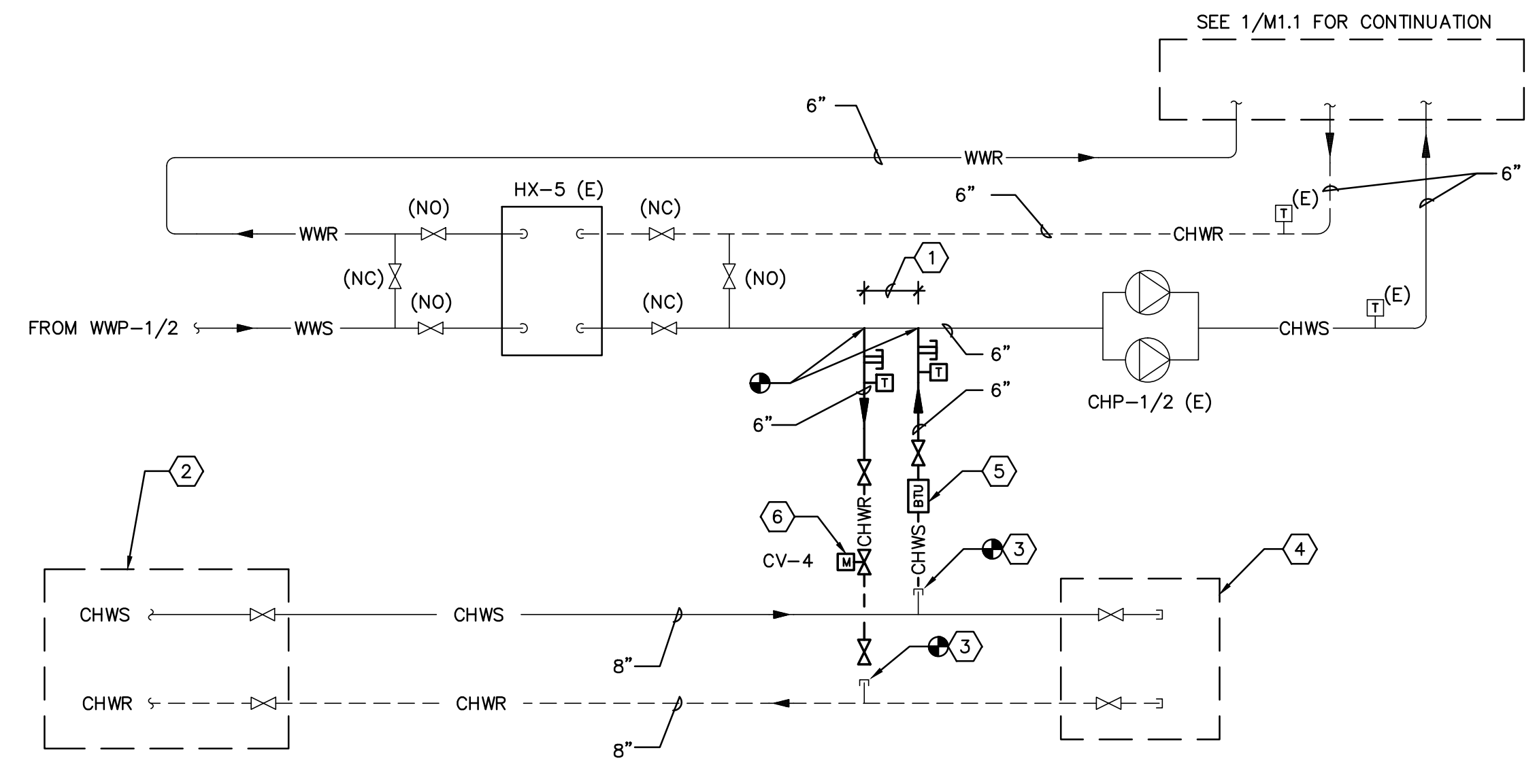


DETAIL NOTES

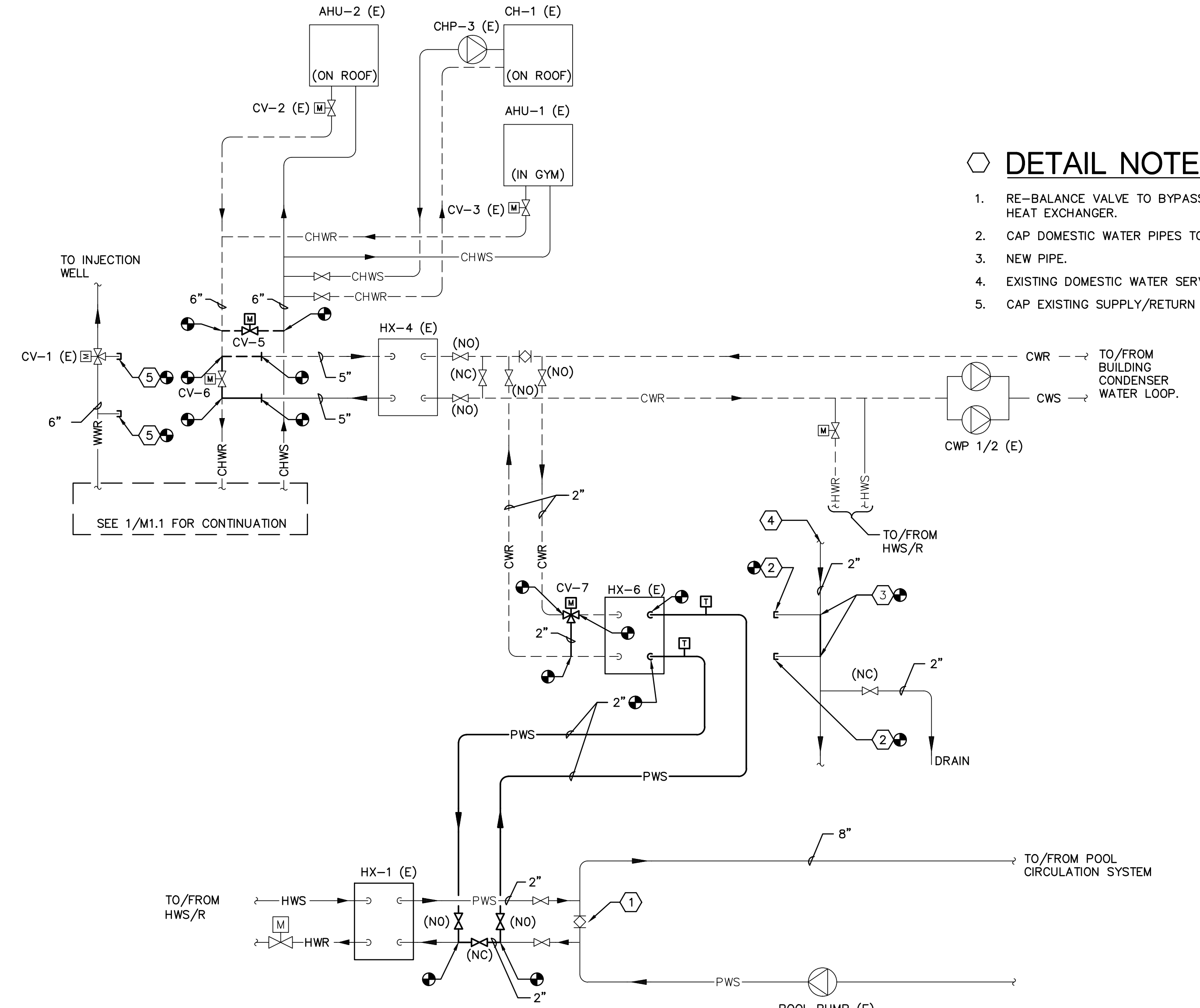
- THREE PIPE DIAMETERS MAX.
- TO/FROM CAMPUS LOOP PROJECT.
- REMOVE CAP AND TIE INTO EXISTING.
- EXISTING VALVES AND CAPS FOR FUTURE LOOP EXTENSION.
- PROVIDE BTU METER TIED TO ASRC BUILDING AUTOMATION SYSTEM.
- PRESSURE INDEPENDENT CONTROL VALVE. SIZE FOR 10 PSI PRESSURE DROP AT 340 GPM.



1 CAMPUS CHILLED WATER LOOP CONNECTION SCHEMATIC
NO SCALE

DETAIL NOTES

- RE-BALANCE VALVE TO BYPASS 48 GPM THROUGH HEAT EXCHANGER.
- CAP DOMESTIC WATER PIPES TO HX-6.
- NEW PIPE.
- EXISTING DOMESTIC WATER SERVICE.
- CAP EXISTING SUPPLY/RETURN TO HX-4 FROM WWR.



2 CONDENSER WATER LOOP HEAT REJECT SCHEMATIC
NO SCALE

MECHANICAL SYMBOL LIST

* THIS IS A STANDARD LIST AND NOT ALL SYMBOLS AND ABBREVIATIONS MAY BE USED.

	VALVE, GENERAL		THERMODYNAMIC STEAM TRAP		EFFICIENT
	CHECK VALVE		F&T STEAM TRAP		ENTERING WATER TEMPERATURE
	QUARTER TURN VALVE		BTU METER		FAHRENHEIT
	GLOBE VALVE		PRESSURE SENSOR		FIRE DAMPER
	GATE VALVE		FLOW SWITCH		FEET
	BALL VALVE		EXPANSION LOOP		GALLONS
	BALANCING VALVE		MANUAL AIR VENT		GALLONS PER HOUR
	TWO-WAY MOTORIZED CONTROL VALVE		AUTOMATIC AIR VENT		GALLONS PER MINUTE
