ABBREVIATIONS

A/E ARCHITECT / ENGINEER
AB AIR BLENDER
AAV AUTOMATIC AIR VENT
ACC AIR COOLED CONDENSER
ACCH AIR COOLED CHILLER
ACCU AIR-COOLED CONDENSING UNIT
ACU AIR CONDITIONING UNIT
ACD AUTOMATIC CONTROL DAMPER,MODULATING
ACD-TP AUTOMATIC CONTROL DAMPER,TWO POSITION
AD ACCESS DOOR
AF AFTER FILTER
AFCV AIR FLOW CONTROL VALVE
AFF ABOVE FINISHED FLOOR
AFMD AIR FLOW MEASURING DEVICE
AHU AIR-HANDLING UNIT
AMP AMPERGE
AP ACCESS PANEL
APD AIR PRESSURE DROP
ARI AIR CONDITIONING AND REFRIGERATION INSTITUTE
AS AIR SEPARATOR
ASME AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AW AIR WASHER
AXF AXIAL FLOW

B BOILER
BD BUTTERFLY DAMPER
BDD BACKDRAFT DAMPER
BDR BASE BOARD RADIATOR
BFP BACKFLOW PREVENTER
BHP BRAKE HORSEPOWER
BHW HOT WATER HEATING BOILER
BSC BIOLOGICAL SAFETY CABINETS
BT BLOWOFF TANK
BTC BLOWOFF TANK CONTROL VALVE
BTU BRITISH THERMAL UNIT
BTUH BRITISH THERMAL UNIT PER HOUR

C CENTIGRADE (CELCIUS)
CC COOLING COIL
CCD COOLING COIL CONDENSATE DRAIN
CD CEILING DIFFUSER
CD-1 CONSTRUCTION DOCUMENTS (SUBMISSION1)
CD-2 CONSTRUCTION DOCUMENTS (SUBMISSION2)
CFH CUBIC FEET PER HOUR
CFM CUBIC FEET PER MINUTE
CFT CUBIC FEET
CFP CHEMICAL FEED PUMP
CG CEILING GRILLE
CHP CHILLED WATER PUMP
CHW CHILLER WATER
CHR CHILLED WATER RETURN
CHS CHILLED WATER SUPPLY
CI CAST IRON
CM CUBIC METER
CM/S CUBIC METER PER SECOND
CO CLEAN OUT
CO2 CARBON DIOXODE
COMP COMPRESSOR UNIT
COP COEFFICIENT OF PERFORMANCE
CP CONDENSATE PUMP
CR CEILING REGISTER
CS CONDENSATE STORAGE TANK
CT COOLING TOWER
CU CONDENSING UNIT
CUH CABINET UNIT HEATER
CV CONSTANT VOLUME
CW COLD WATER (POTABLE)
CWCC CHILLED WATER COOLING COIL
D DAMPER - AUTOMATIC
D-1 OUTDOOR AIR DAMPER
D-2 RETURN AIR DAMPER
D-3 RELIEF AIR DAMPER
DB DECIBELS
Db DRY-BULB TEMPERATURE
DD-1 DESIGN DEVELOPMENT (SUBMISSION1)
DD-2 DESIGN DEVELOPMENT (SUBMISSION2)
DDC DIRECT DIGITAL CONTROLS
DEG DEGREE
DF DIFFUSER
DIA DIAMETER
DIW DEIONIZED WATER
DP DEW POINT TEMPERATURE
DP DIFFUSER PLATE
DPS DIFFERENTIAL PRESSURE SENSOR
DX DIRECT EXPANSION
DXCC DIRECT EXPANSION COOLING COIL
EA EXHAUST AIR
EAT ENTERING AIR TEMPERATURE
EC EVAPORATIVE COOLER
ECC ENGINEERING CONTROL CENTER
ECU EVAPORATIVE CONDENSER UNIT
EDH ELECTRIC DUCT HEATER
EER ENERGY EFFICIENCY RATIO
EF EXHAUST FAN
EG EXHAUST GRILLE
EGS EMERGENCY GAS SHUTOFF
EH EXHAUST HOOD
EJ EXPANSION JOINT
EMD END OF MAIN DRIP (STEAM)
ENT ENTERING
ER EXHAUST REGISTER
ERC ELECTRIC REHEAT COIL
ERP ELECTRIC RADIANT PANEL
ESP EXTERNAL STATIC PRESSURE
ET EXPANSION TANK
ETO ETHYLENE OXIDE

EUH ELECTRIC UNIT HEATER
EWC EVAPORATIVE WATER COOLER
EWT ENTERING WATER TEMPERATURE
EX. EXISTING

F FAHRENHEIT
F&T FLOAT AND THERMOSTATIC
F/SDPR COMBINATION FIRE SMOKE DAMPER
FA FREE AREA
FC FLEXIBLE CONNECTION
FCU FAN COIL UNIT (4 PIPE)
FCUC FAN COIL UNIT COOLING ONLY
FCUH FAN COIL UNIT HEATING ONLY
FCW FORWARD CURVED WHEEL (FAN)
FD FLOOR DRAIN
FD FIRE DAMPER
FE FLOW ELEMENT
FF FINAL FILTER
FHX FLUE GAS/FEEDWATER HEAT EXCHANGER
FM FLOW METER
FPM FEET PER MINUTE
FPS FEET PER SECOND
FR FLOOR REGISTER
FS FLOW SWITCH
FSTAT FREEZESTAT
FT FEET
FT-LB FOOT-POUND
FTR FIN TUBE RADIATION
FV FACE VELOCITY

GA GAUGE
GAL GALLONS
GH GRAVITY HOOD
GPD GALLONS PER DAY
GPH GALLONS PER HOUR
GPM GALLONS PER MINUTE
GPR GAS PRESSURE REGULATOR
GS GALVANIZED STEEL
H HUMIDIFER
H&CW HOT & COLD WATER
HB HOSE BIBB
HC HEATING COIL
HD HEAD
HD HOOD
HOA HAND/OFF/AUTOMATIC
HP HORSEPOWER
HPDT HIGH PRESSURE DRIP TRAP
HPR HIGH PRESSURE RETURN (STEAM CONDENSATE)
HPS HIGH PRESSURE SUPPLY (STEAM)
HRC HEAT RECOVERY COIL
HRD HEAT RECOVERY DEVICE
HRP HYDRONIC RADIANT (CEILING) PANEL
HSTAT HUMIDISTAT
HW HOT WATER
HWC HOT WATER COIL
HWHC HOT WATER HEATING COIL
HWP HEATING HOT WATER PUMP
HWR HEATING HOT WATER RETURN
HWS HEATING HOT WATER SUPPLY
HWUH HOT WATER UNIT HEATER
HVD HOISTWAY VENT DAMPER
HX HEAT EXCHANGER
HZ HERTZ
I/O INPUT/OUTPUT
IAQ INDOOR AIR QUALITY
IBT INVERTED BUCKET TRAP
ID INSIDE DIAMETER
IN INCHES
IN HG INCHES OF MERCURY
IN WC INCH WATER COLUMN
IN WG INCH WATER GAUGE
IN-LB INCH-POUND
IPLV INTERGRATED PART LOAD VALUE
IS INSECT SCREEN
IU INDUCTION UNIT

J INTENTIALLY LEFT BLANK

kg KILOGRAM
kg/HR KILOGRAM PER HOUR
kPa KILOPASCAL
kW KILOWATT
kWh KILOWATT HOUR

L LITER
L/h LITERS PER HOUR (OR LITERS/HOUR)
L/m LITERS PER MINUTE (OR LITERS/MINUTE)
L/s LITERS PER SECOND (OR LITERS/SECOND)
LAT LEAVING AIR TEMPERATURE
LBS/HR POUNDS PER HOUR
LF LINEAR FOOT (FEET)
LH LATENT HEAT
LPR LOW PRESSURE RETURN (STEAM CONDENSATE)
LPRC LOW PRESSURE STEAM RETURN (CLEAN)
LPS LOW PRESSURE STEAM
LPSC LOW PRESSURE STEAM (CLEAN)
LSD LINEAR SLOT DIFFUSER
LTCP LOCAL TEMPERATURE CONTROL PANEL
LVG LEAVING
LVR LOUVER
LWT LEAVING WATER TEMPERATURE
M METER, SI UNIT
M/s METERS PER SECOND (OR METERS/SECOND)
MA MIXED AIR
MAT MIXED AIR TEMPERATURE
MAU MAKE-UP AIR UNIT
MAV MANUAL AIR VENT
MAX MAXIMUM
MB MIXING BOX
MBH 1000 BTUH

MCA MINIMUM BRANCH CIRCUIT AMPACITY
MER MECHANICAL EQUIPMENT ROOM
MERV MINIMUM EFFICIENCY REPORTING VALUE
MH MANHOLE
MHP MOTOR HORSEPOWER
MIN MINIMUM
MM MILLIMETER
MOV MOTOR OPERATED VALVE
MPR MEDIUM PRESSURE RETURN (STEAM CONDENSATE)
MPS MEDIUM PRESSURE STEAM
MRI MAGNETIC RESONANCE IMAGING
MTD MEAN TEMPERATURE DIFFERENCE
MVD MANUAL VOLUME DAMPER
NA NOT APPLICABLE
NC NOISE CRITERIA
NC NORMALLY CLOSED
NG NATURAL GAS
NGFM NATURAL GAS FLOWMETER
NO NORMALLY OPEN
NOAA NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NOM NOMINAL
NPLV NON-STANDARD PART LOAD VALUE
NPSH NET POSITIVE SUCTION HEAD
NTS NOT TO SCALE
OA OUTSIDE AIR
OAI OUTSIDE AIR INTAKE
OD OUTSIDE DIAMETER
OR OPERATING ROOM
P PUMP
PA PASCAL
PC PUMPED CONDENSATE
PCF POUNDS PER CUBIC FOOT (FEET)
PD PRESSURE DROP
PF PRE-FILTER
PG PRESSURE GAGE
PHC PREHEAT COIL
PI PRESSURE INDICATOR
PPM PARTS PER MILLION
PRS PRESSURE REGULATING (VALVE) STATION
PRV PRESSURE REGULATING VALVE
PSI POUNDS PER SQUARE INCH
PSIA POUNDS PER SQUARE INCH – ABSOLUTE
PSIG POUNDS PER SQUARE INCH – GAGE
PSS PRIMARY SECONDARY SYSTEM
PSV PRESSURE SAFETY VALVE
R/E RETURN OR EXHAUST
RA RETURN AIR
RAD REFRIGERANT AIR DRYER
RAHX ROTARY AIR HEAT EXCHANGER
RAT RETURN AIR TEMPERATURE
REA RELIEF AIR
RF RETURN FAN
RG RETURN GRILLE
RH RELATIVE HUMIDITY
RHC REHEAT COIL
RHG REFRIGERANT HOT GAS
RL REFRIGERANT LIQUID LINE
RLA RUN LOAD AMPERE
RO REVERSE OSMOSIS
RPM REVOLUTIONS PER MINUTE
RR RETURN REGISTER
RS REFRIGERANT SUCTION
RTU ROOF TOP UNIT
RV RELIEF VALVE

SA SUPPLY AIR
SAD SOUND ATTENUATING DEVICE
SAT SUPPLY AIR TEMPERATURE
SC SHADING COEFFICIENT
SCFM STANDARD CUBIC FEET PER MINUTE
SCI SPINAL CODE INJURY
SCR SILICON CONTROLLED RECTIFIER
SD SMOKE DETECTOR
SD SUPPLY AIR DIFFUSER
SD-1 SCHEMATIC DESIGN (SUBMISSION1)
SD-2 SCHEMATIC DESIGN (SUBMISSION2)
SDPR SMOKE DAMPER
SDR SMOKE DAMPER (RETURN)
SDS SMOKE DAMPER (SUPPLY)
SEN SENSIBLE HEAT
SF SUPPLY FAN
SG SUPPLY AIR GRILLE
SH STEAM HUMIDIFIER
SHC STEAM HEATING COIL
SI SQUARE INCHES
SP STATIC PRESSURE
SP GR SPECIFIC GRAVITY
SPD SUPPLY PROCESS AND DISTRIBUTION
SPRV STEAM PRESSURE REDUCING VALVE
SPS STATIC PRESSURE SENSOR
SQ FT SQUARE FOOT (FEET)
SR SUPPLY AIR REGISTER
SS STAINLESS STEEL
SSHX STEAM TO STEAM HEAT EXCHANGER
SSR SOLID SEPARATOR
ST STEAM TRAP
SUH STEAM UNIT HEATER
SV STEAM PRESSURE REDUCING VALVE
SVS STEAM VENT SILENCER
SWHX STEAM TO WATER HEAT EXCHANGER
T & PCV TEMPERATURE AND PRESSURE CONTROL VALVE
TAB TESTING, ADJUSTING, BALANCE
TCP TEMPERATURE CONTROL PANEL
TD TEMPERATURE DIFFERENCE
TDH TOTAL DYNAMIC HEAD
TDS TOTAL DISSOLVED SOLIDS
TG TRANSFER GRILLE
TI TEMPERATURE INDICATOR

TP TRAP
TR TOP REGISTER
TSP TOTAL STATIC PRESSURE
TSTAT THERMOSTAT
TU TERMINAL UNIT

UC UNDER CUT
UC UNIT COOLER
UH UNIT HEATER
UL UNDERWRITERS LABORATORY

V VALVE
VAF VANE-AXIAL FAN
VAV VARIABLE AIR VOLUME
VD VOLUME DAMPER (MANUAL OPPOSED BLADE)
VFD VARIABLE FREQUENCY DRIVE
VHA VETERANS HEALTH ADMINISTRATION
VI VIBRATION ISOLATOR
VIV VARIABLE INLET VANES
VP VACUUM PUMP
VR VACUUM (STEAM CONDENSATE) RETURN
VSD VARIABLE SPEED DRIVE
VUH VERTICAL UNIT HEATER

YR YEAR

W WATTS
WAG WASTE ANETHESIA GAS
Wb WET-BULB (TEMPERATURE)
WC WATER COOLED
WEF WALL EXHAUST FAN
WF WATER FILTER
WFCV WATER FLOW CONTROL VALVE
WFM WATER FLOWMETER
WFMD WATER FLOW MEASURING DEVICE
WG WATER GAGE
WPD WATER SIDE PRESSURE DROP

DRAWING SYMBOLS

40A-SF 3
- BUILDING NO. WHERE EQUIPMENT IS LOCATED.
- EQUIPMENT ABBREVIATION (SUPPLY FAN)
- SUPPLY FAN NO. 3 IN BUILDING NO. 26
- TYPICAL UNIT NO.

40A-VAV-01
- BUILDING NO. WHERE EQUIPMENT IS LOCATED
- ITEM (TERMINAL UNIT SHOWN)
- ITEM NUMBER (TERMINAL UNIT NO. 1)

DUCTWORK SYMBOLS

UP DN SUPPLY DUCT (UP & DOWN)
UP DN EXHAUST DUCT (UP & DOWN)
UP DN RETURN DUCT (UP & DOWN)
ROUND AND SQUARE 4-WAY CEILING DIFFUSERS
SUPPLY TOP REGISTER OR GRILLE (WALL TYPE)
EXHAUST OR RETURN CEILING REGISTER OR GRILLE
EXHAUST OR RETURN BOTTOM REGISTER OR GRILLE (WALL TYPE)
EXHAUST OR RETURN REGISTER OR TOP GRILLE (WALL TYPE)
R INCLINED RISE, IN DIRECTION OF AIR FLOW
D INCLINED DROP, IN DIRECTION OF AIR FLOW
FC FLEXIBLE CONNECTION, EQUIPMENT, VIBRATION, OR SEISMIC
VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
FLEXIBLE DUCTWORK (INSULATED)
DUCT WITH SOUND LINING
MANUAL VOLUME DAMPER
FD FIRE DAMPER
BDD BACK DRAFT DAMPER
AUTOMATIC CONTROL DAMPER MODULATING
AUTOMATIC CONTROL DAMPER TWO POSITION
DUCT MOUNTED COIL (HOT WATER OR STEAM COIL)

TERMINAL UNIT SYMBOLS

CONVECTOR OR RADIATOR (WALL HUNG)

AIR TERMINAL SYMBOLS

TERMINAL UNIT WITH REHEAT COIL

FIREWALL LEGEND

1 HOUR CONSTRUCTION
2 HOUR CONSTRUCTION
NON-RATED, LEAD LINED CONSTRUCTION

CONTROLS SYMBOLS

T ROOM THERMOSTAT/TRANSMITTER - WALL MOUNT
M ROOM HUMIDISTAT (MOISTURE)/TRANSMITTER - WALL MOUNT
TT TEMPERATURE TRANSMITTER
TT TEMPERATURE TRANSMITTER, AVERAGING ELEMENT
PT PRESSURE TRANSMITTER
SPS STATIC PRESSURE SENSOR
FT FLOW TRANSMITTER
IT CURRENT TRANSMITTER
SD SMOKE DETECTOR
PDT PRESSURE DIFFERENTIAL TRANSMITTER
PDS PRESSURE DIFFERENTIAL SWITCH
HS HAND SWITCH (HAND-OFF-AUTO SWITCH)
ZC VALVE OR DAMPER POSITION CONTROLLER
TSL TEMPERATURE SWITCH, LOW (FREEZESTAT)
SST START/STOP SIGNAL
PSH PRESSURE SWITCH HIGH
PSL PRESSURE SWITCH LOW
AT CO2 CARBON DIOXIDE TRANSMITTER
AT OC OCCUPANCY SENSOR
HVAC HVAC CONTROL PANEL
VSMC VARIABLE SPEED MOTOR CONTROLLER
ECC INTEGRATE CONTROL POINT ON REMOTE GRAPHICS WORKSTATION AT ENERGY CONTROL CENTER
TC TEMPERATURE CONTROLLER. SEE SEQUENCE OF OPERATION
PC PRESSURE CONTROLLER. SEE SEQUENCE OF OPERATION
SC SPEED CONTROLLER. SEE SEQUENCE OF OPERATION
FC FLOW CONTROLLER. SEE SEQUENCE OF OPERATION
FSH FLOW SWITCH HIGH
MOTOR STARTER
ELECTRIC OPERATED CONTROL DAMPER/OR VALVE
ECC CO2 TRANSMITTER - WALL MOUNT

PIPING SYMBOLS

HPS HIGH PRESSURE STEAM (60 PSIG AND ABOVE)
HPR HIGH PRESSURE STEAM CONDENSATE RETURN
MPS MEDIUM PRESSURE STEAM (16 PSIG THRU 59 PSIG)
MPR MEDIUM PRESSURE STEAM CONDENSATE RETURN
LPS LOW PRESSURE STEAM (15 PSIG AND BELOW)
LPR LOW PRESSURE STEAM CONDENSATE RETURN
PC CONDENSATE PUMP DISCHARGE
HWS HOT WATER HEATING SUPPLY
HWR HOT WATER HEATING RETURN
RL REFRIGERANT LIQUID
RS REFRIGERANT SUCTION
RHG REFRIGERANT HOT GAS
CHS CHILLED WATER SUPPLY
CHR CHILLED WATER RETURN
MW MAKE-UP WATER
D DRAIN LINE
V VENT LINE
CW COLD WATER (CITY WATER)
HW HOT WATER

VALVE SYMBOLS

GATE VALVE
GLOBE VALVE
GATE VALVE WITH 3/4" HOSE ADAPTER
CHECK VALVE
WYE STRAINER WITH BALL VALVE AND HOSE CONNECTION
WYE STRAINER WITH VALVED DRAIN, AND SCREWED CAP HOSE CONNECTOR
FLEXIBLE CONNECTION
BUTTERFLY VALVE
BALL VALVE
MODULATING CONTROL VALVE
MODULATING CONTROL BUTTERFLY VALVE
TWO POSITION CONTROL VALVE
THREE-WAY MODULATING CONTROL VALVE
THREE-WAY TWO POSITION CONTROL VALVE
PRESSURE REGULATING VALVE
PRESSURE SAFETY VALVE
AUTOMATIC BALANCING CONTROL VALVE
WATER BALANCE DEVICE
PRESSURE REDUCING VALVE (PRV)

GENERAL PIPING SYMBOLS

DIRECTION OF FLOW
REDUCER OR INCREASER
ECCENTRIC REDUCER
INVERTED BUCKET TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
FLOAT & THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
PRESSURE GAGE
TEST PLUG (PRESSURE/TEMPERATURE)
AV AUTOMATIC AIR VENT
MV MANUAL AIR VENT
ANCHOR
EXPANSION JOINT
GUIDE

SHEET INDEX

M001 MECHANICAL SYMBOLS LISTS AND SHEET INDEX

MS101 SITE PLAN - MECHANICAL
MS102 SITE PLAN DETAILS

MD100 BUILDING 8 DEMOLITION PLAN - MECHANICAL

MH100 BASEMENT LEVEL HVAC PLAN
MH101 LEVEL 1 HVAC PLAN
MH102 LEVEL 2 HVAC PLAN
MH150 ROOF HVAC PLAN

MH301 SECTIONS - MECHANICAL
MH302 SECTIONS - MECHANICAL
MH304 ENLARGED PLANS - MECHANICAL
MH305 ENLARGED PLANS - MECHANICAL - ACCESS

MH501 MECHANICAL DETAILS
MH502 MECHANICAL DETAILS
MH503 MECHANICAL DETAILS

MH601 MECHANICAL DIAGRAMS
MH602 MECHANICAL DIAGRAMS
MH603 MECHANICAL DIAGRAMS
MH604 MECHANICAL AIR FLOW DIAGRAM
MH610 MECHANICAL SCHEDULES
MH611 MECHANICAL SCHEDULES
MH612 MECHANICAL SCHEDULES
MH613 MECHANICAL SCHEDULES
MH614 MECHANICAL SCHEDULES

MP100 BASEMENT PLAN - MECHANICAL PIPING
MP101 LEVEL 1 PLAN - MECHANICAL PIPING
MP102 LEVEL 2 PLAN - MECHANICAL PIPING
MP601 HEATING WATER DIAGRAM
MP602 STEAM DIAGRAM

MZ100 BASEMENT PLAN - ZONE MAP
MZ101 LEVEL 1 PLAN - ZONE MAP
MZ102 LEVEL 2 PLAN - ZONE MAP

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
		12/30/14
	99% CONSTRUCTION DOCUMENT	12/17/14
	95% CONSTRUCTION DOCUMENT	10/13/14
	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

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Drawing Title
MECHANICAL SYMBOLS LISTS AND SHEET INDEX

Approved: Project Director
Approver

Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **M001**
Dwg. of

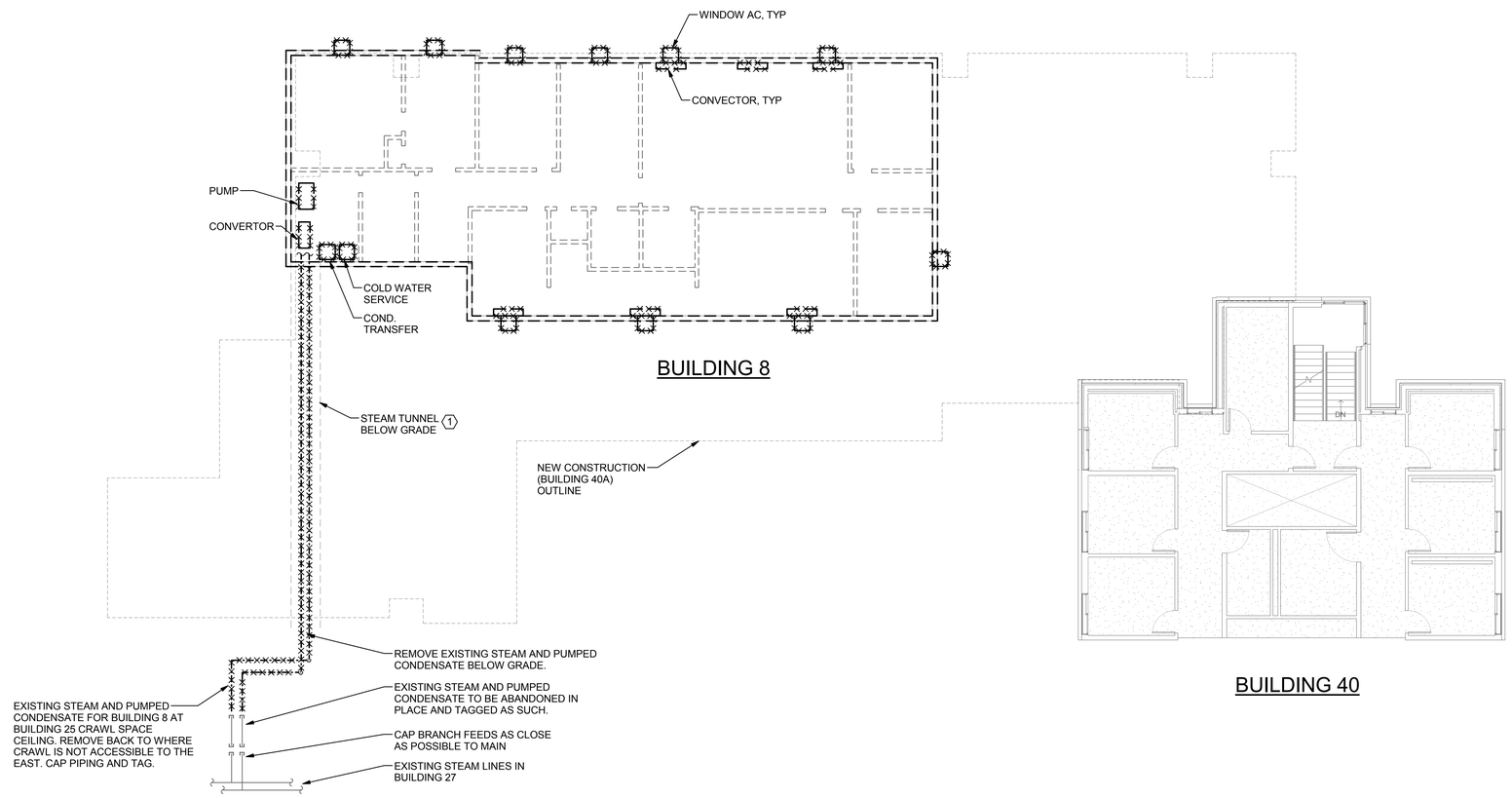
Office of Construction and Facilities Management
Department of Veterans Affairs

GENERAL SHEET NOTES

A DEMOLISH ALL EXISTING MECHANICAL EQUIPMENT, DUCTWORK, PIPING, AND ASSOCIATED DEVICES.

SHEET KEYNOTES

1 DEMOLISH EXISTING HPS AND PC ALONG WITH STEAM TRENCH BENEATH NEW BUILDING FOOTPRINT. REMOVE PIPING BACK TO BUILDING 25 CRAWL SPACE.



TRUE NORTH PLAN NORTH

1 BUILDING 8 DEMOLITION PLAN - MECHANICAL
1/8" = 1'-0"

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
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Drawing Title
BUILDING 8 DEMOLITION PLAN - MECHANICAL

Approved: Project Director
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INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
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Issue Date	Checked	Drawn
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Project Number
668-313

Building Number
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MD100
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Office of Construction and Facilities Management
Department of Veterans Affairs

DEDUCTIVE ALTERNATE BID AREA #1 CONSTRUCTION NOTES:

1. OMIT ALL SUPPLY, EXHAUST AND RETURN GRILLES IN DESIGNATED AREA UNLESS NOTED OTHERWISE.
2. INSTALL 40A-AHU-2 IN MECHANICAL ROOM. TERMINAL UNIT OUTLETS TO BE CAPPED FOR FUTURE CONNECTION UNLESS NOTED OTHERWISE.
3. INSTALL 40A-AHU-1 ON ROOF AND DUCTWORK ROUTED TO BASEMENT LEVEL TO SERVE ELEVATOR MACHINE ROOM AND IT CLOSET. BALANCE EXHAUST FAN FOR REDUCED CFM.
4. INSTALL TU-2-2 AND CONNECT HW COIL. MOUNT THERMOSTAT IN LOCATION NEAR TERMINAL RETURN DUCT OPENING AND SET TO CONDITION SPACE BETWEEN A HIGH TEMPERATURE OF 85 (ADJUSTABLE) AND A LOW OF 50 (ADJUSTABLE) DEGREES F. OMIT LOW PRESSURE DUCTWORK DOWNSTREAM OF TERMINAL UNIT UNLESS NOTED OTHERWISE.

GENERAL SHEET NOTES

A. DUCTWORK TO TERMINAL UNITS ARE TO BE SAME SIZE AS INLET SIZE SHOWN ON TERMINAL UNIT SCHEDULE UNLESS NOTED OTHERWISE. SEE MH612 FOR SCHEDULE.

B. ON THE SUPPLY DUCT SYSTEMS THE VARIABLE VOLUME TERMINAL UNITS (TU) SHALL BE THE POINT OF DEMARCATION BETWEEN LOW (<2 INCH) AND MEDIUM (2 INCH TO 3 INCH) PRESSURE CLASSES. ALL DUCTWORK UPSTREAM OF THE TU IS TO BE MEDIUM PRESSURE DUCTWORK AS SPECIFIED. ALL DUCTWORK DOWNSTREAM OF THE TU IS TO BE LOW PRESSURE DUCTWORK.

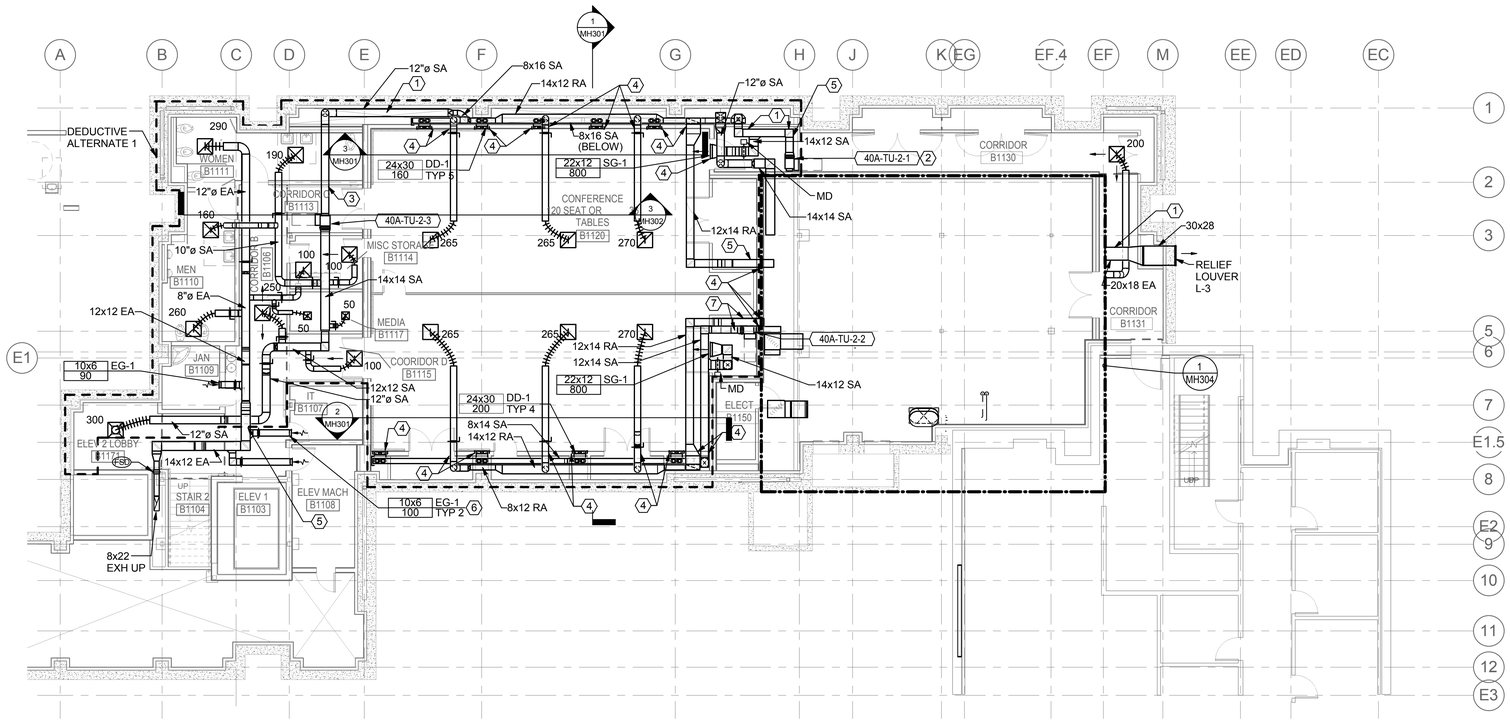
C. ALL RETURN DUCTWORK IS TO BE LOW PRESSURE.

