

### CENTRIFUGAL PUMP SCHEDULE

SYMBOL	MFR.	MODEL NO.	EQUIPMENT SERVED	LOCATION	PUMP SERVICE	PUMP DATA		MAX. WORKING PRESSURE	MOTOR			TYPE COUPLING	TYPE PUMP	REMARKS
						GPM	HEAD		HP	RPM	VOLTAGE CHAR.			
CHWP-1	BELL & GOSSETT	1510 3G	EXIST. AC EQUIP.	OUTDOORS	CHILLED WATER	475	105'	175 PSI	20	1750	480-3-60	FLEXIBLE	END SUCTION	1, 2, 4, 5 "PRIMARY PUMP"
CHWP-2	BELL & GOSSETT	1510 3G	EXIST. AC EQUIP.	OUTDOORS	CHILLED WATER	475	105'	175 PSI	20	1750	480-3-60	FLEXIBLE	END SUCTION	1, 3, 4, 5 "STANDBY PUMP"

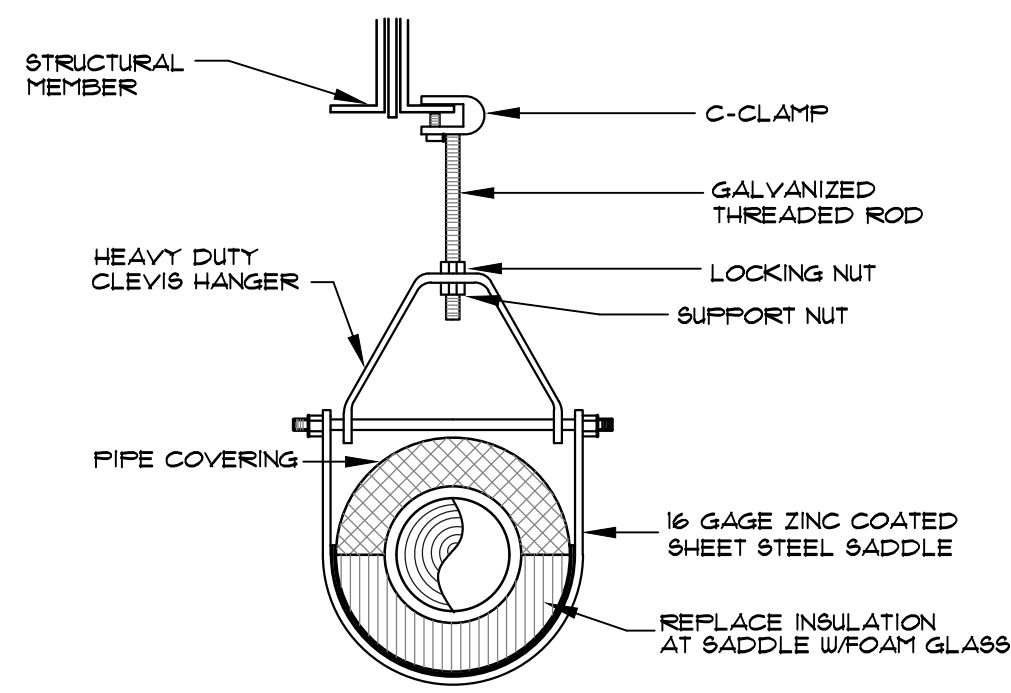
- FURNISH WITH PUMP SUCTION DIFFUSER.
- PUMP SHALL BE CONTROLLED FROM EXISTING VFD. VERIFY COMPATIBILITY.
- FURNISH WITH DANFOSS VFD.
- FURNISH WITH TFFC PREMIUM EFFICIENT MOTOR FOR OUTDOOR INSTALLATION.
- BRONZE FITTED PUMP WITH BUNA-CARBON/CERAMIC SEAL.

