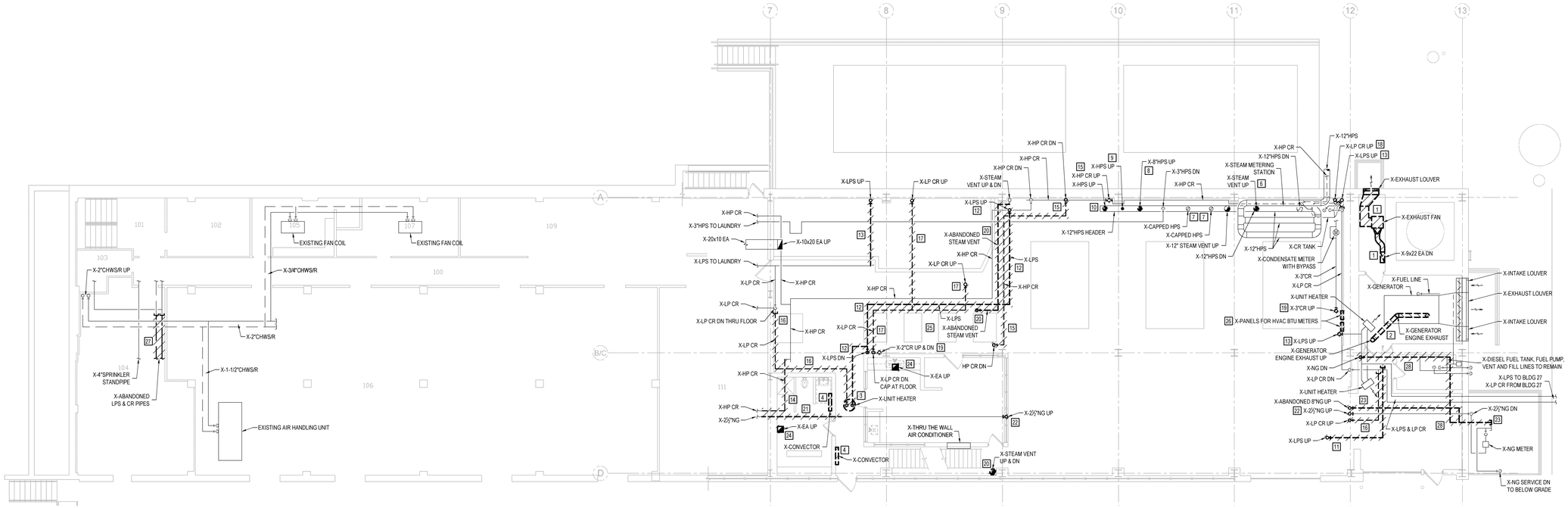
Drawing Title	HVAC Site Plan & Partial Building 3 Ground Floor HVAC Plans
Approved: Project Director	
Project Title	William S. Middleton VA Hospital Renovate Building 2
Location	Madison, WI
Date	MARCH 29, 2013
Checked	DS
Drawn	JAL
Project Number	607-12-115
Building Number	2
Drawing Number	H-050
Dwg. * of	

Office of Construction and Facilities Management

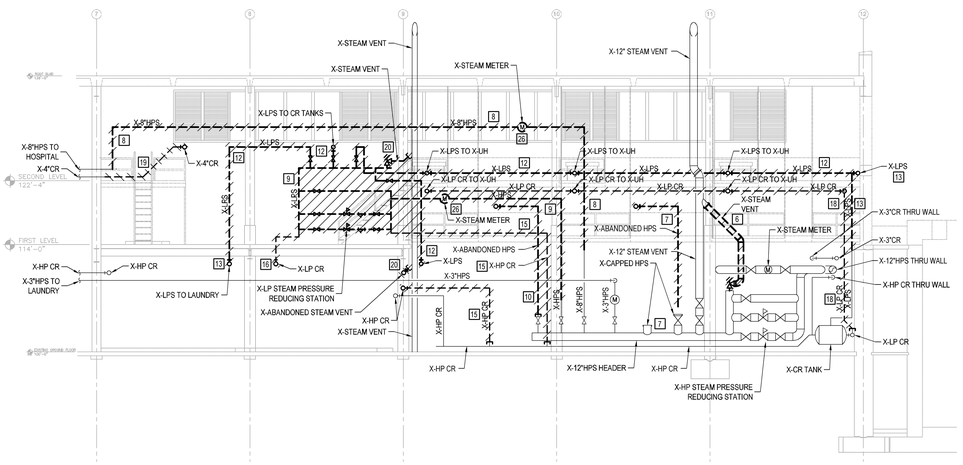
Depar ment of Veterans Affairs

VA FORM 08-6231



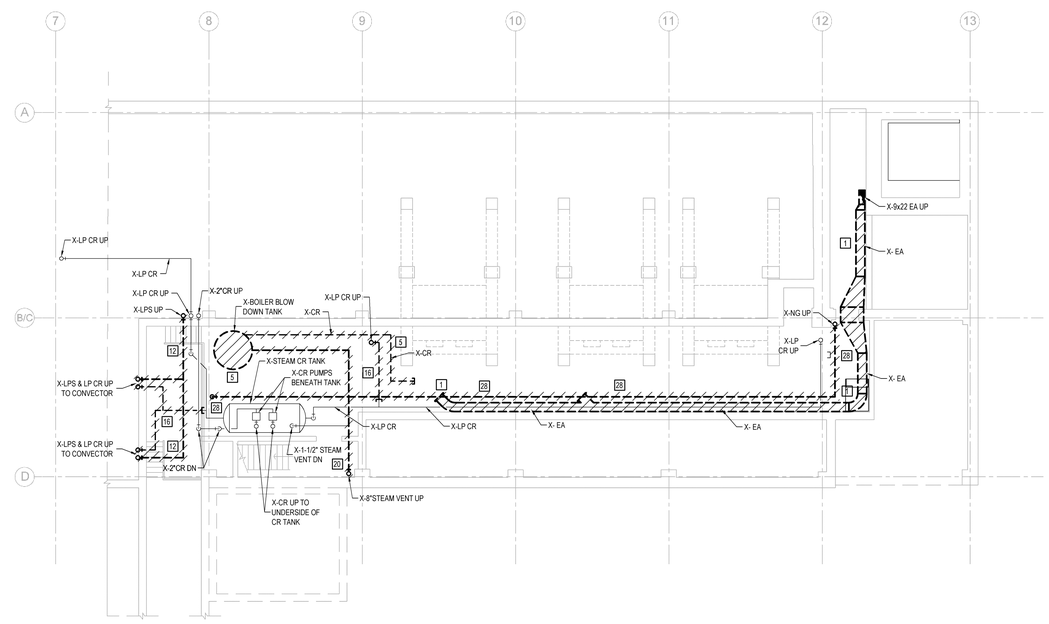
F1 GROUND LEVEL HVAC DEMO PLAN

1/8" = 1'-0"



F3 DEMO ELEVATION VIEW OF STEAM AND CONDENSATE PIPING ALONG NORTH WALL

1/8" = 1'-0"



F2 BASEMENT LEVEL HVAC DEMO PLAN

1/8" = 1'-0"

PLAN NORTH

DEMOLITION NOTES

1. REMOVE EXISTING INLINE EXHAUST FAN AND EXISTING EXHAUST LOUVER ALONG WITH ALL ASSOCIATED DUCTWORK, WIRING AND CONTROL. PATCH EXISTING EXTERIOR WALL AND FLOOR OPENING TO MATCH EXISTING.
2. REMOVE ALL EXISTING GENERATOR ENGINE EXHAUST DUCTWORK. EXISTING GENERATOR ENGINE EXHAUST TO BE REPLACED WITH NEW 10"Ø DUCTWORK AND REROUTED AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
3. REMOVE EXISTING UNIT HEATER ALONG WITH ALL ASSOCIATED PIPING, WIRING AND CONTROL.
4. REMOVE EXISTING CONVECTOR ALONG WITH ALL ASSOCIATED PIPING, WIRING AND CONTROL.
5. REMOVE EXISTING BOILER BLOW DOWN TANK ALONG WITH ALL ASSOCIATED PIPING, WIRING AND CONTROL.
6. REMOVE EXISTING STEAM VENT FROM EXISTING HPS RELIEF VALVE. STEAM VENT TO BE REROUTED AS SHOWN ON NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
7. EXISTING HPS PIPE HAS PREVIOUSLY BEEN CAPPED AND DISCONNECTED. ALL EXISTING HPS PIPING DOWNSTREAM OF THIS CAP HAS BEEN ABANDONED IN PLACE. THE MECHANICAL CONTRACTOR SHALL REMOVE ALL EXISTING ABANDONED HPS PIPING WITHIN THE PROJECT LIMITS. FIELD VERIFY.
8. REMOVE EXISTING 8"HPS SERVING THE HOSPITAL. 8"HPS TO BE REROUTED AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
9. REMOVE EXISTING HPS SERVING THE EXISTING STEAM PRESSURE REDUCING STATION. HPS TO BE REROUTED AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
10. REMOVE EXISTING HPS PIPING. CAP PIPING AT HEADER.
11. REMOVE EXISTING LPS PIPING AS SHOWN. CAP PIPING BACK AT MAIN.
12. REMOVE ALL EXISTING LPS PIPING AS SHOWN BACK TO THE EXISTING STEAM PRESSURE REDUCING STATION.
13. REMOVE EXISTING LPS PIPING AS SHOWN BACK TO THE EXISTING STEAM PRESSURE REDUCING STATION. EXISTING LPS PIPE TO BE RECONNECTED TO NEW STEAM PRESSURE REDUCING STATION AS SHOWN ON THE NEW PLANS.
14. REMOVE EXISTING HP CR PIPING AS SHOWN TO ALLOW FOR THE CONSTRUCTION OF THE NEW STAIRWELL. HP CR PIPE TO BE REROUTED AROUND STAIRWELL AS SHOWN ON THE NEW PLANS.
15. REMOVE EXISTING HP CR PIPING AS SHOWN. CAP PIPING BACK AT MAIN.
16. REMOVE EXISTING LP CR PIPING AS SHOWN. CAP PIPING BACK AT MAIN.
17. REMOVE EXISTING LP CR PIPING AS SHOWN DOWN TO THE GROUND FLOOR LEVEL. CAP PIPING AT FLOOR.
18. REMOVE EXISTING LP CR PIPING UP AND BACK TO THE EXISTING UNIT HEATERS. CAP PIPING AT MAIN ON GROUND FLOOR LEVEL.
19. REMOVE EXISTING PUMPED CR UP AND BACK TO EXISTING CR TANK. THE PUMPED CR TO BE RECONNECTED TO NEW CR TANK AS SHOWN ON THE NEW PLANS.
20. REMOVE EXISTING STEAM VENT.
21. REMOVE EXISTING 2-1/2"NG. PIPING AS SHOWN TO ALLOW FOR THE CONSTRUCTION OF THE NEW STAIRWELL. NG PIPE TO BE REROUTED AROUND STAIRWELL AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
22. REMOVE EXISTING 2-1/2"NG UP AS REQUIRED TO ALLOW THE NEW 2-1/2"NG TO BE ROUTED ALONG NEW GARAGE CEILING. FIELD VERIFY. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
23. REMOVE EXISTING ABANDONED 8"NG PIPE AS SHOWN. PATCH EXTERIOR WALL OPENING TO MATCH EXISTING.
24. REMOVE EXISTING EA DUCTWORK AS SHOWN.
25. REMOVE ALL EXISTING ABANDONED PIPING IN THIS AREA INCLUDING ALL BOILER FEED WATER PIPING. FIELD VERIFY.
26. REMOVE EXISTING HVAC BTU METERS & METER PANELS. METERS AND PANELS TO BE RELOCATED AS SHOWN ON THE NEW PLANS.
27. REMOVE EXISTING ABANDONED LPS & CR PIPING AS REQUIRED TO INSTALL NEW 4"CHWS/R PIPING. CAP PIPING BACK AT MAIN. FIELD VERIFY.
28. REMOVE EXISTING GAS PIPING AS SHOWN. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.

SEQUENCING NOTES

1. EXISTING STEAM, EXISTING STEAM CONDENSATE RETURN, EXISTING NATURAL GAS AND THE EXISTING BUILDING 2 EMERGENCY GENERATOR MUST ALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL SEQUENCE DEMOLITION AND NEW WORK TO ASSURE NO DISRUPTIONS OF SERVICES TO HOSPITAL. SUBMIT DETAILED SEQUENCING PLAN PRIOR TO THE START OF ANY WORK. INCLUDE ALL TEMPORARY AND NEW WORK REQUIRED TO ACCOMMODATE DEMOLITION AND NEW CONSTRUCTION ACROSS ALL TRADES. PLAN MUST BE REVIEWED BY VA PRIOR TO THE START OF ANY WORK.

GENERAL NOTES

1. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN 12 NOON ON FRIDAYS TO 7 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTIONS SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS' NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.
2. THE DUMPING OF STEAM CONDENSATE SHALL BE MINIMIZED DURING CONSTRUCTION.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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nagel architects

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Drawing Title: Basement & Ground Level HVAC Demolition Plans

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: H-100

Dwg. * of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231

SEQUENCING NOTES

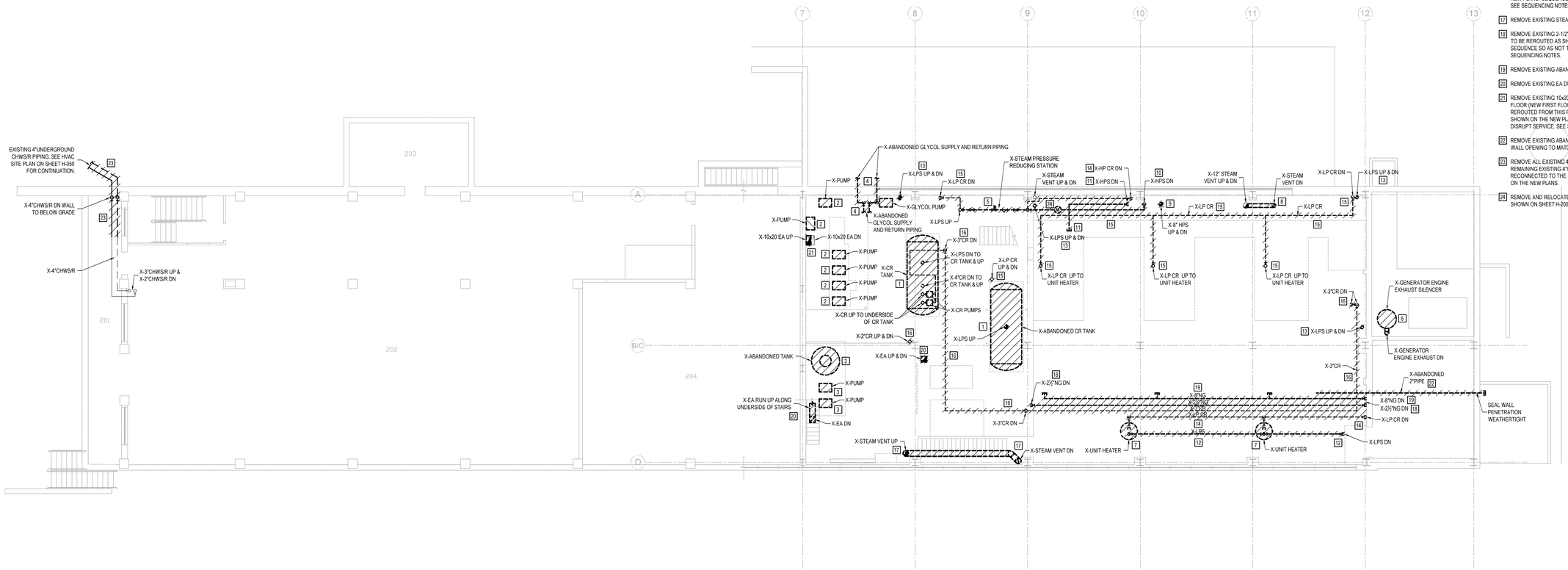
1. EXISTING STEAM, EXISTING STEAM CONDENSATE RETURN, EXISTING NATURAL GAS AND THE EXISTING BUILDING 2 EMERGENCY GENERATOR MUST ALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL SEQUENCE DEMOLITION AND NEW WORK TO ASSURE NO DISRUPTIONS OF SERVICES TO HOSPITAL. SUBMIT DETAILED SEQUENCING PLAN PRIOR TO THE START OF ANY WORK. INCLUDE ALL TEMPORARY AND NEW WORK REQUIRED TO ACCOMMODATE DEMOLITION AND NEW CONSTRUCTION ACROSS ALL TRADES. PLAN MUST BE REVIEWED BY VA PRIOR TO THE START OF ANY WORK.

GENERAL NOTES

1. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN 12 NOON ON FRIDAYS TO 7 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTIONS SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS' NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.
2. THE DUMPING OF STEAM CONDENSATE SHALL BE MINIMIZED DURING CONSTRUCTION.

DEMOLITION NOTES

1. REMOVE EXISTING CR TANK AND CR PUMPS ALONG WITH ALL ASSOCIATED PIPING, WIRING AND CONTROL. FIELD VERIFY.
2. REMOVE EXISTING PUMP ALONG WITH ALL ASSOCIATED PIPING, WIRING AND CONTROL. FIELD VERIFY.
3. REMOVE EXISTING ABANDONED TANK ALONG WITH ALL ASSOCIATED PUMPS, PIPING, WIRING AND CONTROL. FIELD VERIFY.
4. REMOVE EXISTING GLYCOL PUMP ALONG WITH ALL ASSOCIATED, PIPING, WIRING AND CONTROL. PATCH WALL OPENINGS TO MATCH EXISTING.
5. REMOVE EXISTING STEAM PRESSURE REDUCING STATION. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES.
6. REMOVE EXISTING GENERATOR ENGINE EXHAUST DUCTWORK AND SILENCER. EXISTING GENERATOR ENGINE EXHAUST TO BE REPLACED WITH NEW 10"Ø DUCTWORK AND NEW SILENCER AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES.
7. REMOVE EXISTING UNIT HEATER ALONG WITH ALL ASSOCIATED PIPING, WIRING AND CONTROL.
8. REMOVE EXISTING STEAM VENT FROM EXISTING HPS RELIEF VALVE. STEAM VENT TO BE REROUTED AS SHOWN ON NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES.
9. REMOVE EXISTING 8"HPS SERVING THE HOSPITAL. 8"HPS TO BE REROUTED AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES.
10. REMOVE EXISTING HPS SERVING THE EXISTING STEAM PRESSURE REDUCING STATION. HPS TO BE REROUTED AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES.
11. REMOVE EXISTING HPS PIPE. CAP PIPING AT HEADER.
12. REMOVE EXISTING LPS PIPING AS SHOWN. CAP PIPING BACK AT MAIN.
13. REMOVE EXISTING LPS PIPING BACK TO THE EXISTING STEAM PRESSURE REDUCING STATION.
14. REMOVE EXISTING HP CR PIPING AS SHOWN. CAP PIPING BACK AT MAIN.
15. REMOVE EXISTING LP CR PIPING AS SHOWN. CAP PIPING BACK AT MAIN.
16. REMOVE EXISTING PUMPED CR PIPING AS SHOWN. THE PUMPED CR PIPING TO BE REROUTED AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES.
17. REMOVE EXISTING STEAM VENT.
18. REMOVE EXISTING 2-1/2"NG PIPE AS SHOWN. 2-1/2"NG PIPE TO BE REROUTED AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES.
19. REMOVE EXISTING ABANDONED 8"NG PIPE AS SHOWN.
20. REMOVE EXISTING EA DUCTWORK AS SHOWN.
21. REMOVE EXISTING 10x20 EA DUCTWORK DN TO MEZZANINE FLOOR (NEW FIRST FLOOR LEVEL). DUCTWORK TO BE REROUTED FROM THIS POINT ON, UP THRU THE ROOF AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES.
22. REMOVE EXISTING ABANDONED 2"PIPE. PATCH EXTERIOR WALL OPENING TO MATCH EXISTING.
23. REMOVE ALL EXISTING 4"CHWS/R PIPING AS SHOWN. THE REMAINING EXISTING 4"CHWS/R PIPING TO BE RECONNECTED TO THE NEW 6"CHWS/R PIPING AS SHOWN ON THE NEW PLANS.
24. REMOVE AND RELOCATE EXISTING BTU METER WHERE SHOWN ON SHEET H-200-P.



