

CONSTRUCTION REQUIREMENTS

Note: The buildings on the UCCS campus are divided into two categories: General Fund and Auxiliaries. General Fund Buildings include academic and administrative functions. Auxiliary buildings include residence halls, athletic, and dining facilities. In some cases, construction standards differ depending on the building category. Confirm building category with Facilities Services Project Manager.

DIVISION TWENTY-TWO: PLUMBING

- Plumbing General Requirements
- Plumbing Pumps
- Water Distribution
- Plumbing Piping and Schematic Details
- Plumbing Equipment
- Plumbing Fixtures
- Access Panels
- Restroom Layouts / Overall Counts

Plumbing General Requirements:

1. Specify stop valves at all fixtures and equipment and at rough-in locations.
2. Specify all-white fixtures with acid resisting finish.
3. Specify rigid anchors behind walls for all supplies and stops to eliminate push or pull movement.
4. Specify carriers for all wall mounted fixtures. Do not allow wood or metal mounting plates anchored to the wall framing or studs.
5. Laboratory faucets and cocks shall have vacuum breakers, as well as all devices to which hoses can be connected.
6. Tub and tile caulk shall be applied under all self-rimming sinks.
7. All 17 gauge P-traps shall have brass slip nuts
8. Floor drains are REQUIRED in every toilet room, mechanical room or elevated risk/flood prone areas; sure seals required; no trap primers allowed.
9. Plumbing fixtures meet LEED requirements
10. No dielectric unions; dielectric nipples OK
11. Isolation valves at supply and return lines are required for each bathroom group, preferably located outside the bathroom group for maintenance access.
12. Victaulic or gruv-lok fittings are acceptable. Follow manufacturer's installation guide.
13. For Development and Tap fees, refer to Division 33 – Utilities.
14. Where fire rated assemblies exist, fire caulk all penetrations.
15. All other assemblies – provide acoustic sealant at all penetrations.

Plumbing Pumps

Equipment / Products

In-Line Recirculation Pumps

- a. Designed for quiet operation.
- b. Bronze or stainless steel.
- c. Consider ECM type pump.

Submersible Sump Pumps

- a. Cast iron shell, bronze impeller, stainless steel shaft, factory-sealed grease lubricated ball bearings, ceramic mechanical seal, and perforated steel strainer.

Installation of Pumps

- a. Provide baseline vibration analysis of 3 HP or larger pumps.
- b. Provide access space around plumbing pumps for service; not less than recommended by manufacturer.
- c. Provide isolation valves.
- d. Provide laser alignment for new installations.

Support

- a. Provide for vibration control.
- b. Base mounted pumps to be anchored into 4" minimum or manufacturer recommended height concrete base. Inline pumps to be independently supported.

Commissioning/Startup

- a. Starter screens to be removed by contractor at startup and provided to UCCS.

Water Distribution

Equipment / Products

Water Entry/Meter

- Follow Colorado Springs Utilities meter requirements.
- In addition to CSU requirements, include the following:
 - Isolation valve between meter and RPBP. This is in addition to the valves on the RPBP device. Coordinate with CSU distance requirements from meter
 - Isolation valve on house side of RPBP. This is in addition to the valves on the RPBP device.
 - Pressure gage installed on house side of valve described in above.
 - At sub-metered irrigation line, install drainvalve on the irrigation side of the RPBP.

Shock Arresters

- a. Install in hot and cold domestic water piping systems on each set of flush valves, quick closing type valves, and other locations where hydrostatic shock pressures could occur.
- b. Install at locations below but not limited to: all water connections to equipment with flush valves, quick closing valves, water closets, urinals, clinical service sinks, dishwashers, disposals, clothes washers, ice makers, autoclaves, pre-rise spray hose, etc.
- c. For every shock arrester, an isolation valve is required. Shock arresters must be accessible from **Men's Room ADA stalls only**. Provide 12" x 12" locking access door at each shock arrester. Refer to access door requirements.

Thermostatic Mixing Valves

- a. Acceptable Manufacturers:
 - Leonard
 - Powers
 - CVR
 - Watts

- b. Preferred to have one master mixing valve for a bathroom group in lieu of individual mixing valves at all sinks; Exception at code required areas.

Domestic Hot Water Expansion Tanks

- a. Stainless steel system connections
- b. Isolation valve required
- c. Base mounted expansion tank to be anchored to 4" minimum or manufacturer recommended height concrete base.

Isolation Valves

- a. Install isolation valves by floor and by wing on each floor.
- b. Men's and Women's restrooms and gender-neutral restrooms are to be separately isolated with the valves located above the ceiling outside of the restrooms.

