

All Agency Project Request

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<u>Agency</u>	<u>Institution</u>	<u>Building No.</u>	<u>Building Name</u>
University of Wisconsin	Eau Claire	285-0A-9924	Utility - Site Steam & Condensate

<u>Project No.</u>	13A2W	<u>Project Title</u>	Upper Campus Steam Dist Renv
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Project Intent

This project constructs upper campus steam and condensate distribution improvements to significantly enhance system reliability, redundancy, and operating flexibility to meet campus needs. Improvements include completing a steam and condensate distribution loop on the upper campus, providing a new steam and condensate service to Hilltop Center, and replacing steam pit 4 west of Horan Hall.

Project Description

UPPER CAMPUS STEAM DISTRIBUTION LOOP: Project work includes constructing 420 LF of new underground waterproofed concrete box conduit between steam pit MC-2 and steam pit CVTC with new 8-inch steam and 4-inch condensate piping systems, piping insulation, and supports. Steam pit MC-2 is located in green space just south of University Drive and north of the Maintenance and Stores building. Steam pit CVTC is located in the technical college parking lot just south of University Drive and north of the Chippewa Valley Technical College building. All box conduit and piping connections within existing pits will include new isolation valves, expansion joints, steam traps, and drains as determined through the design process. Due to space restrictions, a modest expansion of pit MC-2 is included to accommodate the installation of pit accessories. New pit ladders with extendable safety posts will be installed and all pits will be waterproofed at the box conduit connections. The project areas will be restored to pre-project conditions including all landscaping, turf, pavements, and fencing.

HILLTOP CENTER STEAM SERVICE: Project work includes constructing 130 LF of new underground waterproofed concrete box conduit between existing steam pit 3B and the Hilltop Center with new 4-inch steam and 2-inch condensate piping systems, piping insulation, and supports. A section will be offset near the midpoint to avoid a grease pit and piping near the southwest corner of the Hilltop Center. Steam pit 3B is located in green space west of Murray Hall adjacent to parking stalls along Garfield Avenue. All box conduit and piping connections to pit 3B will include new isolation valves, steam traps, and drains as determined through the design process. A new sub-grade box conduit penetration into the south wall of the Hilltop Center will be constructed. A new steam pressure reducing station with safety relief valve and vent piping will be installed in Room 14A. Approximately 100 LF of new 3-inch (25 psig) steam, new 6-inch (10 psig) steam, and new 2-inch pumped condensate piping/insulation systems will be routed from Room 14A to connections located within Corridor 15 and Room 19. New pit ladders with extendable safety posts will be installed and all pits and building walls will be waterproofed at the box conduit connections. The project areas will be restored to pre-project conditions including all landscaping, turf, pavements, and fencing.

The pressure reducing station within the Hilltop Center will be connected to the Andover building automation system for reporting and a new alarm system will be installed for the pressure reducing station. The pumped condensate piping in Rooms 7 and 19 will be reconfigured to redirect pumped condensate to the new service piping exiting the south wall of building. A new pump receiver set will be installed to collect and discharge drip condensate, if necessary, including associated electrical power and alarm wiring.

Creative construction measures and schedule acceleration options will need to be implemented to minimize food service disruption when project work crosses the roadway south of Hilltop Center.

STEAM PIT 4 REPLACEMENT: Project work includes demolishing steam pit 4 (concrete structure, anchoring and support steelwork, and piping insulation), located on the upper campus southwest of Horan Hall, and replacing it with a new larger concrete pit structure, including a new access shaft, ventilated entrance, access ladder with extendable safety posts, and anchoring and support steelwork. The new pit subgrade walls and connections to existing box conduit sections will be waterproofed. High performance butterfly valves will be installed within the existing steam and condensate piping that exits the pit in three directions. New isolation valves will be installed for future steam/condensate services to the proposed upper campus residence hall that is planned for construction in 2014. New drain and drip trap stations will be installed to prevent the accumulation of condensate during shutdowns. New electrical service will be installed for lighting and maintenance

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activities. The steam and condensate piping systems will be reinsulated and removable blankets will be installed on new valves.

Project Justification

Installing a new box conduit and steam/condensate piping system between pit MC-2 and pit CVTC will complete a main distribution loop on the upper campus and provide a dual path for steam/condensate service from the central heating plant to most upper and lower campus buildings. The majority of the upper campus steam/condensate distribution system was constructed in the 1960s and is at or past its service life. Considering the age of the steam distribution system, it is prudent to have two main routes for steam/condensate for operating flexibility. The completed steam/condensate loop will provide the ability to isolate a leak or shutdown a main section for maintenance while minimizing disruption to building heating systems and limiting the overall impact.