D. ALL EXHAUST DUCTWORK IS TO BE LOW PRESSURE.

E. ALL OUTSIDE AIR DUCTWORK IS TO BE LOW PRESSURE.

SHEET KEYNOTES

1. DUCTWORK TO BE CONSTRUCTED WITH 26GA SHEETMETAL OVER CORRIDOR.
2. PROVIDE TERMINAL UNIT WITH 26GA CASING.
3. DUCT PRESSURE SENSOR SPS-5. REFER TO CONTROL DIAGRAM 2/MH601.
4. SEAL DUCT PENETRATION WITH NON-HARDENING SILICONE MASTIC. WHERE REQUIRED PROVIDE KINETICS ISOMAX OR PAC INTERNATIONAL RSIC RESILIENT CLIPS.
5. DEDUCTIVE ALTERNATE 1: CAP FOR FUTURE CONNECTION WHERE INDICATED ON PLAN.
6. DEDUCTIVE ALTERNATE 1: GRILLE TO BE INSTALLED PER PLAN. DO NOT OMIT.
7. DEDUCTIVE ALTERNATE 1: DUCT TO REMAIN OPEN TO SHELLED SPACE.



TRUE NORTH PLAN NORTH

1 BASEMENT PLAN - MECHANICAL
1/8" = 1'-0"

DIFFUSER/GRILLES		
SUPPLY DIFFUSER		
TAG	NECK SIZE	CFM RANGE
CD-1	8"Ø	0-200
CD-1	10"Ø	201-310
CD-1	12"Ø	311-400
CD-2	8"Ø	0-200
CD-2	10"Ø	201-310
CD-2	12"Ø	311-400
RETURN GRILLES		
TAG	NECK SIZE	CFM RANGE
CRG-1	8"Ø	0-210
CRG-1	10"Ø	211-370
CRG-1	12"Ø	375-600
CRG-2	8x8	0-210
CRG-2	10x10	211-350
CRG-2	14x14	351-720
EXHAUST GRILLES		
TAG	NECK SIZE	CFM RANGE
CEG-1	8"Ø	0-210
CEG-1	10"Ø	211-370
CEG-1	12"Ø	375-600
CEG-2	8x8	0-210
CEG-2	10x10	211-350
CEG-2	14x14	351-720

NOTE:
1. SEE DIFFUSER, REGISTER AND GRILLE SCHEDULE
2. ALL DIFFUSERS , REGISTERS AND GRILLES TO BE TYPE CD, CRG AND CEG UNLESS NOTED OTHERWISE.
3. ALL BRANCH DUCTWORK TO DIFFUSERS, REGISTERS AND GRILLES TO BE SAME SIZE AS NECK SIZE, UNLESS NOTED OTHERWISE.

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
		12/30/14
	99% CONSTRUCTION DOCUMENT	12/17/14
	95% CONSTRUCTION DOCUMENT	10/13/14
	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

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EXP. 4/13/16 11/02/15

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Drawing Title
BASEMENT LEVEL HVAC PLAN

Approved: Project Director
Approver

Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date	Checked	Drawn
11/02/2015	JRM	IEI

Project Number
668-313

Building Number
40A

Drawing Number
MH100
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs

DIFFUSER/GRILLES		
SUPPLY DIFFUSER		
TAG	NECK SIZE	CFM RANGE
CD-1	8"Ø	0-200
CD-1	10"Ø	201-310
CD-1	12"Ø	311-400
CD-2	8"Ø	0-200
CD-2	10"Ø	201-310
CD-2	12"Ø	311-400
RETURN GRILLES		
TAG	NECK SIZE	CFM RANGE
CRG-1	8"Ø	0-210
CRG-1	10"Ø	211-370
CRG-1	12"Ø	375-600
CRG-2	8x8	0-210
CRG-2	10x10	211-350
CRG-2	14x14	351-720
EXHAUST GRILLES		
TAG	NECK SIZE	CFM RANGE
CEG-1	8"Ø	0-210
CEG-1	10"Ø	211-370
CEG-1	12"Ø	375-600
CEG-2	8x8	0-210
CEG-2	10x10	211-350
CEG-2	14x14	351-720

NOTE:
1. SEE DIFFUSER, REGISTER AND GRILLE SCHEDULE
2. ALL DIFFUSERS , REGISTERS AND GRILLES TO BE TYPE CD, CRG AND CEG UNLESS NOTED OTHERWISE.
3. ALL BRANCH DUCTWORK TO DIFFUSERS, REGISTERS AND GRILLES TO BE SAME SIZE AS NECK SIZE, UNLESS NOTED OTHERWISE.

DEDUCTIVE ALTERNATE BID AREA #2 CONSTRUCTION NOTES:

1. OMIT ALL SUPPLY, EXHAUST AND RETURN GRILLES IN DESIGNATED AREA UNLESS NOTED OTHERWISE.
2. INSTALL TERMINAL UNITS AND CONNECT HW COILS. MOUNT THERMOSTATS IN LOCATION NEAR UNIT AND SET TO CONDITION SPACE BETWEEN A HIGH TEMPERATURE OF 85 (ADJUSTABLE) AND A LOW OF 50 (ADJUSTABLE) DEGREES F. OMIT LOW PRESSURE DUCTWORK DOWNSTREAM OF TERMINAL UNITS UNLESS NOTED OTHERWISE.
3. ROUTE EXHAUST DUCT TO L1107 IT AND L1125 ELECTRICAL AND EXHAUST BALANCED TO SERVE THESE SPACES. OMIT OTHER TAKEOFFS AND GRILLES FROM EXHAUST SYSTEM ON FIRST FLOOR UNLESS NOTED OTHERWISE.
4. MECHANICAL SHAFTS TO REMAIN AND DUCTWORK INSTALLED PER DESIGN DOCUMENTS.
5. INSTALL RETURN DUCTWORK AT FIRST FLOOR TO JUST UPSTREAM OF FSD AT SHAFT WALL. INSTALL BALANCING DAMPER AT DUCT OPENING AND BALANCE TO RETURN TERMINAL UNIT MAXIMUM TOTAL.

GENERAL SHEET NOTES

A. DUCTWORK TO TERMINAL UNITS ARE TO BE SAME SIZE AS INLET SIZE SHOWN ON TERMINAL UNIT SCHEDULE UNLESS NOTED OTHERWISE. SEE MH612 FOR SCHEDULE.

B. ON THE SUPPLY DUCT SYSTEMS THE VARIABLE VOLUME TERMINAL UNITS (TU) SHALL BE THE POINT OF DEMARCATION BETWEEN LOW (<2 INCH) AND MEDIUM (2 INCH TO 3 INCH) PRESSURE CLASSES. ALL DUCTWORK UPSTREAM OF THE TU IS TO BE MEDIUM PRESSURE DUCTWORK AS SPECIFIED. ALL DUCTWORK DOWNSTREAM OF THE TU IS TO BE LOW PRESSURE DUCTWORK.

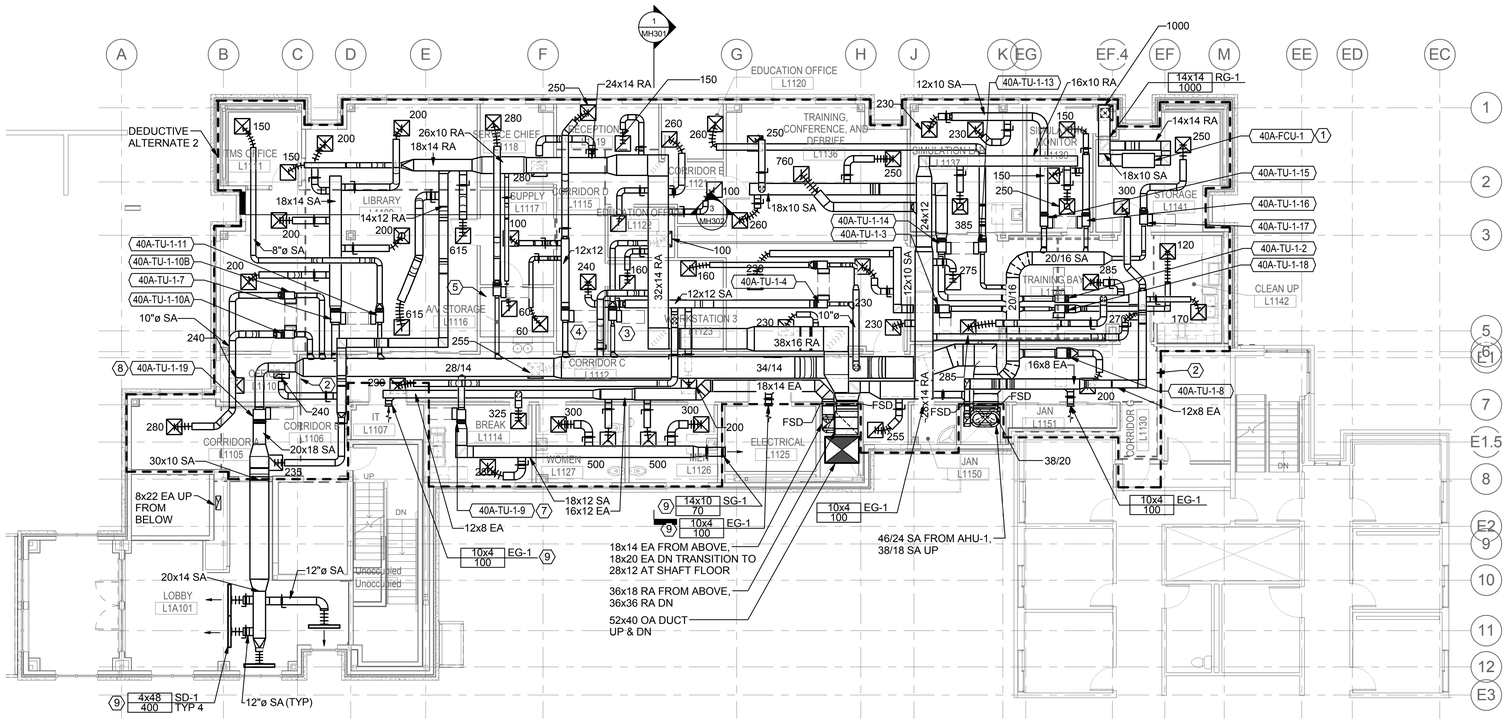
C. ALL RETURN DUCTWORK IS TO BE LOW PRESSURE.

D. ALL EXHAUST DUCTWORK IS TO BE LOW PRESSURE.

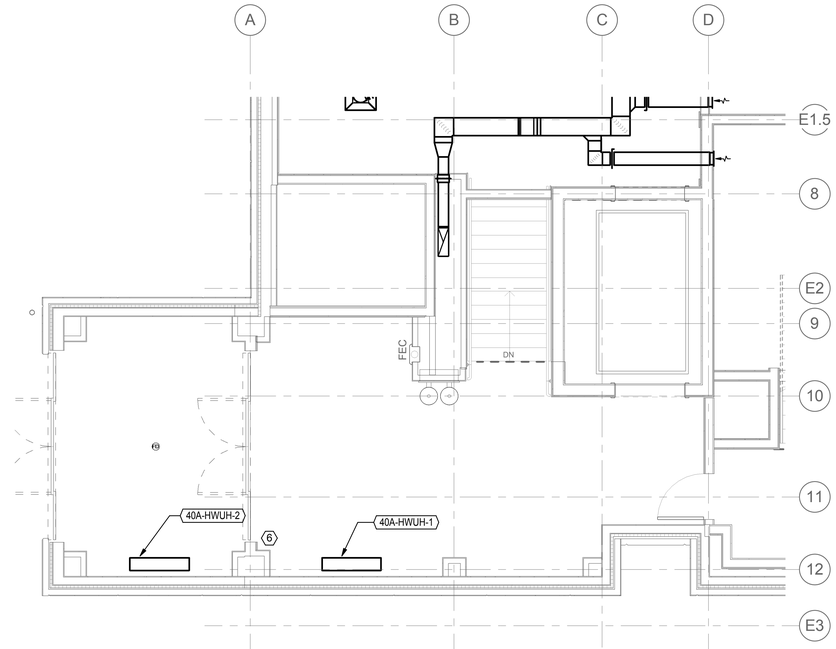
E. ALL OUTSIDE AIR DUCTWORK IS TO BE LOW PRESSURE.

SHEET KEYNOTES

1. ROUTE REFRIGERANT PIPING TO CU-1 ON ROOF. ROUTE 3/4" CONDENSATE LINE TO FLOOR DRAIN IN LOWER LEVEL MECHANICAL ROOM.
2. PROVIDE LON-WORKS DROP CONNECTION TO BMS SYSTEM ON WALL.
3. TERMINAL UNIT 40-TU-1-5.
4. TERMINAL UNIT 40-TU-1-6.
5. TERMINAL UNIT 40-TU-1-12.
6. BUILDING PRESSURE SENSOR SPS-5. REFER TO CONTROL DIAGRAM 1/MH601.
7. DEDUCTIVE ALTERNATE #1: LOW PRESSURE DUCTWORK DOWNSTREAM OF TERMINAL UNIT TO BE INSTALLED TO SUPPLY L1125 ELECTRICAL. ALL OTHER TAKEOFFS AND GRILLES TO BE OMITTED. THERMOSTAT TO BE INSTALLED IN ELECTRICAL ROOM AND TERMINAL UNIT BALANCED TO SERVE LOWER CFM.
8. DEDUCTIVE ALTERNATE #1: ALL LOW PRESSURE DUCTWORK DOWNSTREAM OF TERMINAL UNIT TO BE INSTALLED.
9. DEDUCTIVE ALTERNATE #1: GRILLE TO BE INSTALLED PER PLAN. DO NOT OMIT.



1 LEVEL 1 PLAN - MECHANICAL
1/8" = 1'-0"



2 LEVEL 1A - LOBBY PARTIAL PLAN - MECHANICAL
1/4" = 1'-0"

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
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	95% CONSTRUCTION DOCUMENT	10/13/14
	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

CONSULTANTS:

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EXP. 4/13/16 11/02/15

ARCHITECT/ENGINEERS:

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Drawing Title
LEVEL 1 HVAC PLAN

Approved: Project Director
Approver

Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MH101**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs

GENERAL SHEET NOTES

A. DUCTWORK TO TERMINAL UNITS ARE TO BE SAME SIZE AS INLET SIZE SHOWN ON TERMINAL UNIT SCHEDULE UNLESS NOTED OTHERWISE. SEE MH612 FOR SCHEDULE.

B. ON THE SUPPLY DUCT SYSTEMS THE VARIABLE VOLUME TERMINAL UNITS (TU) SHALL BE THE POINT OF DEMARCATION BETWEEN LOW (<2 INCH) AND MEDIUM (2 INCH TO 3 INCH) PRESSURE CLASSES. ALL DUCTWORK UPSTREAM OF THE TU IS TO BE MEDIUM PRESSURE DUCTWORK AS SPECIFIED. ALL DUCTWORK DOWNSTREAM OF THE TU IS TO BE LOW PRESSURE DUCTWORK.

C. ALL RETURN DUCTWORK IS TO BE LOW PRESSURE.

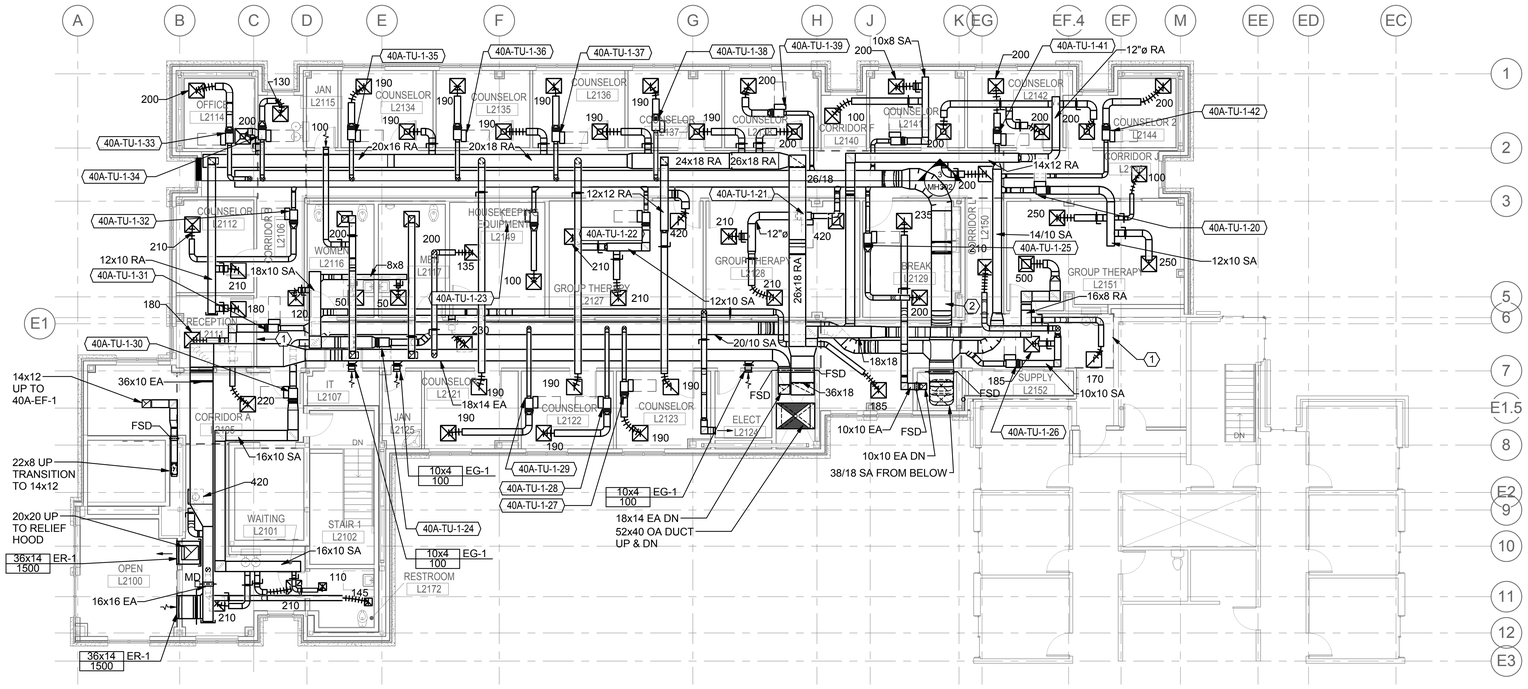
D. ALL EXHAUST DUCTWORK IS TO BE LOW PRESSURE.

E. ALL OUTSIDE AIR DUCTWORK IS TO BE LOW PRESSURE.

SHEET KEYNOTES

1 PROVIDE LON-WORKS DROP CONNECTION TO BMS SYSTEM ON WALL.

2 DUCT PRESSURE SENSOR SPS-4. REFER TO CONTROL DIAGRAM 1/MH601



TRUE NORTH PLAN NORTH

1 LEVEL 2 PLAN - MECHANICAL
1/8" = 1'-0"

DIFFUSER/GRILLES		
SUPPLY DIFFUSER		
TAG	NECK SIZE	CFM RANGE
CD-1	8"Ø	0-200
CD-1	10"Ø	201-310
CD-1	12"Ø	311-400
CD-2	8"Ø	0-200
CD-2	10"Ø	201-310
CD-2	12"Ø	311-400
RETURN GRILLES		
TAG	NECK SIZE	CFM RANGE
CRG-1	8"Ø	0-210
CRG-1	10"Ø	211-370
CRG-1	12"Ø	375-600
CRG-2	8x8	0-210
CRG-2	10x10	211-350
CRG-2	14x14	351-720
EXHAUST GRILLES		
TAG	NECK SIZE	CFM RANGE
CEG-1	8"Ø	0-210
CEG-1	10"Ø	211-370
CEG-1	12"Ø	375-600
CEG-2	8x8	0-210
CEG-2	10x10	211-350
CEG-2	14x14	351-720

NOTE:
1. SEE DIFFUSER, REGISTER AND GRILLE SCHEDULE
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NOVEMBER/02/2015

Revisions	ISSUES	Date
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	95% CONSTRUCTION DOCUMENT	10/13/14
	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

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EXP. 4/13/16 11/02/15

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Drawing Title
LEVEL 2 HVAC PLAN

Approved: Project Director
Approver

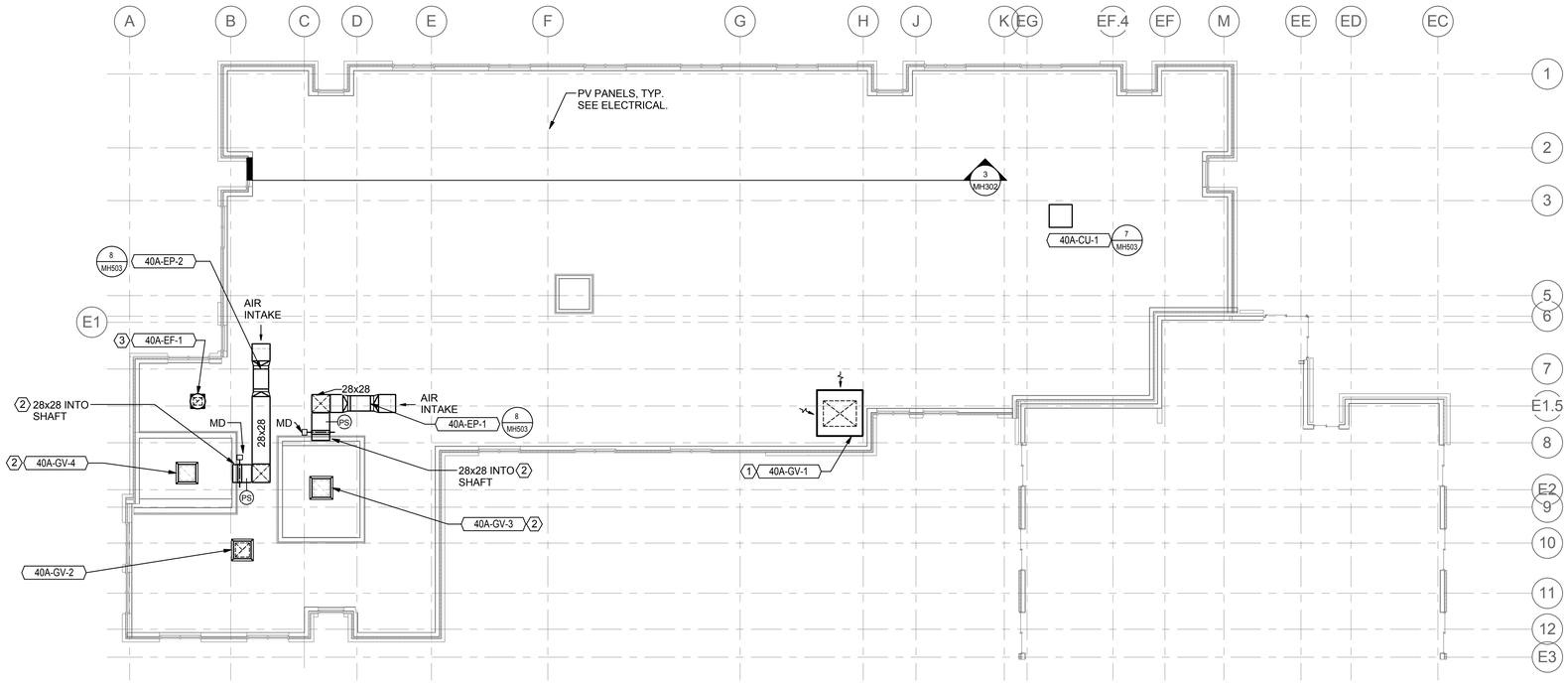
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MH102**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs



TRUE NORTH PLAN NORTH

1 ROOF HVAC PLAN
1/8" = 1'-0"

SHEET KEYNOTES

1. BOTTOM OF INTAKE TO BE 12" ABOVE AVERAGE SNOW ACCUMULATION LEVEL.
2. FINAL PENETRATION AND DUCT LOCATION TO BE COORDINATED WITH ELEVATOR HOISTWAY MANUFACTURER AND STRUCTURAL.
3. EXHAUST FAN TO BE BALANCED TO REDUCE CFM TO SERVE ELEVATOR MACHINE ROOM AND IT CLOSET IN BASEMENT.

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
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	SCHEMATIC DESIGN	3/28/14

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EXP. 4/13/16 11/02/15

ARCHITECT/ENGINEERS:

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Drawing Title
ROOF HVAC PLAN

Approved: Project Director
Approver

Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

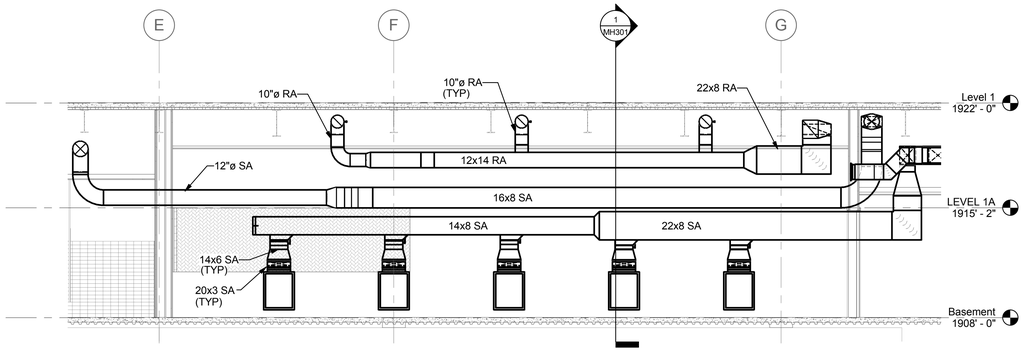
Issue Date	Checked	Drawn
11/02/2015	**JRM**	**IEI**

Project Number
668-313

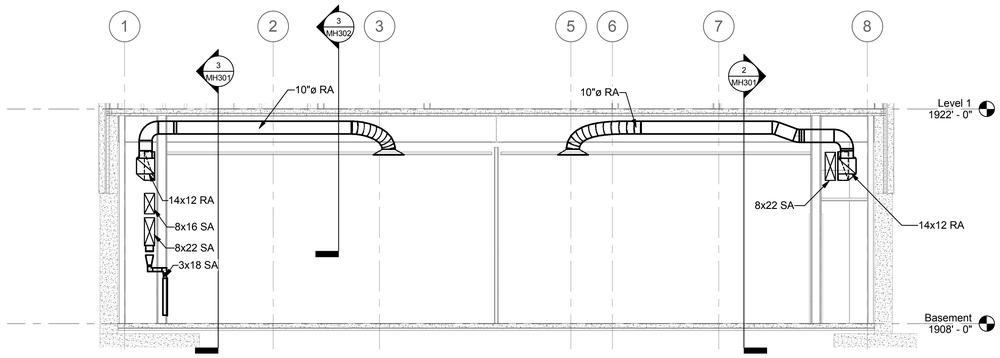
Building Number
40A

Drawing Number
MH150
Dwg. of

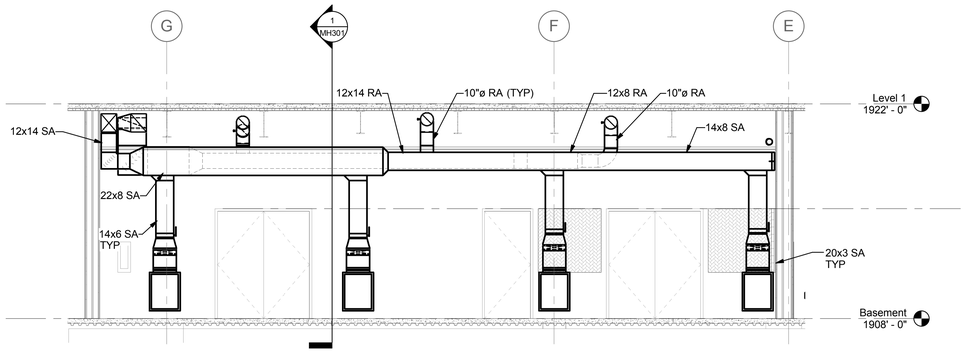
Office of Construction and Facilities Management
Department of Veterans Affairs



3 SECTION - CONFERENCE 1B101 - WEST
1/4" = 1'-0"



1 SECTION - CONFERENCE 1B101 NORTH
1/4" = 1'-0"



2 SECTION - CONFERENCE 1B101 - EAST
1/4" = 1'-0"

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
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	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

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Drawing Title
SECTIONS - MECHANICAL

Approved: Project Director
Approver

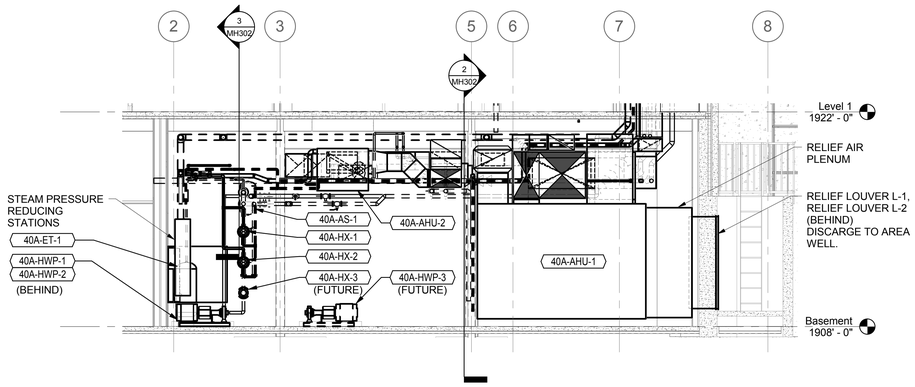
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

