

Element D Services

Heating, Ventilating, and Air
Conditioning

D3015 UTRP Energy Supply

PART 1 - GENERAL

1.1 OVERVIEW

- A. This section addresses criteria for buildings using chilled water provided by the University of Texas Research Park (UTRP) Central Plants (UTRP Plant), which includes all isolation valves, hydronic piping and fittings, hydronic specialties, control valves and pumps required to distribute chilled water through the UTRP piping network.

PART 2 - DESIGN CRITERIA

2.1 GENERAL

- A. The UTRP Plant provides 40 degree F chilled water supply temperature with a return water temperature at 54 degree F.
- B. Chilled water velocities are kept in normal range between 4 to 8 feet per second (fps) with maximum up to 10 fps for abnormal short term operating situations.
- C. The A/E shall allow for a minimum of two (2) centrifugal split case or split-coupled vertical in-line chilled water and condenser water pumps using N+1 redundancy. Pump configuration will depend on scheduled system capacity requirements. Pumps shall be selected at 1750 RPM.
- D. The chilled water pumps and condenser water pumps shall be equipped with variable frequency drives (VFD), unless it is determined by the A/E the use of a VFD is not required for a certain application.
- E. Minimum ¾ inch pipe size for run-outs to fan coil units or air handling units within the UTRP Central Plant.
- F. Provide pre-insulated piping tee connections with isolation valves at the building's chilled water supply and return piping that connects to existing underground UTRP Plant chilled water supply and return piping. The main tee fitting connections need to be the same size as the underground supply and return chilled water distribution piping from the UTRP Plant.
 - 1. Minimum of 5 feet of cover over chilled water pipes.
 - 2. Parallel pipes may run side-by-side or stacked.
 - 3. Except for valves, underground flange fitting connections should be avoided whenever possible.
 - 4. The system design pressure is 150 psig.
 - 5. Hydrostatic test pressure at 225 psig with no leakage over a four-hour period.

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6. Isolation valves and blank off flanges are to be placed at the outlet end of the main tee connections.
 7. Isolation valves are to be placed at the tee branch connections used to connect piping to the buildings.
 8. Valve boxes must be used at all underground valve locations.
 9. Supply and return piping dead legs are to have appropriate drain and vent valves.
- G. The chilled water supply to the building shall be metered through a BTU water flow meter capable of connecting to the building automation system (BAS) to record usage. The A/E shall coordinate meter locations and space for required piping lengths within the mechanical equipment room per the manufacturer's instructions.
- H. The A/E shall confirm all criteria noted above and coordinate the exact location of the chilled water service entrance location to the building.

PART 3 - SPECIAL CONTRACT DOCUMENT REQUIREMENTS

3.1 GENERAL

- A. Specify chilled water supply and return water temperatures and pressures from the UTRP Plant to be delivered to the building on the Contract Documents.
- B. The A/E shall include a schematic of the chilled water distribution system in the contract documents.
- C. Indicate the location all pumps, air separators, expansion tanks, etc. on floor plans.
- D. The A/E shall include a chilled water system distribution schematic drawing that indicates information required to clearly illustrate the intent of system design including, but not limited to, supply source, primary pumps, expansion tanks, strainers, supply and return piping, piping risers, pressure, and temperature sensors, including branch piping and shut-off valves to equipment.
- E. The A/E shall include either a flanged butterfly or a gate valve of to permit proper water velocities or achieve pipe flushing criteria.
- F. The A/E shall include either a flanged 2 inch or greater bypass butterfly or a gate valve of the appropriate size to permit proper water flow at underground supply and return piping dead legs.

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PART 4 - PRODUCTS

4.1 GENERAL

- A. Refer to Master Construction Specifications.
- B. The A/E shall use a hydraulics model to determine the size of the chilled water supply pumps. A system hydraulics model shall be developed to determine the remaining chilled water network pipe sizes to support a totally built-out system along with incremental models for various in-process or future phases of system development.
- C. All piping will be protected from corrosion with exterior coating/jacketing and due to certain instances of installation the piping and valves are to have cathodic protection.
- D. All new buildings connecting to UTRP (with or without chilled water production) shall interface with existing chiller optimization software, global pumping strategies, and energy dashboards.

PART 5 - DOCUMENT REVISION HISTORY

Issue	Date	Revision Description	Reviser
	20190301	Original Issuance	
Rev. 1			

END OF ELEMENT D3015