



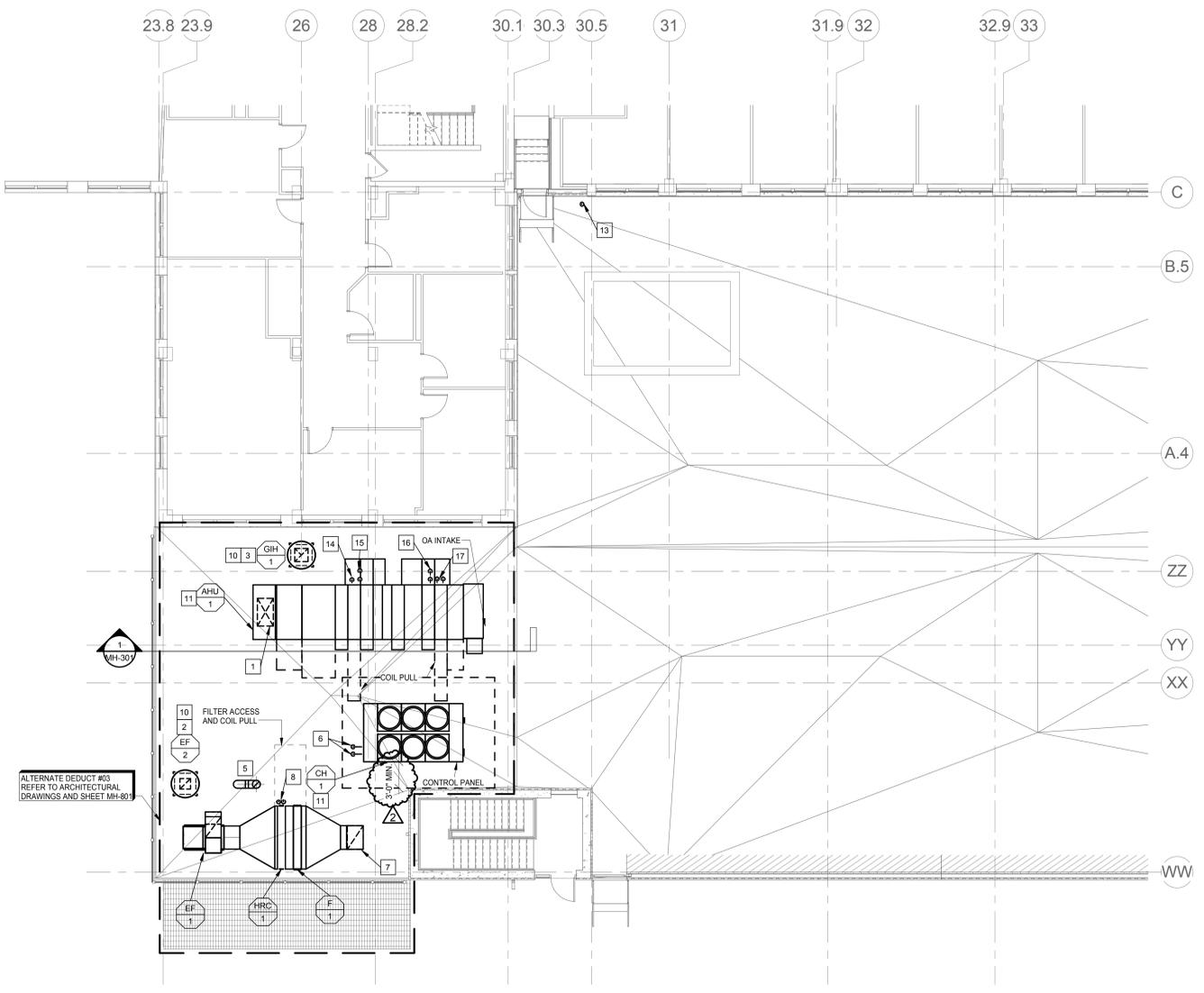


**GENERAL NOTES:**

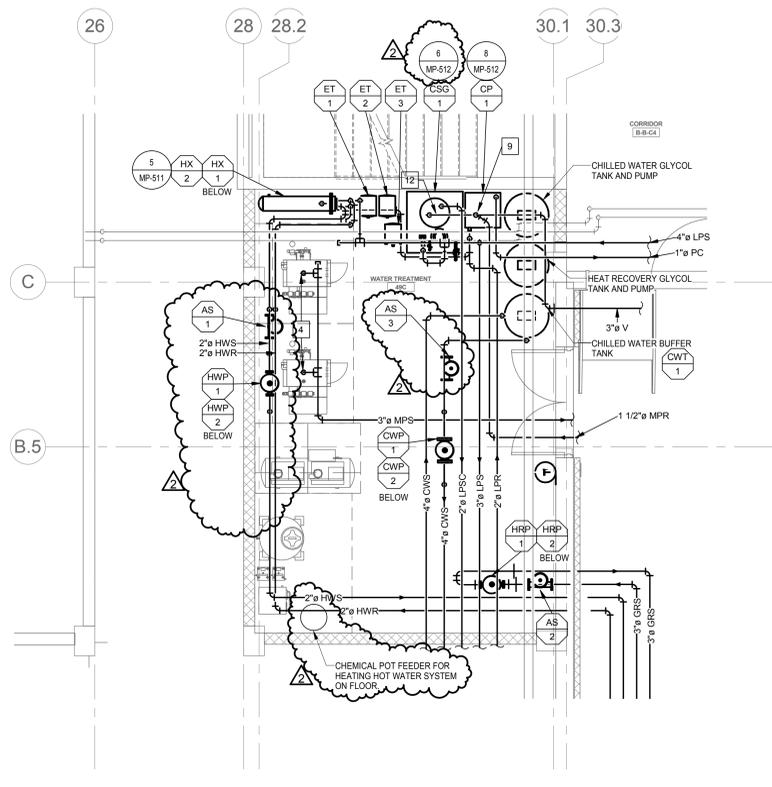
- REFER TO SHEET M00 FOR GENERAL NOTES.