F1 FIRST LEVEL HVAC DEMO PLAN

1/8" = 1'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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Drawing Title: First Level HVAC Demolition Plan

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: H-101

Dwg. * of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231

DEMOLITION NOTES

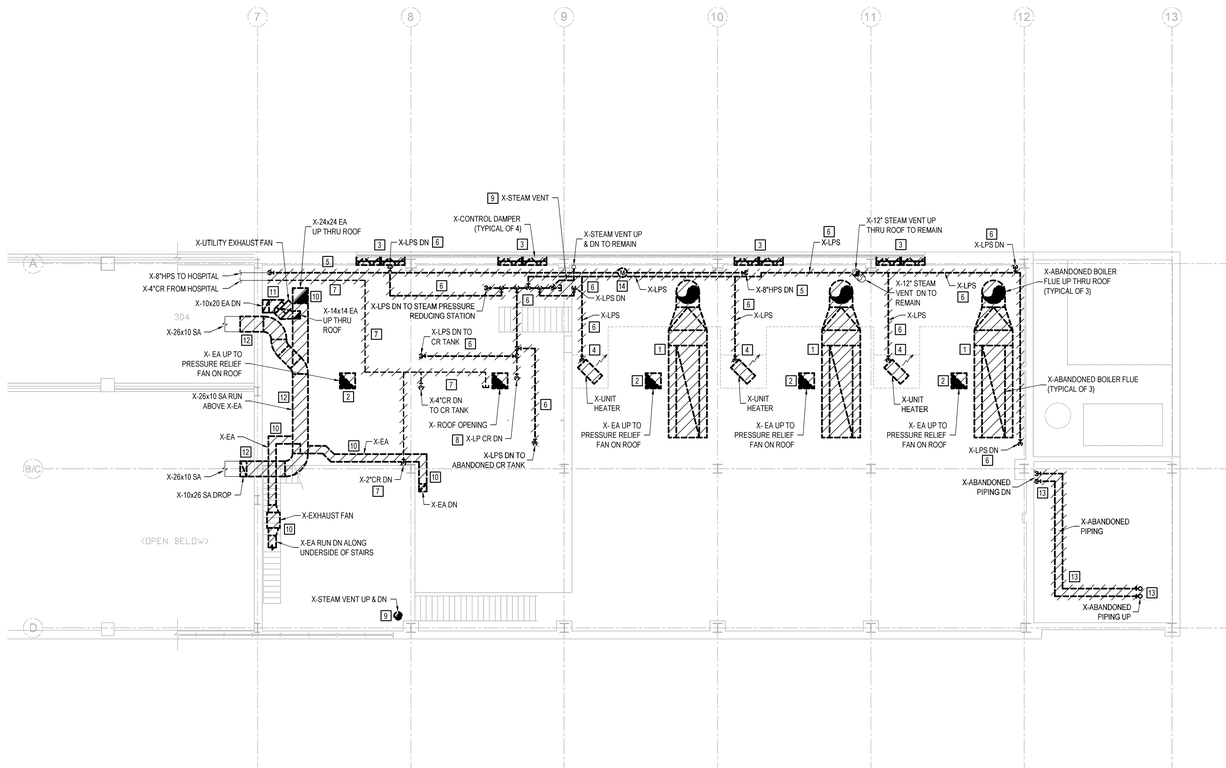
1. REMOVE EXISTING ABANDONED BOILER FLUE.
2. REMOVE EXISTING EA UP TO EXISTING PRESSURE RELIEF FAN ON ROOF.
3. REMOVE EXISTING MOTORIZED CONTROL DAMPER ALONG WITH ALL ASSOCIATED WIRING AND CONTROL.
4. REMOVE EXISTING UNIT HEATER ALONG WITH ALL ASSOCIATED PIPING, WIRING AND CONTROL.
5. REMOVE EXISTING 8"HPS SERVING THE HOSPITAL. 8"HPS TO BE REROUTED AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
6. REMOVE ALL EXISTING LPS PIPING AS SHOWN BACK TO THE EXISTING STEAM PRESSURE REDUCING STATION. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
7. REMOVE EXISTING PUMPED CR PIPING AS SHOWN. CR PIPING TO BE REROUTED AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
8. REMOVE EXISTING LP CR PIPING AS SHOWN. CAP PIPING BACK AT MAIN.
9. REMOVE EXISTING STEAM VENT.
10. REMOVE EXISTING INLINE EXHAUST FAN ALONG WITH ALL ASSOCIATED EA DUCTWORK, WIRING AND CONTROL.
11. REMOVE EXISTING UTILITY EXHAUST FAN ALONG WITH ALL ASSOCIATED EA DUCTWORK. FAN TO BE REPLACED WITH NEW ROOF MOUNTED FAN. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
12. REMOVE EXISTING 26x10 SA DUCTWORK AS SHOWN. PATCH WALL OPENINGS TO MATCH EXISTING. EXISTING 26x10 SA DUCTWORK TO BE REROUTED INTO LAUNDRY AREA AS SHOWN ON THE NEW PLANS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
13. REMOVE EXISTING ABANDONED PIPING AS SHOWN ALONG WITH ALL ASSOCIATED ABANDONED PIPING THAT IS NOT SHOWN. FIELD VERIFY.
14. REMOVE AND RELOCATE BTU METER AS SHOWN ON SHEET H-200-P.

SEQUENCING NOTES

1. EXISTING STEAM, EXISTING STEAM CONDENSATE RETURN, EXISTING NATURAL GAS AND THE EXISTING BUILDING 2 EMERGENCY GENERATOR MUST ALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL SEQUENCE DEMOLITION AND NEW WORK TO ASSURE NO DISRUPTIONS OF SERVICES TO HOSPITAL. SUBMIT DETAILED SEQUENCING PLAN PRIOR TO THE START OF ANY WORK, INCLUDE ALL TEMPORARY AND NEW WORK REQUIRED TO ACCOMMODATE DEMOLITION AND NEW CONSTRUCTION ACROSS ALL TRADES. PLAN MUST BE REVIEWED BY VA PRIOR TO THE START OF ANY WORK.

GENERAL NOTES

1. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN 12 NOON ON FRIDAYS TO 7 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTIONS SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS' NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.
2. THE DUMPING OF STEAM CONDENSATE SHALL BE MINIMIZED DURING CONSTRUCTION.



F1 SECOND LEVEL HVAC DEMO PLAN

1/8" = 1'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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Drawing Title	Second Level HVAC Demolition Plan
Approved: Project Director	
Project Title	William S. Middleton VA Hospital Renovate Building 2
Project Number	607-12-115
Building Number	2
Location	Madison, WI
Date	MARCH 29, 2013
Checked	TK/LHZ
Drawn	JWS
Drawing Number	H-102
Dwg. * of	

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Depar ment of Veterans Affairs

VA FORM 08-6231

DEMOLITION NOTES

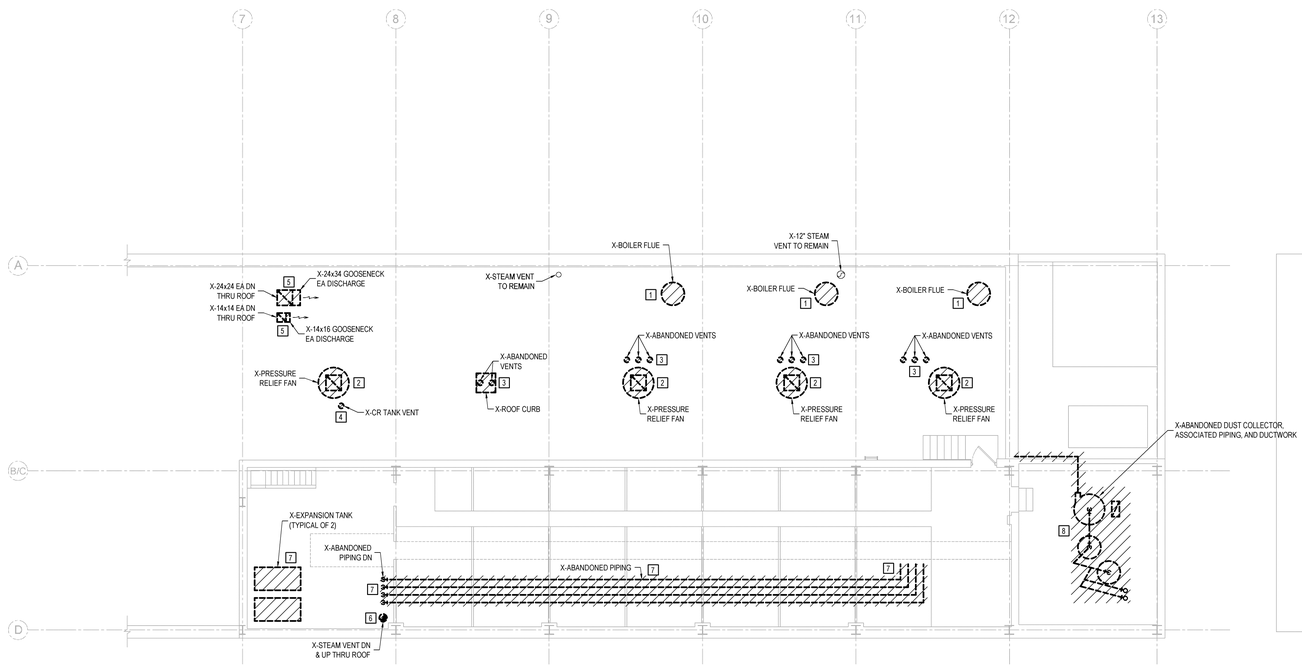
1. REMOVE EXISTING ABANDONED BOILER FLUE. PATCH ROOF OPENING TO MATCH EXISTING.
2. REMOVE EXISTING PRESSURE RELIEF FAN ALONG WITH ALL ASSOCIATED DUCTWORK, WIRING AND CONTROL. PATCH ROOF OPENING TO MATCH EXISTING.
3. REMOVE EXISTING ABANDONED VENT PIPES. PATCH ROOF OPENINGS TO MATCH EXISTING.
4. REMOVE EXISTING CR TANK VENT. PATCH ROOF OPENING TO MATCH EXISTING. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
5. REMOVE EXISTING EA DUCTWORK AS SHOWN. PATCH ROOF OPENING TO MATCH EXISTING. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
6. REMOVE EXISTING STEAM VENT. PATCH ROOF OPENING TO MATCH EXISTING.
7. REMOVE (2) EXISTING ABANDONED EXPANSION TANKS AND EXISTING PIPING AS SHOWN ALONG WITH ALL ASSOCIATED ABANDONED PIPING THAT IS NOT SHOWN. FIELD VERIFY.
8. REMOVE EXISTING ABANDONED DUST COLLECTOR ALONG WITH ALL ASSOCIATED PIPING AND DUCTWORK. PATCH ALL ROOF AND WALL OPENINGS TO MATCH EXISTING.

SEQUENCING NOTES

1. EXISTING STEAM, EXISTING STEAM CONDENSATE RETURN, EXISTING NATURAL GAS AND THE EXISTING BUILDING 2 EMERGENCY GENERATOR MUST ALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL SEQUENCE DEMOLITION AND NEW WORK TO ASSURE NO DISRUPTIONS OF SERVICES TO HOSPITAL. SUBMIT DETAILED SEQUENCING PLAN PRIOR TO THE START OF ANY WORK. INCLUDE ALL TEMPORARY AND NEW WORK REQUIRED TO ACCOMMODATE DEMOLITION AND NEW CONSTRUCTION ACROSS ALL TRADES. PLAN MUST BE REVIEWED BY VA PRIOR TO THE START OF ANY WORK.

GENERAL NOTES

1. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN 12 NOON ON FRIDAYS TO 7 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTIONS SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS' NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.
2. THE DUMPING OF STEAM CONDENSATE SHALL BE MINIMIZED DURING CONSTRUCTION.



F1 THIRD LEVEL HVAC DEMO PLAN

1/8" = 1'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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Drawing Title: Third Level HVAC Demolition Plan

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: H-103

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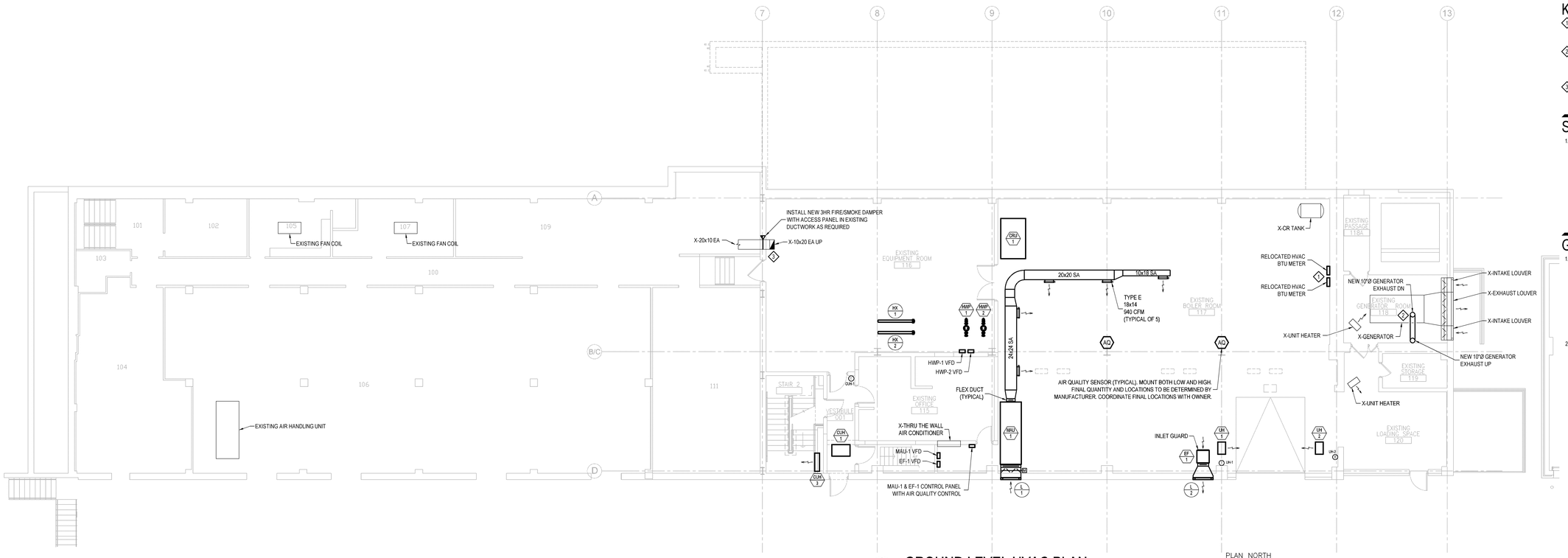
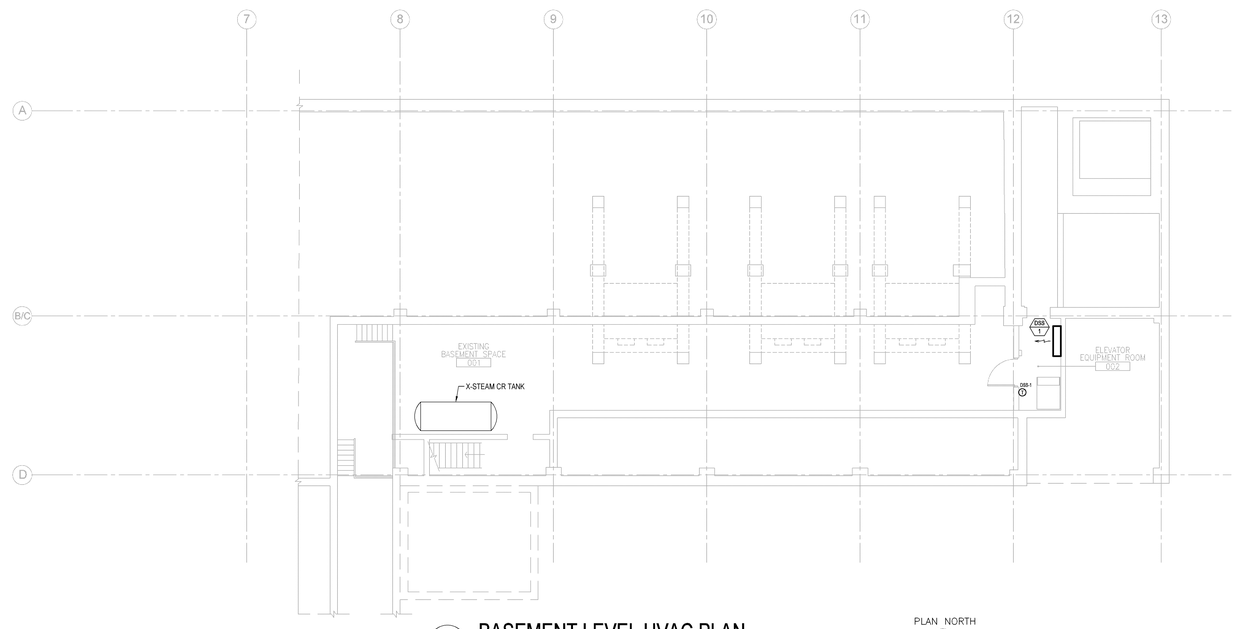
VA FORM 08-6231



F1 GROUND LEVEL HVAC PLAN

1/8" = 1'-0"

PLAN NORTH



F2 BASEMENT LEVEL HVAC PLAN

1/8" = 1'-0"

PLAN NORTH

KEY NOTES

1. RELOCATE EXISTING PANELS FOR HVAC BTU METERS ON WALL BELOW NEW STRUCTURAL COMPONENTS. FIELD VERIFY EXACT LOCATION.
2. CONNECT NEW 10"Ø GENERATOR ENGINE EXHAUST TO EXISTING GENERATOR PER MANUFACTURER'S RECOMMENDATIONS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES B ELOW.
3. PROVIDE FIRE DUCT WRAP ON EXISTING 10x20 EA DUCT FROM WALL PENETRATION ALL THE WAY UP THRU THE ROOF.

SEQUENCING NOTES

1. EXISTING STEAM, EXISTING STEAM CONDENSATE RETURN, EXISTING NATURAL GAS AND THE EXISTING BUILDING 2 EMERGENCY GENERATOR MUST ALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL SEQUENCE DEMOLITION AND NEW WORK TO ASSURE NO DISRUPTIONS OF SERVICES TO HOSPITAL. SUBMIT DETAILED SEQUENCING PLAN PRIOR TO THE START OF ANY WORK. INCLUDE ALL TEMPORARY AND NEW WORK REQUIRED TO ACCOMMODATE DEMOLITION AND NEW CONSTRUCTION ACROSS ALL TRADES. PLAN MUST BE REVIEWED BY VA PRIOR TO THE START OF ANY WORK.