### HVAC PIPING LEGEND

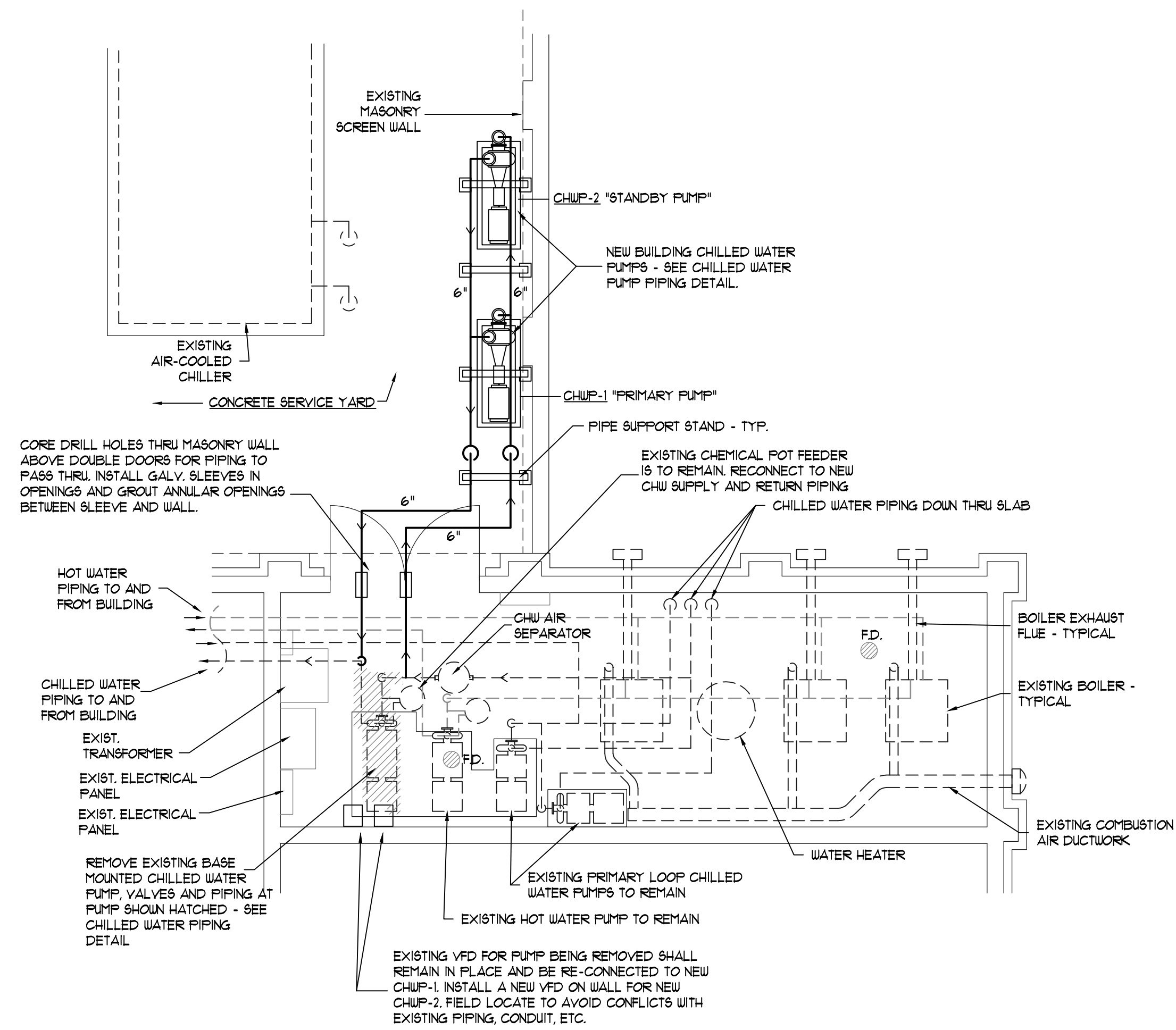
FP	FIRE PROTECTION	(BY OTHERS)
ELEC	ELECTRICAL CONDUIT	(BY OTHERS)
DCW	DOMESTIC COLD WATER	(BY OTHERS)
CH	CHILLED WATER SUPPLY	
CHR	CHILLED WATER RETURN	
CHW	CHILLED WATER SUPPLY AND RETURN	
HHWS	HEATING HOT WATER SUPPLY	
HHWR	HEATING HOT WATER RETURN	
HHW	HEATING HOT WATER SUPPLY AND RETURN	
CWS	CONDENSER WATER SUPPLY	
CWR	CONDENSER WATER RETURN	
CW	CONDENSER WATER SUPPLY AND RETURN	
D	CONDENSATE DRAIN PIPING	
	PITCH ARROW—PITCH DRAIN IN DIRECTION OF ARROW	
	CONCENTRIC INCREASER OR REDUCER	
	ECCENTRIC INCREASER OR REDUCER	
	UNION	
	CIRCUIT SETTER	
	GATE VALVE	
	BUTTERFLY VALVE	
	BALL VALVE	
	LINE SIZE STRAINER W/VALVED BLOWDOWN	
	PRESSURE GAUGE, SIPHON AND STOP COCK	
	HOSE BIBB—H.B.	
	PLUGGED FITTING FOR CLEANOUT	
	CHECK VALVE	
	REMOTE ELECTRONIC THERMOMETER	
A.A.V.	AUTOMATIC AIR VENT	
M.A.V.	MANUAL AIR VENT	
V	VERTICAL FIRE DAMPER—2 HR	
F.D.	FLOOR DRAIN	