Plumbing Piping and Schematic Details

General Requirements

1. Domestic hot and cold water piping is to be Type K below grade and Type L above grade.
2. No dielectric unions allowed. Dielectric nipples OK.
3. Domestic water piping connections are to be brazed or pro pressed in all pipes 2" and larger. All piping connections smaller than 2" to be pro pressed or soldered. Laboratory compressed air piping and vacuum piping to have brazed connections.
4. Backflow device to have isolation valve **before and after** backflow assembly device.
5. Condensate pumps are discouraged. Try to gravity drain.
6. Top takeoffs and hydronic HWS and HWR mains.
7. Flex hoses are **NOT ALLOWED** at equipment connections.
8. Review with UCCS where mainline venting shall occur.

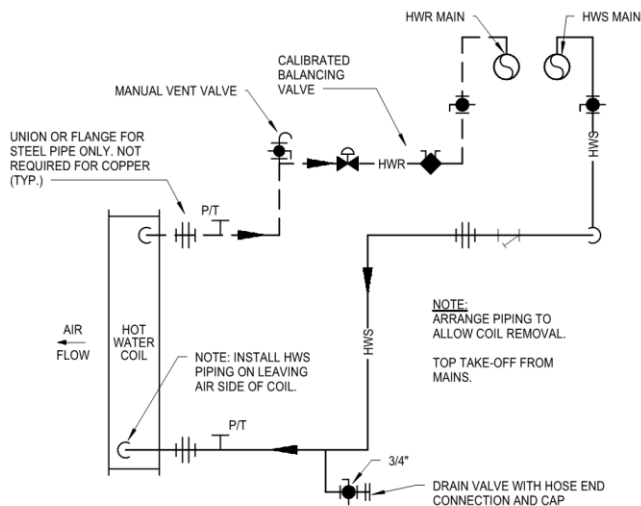
Insulation

- a. Piping insulation to be fully adhered and labeled.

Hangers and Support

- a. Provide hanger on both sides of valves.

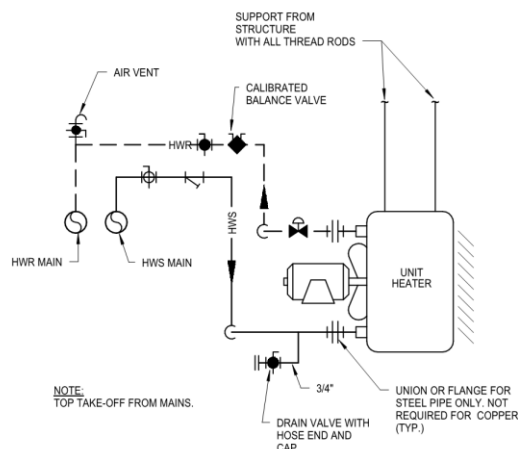
Standard Piping Details



**TERMINAL BOX
COIL PIPING DETAIL**

(15830)

SCALE: NONE



**UNIT HEATER PIPING
DETAIL - HORIZONTAL**

(15830)

SCALE: NONE

Service Entry

Thrust Blocks

- Install at each underground location where piping changes direction according to CSU standards.

Water Meter

Hangers and Support

- Mount meter on wall brackets to CSU standards.
- Provide grounding per CSU standards.

Plumbing Equipment

Backwater Valves

- Bronze fitted cast-iron.

Trap Primers

- Trap Primers are not allowed. Provide sure seals.

Cleanouts

- Install floor and wall cleanout covers.

Water Heaters

Commercial Gas-Fired

- Provide high efficiency condensing unit.

Plumbing Fixtures

General Requirements

1. Fixtures, manufacturers and catalog numbers specified are shown only to establish type and quality of fixtures preferred. Other equal products may be selected from the lists of acceptable manufacturers if advised by UCCS Project Manager.

Equipment / Products

Water Closets

- a. Provide wall hung (preferred), white, valve operated, water saver, open front seat and no lid, shall be certified by an approved agency for operation not exceeding 1.6 gallons per flush.
- b. Set floor height to 15" standard; 17" ADA
- b. Sensor operated water closed are not allowed.
- c. All restroom water closets to have manual dual flush valve.
- d. Acceptable Fixtures:

Kohler K-4330

Crane 3-446E

Zurn Z5610

Or Approved Equal

Acceptable Color:

White

Acceptable Flush Valve:

Sloan

Zurn Aqua Advantage

Style – Regal or Royal

No exceptions taken

Not to exceed 1.6 gallons/flush Sloan Regal

Chair Carrier:

Josam, Series 12000 with cast iron nipple

Zurn, Model Z5610

Jay R. Smith

Or Approved Equal

Vandal Proof Trim

Seat:

Zurn Z5950 white plastic, open front

Kohler

American Standard

Universal Rundle

Toto

- e. Where we have wall tile installed, wall mounted fixture to be set after tile installation and then caulked at walls. This installation method allows for future change of fixture.
- f. Flush lever at ADA stalls to be easily accessible for users. Typically, the lever is on the left when facing the water closet.