**KEYED NOTES:**

- 40"x24" SUPPLY DUCT DOWN THRU ROOF. REFER TO SHEET MH-101 FOR CONTINUATION.
- 16"x16" EXHAUST DUCT DOWN THRU ROOF. REFER TO SHEET MH-101 FOR CONTINUATION.
- GRAVITY INTAKE HOOD GREENNECK MODEL FGI 2000 CFM. 20"x20" NECK, 0.15" MAX PD, WITH 12" HIGH ROOF CURB. EXTEND 20"x20" DUCT DOWN THRU ROOF. REFER TO SHEET MH-101 FOR CONTINUATION.
- CONNECT 2" MPS TO ELECTRIC STEAM GENERATOR PROVIDED AND INSTALLED BY STERIS. PROVIDE SHUT-OFF VALVE AT CONNECTION TO UNIT.
- 12" Ø EXHAUST DUCT DOWN THRU ROOF. REFER TO SHEET MH-101 FOR CONTINUATION. TERMINATE WITH GOOSENECK A MINIMUM OF 18" ABOVE ROOF. ALL CART WASH EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF WELDED STAINLESS STEEL.
- 4" CWS AND CWR PIPING DOWN THRU ROOF. REFER TO SHEET MP-101 FOR CONTINUATION. PROVIDE PIPE CURB ASSEMBLY FOR PIPE PENETRATIONS AT ROOF. REFER TO DETAIL 5 ON SHEET MP-512.
- 36"x24" EXHAUST DUCT DOWN THRU ROOF. REFER TO SHEET MH-101 CONTINUATION.
- 3" GRS AND GRR DOWN THRU ROOF. REFER TO SHEET MP-101 FOR CONTINUATION. PROVIDE PIPE CURB ASSEMBLY FOR PIPE PENETRATIONS AT ROOF. REFER TO DETAIL 5 ON SHEET MP-512.
- CONNECT STEAM VENT TO CONDENSATE PUMP AND INCREASE TO 3" IN VERTICAL RISER. CONNECT 1 1/2" MPR TO 3" STEAM VENT PIPING VERTICAL RISER AND EXTEND AS SHOWN.
- DELETE EQUIPMENT IF ALTERNATE DEDUCT #03 IS ACCEPTED.
- RELOCATE EQUIPMENT AS SHOWN ON SHEET MH-801 IF ALTERNATE DEDUCT #03 IS ACCEPTED.
- CONNECT TO 2" CLEAN STEAM GENERATOR RELIEF VALVE AND PROVIDE DRAIN PAN ELBOW. EXTEND 3" RELIEF VENT TO 3" STEAM VENT VERTICAL RISER AS SHOWN. REFER TO DETAIL 11 ON SHEET MP-511.
- 3" STEAM VENT DOWN THRU ROOF. REFER TO SHEET MP-101 FOR CONTINUATION. TERMINATE 6'-0" ABOVE ROOF. PROVIDE STAINLESS STEEL INSECT SCREEN ON END OF PIPING.
- 2" LPS DOWN THRU ROOF INSIDE AHU PIPE VESTIBULE. REFER TO SHEET MP-101 FOR CONTINUATION.
- 4" CWS AND CWR DOWN THRU ROOF INSIDE AHU PIPE VESTIBULE. REFER TO MP-101 FOR CONTINUATION. CHILLED WATER PIPING INSIDE PIPE VESTIBULE SHALL BE HEAT TRACED. REFER TO ELECTRICAL DRAWINGS.
- 3" LPS AND 2" LPR DOWN THRU ROOF INSIDE PRE-HEAT COIL PIPE VESTIBULE. REFER TO MP-101 FOR CONTINUATION.
- 3" GRS AND GRR DOWN THRU ROOF INSIDE OUTDOOR AIR RECOVERY COIL PIPE VESTIBULE. REFER TO MP-101 FOR CONTINUATION.



**PARTIAL ROOF / FIRST LEVEL - NEW WORK**  
 1 MH-102 1/8" = 1'-0"



**ENLARGED WATER TREATMENT ROOM 49C**  
 2 MH-102 1/4" = 1'-0"

100% CONSTRUCTION DOCUMENTS  
 FULLY SPRINKLERED

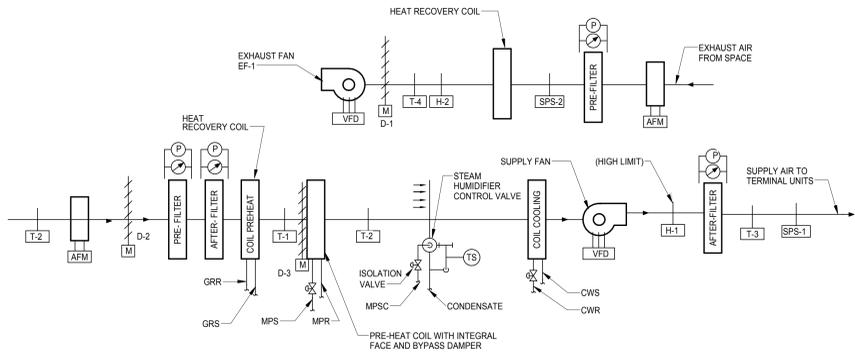
<b>VA</b> SPS BASEMENT ADDITION 2121 LAKE AVE., FORT WAYNE, IN 46805	<b>ARCHITECT/ENGINEERS:</b> AMERICAN STRUCTUREPOINT INC. 7260 SHADELAND STATION INDIANAPOLIS, IN 46256-3957 TEL 317.547.3500 FAX 317.543.0270 www.structurepoint.com		<b>CONSULTANTS:</b> Ross & Baruzzini 8250 Haverstick Road Suite 285 Indianapolis, IN 46240 317.638.8383		Drawing Title <b>ROOF PLAN &amp; ENLARGED MECH. ROOM - NEW WORK</b>	Project Title <b>SPS BASEMENT ADDITION</b>	Project Number 2010.00629	Office of Construction and Facilities Management <b>VA</b> Department of Veterans Affairs
	Amendment 04 06-10-2015	Approved: Project Director			Location 2121 LAKE AVE., FORT WAYNE, IN 46805	Drawing Number <b>MH-102</b>	Date 08/15/2014	

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 one inch = one foot  
 one and one half inches = one foot  
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**AHU-1 SEQUENCE OF OPERATION (CONSTANT VOLUME) WITH EXHAUST FAN EF-1 AND ENERGY RECOVERY COILS:**

OCCUPIED CYCLE: ENERGY MANAGEMENT SYSTEM WILL INDICATE THAT THE AREA SERVED IS OCCUPIED VIA A TIME SCHEDULE OR OPERATOR'S COMMAND. OPEN OUTDOOR AIR DAMPER. OPEN THE EXHAUST DAMPER. START AND RUN SUPPLY FAN AND EXHAUST FAN. SUPPLY AND EXHAUST FANS SHALL OPERATE CONTINUOUSLY. THE SPEED OF THE SUPPLY FAN SHALL BE VARIED TO SATISFY THE ASSOCIATED TERMINAL BOXES, SUCH THAT ONE TERMINAL BOX SHOULD BE ON THE VERGE OF FULL-OPEN (95% OR MORE). THE ENERGY MANAGEMENT SYSTEM SHALL SIGNAL THE RESPECTIVE VARIABLE FREQUENCY DRIVE TO CONTROL FAN SPEED. IF NO TERMINAL BOXES ARE FULLY OPEN, SLOW DOWN THE SUPPLY FAN. IF MORE THAN ONE TERMINAL BOX IS FULLY OPEN, SPEED UP THE SUPPLY FAN. IN ADDITION, MONITOR SUPPLY DUCT STATIC PRESSURE FOR OPERATOR'S ADVICE.

CONTINUOUSLY MEASURE SUPPLY AIRFLOW AND EXHAUST AIRFLOW VIA THE AIRFLOW MEASURING DEVICES. THE SPEED OF THE EXHAUST FAN SHALL BE MODULATED TO MAINTAIN PROGRAMMABLE OFFSET OF EXHAUST AIRFLOW WITH RESPECT TO THE SUPPLY AIRFLOW. THE ENERGY MANAGEMENT SYSTEM SHALL SIGNAL THE RESPECTIVE VARIABLE FREQUENCY DRIVE TO CONTROL EXHAUST FAN SPEED.

HUMIDIFIER: REFER TO SEQUENCE 3 ON DRAWING MI-711 FOR CONTROL SEQUENCE OF STEAM HUMIDIFIER.

ECONOMIZER: THIS UNIT IS 100% OUTDOOR AIR CONSTANTLY. IN LIEU OF ECONOMIZER, USE ENERGY-RECOVERY RUNAROUND COIL. MODULATE ENERGY-RECOVERY COIL CONTROL VALVE (DEPICTED IN DETAIL 9/M212) AS REQUIRED TO MAINTAIN LEAVING AIR TEMPERATURE T-1 AT SETPOINT (INITIALLY 55 DEG, ADJUSTABLE) AS FIRST PRIORITY PRIOR TO ATTEMPTING EITHER STEAM PREHEAT OR CHILLED WATER COOLING. IN WINTER, MODULATE ENERGY-RECOVERY COIL CONTROL VALVE TO PRODUCE T-1 AS WARM AS POSSIBLE BUT NOT ABOVE 55 DEG. IN SUMMER, MODULATE ENERGY-RECOVERY COIL CONTROL VALVE TO PRODUCE T-1 AS COOL AS POSSIBLE BUT NOT BELOW 55 DEG.