### SPECIFICATIONS

- ALL WORK SHALL COMPLY WITH THE 2012 EDITION OF THE INTERNATIONAL BUILDING MECHANICAL AND PLUMBING CODES AND THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE.
- PROVIDE PROPER PIPING SUPPORTS FOR ALL NEW PIPING. WEIGHT OF PIPING SHALL NOT BE SUPPORTED ON PUMPS. PROVIDE ALL SUPPLEMENTAL STEEL AS REQUIRED.
- PRIME AND PAINT ALL NEW BARE STEEL USED TO SUPPORT NEW PIPING.
- CHILLED WATER PIPING SHALL BE SEAMLESS SCHEDULE 40 BLACK STEEL PIPE WITH SCREWED OR WELDED FITTINGS.
- PROVIDE HEAT TAPE ON ALL CHILLED WATER PIPING LOCATED OUTSIDE THE BUILDING. INSTALL HEAT TAPE ON PIPING, PUMPS AND VALVES BEFORE APPLYING INSULATION. HEAT TAPE SHALL BE EQUAL TO RAYCHEM CORP. TYPE SX-1 XL-TRACE SELF-REGULATING HEAT TAPE. HEAT TAPE SHALL BE CONTROLLED FROM A BULB SENSING THERMOSTAT SET AT 40 DEG. F.
- NEW CHILLED WATER PIPING INSIDE AND OUTSIDE THE BUILDING SHALL BE INSULATED WITH 2" THICK ARMAFLEX CLOSED CELL INSULATION WITH A THERMAL CONDUCTIVITY OF 0.25 BTU-IN/HR. FT. F. COVER PIPING LOCATED OUTSIDE THE BUILDING WITH ALUMINUM AND PREFABRICATED PVC ELBOUS AND FITTINGS. INSULATE CHILLED WATER PUMPS WITH 2" THICK SHEET ARMAFLEX INSULATION. INSULATION SHALL BE APPLIED TO PUMPS IN SUCH A MANNER AS TO ALLOW FOR EASY REMOVAL AND REINSTALLATION FOR SERVICE AND INSPECTION OF PUMPS.
- PROVIDE CONCRETE BASES AND PIPE VIBRATION ISOLATORS FOR PUMPS AS RECOMMENDED BY THE PUMP MANUFACTURER.
- VALVES SHALL BE BY JENKINS BROTHERS, CRANE CO., R P & C CO. OR STOCKHAM VALVE CO.
- PRESSURE GAUGES SHALL BE MANNING MAXWELL & MOORE CO. 4-1/2" DIA. "ASHCROFT" MODEL 1010 OR EQUAL BY MARSHALTON OR TAYLOR.
- MANUAL AIR VENTS SHALL BE BAG NO. 11 SR OR EQUAL.
- PIPE VIBRATION ISOLATORS SHALL BE EQUAL TO AMBER/BOOTH 66-PP-FC FLANGED STAINLESS STEEL BRAIDED ISOLATORS.