GENERAL NOTES

1. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN 12 NOON ON FRIDAYS TO 7 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTIONS SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS' NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.
2. THE DUMPING OF STEAM CONDENSATE SHALL BE MINIMIZED DURING CONSTRUCTION.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

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Drawing Title: Basement and Ground Level HVAC Plans

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Project Number: 607-12-115

Building Number: 2

Location: Madison, WI

Date: MARCH 29, 2013

Checked: TK/LHZ

Drawn: JWS

Drawing Number: H-200

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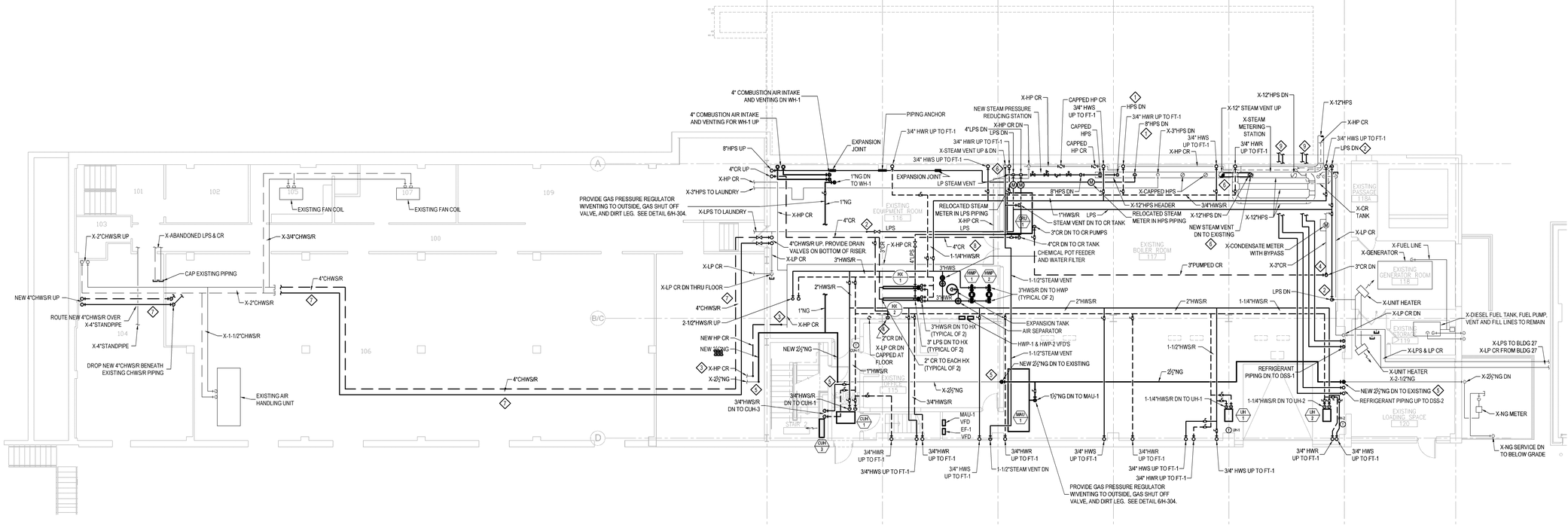


F1 GROUND LEVEL HVAC PLAN - PIPING

1/8" = 1'-0"

PLAN NORTH

KEY NOTES

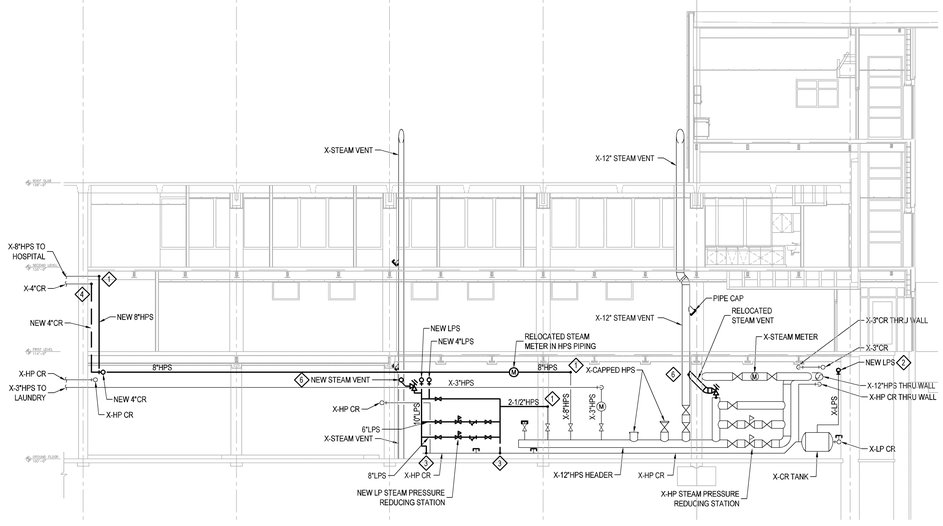
1. CONNECT NEW HPS PIPING TO EXISTING. FIELD VERIFY EXACT SIZE AND LOCATION. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES B ELOW.
2. CONNECT NEW LPS PIPING TO EXISTING. FIELD VERIFY EXACT SIZE AND LOCATION. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES B ELOW.
3. CONNECT NEW HP CR TO EXISTING. FIELD VERIFY EXACT SIZE AND LOCATION.
4. CONNECT NEW PUMPED CR TO EXISTING. FIELD VERIFY EXACT SIZE AND LOCATION. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES B ELOW.
5. CONNECT NEW 2-1/2"NG TO EXISTING. FIELD VERIFY EXACT SIZE AND LOCATION. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES B ELOW.
6. CONNECT NEW STEAM VENT TO EXISTING. FIELD VERIFY EXACT SIZE AND LOCATION. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES B ELOW.
7. FIELD VERIFY EXACT ROUTING OF NEW CHWS/R PIPING. NEW CHWS/R PIPE ROUTING MUST BE APPROVED BY VA ENGINEERS PRIOR TO PIPING INSTALLATION.
8. ALL PIPING IN THIS AREA TO BE INSTALLED AT A MINIMUM HEIGHT OF 8'-6"AFF TO ALLOW FOR FUTURE EQUIPMENT REMOVAL AND REPLACEMENT.
9. CORE DRILL NEW WALL OPENINGS AS REQUIRED FOR THE INSTALLATION OF THE NEW REFRIGERANT PIPING. FIELD VERIFY EXACT LOCATION. SIZE AND INSTALL REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS. SEE THE FIRST LEVEL HVAC PLAN-PIPING FOR CONTINUATION OF REFRIGERANT PIPING.

SEQUENCING NOTES

1. EXISTING STEAM, EXISTING STEAM CONDENSATE RETURN, EXISTING NATURAL GAS AND THE EXISTING BUILDING 2 EMERGENCY GENERATOR MUST ALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL SEQUENCE DEMOLITION AND NEW WORK TO ASSURE NO DISRUPTIONS OF SERVICES TO HOSPITAL. SUBMIT DETAILED SEQUENCING PLAN PRIOR TO THE START OF ANY WORK. INCLUDE ALL TEMPORARY AND NEW WORK REQUIRED TO ACCOMMODATE DEMOLITION AND NEW CONSTRUCTION ACROSS ALL TRADES. PLAN MUST BE REVIEWED BY VA PRIOR TO THE START OF ANY WORK.

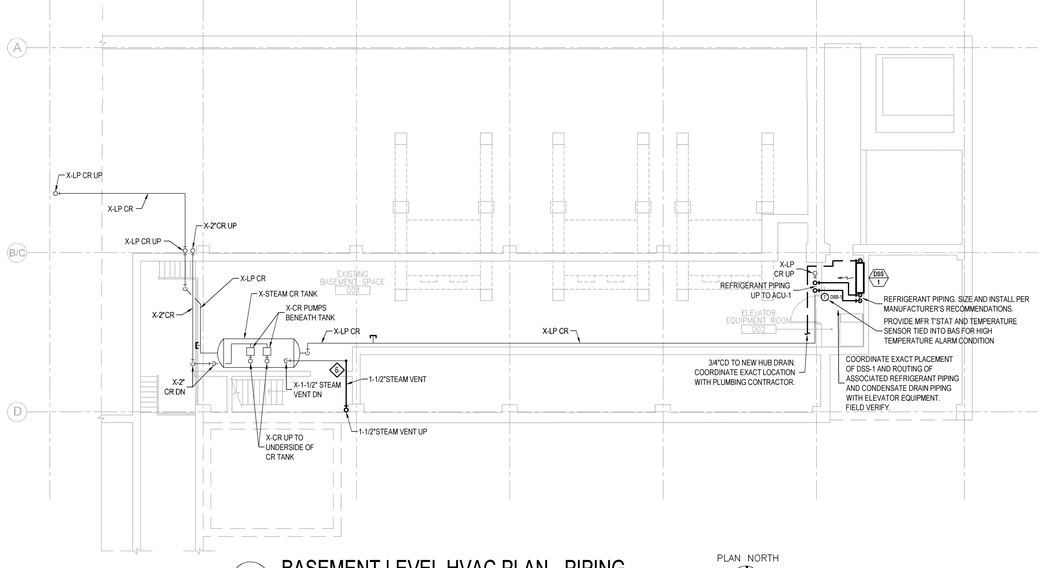
GENERAL NOTES

1. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN 12 NOON ON FRIDAYS TO 7 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTIONS SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS' NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.
2. THE DUMPING OF STEAM CONDENSATE SHALL BE MINIMIZED DURING CONSTRUCTION.



F3 NEW ELEVATION VIEW OF STEAM AND CONDENSATE PIPING ALONG NORTH WALL

1/8" = 1'-0"



F2 BASEMENT LEVEL HVAC PLAN - PIPING

1/8" = 1'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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Drawing Title: Basement and Ground Level HVAC Plans - Piping

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: H-200-P

Dwg. * of

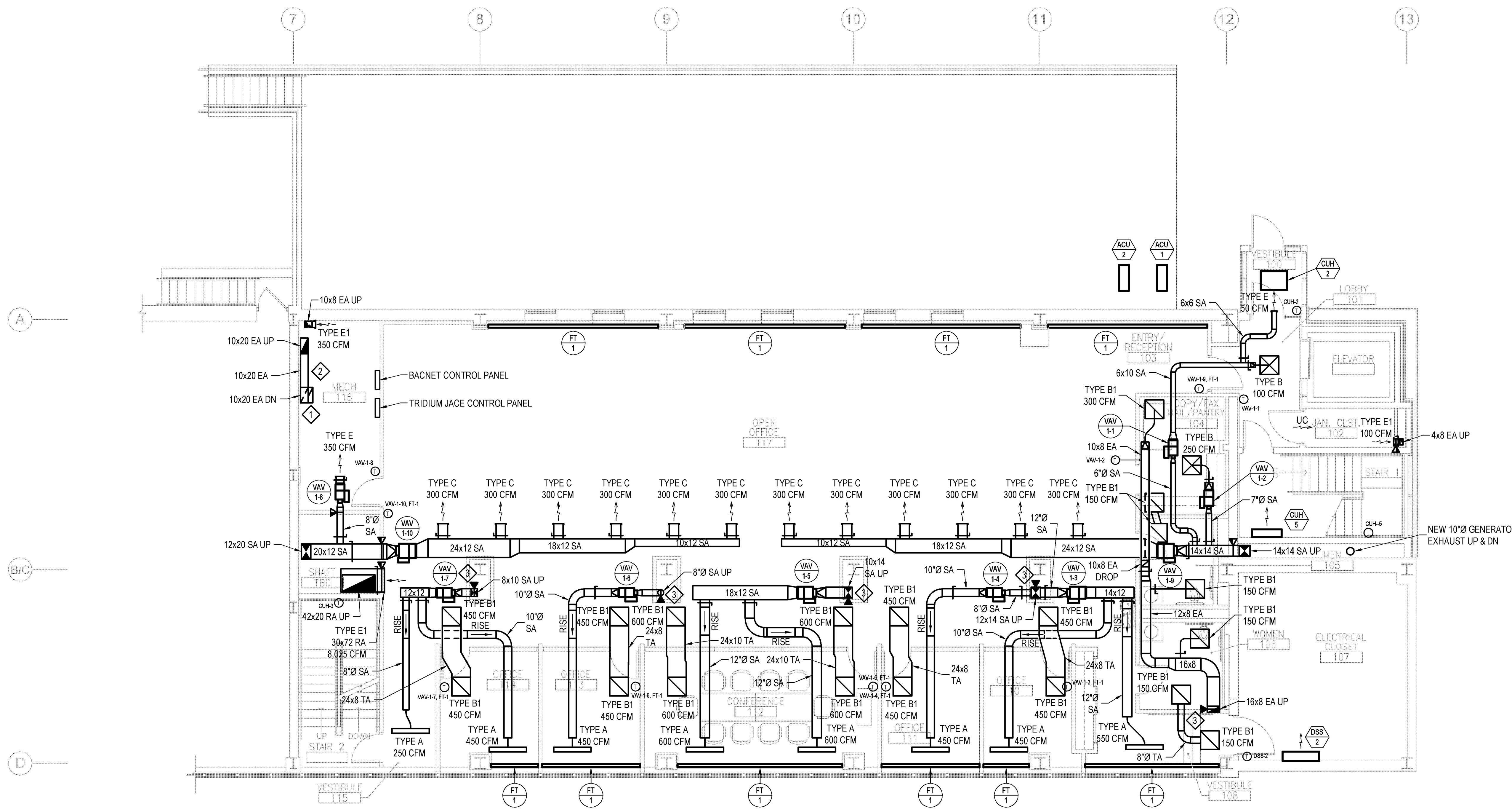
Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231

KEY NOTES

1. CONNECT NEW 10x20 EA TO EXISTING 10x20 EA AT FLOOR. FIELD VERIFY EXACT SIZE AND LOCATION.
2. PROVIDE FIRE DUCT WRAP ON THE ENTIRE EXISTING AND NEW 10x20 EA DUCT.
3. PROVIDE FIRE DAMPER AT SECOND FLOOR PENETRATION.



F1 FIRST LEVEL HVAC PLAN

1/8" = 1'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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Drawing Title	First Level HVAC Plan
Approved: Project Director	
Project Title	William S. Middleton VA Hospital Renovate Building 2
Location	Madison, WI
Date	MARCH 29, 2013
Checked	TK/LHZ
Drawn	JWS
Project Number	607-12-115
Building Number	2
Drawing Number	H-201
Dwg.	* of

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

SHEET NOTES

1. ALL FIN TUBE RADIATION (FT) ON THIS LEVEL SHALL BE FED BY HOT WATER SUPPLY AND RETURN (HWS/R) PIPING FROM THE CEILING SPACE OF THE GROUND LEVEL BELOW. SEE SHEET H-200-P FOR PIPING LAYOUT AND SIZES.

KEY NOTES

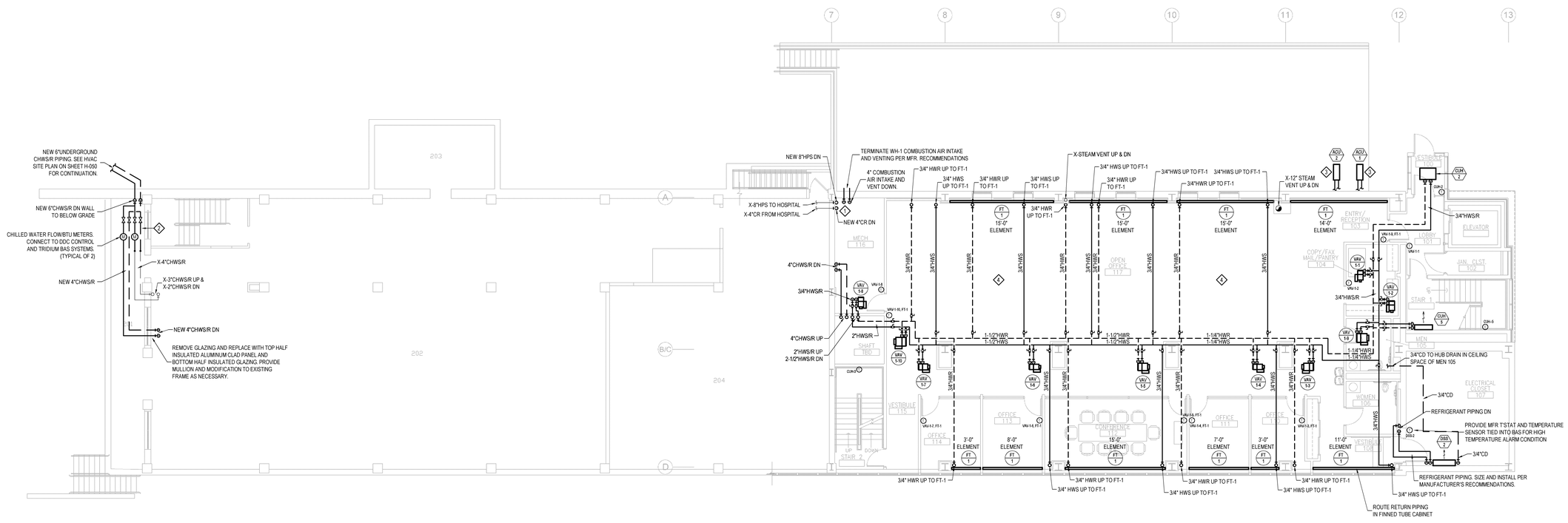
1. CONNECT NEW 8"HPS AND NEW 4"CR TO EXISTING 8"HPS AND EXISTING 4"CR RESPECTIVELY. FIELD VERIFY EXACT SIZE AND LOCATION. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
2. CONNECT NEW 6"CHWS/R PIPING TO EXISTING 4"CHWS/R PIPING AS REQUIRED. FIELD VERIFY EXACT SIZE AND LOCATION.
3. MOUNT NEW CONDENSING UNIT ON EXISTING CONCRETE EQUIPMENT PAD. FIELD VERIFY EXACT LOCATION. SEE THE GROUND LEVEL HVAC PLAN-PIPING ON SHEET H-200-P FOR CONTINUATION OF REFRIGERANT PIPING. SIZE AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
4. COORDINATE HWS/R PIPING IN OPEN OFFICE AREA WITH CEILING PLANS, LIGHTING AND SPRINKLER WORK. ROUTE HWS/R PIPING TO ACCOMMODATE TRADES AND MAINTAIN CEILING HEIGHTS CALLED FOR ON THE ARCHITECTURAL PLANS.

SEQUENCING NOTES

1. EXISTING STEAM, EXISTING STEAM CONDENSATE RETURN, EXISTING NATURAL GAS AND THE EXISTING BUILDING 2 EMERGENCY GENERATOR MUST ALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL SEQUENCE DEMOLITION AND NEW WORK TO ASSURE NO DISRUPTIONS OF SERVICES TO HOSPITAL. SUBMIT DETAILED SEQUENCING PLAN PRIOR TO THE START OF ANY WORK. INCLUDE ALL TEMPORARY AND NEW WORK REQUIRED TO ACCOMMODATE DEMOLITION AND NEW CONSTRUCTION ACROSS ALL TRADES. PLAN MUST BE REVIEWED BY VA PRIOR TO THE START OF ANY WORK.

GENERAL NOTES

1. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN 12 NOON ON FRIDAYS TO 7 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTIONS SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS' NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.
2. THE DUMPING OF STEAM CONDENSATE SHALL BE MINIMIZED DURING CONSTRUCTION.