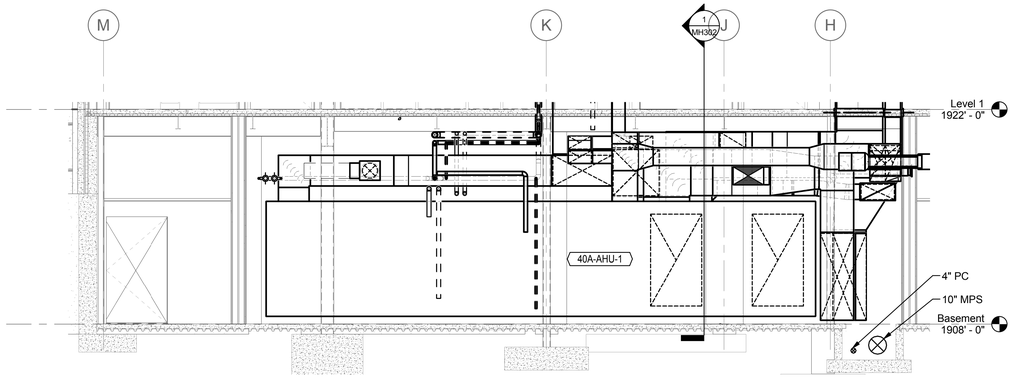
Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MH301**
Dwg. of

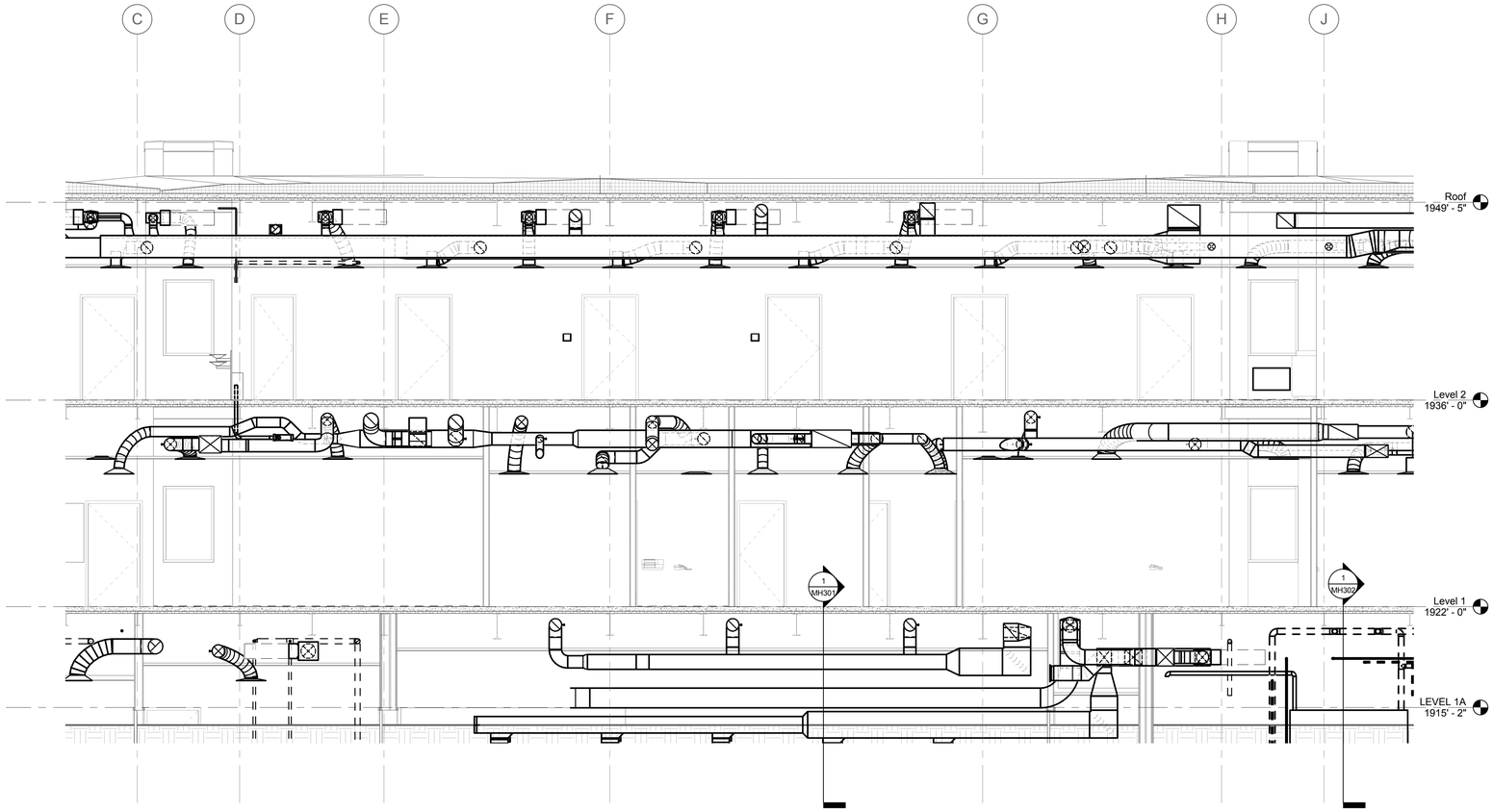
Office of Construction and Facilities Management
Department of Veterans Affairs



1 SECTION - MECH ROOM LOOKING NORTH
1/4" = 1'-0"



2 SECTION - MECH ROOM LOOKING EAST
1/4" = 1'-0"



3 SECTION - LOBBY LOOKING WEST
1/4" = 1'-0"

BID DOCUMENT
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Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
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	95% CONSTRUCTION DOCUMENT	10/13/14
	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

CONSULTANTS:

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JOHN R. McMICHAEL, STATE OF WASHINGTON, 37113, PROFESSIONAL ENGINEER
EXP. 4/13/16 11/02/15

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425-291-7078

Drawing Title
SECTIONS - MECHANICAL

Approved: Project Director
Approver

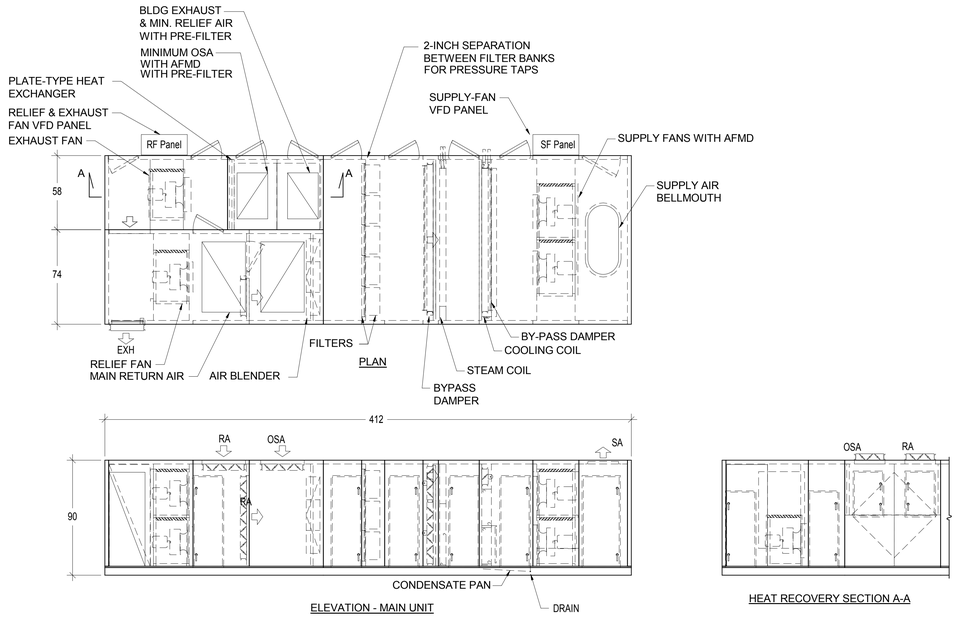
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

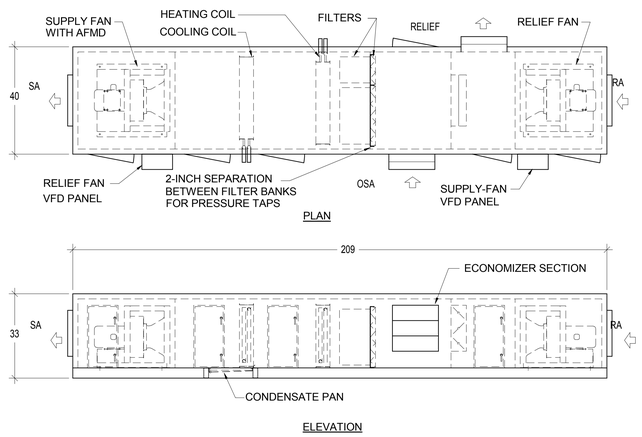
Issue Date **11/02/2015** | Checked **Checker** | Drawn **Author**

Project Number 668-313
Building Number 40A
Drawing Number **MH302**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs



2 AHU-1
NO SCALE



3 AHU-2
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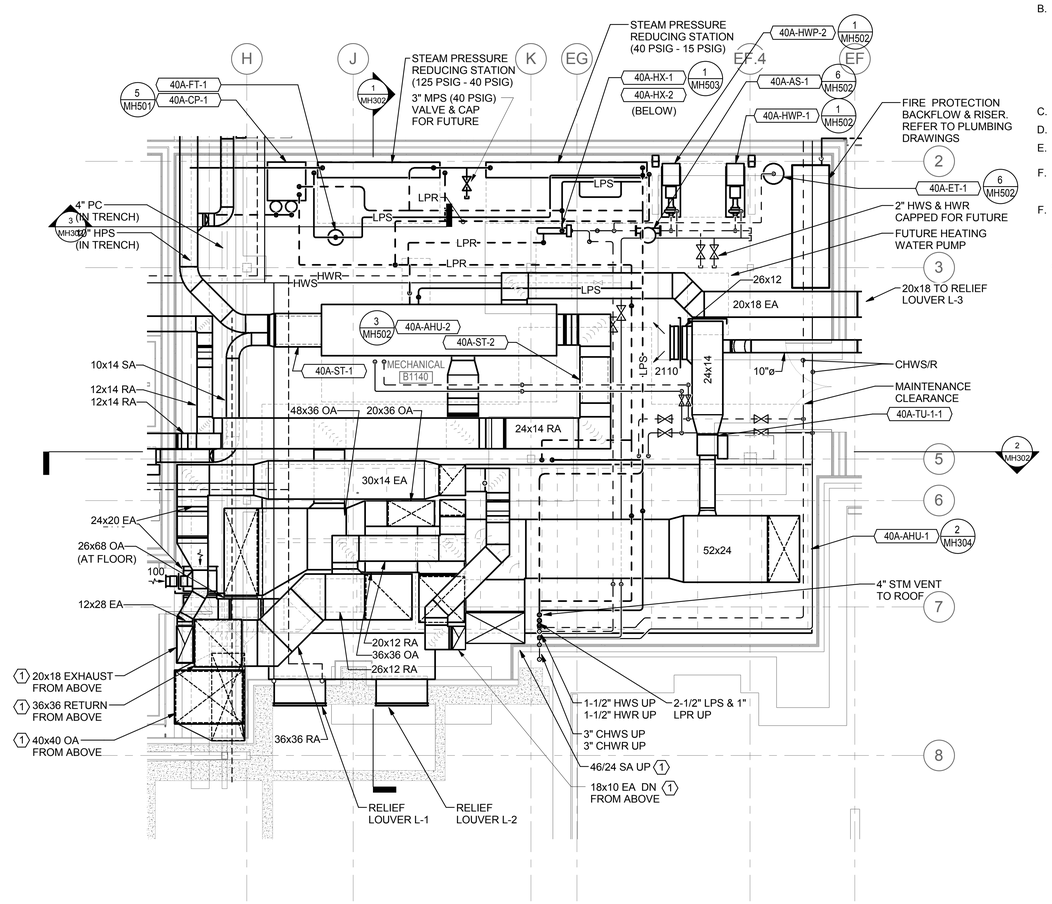

TRUE NORTH PLAN NORTH

1 ENLARGED MECHANICAL ROOM PLAN
1/4" = 1'-0"

GENERAL SHEET NOTES

A. BRANCH DUCTWORK TO TERMINAL UNITS ARE SAME AS INLET SIZE ON TERMINAL UNIT SCHEDULE UNLESS NOTED OTHERWISE. SEE MH612.

B. ON THE SUPPLY DUCT SYSTEMS THE VARIABLE VOLUME TERMINAL UNITS (TU) SHALL BE THE POINT OF DEMARCATION BETWEEN LOW (<2 INCH) AND MEDIUM (2 INCH TO 3 INCH) PRESSURE CLASSES. ALL DUCTWORK UPSTREAM OF THE TU IS TO BE MEDIUM PRESSURE DUCTWORK AS SPECIFIED. ALL DUCTWORK DOWNSTREAM OF THE TU IS TO BE LOW PRESSURE DUCTWORK.

C. ALL RETURN DUCTWORK IS TO BE LOW PRESSURE.

D. ALL EXHAUST DUCTWORK IS TO BE LOW PRESSURE.

E. ALL OUTSIDE AIR DUCTWORK IS TO BE LOW PRESSURE.

F. SUSPEND DUCTWORK WITHIN MECHANICAL ROOM ON COMBINATION SPRING AND NEOPRENE HANGERS WITH 1-INCH STATIC DEFLECTION.

F. SUSPEND PIPING WITHIN 25 FEET OF PUMPS ON COMBINATION SPRING AND NEOPRENE HANGERS WITH 1-INCH STATIC DEFLECTION.

SHEET KEYNOTES

1 COMBINATION FIRE SMOKE DAMPER AT FIRST FLOOR PENETRATION.

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
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EXP. 4/13/16 11/02/15

ARCHITECT/ENGINEERS:

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Drawing Title
ENLARGED PLANS - MECHANICAL

Approved: Project Director
Approver

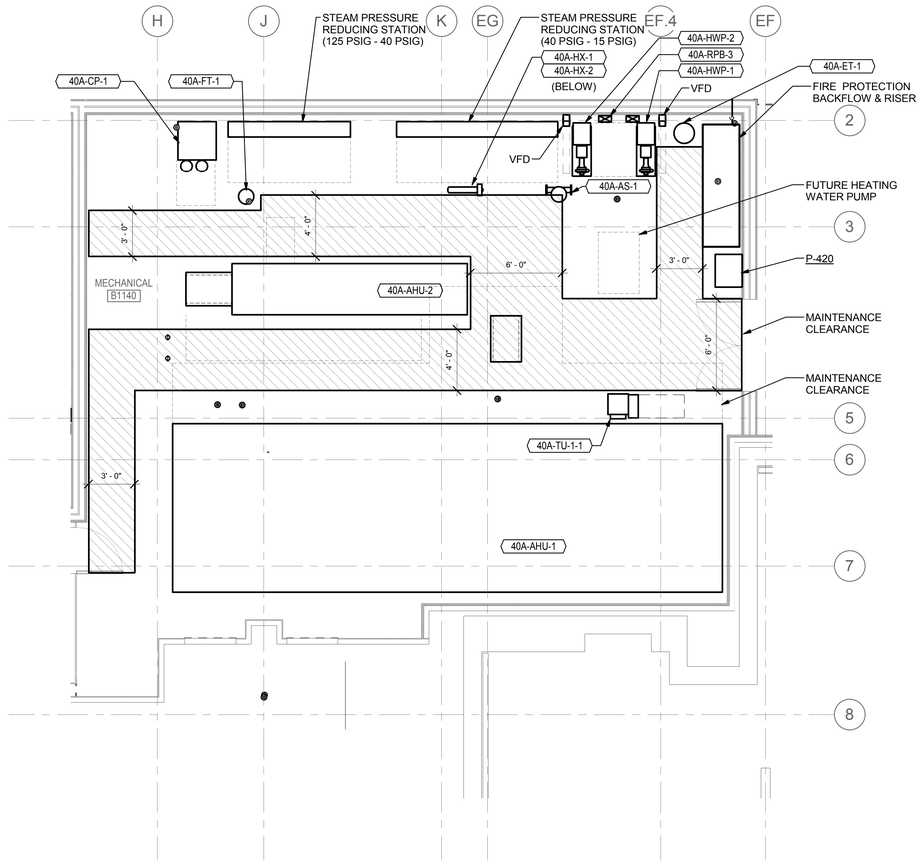
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MH304**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs



1 ENLARGED MECHANICAL ROOM PLAN - ACCESS
1/4" = 1'-0"

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
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JOHN R. McMICHAEL — STATE OF WASHINGTON — 27113 — REGISTERED PROFESSIONAL ENGINEER
EXP. 4/13/16 11/02/15

ARCHITECT/ENGINEERS:

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425-291-7078

Drawing Title
ENLARGED PLANS - MECHANICAL - ACCESS

Approved: Project Director
Approver

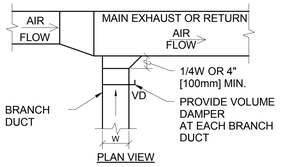
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

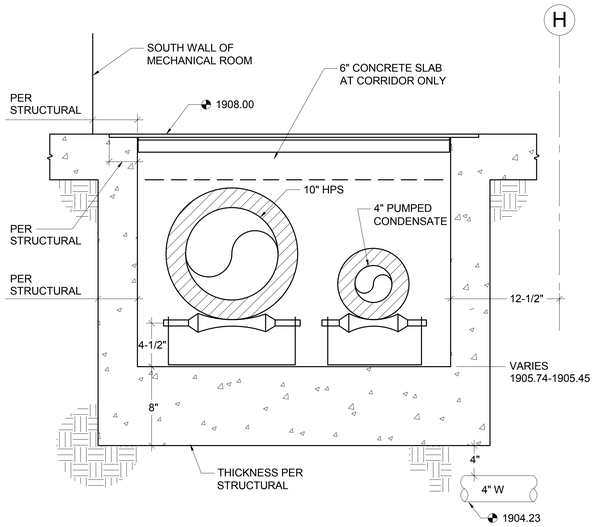
Issue Date **11/02/2015** | Checked **Checker** | Drawn **Author**

Project Number 668-313
Building Number 40A
Drawing Number **MH305**
Dwg. of

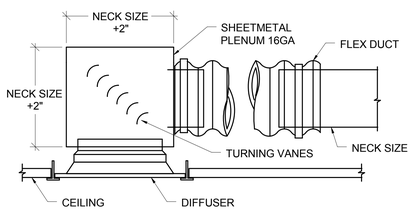
Office of Construction and Facilities Management
Department of Veterans Affairs



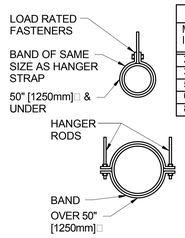
11 EXHAUST OR RETURN BRANCH DUCTWORK
NO SCALE



12 SECTION @ TRENCH
NO SCALE



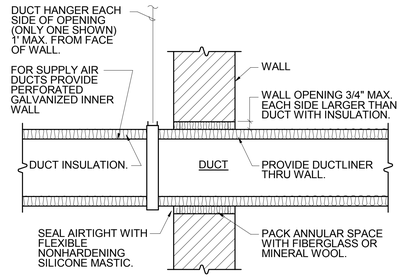
13 DIFFUSER CONNECTION
NO SCALE



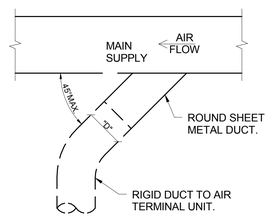
HANGER STRAPS OR RODS			
MAX. DUCT IN. [mm]	QUANTITY/SIZE IN. [mm]	MAX. LOAD LBS. [kg]	MAX. SPACING IN. [mm]
26 [650]	ONE 1 [25] x 22 GA STRAP	260 [119]	144 [3600]
36 [900]	ONE 1 [25] x 18 GA STRAP	420 [190]	144 [3600]
50 [1250]	ONE 1 [25] x 16 GA STRAP	700 [317]	144 [3600]
60 [1500]	TWO 3/8 [10] RODS	1320 [598]	144 [3600]
84 [2100]	TWO 1/2 [13] RODS	2500 [1133]	144 [3600]

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

7 ROUND DUCT HANGERS
NO SCALE

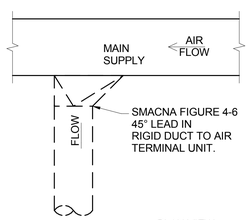


8 ACOUSTICAL WALL DUCT PENETRATION
NO SCALE



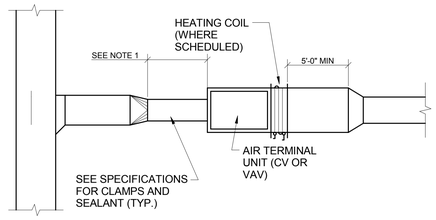
PLAN VIEW

9 SUPPLY DUCT TAKEOFF- AIR TERMINAL UNIT
NO SCALE



PLAN VIEW

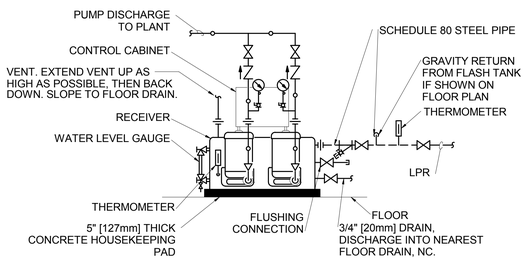
10 ALTERNATE SUPPLY DUCT TAKEOFF- AIR TERMINAL UNITS
NO SCALE



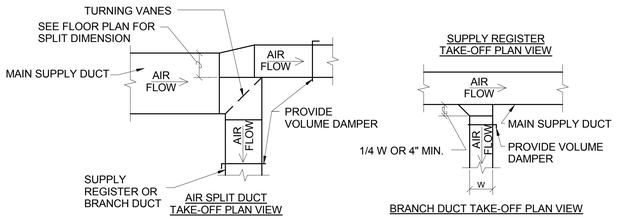
NOTE:

1. RIGID STRAIGHT TERMINAL UNIT INLET LENGTH SHALL BE A MINIMUM OF 3 TIMES THE DIAMETER OF INLET
2. A BRANCH DUCT SERVING AN INDIVIDUAL BOX IS TO BE 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].
3. PROVIDE 3-FT CLEARANCE IN FRONT OF CONROL PANEL.

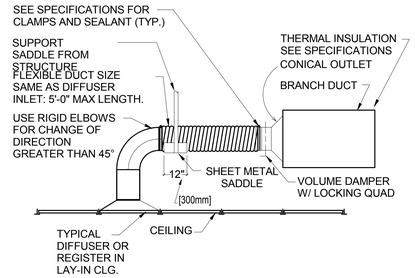
4 TERMINAL UNIT
NO SCALE



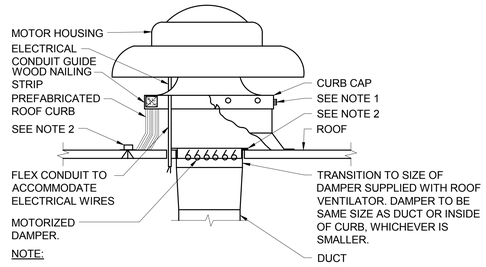
5 CONDENSATE PUMPS- PIPING CONNECTIONS
NO SCALE



6 SUPPLY DUCTWORK TAKEOFFS
NO SCALE



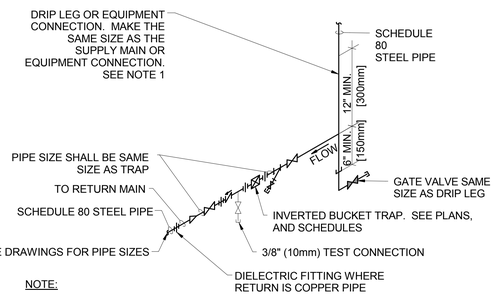
1 FLEXIBLE AIR DUCT CONNECTOR
NO SCALE



NOTE:

1. SECURE CURB CAP TO WOOD NAILING STRIP WITH 3/8" [10mm] CADMIUM PLATED LAG BOLTS NOT OVER 12" [300mm] ON CENTER.
2. SECURE ROOF CURB, DUCTWORK AND DAMPER TO ROOF WITH EXPANSION BOLTS (CONCRETE ROOF) OR RUST RESISTANT BOLTS (METAL DECK AND BAR JOIST ROOF).
3. RUN ELECTRICAL LINES THROUGH CLEARANCE HOLE PROVIDED IN DAMPER, THEN THROUGH VENTILATOR ELECTRICAL CONDUIT GUIDE.

2 POWER ROOF VENTILATOR
NO SCALE



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.

3 INVERTED BUCKET STEAM TRAP ASSEMBLY
NO SCALE

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
		12/30/14
	99% CONSTRUCTION DOCUMENT	12/17/14
	95% CONSTRUCTION DOCUMENT	10/13/14
	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

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EXP. 4/13/16 11/02/15

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Drawing Title
MECHANICAL DETAILS

Approved: Project Director
Approver

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Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MH501**
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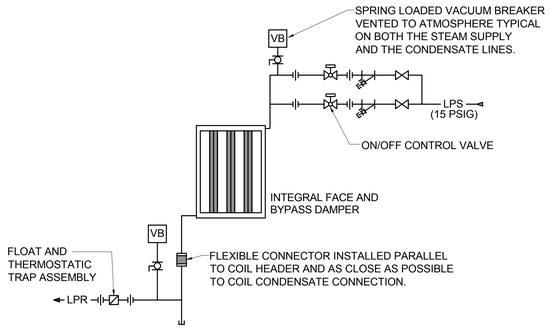
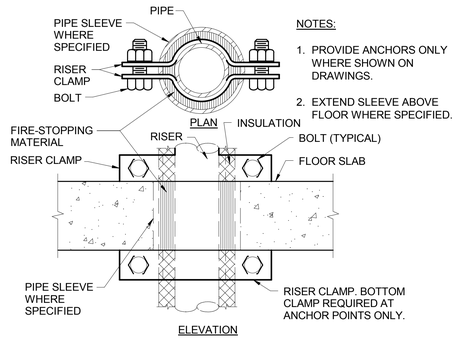
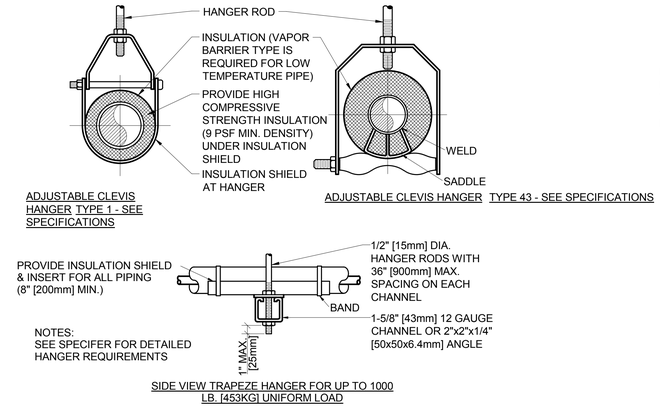


8 INTEGRAL FACE AND BYPASS STEAM COIL DETAIL
NO SCALE



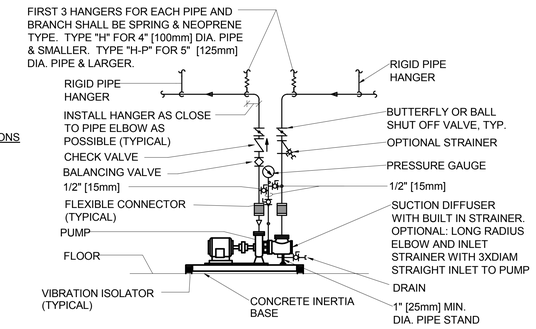
NOTES:
1. PROVIDE ANCHORS ONLY WHERE SHOWN ON DRAWINGS.
2. EXTEND SLEEVE ABOVE FLOOR WHERE SPECIFIED.

5 SUPPORT/ANCHOR FOR PIPE RISERS
NO SCALE



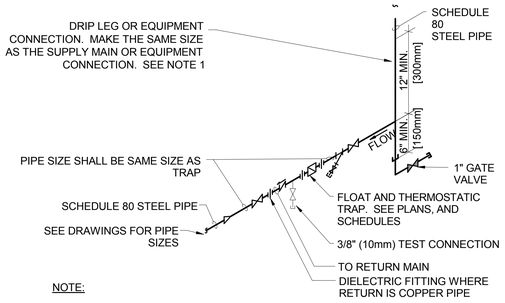
MAXIMUM PIPE/TUBING SUPPORT SPACING																			
NOM. SIZE	IN. [mm]	THRU 3/4 [20]	1 [25]	1 1/4 [32]	1 1/2 [40]	2 [50]	2 1/2 [65]	3 [75]	4 [100]	5 [125]	6 [150]	8 [200]	10 [250]	12 [300]	14 [350]	16 [400]	18 [450]	20 [500]	24 [600]
PIPE	FT. [mm]	7 [2100]	7 [2100]	7 [2100]	9 [2700]	10 [3000]	11 [3400]	12 [3700]	14 [4100]	16 [4900]	17 [5200]	19 [5800]	22 [6700]	23 [7000]	25 [7600]	27 [8200]	28 [8500]	30 [9100]	32 [9600]
TUBING	FT. [mm]	5 FT [1500]	6 [1800]	7 [2100]	8 [2400]	8 [2400]	9 [2700]	10 [3000]	12 [3700]	13 [4000]	14 [4100]	16 [4900]	- -	- -	- -	- -	- -	- -	- -
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.																			

3 PIPE HANGERS
NO SCALE



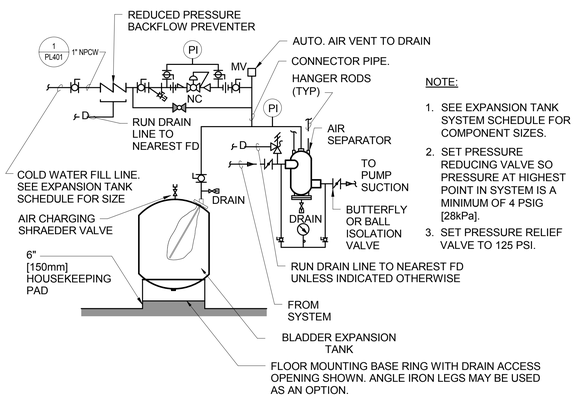
NOTES:
SEE SPECIFICATION SECTION "PUMPS" FOR Y STRAINER OPTION

1 SINGLE SUCTION FLOOR-MOUNTED PUMPS - CONNECTIONS WITH FLEXIBLE CONNECTORS
NO SCALE



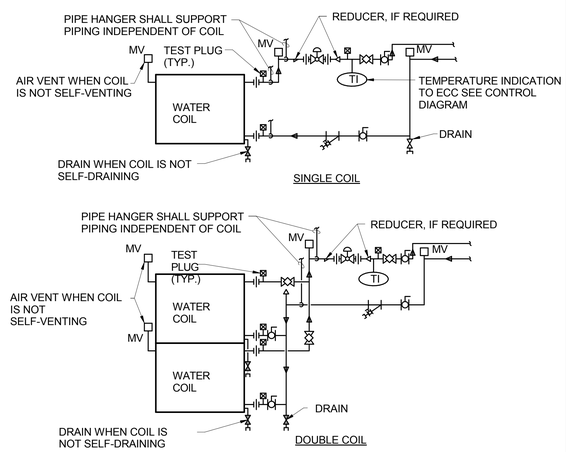
NOTE:
1. ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 12" MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 6" SCALE POCKET BELOW TRAP INLET.