	THREE-WAY MOTORIZED CONTROL VALVE		TEST PORT (PETE'S PLUG OR EQUAL)		HEAD
	PIPE RISE		POINT OF CONNECTION		HEATING
	PIPE DROP		LOW PRESSURE STEAM		INSIDE DIAMETER
	TEE UP ON PIPE		PRESSURIZED CONDENSATE RETURN		INCHES
	TEE DOWN ON PIPE		CHILLED WATER SUPPLY		POUNDS
	CONTINUATION		CHILLED WATER RETURN		MAXIMUM
	CAP		WELL WATER RETURN		MINIMUM
	STRAINER		CONDENSER WATER SUPPLY		NOT APPLICABLE
	PRESSURE GAUGE WITH COCK		CONDENSER WATER RETURN		NOT IN CONTRACT
	THERMOMETER		HEATING WATER SUPPLY		NUMBER
	PIPE TO DRAIN		HEATING WATER RETURN		NOT TO SCALE
	VENT TO ATMOSPHERE		POOL WATER SUPPLY		ON CENTER
	AIR SEPARATOR		ACCESS DOOR		OUTSIDE DIAMETER
	TEMPERATURE SENSOR		ABOVE FINISHED FLOOR		PRESSURE DROP
	PRESSURE RELIEF VALVE		CONTINUATION		PRESSURE REDUCING VALVE
	T&P RELIEF VALVE WITH PIPE TO DRAIN		DROP		POUNDS PER SQUARE INCH
	EXPANSION TANK		DIAMETER		QUANTITY
			EXISTING		RISE
			RETURN		RETURN
			REVOLUTIONS PER MINUTE		SQUARE FEET
			SHUT OFF VALVE		SHUT OFF VALVE
			TEMPERATURE DIFFERENCE		TEMPERATURE DIFFERENCE
			TEMPERATURE		TEMPERATURE
			TOTAL HEAT		TOTAL HEAT
			TOTAL PRESSURE		TOTAL PRESSURE
			WITH		WITH
			WET BULB		WET BULB
			WITHOUT		WITHOUT