F1 FIRST LEVEL HVAC PLAN - PIPING

1/8" = 1'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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Drawing Title	First Level HVAC Plan - Piping
Approved: Project Director	
Project Title	William S. Middleton VA Hospital Renovate Building 2
Project Number	607-12-115
Building Number	2
Location	Madison, WI
Date	MARCH 29, 2013
Checked	TK/LHZ
Drawn	JWS
Drawing Number	H-201-P
Dwg. * of	

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Depar ment of Veterans Affairs

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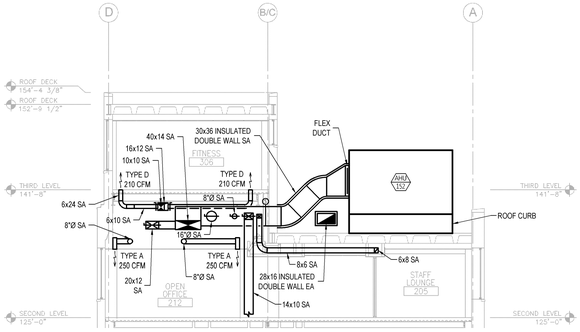
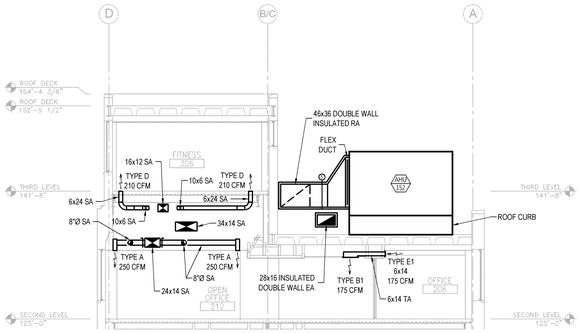


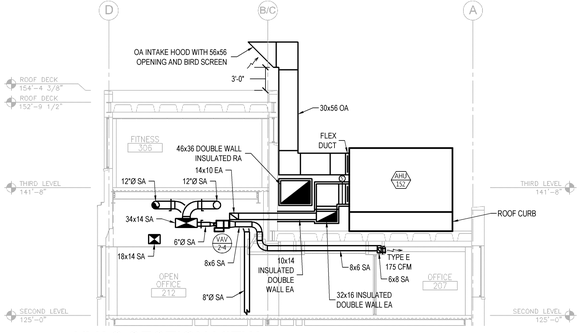
1 HVAC SECTION VIEW

1/8" = 1'-0"



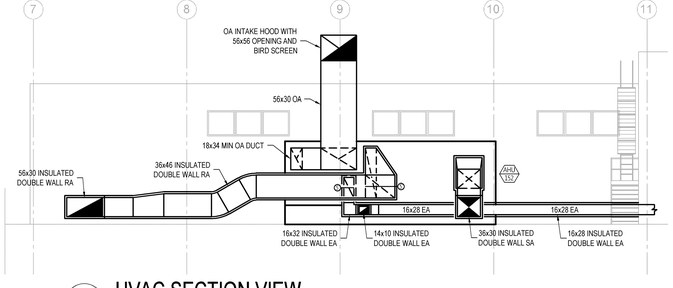
2 HVAC SECTION VIEW

1/8" = 1'-0"



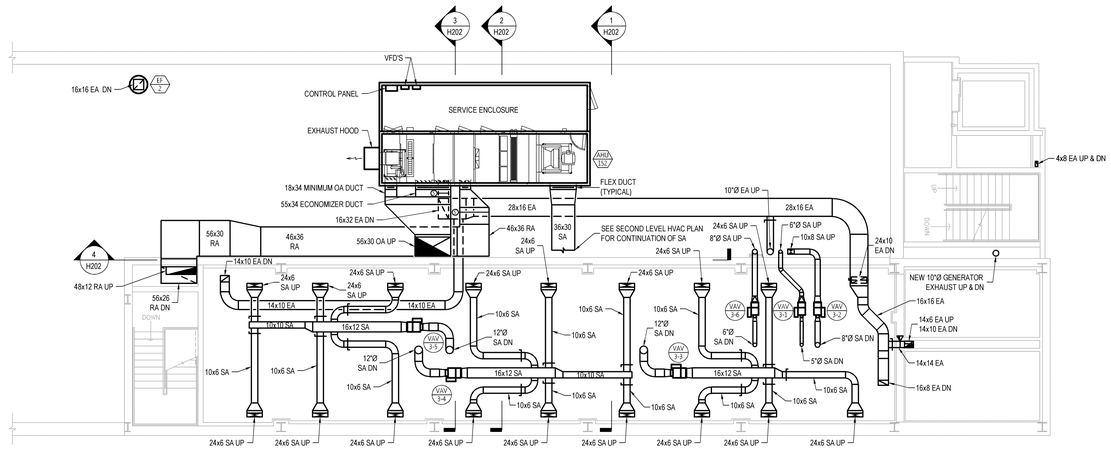
3 HVAC SECTION VIEW

1/8" = 1'-0"



4 HVAC SECTION VIEW

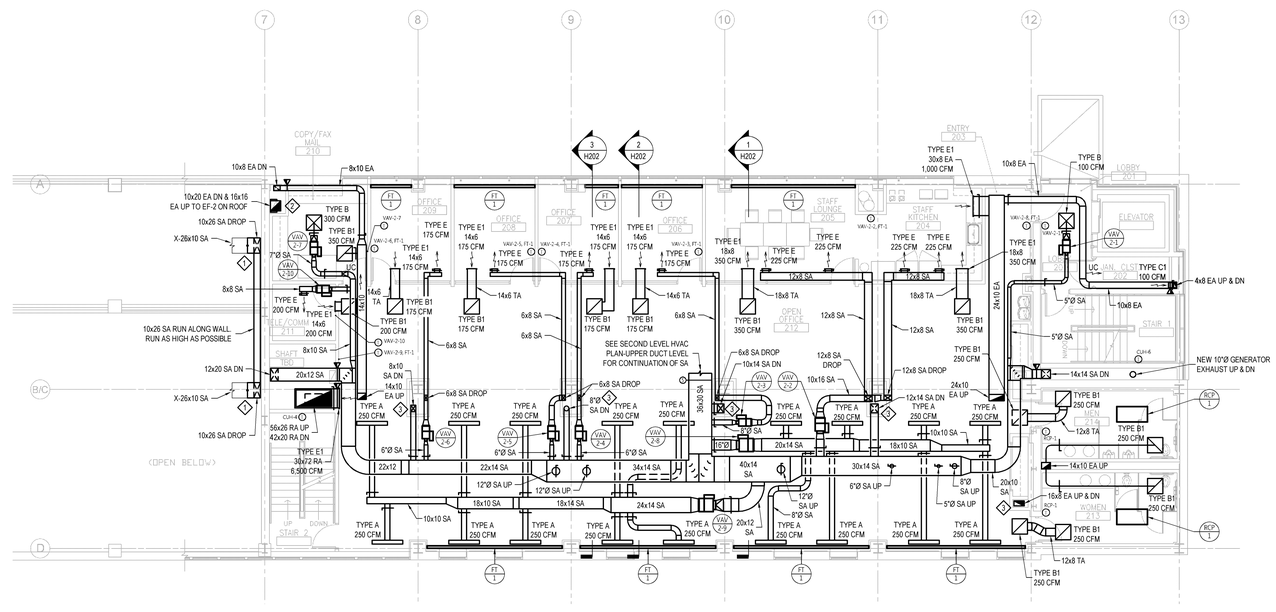
1/8" = 1'-0"



F2 SECOND LEVEL HVAC PLAN - UPPER DUCT LEVEL

1/8" = 1'-0"

PLAN NORTH



F1 SECOND LEVEL HVAC PLAN

1/8" = 1'-0"

PLAN NORTH

KEY NOTES

1. CONNECT NEW 26x10 SA TO EXISTING 26x10 SA. FIELD VERIFY EXACT SIZE AND LOCATION. PROVIDE TURNING VANES IN ALL 90 DEGREE ELBOWS. SEQUENCE SO AS NOT TO DISRUPT SERVICE. SEE SEQUENCING NOTES BELOW.
2. PROVIDE FIRE DUCT WRAP ON THE NEW 10x20 AND 16x16 EA DUCTS.
3. PROVIDE DRYWALL ACCESS PANEL NEAR FLOOR FOR FIRE DAMPER IN DUCTS SERVING FIRST FLOOR.

SEQUENCING NOTES

1. EXISTING STEAM, EXISTING STEAM CONDENSATE RETURN, EXISTING NATURAL GAS AND THE EXISTING BUILDING 2 EMERGENCY GENERATOR MUST ALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL SEQUENCE DEMOLITION AND NEW WORK TO ASSURE NO DISRUPTIONS OF SERVICES TO HOSPITAL. SUBMIT DETAILED SEQUENCING PLAN PRIOR TO THE START OF ANY WORK. INCLUDE ALL TEMPORARY AND NEW WORK REQUIRED TO ACCOMMODATE DEMOLITION AND NEW CONSTRUCTION ACROSS ALL TRADES. PLAN MUST BE REVIEWED BY VA PRIOR TO THE START OF ANY WORK.

GENERAL NOTES

1. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN 12 NOON ON FRIDAYS TO 7 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTIONS SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS' NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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nagel architects

IBC ENGINEERING SERVICES INC.
N8 W22195 JOHNSON DR. STE 180 WAUKESHA, WI 53186
262.549.1190 fx.262.549.1620

Drawing Title: Second Level HVAC Plans

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: JWS

Project Number: 607-12-115

Building Number: 2

Drawing Number: H-202

Dwg. * of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

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SHEET NOTES

1. ALL FIN TUBE RADIATION (FT) ON THIS LEVEL SHALL BE FED BY HOT WATER SUPPLY AND RETURN (HWS/R) PIPING FROM THE CEILING SPACE OF THE FIRST LEVEL BELOW. SEE SHEET H-201-P FOR PIPING LAYOUT AND SIZES.

GENERAL NOTES

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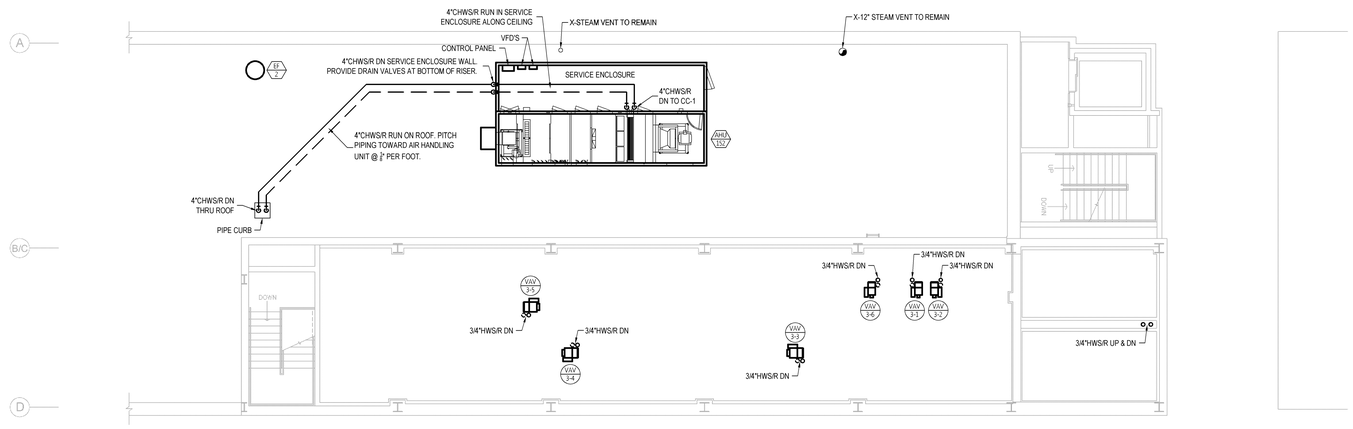
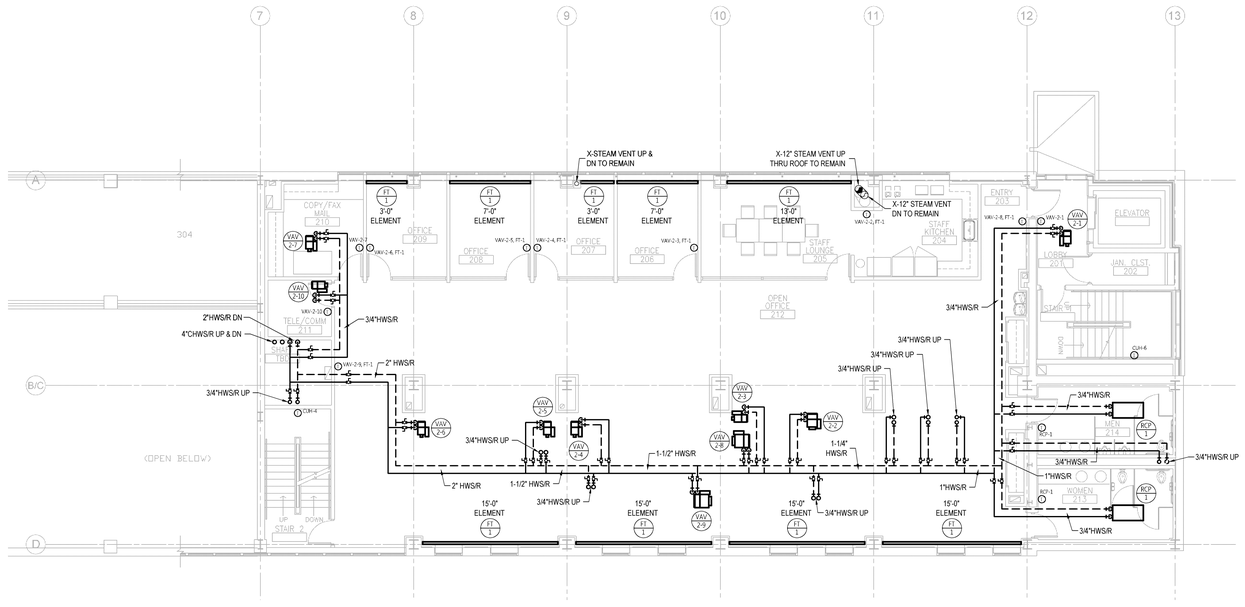


F2 SECOND LEVEL HVAC PLAN - UPPER DUCT LEVEL - PIPING

1/8" = 1'-0"

PLAN NORTH



F1 SECOND LEVEL HVAC PLAN - PIPING

1/8" = 1'-0"

PLAN NORTH

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

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nagel architects

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N8 W22185 JOHNSON DR. STE 180 262.549.1190
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Drawing Title	Project Title	Project Number
Second Level HVAC Plans-Piping	William S. Middleton VA Hospital Renovate Building 2	607-12-115
		Building Number: 2
Approved: Project Director	Location: Madison, WI	Drawing Number: H-202-P
	Date: MARCH 29, 2013 / Checked: TK/LHZ / Drawn: JWS	Dwg. * of

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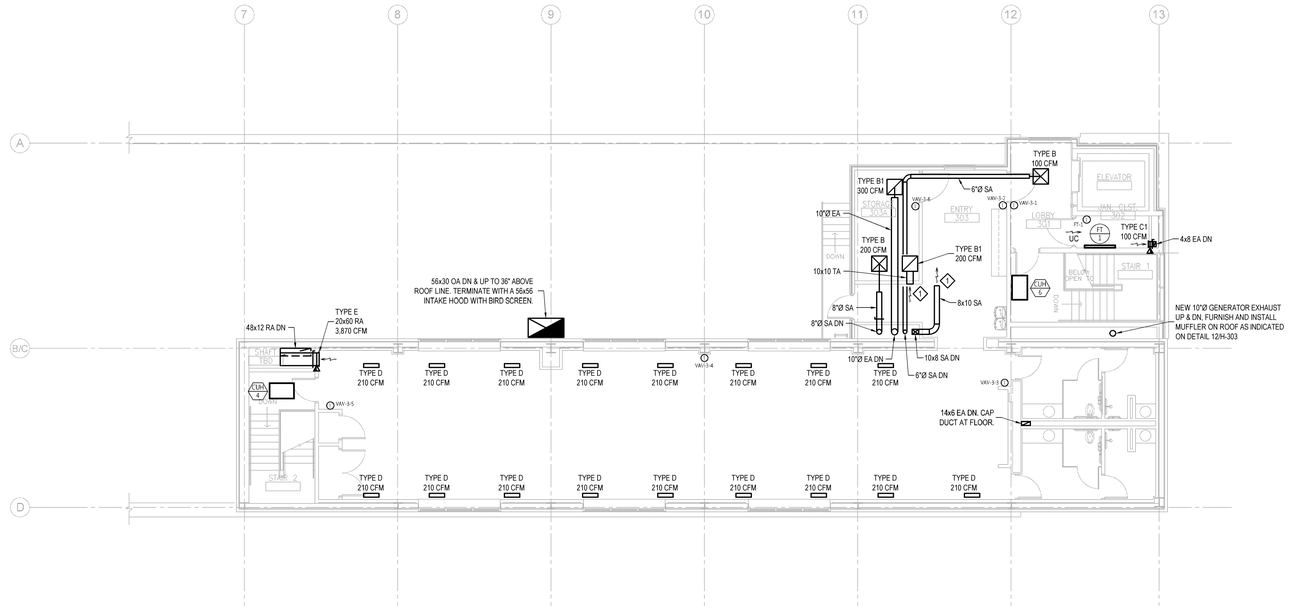
KEY NOTES

1. PROVIDE WIRE MESH SCREEN OVER DUCT OPENING.

GENERAL NOTES

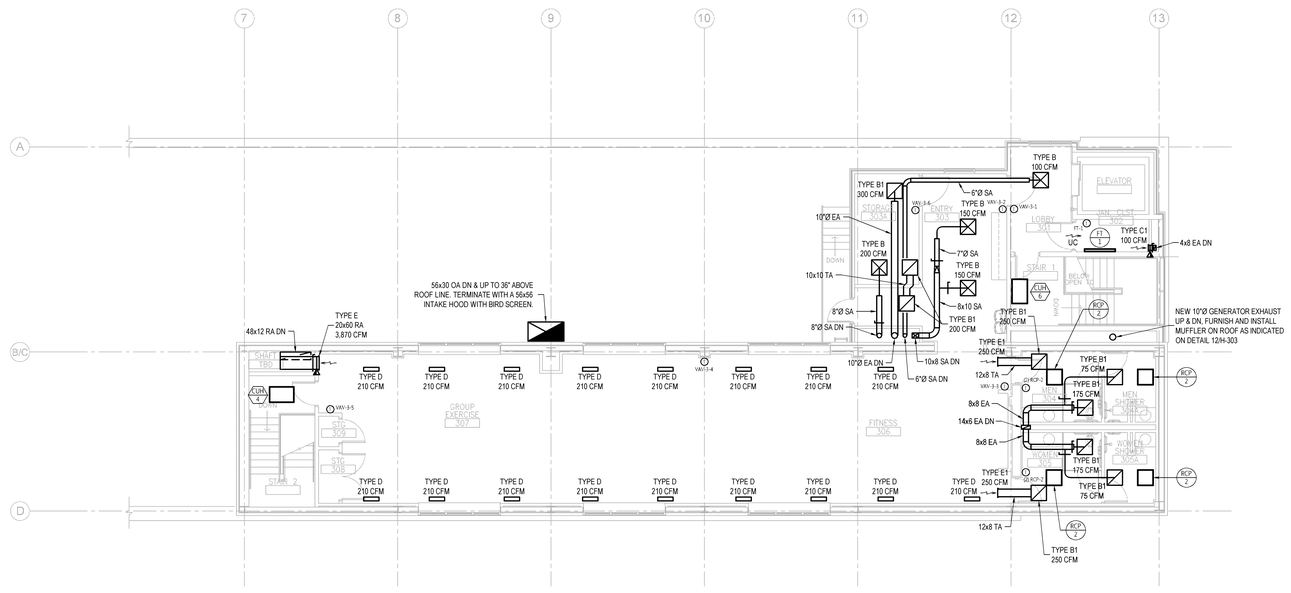
1. ALL MECHANICAL, PLUMBING, OR ELECTRICAL WORK THAT REQUIRES SERVICE DISRUPTIONS IN BUILDING 2 THAT WILL IMPACT THE LAUNDRY OPERATIONS SHALL BE SCHEDULED BETWEEN 12 NOON ON FRIDAYS TO 7 AM ON MONDAY (WEEKEND WORK ONLY). COORDINATE WORK BETWEEN TRADES SO THAT WORK OF MULTIPLE TRADES CAN BE PERFORMED DURING THE SAME SHUT-DOWN PERIOD. ALL WORK REQUIRING SERVICE DISRUPTIONS SHALL BE COORDINATED WITH THE VA. A MINIMUM OF 2 WEEKS' NOTICE SHALL BE GIVEN FOR ANY AND ALL SERVICE DISRUPTIONS.