9 FLOAT AND THERMOSTATIC STEAM TRAP ASSEMBLY
NO SCALE



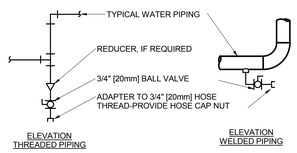
NOTE:
1. SEE EXPANSION TANK SYSTEM SCHEDULE FOR COMPONENT SIZES.
2. SET PRESSURE REDUCING VALVE SO PRESSURE AT HIGHEST POINT IN SYSTEM IS A MINIMUM OF 4 PSIG [28kPa].
3. SET PRESSURE RELIEF VALVE TO 125 PSI.

6 FLOOR MOUNTED EXPANSION TANK - PIPING CONNECTIONS
NO SCALE



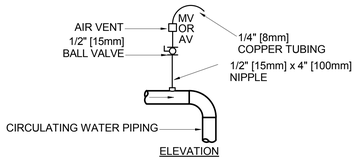
NOTE:
1. WHEN COIL IS INCLUDED IN CASING MOUNTED ON VIBRATION ISOLATORS THE FIRST 2 HANGERS FOR EACH PIPE SHALL BE SPRING & NEOPRENE TYPE. TYPE "H" FOR 4" [100mm]Ø PIPE & SMALLER. TYPE "H-P" FOR 5" [125mm]Ø PIPE & LARGER.
2. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS; NEITHER SHALL IT BLOCK THE SERVICING OF FILTERS, VALES, OR EQUIPMENT.
3. THE FLOW ELEMENT MAY BE INSTALLED IN THE SUPPLY PIPING IF THE REQUIRED MINIMUM UPSTREAM AND DOWNSTREAM DIMENSIONS CANNOT BE OBTAINED IN THE RETURN PIPING.

2 WATER COILS - PIPING CONNECTIONS
NO SCALE



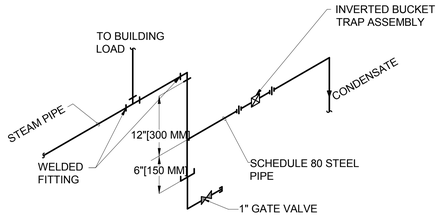
TYPICAL CHILLED AND HOT WATER PIPING DRAIN VALVE CONNECTIONS

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.

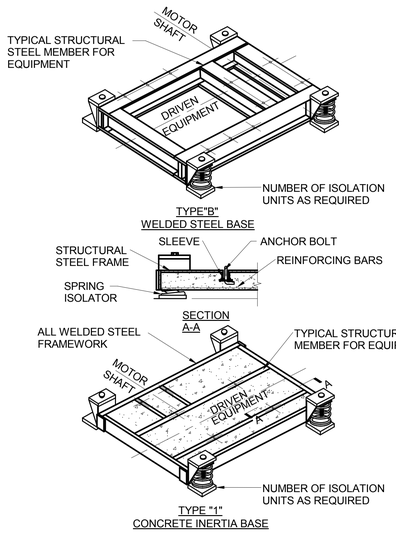


NOTES:
1. VENT ALL HIGH POINTS INDICATED ABOVE.
2. IF AUTOMATIC AIR VENTS ARE USED, PIPE DISCHARGE TO DRAIN.

10 DRAIN VALVE AND AIR VENT CONNECTIONS (HYDRONIC SYSTEMS)
NO SCALE



7 END OF STEAM LINE DRIP TRAP
NO SCALE



4 VIBRATION ISOLATION BASES
NO SCALE

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
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Drawing Title: **MECHANICAL DETAILS**

Approved: Project Director: **Approver**

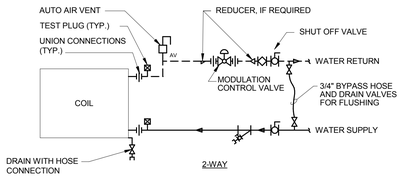
Project Title: **INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING**
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

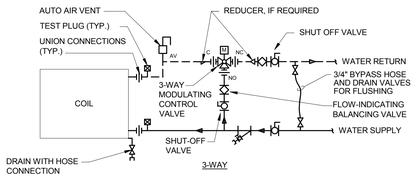
Location: SPOKANE, WASHINGTON 99205

Issue Date: **11/02/2015** | Checked: **JRM** | Drawn: **IEI**

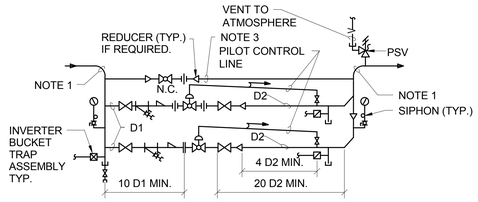
Project Number: 668-313
Building Number: 40A
Drawing Number: **MH502**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs





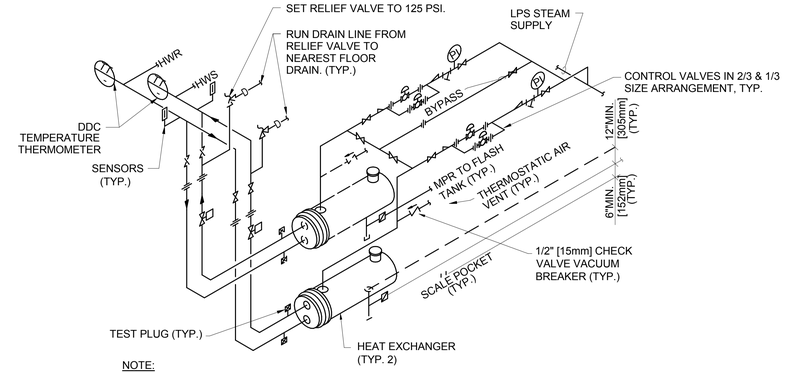
6 TERMINAL UNIT WATER COILS - PIPING CONNECTIONS
NO SCALE



NOTE:

1. SEE 1/MP602 FOR PIPE SIZES.
2. SEE EQUIPMENT SCHEDULES FOR VALVE DATA AND PIPE SIZES D1 AND D2. 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.
5. PROVIDE TWO PRV STATIONS AS SHOWN ABOVE, PIPED IN SERIES. THE FIRST SET TO 40 PSI AND THE SECOND TO 15 PSI.

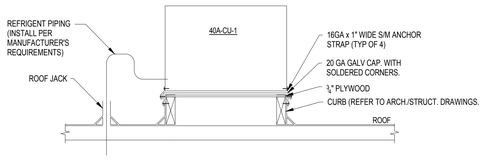
3 STEAM PRESSURE REDUCING STATION DOUBLE VALVE (1/3 & 2/3)
NO SCALE



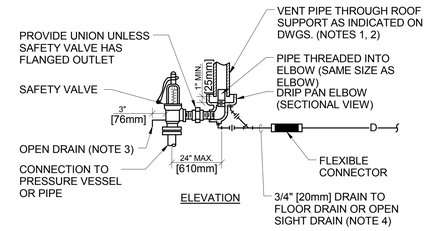
NOTE:

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 $\frac{1}{3}$ AND $\frac{2}{3}$ SIZE ARRANGEMENT.

1 HEAT EXCHANGER - STEAM TO HOT WATER
NO SCALE



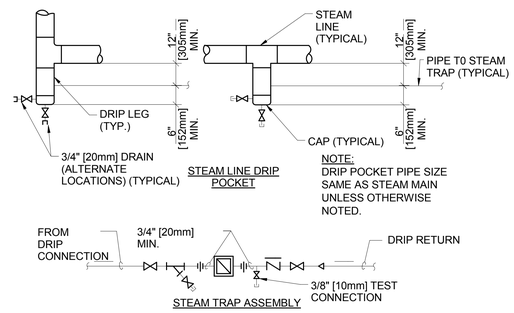
7 AIR COOLED CONDENSING UNIT
NO SCALE



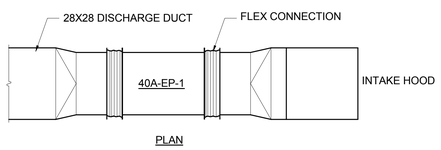
NOTES:

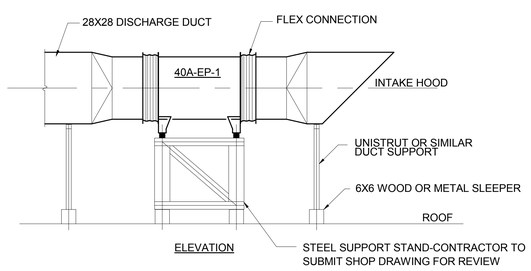
1. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, SIZE THE VENT PIPE SO THAT STEAM IS NOT BLOWN OUT AT THE VENT PIPE ENTRANCE. UTILIZE THE CALCULATION METHOD CONTAINED IN ANSI B31.1. POWER PIPING CODE, APPENDIX II.
2. VENT PIPE SHALL TERMINATE 6' [1829mm] MIN. ABOVE FINISHED ROOF.
3. DISCHARGE OF DRAIN MUST 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.

4 STEAM SAFETY VALVE
NO SCALE

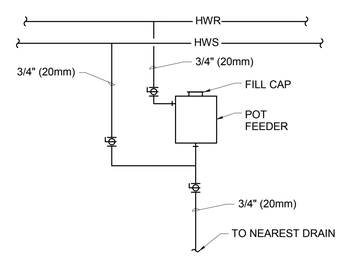


2 STEAM LINE DRIP POCKET STEAM TRAP ASSEMBLY
NO SCALE





8 ELEVATOR PRESSURIZATION FAN
NO SCALE



5 HEATING WATER POT FEEDER
NO SCALE

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
		12/30/14
	99% CONSTRUCTION DOCUMENT	12/17/14
	95% CONSTRUCTION DOCUMENT	10/13/14
	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

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EXP. 4/13/16 11/02/15

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Drawing Title
MECHANICAL DETAILS

Approved: Project Director
Approver

Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MH503**
Dwg. of

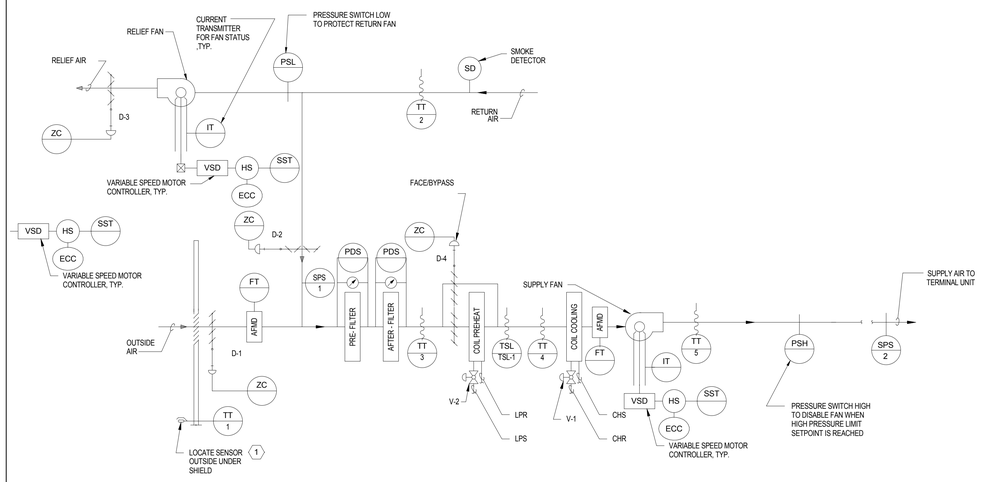
Office of Construction and Facilities Management
Department of Veterans Affairs

GENERAL NOTES

A. ALL DDC GRAPHICS AND DOCUMENTATION ARE TO USE THE ROOM NUMBERS SHOWN ON THE ARCHITECTURAL FINISH (AF) DRAWINGS.

SHEET KEYNOTES

1 COMMON SENSOR FOR AHU-1 & 2.



SEQUENCE OF OPERATION FOR VARIABLE AIR VOLUME AIR HANDLING UNIT WITH MINIMUM OUTSIDE AIR

1. GENERAL

1.1 UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE ECC. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE.

2. TEMPERATURE CONTROL

2.1 SUPPLY AIR TEMPERATURE TT-5 SHALL BE MAINTAINED AT 62F [16.7°C] SETPOINT BY MODULATING D-1, D-2, D-3, D-4, V-1 AND V-2 IN SEQUENCE. D-4 SHALL NORMALLY BE IN THE BYPASS POSITION. ON A CALL FOR HEAT, V-2 SHALL MODULATE TO MAINTAIN SETPOINT AT TT-5. ONCE V-2 IS FULLY OPEN, D-4 SHALL MODULATE TO MAINTAIN SETPOINT.

2.2 WHEN THE OUTSIDE AIR TEMPERATURE AT TT-1 PLUS 2F (ADJUSTABLE) IS BELOW THE SUPPLY AIR TEMPERATURE AT TT-5, MODULATE OSA DAMPER D-1 TO MAINTAIN SUPPLY-AIR SETPOINT. WHEN THE OSA TEMPERATURE PLUS 2F (ADJUSTABLE) IS ABOVE THE SUPPLY AIR TEMPERATURE, BUT BELOW 75°F [23.8°C] (ADJUSTABLE), OPEN D1 (FULL ECONOMIZER). WHEN THE OSA TEMPERATURE IS ABOVE 75°F [23.8°C] (ADJUSTABLE), MODULATE D-1 TO MAINTAIN MINIMUM AIRFLOW SETPOINT AT AIRFLOW MONITOR.

3. AIR FLOW CONTROL

3.1 MODULATE THE SUPPLY FAN VARIABLE SPEED DRIVE TO MAINTAIN DUCT STATIC PRESSURE AT SPS-2. RESET STATIC PRESSURE TO MAINTAIN MOST OPEN VAV BOX AT 75% OPEN.

3.2 MODULATE RELIEF FAN SPEED TO MAINTAIN THE RELIEF FAN SPEED AT AN ADJUSTABLE OFFSET FROM THE SUPPLY FAN SPEED.

3.3 A HIGH PRESSURE SWITCH AT THE SUPPLY FAN DISCHARGE SHALL SHUT OFF THE FAN IF THE DUCT STATIC EXCEEDS 3" [75mm] WG (FIELD ADJUSTABLE). A LOW PRESSURE SWITCH AT THE RETURN FAN INTAKE SHALL SHUT OFF THE FAN IF THE DUCT STATIC EXCEEDS NEGATIVE 2" [50mm] WG (FIELD ADJUSTABLE). ALL SWITCHES SHALL BE HARDWIRED TO THE RESPECTIVE FAN VSD. FANS SHALL SHUTDOWN IN HAND, AUTO OR BYPASS MODE. SWITCHES SHALL REQUIRE MANUAL RESET.

3.4 MODULATE THE OSA DAMPER D-1 AS DESCRIBED IN 2.2 ABOVE. MODULATE THE RELIEF-AIR DAMPER D-3 IN UNISON WITH D-1. MODULATE THE RETURN DAMPER D-2 WITH OPPOSITE CONTROL ACTION TO D-1 .

3.5 IF ANY ZONE WITH CO2 SENSING REGISTERS MORE THAN 1,200 PPM AND THE ZONE DAMPER HAS BEEN 100% OPEN FOR MORE THAN 15 MINUTES, INCREASE OUTSIDE AIR DAMPER POSITION 5% EVERY 10 MINUTES UNTIL HIGHEST CO2 READING IS AT 1000 PPM.

4. FREEZE PROTECTION

4.1 IF THE AIR TEMPERATURE AT TT-4 FALLS BELOW 45°F [7°C], AN ALARM SHALL INDICATE AT THE DCP AND ECC. IF THIS TEMPERATURE FALLS BELOW 40°F [4.4°C] AT THE TSL, THE AHU SHALL SHUTDOWN AND RELIEF AND OUTSIDE AIR DAMPERS GO TO THEIR FULLY CLOSED POSITIONS. VALVE V-2 GOES FULL OPEN. A CRITICAL ALARM SHALL INDICATE AT THE DCP AND ECC. THE TSL SHALL BE HARDWIRED TO THE SUPPLY FAN VSD. THE VSD AND UNIT SHALL BE SHUTDOWN IN HAND, AUTO OR BYPASS MODE. THE TSL SHALL REQUIRE MANUAL RESET.

5. AUTOMATIC SHUTDOWN/RESTART

5.1 WHEN SMOKE IS DETECTED BY ANY DUCT SMOKE DETECTOR (SD), THE SUPPLY AND RETURN FANS SHALL SHUT OFF AND AN ALARM SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM.

5.2 MONITOR FIRE SMOKE DAMPERS AND DO NOT ALLOW START UNTIL DAMPERS ARE OPEN.

6. EMERGENCY CONSTANT SPEED OPERATION

6.1 UPON FAILURE OF THE VSD, THE SUPPLY AND RETURN FANS CAN BE STARTED MANUALLY AT THE DCP OR ECC VIA THE BY-PASS STARTERS. BYPASS MODE SHALL BE ENTERED AT THE DRIVE ONLY VIA MANUAL SWITCHING. FANS SHALL THEN BE OPERATED AT FULL SPEED, BUT NOT UNTIL ALL TU BOXES HAVE BEEN DRIVEN TO THEIR MAX AIRFLOW SETPOINT. PROVIDE GRAPHIC SWITCHES TO MANUALLY OPEN ALL VAV DAMPERS AND TO OVERRIDE SUPPLY FAN TO TURN ON.

6.2 PROVIDE DISCHARGE AIR OVERRIDE SETPOINT TO CONTROL DISCHARGE AIR TO CONSTANT (ADJUSTABLE) TEMPERATURE WHEN UNIT IS IN BYPASS.

7. UNOCCUPIED MODE

7.1 IN UNOCCUPIED MODE, STOP SUPPLY & RETURN FANS, AND CLOSE D-1, D-2 AND D-3.

7.2 IF ANY ZONE FALLS BELOW 55F (ADJUSTABLE), START UNIT IN NIGHT-SETBACK MODE. THE OSA DAMPER D1 TO BE CLOSED. UNIT TO MAINTAIN 60°F [23.8°C] (ADJUSTABLE) SUPPLY AIR TEMPERATURE.

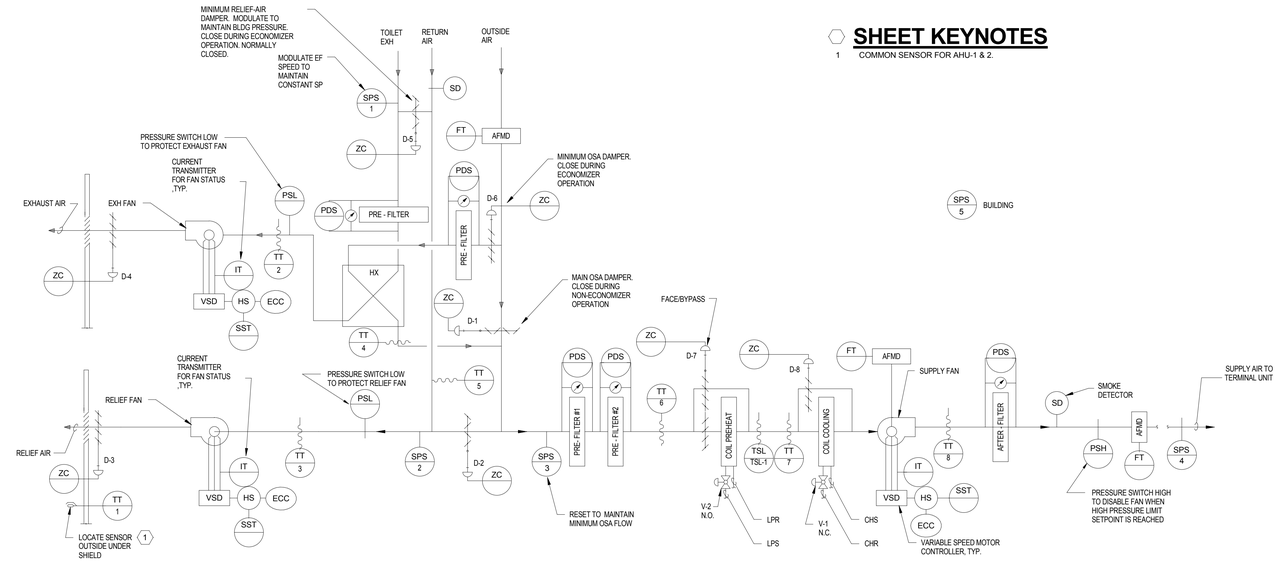
8. MORNING WARMUP MODE

8.1 DURING MORNING WARMUP MODE, OPERATE UNTIL 85% OF ZONES GET TO SET POINT AND THEN SWITCH TO COOLING MODE. WITH UNIT CONTROLLING TO THE DISCHARGE TEMPERATURE THAT SATISFIES THE ZONE WITH THE LARGEST COOLING DEMAND. PROVIDE OPTIMUM START TO BRING ZONES TO SETPOINT BY OCCUPIED TIME.

9. EMERGENCY SMOKE PURGE MODE

9.1 PROVIDE BUTTON SYMBOL ON DDC GRAPHIC TO INITIATE EMERGENCY SMOKE PURGE. UNIT TO OPERATE IN 100% OSA / 100% EXHAUST MODE. ADD NOTE ON GRAPHIC: "IF AHU SHUTS OFF ON FREEZE STAT, OPEN WINDOWS AND DOORS AND MANUALLY START EXHAUST AND RELIEF FANS."

2 CONSTANT AIR VOLUME AIR HANDLING UNIT WITH MINIMUM OUTSIDE AIR CONTROL DIAGRAM: 40A-AHU-2
NO SCALE



SEQUENCE OF OPERATION FOR VARIABLE AIR VOLUME AIR HANDLING UNIT WITH MINIMUM OUTSIDE AIR

1. GENERAL

1.1 UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE ECC. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE.

2. TEMPERATURE CONTROL

2.1 SUPPLY AIR TEMPERATURE TT-8 SHALL BE MAINTAINED AT SETPOINT BY MODULATING D-1, D-2, D-3, D-7, V-1 AND V-2 IN SEQUENCE. D-7 SHALL NORMALLY BE IN THE BYPASS POSITION. ON A CALL FOR HEAT, V-2 SHALL MODULATE CLOSED TO MAINTAIN SETPOINT. IF TT-6 IS GREATER THAN 35F, MODULATE STEAM VALVE TO MAINTAIN SETPOINT WITH FACE AND BYPASS AT FULL FACE POSITION. IF TT6 IS LESS THAN OR EQUAL TO 35F OPEN STEAM VALVE FULLY AND MODULATE FACE AND BYPASS DAMPER TO MAINTAIN SETPOINT.

2.2 RESET DISCHARGE-AIR TEMPERATURE BETWEEN 55°F [12.8°C] AND 65°F [18.3°C] TO MAINTAIN WORST CASE TU DAMPER AT LEAST 75% OPEN

2.3 WHEN THE OUTSIDE AIR TEMPERATURE AT TT-1 PLUS 2F (ADJUSTABLE) IS BELOW THE SUPPLY AIR TEMPERATURE AT TT-8, MODULATE MAIN OSA DAMPER D1 TO MAINTAIN SUPPLY-AIR SETPOINT. WHEN THE OSA TEMPERATURE PLUS 2F (ADJUSTABLE) IS ABOVE THE SUPPLY AIR TEMPERATURE, BUT BELOW 75°F [23.9°C] (ADJUSTABLE), FULLY OPEN D1 (FULL ECONOMIZER) AND FULLY CLOSE D2 AND D4.

2.4 WHENEVER THE OSA IS AT MINIMUM FLOW, D-1 IS TO BE CLOSED AND D-6 OPEN TO ALLOW THE HEAT EXCHANGER TO PREHEAT OR PRECOOL THE OSA USING BUILDING EXHAUST AND MINIMUM RELIEF-AIR.

3. AIR FLOW CONTROL

3.1 WHEN THE UNIT IS "ON", D-3 AND D-4 SHALL BE FULLY OPEN. THE OTHER DAMPERS SHALL MODULATE IN ACCORDANCE WITH THE FOLLOWING SEQUENCES.

3.2 MODULATIE THE SUPPLY FAN VARIABLE SPEED DRIVE TO MAINTAIN DUCT STATIC PRESSURE AT SPS-4. RESET STATIC PRESSURE TO MAINTAIN MOST OPEN VAV BOX AT 90% OPEN.

3.3 A HIGH PRESSURE SWITCH AT THE SUPPLY FAN DISCHARGE SHALL SHUT OFF THE FAN IF THE DUCT STATIC EXCEEDS 3" [75mm] WG (FIELD ADJUSTABLE). LOW PRESSURE SWITCHES AT THE EXHAUST FAN INTAKE AND RELIEF FAN INTAKE SHALL SHUT OFF THE RESPECTIVE FAN IF THE DUCT STATIC EXCEEDS NEGATIVE 2" [50mm] WG (FIELD ADJUSTABLE). ALL SWITCHES SHALL BE HARDWIRED TO THE RESPECTIVE FAN VSD. FANS SHALL SHUTDOWN IN HAND, AUTO OR BYPASS MODE. SWITCHES SHALL REQUIRE MANUAL RESET.

3.4 MODULATE THE SPEED OF THE EXHAUST FAN TO MAINTAIN A CONSTANT PRESSURE IN THE BUILDING GENERAL EXHAUST DUCT AT SPS-1.

3.5 WHENEVER THE FLOW AT THE OSA AIRFLOW MONITOR REACHES MINIMUM SETPOINT, THE MAIN OSA DAMPER D-1 SHALL CLOSE AND D-6 SHALL MODULATE TO MAINTAIN MINIMUM OSA FLOW SETPOINT. THE RELIEF FAN SHALL ALSO BE OFF. THE MINIMUM RELIEF AIR DAMPER D-5 SHALL MODULATE TO MAINTAIN BUILDING STATIC PRESSURE AT SPS-5.

3.6 DURING ECONOMIZER OPERATION, MODULATE RELIEF FAN SPEED TO MAINTAIN THE STATIC PRESSURE SETPOINT AT SPS-5.

3.7 IF ANY ZONE WITH CO2 SENSING REGISTERS MORE THAN 1,200 PPM AND THE ZONE DAMPER HAS BEEN 100% OPEN FOR MORE THAN 15 MINUTES, INCREASE OUTSIDE AIR DAMPER POSITION 5% EVERY 10 MINUTES UNTIL HIGHEST CO2 READING IS AT 1000 PPM.

4. FREEZE PROTECTION

4.1 IF THE AIR TEMPERATURE AT TT-7 FALLS BELOW 45°F [7°C], AN ALARM SHALL INDICATE AT THE DCP AND ECC. IF THIS TEMPERATURE FALLS BELOW 40°F [4.4°C] AT THE TSL, THE AHU SHALL SHUTDOWN AND RELIEF AND OUTSIDE AIR DAMPERS GO TO THEIR FULLY CLOSED POSITIONS. VALVE V-2 GOES FULL-OPEN. A CRITICAL ALARM SHALL INDICATE AT THE DCP AND ECC. THE TSL SHALL BE HARDWIRED TO THE SUPPLY FAN VSD. THE VSD AND UNIT SHALL BE SHUTDOWN IN HAND, AUTO OR BYPASS MODE. THE TSL SHALL REQUIRE MANUAL RESET. OPEN STEAM VALVES 20%.

5. AUTOMATIC SHUTDOWN/RESTART

5.1 WHEN SMOKE IS DETECTED BY ANY DUCT SMOKE DETECTOR (SD), THE SUPPLY AND RELIEF FANS SHALL SHUT "OFF" AND AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM.

5.2 MONITOR FIRE SMOKE DAMPERS AND DO NOT ALLOW START UNTIL DAMPERS ARE OPEN.

6. EMERGENCY CONSTANT SPEED OPERATION

6.1 UPON FAILURE OF THE VSD, THE SUPPLY AND RETURN FANS CAN BE STARTED MANUALLY AT THE DCP OR ECC VIA THE BY-PASS STARTERS. BYPASS MODE SHALL BE ENTERED AT THE DRIVE ONLY VIA MANUAL SWITCHING. FANS SHALL THEN BE OPERATED AT FULL SPEED, BUT NOT UNTIL ALL TU BOXES HAVE BEEN DRIVEN TO THEIR MAX AIRFLOW SETPOINT. PROVIDE GRAPHIC SWITCHES TO MANUALLY OPEN ALL VAV DAMPERS AND TO OVERRIDE SUPPLY FAN TO TURN ON.

6.2 PROVIDE DISCHARGE AIR OVERRIDE SETPOINT TO CONTROL DISCHARGE AIR TO CONSTANT (ADJUSTABLE) TEMPERATURE WHEN UNIT IS IN BYPASS.

7. UNOCCUPIED MODE

7.1 IN UNOCCUPIED MODE, STOP SUPPLY, RELIEF AND EXHAUST FANS, AND CLOSE D-1 AND OPEN D-2, D-3 AND D-4.

7.2 IF ANY ZONE FALLS BELOW 55F (ADJUSTABLE), START UNIT IN NIGHT-SETBACK MODE. THE EXHAUST AND RELIEF FANS ARE TO BE OFF, AND OSA DAMPERS D1 & D6 CLOSED. UNIT TO MAINTAIN 75°F [23.8°C] (ADJUSTABLE) SUPPLY AIR TEMPERATURE.

8. MORNING WARMUP MODE

8.1 DURING MORNING WARMUP MODE, OPERATE UNIT THE SAME AS IN THE NIGHT-SETBACK MODE DESCRIBED ABOVE. WITH UNIT CONTROLLING TO THE DISCHARGE TEMPERATURE THAT SATISFIES THE ZONE WITH THE LARGEST COOLING DEMAND. PROVIDE OPTIMUM START TO BRING ZONES TO SETPOINT BY OCCUPIED TIME.

9. EMERGENCY SMOKE PURGE MODE

9.1 PROVIDE BUTTON SYMBOL ON DDC GRAPHIC TO INITIATE EMERGENCY SMOKE PURGE. UNIT TO OPERATE IN 100% OSA / 100% EXHAUST MODE. ADD NOTE ON GRAPHIC: "IF AHU SHUTS OFF ON FREEZE STAT, OPEN WINDOWS AND DOORS AND MANUALLY START EXHAUST AND RELIEF FANS."