DDC POINTS LIST *

SYSTEM	ANALOG IN	ANALOG OUT	DIGITAL IN	DIGITAL OUT
CHW BTU METER - BTU	X			
CHW BTU METER - FLOW	X			
CHW BTU METER - SUPPLY TEMP.	X			
CHW BTU METER - RETURN TEMP.	X			
CAMPUS CHILLED WATER CONTROL VALVE (CV-4)		X		
CHILLED WATER LOOP BYPASS CONTROL VALVE (CV-5)		X		
CHILLED WATER RETURN CONTROL VALVE (CV-6)		X		
CONDENSER WATER LOOP BYPASS CONTROL VALVE (CV-7)		X		
HX-6 POOL SIDE INLET TEMP.	X			
HX-6 POOL SIDE OUTLET TEMP.	X			

* POINTS LISTED ARE NEW. ADDITIONAL POINTS NEEDED TO ACCOMPLISH SPECIFIED SEQUENCE OF OPERATIONS ARE PRESUMED TO BE EXISTING. VERIFY IF ANY ADDITIONAL NEW POINTS ARE NEEDED TO ACCOMPLISH SPECIFIED SEQUENCE OF OPERATIONS PRIOR TO BIDDING.

- SEQUENCE OF OPERATION**
- EXISTING SEQUENCES AND SETPOINTS TO REMAIN AS IS, UNLESS NOTED OTHERWISE BELOW.
 - WELL WATER LOOP:
 - NORMAL MODE:
 - WELL PUMP, WWP-1, AND WWP-2 TO REMAIN OFF.
 - BACK-UP MODE:
 - EXISTING WELL WATER SEQUENCE TO REMAIN AS IS FOR ALTERNATE SEQUENCE THAT THE OWNER CAN UTILIZE FOR BACK-UP.
 - EXISTING THREE WAY VALVE (CV-1) ASSOCIATED WITH HX-4 TO BE DECOMMISSIONED, ALONG WITH ASSOCIATED SEQUENCES.
 - CHILLED WATER LOOP:
 - NORMAL MODE:
 - CH-1 AND ASSOCIATED PUMP TO REMAIN OFF.
 - UPON CALL FOR CHW LOOP COOLING (AS DETERMINED BY EXISTING SEQUENCE) MODULATE NEW CV-4 OPEN TO LET CAMPUS CHILLED WATER INTO BUILDING CHW LOOP IN ORDER TO MAINTAIN BUILDING CHWS SETPOINT (54F ADJ.).
 - CV-1 TO REMAIN CLOSED AND CHW PUMPS OFF WHEN NO CALL FOR COOLING.
 - GENERATE ALARM IF CV-1 IS OPEN AND CHW PUMPS ARE OFF.
 - BACK-UP MODE:
 - EXISTING CHILLED WATER SEQUENCE FOR CH-1 AND ASSOCIATED PUMP TO REMAIN AS IS FOR ALTERNATE SEQUENCE THAT THE OWNER CAN UTILIZE FOR BACK-UP.
 - CONDENSER WATER LOOP:
 - MODULATE NEW CV-7 TO SEND WATER THROUGH HX-6 IF CWR EXCEEDS 95F (ADJ.). IF LOOP IS STILL UNABLE TO MAINTAIN COOLING SETPOINT, THEN MODULATE NEW CV-6 CLOSED TO SEND CHWR THROUGH HX-4.
 - IF AHU-1 AND AHU-2 CONTROL VALVES ARE CLOSED, THEN MODULATE NEW BYPASS VALVE (CV-5) OPEN.