IF SUPPLY AIR TEMPERATURE T-3 EXCEEDS SETPOINT, MODULATE COOLING COIL CONTROL VALVE AS REQUIRED TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT T-3 (INITIALLY 55 DEG, ADJUSTABLE).

IF SUPPLY AIR TEMPERATURE T-3 FALLS BELOW SETPOINT, OPEN HEATING COIL CONTROL VALVE AND MODULATE FACE-AND-BYPASS DAMPER TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT T-3. WHEN PARTIAL HEATING IS REQUIRED, USE FACE-AND-BYPASS FOR CONTROL. WHEN NO HEATING IS REQUIRED, CLOSE HEATING COIL CONTROL VALVE.

SHUTDOWN ALARMS: CONFIRM NORMAL FAN OPERATION VIA CURRENT SENSOR. UPON FAILURE OF SUPPLY FAN OR EXHAUST FAN, DISABLE FANS. RELEASE ALL CONTROL VALVES AND DAMPERS TO THEIR FAIL-SAFE POSITION DEFINED BELOW. ANNUNCIATE ALARM AT BUILDING TEMPERATURE CONTROL SYSTEM HOST COMPUTER. UPON FREEZE/STALM AND/OR DUCT HIGH-LIMIT STATIC PRESSURE ALARM, DISABLE FANS. RELEASE ALL CONTROL VALVES AND DAMPERS TO THEIR FAIL-SAFE POSITION DEFINED BELOW. ANNUNCIATE ALARM AT BUILDING TEMPERATURE CONTROL SYSTEM HOST COMPUTER. TRACK AND LOG EACH FAN'S RUN TIME IN HOURS AND FAILURE ALARM HISTORY. PROVIDE ANTI-CYCLING SOFTWARE TO PREVENT ANY FAN MOTOR FROM STARTING MORE THAN SIX (6) TIMES PER HOUR.

NON-SHUTDOWN ALARMS: UPON SUPPLY AIR TEMPERATURE OUT-OF-LIMIT, ANNUNCIATE ALARM AT SYSTEM HOST COMPUTER. UPON AIR FILTER DIFFERENTIAL PRESSURE IN EXCESS OF SETPOINT, ANNUNCIATE NON-CRITICAL MAINTENANCE ADVISORY ALARM AT SYSTEM HOST COMPUTER.

FAIL-SAFE POSITION: ALL CONTROL VALVES AND DAMPERS MENTIONED ABOVE SHALL BE NORMALLY-CLOSED AND FAIL-CLOSED, EXCEPT THAT PREHEAT CONTROL VALVE SHALL BE NORMALLY-OPEN AND FAIL-OPEN. (FOR THREE-WAY VALVES, THE TERM "OPEN" OR "CLOSED" MEANS OPEN-TO-THE-COIL OR CLOSED-TO-THE-COIL, RESPECTIVELY.)

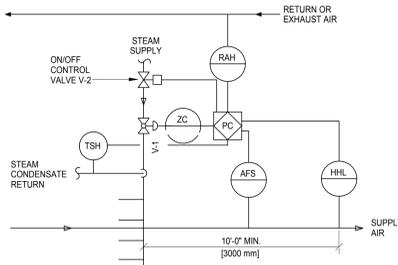
UNOCCUPIED CYCLE: ENERGY MANAGEMENT SYSTEM WILL INDICATE THAT THE AREA SERVED IS UNOCCUPIED VIA A TIME SCHEDULE OR OPERATOR'S COMMAND. OPERATION OF ALL SEQUENCES ABOVE SHALL REMAIN EXACTLY AS DESCRIBED FOR THE OCCUPIED CYCLE, EXCEPT THAT TERMINAL BOX CFM SETTINGS WILL BE REVISED IN ACCORDANCE WITH RESET SCHEDULE.

THE SYSTEM CONSISTS OF AN EXHAUST FAN EF-2, EXHAUST DAMPER, OUTSIDE AIR DAMPER AND ROOM MOUNTED TEMPERATURE SENSOR. ON A RISE IN SPACE TEMPERATURE ABOVE THE SPACE TEMPERATURE SET POINT OF 80°F (ADJ.) THE EXHAUST AIR AND OUTSIDE AIR DAMPERS SHALL OPEN AND ONCE PROVEN OPEN BY END SWITCHES ON THE DAMPER ACTUATOR, THE EXHAUST FAN SHALL START. ON A FALL IN SPACE TEMPERATURE SET POINT, THE EXHAUST FAN SHALL BE DISABLED AND THE MOTORIZED DAMPERS FULLY CLOSED. CONFIRM NORMAL FAN OPERATION VIA A CURRENT SENSOR, UPON FAN FAILURE.

**MECHANICAL ROOM VENTILATION SEQUENCE (EF-2)**

**1 CONSTANT VOLUME CONTROLS**

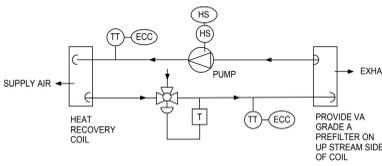
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STEAM HUMIDIFIER RETURN (OR EXHAUST) AIR HUMIDITY SHALL BE MONITORED. ON A CALL FOR HUMIDIFICATION, HUMIDIFIER VALVE V-1 SHALL MODULATE TO MAINTAIN THE RETURN (OR EXHAUST) AIR HUMIDITY SET POINT TO 30% (ADJUSTABLE). PRIOR TO ACTIVATION OF V-1, THE ON/OFF CONTROL VALVE V-2 SHALL BE ENABLED THROUGH ECC AND JACKET TEMPERATURE SENSED BY TSH SHALL BE WARM ENOUGH TO PREVENT CONDENSATION. THE HIGH LIMIT HUMIDITY SENSOR, LOCATED IN THE SUPPLY AIR DUCT 10 FEET AWAY FROM THE HUMIDIFIER SHALL DISABLE THE HUMIDIFIER AND GIVE AN ALARM SIGNAL TO THE ECC. IF THE SUPPLY AIR HUMIDITY EXCEEDS 90% RH (ADJUSTABLE), THE AIRFLOW SWITCH SHALL PROVE AIRFLOW BEFORE HUMIDITY CONTROLS ARE ACTIVATED.

