33 00 00 – Utilities

33 11 00 Water Distribution System

The water utility at CCU is the City of Conway Public Utilities Dept. Distribution mains throughout the campus are operated and maintained by them with individual water meters installed as needed for individual facilities.

Generally, for new projects CCU will install new distribution mains as necessary and dedicate them to the City of Conway for O&M. University will typically pay meter/tap and impact fees directly for new projects and not through the contractor. Inspection, testing and commissioning requirements are substantial and are typically coordinated by the permitting engineer. Contact SCDHEC and the City of Conway for additional information.

Regulatory Requirements:

Comply with design, materials, workmanship, and other applicable requirements of the South Carolina Department of Health and Environmental Control and the City of Conway Public Utilities Dept.

Material Requirements:

Generally, the City of Conway requires AWWA C900 PVC Pipe with push-on joints for water distribution mains. C151 ductile iron pipe may be required for special circumstances such as shallow cover or minimum clearance pipeline crossings, etc. In addition, ductile iron pipe (with restrained joints) should be considered for high value or other applications where pipe or joint failure would lead to substantial damage and/or repair expense.

Fittings 3” and above in size are required to AWWA C110 or C153 mechanical joint, ductile iron.

Restrained joints, where required, are typically accomplished with mechanical joint glands (Megalug or approved equal).

Valves 3” to 12” in size shall be AWWA C509 ductile iron gate valves by Mueller Co. and shall be limited to specific models as required by the City of Conway to minimize maintenance part inventories. Valves great than 12” in size shall be C504 butterfly valves as required by the City of Conway. In addition, UL/FMG gate valves with indicator posts are typically required by the State Engineers Office for dedicated fire line installations.

Hydrants shall be AWWA C502 by Mueller Co. and shall be limited to specific models as required by the City of Conway to minimize maintenance part inventories.

Backflow preventers shall be installed inside building equipment rooms where possible for ease of access for testing and maintenance.

All underground pipe installations shall have detectable warning tape and locator wires installed in the trench above the pipe in accordance with City of Conway requirements.
33 31 00 Gravity Flow Sanitary Sewerage System

The sanitary sewer utility at CCU is the Grand Strand Water and Sewer Authority. The sanitary sewer collection system is operated and maintained by them and they treat the wastewater.

Generally, for new projects CCU will install new collection mains as necessary and dedicate them to the GSWSA for O&M. The University will typically pay tap and impact fees directly for new projects and not through the contractor. Inspection, testing and commissioning requirements are substantial and are typically coordinated by the permitting engineer. Contact SCDHEC and the GSWSA for additional information.

Regulatory Requirements:

Comply with design, materials, workmanship, and other applicable requirements of the South Carolina Department of Health and Environmental Control and the GSWSA.

Material Requirements:

Generally, the GSWSA requires ASTM D 3034 PVC sewer pipe with push-on joints. ASTM A 746 ductile iron pipe (ceramic epoxy lined) may be required for special circumstances such as shallow cover or minimum clearance pipeline crossings, etc.

Manholes shall be ASTM C 478 precast concrete with ASTM C 990 sealant joints. Tops are typically eccentric cone type except for flat slabs in low cover applications. Pipe connections are to be made using ASTM C 923 resilient pipe connectors. Tops are 24” inside diameter ASTM A 48 iron ring and covers. Cover inserts are required for “in pavement” installations and where the likelihood of inundation exists.

A manhole or PVC cleanout with a threaded PVC cap shall be provided at the point of connection to all building plumbing systems. Where cleanouts are used, they shall be housed in a traffic grade ring and cover set at grade in a cast-in-place concrete collar.

Grease traps, where required, shall be ASTM C 857/858 precast concrete vaults with internal grease trap configuration. Frames and covers shall be as for manholes.

All underground pipe installations shall have detectable warning tape installed in the trench above the pipe in accordance with GSWSA requirements.

LEED Considerations:

Water Efficiency: Innovative Wastewater Technologies (Credit 2)

33 41 00 Storm Drainage System

CCU is located within the City of Conway and, as a result, project site plans are subject to review under their Technical Review Committee approval process. Local storm drainage requirements should be considered applicable in addition to the SCDHEC Standards for Stormwater Management and Sediment Reduction, the SCDHEC Stormwater Management

Soils on the campus are generally highly erodible and, as a result, designers should consider measures to minimize potential sinkhole damage due to loss of soil material into leaks in the drainage system. Measures to mitigate damage from leaking pipe joints include gasketed joints, wrapping joints with filter fabric, and ASTM C 877 external sealing bands.

The preferred drainage culvert pipe is ASTM C 76 Reinforced Concrete (RCP). ASTM C 990 sealant joints are allowed but the designer should consider the use of ASTM C 443 gasket joints in high value areas or locations where access for maintenance and repair is limited.

Corrugated HDPE Pipe (AASHTO M 252M or 294M as applicable) must have smooth wall interiors and shall not be used in areas subject to vehicular traffic loading.

ASTM A 760 Corrugated Steel Pipe is not preferred but will be considered, on a case by case basis, for large diameter installations where the potential for cost savings is substantial.

Drainage Structure Boxes shall generally be precast reinforced concrete in accordance with Section 719 of the SCDOT “Standard Specifications for Highway Construction” unless specific conditions warrant otherwise.

Generally, culvert outlets shall be terminated with prefabricated, flared/mitered end sections or built in place brick or concrete headwalls as conditions warrant. Prefabricated headwalls shall not be used unless approved by the CCU Project Manager and, when used, special care shall be taken to ensure that openings are properly grouted and backfill slopes transition smoothly to meet the top of the wall.

Outfalls and areas subject to erosive flow velocities shall be stabilized with the preferred method being turf reinforcement mat such as Pyramat, P550, or Recyclex. Riprap shall not be used unless approved by the CCU Project Manager.

Completed culvert installations shall be videotaped along their interior length utilizing equipment made specifically for the purpose. Damaged culvert sections and damaged, displaced, or leaking joints shall be repaired or replaced prior to final acceptance.

LEED Considerations:

- Sustainable Sites: Stormwater Design—Quantity (Credit 6.1—porous pavers)
  Stormwater Design—Quality (Credit 6.2—porous pavers)

- Materials & Resources: Regional Materials (Credit 5)