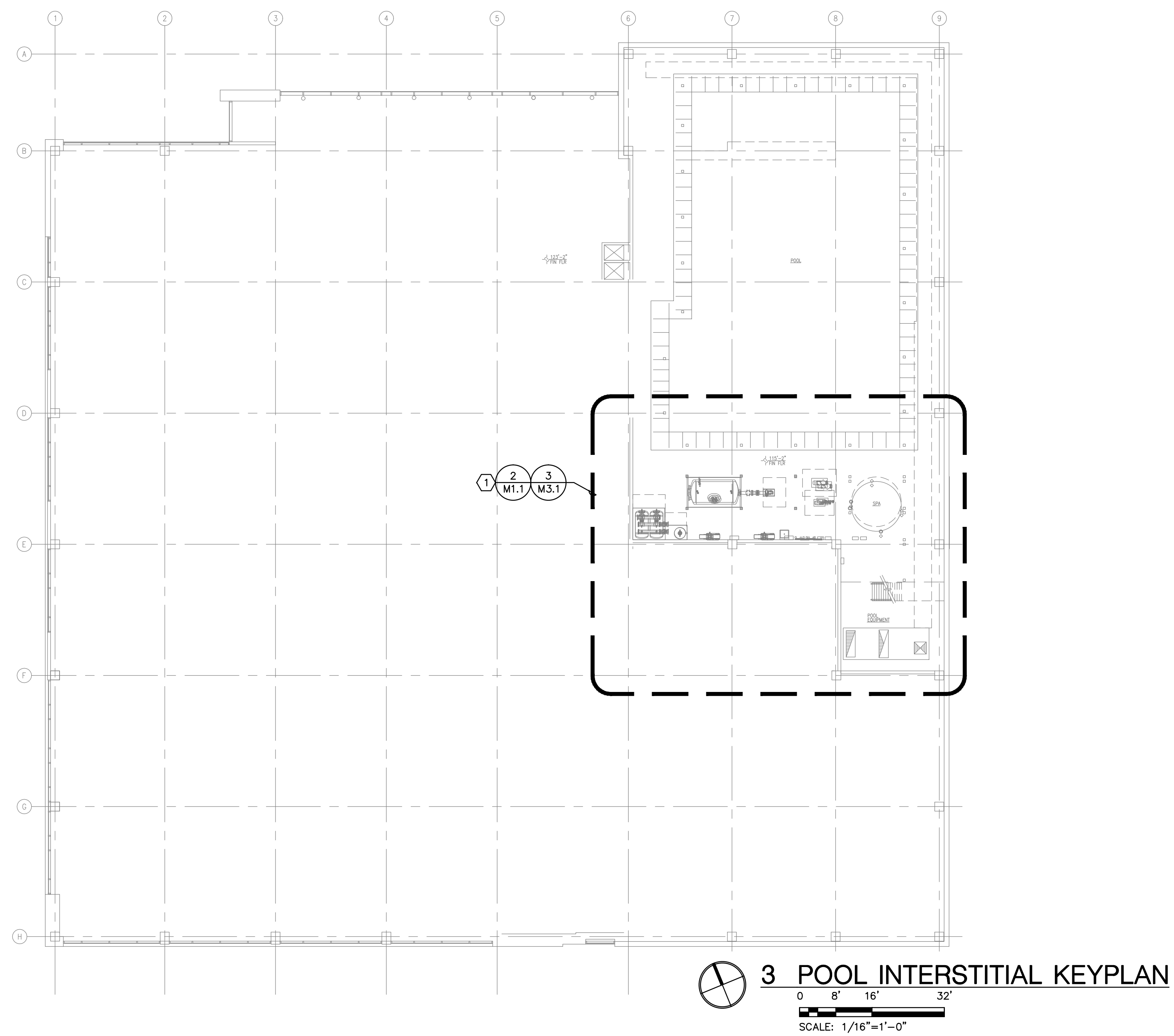
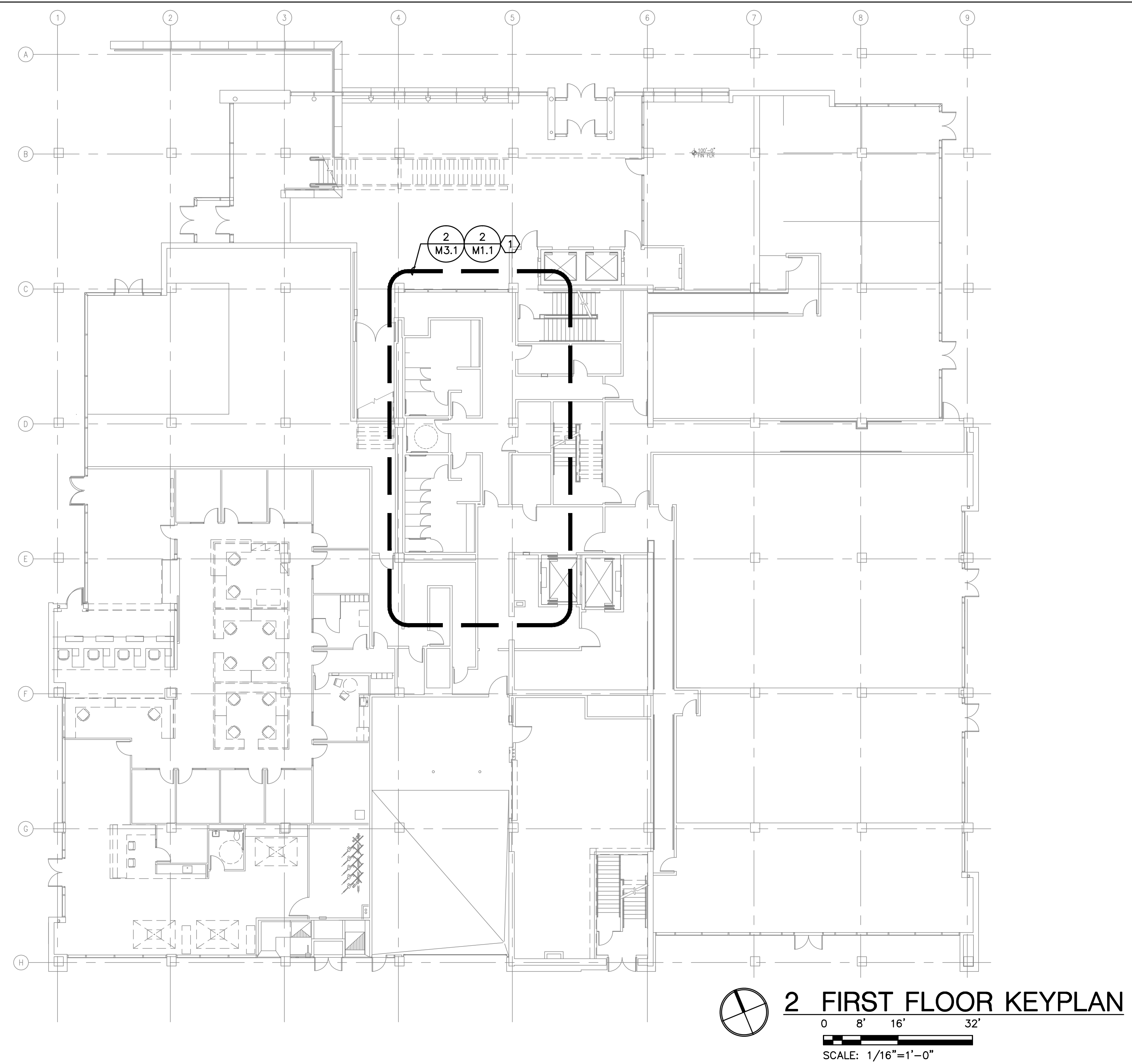