C1 THIRD LEVEL HVAC PLAN - ALTERNATE #1

1/8" = 1'-0"

PLAN NORTH



F1 THIRD LEVEL HVAC PLAN

1/8" = 1'-0"

PLAN NORTH

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Drawing Title	Third Level HVAC Plan
Approved: Project Director	
Project Title	William S. Middleton VA Hospital Renovate Building 2
Project Number	607-12-115
Building Number	2
Location	Madison, WI
Date	MARCH 29, 2013
Checked	TK/LHZ
Drawn	JWS
Drawing Number	H-203
Dwg. * of	

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231

GENERAL NOTES

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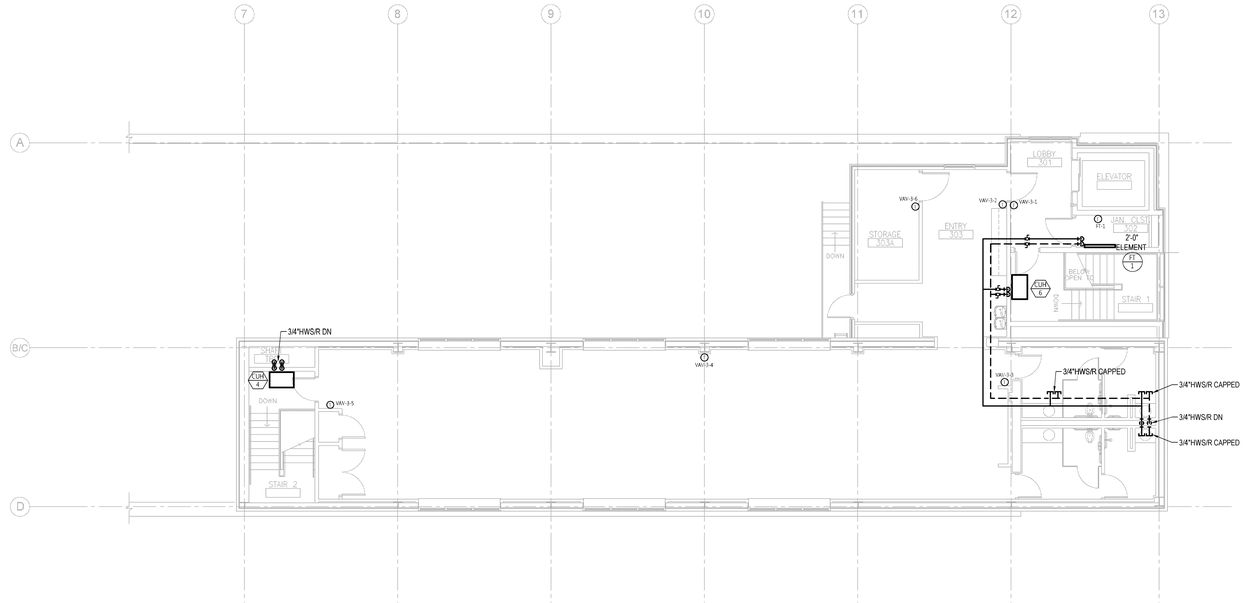
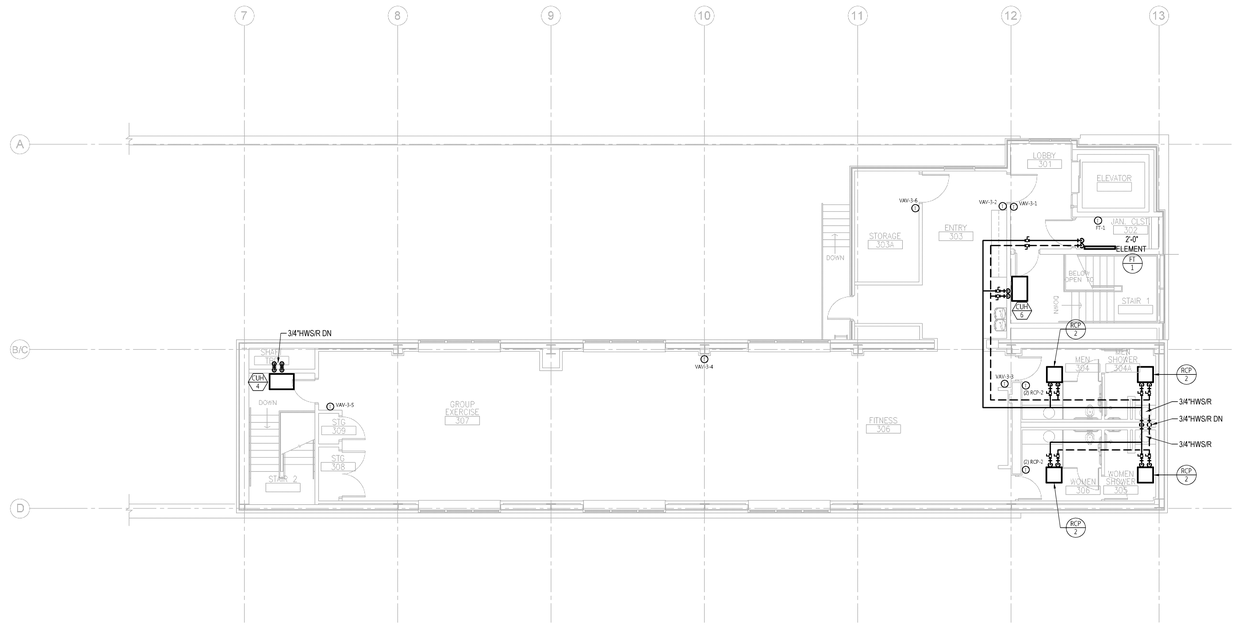


C1 THIRD LEVEL HVAC PLAN - PIPING - ALTERNATE #1

1/8" = 1'-0"

PLAN NORTH



F1 THIRD LEVEL HVAC PLAN - PIPING

1/8" = 1'-0"

PLAN NORTH

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Drawing Title	Third Level HVAC Plan - Piping
Approved: Project Director	
Project Title	William S. Middleton VA Hospital Renovate Building 2
Project Number	607-12-115
Building Number	2
Location	Madison, WI
Date	MARCH 29, 2013
Checked	TK/LHZ
Drawn	JWS
Drawing Number	H-203-P
Dwg. * of	

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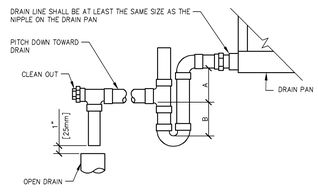
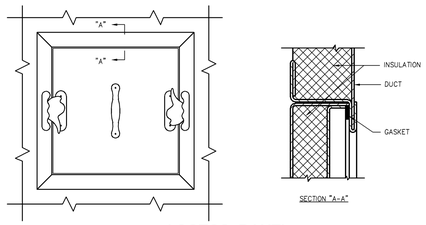


NOTE:

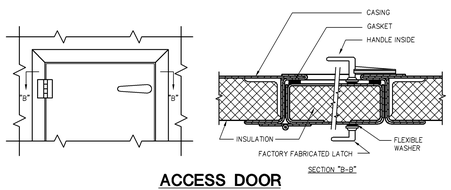
UNIT TYPE	A	B
DRAW THRU	2" [51mm] PLUS X	X
BLOW THRU	1" [25mm] MINIMUM	2X

WHERE X = STATIC PRESSURE IN PAN

11 AIR HANDLING UNIT DRAIN TRAP DETAIL
N.T.S.



ACCESS PANEL

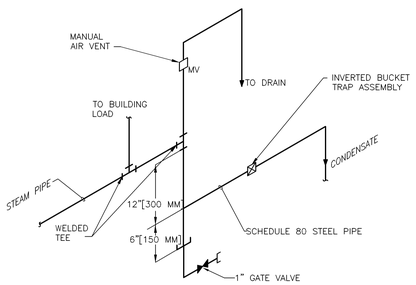


ACCESS DOOR

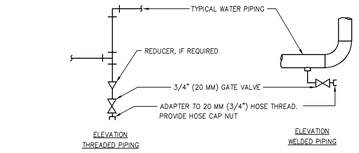
NOTES:

1. LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
2. HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS.

10 ACCESSPANEL/DOOR DETAIL
N.T.S.



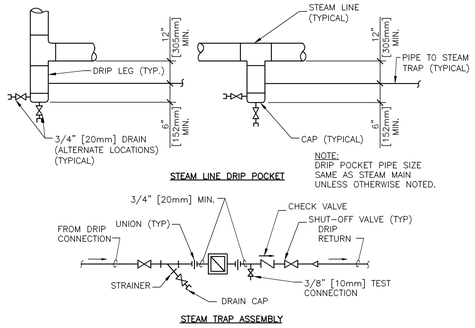
9 END OF LINE STEAM LINE DRIP TRAP
N.T.S.



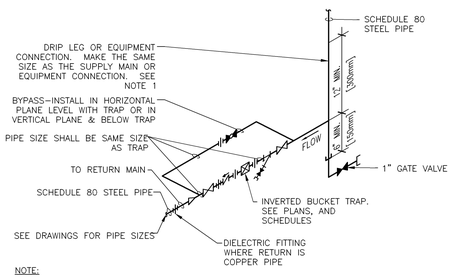
NOTES:

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

8 TYPICAL CHILLED AND HOT WATER PIPING DRAIN VALVE CONNECTION
N.T.S.



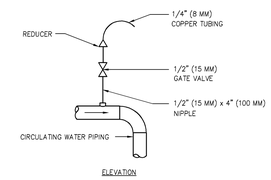
7 STEAM LINE DROP POCKET AND STEAM TRAP ASSEMBLY DETAIL
N.T.S.



NOTE:

1. ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 12" MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 6" SCALE POCKET BELOW TRAP INLET.
2. PROVIDE BYPASS PIPING.

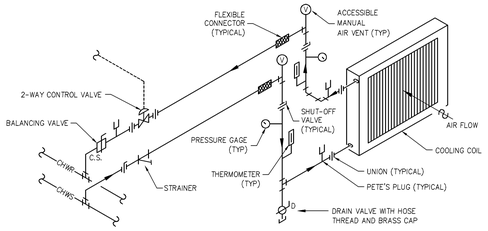
6 INVERTED BUCKET STEAM TRAP ASSEMBLY DETAIL
N.T.S.



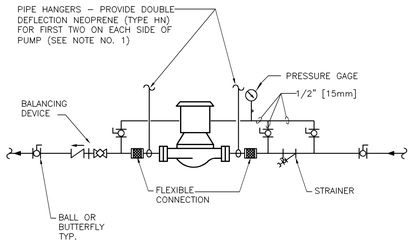
NOTES:

1. VENT ALL HIGH POINTS ABOVE.
2. IF AUTOMATIC AIR VENTS ARE USED, PIPE DISCHARGE TO DRAIN

5 TYPICAL AIR VENT DETAIL
N.T.S.



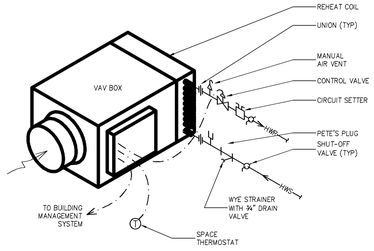
4 CHILLED WATER COOLING COIL PIPING DETAIL
N.T.S.



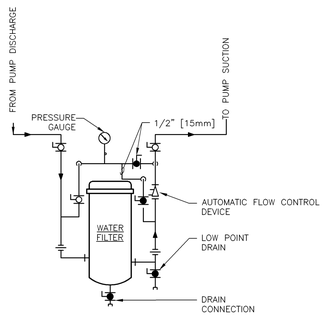
NOTES:

1. SUPPORT PUMP FROM PIPING ONLY. DO NOT SUPPORT PUMP FROM MOTOR.

3 INLINE PUMP DETAIL
N.T.S.



2 VAV & CONSTANT VOLUME BOX W/REHEAT CONTROL DIAGRAM
N.T.S.



1 WATER FILTERS – CLOSED LOOP HYDRONIC SYSTEM
N.T.S.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

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262.549.1190 fx 262.549.1620

Drawing Title: HVAC DETAILS

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Project Number: 607-12-115

Building Number: 2

Location: Madison, WI

Date: MARCH 29, 2013

Checked: TK/LHZ

Drawn: AB

Drawing Number: H-300

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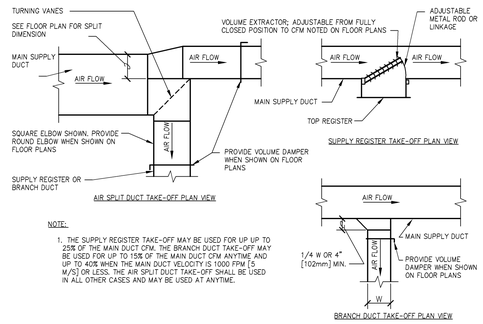
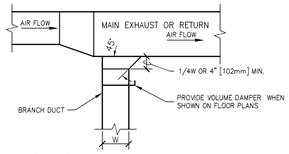


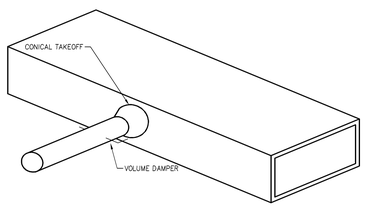
NOTE:

1. THE SUPPLY REGISTER TAKE-OFF MAY BE USED FOR UP UP TO 25% OF THE MAIN DUCT CFM. THE BRANCH DUCT TAKE-OFF MAY BE USED FOR UP TO 15% OF THE MAIN DUCT CFM ANYTIME AND UP TO 40% WHEN THE MAIN DUCT VELOCITY IS 1000 FPM [5 M/S] OR LESS. THE AIR SPLIT DUCT TAKE-OFF SHALL BE USED IN ALL OTHER CASES AND MAY BE USED AT ANYTIME.

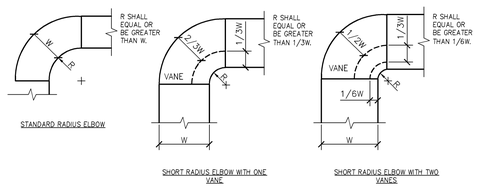
10 SUPPLY DUCTWORK TAKE-OFFS
N.T.S.



9 EXHAUST OR RETURN BRANCH DUCTWORK
N.T.S.



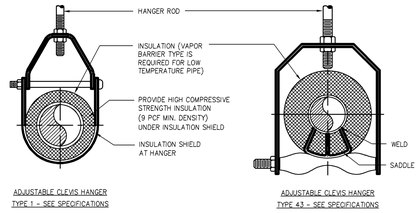
8 ROUND BRANCH DUCT TAKEOFF
N.T.S.

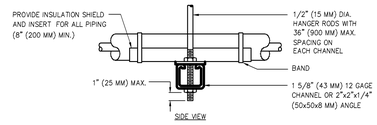


NOTE:

1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
2. ALL STANDARD RADIUS ELBOWS SHOWN ON FLOOR PLANS MAY BE MADE SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.

7 DUCTWORK RADIUS ELBOWS
N.T.S.



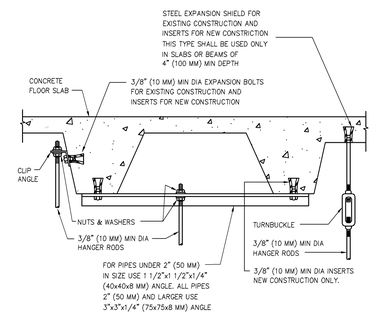


TRAPEZE HANGER FOR UP TO 1000 LB. (453 KG) UNIFORM LOAD

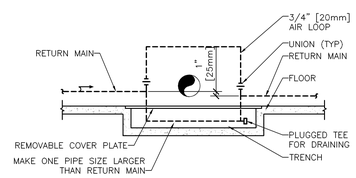
MAXIMUM PIPE/TUBING SUPPORT SPACING																			
NOM. SIZE	IN. (MM)	THRU 3/4 THRU (20)	1 (25)	1 1/4 (32)	1 1/2 (40)	2 (50)	2 1/2 (65)	3 (75)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	14 (350)	16 (400)	18 (450)	20 (500)	24 (600)
PIPE	FT. (M)	7 (2.1)	7 (2.1)	7 (2.1)	9 (2.7)	10 (3.0)	11 (3.4)	12 (3.7)	14 (4.1)	16 (4.9)	17 (5.2)	19 (5.8)	22 (6.7)	23 (7.0)	25 (7.6)	27 (8.2)	28 (8.5)	30 (9.1)	32 (9.6)
TUBING	FT. (M)	5 FT. 5 FT. (1.8)	6 (2.1)	7 (2.1)	8 (2.4)	8 (2.4)	9 (2.7)	10 (3.0)	12 (3.7)	13 (4.0)	14 (4.1)	16 (4.9)	-	-	-	-	-	-	-

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

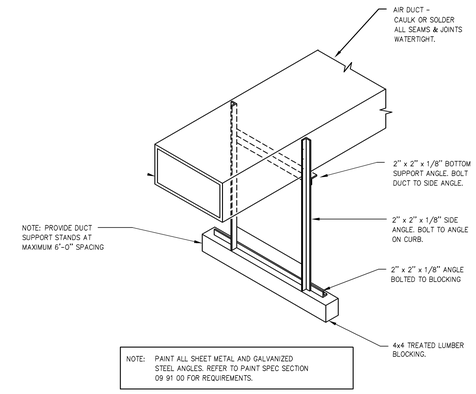
6 TYPICAL PIPE HANGER DETAIL
N.T.S.



5 TYPICAL METHOD OF SECURING HANGER RODS IN CONCRETE SLABS AND BEAMS
N.T.S.

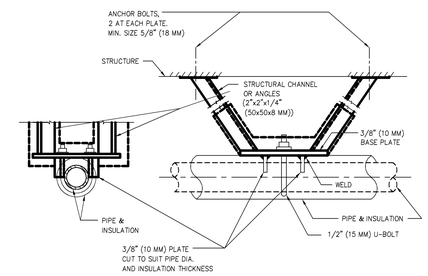


4 CONDENSATE RETURN PIPING AROUND OBSTRUCTIONS
N.T.S.



NOTE: PAINT ALL SHEET METAL AND GALVANIZED STEEL ANGLES. REFER TO PAINT SPEC SECTION 09 91 00 FOR REQUIREMENTS.

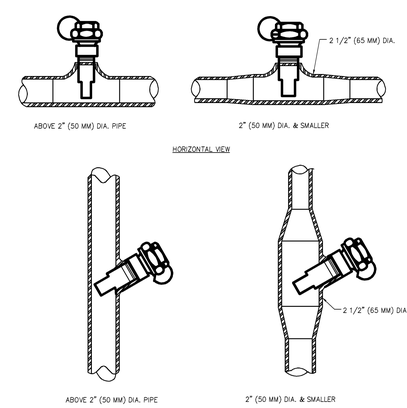
3 TYPICAL EXPOSED DUCTWORK SUPPORT DETAIL
N.T.S.



NOTES:

1. INSULATE ANCHOR AS INDICATED FOR COLD PIPING.

2 HORIZONTAL PIPE ANCHOR DETAIL
N.T.S.



1 INSTALLATION OF THERMOMETER WELLS
N.T.S.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

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Drawing Title: HVAC DETAILS

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Project Number: 607-12-115

Building Number: 2

Location: Madison, WI

Date: MARCH 29, 2013

Checked: TK/LHZ

Drawn: AB

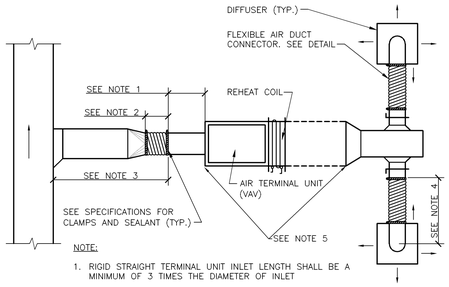
Drawing Number: H-301

Dwg. ● of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

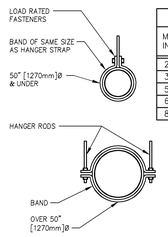
VA FORM 08-6231



NOTE:

1. RIGID STRAIGHT TERMINAL UNIT INLET LENGTH SHALL BE A MINIMUM OF 3 TIMES THE DIAMETER OF INLET
2. A FLEXIBLE AIR DUCT CONNECTOR IS NOT MANDATORY FOR INLET TO THIS BOX, BUT ALLOWED TO ACCOMMODATE MINOR OFFSETS. MAXIMUM LENGTH 3'–0" [900mm].
3. A BRANCH DUCT SERVING AN INDIVIDUAL BOX MAY BE THE SAME SIZE AS THE BOX INLET, PROVIDED THE EQUIVALENT LENGTH OF THE BRANCH DUCT, AS SHOWN, DOES NOT EXCEED 10 FEET (3 METERS). FOR LONGER LENGTHS, INCREASE THE DUCT SIZE AND PROVIDE A DUCT TRANSITION TO MAINTAIN THE DUCT STATIC PRESSURE DROP AT OR BELOW 0.2"/100' [1.64Pa/m].
4. FLEXIBLE AIR DUCT CONNECTORS, WHEN USED FROM TERMINAL UNIT SUPPLY AIR DUCT TO DIFFUSER, SHALL NOT EXCEED 5'–0" [1500mm]. USE RIGID ELBOWS FOR CHANGE OF DIRECTION GREATER THAN 45°.
5. COMPONENT ARRANGEMENT MAY VARY BY MANUFACTURER. PROVIDE INSULATION W/VAPOR BARRIER FOR CONNECTING DUCT SECTIONS.

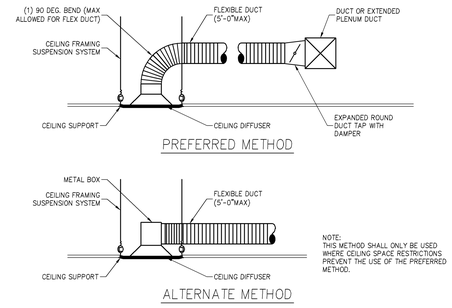
10 DUCT CONNECTIONS – AIR TERMINAL UNITS
N.T.S.



