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. Prior to delivery of pipe from each manufacturing lot or run, submit:
6. 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 – 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. Inspection of the pipe prior to backfill
   2. Make inspections after lines between manholes, or manhole locations, have been installed and approximately 2’ of backfill is in place.
   3. 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.
   4. Inspection of rebar for cast-in-place manhole bases.
   5. Inspection during any required pressure or bacteriological testing required under these standards.
   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 5 – 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 domestic water work similar to that required for project.

PART 6 – 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:

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<thead>
<tr>
<th>Water</th>
<th>Sewer</th>
<th>Storm</th>
<th>Electric, Telecommunications, and/or Gas</th>
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<tr>
<td>Water</td>
<td>10-ft</td>
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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.

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 both utility 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 Director’s approval.

PART 7 – 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.

B. If the Contractor is alerted to the fact 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.

END OF SECTION 02400