

2.4 PROJECT NARRATIVE AND DOCUMENTATION

GENERAL PROJECT DESCRIPTION

The main campus steam infrastructure consists of central steam plant and a network of steam and condensate piping serving 80% of the campus buildings for both building heating and potable hot water. Anticipated service life for steam production boilers and piping is approximately 20-25 years. Near half of the campus infrastructure for this utility has been in service for 20 years or more. In 2017 ETSU completed a boiler plant conversion from base loading with coal fired boilers to those utilizing natural gas. Existing backup natural gas fired boilers in 2017 became part of the primary steam production. These boilers are now 26 and 23 years old and at the end of service life. FSC reported in 2020 that significant investments in steam utility infrastructure would need to take place in the next 5 years. ETSU has undergone smaller scale piping replacements since that time as funds became available, but keeping pace with the scale of the installation over 20 years ago has not been possible. Leaks arise from time to time as old infrastructure begins to fail and the leakage causes a more rapid deterioration of the remaining pipe. It is clear from recent experiences that below grade piping needs to be replaced by the time it reaches 25 years of age.

While the buried steam piping is more straight-forward, the east side condensate collection system has been an ongoing problem which could have various solutions. The east side has several buildings with condensate return pumps which utilize a common pipe to deliver condensate “over the hill” near Gilbreath Hall. The individual pumps are failing at a high rate. Part of the reason for this is the initial common pipe was taxed with additional load from new buildings placing them all under a higher load than normal. Based on the topography of the general location, a gravity system and area condensate pump station would be a reasonable solution to minimize wear on individual pumps. Placing the station in the general proximity of the diagonal between Burgin Dossett Hall and Reese Museum makes sense. There are many options for aesthetic treatment or screening of the small pump station and due to the location, this should be incorporated into the pump station design. Adequate piping replacements are also required to both collect and deliver the condensate.

The campus has executed several recent replacement projects for the main campus chilled water production plant. These have resulted in significant efficiency gains. As part of these projects, the campus primary and loop distribution pumps have been replaced. It is now time to turn attention to proper balancing of the secondary to tertiary pump system. This may require some piping/test port/valve adjustments for proper functionality.

Steam production (Boiler), steam distribution piping, condensate collection system and chilled water distribution pumps noted above are the utility infrastructure needs which present the highest risk for the campus at this time. Executing these replacements will be reasonably disruptive on campus will involve cutting and patching concrete, asphalt, hardscape and landscape and is best suited for summer construction, but select opportunities for work during the remainder of the year also needs to be considered.

During the planned replacement activities, some other utilities may be impacted (water, sewer, chilled water, potable water, potable hot water, power, etc.), and it will be practical to handle minor other incidental utility replacements which can be done at a fraction of the cost due to the construction (i.e. placing piping in the same general trench). Disturbances of the campus landscape will necessitate repairs per the current landscaping campus requirements and standards.

IMPACTED BUILDINGS

The following is a list of served buildings which infrastructure may be impacted by this project:

E&G Buildings:

- | | |
|------------------------|------------------------|
| 1. Alexander Hall | 13. Mathes Hall |
| 2. Ball Hall | 14. Memorial Center |
| 3. Brown Hall | 15. Nicks Hall |
| 4. Burgin Dossett Hall | 16. Power Plant |
| 5. Burleson Hall | 17. Reece Museum |
| 6. Clack Building | 18. Rogers-Stout Hall |
| 7. Data Center | 19. Ross Hall |
| 8. Bond Building | 20. Sam Wilson Hall |
| 9. Gilbreath Hall | 21. Sherrod Library |
| 10. Hutcheson Hall | 22. Warf-Pickel Hall |
| 11. Lamb Hall | 23. Wilson-Wallis Hall |
| 12. Lyle House | |

Design Team

Mechanical	Facility Systems Consultants, LLC
Electrical	Facility Systems Consultants, LLC
Architecture	Cain Rash West Architects, Inc., P.C.
Structural	Prosim Engineering, LLC
Civil	Thompson & Litton, Inc.
Landscape	Ross/Fowler PC
Environmental	S&ME, Inc. (Louisville, TN)

ANTICIPATED SCHEDULE

Schematic Design	November 2026
Design Development	Mid-January 2027
Construction Documents - Early Release Package 1	Mid-March 2027
CMGC Bidding - Early Release Package 1	Mid-April 2027
CMGC Subcontract Awards - Early Release Package 1	May 2027
Construction Documents - Package 2	May 2027
CMGC Bidding - Package 2*	June 2027*
CMGC Subcontract Awards - Package 2	July 2027
Substantial Completion - Early Release Package 1	August 2027
Final Completion - Early Release Package 1	September 2027
Substantial Completion - Package 2	November 2028
Final Completion - Package 2	December 2028

*Note – It is also possible that a Package 3 follows a similar schedule to Package 2, depending on scopes.

Project Budget

Bid Target	\$16,150,000.00
MACC	\$17,747,500.00