HANGER STRAPS OR RODS			
MAX. DUCT ø IN. [mm]	QUANTITY/SIZE IN. [mm]	MAX. LOAD LBS. [kg]	MAX. SPACING IN. [mm]
26 [650]	ONE 1 [25] x 22 GA STRAP	260 [119]	144 [3658]
36 [900]	ONE 1 [25] x 18 GA STRAP	420 [190]	144 [3658]
50 [1250]	ONE 1 [25] x 16 GA STRAP	700 [317]	144 [3658]
60 [1500]	TWO 3/8 [10]ø. RODS	1320 [598]	144 [3658]
84 [2100]	TWO 1/2 [13]ø RODS	2500 [1133]	144 [3658]

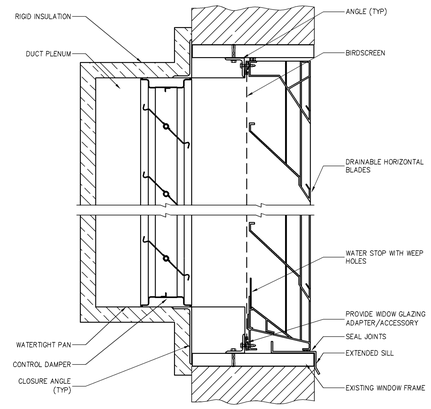
NOTE:
TABULATED DATA FROM SMACNA. ALLOWS FOR DUCT REINFORCING AND INSULATION, BUT NO EXTERNAL LOAD.

7 ROUND DUCT HANGERS
N.T.S.

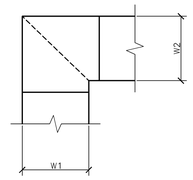


NOTE:
THIS METHOD SHALL ONLY BE USED WHERE CEILING SPACE RESTRICTIONS PREVENT THE USE OF THE PREFERRED METHOD.

4 CEILING DIFFUSER DETAIL
N.T.S.



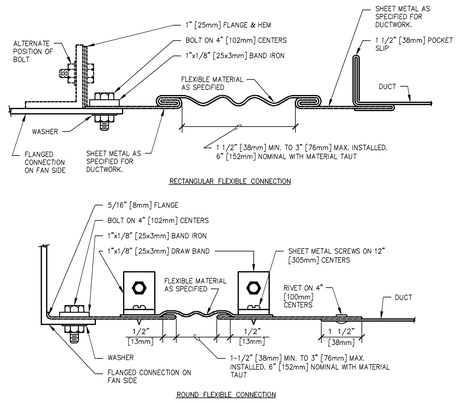
6 LOUVER WITH CONTROL DAMPER DETAIL
N.T.S.



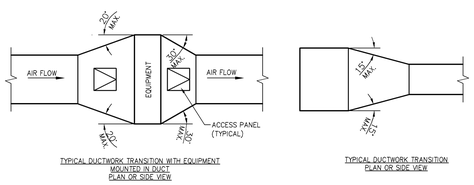
NOTE:

1. ALL VANED ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.
2. WHEN W1 DOES NOT EQUAL W2, VANE SHALL BE SINGLE VANE TYPE REGARDLESS OF W DIMENSION.
3. ALL SINGLE VANES SHALL HAVE A 2" [50mm] RADIUS, 1 1/2" [40mm] MAXIMUM SPACE BETWEEN VANES AND A 3/4" [20mm] TRAILING EDGE.
4. WHEN W EQUALS W2 AND W1 IS GREATER THAN 20" [500mm] VANES SHALL BE DOUBLE VANE TYPE.
5. PROVIDE ACCESS PANELS AT ELBOW TO FACILITATE CLEANING.

3 DUCTWORK SQUARE VANED ELBOWS
N.T.S.



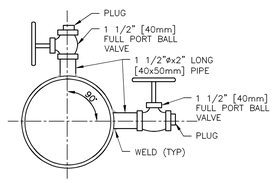
9 RECTANGULAR AND ROUND FLEXIBLE CONNECTION DETAILS
N.T.S.



NOTE:

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

2 TYPICAL DUCTWORK TRANSITION WITH EQUIPMENT MOUNTED IN DUCT
N.T.S.

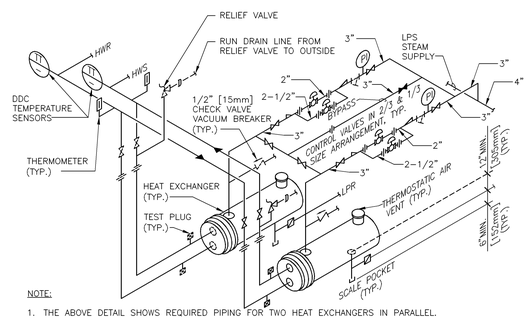


NOTE:

1. PROVIDE IN CHILLED WATER MAIN AND IN CONDENSER WATER MAIN.
2. LOCATE PILOT TUBE TAPS 20 PIPE DIAMETERS DOWNSTREAM AND 10 PIPE DIAMETERS UPSTREAM FROM THE NEAREST PIPE FITTING.

   EITHER TOP OR SIDE LOCATION. BOTH ARE NOT REQUIRED AT SAME LOCATION.

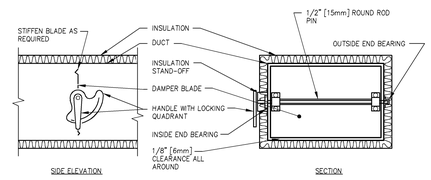
8 PITOT TEST CONNECTIONS
N.T.S.



NOTE:

1. THE ABOVE DETAIL SHOWS REQUIRED PIPING FOR TWO HEAT EXCHANGERS IN PARALLEL.
2. PROVIDE SADDLE SUPPORTS AND LEGS OR HANGERS FOR HEAT EXCHANGER. MOUNTING HEIGHT SHALL BE ADJUSTED TO FACILITATE GRAVITY RETURN OF STEAM CONDENSATE.
3. MAKE THE BYPASS THE SAME SIZE AS THE CONNECTIONS TO THE CONTROL VALVES.
4. CONTROL VALVES SHALL BE IN A 1/3 AND 2/3 SIZE ARRANGEMENT.

5 HEAT EXCHANGER – STEAM TO HOT WATER
N.T.S.



NOTE:

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

1 VOLUME DAMPER DETAIL
N.T.S.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

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Drawing Title: HVAC DETAILS

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013 | Checked: TK/LHZ | Drawn: AB

Project Number: 607-12-115

Building Number: 2

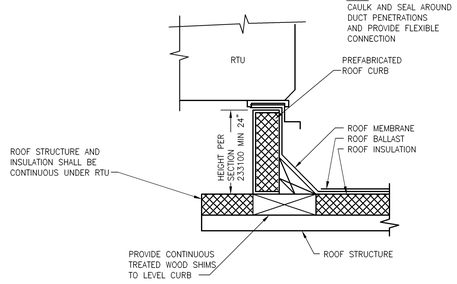
Drawing Number: H-302

Dwg. • of

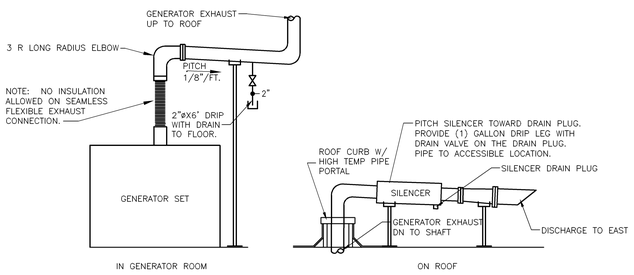
Office of Construction and Facilities Management

Depar ment of Veterans Affairs

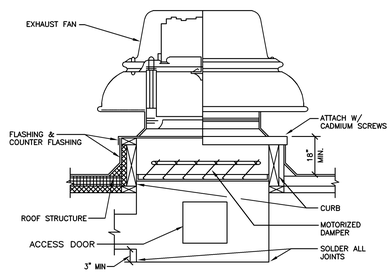
VA FORM 08-6231



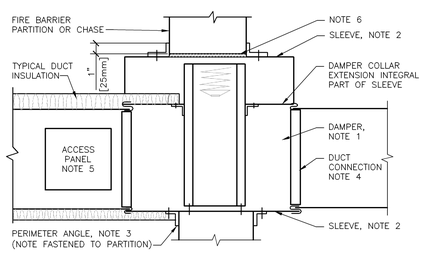
9 OUTDOOR AHU CURB DETAIL
N.T.S.



11 GENERATOR EXHAUST DETAIL
N.T.S.



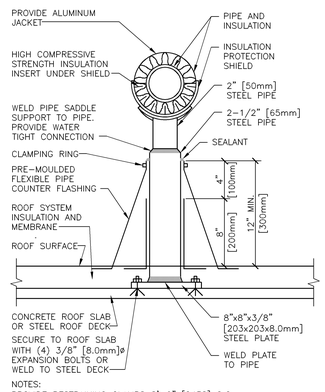
8 ROOF MOUNTED EXHAUST FAN DETAIL
N.T.S.



NOTE:

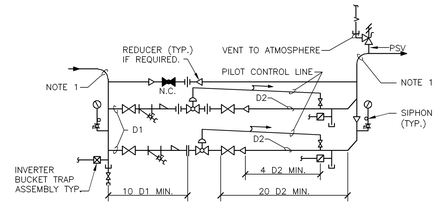
1. A VERTICAL DAMPER IS SHOWN. HORIZONTAL DAMPER INSTALLATION, IS SIMILAR. FOLLOW DAMPER MANUFACTURER'S INSTRUCTIONS, INCLUDING FASTENER OPTIONS AND GAGES FOR SLEEVE AND PERIMETER ANGLES. FIRE DAMPERS MUST BE INSTALLED IN THE PARTITION OR FLOOR AND NOT OUTSIDE THE PENETRATION.
2. GALVANIZED SLEEVE: GAGE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

10 SECTION THROUGH FIRE DAMPER INSTALLATION
N.T.S.



NOTES:
PROVIDE RESTRAINING CLAMPS 8'-0" [2438] O.C.

7 DETAIL FOR SUPPORTING PIPE ON ROOF
N.T.S.



NOTE:

1. SEE FLOOR PLANS FOR PIPE SIZES.
2. INSTALL VALVES AS RECOMMENDED BY MANUFACTURER.
3. MAKE BYPASS VALVE DISCHARGE PIPE THE SAME SIZE AS D2 FOR THE LARGEST PRV.
4. PROVIDE NECESSARY UNIONS FOR THE REMOVAL OF VALVE WITH SCREWED CONNECTIONS.

6 STEAM PRESSURE REDUCING STATION (1/3 AND 2/3)
N.T.S.

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

HANGER STRAPS OR RODS			
MAX. DUCT DIM IN. [mm]	QUANTITY/SIZE IN. [mm]	MAX. LOAD LBS. [kg]	MAX. SPACING IN. [mm]
26 [650]	ONE 1 [25] x 22 GA STRAP	260 [119]	144 [3600]
36 [900]	ONE 1 [25] x 18 GA STRAP	420 [190]	144 [3600]
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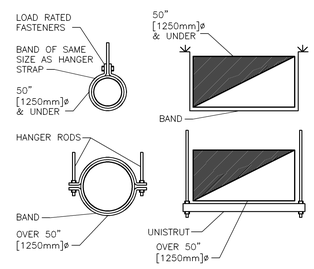
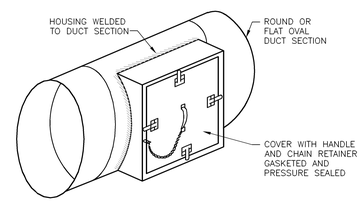
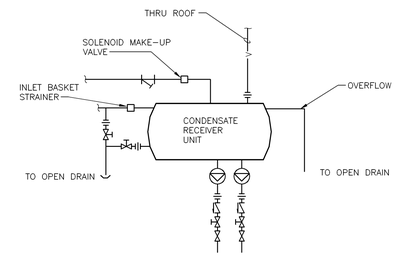


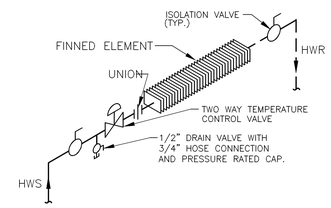
5 DUCT HANGERS
N.T.S.



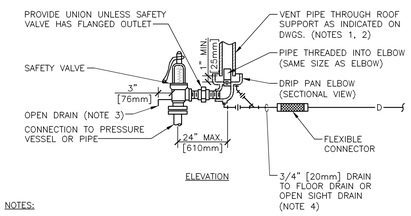
4 ACCESS SECTION FOR ROUND/OVAL DUCT
N.T.S.



3 CONDENSATE RECEIVER UNIT
N.T.S.



2 FIN TUBE PIPING DETAIL
N.T.S.



NOTES:

1. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, SIZE THE VENT PIPE SO THAT STEAM IS NOT BLOWN OUT AT THE VENT PIPE ENTRANCE. UTILIZE THE CALCULATION METHOD CONTAINED IN ANSI B31.1, POWER PIPING CODE, APPENDIX II.
2. VENT PIPE SHALL TERMINATE 6' [1829mm] MIN. ABOVE FINISHED ROOF.
3. DISCHARGE OF DRAIN MUST BE DIRECTED AWAY FROM PLATFORMS OR OTHER AREAS WHICH PERSONNEL MAY OCCUPY.
4. DO NOT CONNECT ANY OTHER DRAIN TO THE DRIP PAN ELBOW DRAIN PIPE.

1 STEAM SAFETY VALVE
N.T.S.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

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Drawing Title: HVAC DETAILS

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Project Number: 607-12-115

Building Number: 2

Location: Madison, WI

Date: MARCH 29, 2013

Checked: TK/LHZ

Drawn: AB

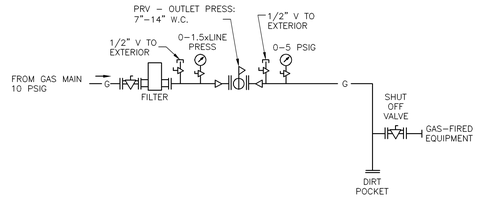
Drawing Number: H-303

Dwg. ● of

Office of Construction and Facilities Management

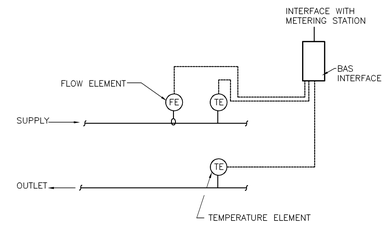
Depar ment of Veterans Affairs

VA FORM 08-6231



6 GAS PRESSURE REGULATOR W/VENTING AND GAS PIPE DIRT LEG AND SHUT OFF VALVE

NTS

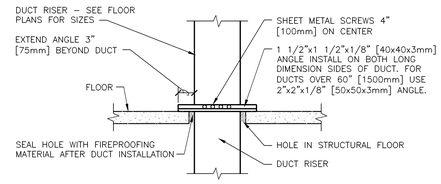


NOTE:

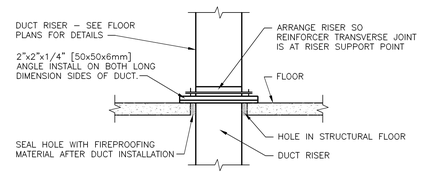
1. MAINTAIN UPSTREAM AND DOWN STREAM DISTANCES RECOMMENDED BY METER MANUFACTURES
2. FOR WATER METERING: PROVIDE CONNECTION TO BAS FOR WATER FLOW AND TOTALIZER.

5 WATER FLOW MEASURING STATION (WITH BTU METER)

NTS



0.5 INCH WG [125Pa] TO 2 INCHES WG [500Pa] DUCT RISER SUPPORT

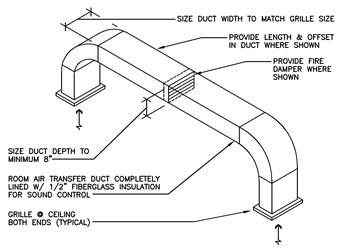


2 INCHES WG [500Pa] TO 4 INCHES WG [1000Pa] DUCT RISER SUPPORT

NOTE:
ALL DUCT WORK RISERS WHICH ARE RUN EXPOSED, SUCH AS THRU ATTIC FLOORS AND FAN ROOM FLOORS SHALL BE PROVIDED WITH A 3" [75mm] HIGH CONCRETE CURB AROUND OPENING FOR DUCT.

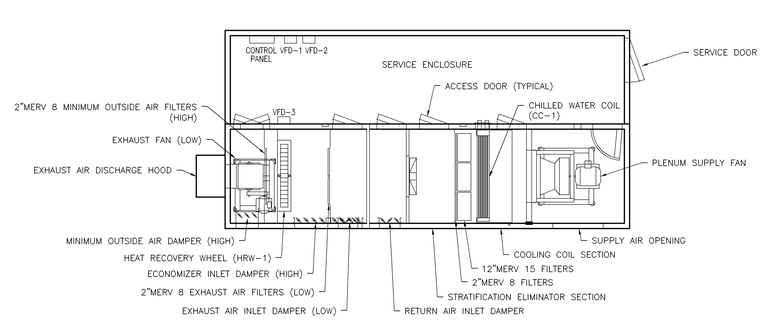
3 DUCT RISER SUPPORTS

N.T.S.



9 ROOM AIR TRANSFER DUCT DETAIL

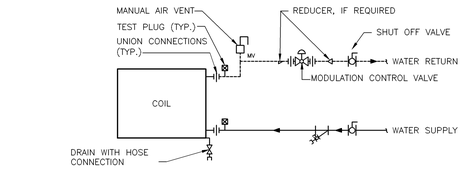
N.T.S.



SEE SPEC SECTION 23 74 13 FOR FURTHER DETAILS AND FEATURES

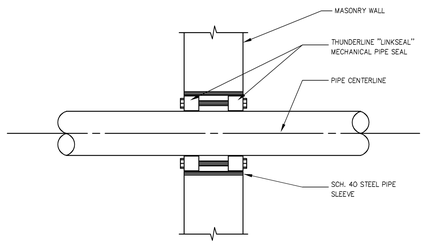
4 CUSTOM OUTDOOR AHU DETAIL

N.T.S.



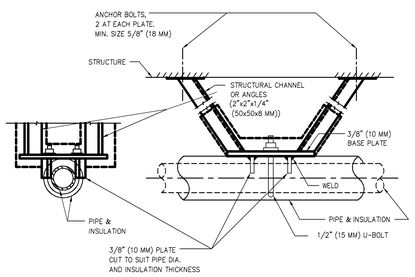
2 TERMINAL UNIT WATER COILS – PIPING CONNECTIONS

N.T.S.



8 TYPICAL EXTERIOR WALL PIPE PENETRATION DETAIL

N.T.S.

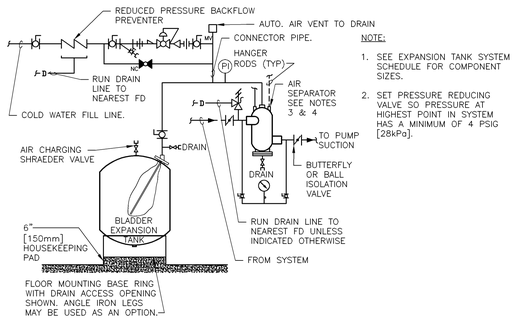


NOTES:

1. INSULATE ANCHOR AS INDICATED FOR COLD PIPING.

7 HORIZONTAL PIPE ANCHOR DETAIL

N.T.S.



NOTE:

1. SEE EXPANSION TANK SYSTEM SCHEDULE FOR COMPONENT SIZES.
2. SET PRESSURE REDUCING VALVE SO PRESSURE AT HIGHEST POINT IN SYSTEM HAS A MINIMUM OF 4 PSIG [28kPa].

1 FLOOR MOUNTED EXPANSION TANK – PIPING CONNECTIONS

N.T.S.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

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Drawing Title: HVAC DETAILS

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Project Number: 607-12-115

Building Number: 2

Location: Madison, WI

Date: MARCH 29, 2013

Checked: TK/LHZ

Drawn: AB

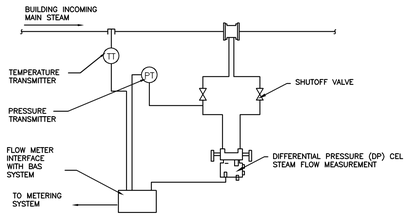
Drawing Number: H-304

Dwg. ● of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231



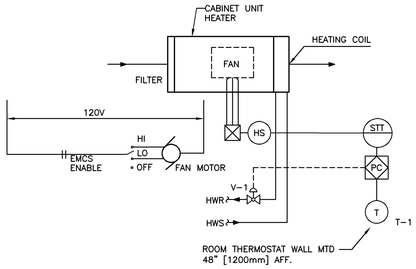
NOTE:

1. MAINTAIN UPSTREAM AND DOWN STREAM DISTANCES RECOMMENDED BY METER MANUFACTURES
2. FOR STEAM METERING: PROVIDE CONNECTION TO BAS FOR FLOW, TOTALIZER, AND ENERGY FLOW.