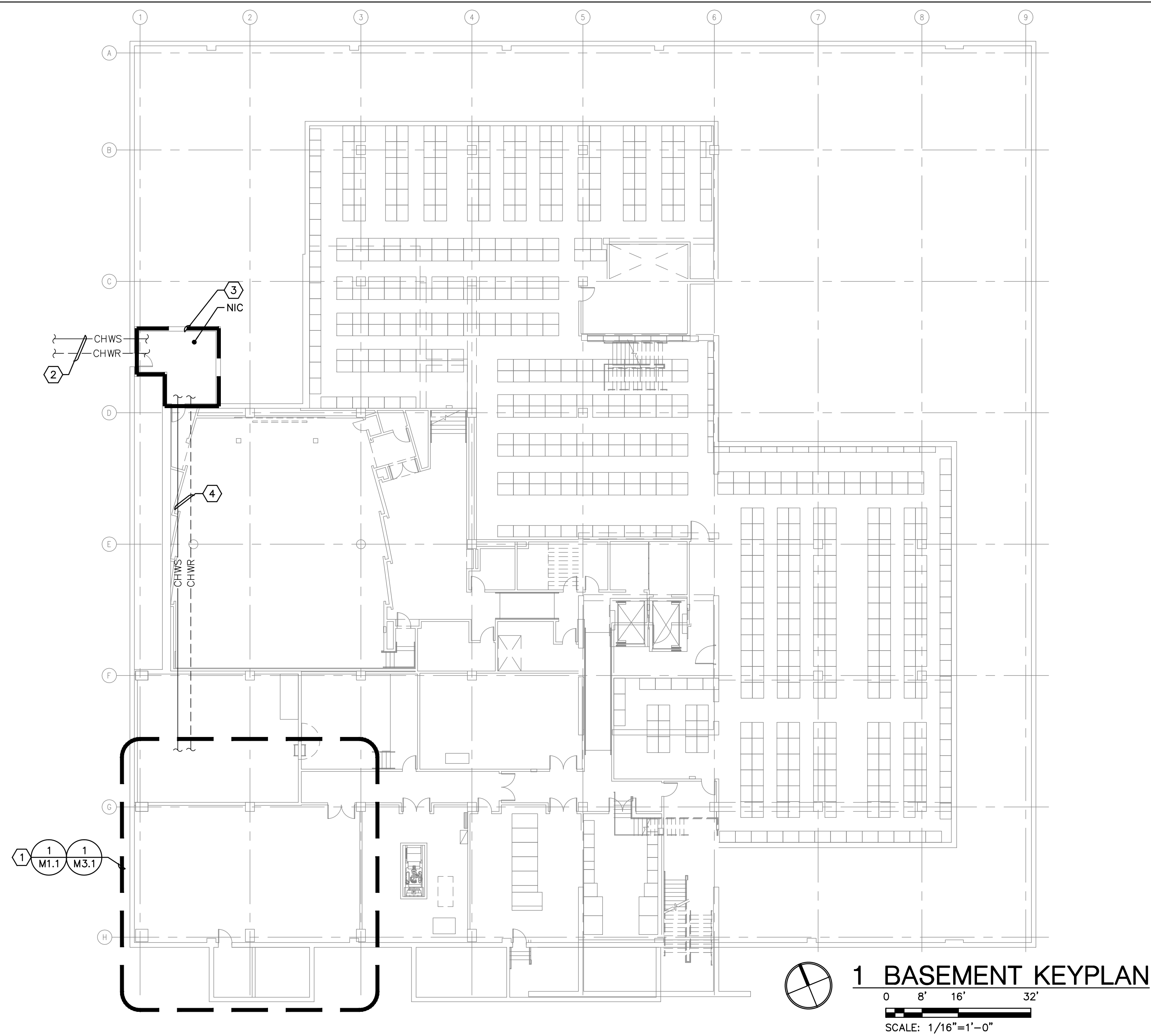
3 DDC POINTS LIST AND SEQUENCE OF OPERATIONS
NO SCALE