1 VARIABLE AIR VOLUME AIR HANDLING UNIT WITH MINIMUM OUTSIDE AIR CONTROL DIAGRAM: 40A-AHU-1
NO SCALE

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
		12/30/14
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Drawing Title
MECHANICAL DIAGRAMS

Approved: Project Director
Approver

Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

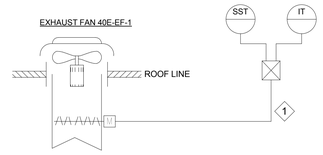
Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MH601**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs

4 CONDENSATE RECEIVER CONTROLS
NO SCALE



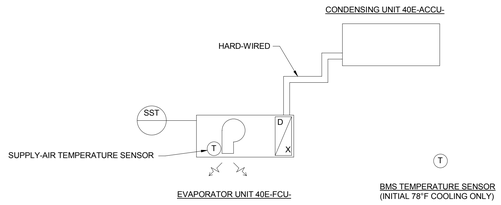
NOTES:

1. HARD WIRE TO STARTER TO OPEN DAMPER WHEN FAN STARTS. PROVIDE TRANSFORMER AS NECESSARY.

SEQUENCE OF OPERATIONS

1. DURING OCCUPIED MODE OPEN ISOLATION DAMPER AND RUN FAN CONTINUOUSLY. DURING UNOCCUPIED MODE, CLOSE ISOLATION DAMPER AND FAN OFF.
2. CURRENT TRANSFORMER SIGNALS CONTROLLER WHICH GENERATES ALARM WHEN FAN/CONTROLLER FAILS TO OPERATE.

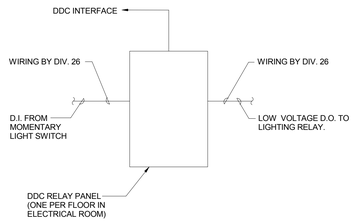
1 GENERAL EXHAUST FAN CONTROL DIAGRAM
NO SCALE



SEQUENCE OF OPERATIONS

THE SPLIT SYSTEM A/C UNITS SHALL RUN 24/7 FOR COOLING OF PROCESS LOADS. THE A/C UNITS AND ASSOCIATED CONDENSERS WILL BE CONTROLLED THROUGH THE MANUFACTURER PROVIDED INTERNAL MICROPROCESSOR CONTROLLER. THE CONTROLLER SHALL INTERFACE TO THE BMS SYSTEM THROUGH AN OPEN PROTOCOL INTERFACE. THE BMS VENDOR SHALL PROVIDE THE TEMPERATURE SENSORS TO ALLOW CONTROL AND MONITORING THROUGH THE BMS.

2 FC AND CU CONTROL DIAGRAM
NO SCALE



NOTES:

1. REFER TO DETAIL 3/EP501 FOR LIGHTING DIAGRAM AND SEQUENCES.
2. PROVIDE 25% SPARE D.O. AND D.I. POINTS IN EACH PANEL.

3 LIGHTING CONTROLS
NO SCALE

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
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SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

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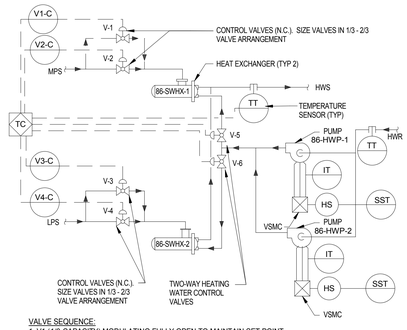
Building Number 40A
Drawing Number **MH602**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs

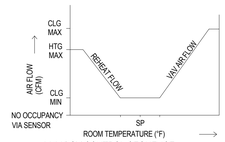
SEQUENCE OF OPERATION:

1. ENABLE LEAD HEATING WATER SUPPLY PUMP AND OPEN HEATING WATER ISOLATION VALVE FOR LEAD HEAT EXCHANGER. ENABLE THE TWO NORMALLY-CLOSED TWO-WAY STEAM CONTROL VALVES ON LEAD HEAT EXCHANGER. STANDBY PUMP REMAINS OFF AND ALL CONTROL VALVES FOR STANDBY HEAT EXCHANGER ARE CLOSED.
2. TEMPERATURE SENSOR IN HEATING WATER SUPPLY SIGNALS CONTROLLER WHICH IN SEQUENCE MODULATES TWO STEAM CONTROL VALVES AT LEAD HEAT EXCHANGER TO MAINTAIN TEMPERATURE SETPOINT OF HOT WATER SUPPLY.
3. UPON FAILURE OF LEAD HEAT EXCHANGER TO MAINTAIN SET HEATING WATER SUPPLY TEMPERATURE, CLOSE HEATING WATER ISOLATION VALVE AND STEAM CONTROL VALVES ON LEAD HEAT EXCHANGER, ENABLE STANDBY HEAT EXCHANGER HEATING WATER AND STEAM CONTROL VALVES. SEND FAILURE ALARM TO CENTRAL PANEL. MODULATE THE TWO TWO-WAY STEAM CONTROL VALVES AT STANDBY HEAT EXCHANGER TO MAINTAIN TEMPERATURE SETPOINT OF HOT WATER SUPPLY.
4. HWS TEMPERATURE SET POINT TO BE RESET BASED ON HEATING CONTROL VALVE DEMAND. RESET TO MAINTAIN THE AVERAGE OF THE THREE MOST OPEN VALVES AT 90 PERCENT OPEN OR TO MAXIMUM OF 160°F (ADJUSTABLE).
5. LEAD AND STANDBY HEAT EXCHANGERS AND PUMPS TO BE DESIGNATED BY OPERATOR TERMINAL SOFTWARE COMMAND AND BE ALTERNATED WEEKLY.
6. HEAT EXCHANGER CONTROLLER RECEIVES GLOBAL SIGNAL FROM CENTRAL CONTROLLER WHICH RESETS HWS TO 120°F DURING WARM-UP OPERATION.



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

3 DUAL HEAT EXCHANGER CONTROLS (HEATING SYSTEM)
NO SCALE



VAV BOX CONTROL SEQUENCE

W/DEADBAND

A. SET POINTS SHALL BE SET AS FOLLOWS:
COOLING 74°F (ADJ)
HEATING 72°F(ADJ)
DEADBAND OF 2° F BETWEEN HEATING AND COOLING SET POINTS WILL BE MAINTAINED.

B. UPON FALL IN SPACE TEMPERATURE THE VAV DAMPER WILL MODULATE TO MINIMUM POSITION.

C. UPON FURTHER DROP IN SPACE TEMPERATURE, VALVE V-1 WILL MODULATE TO MAINTAIN SET POINT. UPON REACHING A MAXIMUM DISCHARGE-AIR TEMPERATURE OF 90F (ADJUSTABLE), MODULATE DAMPER OPEN UNTIL HEATING MAXIMUM AIR FLOW IS REACHED.

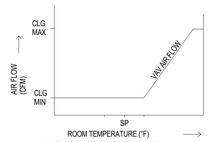
D. THE REVERSE SHALL OCCUR ON THE RISE IN SPACE TEMPERATURE.

E. THE CLG MIN SETPOINT SHALL BE SET TO ZERO DURING THE TIME THE OCCUPANCY SENSOR TURNS OFF THE LIGHTS.

F. PROVIDE SEPARATE HEATING/COOLING SETBACK/SETUP TEMPERATURES FOR PERIODS WHEN OCCUPANCY SENSOR SENSES NO OCCUPANTS DURING NORMAL OCCUPIED HOURS.

G. FOR ZONES WITH CARBON DIOXIDE SENSORS, THE CLG MIN AIRFLOW SETPOINT SHALL BE CONTINUALLY RESET TO MAINTAIN ROOM CO2 CONCENTRATION BELOW 1000 PPM.

H. DURING WARMUP PROVIDE REVERSE ACTING CONTROL FOR TERMINAL UNITS SERVING ROOMS WITH SUPPLEMENTAL COOLING.



VAV BOX CONTROL SEQUENCE

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HEATING 72°F(ADJ)
DEADBAND OF 2° F BETWEEN HEATING AND COOLING SET POINTS WILL BE MAINTAINED.

B. UPON FALL IN SPACE TEMPERATURE, THE VAV DAMPER WILL MODULATE TO MINIMUM POSITION.

C. UPON FURTHER DROP IN SPACE TEMPERATURE, VALVE V-1 WILL MODULATE TO MAINTAIN SETPOINT WHILE THE THE AIRFLOW REMAINS AT THE CLG MIN SETPOINT.

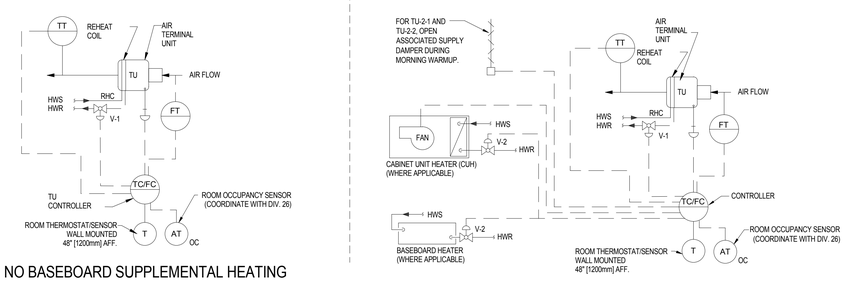
D. WHEN OUTSIDE AIR FALLS BELOW 40° F (ADJ) AND VALVE V-1 HAS BEEN MODULATED OPEN ABOVE 30% (ADJ), START THE CUH FAN (WHERE APPLICABLE) AND MODULATE VALVE V-2 TO MAINTAIN ROOM SETPOINT.

E. THE REVERSE SHALL OCCUR ON THE RISE IN SPACE TEMPERATURE.

F. THE CLG MIN SETPOINT SHALL BE SET TO ZERO DURING THE TIME THE OCCUPANCY SENSOR TURNS OFF THE LIGHTS.

G. PROVIDE SEPARATE HEATING/COOLING SETBACK/SETUP TEMPERATURES FOR PERIODS WHEN OCCUPANCY SENSOR SENSES NO OCCUPANTS DURING NORMAL OCCUPIED HOURS.

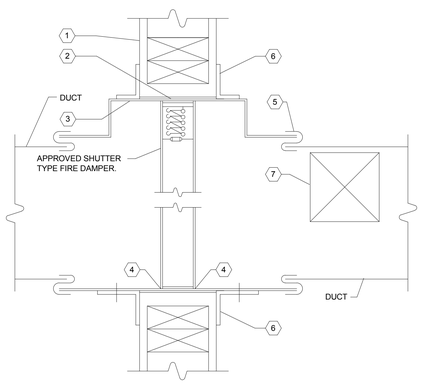
H. DURING WARMUP PROVIDE REVERSE ACTING CONTROL FOR TERMINAL UNITS SERVING ROOMS WITH SUPPLEMENTAL COOLING.



NO BASEBOARD SUPPLEMENTAL HEATING

WITH BASEBOARD OR CUH SUPPLEMENTAL HEATING

1 VARIABLE VOLUME AIR TERMINAL UNIT CONTROL DIAGRAM
NO SCALE



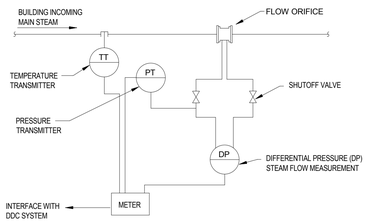
NOTES:

1. FIRE RATED PARTITION. COORDINATE WITH ARCHITECTURAL FOR FRAMING AND FIRE RATED LINING REQUIREMENTS.
2. COORDINATE PARTITION OPENING, 1/8" LARGER THAN FIRE DAMPER SLEEVE PER FOOT OF WIDTH OR HEIGHT.
3. PROVIDE SLEEVE 3" BEYOND EDGE OF PARTITION, EACH SIDE.
4. FIRE DAMPER FRAME ATTACHED TO SLEEVE BY MANUFACTURER.
5. "S" TYPE DUCT CONNECTION. DO NOT SCREW OR BOLT.
6. ANGLE ALL AROUND SLEEVE MINIMUM 1" OVERLAP WITH WALL FRAMING. ONE INCH FILLET WELDS 5" MAX. ON CENTER, OR 1/4" BOLTS 5" MAX. ON CENTER. DO NOT ATTACH ANGLES TO WALL. COORDINATE WITH DAMPER MANUFACTURER FOR APPROVED ANGLE SIZE AND GAUGE.
7. PROVIDE DUCT ACCESS DOOR. COORDINATE LOCATION AND TYPE OF ARCHITECTURAL SERVICE ACCESS WITH ARCHITECTURAL.

GENERAL NOTES:

A. DETAIL INDICATES REQUIREMENTS FOR STANDARD FRAME INSTALLATION. REFERENCE SMACNA FIRE, SMOKE AND RADIATION DAMPER INSTALLATION GUIDE" FOR OTHER CONFIGURATION REQUIREMENTS. COMPLY FULLY WITH ABOVE MENTIONED AND ALSO AHJ REQUIREMENTS IN ALL CASES.
B. PROVIDE POSITION SENSING SWITCHES FOR FIRE SMOKE DAMPERS FOR FULL "OPEN" AND "CLOSED" POSITION.

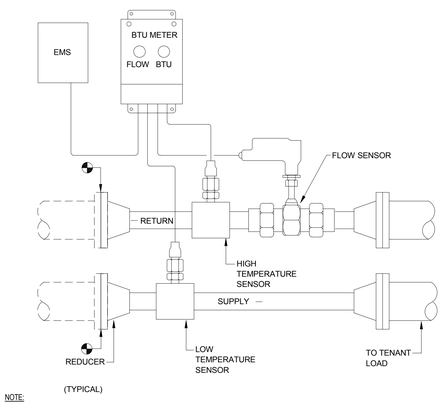
6 FIRE AND SMOKE DAMPER DIAGRAM
NO SCALE



NOTE:

1. MAINTAIN UPSTREAM AND DOWN STREAM DISTANCES RECOMMENDED BY METER MANUFACTURER.

4 STEAM METER DETAIL
NO SCALE

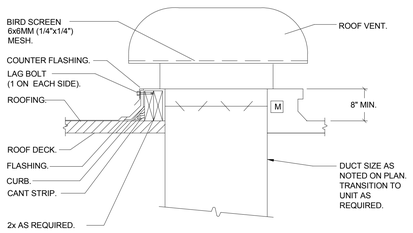


NOTE:

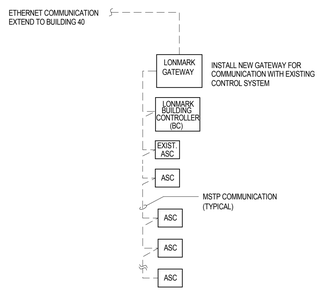
1. MAINTAIN UPSTREAM AND DOWNSTREAM STRAIGHT PIPE DISTANCES RECOMMENDED BY METER MANUFACTURER.

2 FLOW METER DIAGRAM
NO SCALE

NOTE:
FLAT ROOF. COORDINATE SIZE AND LOCATION OF ROOF PENETRATIONS WITH GENERAL CONTRACTOR. ALL ROOFING AND CURB INSTALLATION WITH GENERAL CONTRACTOR.



7 HOISTWAY VENT DAMPER DIAGRAM
NO SCALE



NOTES:

1. INSTALL NEW LON GATEWAY WITH FULL COMMUNICATION TO EXISTING HEAD END.
2. INSTALL MULTIPLE BUILDING CONTROLLERS AS REQUIRED.
3. INSTALL NEW CONTROLLERS (ASC) AS REQUIRED.

5 DDC SYSTEM ARCHITECTURE
NO SCALE

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
		12/30/14
	99% CONSTRUCTION DOCUMENT	12/17/14
	95% CONSTRUCTION DOCUMENT	10/13/14
	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

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EXP. 4/13/16 11/02/15

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Drawing Title
MECHANICAL DIAGRAMS

Approved: Project Director
Approver

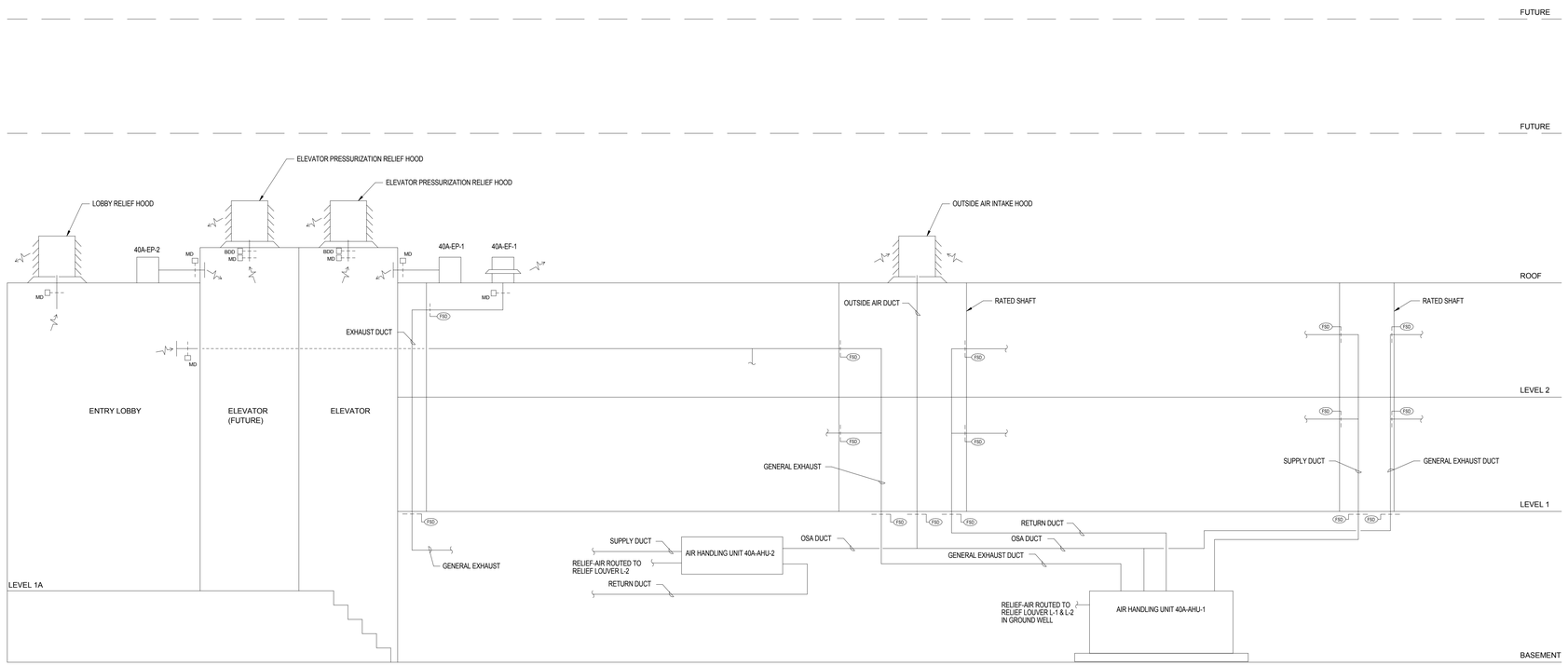
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MH603**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs



1 MECHANICAL AIR FLOW DIAGRAM
NO SCALE

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Project Number 668-313
Building Number 40A
Drawing Number **MH604**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs

AIR HANDLING UNIT SCHEDULE

SYMBOL	DESCRIPTION	ELECTRICAL
40A-AHU-1		

SUPPLY FAN

TOTAL CFM:	21000	# OF FANS:	4
MIN OA CFM:	6360	BHP:	7.0 EA
TSP (IN H20):	5.5	MHP:	7.5 EA
ESP (IN H20):	2.2	FRPM:	2180
FAN TYPE:	FAN ARRAY	VFD (Y/N):	Y (2 EA)

SF CIRCUIT
VOLT: 208 V/3 PHASE
MCA: 120 MCA

RELIEF FAN

TOTAL CFM:	14000	BHP:	2.9 EA
TSP (IN H20):	1.5	MHP:	3 EA
ESP (IN H20):	1.2	FRPM:	1840
FAN TYPE:	FAN ARRAY	VFD (Y/N):	Y
# OF FANS:	2		

RF/EF CIRCUIT
VOLT: 208 V/3 PHASE
MCA: 46 MCA

EXHAUST FAN

TOTAL CFM:	6400	BHP:	3.9
TSP (IN H20):	3.25	MHP:	4
ESP (IN H20):	2.5	FRPM:	1925
FAN TYPE:	PLENUM FAN	VFD (Y/N):	Y
# OF FANS:	1		

CHILLED WATER COOLING COIL

TOTAL CFM:	21000	ENT. WATER TEMP:	45
TOTAL CAP. (MBH):	620	LEAVING WATER TEMP:	60
SENS. CAP. (MBH):	600	ENTERING AIR COND.:	79.5 DB/62.5 WB
# OF ROWS:	4	LEAVING AIR COND.:	52.5 DB/51.5 WB
FPI:	12	MAX FACE VELOCITY:	460 FPM
WATER FLOW (GPM):	95	MAX APD (IN H20):	0.7
		MAX WPD (FT):	10

LIGHTING/OUTLETS:
VOLT: 120 V/1 PHASE

STEAM COIL

TOTAL AIRFLOW:	16100	STM FLOW (LBS/HR):	410
SENS. CAP. (MBH):	390	ENTERING AIR COND.:	63 DB
# OF ROWS:	1	LEAVING AIR COND.:	85 DB
FPI:	6	MAX FACE VELOCITY:	450
STM ENT. PSIG:	12	MAX APD (IN H20):	0.06

HEAT RECOVERY

WINTER OA EAT:	2.0 DB/2.0 WB	SUMMER OA EAT:	90.0 DB/64.0 WB
WINTER OA LAT:	48.5 DB/34.5 WB	SUMMER OA LAT:	82.5 DB/61.5 WB
WINTER EA EAT:	72.0 DB/58.0 WB	SUMMER EA EAT:	78.0 DB/64.0 WB
WINTER EA LAT:	25.5 DB/25.5 WB	SUMMER EA LAT:	87.0 DB/67.0 WB
SUPPLY APD:	0.8		
EXHAUST APD:	0.5		

PRE-FILTER 1 2"

EFFICIENCY (MERV):	7	INITIAL PD:	0.15
FACE VELOCITY:	320	FINAL PD:	0.5

PRE-FILTER 2 12"

EFFICIENCY (MERV):	11	INITIAL PD:	0.15
FACE VELOCITY:	320	FINAL PD:	0.8

HX PRE-FILTER 1 (OSA) 2"

EFFICIENCY (MERV):	7	INITIAL PD:	0.15
FACE VELOCITY:	350	FINAL PD:	0.5

HX PRE-FILTER 2 (RF/EA) 2"

EFFICIENCY (MERV):	7	INITIAL PD:	0.1
FACE VELOCITY:	300	FINAL PD:	0.5

OCTAVE BAND	1	2	3	4	5	6	7	8
FREQUENCY (HZ)	63	125	250	500	1000	2000	4000	8000
EXH AIR OPENING	79	79	89	76	74	73	70	80
OSA OPENING	88	85	83	83	78	79	76	66
RET AIR OPENING	89	85	83	83	80	80	77	68
SUP AIR OPENING	82	79	91	79	75	74	70	63
RET AIR OPENING (HX)	81	77	75	75	68	69	66	57
OSA OPENING (HX)	86	82	80	80	73	74	72	62
CASING RADIATED	84	73	74	66	56	51	45	36

BASIS OF DESIGN:
TEMTROL

40A-AHU-2

SUPPLY FAN

TOTAL CFM:	3030	# OF FANS:	1
MIN OSA CFM:	1150	BHP:	2.6
TSP (IN H20):	3.5	MHP:	3
ESP (IN H20):	1.6	FRPM:	1770
FAN TYPE:	PLENUM FAN	VFD (Y/N):	Y

SINGLE CONNECTION
VOLT: 208 V/3 PHASE
MCA: 15

RELIEF FAN

TOTAL CFM:	1765	BHP:	0.5
TSP (IN H20):	1.0	MHP:	1
ESP (IN H20):	0.6	FRPM:	1450
FAN TYPE:	PLENUM FAN	VFD (Y/N):	Y
# OF FANS:	1		

CHILLED WATER COOLING COIL

TOTAL CFM:	3030	ENT. WATER TEMP:	45
TOTAL CAP. (MBH):	68	LEAVING WATER TEMP:	60
SENS. CAP. (MBH):	68	ENTERING AIR COND.:	80.5 DB/63.0 WB
# OF ROWS:	2	LEAVING AIR COND.:	60.0 DB/58.5 WB
FPI:	11	MAX FACE VELOCITY:	500 FPM
WATER FLOW (GPM):	9	MAX APD (IN H20):	0.3
		MAX WPD (FT):	10

STEAM COIL

TOTAL AIRFLOW:	3030	STM FLOW (LBS/HR):	90
SENS. CAP. (MBH):	85	ENTERING AIR COND.:	45 DB
# OF ROWS:	1	LEAVING AIR COND.:	70
FPI:	10	MAX FACE VELOCITY:	500 FPM
STM ENT. PSIG:	12	MAX APD (IN H20):	0.1

PRE-FILTER 1 2"

EFFICIENCY (MERV):	7	INITIAL PD:	0.25
FACE VELOCITY:	500	FINAL PD:	0.5

PRE-FILTER 2 12"

EFFICIENCY (MERV):	11	INITIAL PD:	0.25
FACE VELOCITY:	500	FINAL PD:	0.75

OCTAVE BAND	1	2	3	4	5	6	7	8
FREQUENCY (HZ)	63	125	250	500	1000	2000	4000	8000
EXH AIR OPENING	73	75	79	84	79	77	74	70
RET AIR OPENING	75	76	74	68	63	62	58	52
SUP AIR OPENING	78	77	79	84	79	77	74	70
RET FAN RAD. - MAX	78	76	79	72	66	62	59	53
SUP FAN RAD. - MAX	92	90	90	89	80	76	73	67
CASING RADIATED	70	61	58	55	50	48	44	42

BASIS OF DESIGN:
BASX SOLUTIONS

AIR SEPARATOR SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE	AIR SEPARATOR SIZE IN (IN)	FLOW (GPM)	WPD (FT)	BUILT-IN STRAINER REQ'D	REMARKS
40A-AS-1	B1140	HEATING WATER	IN-LINE	3	40	2	NO	SIZED FOR FUTURE 80 GPM

FAN SCHEDULE

MARK	LOCATION	AREA SERVED	SYSTEM AND/OR SERVICE	AIR FLOW (CFM)	TSP (IN)	FAN TYPE	FAN ARRANGEMENT, ROTATION, AND DISCHARGE	MIN % EFF	DRIVE	FAN MAX RPM	MOTOR ELECTRICAL NOMINAL POWER BHP	NOMINAL POWER HP	PHASE	VOLT	RPM	SPEED CONTROL	REMARKS
40A-EF-1	ROOF	BASEMENT	GENERAL	880	0.75	CENTRIFUGAL	ROOF EXH.	46%	DIRECT	1725	0.23	1/3	3	208	1725	NO	1
40A-EP-1	ROOF	ELEVATOR SHAFT	ELEVATOR PRESSURIZATION	7000	1	VANE AXIAL	HORIZONTAL, ARRANGEMENT 4		DIRECT	1770	1.98	3	3	208	1770	VFD	1
40A-EP-2	ROOF	ELEVATOR SHAFT	ELEVATOR PRESSURIZATION	7000	1	VANE AXIAL	HORIZONTAL, ARRANGEMENT 4		DIRECT	1770	1.98	3	3	208	1770	VFD	1

NOTE

1. SELECT FANS FOR OPERATION AT 2365 FT. ABOVE SEA LEVEL

SPLIT SYSTEM FAN-COIL UNIT SCHEDULE

MARK	LOCATION	AREA SERVED	TYPE	TOTAL SUPPLY AIR FLOW (CFM)	MIN. OUTSIDE AIR FLOW (CFM)	EXT STATIC PRESSURE (IN)	COOLING CAPACITY MIN TOTAL CAPACITY (MBH)	MIN SENS CAPACITY (MBH)	MIN SEER	EAT Db (°F)	EAT Wb (°F)	OSA DESIGN TEMP (°F)	AIR FILTER	ELECTRICAL DATA INDOOR FAN HP (W)	INDOOR FAN CONTROL	OUTDOOR UNIT FAN MCA	OUTDOOR UNIT FAN CONTROL	REMARKS
40A-FCU-1	STORAGE ROOM	SIM LAB EQUIP RM	DUCTED	800	0	0.3	22	19	14.5	78	64	95	1" MERV-8	1/3	2/MH602	17.6	2/MH602	1

NOTES:

1. DEDUCTIVE ALTERNATE #2: FIRST FLOOR SPACE SHELLED. FAN COIL UNIT NOT REQUIRED.

AIR COOLED CONDENSING UNIT SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	TYPE	CAPACITY (MBH)	REFRIGERANT	MAX SUCTION TEMP @ COMP (°F)	OA TEMP (°F)	MIN EER	SEER	COMPRESSOR MOTOR # COMP	NOMINAL POWER HP	PHASE	VOLT	CONDENSER FAN MOTOR # FANS	NOMINAL POWER HP	PHASE	VOLT	REMARKS
40A-ACCU-1	ROOF	L1110	40A-FCU-1	SPLIT-SYSTEM		410a	-	95	12.0	14.5	1	2	1	208	1	1/3	1	208	1

NOTES:

1. PROVIDE LOW AMBIENT CONTROL TO 0-DEG F.

PUMP SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	TYPE	CIRCULATING FLUID FLUID	FLOW (GPM)	HEAD (FT)	NPSH AVAILABLE (FT)	TEMPERATURE (°F)	SP GR	MIN % EFF	ELECTRICAL MOTOR NOMINAL POWER (HP)	PHASE	VOLT	MAX RPM	SPEED CONTROL	REMARKS
40A-HWP-1 & 2	B1140	BLDG 40A	HEATING WATER	BASE MOUNTED	WATER	40	60	30	180	1	49	2	3	208	1750	VFD	

NOTE

EXPANSION TANK SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE	APPROX SYSTEM VOLUME (GAL)	SYSTEM TEMPERATURE RANGE MIN (°F)	MAX (°F)	INITIAL PRESSURE IN TANK (PSIG)	MAX OPERATING PRESSURE (PSIG)	FILL PRESSURE AT TANK RELIEF VALVE (PSIG)	AT TANK (PSIG)	MIN VOLUME TANK (GAL)	MIN BLADDER VOLUME (GAL)	PIPE SIZE TO TANK (IN)	COLD WATER FILL SIZE (IN)	REMARKS
40A-ET-1	HEATING WATER LOOP	B1140	VERTICAL	200	50	180	21	65	50	21	16	7	3/4	3/4	

STEAM CONDENSATE PUMP SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE UNIT	FLOW EACH PUMP (GPM)	DISCHARGE PRESSURE (PSIG)	MIN RECEIVER SIZE (GAL)	MOTOR NOMINAL POWER EACH (HP)	PHASE	VOLT	REMARKS
40A-CP-1	B1140	BLDG STEAM CONDENSATE RETURN	DUPLEX	10	50	36	3	3	208	

NOTE

STEAM TO WATER HEAT EXCHANGER SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	TYPE	WATER CONDITIONS FLOW (GPM)	EWT (°F)	LWT (°F)	WPD (FT)	STEAM PRESSURE ENT CONTROL VALVE (PSIG)	ENT HEAT EXCHANGER (PSIG)	CONTROL VALVE (LBS/HR)	TRAP TRAP #	CAPACITY (LBS/HR)	REMARKS
40A-SWHX-1	B1140	BLDG 40A	HEATING WATER	SHELL & TUBE	40	120	150	2	15	12	637	40A-ST-4	1750	
40A-SWHX-2	B1140	BLDG 40A	HEATING WATER	SHELL & TUBE	40	120	150	2	15	12	637	40A-ST-5	1750	