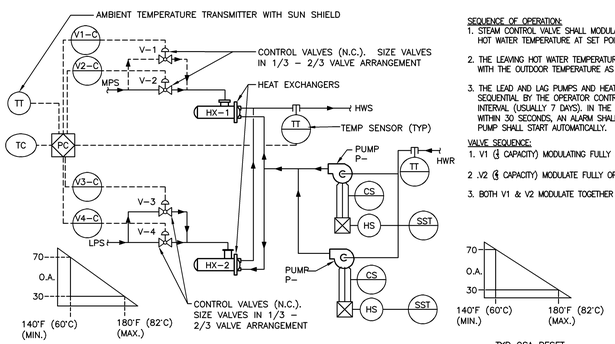
9 STEAM METER DETAIL
N.T.S.

HOT WATER CABINET UNIT HEATER SEQUENCE

1. CABINET HEATER SHALL OPERATE ON A SCHEDULE AS SET BY THE ECC. FAN STATUS SHALL BE MONITORED AND AN ALARM MESSAGE GENERATED IN THE EVENT THE UNIT FAILS TO RUN. THE ROOM TEMP SETPOINT WILL BE 60° (ADJ). THE HOT WATER VALVE WILL BE ENABLED AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT. HI/LO/OFF SWITCH WILL ALLOW LOCAL FAN SPEED ADJUSTMENT.



8 HOT WATER CABINET UNIT HEATER CONTROLS
NTS



SEQUENCE OF OPERATION:

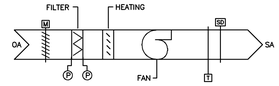
1. STEAM CONTROL VALVE SHALL MODULATE TO MAINTAIN THE LEAVING HOT WATER TEMPERATURE AT SET POINT.
2. THE LEAVING HOT WATER TEMPERATURE SHALL BE RESET INVERSELY WITH THE OUTDOOR TEMPERATURE AS SCHEDULED.
3. THE LEAD AND LAG PUMPS AND HEAT EXCHANGERS SHALL BE SEQUENTIAL BY THE OPERATOR CONTROLS AT THE PRE-DETERMINED INTERVAL (USUALLY 7 DAYS). IN THE EVENT THE PUMP FAILS TO START WITHIN 30 SECONDS, AN ALARM SHALL BE INITIATED AND THE SECOND PUMP SHALL START AUTOMATICALLY.

VALVE SEQUENCE:

1. V1 (¼ CAPACITY) MODULATING FULLY OPEN TO MAINTAIN SET POINT
2. V2 (¼ CAPACITY) MODULATE FULLY OPEN TO MAINTAIN SET POINT.
3. BOTH V1 & V2 MODULATE TOGETHER TO MAINTAIN SET POINT.

TYP OSA RESET SCHEDULE

7 DUAL HEAT EXCHANGER CONTROLS (HEATING SYSTEM)
NTS



MAU-X

GENERAL:

PROVIDE AND INSTALL ALL CONTROLS NECESSARY TO PERFORM THE FUNCTIONS LISTED.

PROVIDE ALL CONTROL DAMPERS W/ ELECTRIC OPERATORS & LINKAGES, UNLESS NOTED OTHERWISE. WHENEVER FANS ARE OFF, RELATED CONTROL AIR DAMPERS SHALL MOVE TO FAIL POSITIONS.

PROVIDE ALL TEMPERATURE CONTROL VALVES W/ ELECTRIC OPERATORS, UNLESS NOTED OTHERWISE.

ALL CONTROLS SHALL BE PERFORMED BY DIRECT DIGITAL CONTROL (DDC) SYSTEMS, UNLESS NOTED OTHERWISE.

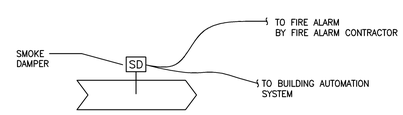
SUPPLY FAN SHALL RUN WHEN COMMANDED BY BAS, AND WHEN INTERLOCKED EXHAUST FAN HAS BEEN COMMANDED BY BAS TO OPERATE.

TYPICAL CONTROL SEQUENCES:

GAS FIRED MAKE-UP AIR UNIT – MAU-1 – GARAGE UNIT

1. THE HEATING AND VENTILATING UNIT SHALL HAVE A MICROPROCESSOR BASED CONTROLLER WHICH SHALL MONITOR AND CONTROL THE GAS FIRED HEATING UNIT IN A STANDALONE MODE OR AS DIRECTED BY THE BUILDING CONTROL PANEL. THE DDC CONTROLLER SHALL BE LOCATED IN THE UNIT AND HAVE A 2 LINE BY 40 CHARACTER LCD DISPLAY.
   MAKE-UP AIR UNIT MAU-01 TO BE CONTROLLED BY CONTROL PANEL SUPPLIED BY UNIT MANUFACTURER. PROVIDE PANEL WITH 'ON_OFF_AUTO' CONTROL SWITCH (COORDINATE WITH UNIT MANUFACTURER).
   a. ON AND OFF SWITCH POSITIONS WILL BE MANUAL CONTROL.
   b. WITH THE SWITCH IN THE 'AUTO' POSITION, MAU_01 SHALL BE CONTROLLED TO OPERATE 12.5 MINUTES EACH HOUR FOR A TOTAL OF 5 HOURS IN EACH 24_HOUR PERIOD. PROVIDE TIMER CONTROL TO ACCOMPLISH THIS FUNCTION. COORDINATE WITH OWNER THE FINAL SCHEDULE REQUIRED.
   c. ALSO A AIR QUALITY DETECTION SYSTEM SHALL BE USED TO SENSE CARBON MONOXIDE LEVELS AND NITROGEN DIOXIDE LEVELS. MAU_01 SHALL ALSO OPERATE TO MAINTAIN CARBON MONOXIDE LEVELS BELOW 35 PPM AND NITROGEN DIOXIDE LEVELS BELOW 1 PPM.
   d. SENSORS, BOTH QUANTITY AND LOCATION SHALL BE INSTALLED AS RECOMMENDED BY SENSOR MANUFACTURER TO ADEQUATELY COVER ENTIRE STORAGE GARAGE AREA.
   e. MAU UNIT TO HAVE CONTROL WITH DISCHARGE AIR TEMPERATURE CONTROLLER DIAL LOCATED INSIDE CONTROL PANEL ALONG WITH OPERATION INDICATOR LIGHTS, O.A. TEMPERATURE BURNER RESET CONTROL (ABOVE O.A. TEMPERATURE SETPOINT THE BURNER OPERATION IS TO BE LOCKED OUT. BELOW THE O.A. TEMPERATURE, THE BURNER OPERATION IS TO BE ENABLED), WARNING LIGHTS, AND INTAKE DAMPER CONTROL.
2. THE SYSTEM CONSISTS OF A DRAW-THROUGH DIRECT FIRED GAS HEATING AND VENTILATING UNIT, AN OUTDOOR AIR DAMPER, A MODULATING GAS FIRED HEATING SECTION AND SUPPLY FAN.
3. PROVIDE AN INTERFACE FROM THE BAS TO THE GAS FIRED HEATING AND VENTILATING UNIT TO CONTROL THE AUTOMATIC OUTSIDE AIR INTAKE DAMPER AND THE BURNER GAS VALVE MODULATION CONTROLLER.
4. WHENEVER THE OUTSIDE AIR TEMPERATURE IS BELOW 55°F (ADJUSTABLE), THE CONTROLS SHALL MODULATE THE GAS FIRED HEATING SECTION BURNER TO MAINTAIN A UNIT DISCHARGE AIR TEMPERATURE SETPOINT (MEASURED DOWNSTREAM OF THE UNIT HEATING SECTION)OF 55°F (ADJUSTABLE). A ROOM MOUNTED THERMOSTAT SHALL BE CAPABLE OF RESETTING THE FINAL UNIT DISCHARGE AIR TEMPERATURE SETPOINT. SHOULD THE SPACE TEMPERATURE DROP BELOW THE ROOM THERMOSTAT SETPOINT OF 70°F (ADJUSTABLE), THE FINAL UNIT DISCHARGE AIR TEMPERATURE SETPOINT (MEASURED DOWNSTREAM OF THE UNIT HEATING SECTION) SHALL BE RESET PROPORTIONALLY HIGHER FROM THE MINIMUM OF 55°F (ADJUSTABLE) AS REQUIRED TO MAINTAIN THE ROOM THERMOSTAT SETPOINT. THE AIR QUALITY SENSORS (CO & NO2) SHALL COMMAND THE INTERLOCKED EXHAUST FAN AND THE MAKE-UP AIR UNIT SUPPLY FAN TO OPERATE AS REQUIRED TO MAINTAIN CO AND N02 LEVELS WITHIN THE SPACE BELOW THE CODE ALLOWED MINIMUM VALUES.
5. DURING THE UNOCCUPIED MODE, THE GAS FIRED HEATING AND VENTILATING UNIT SUPPLY FAN SHALL BE OFF AND THE OUTSIDE AIR DAMPER SHALL BE CLOSED.
6. ALL CONTROL WIRING INSTALLATION SHALL BE PROVIDED BY THE HVAC/TEMPERATURE CONTROL CONTRACTOR.
7. FILTERS
   a. INSTALL A DIFFERENTIAL STATIC PRESSURE SENSOR ACROSS FILTER BANK. ENSURE THAT THE STATIC PROBES DO NOT IMPEDE FILTER REMOVAL.
   b. FOR PRE-FILTER BANK, PROVIDE AN ALARM TO THE OPERATOR INTERFACE WHEN THE DIFFERENTIAL STATIC PRESSURE EXCEEDS 0.7" W.C. (ADJ.).
8. SAFETIES
   a. FIRE ALARM SHUTDOWN: UPON A FIRE ALARM SYSTEM ALARM, THE FIRE ALARM CONTROL MODULE PROVIDED BY THE ELECTRICAL CONTRACTOR AT THE TEMPERATURE CONTROL PANEL SHALL CHANGE STATE OF ITS CONTACTS. THIS SHALL CAUSE THE UNIT TO BE SHUT DOWN (SEE UNIT SHUTDOWN FOR ADDITIONAL INFORMATION) AND ALL DAMPERS WITHIN THIS SYSTEM SHALL CLOSE. AN AUXILIARY CONTACT SHALL BE PROVIDED TO NOTIFY THE DDC SYSTEM OF A FIRE ALARM SHUTDOWN.
9. UNIT SHUTDOWN
   a. WHENEVER THE AIR HANDLING UNIT IS INDEXED OFF, THE SUPPLY FAN SHALL STOP AND DAMPERS FAIL SAFE. ON A FAILURE OF THE SUPPLY FAN, AN ALARM WILL BE SENT THROUGH THE DDC SYSTEM. WHENEVER THE SUPPLY FANS IS OFF FOR ANY REASON THE FOLLOWING SHALL OCCUR:
      1) THE OUTSIDE AIR DAMPERS SHALL CLOSE.
10. AIR QUALITY SENSORS AND CONTROLLER: PROVIDE QUANTITIES OF AIR QUALITY SENSORS AS REQUIRED FOR TOTAL COVERAGE OF THE ENTIRE VEHICLE STORAGE GARAGE. MOUNT SENSORS ON EXISTING COLUMNS AND INTERIOR WALLS AS NEEDED.
   a. COORDINATE ELEVATION OF SENSORS NEEDED BOTH LOW AND HIGH AS RECOMMENDED BY THE MANUFACTURER FOR PROPER SENSING BASED ON THE INTENT OUTLINED IN THIS SPECIFICATION. MOUNT SENSORS BOTH IN A LOWER SPACE ZONE AND UPPER SPACE ZONE IN ORDER TO COVER FOR THE DIESEL EXHAUST MOVEMENT. COORDINATE ALL MOUNTING LOCATIONS WITH THE OWNER.
   b. MOUNT IN AREAS THAT OFFER SOME PHYSICAL PROTECTION OF SENSORS FROM POTENTIAL IMPACT DAMAGE.
   c. ALL CONTROL WIRING THROUGHOUT THE GARAGE AREA SHALL BE IN CONDUIT.

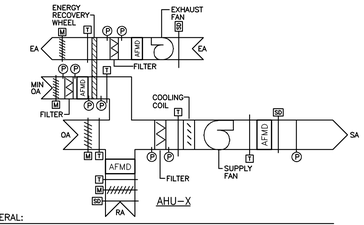
6 MAKE-UP AIR UNIT CONTROL SEQUENCES
N.T.S.



1. SIGNAL FROM FIRE ALARM PANEL SHALL CLOSE, NORMALLY CLOSED ELECTRIC SMOKE DAMPER.

SMOKE DAMPER

5 SMOKE DAMPER CONTROL SEQUENCES
N.T.S.



AHU-X

GENERAL:

PROVIDE AND INSTALL ALL CONTROLS NECESSARY TO PERFORM THE FUNCTIONS LISTED.

PROVIDE ALL CONTROL DAMPERS W/ ELECTRIC OPERATORS & LINKAGES, UNLESS NOTED OTHERWISE. WHENEVER FANS ARE OFF, RELATED CONTROL AIR DAMPERS SHALL MOVE TO FAIL POSITIONS.

PROVIDE ALL TEMPERATURE CONTROL VALVES W/ ELECTRIC OPERATORS, UNLESS NOTED OTHERWISE.

ALL CONTROLS SHALL BE PERFORMED BY DIRECT DIGITAL CONTROL (DDC) SYSTEMS, UNLESS NOTED OTHERWISE.

SUPPLY FAN SHALL RUN CONTINUOUSLY.

SUPPLY FAN AND ENERGY RECOVERY WHEEL SHALL OPERATE

TYPICAL CONTROL SEQUENCES:

VARIABLE AIR VOLUME (VAV) ROOFTOP UNIT CONTROL – AHU-1S2

1. THE ROOFTOP AIR CONDITIONING UNIT SHALL HAVE A MICROPROCESSOR BASED DDC CONTROLLER WHICH SHALL MONITOR AND CONTROL THE OPERATION OF THE ROOFTOP UNIT IN A STANDALONE MODE OR AS DIRECTED BY THE BUILDING CONTROL PANEL.
2. THIS SYSTEM CONSISTS OF A CUSTOM ROOFTOP AIR CONDITIONING UNIT WITH A VARIABLE VOLUME SUPPLY FAN AND INTEGRAL EXHAUST FAN AND CHILLED WATER COOLING SYSTEM.
3. FURNISH CONTROLS TO OPERATE THE UNIT SUPPLY FAN AND COOLING SYSTEMS.
4. THE ROOFTOP UNIT AND VAV SYSTEM SHALL BE INDEXED FROM OCCUPIED TO UNOCCUPIED THROUGH THE BUILDING AUTOMATION SYSTEM. IN THE OCCUPIED MODE THE UNIT SUPPLY FAN SHALL RUN CONTINUOUSLY. IN THE UNOCCUPIED MODE, THE UNIT SUPPLY FAN SHALL NORMALLY BE OFF UNLESS NIGHT HEATING IS SEQUENCED FROM THE ROOM THERMOSTATS.
5. AFTER THE UNOCCUPIED CYCLE AND BEFORE ENTERING THE OCCUPIED CYCLE, ALL THERMOSTATS IN THE AREA SERVED BY THIS SYSTEM SHALL BE INDEXED TO THEIR OCCUPIED SETPOINT AND THE SYSTEM SHALL ENTER A RETURN AIR WARM-UP CYCLE, DURING WHICH THE SYSTEM SHALL START AND OPERATE CONTINUOUSLY WITH THE SUPPLY FAN ON AT MAXIMUM AIR VOLUME, THE OUTSIDE AIR DAMPER FULLY CLOSED, THE RETURN AIR DAMPER FULLY OPEN, AND COOLING DISABLED. THE VAV BOXES SHALL BE INDEXED TO THEIR MAXIMUM AIRFLOW POSITION AND THE UNIT'S GAS FIRED HEATING SECTION ENERGIZED UNTIL THE RETURN AIR TEMPERATURE TO THE ROOFTOP UNIT RISES ABOVE THE MORNING WARM-UP SETPOINT OF 70°F (ADJUSTABLE).
6. UPON SYSTEM START-UP (AFTER MORNING WARM-UP), THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY, THE VFD OF THE SUPPLY FAN SHALL BE CONTROLLED AS SPECIFIED HEREIN, THE UNIT'S OUTSIDE AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION AND THE VAV BOXES SHALL BE CONTROLLED BY THEIR RESPECTIVE DDC CONTROL ROOM THERMOSTATS.
7. THE ROOFTOP UNIT'S DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE MAINTAINED AT 55°F (ADJUSTABLE) BY SEQUENCING THE STAGES OF COOLING AS REQUIRED.
8. THE DISCHARGE AIR TEMPERATURE SHALL BE RESETABLE TO A HIGHER TEMPERATURE BASED ON VAV TERMINAL ZONE COOLING DEMAND. THE VAV TERMINAL CONTROL SYSTEM SHALL CONTROL THE DISCHARGE AIR TEMPERATURE OF THE ROOFTOP UNIT BY MODULATING THE COOLING COIL CONTROL VALVE.
9. ON A CALL FOR COOLING, WHEN OUTDOOR AIR CONDITIONS PERMIT, AN DRY BULB ECONOMIZER CONTROL SYSTEM, LOCATED WITHIN THE UNIT, SHALL UTILIZE A 100% OUTSIDE AIR ECONOMIZER CYCLE. THE ECONOMIZER CYCLE SHALL EITHER MODULATE THE OUTSIDE AIR/RETURN AIR DAMPERS TO MAINTAIN DISCHARGE TEMPERATURE SETPOINT.
10. A DDC SYSTEM STATIC PRESSURE CONTROL PROGRAM, WITH ITS SENSORS LOCATED TWO-THIRDS OF THE DISTANCE DOWN THE MAIN SUPPLY DUCTS, SHALL MAINTAIN A SETPOINT OF 1.5" WATER COLUMN STATIC PRESSURE (ADJUSTABLE) BY MODULATING THE SUPPLY FAN VFD.
11. A DEDICATED STATIC PRESSURE HIGH LIMIT CONTROLLER WITH MANUAL RESET (NOT USED FOR ANY OTHER STATIC PRESSURE CONTROL FUNCTION) SHALL SHUTDOWN THE ROOFTOP UNIT WHEN THE STATIC PRESSURE IN THE DUCTWORK AT THE ROOFTOP UNIT DISCHARGE EXCEEDS 4" WATER COLUMN (ADJUSTABLE).
12. UPON SYSTEM SHUTDOWN, WHEN SEQUENCED TO THE UNOCCUPIED MODE, THE UNIT SUPPLY AND EXHAUST FANS SHALL STOP, THE OUTSIDE AIR DAMPER SHALL CLOSE FULLY, THE RETURN AIR DAMPER SHALL OPEN FULLY AND COOLING SHALL BE LOCKED OUT. THE UNIT SUPPLY FAN BE SEQUENCED ON AS REQUIRED TO MAINTAIN NIGHT SETBACK ROOM THERMOSTAT SETPOINT.
13. ENERGY RECOVERY WHEEL – SEQUENCE/CONTROL
    UNOCCUPIED MODE: UNIT IS "OFF" OA & EA DAMPERS CLOSED
    MORNING WARM-UP MODE: UNIT IS "OFF"
    OCCUPIED MODE:
    FANS RUN CONTINUOUSLY, DAMPERS ARE OPEN. SYSTEM TO MONITOR FANS STATUS, DAMPER POSITION, OA, RA, FA, & EA TEMPERATURE, WHEEL RPM.
    FROST CONTROL:
    ON SIGNAL FROM PRESSURE DIFFERENTIAL SENSOR MODULATE THE WHEEL VFD TO MAINTAIN PRESSURE DIFFERENTIAL SET POINT.
    ECONOMIZER CONTROL: UNIT IS "OFF"

4 AIR HANDLING UNIT AHU-1S2 CONTROL SEQUENCES
N.T.S.

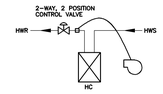
EXHAUST FAN

TYPICAL CONTROL SEQUENCES:

EXHAUST FANS

1. EF-1 SHALL BE CONTROLLED BY THE BAS AND THE AIR QUALITY SENSORS TO OPERATE AS NECESSARY TO MAINTAIN AIR QUALITY IN GARAGE. THE EXHAUST FAN SHALL BE OFF WHEN THE ASSOCIATED AIR HANDLING SYSTEM (MAU-1) IS SHUT DOWN OR WHEN THE STARTER SWITCH IS MANUALLY TURNED OFF FOR MAINTENANCE.
2. FURNISH MOTORIZED AUTOMATIC CONTROL DAMPERS AND ACTUATORS FOR EACH EXHAUST FAN AS SHOWN ON THE PROJECT DRAWINGS. INTERLOCK THE ASSOCIATED MOTORIZED CONTROL DAMPER TO OPEN WHEN THE FAN IS OPERATING.
3. FURNISH MOTORIZED AUTOMATIC CONTROL DAMPERS AND ACTUATORS FOR EXHAUST FAN AS SHOWN ON THE PROJECT DRAWINGS. INTERLOCK THE ASSOCIATED MOTORIZED CONTROL DAMPER TO OPEN WHEN THE FAN IS OPERATING.
4. EF-2 SHALL BE INTERLOCKED WITH THE BUILDING AUTOMATION SYSTEM TO RUN CONTINUOUSLY. THE EXHAUST FAN SHALL BE OFF WHEN THE ASSOCIATED AIR HANDLING SYSTEM IS SHUT DOWN OR WHEN THE STARTER SWITCH IS MANUALLY TURNED OFF FOR MAINTENANCE.
5. FURNISH MOTORIZED AUTOMATIC CONTROL DAMPERS AND ACTUATORS FOR EACH EXHAUST FAN AS SHOWN ON THE PROJECT DRAWINGS. INTERLOCK THE ASSOCIATED MOTORIZED CONTROL DAMPER TO OPEN WHEN THE FAN IS OPERATING.
6. FURNISH MOTORIZED AUTOMATIC CONTROL DAMPERS AND ACTUATORS FOR EXHAUST FAN AS SHOWN ON THE PROJECT DRAWINGS. INTERLOCK THE ASSOCIATED MOTORIZED CONTROL DAMPER TO OPEN WHEN THE FAN IS OPERATING.