GENERAL PROJECT NOTES

- GENERAL SCOPE OF PROJECT IS TO CONNECT THE PSU ASRC BUILDING TO THE CAMPUS CHILLED WATER SYSTEM.
- CONDITIONS SHOWN ON DRAWINGS ARE BASED ON LIMITED SITE VISITS AND AVAILABLE EXISTING CONSTRUCTION DRAWINGS. CONTRACTOR TO VERIFY EXACT FIELD CONDITIONS PRIOR TO BIDDING/CONSTRUCTION.
- NOT ALL HVAC PIPING, EQUIPMENT, COMPONENTS, ETC... ARE SHOWN ON DRAWINGS FOR THE SAKE OF CLARITY.
- DDC CONTROLS TO BE SIEMENS APOGEE AND BE INTEGRATED INTO EXISTING ASRC BUILDING SIEMENS APOGEE SYSTEM. REFER TO 3/M1.1 FOR DDC POINTS LIST AND SEQUENCE OF OPERATION.
- WORK SCHEDULE TO BE SUBMITTED TO OWNER AND APPROVED PRIOR TO BEGINNING CONSTRUCTION. WORK SCHEDULE TO MINIMIZE DISRUPTION TO BUILDING TENANTS. COORDINATE ANY BUILDING SERVICE OUTAGES OR DISRUPTIONS WITH OWNER.
- BTU METER TO BE ONICON SYSTEM-10.
- CHWS/R PIPING TO BE BLACK STEEL SCHEDULE 40 ASTM A120, GROOVED MECHANICAL JOINT FITTINGS AND COUPLINGS (VICTAULIC OR APPROVED EQUIVALENT).
- PWS PIPING, VALVES AND COMPONENTS TO BE SCHEDULE 40 PVC WITH SOLVENT WELDED JOINTS.
- PIPE AND VALVE LABELING TO MATCH EXISTING.
- PROVIDE PIPING HANGERS AND SUPPORTS IN ACCORDANCE WITH 2010 OREGON MECHANICAL SPECIALTY CODE. (OMSC).
- CHWS/R PIPING, VALVES AND COMPONENTS TO BE INSULATED WITH 1-1/2" FIBERGLASS PIPE INSULATION WITH CONTINUOUS VAPOR BARRIER. PWS PIPING TO/FROM HX-6 TO HAVE 2" FIBERGLASS PIPE INSULATION.
- PROVIDE ISOLATION VALVES ON BOTH SIDES OF NEW MOTORIZED CONTROL VALVES.
- VALVES: PROVIDE SELECTION AS DETERMINED BY MANUFACTURER FOR INSTALLATION REQUIREMENTS AND PRESSURE CLASS, BASED ON MAXIMUM PRESSURE AND TEMPERATURE IN PIPING SYSTEM. PROVIDE VALVE SIZE IN ACCORDANCE WITH SPECIFIED MAXIMUM PRESSURE DROP ACROSS CONTROL VALVE. PROVIDE CONTROL VALVES WITH HEAVY DUTY ACTUATORS, WITH PROPER SHUT-OFF RATING FOR EACH INDIVIDUAL APPLICATION. PROVIDE ADEQUATE TORQUE TO MEET THE APPLICATION AND SPRING RETURN. EQUAL PERCENTAGE CHARACTERISTICS FOR THROTTLING SERVICE LINEAR CHARACTERISTICS FOR THREE-WAY MIXING OR DIVERTING SERVICE. NIBCO, BELIMO, GRISWOLD, OR APPROVED EQUIVALENT.

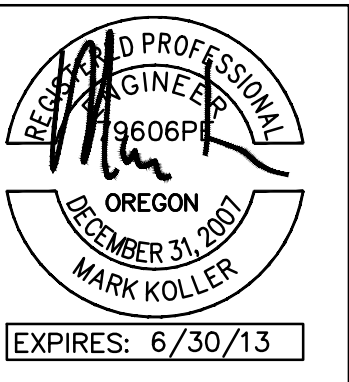
DRAWING INDEX

- M1.1 SYMBOLS / DETAILS- HVAC
- M2.1 KEY PLANS - HVAC
- M3.1 ENLARGED PLANS - HVAC



SHEET KEYNOTES

- 1 SCOPE OF WORK WITHIN BOUNDARY INDICATED. REFERENCE CORRESPONDING ENLARGED PLAN.
- 2 8" CHWS/R IN UNDERGROUND TUNNEL TO ASRC VAULT (NIC).
- 3 CAMPUS LOOP PROJECT TO CONNECT TO EXISTING 8" CHWS/R PIPES IN THIS ROOM (NIC).
- 4 EXISTING 8" CHWS/R ROUTED FROM VAULT TO BASEMENT MECHANICAL ROOM (NIC).



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Project: 2012-0039



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Project: **PSU ASRC CONNECTION TO CAMPUS CHILLED WATER LOOP**
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Sheet Title: **KEY PLANS - HVAC**