NOTE

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Issue Date **11/02/2015** | Checked **Checker** | Drawn **Author**

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Department of Veterans Affairs

SINGLE DUCT AIR TERMINAL UNIT SCHEDULE

MARK	AREA AND/OR ROOM SERVED	SYSTEM AIR HANDLING	SIZE	AIR FLOW MAX CFM	AIR FLOW MIN CFM	HTG CFM	REHEAT HW	REHEAT MBH	REHEAT SAT	REHEAT GPM	REHEAT RUNOUT (IN)	PERIMETER SUPPLEMENTAL HEAT LINK	REMARKS
40A-TU-1-1	B1140, B1130, B1131, B1150	40A-AHU-1	J	2,310	2,310	2,310	N	-	-	-	-	NO	2
40A-TU-1-2	L1140	40A-AHU-1	E	570	0	230	Y	3.7	70	0.5	.75	NO	1, 2, 3
40A-TU-1-3	L1135	40A-AHU-1	D	460	0	185	Y	3.0	70	0.5	.75	NO	1, 2, 3
40A-TU-1-4	L1123	40A-AHU-1	A	160	155	155	Y	2.5	70	0.5	.75	NO	1, 2
40A-TU-1-5	L1122	40A-AHU-1	A	100	55	55	Y	0.9	70	0.5	.75	NO	1, 2
40A-TU-1-6	L1119, L1121, L1116, L1117	40A-AHU-1	E	510	510	510	Y	11.3	75	0.8	.75	NO	1, 2
40A-TU-1-7	L1109	40A-AHU-1	H	1,230	0	695	Y	22.0	84	1.5	.75	NO	1, 2, 3
40A-TU-1-8	L1106, L1112, L1115, L1121, L1130, L1150, L1151, L1107, L1125	40A-AHU-1	G	1,030	1,030	1,030	Y	20.4	73	1.4	.75	YES	1, 2
40A-TU-1-9	L1127, L1126, L1114	40A-AHU-1	F	760	760	760	Y	21.0	81	1.4	.75	NO	1, 2
40A-TU-1-10A	L1105	40A-AHU-1	C	280	280	280	Y	8.5	83	0.6	.75	NO	1, 2
40A-TU-1-10B	L1110	40A-AHU-1	B	240	55	95	Y	3.4	88	0.5	.75	NO	1, 2
40A-TU-1-11	L1111	40A-AHU-1	A	150	95	145	Y	6.4	95	0.5	.75	NO	1, 2
40A-TU-1-12	L1118	40A-AHU-1	C	280	90	155	Y	5.0	85	0.5	.75	NO	1, 2
40A-TU-1-13	L1120	40A-AHU-1	C	260	55	105	Y	4.0	90	0.5	.75	NO	1, 2
40A-TU-1-14	L1136	40A-AHU-1	F	760	0	310	Y	10.7	87	0.7	.75	NO	1, 2, 3
40A-TU-1-15	L1137	40A-AHU-1	D	460	460	460	Y	7.5	70	0.5	.75	YES	1, 2
40A-TU-1-16	L1139	40A-AHU-1	C	300	300	300	Y	4.9	70	0.5	.75	YES	1, 2
40A-TU-1-17	L1141	40A-AHU-1	B	250	250	410	Y	13.3	85	0.9	.75	NO	1, 2
40A-TU-1-18	L1142	40A-AHU-1	A	120	120	160	Y	5.2	85	0.5	.75	NO	1, 2
40A-TU-1-19	L1A101	40A-AHU-1	I	1,590	1,590	1,590	Y	42.9	80	2.9	.75	NO	1, 2
40A-TU-1-20	L2129, L2146	40A-AHU-1	D	600	0	305	Y	8.3	80	0.6	.75	NO	1, 2, 3
40A-TU-1-21	L2128	40A-AHU-1	D	420	0	170	Y	3.3	73	0.5	.75	NO	1, 2, 3
40A-TU-1-22	L2127	40A-AHU-1	D	420	0	170	Y	3.3	73	0.5	.75	NO	1, 2, 3
40A-TU-1-23	L2148, L2149	40A-AHU-1	B	200	200	200	Y	3.6	72	0.5	.75	NO	1, 2
40A-TU-1-24	L2106, L2116, L2117, L2107, L2124, L2125, L2120A, L2140	40A-AHU-1	F	730	730	730	Y	15.2	74	1.0	.75	YES	1, 2
40A-TU-1-25	L2151	40A-AHU-1	C	200	200	200	Y	3.8	73	0.5	.75	NO	1, 2
40A-TU-1-26	L2120B, L2150	40A-AHU-1	C	350	350	350	Y	5.9	71	0.5	.75	YES	1, 2
40A-TU-1-27	L2123	40A-AHU-1	B	190	105	105	Y	4.5	94	0.5	.75	NO	1, 2
40A-TU-1-28	L2122	40A-AHU-1	B	190	105	105	Y	4.5	94	0.5	.75	NO	1, 2
40A-TU-1-29	L2121	40A-AHU-1	B	190	105	170	Y	5.5	85	0.5	.75	NO	1, 2
40A-TU-1-30	L2101, L2172	40A-AHU-1	F	750	750	750	Y	17.2	76	1.1	.75	YES	1, 2
40A-TU-1-31	L2105, L2111	40A-AHU-1	D	400	400	400	Y	10.6	80	0.7	.75	NO	1, 2
40A-TU-1-32	L2112	40A-AHU-1	B	210	120	120	Y	5.3	95	0.5	.75	NO	1, 2
40A-TU-1-33	L2114	40A-AHU-1	B	200	90	185	Y	8.0	95	0.5	.75	NO	1, 2
40A-TU-1-34	L2115	40A-AHU-1	A	130	65	95	Y	4.1	95	0.5	.75	NO	1, 2
40A-TU-1-35	L2134	40A-AHU-1	B	190	105	105	Y	4.5	94	0.5	.75	NO	1, 2
40A-TU-1-36	L2135	40A-AHU-1	B	190	105	105	Y	4.5	94	0.5	.75	NO	1, 2
40A-TU-1-37	L2136	40A-AHU-1	B	190	105	105	Y	4.5	94	0.5	.75	NO	1, 2
40A-TU-1-38	L2137	40A-AHU-1	B	190	105	105	Y	4.5	94	0.5	.75	NO	1, 2
40A-TU-1-39	L2138	40A-AHU-1	B	200	105	125	Y	5.3	95	0.5	.75	NO	1, 2
40A-TU-1-40	L2141	40A-AHU-1	B	200	110	130	Y	5.6	95	0.5	.75	NO	1, 2
40A-TU-1-41	L2142	40A-AHU-1	B	200	110	130	Y	5.6	95	0.5	.75	NO	1, 2
40A-TU-1-42	L2144, I2146	40A-AHU-1	C	300	300	300	Y	9.9	86	0.7	.75	NO	1, 2
40A-TU-2-1	B1120A	40A-AHU-2	G	800	0	320	Y	5.2	70	0.5	.75	NO	1, 2, 3
40A-TU-2-2	B1120B	40A-AHU-2	G	800	0	320	Y	9.7	83	0.6	.75	NO	1, 2, 3
40A-TU-2-3	B1105, B1109, B1110, B1111, B1113, B1114, B1115, B1117, B1106, B1107, B1108	40A-AHU-2	H	1,150	1,150	1,150	Y	28.7	78	1.9	.75	NO	1, 2

NOTES:

2. MAX. UNIT APD = 0.4-INCH, MAX COIL WPD = 5FT

AIR FLOW MEASURING DEVICE SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	AIR FLOW MIN CFM	AIR FLOW MAX CFM	DUCT SIZE WIDTH IN	DUCT SIZE HEIGHT IN	APD IN	REMARKS
1-AFMD-1	B1140	40A-AHU-1	15510	20500				SUPPLY AIR
1-AFMD-2	B1140	40A-AHU-1	6460	20500				OUTSIDE AIR
1-AFMD-3	B1140	40A-AHU-2	2270	3030				SUPPLY AIR
1-AFMD-4	B1140	40A-AHU-2	1270	3030				OUTSIDE AIR

LOUVER SCHEDULE

SYMBOL	AREA SERVED	TYPE	AIR FLOW (CFM)	MAX APD (IN H20)	MIN FREE AREA (SQ FT)	FRAME SIZE WIDTH (IN)	FRAME SIZE HEIGHT (IN)	NOTES
L-1	AHU-1	RELIEF	10000	0.18	10	40	72	
L-2	AHU-1	RELIEF	10000	0.18	10	40	72	
L-3	AHU-2	RELIEF	3000	0.18	3	36	24	

NOTES:

HOT WATER UNIT HEATER SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	TYPE UNIT	AIR FLOW CFM	MIN CAPACITY BTUH	TEMPERATURES EAT °F	TEMPERATURES EWT °F	FLOW GPM	WPD FT	CONTROL SEQUENCE	MOTOR POWER HP	MOTOR PHASE	MOTOR VOLT	MOTOR RPM	REMARKS
40A-HWUH-1	L1A101	LOBBY	VERTICAL CABINET	544	31.5	65	150	2.49	7.6	DETAIL 1/MH603	0.07	1	115	1030	
40A-HWUH-2	L1A110	VESTIBULE	VERTICAL CABINET	349	18.7	65	150	1.58	2.8	DETAIL 1/MH603	0.05	1	115	1050	

NOTES:

1. VERTICAL, FRONT TOE SPACE INLET, TOP QUAD GRILLE OUTLET, 2-ROW COILS.

2. PROVIDE ECM MOTOR.

3. PROVIDE 1" THROWAWAY FILTER.

HOT WATER FINNED TUBE RADIATION SCHEDULE

MARK	LOCATION	AREA SERVED	TYPE	MOUNTING	ENCLOSURE LENGTH FT	CAPACITY BTUH	TEMPERATURES EWT °F	TEMPERATURES LWT °F	FLOW GPM	MAX WPD FT	REMARKS
40A-RP-101	L1112	CORRIDOR	PANEL	FLOOR	5	2025	150	130	0.5	5	
40A-RP-102	L1137	SIM LAB	PANEL	FLOOR	7	3345	150	130	0.5	5	
40A-RP-103	L1139	SIM LAB MONITOR	PANEL	FLOOR	7	2925	150	130	0.5	5	
40A-RP-104	L1119	RECEPTION	PANEL	FLOOR	6	2730	150	130	0.5	5	
40A-RP-105	L1102	STAIR	PANEL	FLOOR	5	2029	150	130	0.5	5	
40A-RP-201	L2140	CORRIDOR	PANEL	FLOOR	3	1360	150	130	0.5	5	
40A-RP-202	L2146	CORRIDOR	PANEL	FLOOR	3	1410	150	130	0.5	5	
40A-RP-203	L2120B	CORRIDOR	PANEL	FLOOR	7	3030	150	130	0.5	5	
40A-RP-204	L2101	WAITING	PANEL	FLOOR	10	4305	150	130	0.5	5	

NOTES

DIFFUSER, REGISTER AND GRILLE SCHEDULE

SYMBOL	TYPE	FACE	FRAME	DAMPER	FINISH	BASIS OF DESIGN	NOTES
CD-1	CEILING DIFFUSER	PERFORATED	LAY-IN	NONE	WHITE	TITUS PCS	1
CD-2	CEILING DIFFUSER	LOUVERED	SURFACE	NONE	WHITE	TITUS MCD	1
DD-1	DISPLACEMENT DIFFUSER	PERFORATED	SURFACE	NONE	WHITE	TITUS DVIR	ONE-WAY, FLUSH MOUNT
SD-1	ADJUSTABLE LINEAR SLOT DIFFUSER	2-SLOT, 1 INCH	T-BAR	NONE	WHITE	TITUS ML-39	INSULATED FACTORY PLENUM.
SG-1	SUPPLY GRILLE	DOUBLE DEFL.	1/4" BORDER	NONE	WHITE	TITUS 300R	
CEG-1	CEILING EXHAUST GRILLE	PERFORATED	LAY-IN	NONE	WHITE	TITUS PAR	1
CEG-2	CEILING EXHAUST GRILLE	EGGCRATE	SURFACE	NONE	WHITE	TITUS 50F	1
EG-1	EXHAUST GRILLE	FIXED BAR	1/4" BORDER	NONE	WHITE	TITUS 350R	
CRG-1	CEILING RETURN GRILLE	PERFORATED	LAY-IN	NONE	WHITE	TITUS PAR	1
CRG-2	CEILING RETURN GRILLE	EGGCRATE	SURFACE	NONE	WHITE	TITUS 50F	1
RG-1	RETURN GRILLE	FIXED BAR 35 DEG. DEFL.	1/4" BORDER	NONE	WHITE	TITUS 350R	

NOTES:

1 COORDINATE DIFFUSER OR GRILLE TYPE WITH ARCHITECTURAL REFLECTED CEILING PLAN. NECK SIZE TO BE SELECTED BASED ON AIRFLOW PER SCHEDULES ON MECHANICAL FLOOR PLANS.

SOUND ATTENUATING DEVICE SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE	AIRFLOW CFM	APD IN WG	INLET SIZE IN	LENGTH IN	DYNAMIC INSERTION LOSS DB OCTAVE BAND AND MID-FREQUENCY [CPS] 63 / 1	125 / 2	250 / 3	500 / 4	1000 / 5	2000 / 6	4000 / 7	8000 / 8	REMARKS
40A-SAD-1	ATTIC	86-AHU-1 SA	RECTANGULAR	6700	0.12	26x26	36	4	7	12	19	23	23	18	11	

NOTE

IN THE INLET SIZE COLUMN, WHEN ONE VALUE IS INDICATED, THE DUCT IS A ROUND DUCT. IF SIZE IS INDICATED AS ##" x ##," THE DUCT IS A RECTANGULAR DUCT WITH SPECIFICATIONS OF "DUCT WIDTH" BY "DUCT DEPTH."

BID DOCUMENT
NOVEMBER/02/2015

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	100% CONSTRUCTION DOCUMENT	1/26/2015
		12/30/14
	99% CONSTRUCTION DOCUMENT	12/17/14
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	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

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Drawing Title
MECHANICAL SCHEDULES

Approved: Project Director
Approver

Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
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Department of Veterans Affairs

Direct Digital Control System Points List

System	Point Name	HARDWARE POINT: Analog In (AI)	HARDWARE POINT: Analog Out (AO)	HARDWARE POINT: Binary In (BI)	HARDWARE POINT: Binary Out (BO)	SOFTWARE POINT: Analog Value	SOFTWARE POINT: Binary Value	SOFTWARE POINT: Point Schedule	Trending (Note 1)	Graphic	Alarm
Air Handling Unit AHU-1	Outside air damper		x			% Open			I	x	
	Outside air flow	x				CFM			I	x	
	Exhaust air damper		x			% Open			I	x	
	Return air damper		x			% Open			I	x	
	Prefilter #1 differential pressure			x			high		CV	x	high
	Prefilter #2 differential pressure			x			high		CV	x	high
	After filter differential pressure			x			high		CV	x	high
	Mixed air temperature	x				F			I	x	
	HX outside air damper		x			% Open			I	x	
	HX OSA Prefilter differential pressure			x			high		CV	x	high
	HX OSA leaving temperature	x				F			I	x	low
	Preheat coil leaving temperature	x				F			I	x	
	Preheat coil freeze thermostat			x			low		CV	x	low
	Preheat coil valve position		x			% Open			I	x	
	Preheat coil bypass damper		x			% Open			I	x	
	Cooling coil leaving temperature	x				F			I	x	
	Cooling coil valve position		x			% Open			I	x	
	Cooling coil bypass damper		x			% Open			I	x	
	Supply fan status			x			on/off		CV	x	fail
	Supply fan start/stop				x		start/stop		CV	x	
	Supply fan speed		x			Hz			I	x	
	Supply fan power	x				Kw			I	x	
	Supply fan VSD alarm			x					CV	x	fail
	Air handler discharge air temperature	x				F			I	x	
	Supply air high static safety			x			high		CV	x	high
	Supply air flow	x				CFM			I	x	
	Supply air static pressure	x				In. W.G.			I	x	high
	Return air temperature	x				F			I	x	
	Relief fan start/stop				x		on/off		CV	x	
	Relief fan status			x			on/off		CV	x	fail
	Relief fan power	x				Kw			I	x	
	Relief fan VSD alarm			x					CV	x	fail
	Return air smoke detector			x			smoke		CV	x	smoke detected
	Return air low static safety			x			low		CV	x	low
	Exhaust fan start/stop				x		on/off		CV	x	
	Exhaust fan status			x			on/off		CV	x	fail
	Exhaust fan power	x				Kw			I	x	
	Exhaust fan VSD alarm			x					CV	x	fail
	Exhaust air low static safety			x			low		CV	x	low
	Exhaust air temperature leaving HX	x				F			I	x	
	Exhaust air Prefilter differential pressure			x			high		CV	x	high
	Exhaust air static pressure	x				In. W.G.			I	x	high
	Minimum Relief-air damper		x			% Open			I	x	
Air Handling Unit AHU-2	Outside air damper		x			% Open			I	x	
	Exhaust air damper		x			% Open			I	x	
	Prefilter #1 differential pressure			x			high		CV	x	high
	Prefilter #1 differential pressure			x			high		CV	x	high
	After filter differential pressure (VERIFY NOT USED)										
	Outside air temperature	x				F			I	x	
	Preheat coil leaving temperature	x				F			I	x	
	Preheat coil freeze thermostat			x			low		CV	x	low
	Preheat coil valve position		x			% Open			I	x	
	Cooling coil leaving temperature	x				F			I	x	
	Cooling coil valve position		x			% Open			I	x	
	Supply fan status			x			on/off		CV	x	fail
	Supply fan start/stop				x		start/stop		CV	x	
	Supply fan speed		x			Hz			I	x	
	Supply fan power	x				Kw			I	x	
	Supply fan VSD alarm			x					CV	x	fail
	Discharge air temperature	x				F			I	x	
	Supply air high static safety			x			high		CV	x	high
	Supply air flow	x				CFM			I	x	
	Supply air static pressure	x				In. W.G.			I	x	high
	Relief fan start/stop				x		start/stop		CV	x	
	Relief fan status			x			on/off		CV	x	fail
	Relief fan speed		x			Hz			I	x	
	Relief fan power	x				Kw			I	x	
	Relief fan VSD alarm			x					CV	x	fail
	Relief fan low static safety			x			low		CV	x	low
	Fire smoke damper status			x						x	

Notes: 1. Trending shall be Interval (I), Differential Value (DV), or Change of Value (CV)

Direct Digital Control System Points List

System	Point Name	HARDWARE POINT: Analog In (AI)	HARDWARE POINT: Analog Out (AO)	HARDWARE POINT: Binary In (BI)	HARDWARE POINT: Binary Out (BO)	SOFTWARE POINT: Analog Value	SOFTWARE POINT: Binaray Value	SOFTWARE POINT: Point Schedule	Trending (Note 1)	Graphic	Alarm
Exhaust Fan EF-1	Exhaust fan start/stop				x		start/stop		CV	x	
	Exhaust fan status			x			on/off		CV	x	fail
Split System Air Conditioner FCU-1	Space temperature	x				F			I	x	high
	Enable/Disable				x		enable/disable		CV	x	
	Fan status			x			on/off		CV	x	
	Compressor status			x			on/off		CV	x	
Hot Water Cabinet Unit Heater	Space temperature	x				F			I	x	low
	Enable/Disable				x		enable/disable		CV	x	
	Fan status			x			on/off		CV	x	fail
	Heating water valve position		x			% Open			I	x	
Single Duct Air Terminal Unit	Space temperature	x				F			I	x	
	Discharge air temperature	x				F			I	x	
	air flow	x				CFM			I	x	
	damper postion		x			% Open			I	x	
	Heating water valve position (where scheduled)		x			% Open			I	x	
	Finned tube heating water valve (where shown)		x			% Open			I	x	
Chilled Water System	Chilled water system differential pressure	x				PSI			I	x	
	Chilled water Total BTU's	x							I	x	
Heating Water Pump System HWP-1,2	Heating water system differential pressure	x				PSI			I	x	
	BTU	x							I		
	Pump enable/disable				x		enable/disable		CV	x	
	Pump status			x			on/off		CV	x	fail
	Pump speed		x			Hz			I	x	
	Heating water flow	x				GPM			I	x	low
	Heating water minimum flow bypass		x			GPM			I	x	
Steam System	Steam flow	x				LB/HR			I	x	
	Steam total	x				LB			I	x	
	Condensate Transfer Unit - high level alarm			x			on/off		CV	x	high
Steam to Water Heat Exchanger SWHX-1,2	Heating water supply temperature	x				F			I	x	low
	Heating water return temperature	x				F			I	x	
	SWHX-1 low flow steam valve		x			% Open			I	x	
	SWHX-1 high flow steam valve		x			% Open			I	x	
	SWHX-2 low flow steam valve		x			% Open			I	x	
	SWHX-2 high flow steam valve		x			% Open			I	x	
Domestic Cold Water	Flow	x				GPM			I	x	
Domestic Hot Water Circulation Pump	Pump start/stop				x		start/stop		CV	x	
	Pump Status			x			on/off		CV	x	fail
Domestic Hot Water System	Domestic Hot Water Return Temperature	x				F			I	x	
	Leaving water Temperature	x				F			I	x	
Lighting Control	On/Off				x						
Conference Room Motorized Dampers	Damper Postion				x					x	

Notes: 1. Trending shall be Interval (I), Differential Value (DV), or Change of Value (CV)
2. Verify quantity of points on electrical drawings. Provide schedule for each zone.

VIBRATION ISOLATION SCHEDULE

MARK	LOCATION	EQUIPMENT AND/OR SERVICE	TYPE BASE	TYPE ISOLATOR	MIN STATIC DEFLECT. IN	REMARKS
40A-VI-1	MECH. RM	40A-SF-2		SPRING	1	
40A-VI-2	MECH. RM	40A-RF-2		SPRING	1	
40A-VI-3	MECH. RM	40A-HWP-1	INERTIA BASE		1	
40A-VI-4	MECH. RM	40A-HWP-2	INERTIA BASE		1	
40A-VI-6	MECH. RM	40A-EF-1		NEOPRENE		
40-VI-7	MECH. RM	40A-SF-1		SPRING	1.5	
40-VI-8	MECH. RM	40A-SF-1		SPRING	1.5	
NOTE						

STEAM TRAP SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	CAPACITY AT MIN DIFF PRESS LBS/HR	MIN DIFF PRESS PSI	MIN INLET PRESS PSI	TRAP TYPE	TRAP SIZE IN	REMARKS
40A-ST-1	B1140	AHU-1 COIL LP DRIP	1650	6	12	INVERTED BUCKET	1	MATERIAL: STEEL
40A-ST-2	B1140	AHU-2 COIL LP DRIP	350	6	12	INVERTED BUCKET	3/4	MATERIAL: STEEL
40A-ST-3	B1140	SWHX 1 AND 2	1200	6	12	INVERTED BUCKET	1	MATERIAL: STEEL
40A-ST-4	B1140	SWHX-3	2400					FUTURE
40A-ST-5	B1140	END OF BRANCH TO SWHX	50	6	12	F&T	1/2	MATERIAL: STEEL
40A-ST-6	B1140	40 PSI TO 15 PSI PRV STATION	50	6	12	INVERTED BUCKET	1/2	MATERIAL: STEEL
40A-ST-7	B1140	125 PSI TO 40 PSI PRV STATION	50	6	12	INVERTED BUCKET	1/2	MATERIAL: STEEL
40A-ST-8	B1140	FLASH TANK	100	10	15	INVERTED BUCKET	1/2	MATERIAL: STEEL
40A-ST-9	B1140	LP LINE TRAP	50	10	15	F&T	1/2	MATERIAL: STEEL
40A-ST-10	B1140	HP LINE TRAP	50	115	125	F&T	1/2	MATERIAL: STEEL
40A-ST-11	B40A EAST VAULT	HP LINE TRAP	50	85	100	INVERTED BUCKET	3/4	MATERIAL: STEEL
26A-ST-1A	B26/27 CRAWLSPACE	HP LINE TRAP	50	85	100	INVERTED BUCKET	3/4	MATERIAL: STEEL
26A-ST-1B	B26/27 CRAWLSPACE	HP LINE TRAP	50	85	100	INVERTED BUCKET	3/4	MATERIAL: STEEL

INTAKE/EXHAUST HOOD SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE	APPLICATION	THROAT SIZE IN	AIR FLOW CFM	APD IN	DAMPER TYPE	REMARKS
40A-GV-1	ROOF	40A-AHU-1	LOUVERED PENTHOUSE	OSA INTAKE	52x40	24000	0.5	MOTORIZED	
40A-GV-2	ROOF	40A-AHU-1	LOUVERED PENTHOUSE	ATRIUM RELIEF	22x22	1500	0.05	MOTORIZED	
40A-GV-3	ROOF	40A-EP-1	LOUVERED PENTHOUSE	HOISTWAY VENTING	24x24	-	-	MOTORIZED AND GRAVITY	
40A-GV-4	ROOF	40A-EP-2	LOUVERED PENTHOUSE	HOISTWAY VENTING	22x22	-	-	MOTORIZED AND GRAVITY	
NOTE									

AIR TERMINAL UNIT SIZING SCHEDULE

SIZE	MIN ALLOWABLE AIR FLOW	MAX ALLOWABLE AIR FLOW	DUCT INLET SIZE	MAX APD	MAXIMUM SOUND POWER LEVEL (Re: 10 -12 WATTS) FOR BOX DISCHARGE AT MAXIMUM INLET DUCT STATIC: OCTAVE BANDS 2	3	4	5	6	7	REMARKS
	CFM	CFM	IN	IN WG							
A	60	170	4	0.4	69	65	58	52	51	47	----
B	90	260	5	0.4	69	63	59	52	51	47	----
C	130	380	6	0.4	69	67	61	55	52	49	----
D	160	490	7	0.4	70	68	63	57	53	49	----
E	230	680	8	0.4	71	68	59	53	51	47	----
F	270	790	9	0.4	71	69	60	54	51	47	----
G	350	1050	10	0.4	74	68	61	57	54	52	----
H	500	1500	12	0.4	73	69	64	59	57	53	----
I	750	2250	14	0.4	73	68	65	61	61	59	----
J	1000	3000	16	0.4	73	68	66	60	58	55	----

NOTES

1. INLET STATIC BASED ON ARI 885-98.
2. THIS SCHEDULE IS USED WITH THE TERMINAL UNIT SCHEDULE.
3. CONTROL SEQUENCE SHALL BE AS INDICATED ON THE AIR TERMINAL UNIT SCHEDULE.
4. PROVIDE SOUND ATTENUATION AFTER-SECTION AS REQUIRED TO MEET ROOM NC LEVEL.