**3 RUN AROUND HEAT RECOVERY COIL DETAIL**

NTS



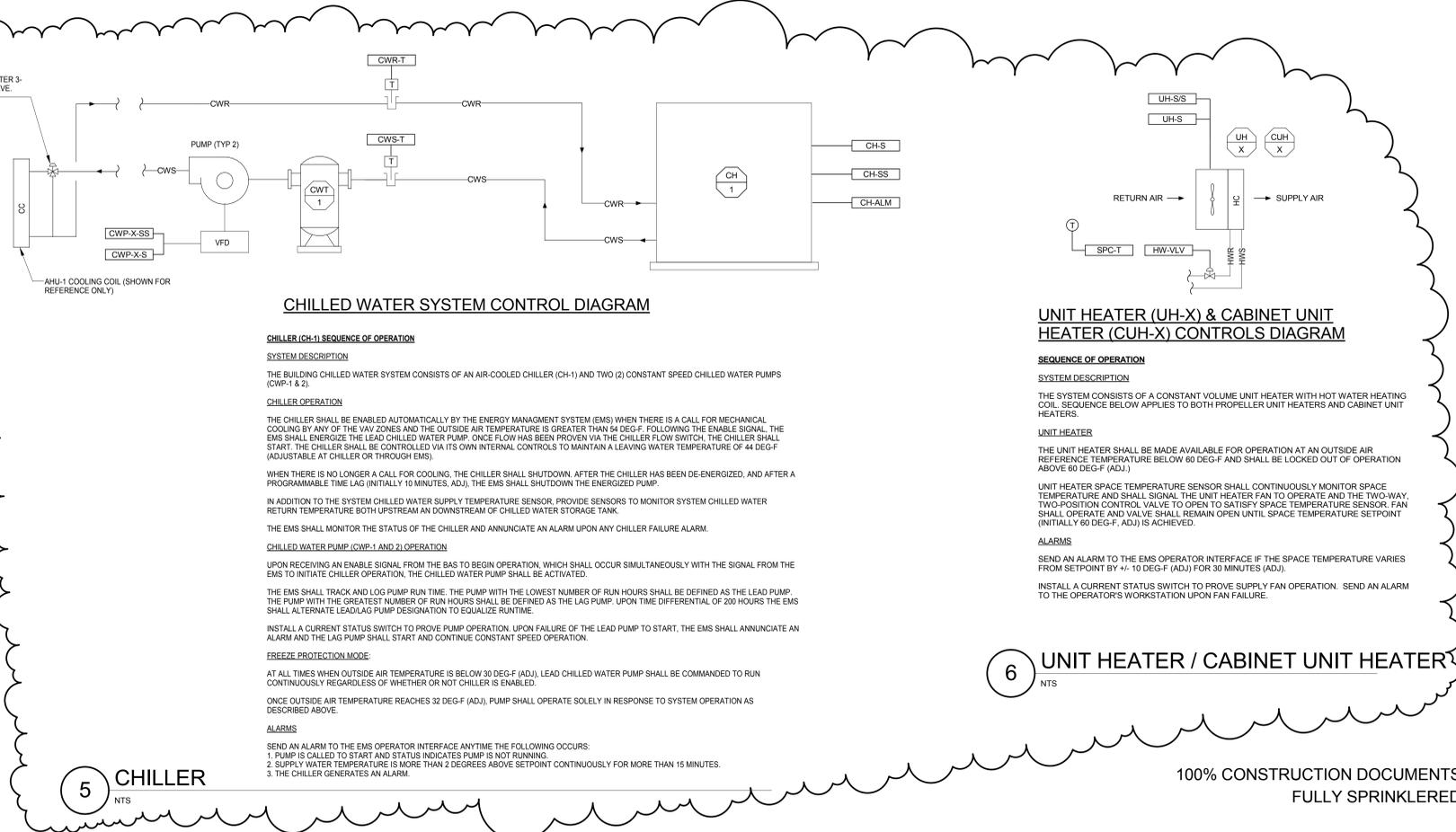
- NOTES:
1. TO PREVENT ICING ON EXHAUST COIL MAINTAIN TEMPERATURE OF SOLUTION ENTERING EXHAUST AIR COIL  $\geq 35^\circ\text{F}$  BY MODULATING 3 WAY VALVE.
  2. DISCONTINUE HEAT RECOVERY IF OUTSIDE AIR TEMPERATURE  $\geq$  BETWEEN 50 TO  $60^\circ\text{F}$  (ADJUSTABLE)
  3. PROVIDE 40% PROPYLENE GLYCOL SOLUTION.

**2 STEAM HUMIDIFIER CONTROLS**

NTS

**5 CHILLER**

NTS



**CHILLED WATER SYSTEM CONTROL DIAGRAM**

**CHILLER (CH-1) SEQUENCE OF OPERATION**

**SYSTEM DESCRIPTION**

THE BUILDING CHILLED WATER SYSTEM CONSISTS OF AN AIR-COOLED CHILLER (CH-1) AND TWO (2) CONSTANT SPEED CHILLED WATER PUMPS (CWP-1 & 2).

**CHILLER OPERATION**

THE CHILLER SHALL BE ENABLED AUTOMATICALLY BY THE ENERGY MANAGEMENT SYSTEM (EMS) WHEN THERE IS A CALL FOR MECHANICAL COOLING BY ANY OF THE VAV ZONES AND THE OUTSIDE AIR TEMPERATURE IS GREATER THAN 54 DEG-F. FOLLOWING THE ENABLE SIGNAL, THE EMS SHALL ENERGIZE THE LEAD CHILLED WATER PUMP. ONCE FLOW HAS BEEN PROVEN VIA THE CHILLER FLOW SWITCH, THE CHILLER SHALL START. THE CHILLER SHALL BE CONTROLLED VIA ITS OWN INTERNAL CONTROLS TO MAINTAIN A LEAVING WATER TEMPERATURE OF 44 DEG-F (ADJUSTABLE AT CHILLER OR THROUGH EMS).

WHEN THERE IS NO LONGER A CALL FOR COOLING, THE CHILLER SHALL SHUTDOWN. AFTER THE CHILLER HAS BEEN DE-ENERGIZED, AND AFTER A PROGRAMMABLE TIME LAG (INITIALLY 10 MINUTES, ADJ), THE EMS SHALL SHUTDOWN THE ENERGIZED PUMP.

IN ADDITION TO THE SYSTEM CHILLED WATER SUPPLY TEMPERATURE SENSOR, PROVIDE SENSORS TO MONITOR SYSTEM CHILLED WATER RETURN TEMPERATURE BOTH UPSTREAM AND DOWNSTREAM OF CHILLED WATER STORAGE TANK.

THE EMS SHALL MONITOR THE STATUS OF THE CHILLER AND ANNUNCIATE AN ALARM UPON ANY CHILLER FAILURE ALARM.

**CHILLED WATER PUMP (CWP-1 AND 2) OPERATION:**

UPON RECEIVING AN ENABLE SIGNAL FROM THE BAS TO BEGIN OPERATION, WHICH SHALL OCCUR SIMULTANEOUSLY WITH THE SIGNAL FROM THE EMS TO INITIATE CHILLER OPERATION, THE CHILLED WATER PUMP SHALL BE ACTIVATED.

THE EMS SHALL TRACK AND LOG PUMP RUN TIME. THE PUMP WITH THE LOWEST NUMBER OF RUN HOURS SHALL BE DEFINED AS THE LEAD PUMP. THE PUMP WITH THE GREATEST NUMBER OF RUN HOURS SHALL BE DEFINED AS THE LAG PUMP. UPON TIME DIFFERENTIAL OF 200 HOURS THE EMS SHALL ALTERNATE LEAD/LAG PUMP DESIGNATION TO EQUALIZE RUNTIME.

INSTALL A CURRENT STATUS SWITCH TO PROVE PUMP OPERATION. UPON FAILURE OF THE LEAD PUMP TO START, THE EMS SHALL ANNUNCIATE AN ALARM AND THE LAG PUMP SHALL START AND CONTINUE CONSTANT SPEED OPERATION.

**FREEZE PROTECTION MODE:**

AT ALL TIMES WHEN OUTSIDE AIR TEMPERATURE IS BELOW 30 DEG-F (ADJ), LEAD CHILLED WATER PUMP SHALL BE COMMANDED TO RUN CONTINUOUSLY REGARDLESS OF WHETHER OR NOT CHILLER IS ENABLED. ONCE OUTSIDE AIR TEMPERATURE REACHES 32 DEG-F (ADJ), PUMP SHALL OPERATE SOLELY IN RESPONSE TO SYSTEM OPERATION AS DESCRIBED ABOVE.

**ALARMS**

- SEND AN ALARM TO THE EMS OPERATOR INTERFACE ANYTIME THE FOLLOWING OCCURS:
1. PUMP IS CALLED TO START AND STATUS INDICATES PUMP IS NOT RUNNING.
  2. SUPPLY WATER TEMPERATURE IS MORE THAN 2 DEGREES ABOVE SETPOINT CONTINUOUSLY FOR MORE THAN 15 MINUTES.
  3. THE CHILLER GENERATES AN ALARM.

**6 UNIT HEATER / CABINET UNIT HEATER**

NTS

**UNIT HEATER (UH-X) & CABINET UNIT HEATER (CUH-X) CONTROLS DIAGRAM**

**SEQUENCE OF OPERATION**

**SYSTEM DESCRIPTION**

THE SYSTEM CONSISTS OF A CONSTANT VOLUME UNIT HEATER WITH HOT WATER HEATING COIL. SEQUENCE BELOW APPLIES TO BOTH PROPELLER UNIT HEATERS AND CABINET UNIT HEATERS.

