SECTION 02400

GENERAL UTILITY REQUIREMENTS:

PART I - PERMITS

A. Each project which disturbs or modifies an underground utility is required to obtain a Utility Permit from the University’s Facilities Management Department prior to commencing construction.

B. The project is responsible for paying any permit fees associated with the Utility Permit.

PART II – TAP FEES

A. The project is responsible for paying any tap fee (also commonly referred to as an impact fee or a plant investment fee (PIF)) as determined by the University’s Facility Management – Civil Division. Please reference the utility fee schedule.

PART III – SUBMITTALS

A. During Schematic Design, the design engineer shall provide a preliminary utilities plan which:
   1. Illustrates proposed methods and alternatives for providing utility service for the project.
   2. Include site topography at 2-foot interval contours
   3. Illustrate existing utilities, including manholes, within 400 feet of the proposed development.
   4. Identify features, such as creeks, drainage facilities, wetlands, floodplain, utility tunnel, and irrigation ditches, that might influence the location of underground utilities.
   5. Illustrate the general layout of the proposed utilities including mains and manhole locations.
   6. Illustrate a demolition plan which clearly identifies which utility lines are to be abandoned.

B. During Design Development, the design engineer shall submit a Utility Report to the University’s Civil Engineer. This report shall conform to the requirements outlined in the City of Boulder’s Design & Construction Standards for the utility report. The engineer shall submit a utility system analysis showing the impacts of the project on the utility services. In addition, the following items shall be included for review:
   1. Demolition plans,
   2. Utility plans showing new and existing utilities,
   3. Utility details, and
   4. An outline specification
C. Construction Document Phase, the design engineer shall submit complete plans and specifications for review which include:

1. Pipe sizes
2. Points of connection
3. Valve details,
4. Thrust blocks (including area)
5. Thrust (restraint) rods (including diameter),
6. Supports,
7. Trenching and bedding details,
8. Hydrant details,
9. Connection and joint details,
10. Vault plans and sections,
11. All existing tunnels and utilities,
12. A demolition plan indicating which lines are to be abandoned,
13. Building penetration details, and

D. Prior to construction:

1. A copy of the manufacturer’s installation recommendations for each kind of pipe must be provided to each foreman and the inspector prior to construction and must be followed during construction unless otherwise instructed.
   b. Manufacturer’s description of admixtures used.
   c. Manufacturer’s report of visual inspection.
2. Submit a copy of the project’s Stormwater Management Plan (SWMP) for review and approval. Use Best Management Practices (BMP’s). Sediment, debris or other pollutants from construction operations must be managed to prevent flow to the storm drainage system(s). Erosion and sediment management practices must be applied during construction.
3. Submit a copy of the project’s dewatering permit, if applicable.
4. Submit proposed modifications to any existing pre-engineered concrete structure (i.e., manhole, catch basin, or vault). Submittal shall show dimension of any holes and method for preventing excessive damage.
5. Shop drawings
6. Prior to delivery of pipe from each manufacturing lot or run, submit:
   o Test results for external load crushing strength test per Section 11 of ASTM C76 or Section 10 of ASTM C655.

E. At project closeout:

Record Drawings: The Contractor shall safely maintain in good working order at the project site, one copy of all approved plans, specifications, addenda, written amendments, change orders, work change directives, field orders, and written interpretations and clarifications, clearly annotated to describe all changes made during construction. These documents, together with all final samples and Shop
Drawings, shall be available for reference at the request of the University. Upon completion of the work, any deviations from the approved design and any pertinent notes and comments regarding construction conflicts shall be transferred to the approved plans and electronic drawing files and subsequently submitted to the University as the “Record Documents” for the project.

1. Submit record drawings of installed utility system piping and products, in accordance with requirements of Section 01720.
2. Submit shop drawings in accordance with the Section 01300.

PART 4 – NOTIFICATIONS:

A. Notify the CU Project Manager:
   1. Not less than 48 hours before performing locates.
   2. Not less than 48 hours before commencing work.
   3. Not less than 24 hours before laying pipe.
   4. Not less than 48 hours before any testing required by these standards.
   5. At substantial completion
   6. Not less than 48 hours before final inspection.

PART 5 – INSPECTIONS:

A. Notify the Owner’s Representative not less than 48 hours before inspection time.

B. Inspections are required prior to the following installation activities.
   1. **Stockpiled Materials** – Verify that materials meet construction drawings and approved submittals, including but not limited to: bedding material, pipe, fittings, valves, valve boxes, and fire hydrants.
   2. **Excavation** – Verify proper trench depths, shoring, spoil pile location, dewatering, and location and protection of existing utilities.
   3. **Installation** – Verify proper bedding depth, alignment and grade, clean pipe and lubricants. Inspect piping to determine whether line displacement or other damage has occurred. If inspection indicated poor alignment, debris, displaced pipe, infiltration or other defects, correct such defects, and re-inspect. Inspection of rebar for cast-in-place manhole bases.
   4. **Backfill and Compaction** – Verify proper methods of backfill and compaction, depths of lifts, moisture control, backfill material free of large rock and organic or frozen material, and proper compaction effort and passing tests. Verify that warning tape has been installed. Verify that tracer wire has been installed and that it has a passing continuity test.
   5. **Testing** – Verify that testing methods comply with UCB Design and Construction Standards. Verify that the Utility Inspector has witnessed all
pressure tests of pipe, vacuum testing of manholes, televising of storm and sanitary sewers, and any other testing requirements such as deflection testing may be required in the project specifications.