STEAM PRESSURE REDUCING VALVE SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	QUANTITY	REQUIRED CAPACITY LBS/HR	MAX FLOW WIDE OPEN VALVE LBS/HR	PRESSURE IN PSIG	PRESSURE OUT PSIG	REMARKS
40A-SPRV-1A	B1140	40 PSI PRV STATION	1	1335	1500	60	40	1/3 CAPACITY VALVE
40A-SPRV-1B	B1140	40 PSI PRV STATION	1	2670	3000	60	40	2/3 CAPACITY VALVE
40A-SPRV-2A	B1140	15 PSI PRV STATION	1	1335	1500	40	15	1/3 CAPACITY VALVE
40A-SPRV-2B	B1140	15 PSI PRV STATION	1	2670	3000	40	15	2/3 CAPACITY VALVE

STEAM PRESSURE RELIEF VALVE SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	TEMPERATURE °F	MINIMUM CAPACITY LBS/HR	SET PRESSURE PSIG	REMARKS
40A-SV-1	B1140	40 PSI STEAM PRV STATION	300	3200	50	
40A-SV-2	B1140	15 PSI STEAM PRV STATION	260	3200	20	
40A-SV-3	B1140	FLASH TANK	300	150	20	

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
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Drawing Title
MECHANICAL SCHEDULES

Approved: Project Director
Approver

Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **Checker** | Drawn **Author**

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AIR HANDLING UNIT SYSTEM - ROOM DATA SHEET - AHU-1

ROOM NO	ROOM NAME	AREA (SF)	CEILING HEIGHT (FT)	AIR HANDLING UNIT NO	TERMINAL UNIT	SUPPLY ROOM AIR FLOW		RETURN OR EXHAUST ROOM AIR FLOW				AIR CHANGE PER HOUR (ACH) ACTUAL ACH		VA REQ'D ACH			ROOM AIR FLOW		ROOM AIR BALANCE	NET INFILTRATION		NET EXFILTRATION		REMARKS
						CFM	L/S	RETURN OR EXHAUST (R/E)	CFM	EA (G)	EA (S)	SA/EA (ACH)	OA (ACH)	SA/EA (ACH)	OA (ACH)	RETURN OR EXHAUST	CV	VAV		CFM	L/S	CFM	L/S	
B1140	MECHANICAL	1560	13.5	40A-AHU-1	40A-TU-1-1	2110	995	R	2110			6.0	2.1	6.0	2.0	R	X		o					
B1130	CORRIDOR	60	13.5	40A-AHU-1	40A-TU-1-1	100	47	R	0			7.4	2.6	4.0	2.0	R	X		+			100	47	
B1131	CORRIDOR	60	13.5	40A-AHU-1	40A-TU-1-1	100	47	R	0			7.4	2.6	4.0	2.0	R	X		+			100	47	
B1150	ELECT	54.2	13.5	40A-AHU-1	40A-TU-1-1	0	0	E		100		0.0	0.0	0.0	0.0	E	X		-	100	47			
L1140	TRAINING BAY	435	9	40A-AHU-1	40A-TU-1-2	570	269	R	545			0.0	0.0	6.0	2.0	R		X	-	545	257			CO2 SENS. CTRL MIN
L1135	TRAINING, CONFERENCE, DEBRIEF	345	10	40A-AHU-1	40A-TU-1-3	460	217	R	460			0.0	0.0	4.0	2.0	R		X	o					CO2 SENS. CTRL MIN
L1123	WORKSTATION 3	180	9	40A-AHU-1	40A-TU-1-4	160	75	R	160			5.7	2.0	4.0	2.0	R		X	o					
L1122	EDUCATION OFFICE	60	9	40A-AHU-1	40A-TU-1-5	100	47	R	100			6.1	2.1	4.0	2.0	R		X	o					
L1119	STORAGE	75	9	40A-AHU-1	40A-TU-1-6	250	118	R	150			22.2	7.8	4.0	0.0	R	X		+			100	47	
L1121	CORRIDOR E	110	9	40A-AHU-1	40A-TU-1-6	100	47	R	0			6.1	2.1	4.0	2.0	R	X		+			100	47	
L1116	RECEPTION	60	9	40A-AHU-1	40A-TU-1-6	60	28	R	60			6.7	2.3	6.0	2.0	R	X		o					
L1117	SUPPLY	140	9	40A-AHU-1	40A-TU-1-6	100	47	R	0			4.8	1.7	4.0	0.0	R	X		+			100	47	
L1109	LIBRARY	925	9	40A-AHU-1	40A-TU-1-7	1230	580	R	1230			0.0	0.0	4.0	2.0	R		X	o					CO2 SENS. CTRL MIN
L1106	CORRIDOR B	105	9	40A-AHU-1	40A-TU-1-8	90	42	R	0			5.7	2.0	4.0	2.0	R	X		+			90	42	
L1112	CORRIDOR C	690	9	40A-AHU-1	40A-TU-1-8	600	283	R	510			5.8	2.0	4.0	2.0	R	X		+			90	42	
L1115	CORRIDOR D	160	9	40A-AHU-1	40A-TU-1-8	140	66	R	0			5.8	2.0	4.0	2.0	R	X		+			140	66	
L1121	CORRIDOR E	110	9	40A-AHU-1	40A-TU-1-8	100	47	R	0			6.1	2.1	4.0	2.0	R	X		+			100	47	
L1130	CORRIDOR D	30	9	40A-AHU-1	40A-TU-1-8	30	14	R	0			6.7	2.3	4.0	2.0	R	X		+			30	14	
L1150	JAN	30	9	40A-AHU-1	40A-TU-1-8	0	0	E		100		22.2	0.0	10.0	0.0	E	X		--	100	47			
L1151	JAN	45	9	40A-AHU-1	40A-TU-1-8	0	0	E		100		14.8	0.0	10.0	0.0	E	X		--	100	47			
L1107	IT	41.12	13.5	40A-AHU-1	40A-TU-1-8	0	0	E		100		0.0	0.0	0.0	0.0	E	X		-	100	47			
L1125	ELECTRICAL	125	13.5	40A-AHU-1	40A-TU-1-8	70	33	E		100		2.5	0.9	0.0	0.0	E	X		-	30	14			
L1127	WOMEN	115	9	40A-AHU-1	40A-TU-1-9	240	113	E		315		18.3	4.9	10.0	0.0	E	X		--	75	35			
L1126	MEN	115	9	40A-AHU-1	40A-TU-1-9	240	113	E		315		18.3	4.9	10.0	0.0	E	X		--	75	35			
L1114	BREAK	135	10	40A-AHU-1	40A-TU-1-9	280	132	E		325		14.4	4.4	4.0	2.0	E	X		-	45	21			
L1105	CORRIDOR A	190	9	40A-AHU-1	40A-TU-1-10A	280	132	R	235			9.8	3.4	4.0	2.0	R	X		+			45	21	
L1110	OFFICE	60	9	40A-AHU-1	40A-TU-1-10B	240	113	R	240			6.1	2.1	4.0	2.0	R		X	o					
L1111	TMS OFFICE	110	9	40A-AHU-1	40A-TU-1-11	150	71	R	150			5.8	2.0	4.0	2.0	R		X	o					
L1118	SERVICE CHIEF	100	9	40A-AHU-1	40A-TU-1-12	280	132	R	280			6.0	2.1	4.0	2.0	R		X	o					
L1120	EDUCATION OFFICE	60	9	40A-AHU-1	40A-TU-1-13	260	123	R	260			6.1	2.1	4.0	2.0	R		X	o					
L1136	TRAINING, CONFERENCE, DEBRIEF	415	10	40A-AHU-1	40A-TU-1-14	760	358	R	760			0.0	0.0	4.0	2.0	R		X	o					CO2 SENS. CTRL MIN
L1137	SIMULATION LAB	240	9	40A-AHU-1	40A-TU-1-15	460	217	R	385			12.8	4.5	12.0	2.0	R	X		+			75	35	
L1139	SIMULATION MONITOR	140	9	40A-AHU-1	40A-TU-1-16	300	142	R	250			14.3	5.0	6.0	2.0	R	X		+			50	24	
L1141	STORAGE	225	10	40A-AHU-1	40A-TU-1-17	250	118	E		300		6.7	2.3	6.0	0.0	E	X		-	50	24			
L1142	CLEAN UP	130	9	40A-AHU-1	40A-TU-1-18	120	57	E		170		6.2	2.2	6.0	0.0	E	X		-	50	24			
L1A101	LOBBY	465	9	40A-AHU-1	40A-TU-1-19	1590	750	E				22.8	8.0	4.0	2.0	E	X		+			240	113	
L2129	GROUP THERAPY	334	8	40A-AHU-1	40A-TU-1-20	500	236	R	500			0.0	0.0	6.0	2.0	R	X		o					CO2 SENS. CTRL MIN
L2146	CORRIDOR J	75	9	40A-AHU-1	40A-TU-1-20	100	47	R	0			0.0	0.0	4.0	2.0	R	X		+			0	0	
L2128	GROUP THERAPY	300	9	40A-AHU-1	40A-TU-1-21	420	198	R	420			0.0	0.0	6.0	2.0	R		X	o					CO2 SENS. CTRL MIN
L2127	GROUP THERAPY	300	9	40A-AHU-1	40A-TU-1-22	420	198	R	420			0.0	0.0	6.0	2.0	R		X	o					CO2 SENS. CTRL MIN
L2148	COUNSELOR 1	90	9	40A-AHU-1	40A-TU-1-23	100	47	E		135		10.0	2.6	10.0	0.0	E	X		--	35	17			
L2149	COUNSELOR 1	90	9	40A-AHU-1	40A-TU-1-23	100	47	E		135		10.0	2.6	10.0	0.0	E	X		--	35	17			
L2106	CORRIDOR B	140	9	40A-AHU-1	40A-TU-1-24	120	57	R	0			5.7	2.0	4.0	2.0	R	X		+			120	57	
L2116	MEN	130	9	40A-AHU-1	40A-TU-1-24	50	24	E		200		10.3	0.9	10.0	0.0	E	X		--	150	71			
L2117	WOMEN	130	9	40A-AHU-1	40A-TU-1-24	50	24	E		200		10.3	0.9	10.0	0.0	E	X		--	150	71			
L2107	IT	41.12	13.5	40A-AHU-1	40A-TU-1-24	0	0	E		100		0.0	0.0	0.0	0.0	E	X		-	100	47			
L2124	ELECT	75	13.5	40A-AHU-1	40A-TU-1-24	40	19	E		100		2.4	0.8	0.0	0.0	E	X		-	60	28			
L2125	JAN	45	9	40A-AHU-1	40A-TU-1-24	0	0	E		100		14.8	0.0	10.0	0.0	E	X		--	100	47			
L2120A	S CORRIDOR C	425	9	40A-AHU-1	40A-TU-1-24	370	175	R	170			5.8	2.0	4.0	2.0	R	X		+			200	94	
L2140	CORRIDOR F	45	9	40A-AHU-1	40A-TU-1-24	100	47	R	0			14.8	5.2	4.0	2.0	R	X		+			100	47	
L2151	BREAK ROOM	191	10	40A-AHU-1	40A-TU-1-25	200	94	E		235		7.4	2.2	4.0	2.0	E	X		-	35	17			
L2120B	N CORRIDOR C	145	9	40A-AHU-1	40A-TU-1-26	230	108	R	0			10.6	3.7	4.0	2.0	R	X		+			230	108	
L2150	CORRIDOR L	135	9	40A-AHU-1	40A-TU-1-26	120	57	R	0			5.9	2.1	4.0	2.0	R	X		+			120	57	
L2123	COUNSELOR	120	9	40A-AHU-1	40A-TU-1-27	190	90	R	190			5.8	2.0	4.0	2.0	R		X	o					
L2122	COUNSELOR	120	9	40A-AHU-1	40A-TU-1-28	190	90	R	190			5.8	2.0	4.0	2.0	R		X	o					
L2121	COUNSELOR	120	9	40A-AHU-1	40A-TU-1-29	190	90	R	190			5.8	2.0	4.0	2.0	R		X	o					
L2101	WAITING	280	9	40A-AHU-1	40A-TU-1-30	640	302	E		740		17.6	5.3	6.0	2.0	E	X		-	100	47			
L2172	RESTROOM	66.4	9	40A-AHU-1	40A-TU-1-30	110	52	E		145		14.6	3.9	10.0	0.0	E	X		--	35	17			
L2105	CORRIDOR A	255	9	40A-AHU-1	40A-TU-1-31	220	104	R	0			5.8	2.0	4.0	2.0	R	X		+			220	104	
L2111	RECEPTION	95	9	40A-AHU-1	40A-TU-1-31	180	85	R	180			12.6	4.4	4.0	2.0	R	X		o					
L2112	COUNSELOR	135	9	40A-AHU-1	40A-TU-1-32	210	99	R	210			5.9	2.1	4.0	2.0	R		X	o					
L2114	COUNSELOR 3	105	9	40A-AHU-1	40A-TU-1-33	200	94	R	200			5.7	2.0	4.0	2.0	R		X	o					
L2115	COUNSELOR 4	75	9	40A-AHU-1	40A-TU-1-34	130	61	R	130			5.8	2.0	4.0	2.0	R		X	o					
L2134	COUNSELOR	120	9	40A-AHU-1	40A-TU-1-35	190	90	R	190			5.8	2.0	4.0	2.0	R		X	o					
L2135	COUNSELOR	120	9	40A-AHU-1	40A-TU-1-36	190	90	R	190			5.8	2.0	4.0	2.0	R		X	o					
L2136	COUNSELOR	120	9	40A-AHU-1	40A-TU-1-37	190	90	R	190			5.8	2.0	4.0	2.0	R		X	o					
L2137	COUNSELOR	120	9	40A-AHU-1	40A-TU-1-38	190	90	R	190			5.8	2.0	4.0	2.0	R		X	o					
L2138	COUNSELOR	120	9	40A-AHU-1	40A-TU-1-39	200	94	R	200			5.8	2.0	4.0	2.0	R		X	o					
L2141	COUNSELOR	125	9	40A-AHU-1	40A-TU-1-40	200	94	R	200			5.9	2.1	4.0	2.0	R		X	o					
L2142	COUNSELOR	125	9	40A-AHU-1	40A-TU-1-41	200	94	R	200			5.9	2.1	4.0	2.0	R		X	o					
L2144	COUNSELOR 2	125	9	40A-AHU-1	40A-TU-1-42	200	94	R	200			10.7	3.7	4.0	2.0	R	X		o					
l2146	CORRIDOR J	75	9	40A-AHU-1	40A-TU-1-42	100	47	R	0			8.9	3.1	4.0	2.0	R	X		+			100	47	

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Approved: Project Director
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Building Number 40A
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AIR HANDLING UNIT SYSTEM - ROOM DATA SHEET - AHU-2

ROOM NO	ROOM NAME	AREA (SF)	CEILING HEIGHT (FT)	AIR HANDLING UNIT NO	TERMINAL UNIT	SUPPLY ROOM AIR FLOW CFM	SUPPLY ROOM AIR FLOW L/S	RETURN OR EXHAUST (R/E)	RETURN OR EXHAUST ROOM AIR FLOW CFM	RETURN OR EXHAUST ROOM AIR FLOW EA (G)	RETURN OR EXHAUST ROOM AIR FLOW EA (S)	AIR CHANGE PER HOUR (ACH) ACTUAL ACH SA/EA (ACH)	ACTUAL ACH OA (ACH)	VA REQ'D ACH SA/EA (ACH)	VA REQ'D ACH OA (ACH)	VA REQ'D ACH RETURN OR EXHAUST	ROOM AIR FLOW CV	ROOM AIR FLOW VAV	ROOM AIR BALANCE	NET INFILTRATION CFM	NET INFILTRATION L/S	NET EXFILTRATION CFM	NET EXFILTRATION L/S	REMARKS
B1120A	CONFERENCE	985	11	40E-AHU-2	40A-TU-2-1	800	377	R	800			0.0	0.0	4.0	2.0	R		X	o					CO2 SENS. CTRL MIN
B1120B	CONFERENCE	985	11	40E-AHU-2	40A-TU-2-2	800	377	R	800			0.0	0.0	4.0	2.0	R		X	o					CO2 SENS. CTRL MIN
B1105	CORRIDOR A	150	10	40E-AHU-2	40A-TU-2-3	300	142	E		0		12.0	5.5	4.0	2.0	E	X		+			300	142	
B1109	JAN	60	9	40E-AHU-2	40A-TU-2-3	0	0	E		90		10.0	0.0	10.0	0.0	E	X		--	90	42			
B1110	MEN	170	9	40E-AHU-2	40A-TU-2-3	160	75	E		260		10.2	2.9	10.0	0.0	E	X		--	100	47			
B1111	WOMEN	190	9	40E-AHU-2	40A-TU-2-3	190	90	E		290		10.2	3.1	10.0	0.0	E	X		--	100	47			
B1113	CORRIDOR C	60	10	40E-AHU-2	40A-TU-2-3	100	47	E		0		10.0	4.6	4.0	2.0	E	X		+			100	47	
B1114	KITCHENETTE	65	9	40E-AHU-2	40A-TU-2-3	0	0	E		100		10.3	0.0	6.0	0.0	E	X		--	100	47			
B1115	CORRIDOR D	60	10	40E-AHU-2	40A-TU-2-3	100	47	E		0		10.0	4.6	4.0	2.0	E	X		+			100	47	
B1117	MEDIA	50	9	40E-AHU-2	40A-TU-2-3	50	24	E		50		6.7	3.1	4.0	2.0	E	X		o					
B1106	CORRIDOR B	265	10	40E-AHU-2	40A-TU-2-3	250	118	E		0		5.7	2.6	4.0	2.0	E	X		+			250	118	
B1107	IT	65.5	13.5	40E-AHU-2	40A-TU-2-3	0	0	E		100		0.0	0.0	0.0	0.0	E	X		-	100	47			
B1108	ELEV MACH	135	13.5	40E-AHU-2	40A-TU-2-3	0	0	E		100		3.3	0.0	0.0	0.0	E	X		-	100	47			

SOUND ATTENUATING DEVICE SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE	AIRFLOW CFM	APD IN WG	INLET SIZE IN	LENGTH IN	DYNAMIC INSERTION LOSS DB OCTAVE BAND AND MID-FREQUENCY [CPS] 63 / 1	125 / 2	250 / 3	500 / 4	1000 / 5	2000 / 6	4000 / 7	8000 / 8	REMARKS
40A-ST-1	B1140 MECHANICAL	40A-AHU-2 SA	RECTANGULAR	3030	0.12	24x14	36	10	13	23	27	26	22	17	14	1, 2
40A-ST-2	B1140 MECHANICAL	40A-AHU-2 RA	RECTANGULAR	1765	0.12	24x14	36	10	13	23	27	26	22	17	14	1, 2

NOTE

1. IN THE INLET SIZE COLUMN, WHEN ONE VALUE IS INDICATED, THE DUCT IS A ROUND DUCT. IF SIZE IS INDICATED AS ##" x ##," THE DUCT IS A RECTANGULAR DUCT WITH SPECIFICATIONS OF "DUCT WIDTH" BY "DUCT DEPTH."
2. BASIS OF DESIGN: IAC 3LFS

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Department of Veterans Affairs

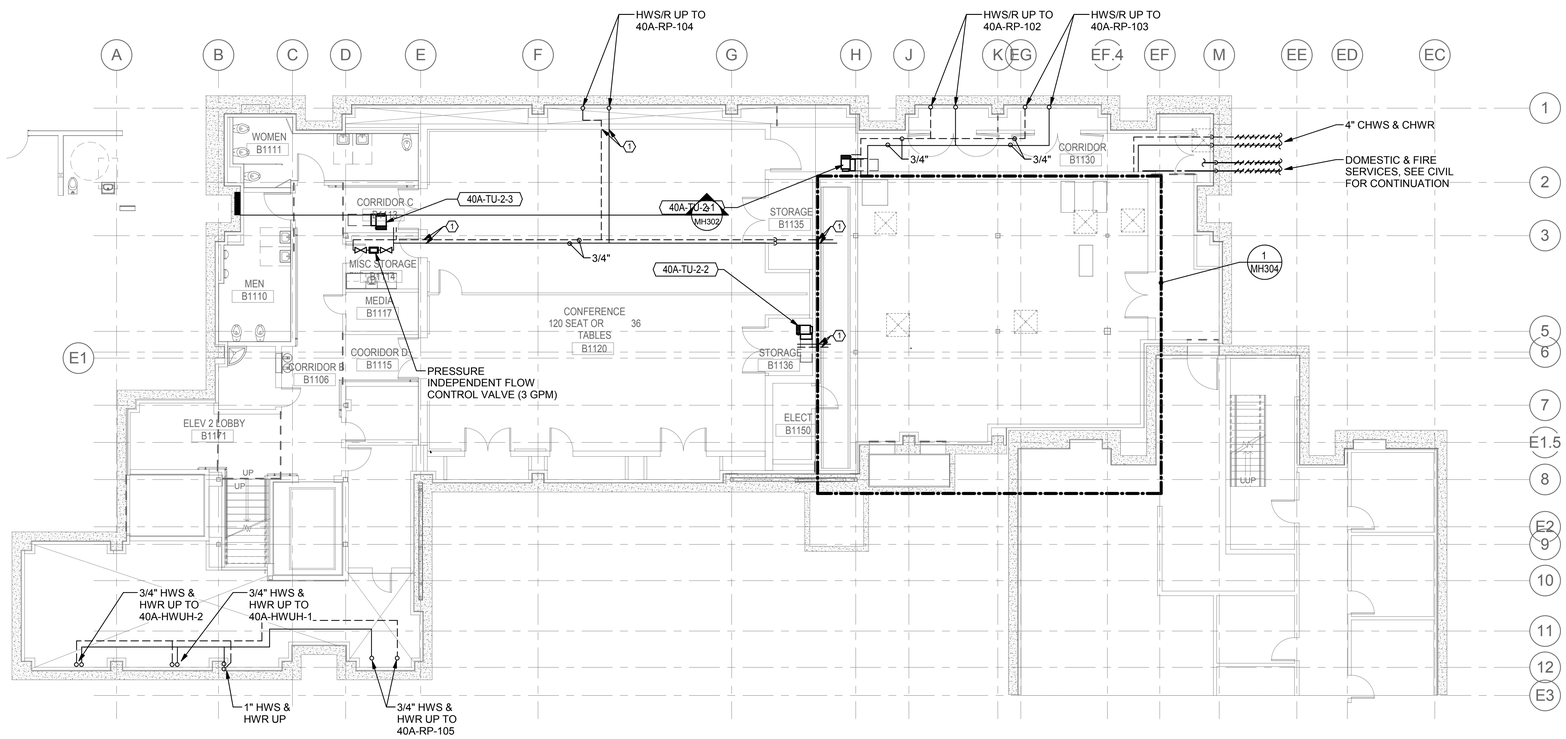
GENERAL SHEET NOTES

A. PROVIDE LAGGING WRAP ON HEATING WATER SUPPLY AND RETURN PIPING OVER B1120 CONFERENCE ROOM. LAGGING MATERIAL TO BE KINETIC KNM 100 ALQ OR EQUIVALENT.

B. ISOLATE HEATING WATER SUPPLY AND RETURN PIPING FROM STRUCTURE WITH HUBBARD HOLDRITE SILENCER SYSTEM OR EQUIVALENT OVER B1120 CONFERENCE ROOM.

SHEET KEYNOTES

1 SEAL PIPE PENETRATION WITH NON-HARDENING SILICONE MASTIC. WHERE REQUIRED PROVIDE KINETICS ISOMAX OR PAC INTERNATIONAL RSIC RESILIENT CLIPS.



TRUE NORTH PLAN NORTH

1 BASEMENT PLAN - MECHANICAL PIPING
1/8" = 1'-0"

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
		12/30/14
	99% CONSTRUCTION DOCUMENT	12/17/14
	95% CONSTRUCTION DOCUMENT	10/13/14
	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

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EXP. 4/13/16 11/02/15

ARCHITECT/ENGINEERS:

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14410 SE Petrovitsky Rd. Suite 206
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425-291-7078

Drawing Title
BASEMENT PLAN - MECHANICAL PIPING

Approved: Project Director
Approver

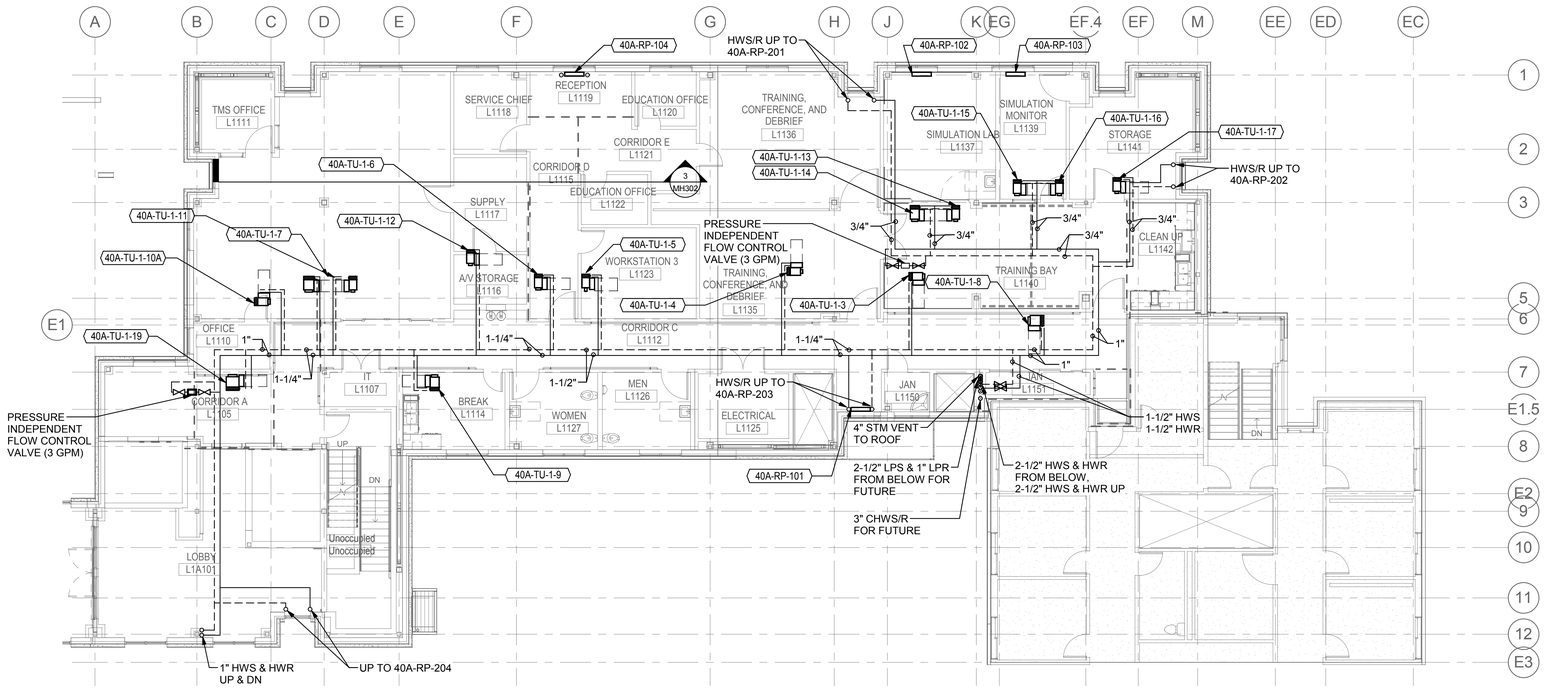
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

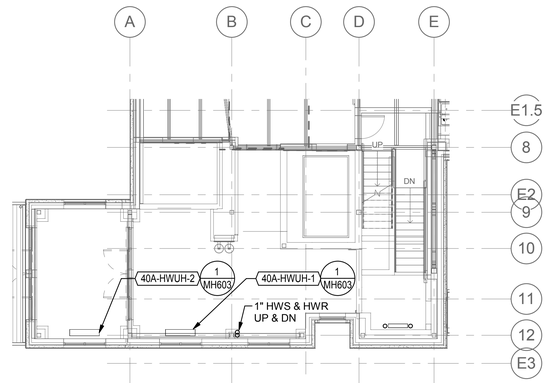
Project Number 668-313
Building Number 40A
Drawing Number **MP100**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs



TRUE NORTH PLAN NORTH

1 LEVEL 1 PLAN - MECHANICAL PIPING
1/8" = 1'-0"



TRUE NORTH PLAN NORTH

2 LEVEL 1A - LOBBY PARTIAL PLAN - MECHANICAL PIPING
1/8" = 1'-0"

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
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Drawing Title
LEVEL 1 PLAN - MECHANICAL PIPING

Approved: Project Director
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Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

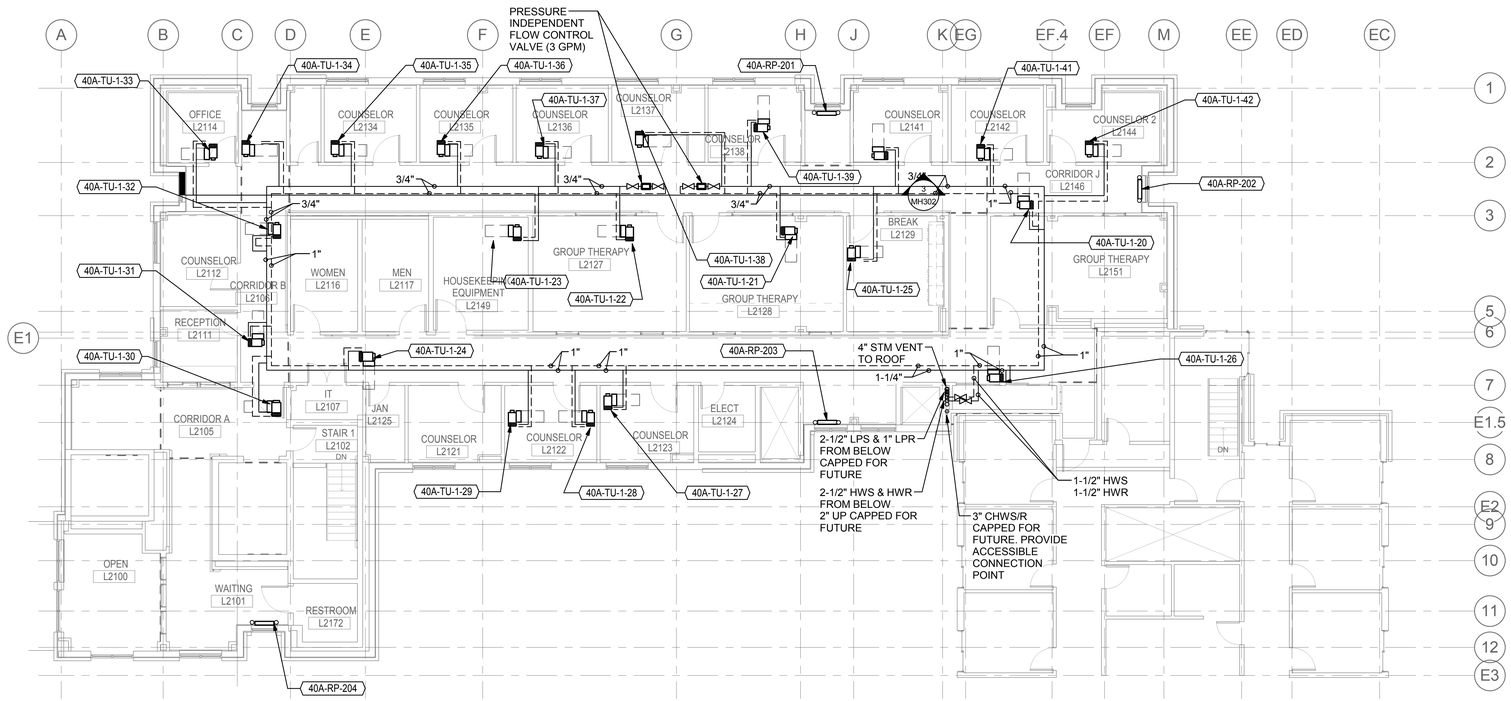
Issue Date	Checked	Drawn
11/02/2015	JRM	IEI

Project Number
668-313

Building Number
40A

Drawing Number
MP101
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs



TRUE NORTH PLAN NORTH

1 LEVEL 2 PLAN - MECHANICAL PIPING
1/8" = 1'-0"

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
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	SCHEMATIC DESIGN	3/28/14

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EXP. 4/13/16 11/02/15

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Drawing Title
LEVEL 2 PLAN - MECHANICAL PIPING

Approved: Project Director
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Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313

Building Number 40A

Drawing Number **MP102**

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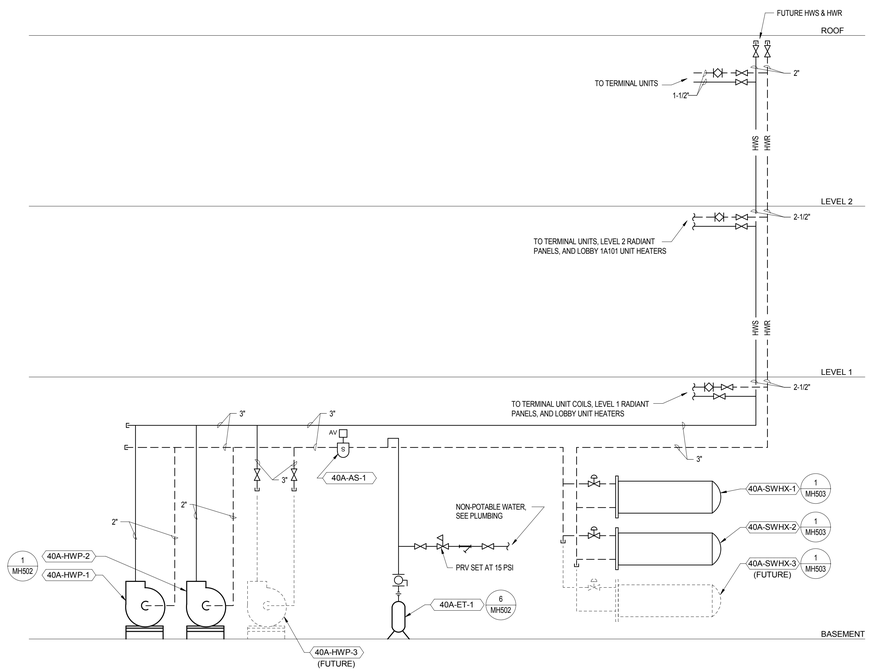
Office of Construction and Facilities Management

Department of Veterans Affairs



1 HEATING WATER DIAGRAM
NO SCALE

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
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Drawing Title
HEATING WATER DIAGRAM