**UNIT HEATER**

THE UNIT HEATER SHALL BE MADE AVAILABLE FOR OPERATION AT AN OUTSIDE AIR REFERENCE TEMPERATURE BELOW 60 DEG-F AND SHALL BE LOCKED OUT OF OPERATION ABOVE 60 DEG-F (ADJ.)

UNIT HEATER SPACE TEMPERATURE SENSOR SHALL CONTINUOUSLY MONITOR SPACE TEMPERATURE AND SHALL SIGNAL THE UNIT HEATER FAN TO OPERATE AND THE TWO-WAY, TWO-POSITION CONTROL VALVE TO OPEN TO SATISFY SPACE TEMPERATURE SENSOR. FAN SHALL OPERATE AND VALVE SHALL REMAIN OPEN UNTIL SPACE TEMPERATURE SETPOINT (INITIALLY 60 DEG-F, ADJ) IS ACHIEVED.

**ALARMS**

SEND AN ALARM TO THE EMS OPERATOR INTERFACE IF THE SPACE TEMPERATURE VARIES FROM SETPOINT BY +/- 10 DEG-F (ADJ) FOR 30 MINUTES (ADJ).

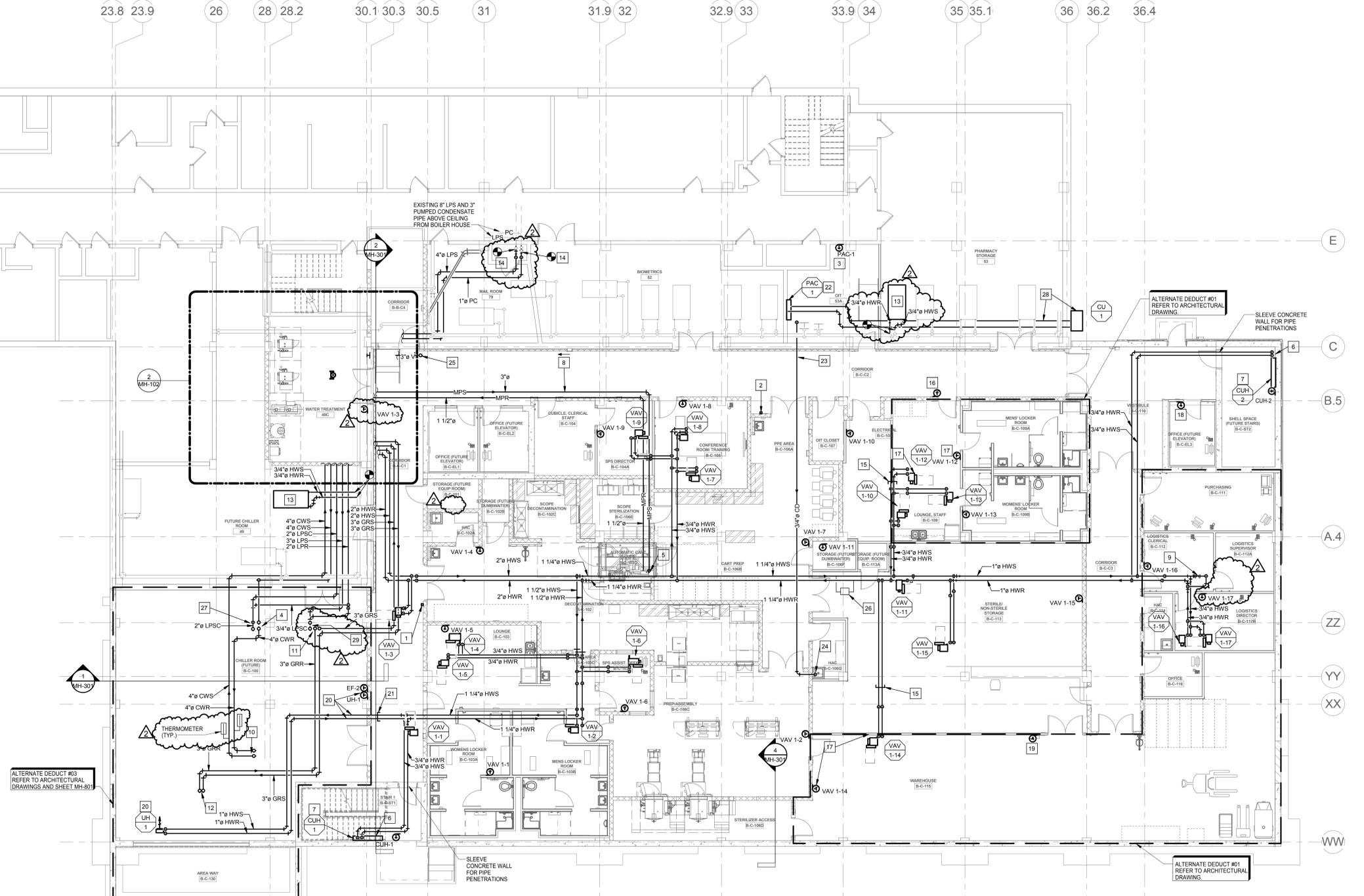
INSTALL A CURRENT STATUS SWITCH TO PROVE SUPPLY FAN OPERATION. SEND AN ALARM TO THE OPERATOR'S WORKSTATION UPON FAN FAILURE.

100% CONSTRUCTION DOCUMENTS FULLY SPRINKLERED

<p><b>SPS BASEMENT ADDITION</b> 2121 LAKE AVE., FORT WAYNE, IN 46805</p>		<p><b>ARCHITECT/ENGINEERS:</b></p> <p>7260 SHADELAND STATION INDIANAPOLIS, IN 46256-3957 TEL 317.547.3500 FAX 317.543.0270 www.structurepoint.com</p>		<p><b>CONSULTANTS:</b></p> <p>8250 Haverstick Road Suite 285 Indianapolis, IN 46240 317.638.8383</p>		<p>Drawing Title <b>MECHANICAL CONTROLS</b></p> <p>Approved: Project Director</p>		<p>Project Title <b>SPS BASEMENT ADDITION</b></p> <p>Project Number 2010.00629</p> <p>Building Number 01</p> <p>Drawing Number <b>MI-711</b></p>		<p>Location <b>2121 LAKE AVE., FORT WAYNE, IN 46805</b></p> <p>Date 08/15/2014</p> <p>Checked SWD</p> <p>Drawn RAC</p>		<p>Office of Construction and Facilities Management</p> <p><b>VA</b> Department of Veterans Affairs</p>	
<p>Amendment 04</p> <p>Revisions:</p>		<p>06-10-2015</p> <p>Date</p>		<p>VA FORM 08-6231</p>		<p>08/15/2014</p>		<p>08/15/2014</p>		<p>08/15/2014</p>			

- GENERAL NOTES:**
- REFER TO SHEET M-000 FOR GENERAL NOTES.
  - ALL PIPE RUNOUT SIZES TO AIR TERMINAL UNIT REHEAT COIL SHALL BE 3/4" UNLESS NOTED OTHERWISE.