The steam and condensate services to Hilltop Center, constructed during the 1960s, cross under Garfield Avenue within a concrete box conduit from pit 6 through the north basement wall of Hilltop Center. The steam branch configuration within pit 6 exerts high forces near the connection and has been repaired once due to failure. Hilltop Center houses dining facilities that are used throughout the year and the loss of steam would result in the inability to make hot water as well as creating environmental control and comfort issues. The new steam/condensate services will address reliability concerns and provide an alternate means to maintain steam service to Hilltop Center.

Steam pit 4 was also constructed in the mid-1960s and is at the end of its useful life. This pit is too small and shallow to serve as an anchor point and hub for the steam and condensate distribution mains. Due to its inadequate size and configuration, operational maintenance activities are challenging. The anchor steel has failed due to repeated thermal cycles and the resulting forces imposed on the anchors. Temporary bracing steel has been added to prevent distribution piping failure, but it is not a long-term solution.

A/E Consultant Requirements

A/E Selection Required?

Consultants should have specific expertise and experience in the design and coordination of central steam distribution systems in an institutional environment as part of a design team. Work includes site surveys, acquiring field data, and verifying as-built conditions to assure accurate development of design and bidding documents, and production of necessary design and bidding documents. Work also includes the development of plans and specifications to assist in the coordination, scheduling, and phasing efforts associated to project construction work in an active part of the campus. Consultants should indicate specific projects from past experience (including size, cost, and completion date) in their letter of interest and when known, include proposed consulting partners and specialty consultants.

Commissioning

- Level 1
 Level 2

Project Budget

Construction Cost:		\$1,143,000
Haz Mats:		\$20,000
Construction Total:		<u>\$1,163,000</u>
Contingency:	15%	\$175,500
A/E Design Fees:	8%	\$93,000
DFD Mgmt Fees:	4%	\$53,500
Equipment/Other:		\$0
		<u>\$1,485,000</u>

Funding Source

GFSB - Utilities Repair & Renovation [Z080]	\$861,300
PRSB - []	\$0
Agency/Institution Cash [AGF0]	\$623,700
Gifts	\$0
Grants	\$0
Building Trust Funds [BTF]	\$0
Other Funding Source	\$0
	<u>\$1,485,000</u>

Project Schedule

Project Contact

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SBC Approval: 02/2013
A/E Selection: 03/2013
Bid Opening: 02/2014
Construction Start: 05/2014
Substantial Completion: 09/2014
Project Close Out: 12/2014

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Project Scope Consideration Checklist

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1. Will the building or area impacted by the project be occupied during construction? If yes, explain how the occupants will be accommodated during construction.

All project work will be coordinated through campus physical plant staff to minimize disruptions to daily operations and activities.

2. Is the project an extension of another authorized project? If so, provide the project #...

3. Are hazardous materials involved? If yes, what materials are involved and how will they be handled?

Required hazardous materials abatement has been included in the estimated project schedule and project budget. Comprehensive building survey inventory data is not available on Wisconsin's Asbestos & Lead Management System (WALMS) <<http://walms.doa.state.wi.us/>>.

4. Will the project impact the utility systems in the building and cause disruptions? If yes, to what extent?

All project work will be coordinated through campus physical plant staff to minimize disruptions to daily operations and activities.

5. Will the project impact the heating plant, primary electrical system, or utility capacities supplying the building? If yes, to what extent?

6. Are other projects or work occurring within this project's work area? If yes, provide the project # and/or description of the other work in the project scope.

The Garfield Avenue Utility Corridor Improvements (12K1L) is planned for construction during summer 2014. It is anticipated that the Garfield utility project will sever steam and condensate services to the Hilltop Center for the duration of its construction. Portions of this project work should be completed prior to the Garfield work to maintain steam and condensate services to the Hilltop Center.

7. Have you identified the WEPA designation of the project...Type I, Type II, or Type III?

Type III.

8. Is the facility listed on a historic register (federal or state), or is the facility listed by the Wisconsin Historical Society as a building of potential historic significance? If yes, describe here.

9. Are there any other issues affecting the cost or status of this project?

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10. Will the construction work be limited to a particular season or window of opportunity? If yes, explain the limitations and provide proposed solution.
Project work is seasonal. Preferred project work schedule should be limited to late spring, summer, and/or early fall months if possible.
11. Will the project improve, decrease, or increase the function and costs of facilities operational and maintenance budget and the work load? If yes, to what extent?
Completion of this project will decrease operational maintenance costs.
12. Are there known code or health and safety concerns? If yes, identify and indicate if the correction or compliance measure was included in the budget estimate, or indicate plans for correcting the issue(s).
13. Are there potential energy or water usages reduction grants, rebates, or incentives for which the project may qualify (i.e. Focus on Energy <<http://www.focusonenergy.com>> or the local utility provider)? If yes, describe here.
14. If this is an energy project, indicate and describe the simple payback on state funding sources in years and the expected energy reduction here.