- CONTROLS: CHWP-1 PUMP SHALL SERVE AS THE "PRIMARY" BUILDING LOOP CHILLED WATER PUMP AND CHWP-2 SHALL SERVE AS THE "STANDBY" BUILDING LOOP CHILLED WATER PUMP. THE EXISTING CHILLED WATER PUMP VARIABLE FREQUENCY DRIVE "VFD" SHALL VARY THE PUMP SPEED FOR CHWP-1 TO VARY THE BUILDING LOOP CHILLED WATER FLOW TO MATCH THE BUILDING COOLING LOAD UTILIZING THE EXISTING BUILDING CHILLED WATER CONTROLS. THE NEW "VFD" SHALL VARY THE PUMP SPEED FOR CHWP-2. PROVIDE NEW CONTROLS, CONDUIT, WIRING, CONTACTORS, RELAYS, ETC. AND RE-PROGRAMMING OF THE EXISTING CONTROLS SYSTEM TO OPERATE NEW PUMP/VFD AND TO AUTOMATICALLY ALTERNATE THE OPERATION OF CHWP-1 AND CHWP-2 TO EVEN OUT RUN TIMES FOR THE TWO PUMPS. THE NEW VARIABLE FREQUENCY DRIVE "VFD" SHALL MATCH EXISTING DRIVE AND SHALL BE A DANFOSS VLT HVAC DRIVE MATERIAL NO. ITU845 - NO SUBSTITUTIONS. COORDINATE ALL REQUIREMENTS FOR THE DRIVE WITH THE OWNER'S MAINTENANCE PERSONNEL.
- THE ELECTRICAL CONTRACTOR SHALL WORK AS A SUB-CONTRACTOR UNDER THE MECHANICAL CONTRACTOR REFER TO THE ELECTRICAL DRAWINGS FOR THE EXTENT OF THE ELECTRICAL WORK FOR THIS PROJECT.
- THE CONTRACTOR SHALL PAY ALL FEES AND SECURE ALL LICENSES AND PERMITS REQUIRED FOR THE WORK INDICATED ON THE DRAWINGS.
- ALL CONTROL ITEMS AND PIECES OF EQUIPMENT SHALL BE PERMANENTLY LABELED WITH BAKELITE LABELS.
- THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER FOR REVIEW AND APPROVAL A COMPLETE SET OF SUBMITTAL DATA FOR ALL EQUIPMENT, MATERIALS AND CONTROLS BEFORE ORDERING OR INSTALLING ANY EQUIPMENT.
- THE CONTRACTOR SHALL ENLIST THE SERVICES OF A NEBB OR AABC CERTIFIED TEST AND BALANCE CONTRACTOR TO ADJUST AND SET THE CHILLED WATER FLOW RATES AS INDICATED ON THE DRAWINGS. THE T & B CONTRACTOR SHALL PROVIDE A REPORT TO BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUALS.
- THE CONTRACTOR SHALL PROVIDE COMPLETE OWNER TRAINING FOR THE NEW EQUIPMENT INSTALLED.
- THE CONTRACTOR SHALL PROVIDE 2 COPIES OF OPERATION AND MAINTENANCE MANUALS, INCLUDING CONTROL DIAGRAMS AND T & B REPORT, TO THE OWNER AT PROJECT CLOSEOUT.
- THE CONTRACTOR SHALL PROVIDE A 1 YEAR WARRANTY FROM THE DATE OF FINAL ACCEPTANCE ON ALL EQUIPMENT, MATERIALS AND LABOR.