- KEYED NOTES:**
- WALL MOUNTED DECONTAM ROOM NEGATIVE PRESSURE MONITOR FOR MONITORING SPACE PRESSURE BETWEEN DECONTAM ROOM AND CORRIDOR. INSTALL MONITOR AND PRESSURE SENSORS PER MANUFACTURERS RECOMMENDATIONS.
  - WALL MOUNTED PREP-ASSEMBLY POSITIVE PRESSURE MONITOR FOR MONITORING SPACE PRESSURE BETWEEN PREP-ASSEMBLY AND CORRIDOR. INSTALL MONITOR AND PRESSURE SENSORS PER MANUFACTURERS RECOMMENDATIONS.
  - COORDINATE LOCATION OF WALL MOUNTED THERMOSTAT/SPACE TEMPERATURE SENSOR IN ROOM WITH LOCATION OF EQUIPMENT AND OTHER WALL MOUNTED DEVICES PRIOR TO INSTALLING.
  - 4" CWS AND CWR UP THRU ROOF TO AIR HANDLING UNIT AHU-1. PIPING SHALL BE LOCATED INSIDE COOLING COIL PIPE VESTIBULE.
  - CONNECT 3" MPS AND 1 1/2" MPR TO CART WASHER DISINFECTOR. REFER TO ARCHITECTURAL DRAWINGS. PROVIDE SHUT-OFF VALVES AT EQUIPMENT. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
  - 24" HWS AND HWR EXPOSED DOWN CONCRETE WALL TO CABINET UNIT HEATER.
  - INSTALL BOTTOM OF CABINET UNIT HEATER 8" AFF.
  - SLOPE STEAM MAIN DOWN IN DIRECTION TO STEAM GENERATORS.
  - CALIBRATED ORIFICE BALANCING VALVE. BALANCE FOR 5 GPM.
  - 4" CWS AND CWR UP THRU ROOF TO AIR COOLED CHILLER CH-1. REFER TO SHEET MH-102 FOR CONTINUATION.
  - 3" GRS AND GRR UP THRU ROOF TO HEAT RECOVERY COIL IN AHU-1. PIPING SHALL BE LOCATED IN HEAT RECOVERY COIL PIPE VESTIBULE. REFER TO SHEET MH-102 FOR CONTINUATION.
  - 3" GRS AND GRR UP THRU ROOF TO HEAT RECOVERY COIL IN EF-1 INTAKE DUCT. REFER TO SHEET MH-102 FOR CONTINUATION.
  - RELOCATED EXISTING HOT WATER RADIATOR UNIT. RECONNECT EXISTING BRANCH PIPING TO UNIT.
  - CONNECT NEW 4" LPS AND 1" PC TO EXISTING 8" LPS AND 3" PC MAINS. COORDINATE SHUT DOWN WITH OWNERS REPRESENTATIVE.
  - CAP BRANCH PIPING WHERE SHOWN IF DUCT ALTERNATE #01 IS ACCEPTED.
  - LOCATE THERMOSTAT FOR VAV 1-13 IN CORRIDOR IF DUCT ALTERNATE #01 IS ACCEPTED.
  - DELETE AIR TERMINAL UNIT AND ASSOCIATED THERMOSTAT IF DUCT ALTERNATE #01 IS ACCEPTED.
  - LOCATE THERMOSTAT FOR VAV 1-18 IN OFFICE IF DUCT ALTERNATE #01 IS ACCEPTED.
  - LOCATE THERMOSTAT FOR VAV 1-17 IN SHELL SPACE IF DUCT ALTERNATE #01 IS ACCEPTED.
  - DELETE UH-1 AND ASSOCIATED BRANCH PIPING AND CONTROLS IF ALTERNATE DUCT #03 IS ACCEPTED.
  - CAP BRANCH PIPING AT THIS LOCATION IF DUCT ALTERNATE #03 IS ACCEPTED.
  - INSTALL UNIT ON WALL TOP OF UNIT 8'-0" AFF. COORDINATE LOCATION WITH OWNER PRIOR TO INSTALLING.
  - 3/4" INSULATED PUMPED CONDENSATE FROM PAC-1 TO JANITORS SINK DISCHARGE.
  - 3/4" CONDENSATE LINE EXPOSED DOWN WALL. TERMINATE 6" ABOVE JANITORS SINK.
  - 3" STEAM VENT UP THRU ROOF. REFER TO SHEET MH-102 FOR CONTINUATION.
  - HEATING HOT WATER SYSTEM DIFFERENTIAL PRESSURE SENSOR FOR PUMPS HWP-1 AND HWP-2. REFER TO DETAIL 8 ON SHEET MP-511.
  - 2" LPSC UP THRU ROOF TO AHU-1 HUMIDIFIER. PIPING SHALL BE LOCATED INSIDE HUMIDIFIER PIPE VESTIBULE. PROVIDE DRIP TRAP AT BASE OF LPSC RISER. REFER TO STEAM PIPING DIAGRAM ON SHEET MP-312.
  - REFRIGERANT PIPING THRU EXISTING EXTERIOR WALL TO CONDENSING UNIT. CONDENSING UNIT SHALL BE WALL MOUNTED AND BRACED TO THE WALL. SLEEVE EXTERIOR WALL FOR PIPE PENETRATIONS AND SEAL WATER TIGHT. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
  - 3" LPS AND 2" LPR UP THRU ROOF TO AHU-1. PIPING SHALL BE ROUTED ABOVE ROOF INSIDE PRE-HEAT COIL PIPE VESTIBULE. PROVIDE DRIP TRAP AT BASE OF LPS RISER. REFER TO STEAM PIPING DIAGRAM ON SHEET MP-312.



**BASEMENT LEVEL PIPING PLAN - NEW WORK**  
 1 MP-101 1/8" = 1'-0"

100% CONSTRUCTION DOCUMENTS  
 FULLY SPRINKLERED

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 eighty nine inches = one foot  
 ninety inches = one foot  
 ninety one inches = one foot  
 ninety two inches = one foot  
 ninety three inches = one foot  
 ninety four inches = one foot  
 ninety five inches = one foot  
 ninety six inches = one foot  
 ninety seven inches = one foot  
 ninety eight inches = one foot  
 ninety nine inches = one foot  
 one hundred inches = one foot