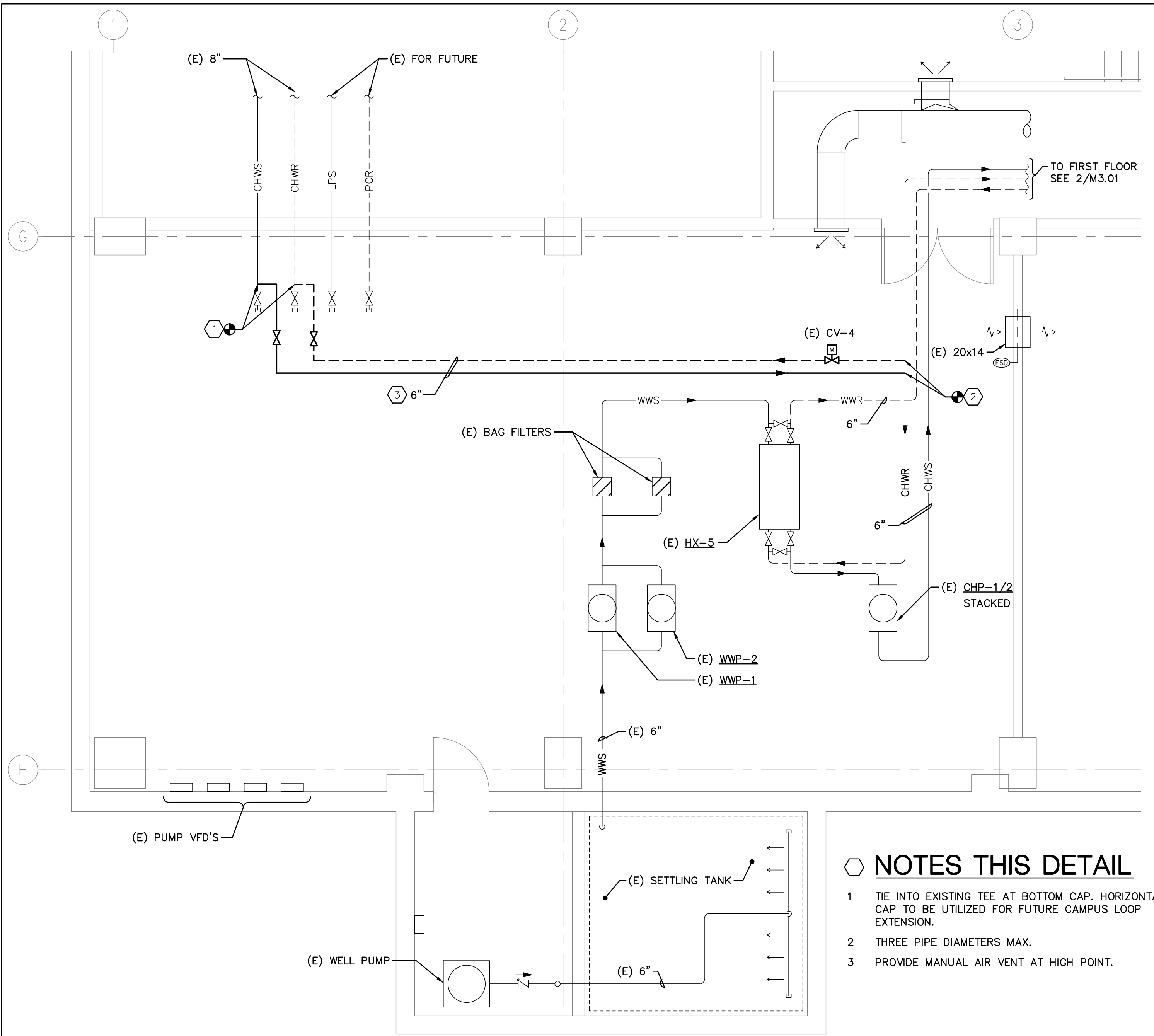
Drawing No.

M2.1

Scale: 1/16" = 1'-0"

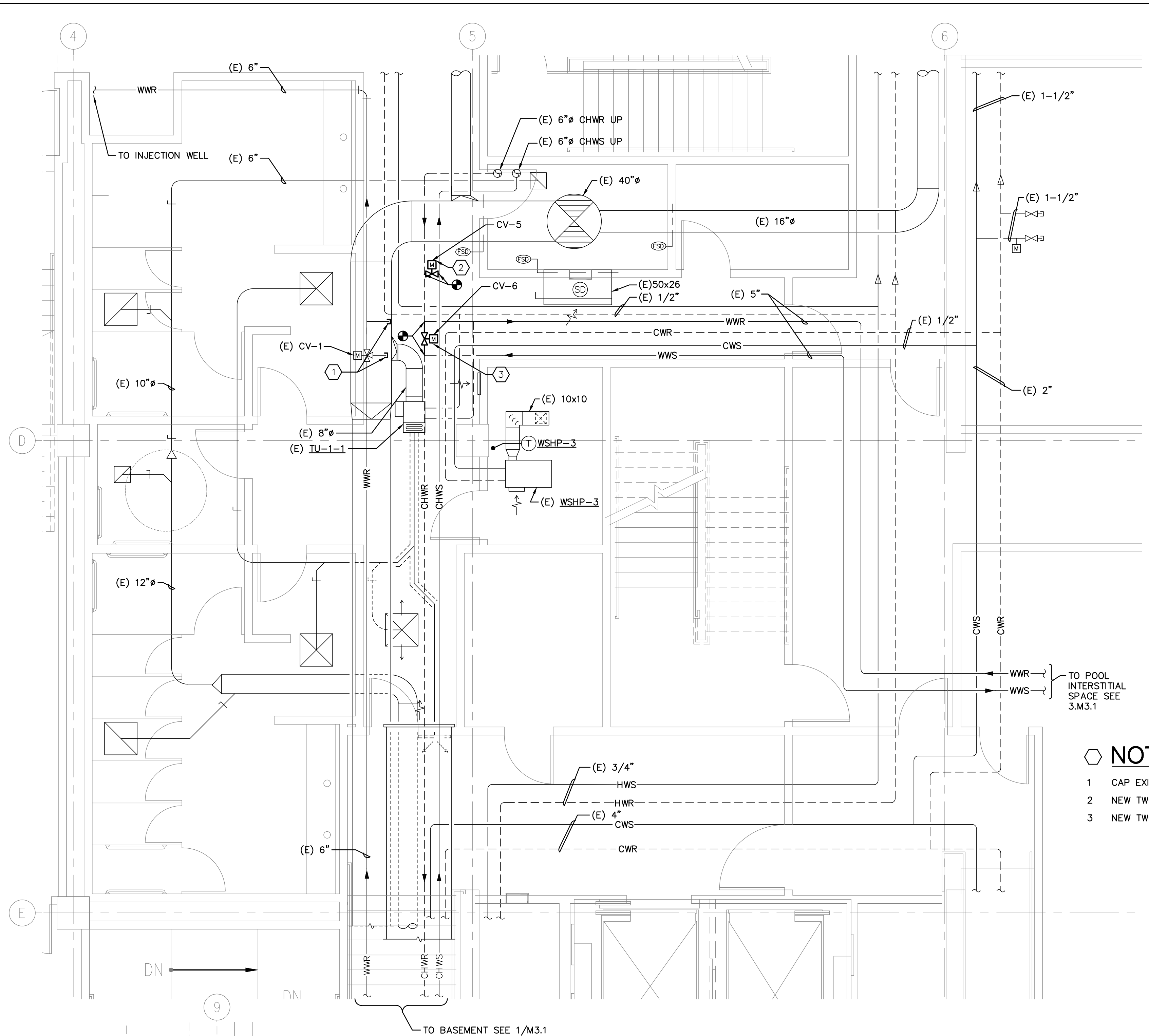
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Project No.: 89200