3 EXHAUST FAN CONTROL SEQUENCES
N.T.S.



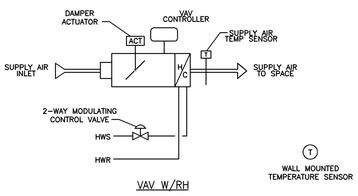
UNIT HEATER (UH)

TYPICAL CONTROL SEQUENCES:

UNIT HEATERS

1. PROVIDE A DDC ROOM THERMOSTAT, A STRAP-ON AQUASTAT AND FURNISH A TWO-WAY, DDC NORMALLY OPEN VALVE.
2. ON A DROP IN SPACE TEMPERATURE BELOW SETPOINT, THE TWO-WAY CONTROL VALVE SHALL BE MODULATED OPEN. WHEN THE STRAP-ON AQUASTAT SENSES HOT WATER THE FAN SHALL CYCLE ON.
3. THE REVERSE SHALL OCCUR ON A RISE IN SPACE TEMPERATURE ABOVE SETPOINT.
4. THE DDC ROOM THERMOSTATS SHALL BE INDEXED TO/FROM THE OCCUPIED/UNOCCUPIED MODE THROUGH THE BUILDING AUTOMATION SYSTEM.

2 UH CONTROL SEQUENCES
N.T.S.



VAV W/RH

GENERAL:

PROVIDE AND INSTALL ALL CONTROLS NECESSARY TO PERFORM THE FUNCTIONS LISTED.

PROVIDE ALL CONTROL DAMPERS W/ ELECTRIC OPERATORS & LINKAGES, UNLESS NOTED OTHERWISE. WHENEVER FANS ARE OFF, RELATED CONTROL AIR DAMPERS SHALL MOVE TO FAIL POSITIONS.

PROVIDE ALL TEMPERATURE CONTROL VALVES W/ ELECTRIC OPERATORS, UNLESS NOTED OTHERWISE.

ALL CONTROLS SHALL BE PERFORMED BY DIRECT DIGITAL CONTROL (DDC) SYSTEMS, UNLESS NOTED OTHERWISE.

TYPICAL CONTROL SEQUENCES:

VARIABLE AIR VOLUME BOXES WITH REHEAT COILS

1. FURNISH A MODULATING TWO-WAY AUTOMATIC VALVE FOR THE BOX REHEAT COIL AS SHOWN ON THE PLANS.
2. ELECTRONIC AIR VOLUME BOX OPERATORS SHALL BE FURNISHED BY THE BOX MANUFACTURER AND FACTORY INSTALLED.
3. PROVIDE A DDC ROOM THERMOSTAT WHICH SHALL MODULATE THE VAV BOX AND HOT WATER AUTOMATIC VALVE TO MAINTAIN SETPOINT.
4. THE VAV DDC CONTROLLER SHALL BE INDEXED TO OCCUPIED THROUGH THE BUILDING AUTOMATION SYSTEM.
5. ON A RISE IN SPACE TEMPERATURE ABOVE THE ROOM THERMOSTAT SETPOINT OF 70°F (ADJUSTABLE), THE ROOM THERMOSTAT SHALL MODULATE THE VAV BOX DAMPER FROM ITS MINIMUM POSITION TOWARDS ITS MAXIMUM OPEN POSITION. AS THE SPACE TEMPERATURE DROPS BELOW THE ROOM THERMOSTAT SETPOINT, THE VAV BOX DAMPER SHALL MODULATE TOWARDS ITS MINIMUM CFM (AS INDICATED ON THE PLAN SCHEDULES – ADJUSTABLE). AS THE SPACE TEMPERATURE CONTINUES TO DROP AND DROPS BELOW ROOM THERMOSTAT SETPOINT, THE 2-WAY HOT WATER CONTROL VALVE, PROVIDED ON THE VAV BOX HOT WATER COIL, SHALL MODULATE OPEN.
6. VAV BOXES SHALL OPEN 100% DURING THE UNOCCUPIED MODE (FOR AHU-1) AND DURING MORNING WARM UP. VAV BOXES SHALL CLOSE 100% WHEN THE LOCAL OCCUPANCY SENSOR INDICATES THAT THE SPACE IS UNOCCUPIED.

1 VAV TERMINAL UNIT WITH HOT WATER REHEAT TEMPERATURE CONTROL DIAGRAM
N.T.S.

100% CONSTRUCTION DOCUMENTS

Revisions:	Date

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Drawing Title	HVAC CONTROL SCHEMATICS
Approved: Project Director	
Project Title	William S. Middleton VA Hospital Renovate Building 2
Project Number	607-12-115
Building Number	2
Location	Madison, WI
Date	MARCH 29, 2013
Checked	TK/LHZ
Drawn	AB
Drawing Number	H-400
Dwg. ● of	

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231

VAV - SYSTEM POINT LIST

SYSTEM POINT DESCRIPTION		POINT TYPE: GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	DEFAULT VALUE	ALARMS: HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL	DIAGNOSTICS	NOTES:
VAV BOX TERMINAL UNIT - SINGLE DUCT, HOT WATER HEAT														
ZONE SENSOR	ZONE TEMPERATURE (THERM)	X	AI				X	X			X		SENSOR FAILURE	
	ZONE TEMPERATURE SETPOINT		AI								X		SENSOR FAILURE	
	ON/CANCEL													
VAV BOX AIRFLOW		X	AI								X		SENSOR FAILURE	
VAV BOX DAMPER		X		BO										NOTE 5
SUPPLY AIR TEMPERATURE SENSOR (THERM)		X	AI				X	X			X		SENSOR FAILURE	
HOT WATER REHEAT (PROPORTIONAL)		X		BO										
FINNED TUBE RAD VALVE CONTROL (PROPORTIONAL)		X		BO			X	X			X		SENSOR FAILURE	
OCCUPIED COOLING SETPOINT					X	PER VA	X	X						NOTE 1
OCCUPIED HEATING SETPOINT					X	PER VA	X	X						NOTE 1
OCCUPIED STANDBY COOLING SETPOINT					X	PER VA	X	X						NOTE 1,7
OCCUPIED STANDBY HEATING SETPOINT					X	PER VA	X	X						NOTE 1
UNOCCUPIED COOLING SETPOINT					X	PER VA								NOTE 1
UNOCCUPIED HEATING SETPOINT					X	PER VA								NOTE 1
MINIMUM COOLING AIRFLOW SETPOINT					X									NOTE 6
MAXIMUM COOLING AIRFLOW SETPOINT					X									NOTE 6
MINIMUM HEATING AIRFLOW SETPOINT					X									NOTE 6
MAXIMUM HEATING AIRFLOW SETPOINT					X									NOTE 6
OCCUPIED BYPASS TIMER					X	PER VA								
BAS COMMUNICATION STATE					X							X		NOTE 3
CONTROLLER SPARE HARDWARE POINTS														
ANALOG INPUT(S)			2											NOTE 4
UNIVERSAL INPUT(S)			2											NOTE 4
BINARY INPUT(S)			3											NOTE 4
ANALOG OUTOUT(S)/BINARY INPUT(S)			1	1										NOTE 4,8
BINARY OUTPUT(S)				5										NOTE 4

GENERAL NOTES:

1. VERIFY SETPOINTS WITH OWNER
2. AVAILABLE WHEN NO OCCUPANCY SENSOR IS PRESENT
3. DISPLAYED AT THE BAS USER INTERFACE
4. SPARE OR UNUSED POINTS
5. VAV CONTROLLER OUTPUT
6. SEE VAV SCHEDULE FOR VALUES
7. REQUIRES OCCUPANCY SENSOR
8. POINT IS CONFIGURABLE AS EITHER ANALOG OUTPUT OR BINARY INPUT

4 POINTS LIST FOR VAV BOXES

NTS

INPUT/OUTPUT SUMMARY TABLE

PROJECT: VA MIDDLETON BUILDING 2 RENOVATION

CABINET UNIT HEATER (CUH-X) UNIT HEATER (UH-X)	HW OUTPUT DIGITAL: Control Relay	HW OUTPUT ANALOG: Solenoid Valve Actuator	HW OUTPUT ANALOG: Pneumatic Transducer (Actuator)	HW OUTPUT ANALOG: Pneumatic Transducer	HW OUTPUT ANALOG: 4-20 MA Module	HW OUTPUT ANALOG: Control Relay	HW INPUT DIGITAL: Pressure Switch	HW INPUT DIGITAL: Flow Switch	HW INPUT DIGITAL: Smoke Detector	HW INPUT DIGITAL: Auxiliary Contact	HW INPUT ANALOG: Kw	HW INPUT ANALOG: Current Sensor	HW INPUT ANALOG: VAD Point	HW INPUT ANALOG: Pressure Transducer	HW INPUT ANALOG: Relative Humidity	HW INPUT ANALOG: Position	HW INPUT ANALOG: Flow	HW INPUT ANALOG: Control Relay	ALARMS DIGITAL: Equipment Status	ALARMS DIGITAL: Maintenance Control Relay	ALARMS ANALOG: High Limit	ALARMS ANALOG: Low Limit	ALARMS ANALOG: Run Time	ALARMS ANALOG: Control Relay	SOFTWARE (ENERGY MANAGEMENT SYSTEM FUNCTIONS): Schedule Start/Stop	Demand Shed	Point History	Day/Night Setback	Temperature Control	Hot/Cold Deck Reset	Hot Water Reset	Steam Boiler Optim.	Hot Water Boiler Optim.	Chiller Optimization	Chiller Sequencing	Chiller Demand Limit	VAV Control	Lighting Control	INSTALL/E
POINT DESCRIPTION																																									
CUH-X OR UH-X FAN (TYPICAL)	X											X			X				X																					
HOT WATER COIL VALVE (TYPICAL)				X												X																									
HOT WATER RETURN TEMPERATURE													X																												
SPACE TEMPERATURE													X																												

SEQUENCE OF OPERATION CUH-1

WHEN TEMPERATURE FALLS BELOW SETPOINT (60^F ADJUSTABLE), THE CABINET UNIT HEATER OR UNIT HEATER SHALL BE ENGERGIZED AND CONTROL VALVE SHALL MODULATE TO MAINTAIN ROOM AIR TEMPERATURE REGULATED BY THE ROOM THERMOSTAT. CABINET UNIT HEATER OR UNIT HEATER SHALL BE "OFF" DURING SUMMER MONTHS.

3 POINTS LIST FOR CABINET UNIT HEATER AND UNIT HEATER

NTS

JOB: 607-12-115
BUILDING: 2 RENOVATION
SYSTEM: VAV AIR HANDLER AHU-1S2
PAGE:

POINT LEGEND — SYSTEM OUTPUTS: BINARY, ANALOG — SYSTEM INPUTS: BINARY, ANALOG — SYSTEM SOFTWARE/CONTROL: ALARM PROCESSING, APPLICATION/FUNCTION

| SYSTEM COMPONENT: | POINT ID | ABBREVIATION | DIGITAL CONTROL (ALUMINUM BOX) | DIGITAL CONTROL (PANEL) | DIGITAL CONTROL (SPECIALIZED) | DIGITAL CONTROL (SOFTWARE) | DIGITAL CONTROL (SOFTWARE PROGRAMMABL

INPUT/OUTPUT SUMMARY TABLE

PROJECT:
VA MIDDLETON BUILDING 2 RENOVATION

	HARDWARE																						SOFTWARE																											
	OUTPUT							INPUT															ALARMS							ENERGY MANAGEMENT SYSTEM FUNCTIONS																			
	DIGITAL			ANALOG				DIGITAL								ANALOG							DIGITAL			ANALOG																						
STEAM/CHILLED WATER METER (TYP)	Control Relay	Solenoid	Contactor	Incremental	Pneumatic Transducer	Electric Transducer	4-20 MA Module	Control Relay	Contactor	Pressure Switch	Flow Switch	Pressure	Auxiliary Contact	Kw	Control Relay	Current Sensor	Current Auxiliary	Temperature	Relative Humidity	Position	Flow	Control Relay	Static Pressure	Equipment Status	Maintenance	Control Relay	High Limit	Low Limit	Run Time	Control Relay	Schedule Start/Stop	Alarm Reset	Point History	Day/Night Setback	Economizer	Temperature	Hot/Cold Deck Reset	Reset Outdoor	Steam Boiler Optim.	Hot Water Boiler Optim.	Hot Water	Chiller Optimization	Chilled Water Reset	Condenser Water Reset	Chiller Demand Limit	VAV Control	Unit Controller	TOTALIZE			
POINT DESCRIPTION																																																		
STEAM METER																																																		
TEMP	X									X											X		X		X							X			X											X			
PRESSURE	X																				X		X		X							X														X			
FLOW	X																		X	X	X		X		X							X														X			
TOTALIZER	X																		X	X	X		X		X							X														X			
ENERGY FLOW	X																		X	X	X		X		X							X														X			
CHILLED WATER METER																																																		
TEMP	X													X					X		X		X		X							X			X											X			
FLOW	X										X								X	X	X		X		X							X														X			

SEQUENCE OF OPERATION FOR STEAM OR CHILLED WATER METER
STEAM OR CHILLED WATER METER SHALL BE TIED INTO THE BUILDING BAS AND SHALL PROVIDE THE INFORMATION/POINTS LISTED ABOVE.

3 POINTS LIST FOR STEAM/CHILLED WATER METERS
NTS

INPUT/OUTPUT SUMMARY TABLE

PROJECT:
VA MIDDLETON BUILDING 2 RENOVATION

	HARDWARE																						SOFTWARE																											
	OUTPUT							INPUT															ALARMS							ENERGY MANAGEMENT SYSTEM FUNCTIONS																			
	DIGITAL			ANALOG				DIGITAL								ANALOG							DIGITAL			ANALOG																						
CONDENSATE RETURN UNIT PUMPS P-1 AND P-2	Control Relay	Solenoid	Contactor	Incremental	Pneumatic Transducer	Electric Transducer	4-20 MA Module	Control Relay	Contactor	Pressure Switch	Flow Switch	Pressure	Auxiliary Contact	Kw	Control Relay	Current Sensor	Current Auxiliary	Temperature	Relative Humidity	Position	Flow	Control Relay	Static Pressure	Equipment Status	Maintenance	Control Relay	High Limit	Low Limit	Run Time	Control Relay	Schedule Start/Stop	Alarm Reset	Point History	Day/Night Setback	Economizer	Temperature	Hot/Cold Deck Reset	Reset Outdoor	Steam Boiler Optim.	Hot Water Boiler Optim.	Hot Water	Chiller Optimization	Chilled Water Reset	Condenser Water Reset	Chiller Demand Limit	VAV Control	Unit Controller	TOTALIZE			
POINT DESCRIPTION																																																		
CONDENSATE RETURN PUMPS (CRU-1)																																																		
P-1 PUMP STATUS	X													X					X		X	X	X		X																									
P-1 PUMP START/STOP	X													X					X	X	X	X	X		X																									
P-2 PUMP STATUS	X													X					X		X	X	X		X																									
P-2 PUMP START/STOP	X													X					X	X	X	X	X		X																									

SEQUENCE OF OPERATION CONDENSATE RETURN UNIT PUMPS (P-1 & P-2)
PUMPS SHALL OPERATE AS COMMANDED BY THE CONDENSATE RETURN UNITS INTEGRAL CONTROL PANEL. PUMPS SHALL BE OPERATED AS LEAD/LAG PUMPS. CONTROL PANEL SHALL DETERMINE WHICH PUMP (P-1 OR P-2) SHALL BE LEAD PUMP AND SHALL CHANGE LEAD PUMP PER MANUFACTURER'S PROGRAMMING.

2 POINTS LIST FOR CONDENSATE RETURN PUMPS
NTS

ELEVATOR PIT SUMP PUMP - SYSTEM POINT LIST

SYSTEM POINT DESCRIPTION	POINT TYPE					INPUT	ALARMS							
ELEVATOR PIT SUMP PUMP	GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	DEFAULT VALUE	FLOW	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL	DIAGNOSTICS	NOTES:
PUMP STATUS START/STOP	X	BI									X		SENSOR FAILURE	
HIGH WATER ALARM	X						X				X		SENSOR FAILURE	
OIL DETECTION ALARM	X										X		SENSOR FAILURE	
GENERAL NOTES:														

4 POINTS LIST FOR SUMP PUMP
NTS

INPUT/OUTPUT SUMMARY TABLE

PROJECT:
VA MIDDLETON BUILDING 2 RENOVATION

	HARDWARE																						SOFTWARE																											
	OUTPUT							INPUT															ALARMS							ENERGY MANAGEMENT SYSTEM FUNCTIONS																			
	DIGITAL			ANALOG				DIGITAL								ANALOG							DIGITAL			ANALOG																						
EXHAUST FAN (EF-1) MAKE UP AIR UNIT (MAU-1)	Control Relay	Solenoid	Contactor	Incremental	Pneumatic Transducer	Electric Transducer	4-20 MA Module	Control Relay	Contactor	Pressure Switch	Flow Switch	Pressure	Auxiliary Contact	Kw	Control Relay	Current Sensor	Current Auxiliary	Temperature	Relative Humidity	Position	Flow	Control Relay	Static Pressure	Equipment Status	Maintenance	Control Relay	High Limit	Low Limit	Run Time	Control Relay	Schedule Start/Stop	Alarm Reset	Point History	Day/Night Setback	Economizer	Temperature	Hot/Cold Deck Reset	Reset Outdoor	Steam Boiler Optim.	Hot Water Boiler Optim.	Hot Water	Chiller Optimization	Chilled Water Reset	Condenser Water Reset	Chiller Demand Limit	VAV Control	Unit Controller	TOTALIZE			
POINT DESCRIPTION																																																		
EXHAUST FAN (EF-2)																																																		
EF-2 CONTROL DAMPER	X												X						X		X		X																											
EF-2 FAN STATUS	X													X						X	X	X	X		X																									
EF-2 FAN START/STOP	X													X					X	X	X	X	X		X																									

SEQUENCE OF OPERATION EF-2
EF-2 SHALL RUN CONTINUOUSLY.

1 POINTS LIST FOR EXHAUST FAN EF-2
NTS

100% CONSTRUCTION DOCUMENTS

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Drawing Title: HVAC POINTS LISTS

Approved: Project Director

Project Title: William S. Middleton VA Hospital Renovate Building 2

Location: Madison, WI

Date: MARCH 29, 2013

Checked: TK/LHZ

Drawn: AB

Project Number: 607-12-115

Building Number: 2

Drawing Number: H-402

Dwg. ● of

Office of Construction and Facilities Management

Depar ment of Veterans Affairs

VA FORM 08-6231