Amendment 04	06-10-2015
Revisions:	Date

**VA**  
 SPS BASEMENT ADDITION  
 2121 LAKE AVE., FORT WAYNE, IN 46805

**ARCHITECT/ENGINEERS:**

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**CONSULTANTS:**

**Drawing Title**  
 BASEMENT LEVEL PIPING PLAN - NEW WORK

Approved: Project Director

**Project Title**  
 SPS BASEMENT ADDITION

**Project Number**  
 2010.00629

**Building Number**  
 01

**Drawing Number**  
 MP-101

**Location**  
 2121 LAKE AVE., FORT WAYNE, IN 46805

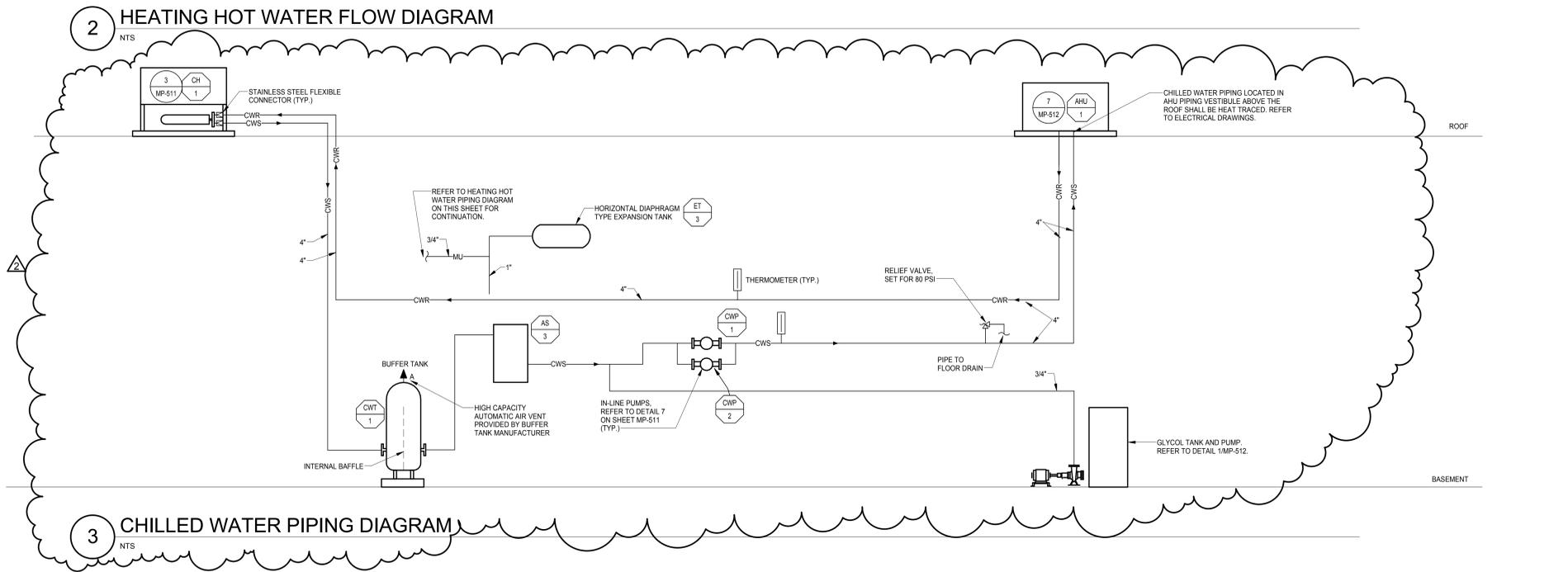
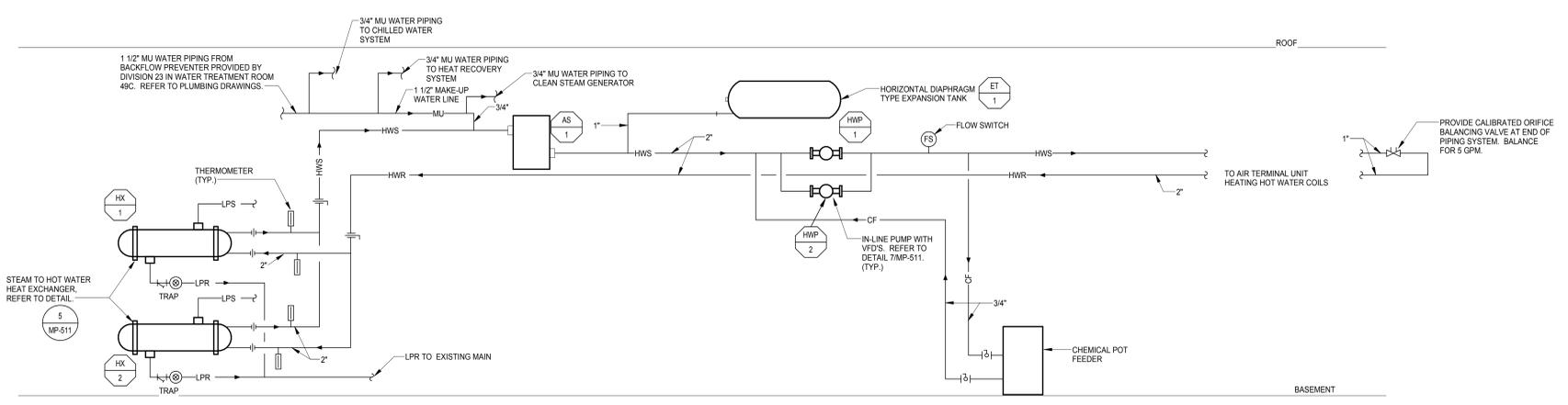
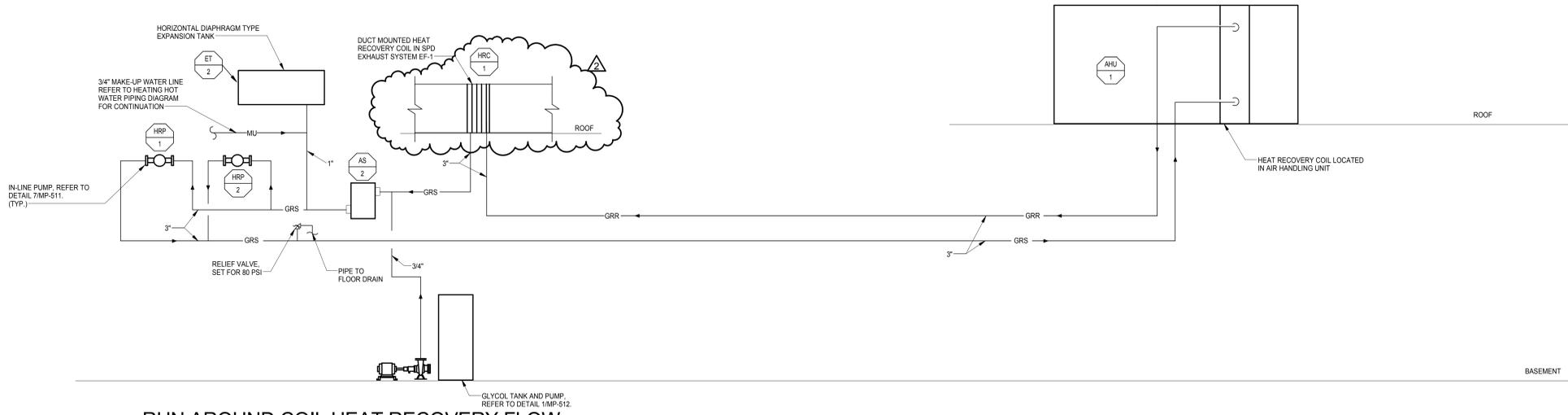
**Date**  
 08/15/2014

**Checked**  
 SWD

**Drawn**  
 RAC

**Office of Construction and Facilities Management**

**VA Department of Veterans Affairs**



100% CONSTRUCTION DOCUMENTS  
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Amendment 04	06-10-2015
Revisions:	Date



**SPS BASEMENT ADDITION**  
2121 LAKE AVE., FORT WAYNE, IN 46805

**ARCHITECT/ENGINEERS:**



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**CONSULTANTS:**

Drawing Title  
**FLOW DIAGRAMS**

Approved: Project Director

Project Title  
**SPS BASEMENT ADDITION**

Location  
**2121 LAKE AVE., FORT WAYNE, IN 46805**

Date  
08/15/2014

Checked  
SWD

Drawn  
RAC

Project Number  
2010.00629

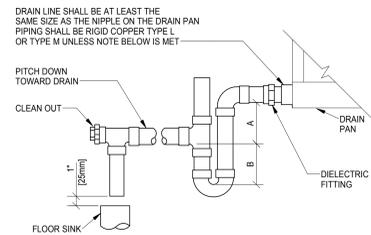
Building Number  
01

Drawing Number  
**MP-311**

Office of  
Construction  
and Facilities  
Management







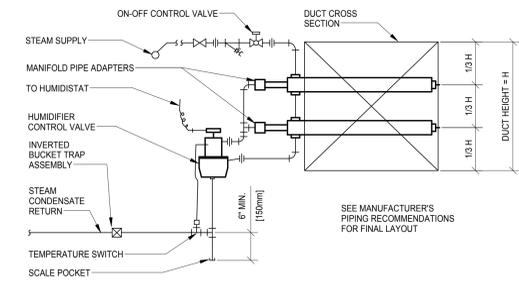
- NOTE:
1. CPVC PIPE MAY BE USED ONLY IF APPROVED BY LOCAL BA AND IS INDOORS AND DOES NOT PASS THROUGH RATED BARRIERS.
  2. DIELECTRIC FITTING TO BE USED WHEN TWO DISSIMILAR METALS ARE TO BE CONNECTED.