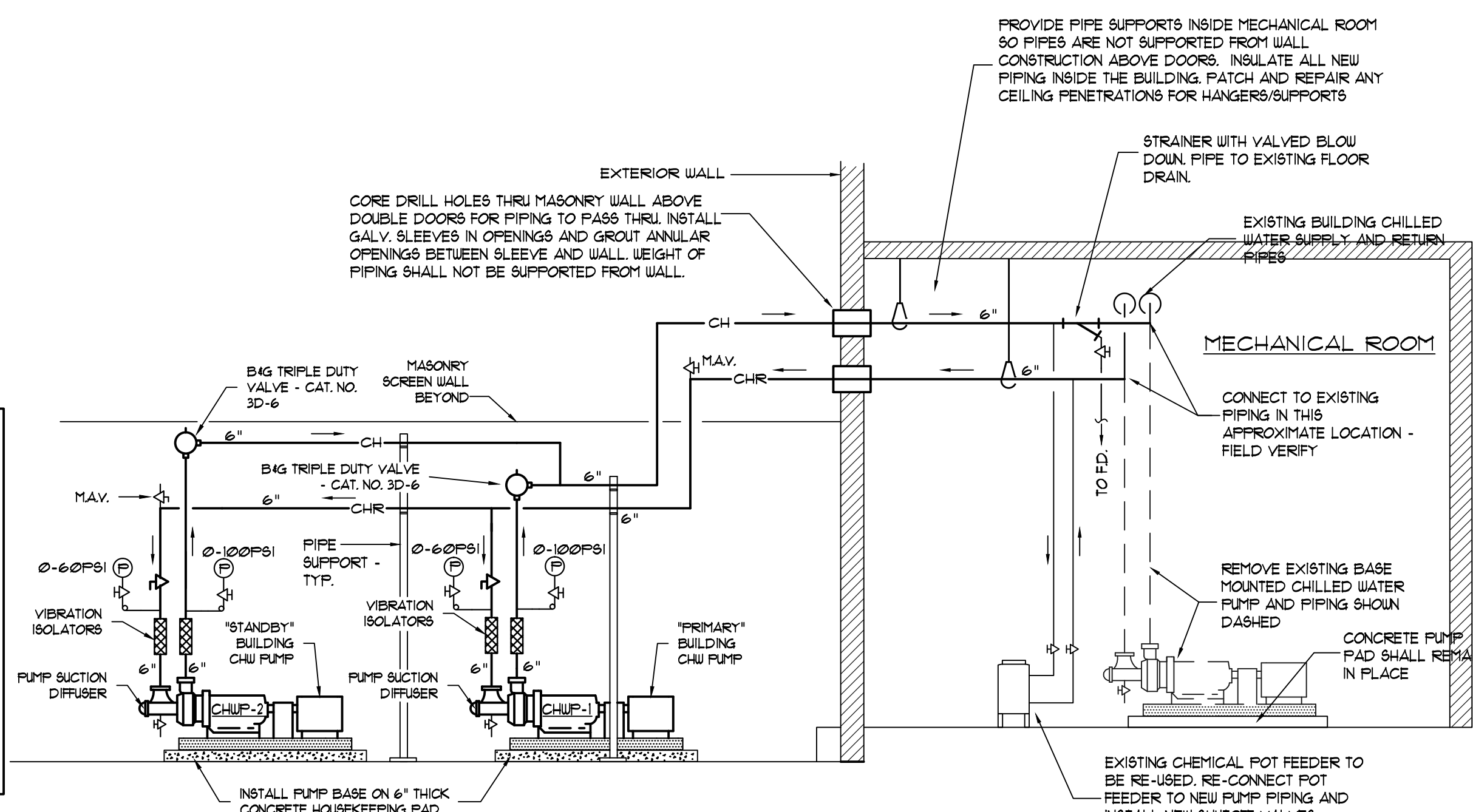


NOTE: TRAPEZE HANGERS ALSO ACCEPTABLE.  
**PIPE HANGER DETAIL**  
NOT TO SCALE



**MECHANICAL ROOM FLOOR PLAN**  
SCALE: 1/4" = 1'-0"

- DETAIL NOTES:**
- PUMP AND MOTOR ASSEMBLIES SHALL BE RATED FOR OUTDOOR INSTALLATIONS.
  - INSULATE ALL PIPING, VALVES AND PUMPS INSTALLED OUTDOORS. INSTALL ALUMINUM JACKETS OVER PIPE INSULATION.
  - INSTALL PIPE HEAT TRACE TAPE ON PIPING, VALVES AND PUMPS BEFORE APPLYING INSULATION.
  - ALL EXTERIOR PIPING SHALL BE PROPERLY SUPPORTED FROM EXISTING EXTERIOR CONCRETE SLAB AND EXISTING SCREEN WALL CONSTRUCTION USING STEEL ANGLES, CHANNELS OR PIPE COLUMNS AS APPLICABLE. PIPING SHALL NOT BE SUPPORTED FROM PUMPS. PRIME AND PAINT ALL BARE STEEL METAL.
  - INSTALL CONSTRUCTION MESH STRAINERS IN PUMP SUCTION DIFFUSERS AND IN LINE STRAINER FOR SYSTEM STARTUP. REPLACE MESH AFTER 48 HOURS OF CONTINUOUS WATER CIRCULATION WITH FINAL MESH.



**CHILLED WATER PUMP PIPING DETAIL**  
NOT TO SCALE

REVISION	DATE	MARK	TIMES	DESCRIPTION

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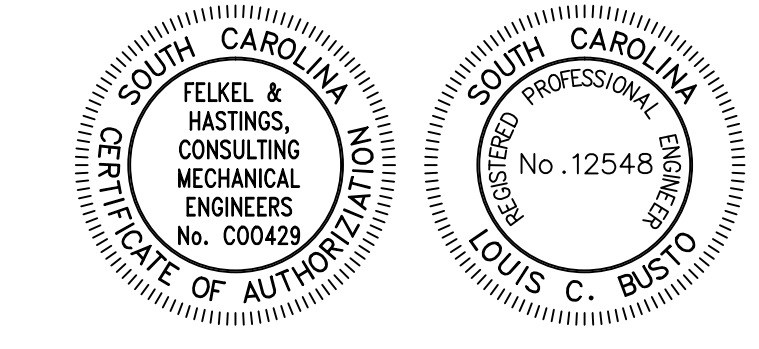
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