Urinals

- a. White, vitreous china, wall hung.
- b. In existing buildings, urinals shall not exceed 1 gallon per flush.
- c. In new facilities, electric flush valves shall be 24 volt with 110 volt transformers for urinal only, 1/8 gallon battery operated flush.
- d. Set floor height to 24" standard; 17" ADA
- e. Waterless urinals are not allowed
- f. Acceptable Fixture:
 - Zurn model Z5798 (HEU)
 - Or Approved Equal

Acceptable Flushometer Valve:

Supply: 3/4"

Carrier: Jay R. Smith

- g. Where we have wall tile installed, fixture to be set after tile installation and then caulked at walls. This installation method allows for future change of fixture.

Lavatories

- a. Vandal resistant aerator to limit flow to 0.5 GPM.
- b. Provide closed cell pipe insulation on the waste pipes and hot water pipes below each lavatory for the handicapped.
- c. Under mount lavatories permitted
- d. Provide Chicago Electronic SSPS Faucets – Deck mounted single hole E-Tronic 40 Traditional Sink Faucet with Dual Beam Infrared sensor

Stainless Steel Sinks

- a. Acceptable Fixtures:
 - Type (302) (304) and (316) 18 gauge minimum
 - Elkay ILRG-4322
 - Just
 - Bradley
 - Or Approved Equal

Fixture Carriers and Supports

- b. Acceptable Manufacturers:
 - Josam
 - J. R. Smith
 - Wade
 - Zurn
 - Or Approved Equal

Coffee Bar Faucets

- a. Single handle faucet with goose-neck spout
- b. Acceptable Fixtures:
 - Delta 711HDF
 - Or Approved Equal

Kitchen Faucets

- c. Acceptable Fixtures
 - Moen M7425
 - Delta D26C3934
 - Or Approved Equal

Laboratory Faucets

- a. Single Handle, 4 inch center Spacing, with ceramic cartridge (avoid ceramic stems).
- b. Hardwire automatic sensors. Set run time to 5 seconds.
- c. Acceptable Fixtures:
 - Zurn Z8100-3M
 - Moen M8413; M8301 with M104427
 - American Standard 2506
 - Delta 600T050; D591T1250 with DRP32856
 - Kohler
 - Crane
 - Eljer
 - Or Approved Equal

Shower Valves/Equipment

- a. Shall not exceed 1.5 gallons per minute.
- b. Single handle, pressure compensating, tamper-proof
- c. Manufacturers:
 - Delta
 - Bricor
 - Kohler
 - Leonard
 - Or Approved Equal

Electric bottle filling station/hydrostations

- a. Provide at least (1) hydrostation in each new construction building.
- b. Acceptable Fixture:
 - Elkay EZH2O Bottle Filling Station with Versatile Bi-Level Green, ADA Cooler Non-Filtered 8 GPH Light Gray; EZSTLG8WSLK; **NO FILTERS**
- c. Meet ADA requirement
- d. Provide bottle/glass filler at each handicapped height EWC.
- e. Provide in-wall steel support carrier.

Mop Service Basins

- a. Precast terrazzo, stainless steel drain, with stainless steel caps on all curbs is preferred

Emergency Fixtures (Emergency Showers and Eye/Face Wash Equipment)

- a. Acceptable Fixtures:

Desert Assembly, Inc.
Haws
Sloan
Water-Saver Co.
Or Approved Equal

Fixture Supplies, Stops and Traps

- a. Acceptable Fixtures:
American Standard
Brasscraft
Eljer
Kohler
Or Approved Equal

Protective Pipe Covers

- a. Install protective pipe covers for all under lavatory piping

Garbage Disposals

- a. Garbage disposers are discouraged, however if needed the Badger 5 – ½ HP model is preferred.

Solids Interceptor

- a. Provide solids interceptor at locations where paint; where food is present, defer to the local health department code

Water Conservation

- a. Refer to LEED standards.

Access Panels

- a. Provide locking powder coated access panels at ALL locations.
- b. Key should be standard among all access panels throughout building. Confirm key type with UCCS Project Manager.

Restroom Layout / Overall Counts

- a. In all new buildings, a minimum of one single-user restroom must be provided for gender-neutral use. This restroom must also be fully ADA compliant.