

All Agency Project Request

2013 - 2015 Biennium

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

<u>Project No.</u>	13H1L	<u>Project Title</u>	Lake St./Law Bldg Steam & Condensate Renv
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Project Intent

This project renovates high pressure steam (HPS), pumped condensate return (PCR), and compressed air (CA) utilities within a concrete box conduit system along Lake Street between Dayton Street and Johnson Street, including the replacement of two (2) steam pits and the replacement of the steam/condensate utility service to Witte Hall. The concrete box conduit and associated steam and condensate piping from the steam tunnel entrance to the Law Building will be replaced. This project also expands an existing utility tunnel entrance to accommodate the installation of a new duplex condensate pumping station that is just north of the Central Kitchen (west of Park Street).

Project Description

This project will be designed in multiple phases and require multiple years of construction. Project work includes replacing steam pits 79/12 and 11/13; replacing ~140 LF of direct buried steam, condensate return and compressed air piping from steam pit 79/12 to Witte Hall; and renovating ~430 LF of steam, condensate return and compressed air utilities within concrete box conduit between steam pits 79/12 and 11/13 along Lake Street. To facilitate reconstructing pit 79/12, an ADA access ramp constructed in the Gordon Commons project (09A3E) will be removed and reconstructed.

The direct buried utilities to Witte Hall and along Lake Street will be replaced by a concrete box conduit with new 6-inch HPS, 3-inch PCR, and 1-inch CA piping, insulation, and supports. It's also believed that the steam and condensate anchor located within the box conduit is broke and in need of repair.

Project work also includes the expansion of the sub-grade utility tunnel access 44/12, installation of a duplex condensate pumping station and ~1,200 LF of 2-inch PCR within the Lathrop Drive utility tunnel from just north of the Central Kitchen to Charter Street. Signal and emergency power will be provided to Pit 44/12. Pathways will not be routed in existing tunnel.

Project work includes replacing ~220 LF of low pressure steam (LPS) and condensate return (PCR) piping from steam tunnel entrance 37.5/12 to the Law Building. The existing box conduit will be replaced by a larger box conduit and new insulated 8-inch LPS and 2-inch PCR piping. The larger concrete box conduit will accommodate the required insulation thicknesses of today's design standards.

All areas disturbed by the project will be fully restored, including roadways, sidewalks, terraces, landscaping features, and site structures. Temporary steam, condensate and compressed air will be required in order to serve connected loads while steam pits and box conduits are being constructed. Project work also includes asbestos abatement of the steam pits and piping insulation as required.

Project Justification

Steam pit 79/12 and the thermal utilities serving Witte Hall were installed in the early 1960s during the phased construction of Sellery Hall, Witte Hall, Gordon Commons, and Ogg Hall. The steam pit roof and large sections of the walls are failing. Concrete has delaminated and the reinforcement steel is exposed and corroded. The steam pit roof and a corner of the wall were repaired once but have failed again. The compressed air piping service to Witte Hall has failed and the condensate service is in poor condition. The direct-buried steam, condensate return, and compressed air utilities to Witte have reached the end of their useful life and need to be replaced to ensure that the building heating and controls systems are reliable.

Steam pit 11/13 and the concrete box conduit between steam pits 79/12 and 11/13 were installed in the mid 1980s for the construction of the Southeast Recreational Facility (SERF). The design of the steam pit and box conduit incorporated a drain tile on each side of the box conduit and a storm pump manhole adjacent to the steam pit. Due to periodic failures and/or back up of the storm pump system, the steam pits and box conduit have flooded. Although this issue has been addressed, the flood incidents have led to pit structural damage and large sections of the walls have exposed and corroded reinforcement steel and large sections of spalled concrete. Associated to the past flooding issues, the steam and

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condensate piping insulation within the box conduit is deteriorated and needs to be replaced. Due to the age of the steam, condensate and compressed air piping systems and box conduit system, it is assumed to be in good shape and can be re-used.

Pumped condensate return is one of the more vulnerable utilities in this area of east campus. The only pathway of pumped condensate return from east campus facilities is through direct buried piping routed along Dayton Street from Park Street back to the Charter Street Heating Plant. Most of the pumped condensate return piping of this vintage on campus (1950s) has failed requiring either replacement or installation of a smaller sleeve pipe within the failed condensate main. Failure of the pumped condensate piping between the Charter Street Heating Plant and Park Street would result in a significant and costly loss of condensate return from east campus facilities and severely challenge the capacity of the central plant boiler make-up water systems. Economic and reliable steam production at the central plants is directly tied to the efficient return of campus condensate. The installation of a centrally located condensate pumping station will provide a second means to return condensate to the central plants should a failure occur in the Dayton St condensate main. To further enhance reliability of the condensate return system going forward, the long term plan is to upgrade the condensate main along with other Dayton Street utilities as an enumerated major project in a future budget bill.

Steam tunnel entrance 37.5/12 was created when an existing section of the Law Building was demolished in order to construct a building addition in the early 1960s. The building addition project installed the current low-pressure steam and condensate return box conduit system from the end of the steam tunnel to the building addition. The condensate piping in this section of box conduit has failed limiting return to the central heating plants.

A/E Consultant Requirements

Consultants should have specific expertise and experience in the design and coordination of underground utility systems including steam pits and concrete box conduits as part of a design team. Work includes site surveys, acquiring field data, and verifying as-built conditions to assure accurate development and production of design and bidding documents. 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.

A/E Selection Required?

Commissioning

- Level 1
- Level 2

Project Budget

Construction Cost:		\$2,924,000	
Haz Mats:		\$30,000	
Construction Total:		\$2,954,000	
Contingency:	15%	\$442,800	
A/E Design Fees:	8%	\$236,300	
DFD Mgmt Fees:	4%	\$135,900	
Equipment/Other:		\$0	
		\$3,769,000	

Funding Source

GFSB - Utilities Repair & Renovation [Z080]	
PRSB - []	
Agency/Institution Cash [AGF0]	
Gifts	
Grants	
Building Trust Funds [BTF]	
Other Funding Source	

Total

\$2,751,400	
\$0	
\$1,017,600	
\$0	
\$0	
\$0	
\$0	
\$3,769,000	

Project Schedule

Project Contact

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SBC Approval: 09/2013
A/E Selection: 10/2013
Bid Opening: 06/2014
Construction Start: 07/2014
Substantial Completion: 11/2015
Project Close Out: 04/2016

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Project Scope Consideration Checklist

Y **N**

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/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.
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.