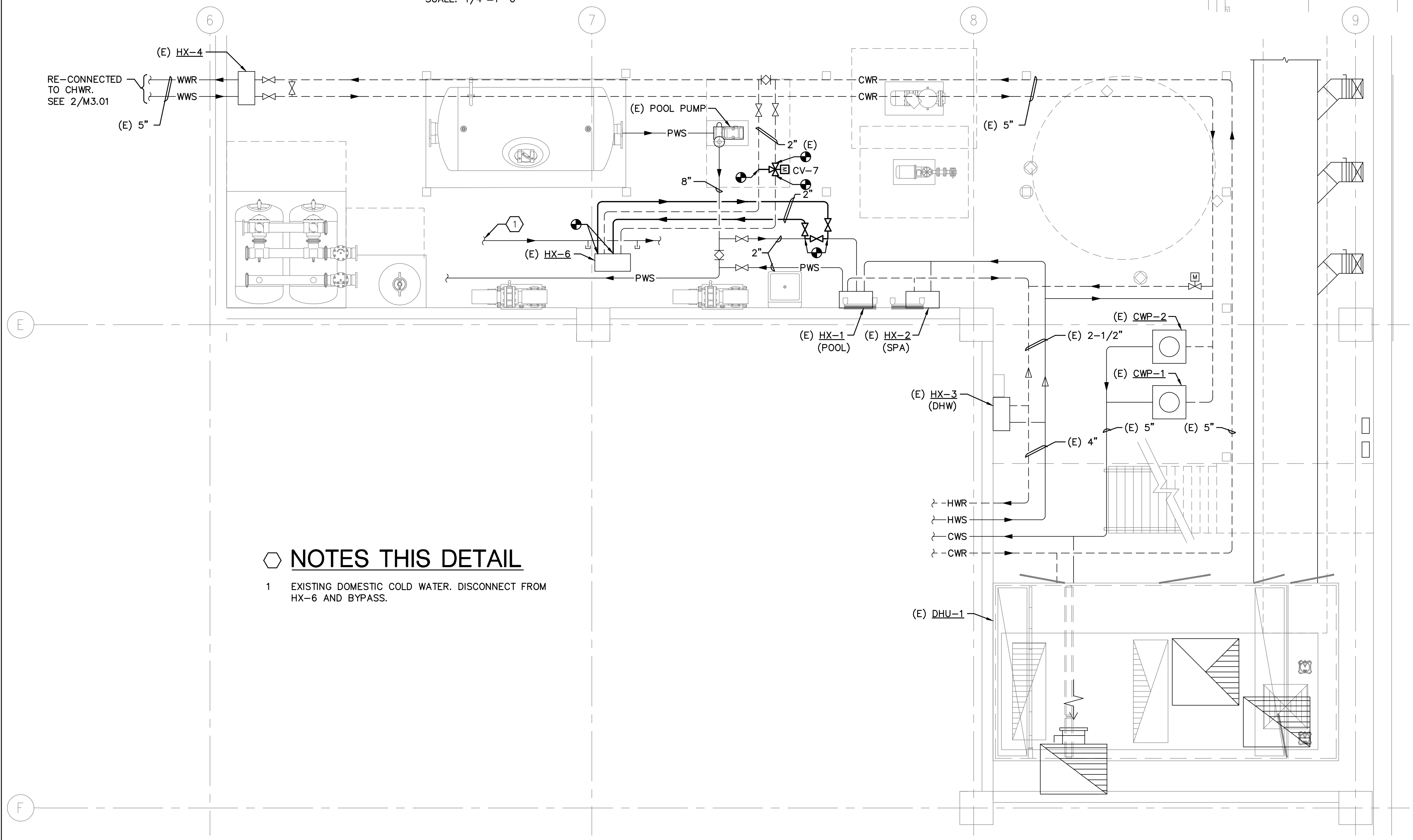
1 BASEMENT ENLARGED PLAN - HVAC
 SCALE: 1/4"=1'-0"

- NOTES THIS DETAIL**
- 1 TIE INTO EXISTING TEE AT BOTTOM CAP. HORIZONTAL CAP TO BE UTILIZED FOR FUTURE CAMPUS LOOP EXTENSION.
 - 2 THREE PIPE DIAMETERS MAX.
 - 3 PROVIDE MANUAL AIR VENT AT HIGH POINT.



2 FIRST FLOOR ENLARGED PLAN - HVAC
 SCALE: 1/4"=1'-0"

- NOTES THIS DETAIL**
- 1 CAP EXISTING WWS/R GOING TO HX-4.
 - 2 NEW TWO-WAY BYPASS VALVE.
 - 3 NEW TWO-WAY DIVERTING VALVE.



3 POOL INTERSTITIAL ENLARGED PLAN - HVAC
 SCALE: 1/4"=1'-0"

- NOTES THIS DETAIL**
- 1 EXISTING DOMESTIC COLD WATER. DISCONNECT FROM HX-6 AND BYPASS.



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Sheet Title
 ENLARGED PLANS - HVAC

Drawing No.
M3.1

Scale
 1/8" = 1'-0"

Date
 02.08.12

Project No.
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