UNIT TYPE	A	B
DRAW THRU	2" (50mm) PLUS X	X
BLOW THRU	1" (25mm) MINIMUM	2X

WHERE X = STATIC PRESSURE IN PAN

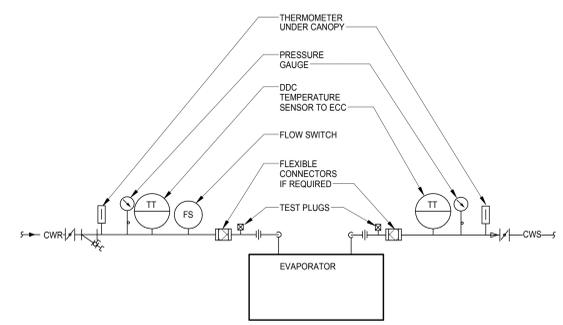
### 1 AIR HANDLING UNIT DRAIN TRAP DETAIL

NTS



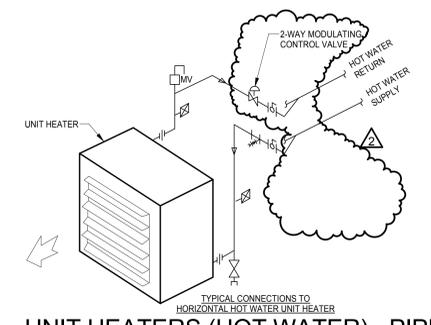
### 2 STEAM HUMIDIFIER - PIPING CONNECTION (MULTIPLE DISPERSION TUBES)

NTS



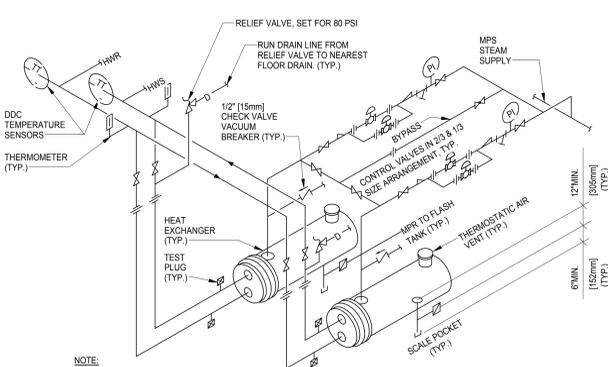
### 3 AIR COOLED CHILLER - PIPING CONNECTIONS

NTS



### 4 UNIT HEATERS (HOT WATER) - PIPING CONNECTIONS

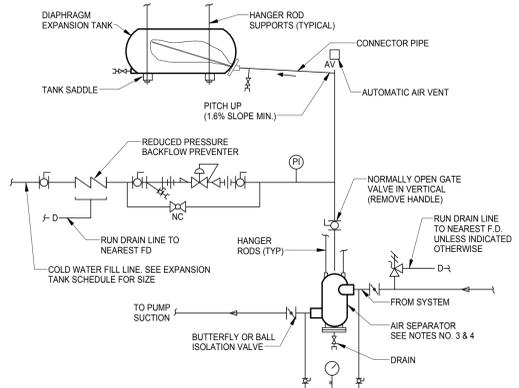
NTS



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

### 5 HEAT EXCHANGER - STEAM TO HOT WATER

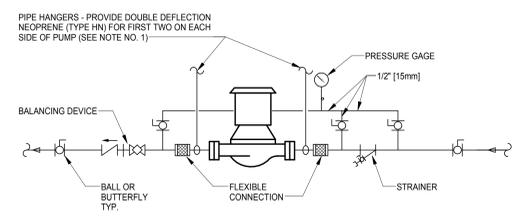
NTS



- NOTES:
1. SEE EXPANSION TANK SYSTEM SCHEDULE FOR COMPONENT SIZES.
  2. RELIEF VALVE FOR CHILLED WATER SYSTEM IS SHOWN. OMIT WHEN RELIEF VALVE IS SHOWN ON HEAT EXCHANGER DETAIL & SYSTEM IS USED ONLY FOR HOT WATER HEATING.
  3. PROVIDE STRAINER IN AIR SEPARATOR WHEN INDICATED IN EXPANSION TANK SCHEDULE.
  4. FOR HOT WATER SYSTEMS 2" (50mm) AND SMALLER AND CHILLED WATER SYSTEMS USE IN-LINE AIR PURGER IN LIEU OF AIR SEPARATOR.
  5. SET PRESSURE REDUCING VALVE SO PRESSURE AT HIGHEST POINT IN SYSTEM HAS A MINIMUM OF 4 PSIG. (28kPa)

### 6 HORIZONTAL EXPANSION TANK-PIPING CONNECTIONS

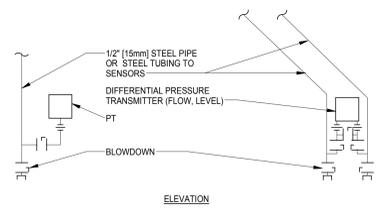
NTS



- NOTES:
1. SUPPORT PUMP FROM PIPING ONLY. DO NOT SUPPORT PUMP FROM MOTOR.

### 7 IN-LINE PUMPS - CONNECTIONS

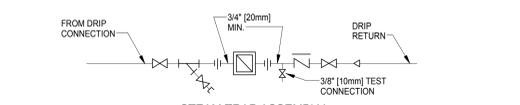
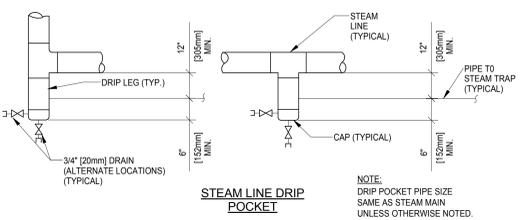
NTS



- NOTES:
1. INSTALLATION OF SENSORS AND TRANSMITTERS SHALL CONFORM TO RECOMMENDATIONS OF MANUFACTURERS OF TRANSMITTERS.

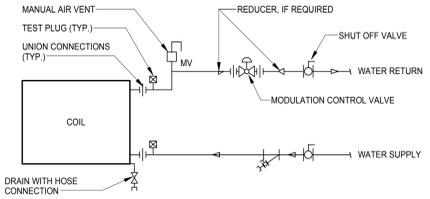
### 8 PRESSURE TRANSMITTER INSTALLATION

NTS



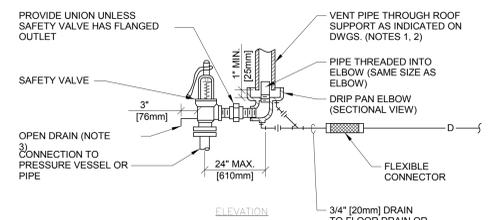
### 9 STEAM LINE DRIP POCKET STEAM TRAP ASSEMBLY

NTS



### 10 TERMINAL UNIT WATER COILS-PIPING CONNECTION

NTS



- 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.

### 11 STEAM SAFETY VALVE

NTS

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<b>ARCHITECT/ENGINEERS:</b> <b>SPS BASEMENT ADDITION</b> 2121 LAKE AVE., FORT WAYNE, IN 46805		<b>AMERICAN STRUCTUREPOINT INC.</b> 7260 SHADELAND STATION INDIANAPOLIS, IN 46256-3957 TEL 317.547.3500 FAX 317.543.0270 www.structurepoint.com		<b>ROSS &amp; BARUZZINI</b> 8250 Haverstick Road Suite 285 Indianapolis, IN 46240 317.638.8383		<b>CONSULTANTS:</b>		Drawing Title <b>MECHANICAL PIPING DETAILS</b>		Project Title <b>SPS BASEMENT ADDITION</b>		Project Number 2010.00629		Office of Construction and Facilities Management  Department of Veterans Affairs	
Amendment 04 06-10-2015						Approved: Project Director		Location 2121 LAKE AVE., FORT WAYNE, IN 46805		Building Number 01		Drawing Number <b>MP-511</b>			
Revisions:								Date 08/15/2014		Checked SWD		Drawn RAC			