6. At any other time required by the contract documents.

C. Final inspection will be performed at completion at final stabilization of grade.

D. If work to be inspected is covered up prior to inspection, and if the University considers it necessary or advisable that covered work be observed, inspected, or tested, the Contractor, at the University’s request, shall uncover, expose, or otherwise make available for observation, inspection, or testing by the University, that portion of the work in question, furnishing all necessary labor, material, and equipment at no cost to the University.

E. If directed, the Contractor shall promptly correct all defective work, whether or not fabricated, installed, or completed, or, if the work has been rejected, remove it from the site and replace it with work that is not defective. The Contractor shall pay all claims, costs, losses, and damages caused by or resulting from such correction or removal (including, but not limited to, all costs of repair or replacement of work by others).

PART 6 – QUALITY ASSURANCE:

A. Manufacturer's Qualifications:

1. The manufacturer(s) shall be a firm regularly engaged in manufacture of water system materials and products, and whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installer's Qualifications:

1. The installation firm(s) must submit documents of qualification and have a minimum of 3 years of successful installation experience on projects with work similar to that required for project.

PART 7 – SEPARATION OF UTILITIES:

A. Parallel (Horizontal) Separation: Parallel separations between utility mains and services to provide for adequate trench excavations and maintenance operations shall be as follows. All distances are measured from outside of pipe to outside of pipe:
If the minimum horizontal separation between wastewater pipe and other utility cannot be achieved, then either the wastewater pipe or the other utility pipe should be upgraded to a pressure class pipe for the distance where the minimum separation cannot be achieved. The Utility Engineer may approve any deviation from the minimum separation distances on a case-by-case basis.

### B. Pipe Crossings (Vertical) Separation

1. The minimum vertical separation between water and wastewater line crossings, as measured outside of pipe to outside of pipe, shall be 18 inches. The water line shall be constructed above the wastewater line.

2. The minimum vertical separation between water and storm drainage line crossings shall be 18 inches, measured from outside of pipe to outside of pipe.

   (a) If the water line is constructed below the wastewater line, pressure-class pipe will be required for sewer line to prevent possible wastewater contamination of the potable water.

   (b) If the vertical separation between the wastewater and water line is less than 18 inches, structural support will be required, subject to the UCB Utility Engineer’s approval.

3. The minimum vertical separation between wastewater and storm drainage line crossings, as measured outside of pipe to outside of pipe, shall be 6 inches, including the following:

   (a) If the storm drainage line is constructed below the wastewater line, pressure-class pipe will be required for one of the lines to prevent possible wastewater contamination of storm drainage.

   (b) If the vertical separation between the wastewater and storm drainage line is less than 18 inches, structural support will be required, subject to the UCB Utility Engineer’s approval.

4. When excavating under an existing utility, flowfill shall be used for backfilling under the utility pipe.

### PART 8 – EROSION AND DUST CONTROL
A. The Contractor shall prevent erosion of soil on the site and adjacent property resulting from utility construction activities. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation, or other operation that will disturb the natural protection. Work shall be scheduled to expose areas subject to erosion for the shortest possible time, and natural vegetation shall be preserved to the greatest extent practical. Stormwater inlets shall be protected to prevent sediment from excavated areas from entering. All BMPs shall be designed as to not restrict the inlets during large storm events which have the potential to cause flooding and damage to campus buildings.

B. If the Contractor is told that off-project area transport of dust is occurring during construction. The Contractor shall immediately increase the level of dust control to their construction activities.

C. It shall be the responsibility of the Contractor to investigate and verify in the field, the existence and location of utilities whether shown on the approved plans or not. The Contractor shall be solely responsible for the protection of all structures or utilities, including pipes, cables, fences or similar items. Permission for the adjustment of existing utilities or other items or structures shall be obtained from the appropriate owners or agents.

PART 9 – UTILITY LOCATES FOR OUTSIDE CONTRACTORS/PROJECTS

A. All underground utility locate requests must be initiated by calling the Utility Notification Center of Colorado (UNCC) at 1-(800)-922-1987 or 811. All contractors/ projects are responsible to read and follow the rules of UNCC and applicable State of Colorado laws.

B. The dig area(s) must be marked with white paint or pre-marked with Flo Pink or White Proposed Dig Area flags to be obtained at the Facilities Management Construction Stores, unless contractor has met with the CU utility locator or CU representative to confirm dig area(s) when the utility locate is called in to UNCC, including building names and landmarks in the description(s).

C. APWA approved color codes shall be used.

D. The contractor may contact the University of Colorado (CU) utility locator at (303)-735-2875 or (303)-492-5643 or Facilities Management Service Center at (303)-492-5522 for additional information.

PART 10 – DAMAGE NOTIFICATION. IF A FACILITY IS DAMAGED, THE FOLLOWING DAMAGE NOTIFICATION PROCEDURE SHALL BE FOLLOWED:
A. Immediately evacuate the area and call 911 if a dangerous or potentially dangerous situation exists.

B. Cease excavation and immediately notify the CU representative to report damage or exposed facility. Assist CU representative in completing a damage report.

C. Immediately call UNCC (1-800-922-1987 or 811) and process a Damage Ticket.

D. Contact facility owner(s) and report the damage.

A. Excavators and owners/operators who fail to use reasonable care will be “presumed liable” for the cost of the damage, including expenses of suit and reasonable attorney fees and any third party injuries or damages. Reasonable care should include all of the guidelines identified under excavator and facility owner/operator responsibilities.

G. Continue excavation only after a facility representative has arrived and given permission to proceed.

END OF SECTION 02400