Approved: Project Director
Approver

Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

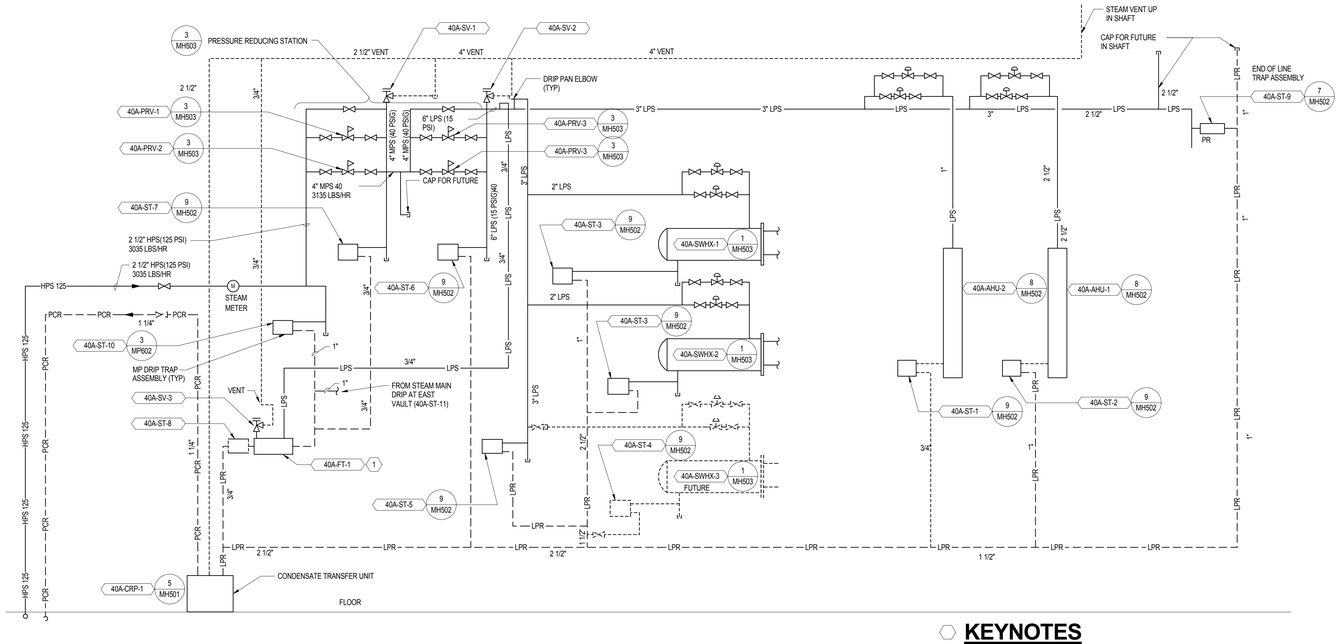
Issue Date	Checked	Drawn
11/02/2015	JRM	IEI

Project Number
668-313

Building Number
40A

Drawing Number
MP601
Dwg. of

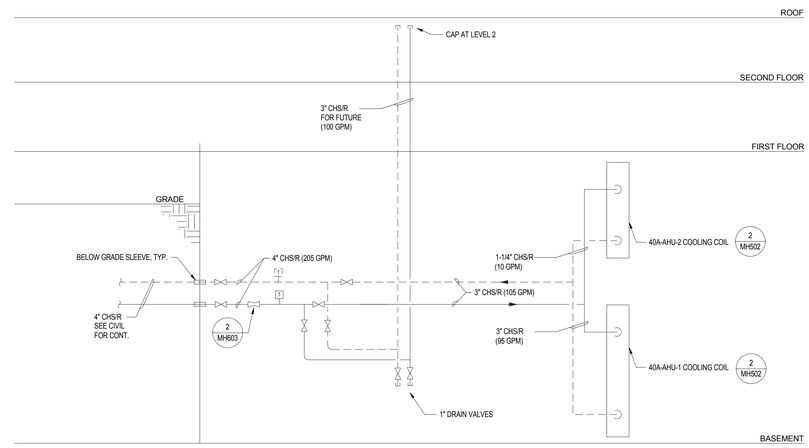
Office of Construction and Facilities Management
Department of Veterans Affairs



1 STEAM DIAGRAM
NO SCALE

KEYNOTES

1 FLASH TANK TO BE 6" DIA. x 24" LONG. 150 LBS/HR 60 PSI CONDENSATE IN; 10 LBS/HR 15 PSI STEAM OUT.



2 CHILLED WATER PIPING DIAGRAM
NO SCALE

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
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EXP. 4/13/16 11/02/15

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Drawing Title
STEAM DIAGRAM

Approved: Project Director
Approver

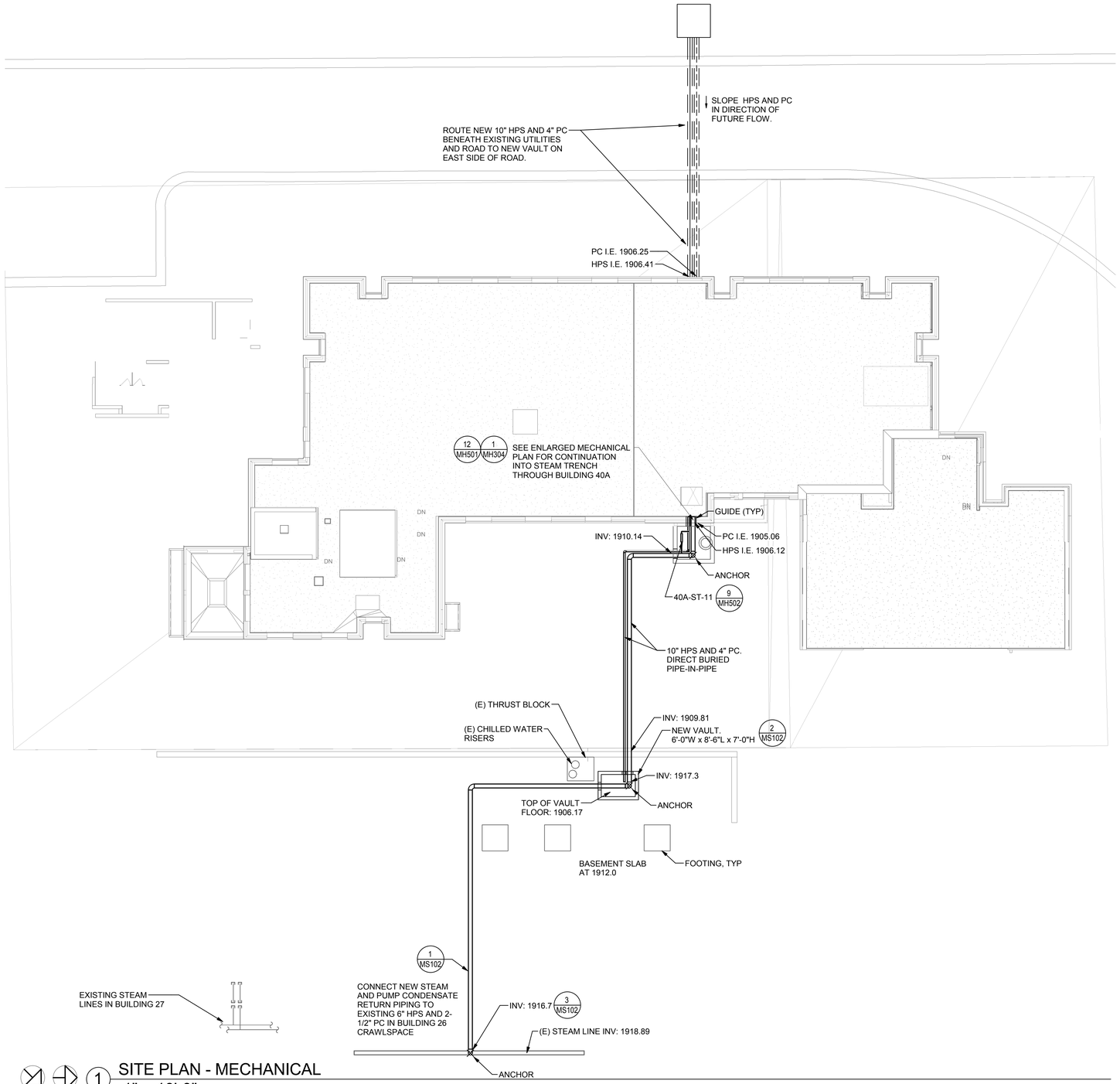
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MP602**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs



TRUE NORTH PLAN NORTH

1 SITE PLAN - MECHANICAL
1" = 10'-0"

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
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Drawing Title
SITE PLAN - MECHANICAL

Approved: Project Director
Approver

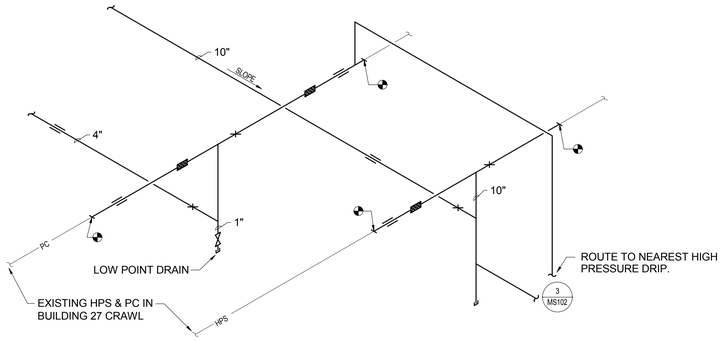
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

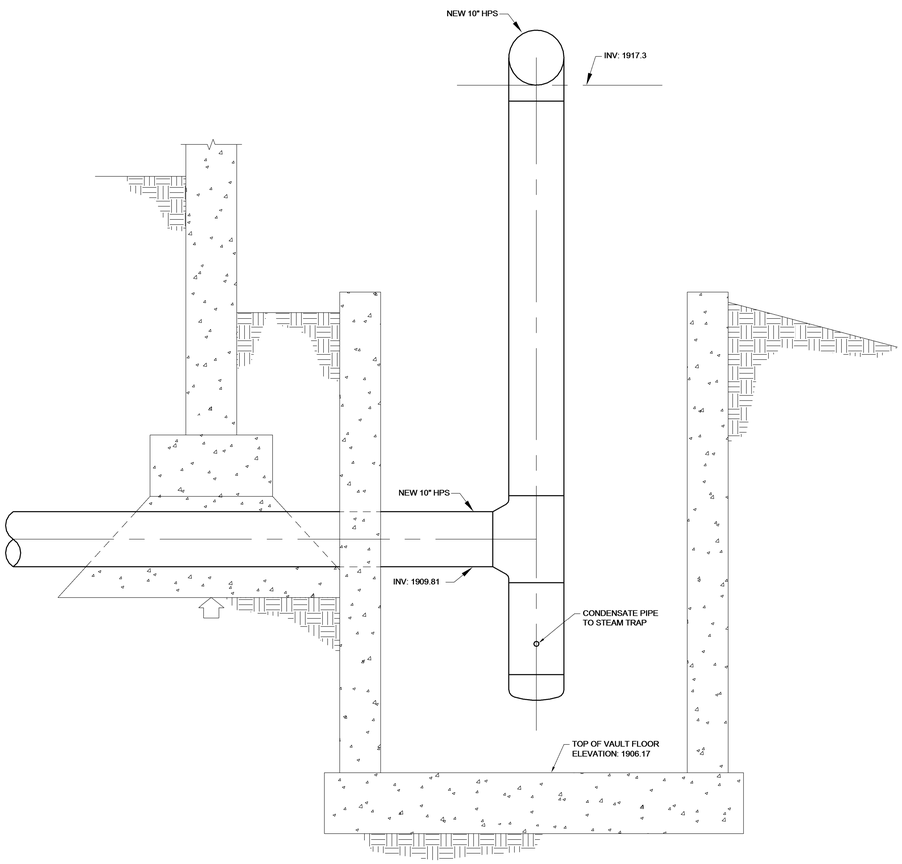
Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MS101**
Dwg. of

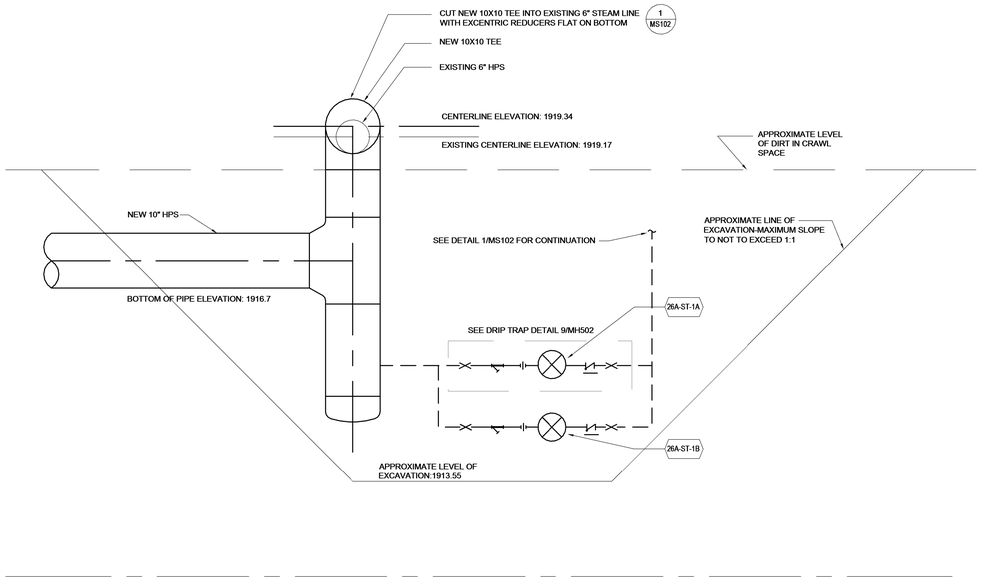
Office of Construction and Facilities Management
Department of Veterans Affairs



1 STEAM CONNECTION DIAGRAM
NO SCALE



2 STEAM VAULT
NO SCALE



3 STEAM POINT OF CONNECTION
NO SCALE

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NOVEMBER/02/2015

Revisions	ISSUES	Date
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Drawing Title
SITE PLAN DETAILS

Approved: Project Director
Approver

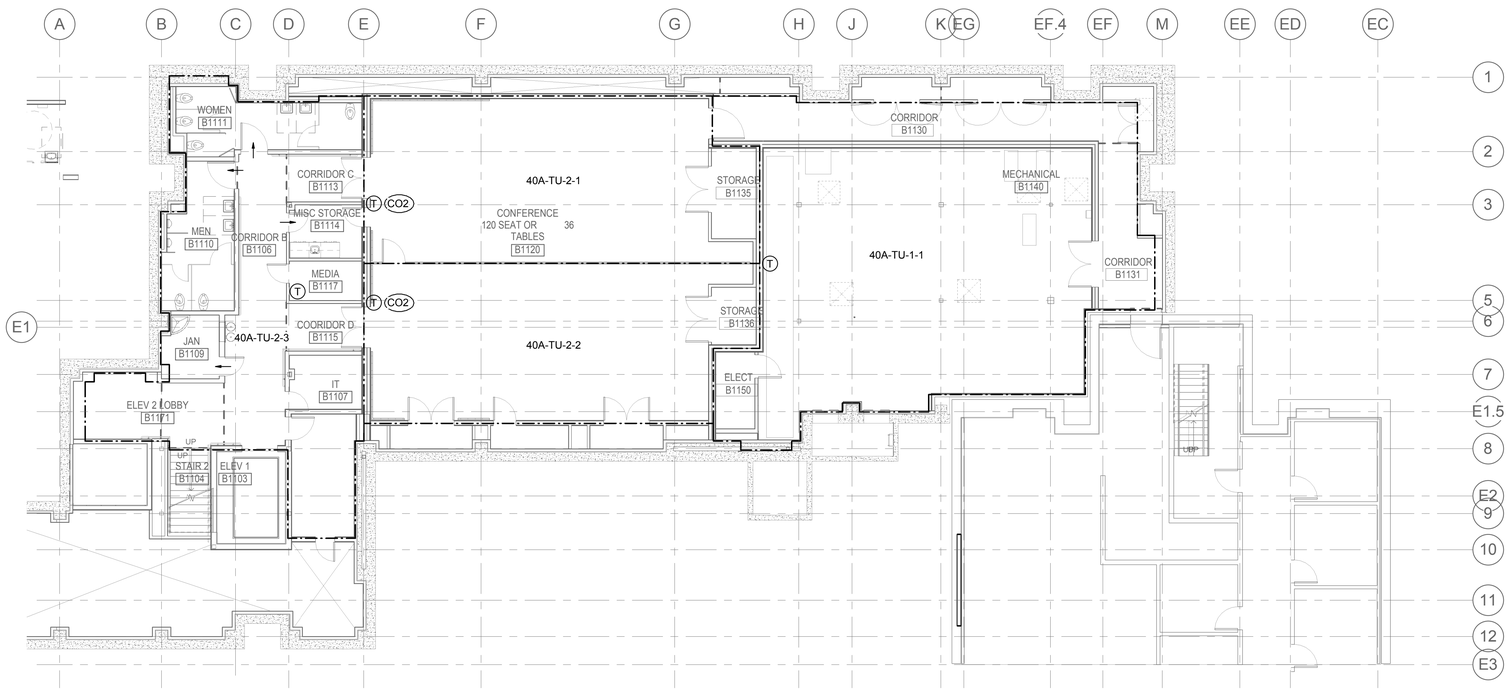
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **Checker** | Drawn **Author**

Project Number 668-313
Building Number 40A
Drawing Number **MS102**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs



TRUE NORTH PLAN NORTH

BASEMENT PLAN - ZONE MAP

1/8" = 1'-0"

AIRFLOW RELATIONSHIP - BASEMENT						
Level	Room: Number	Room: Name	Specified Supply Airflow	Specified Return Airflow	Specified Exhaust Airflow	Specified Room Pressure
Basement	B1105	CORRIDOR A	0	0	0	0
Basement	B1106	CORRIDOR B	250	0	0	250
Basement	B1107	IT	0	0	100	-100
Basement	B1108	ELEV MACH	0	0	100	-100
Basement	B1109	JAN	0	0	90	-90
Basement	B1110	MEN	160	0	260	-100
Basement	B1111	WOMEN	190	0	290	-100
Basement	B1113	CORRIDOR C	0	0	0	0
Basement	B1114	MISC STORAGE	100	0	100	0
Basement	B1115	COORIDOR D	100	0	0	100
Basement	B1117	MEDIA	50	0	50	0
Basement	B1120	CONFERENCE 120 SEAT OR 36 TABLES	1600	1600	0	0
Basement	B1125	STORAGE	0	0	0	0
Basement	B1126	STORAGE	0	0	0	0
Basement	B1127	STORAGE	0	0	0	0
Basement	B1130	CORRIDOR	0	0	0	0
Basement	B1131	CORRIDOR	200	0	0	200
Basement	B1135	STORAGE	0	0	0	0
Basement	B1136	STORAGE	0	0	0	0
Basement	B1140	MECHANICAL	2110	2110	0	0
Basement	B1150	ELECT	0	0	100	-100
Basement	B1171	ELEV 2 LOBBY	300	0	0	300

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EXP. 4/13/16 11/02/15

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Drawing Title
BASEMENT PLAN - ZONE MAP

Approved: Project Director
Approver

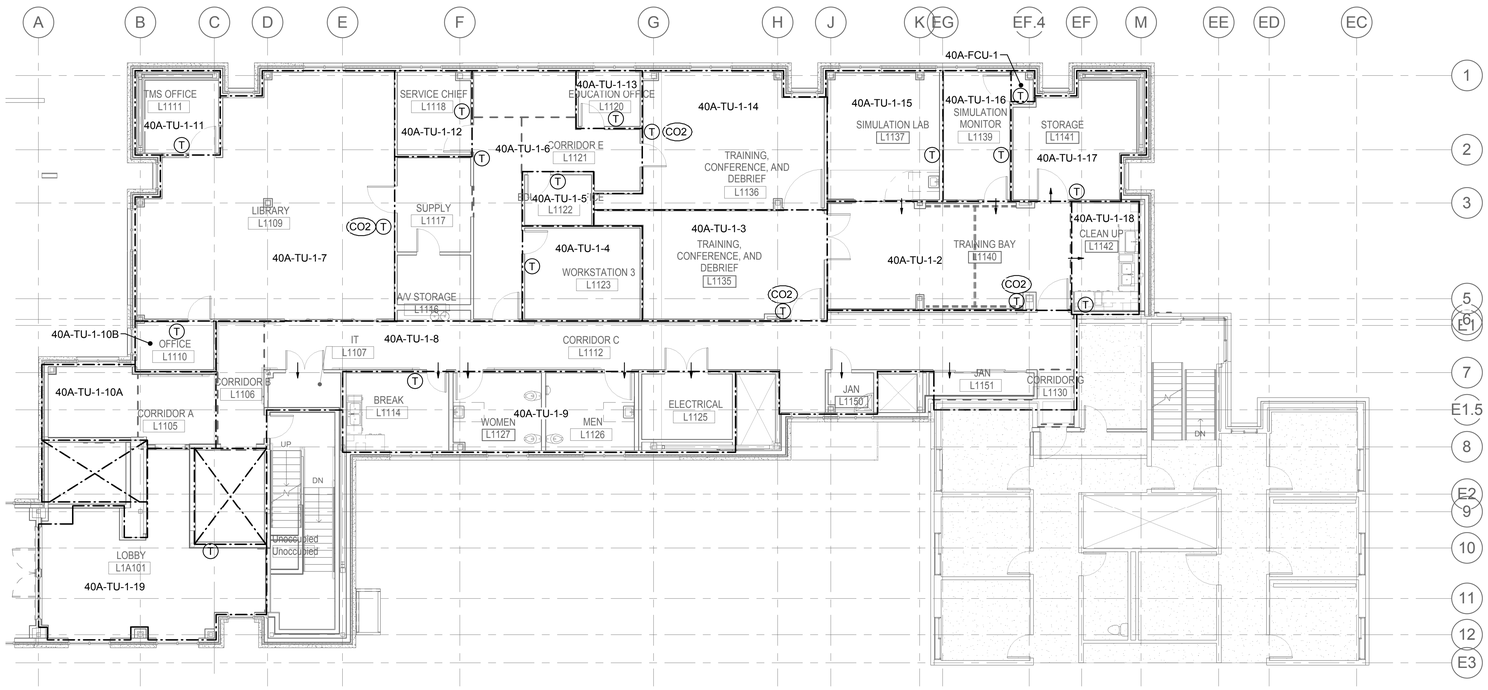
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MZ100**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs



TRUE NORTH PLAN NORTH

1 LEVEL 1 PLAN - ZONE MAP
1/8" = 1'-0"

AIRFLOW RELATIONSHIP - LEVEL 1

Level	Room: Number	Room: Name	Specified Supply Airflow	Specified Return Airflow	Specified Exhaust Airflow	Specified Room Pressure
Level 1			0	0	0	0
Level 1	L1A101	LOBBY	1600	0	0	1600
Level 1	L1105	CORRIDOR A	280	0	0	280
Level 1	L1106	CORRIDOR B	0	235	0	-235
Level 1	L1107	IT	0	0	100	-100
Level 1	L1109	LIBRARY	1000	1230	0	-230
Level 1	L1110	OFFICE	240	240	0	0
Level 1	L1111	TMS OFFICE	150	150	0	0
Level 1	L1112	CORRIDOR C	690	310	0	380
Level 1	L1114	BREAK	280	0	325	-45
Level 1	L1115	CORRIDOR D	240	0	0	240
Level 1	L1116	A/V STORAGE	60	60	0	0
Level 1	L1117	SUPPLY	100	0	0	100
Level 1	L1118	SERVICE CHIEF	280	280	0	0
Level 1	L1119	RECEPTION	250	150	0	100
Level 1	L1120	EDUCATION OFFICE	260	260	0	0
Level 1	L1121	CORRIDOR E	0	100	0	-100
Level 1	L1122	EDUCATION OFFICE	100	100	0	0
Level 1	L1123	WORKSTATION 3	160	160	0	0
Level 1	L1125	ELECTRICAL	70	0	100	-30
Level 1	L1126	MEN	300	0	500	-200
Level 1	L1127	WOMEN	300	0	500	-200
Level 1	L1130	CORRIDOR G	0	0	0	0
Level 1	L1135	TRAINING, CONFERENCE, AND DEBRIEF	460	460	0	0
Level 1	L1136	TRAINING, CONFERENCE, AND DEBRIEF	760	760	0	0
Level 1	L1137	SIMULATION LAB	460	385	0	75
Level 1	L1139	SIMULATION MONITOR	300	250	0	50
Level 1	L1140	TRAINING BAY	570	545	0	25
Level 1	L1141	STORAGE	250	0	300	-50
Level 1	L1142	CLEAN UP	120	0	170	-50
Level 1	L1150	JAN	0	0	100	-100
Level 1	L1151	JAN	0	0	100	-100
						1410

BID DOCUMENT
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Drawing Title
LEVEL 1 PLAN - ZONE MAP

Approved: Project Director
Approver

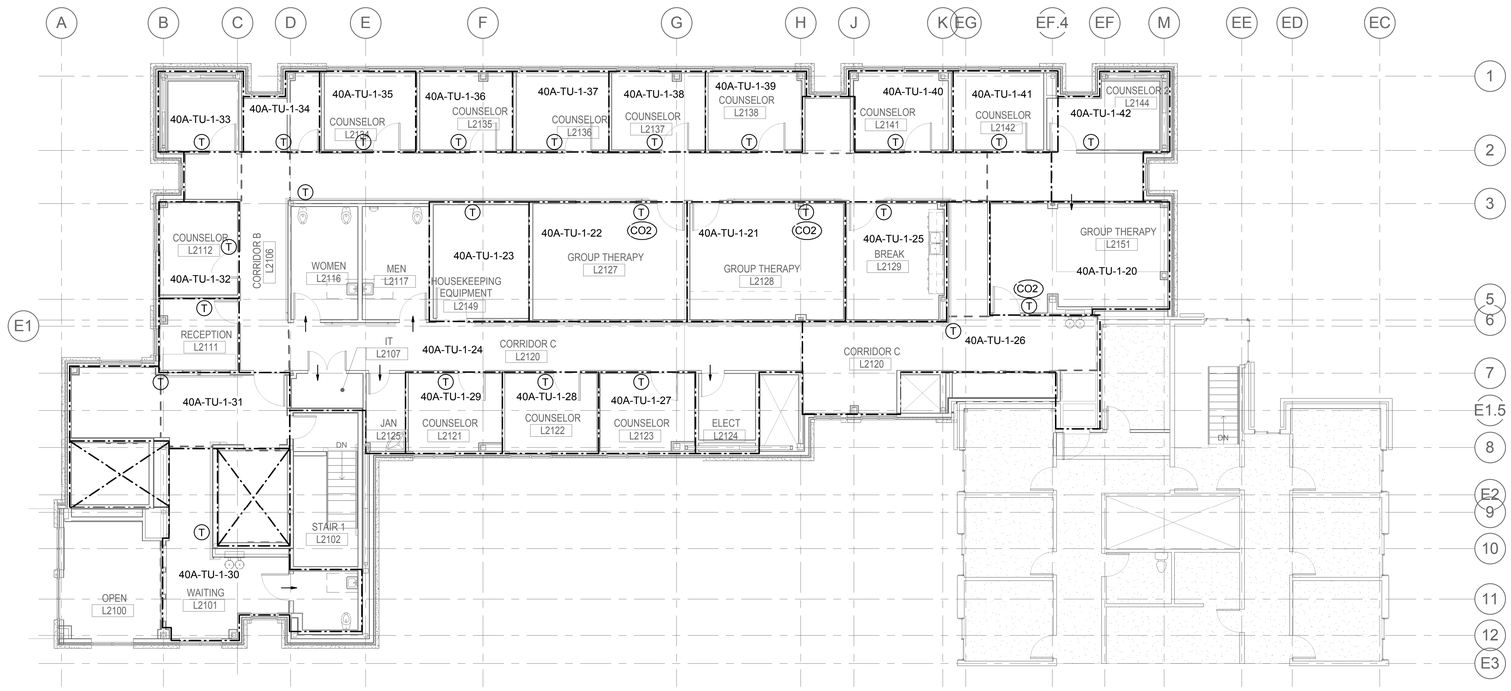
Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

Project Number 668-313
Building Number 40A
Drawing Number **MZ101**
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs



TRUE NORTH PLAN NORTH

1 LEVEL 2 PLAN - ZONE MAP
1/8" = 1'-0"

AIRFLOW RELATIONSHIP - LEVEL 2						
Level	Room: Number	Room: Name	Specified Supply Airflow	Specified Return Airflow	Specified Exhaust Airflow	Specified Room Pressure
Level 2	L2100	OPEN	1500	0	1500	0
Level 2	L2101	WAITING	420	0	420	0
Level 2	L2102	STAIR 1	0	0	0	0
Level 2	L2105	CORRIDOR A	220	0	0	220
Level 2	L2106	CORRIDOR B	250	0	0	250
Level 2	L2107	IT	0	0	100	-100
Level 2	L2111	RECEPTION	180	180	0	0
Level 2	L2112	COUNSELOR	210	210	0	0
Level 2	L2113	CORRIDOR D	0	0	0	0
Level 2	L2114	OFFICE	200	200	0	0
Level 2	L2115	JAN	0	0	100	-100
Level 2	L2116	WOMEN	50	0	200	-150
Level 2	L2117	MEN	50	0	200	-150
Level 2	L2120	CORRIDOR C	230	0	0	230
Level 2	L2120	CORRIDOR C	185	0	0	185
Level 2	L2120	CORRIDOR C	185	170	0	15
Level 2	L2121	COUNSELOR	190	190	0	0
Level 2	L2122	COUNSELOR	190	190	0	0
Level 2	L2123	COUNSELOR	190	190	0	0
Level 2	L2124	ELECT	0	0	100	-100
Level 2	L2125	JAN	0	0	100	-100
Level 2	L2127	GROUP THERAPY	420	420	0	0
Level 2	L2128	GROUP THERAPY	420	420	0	0
Level 2	L2129	BREAK	200	0	235	-35
Level 2	L2134	COUNSELOR	190	190	0	0
Level 2	L2135	COUNSELOR	190	190	0	0
Level 2	L2136	COUNSELOR	190	190	0	0
Level 2	L2137	COUNSELOR	190	190	0	0
Level 2	L2138	COUNSELOR	200	200	0	0
Level 2	L2139	CORRIDOR E	0	200	0	-200
Level 2	L2140	CORRIDOR F	100	0	0	100
Level 2	L2141	COUNSELOR	200	200	0	0
Level 2	L2142	COUNSELOR	200	200	0	0
Level 2	L2144	COUNSELOR 2	200	200	0	0
Level 2	L2146	CORRIDOR J	100	0	0	100
Level 2	L2149	HOUSEKEEPING EQUIPMENT	100	0	135	-35
Level 2	L2150	CORRIDOR L	210	0	0	210
Level 2	L2151	GROUP THERAPY	500	500	0	0
Level 2	L2152	SUPPLY	0	0	0	0
Level 2	L2171	ELEV 2 LOBBY	0	0	0	0
Level 2	L2172	RESTROOM	110	0	145	-35
						305

BID DOCUMENT
NOVEMBER/02/2015

Revisions	ISSUES	Date
	BID DOCUMENT	11/02/2015
	100% CONSTRUCTION DOCUMENT	1/26/2015
		12/30/14
	99% CONSTRUCTION DOCUMENT	12/17/14
	95% CONSTRUCTION DOCUMENT	10/13/14
	65% DESIGN DEVELOPMENT	6/27/14
	SCHEMATIC DESIGN	3/28/14

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Drawing Title
LEVEL 2 PLAN - ZONE MAP

Approved: Project Director
Approver

Project Title
INTENSIVE OUTPATIENT MENTAL HEALTH AND EDUCATION BUILDING
SPOKANE VA MEDICAL CENTER
SPOKANE, WASHINGTON 99205

Location
SPOKANE, WASHINGTON 99205

Issue Date **11/02/2015** | Checked **JRM** | Drawn **IEI**

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Drawing Number **MZ102**
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