All Agency Project Request
2011 - 2013 Biennium

Agency	Institution	Building No.	Building Name
University of Wisconsin	Parkside	285-0G-3052	H&CP - Heating & Chilling Plant

Project No. 12E1I **Project Title** Utility Tunnel Renv/Repr

Project Intent

This project repairs the underground poured concrete utility tunnel structure; primary and signal vault roofs; utility tunnel vent assemblies; and utility piping, anchors, supports and insulation to resolve groundwater infiltration issues and correct the damage already incurred. Project work includes repairing leaks at the tunnel entrances and the enclosure, spalling concrete enclosure surfaces, high-pressure steam and condensate and chilled water piping supports, and piping insulation and protective coatings.

Project Description

TUNNEL ENCLOSURE: The tunnel enclosure will be excavated in specified locations to waterproof ~1,420 LF and reconstruct ~15 LF. In addition, ~358 locations with small scale leaks will be filled with waterproofing compound and ~22 locations with spalled concrete surfaces will be repaired with mortar patches. Approximately nine (9) concrete and masonry tunnel and vent structures will be replaced, the poured concrete walls will be extended above grade level, the masonry vent structure will be reconstructed, a new aluminum hatch with a lock will be installed, and new safety posts/side rails for the access ladders will be installed. Approximately eight (8) unused tunnel vent structures will be demolished, capped, and the opening waterproofed at the tunnel roof intersection. Approximately nine (9) concrete roofs will be replaced on the primary electric and signal vaults.

PIPING: The high pressure steam piping support bases will be replaced in ~79 locations with new stainless steel bases, two (2) steel anchors will be repaired, and eight (8) anchors and supports will remove corrosion and be repainted. Chilled water supports will be replaced in ~229 locations with supports that allow a complete vapor barrier to be installed around the piping. Steam and condensate piping insulation (~1,260 LF) will be replaced, including ~360 LF with protective metal jacketing. High-pressure steam piping insulation (~1,000 LF) will be abated and replaced. Chilled water piping insulation (~4,780 LF) will be replaced, including ~360 LF with protective metal jacketing. The steam piping exterior guide steel will also be insulated. Compressed air piping (~300 LF) will be prepared and painted with a protective epoxy coating.

Project Justification

The main campus utility tunnel and associated piping was constructed between 1971 and 1972. Groundwater infiltration and piping vapor barrier failure has caused accelerated deterioration of the utility piping, anchors and supports, and insulation. Some of these sections were previously repaired during projects 01J4E, 05G2Y and 07A3M. While groundwater infiltration remediation was addressed in those projects, additional waterproofing and repair efforts are required.

Ground water infiltration has damaged the tunnel enclosure, piping, supports, and insulation and protective jackets or coatings. The electrical duct banks were constructed directly on top of the utility tunnel enclosure, making repairs extremely difficult to manage and implement. Concrete surfaces are spalling, exposing the reinforcing materials. One section has deteriorated significantly and requires reconstruction because repair is no longer viable. The tunnel construction joints show evidence of severe water penetration. The high-pressure steam support bases, wall connections, and anchors have corroded and begun to fail. The exterior guide steel is exposed to the traffic aisle without insulation, creating a safety hazard for maintenance staff. The chilled water piping was installed directly on the steel support saddles, which does not provide a true vapor barrier.

The masonry ledge at tunnel entrances is below grade, allowing surface water to infiltrate the tunnel enclosure. The entrance hatches are not secure and safety posts/side rails are not installed on the access ladders, creating a safety hazard. The unused tunnel vent structure creates unnecessary operational maintenance costs. The primary electric and signal vault roofs are exposed above grade and have significantly deteriorated.

All Agency Project Request
2011 - 2013 Biennium

A/E Consultant Requirements

☑ A/E Selection Required?

Consultants should have specific expertise and experience in the design and coordination of utility tunnel construction and distribution systems 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. 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:		$2,230,000
Haz Mats:		$25,000
Construction Total:		$2,255,000
Contingency:	15%	$337,900
A/E Design Fees:	8%	$180,400
DFD Mgmt Fees:	4%	$103,700
Equipment/Other:		$0
		$2,877,000

Funding Source

Funding Source	Total
GFSB - Utilities Repair & Renovation [Z080]	$2,157,800
PRSB - Utilities Repair & Renovation [T570]	$719,200
Agency/Institution Cash []	$0
Gifts	$0
Grants	$0
Building Trust Funds [BTF]	$0
Other Funding Source	$0
	$2,877,000

Project Schedule

SBC Approval:	06/2012
A/E Selection:	07/2012
Bid Opening:	03/2013
Construction Start:	05/2013
Substantial Completion:	05/2014
Project Close Out:	10/2014

Project Contact

Contact Name:	Dale A. Lovejoy
Email:	<dale.lovejoy@uwp.edu>
Telephone No.:	(262) 595-2453 x

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 #...	☑	☐
09G3Q		
3. Are hazardous materials involved? If yes, what materials are involved and how will they be handled?	☑	☐
Required hazardous materials abatement (~1,000 LF high-pressure steam piping insulation) 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? ☑ ☐

   Minimal disruptions are anticipated. Chilled water system work is planned for cold months when the system is not in operation. Steam & condensate system planned outage work, which should be minimal, is planned during campus annual steam outage, and work that can be accomplished without an outage will be conducted during warm months to minimize unplanned outage impact.

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? ☐ ☑

10. Will the construction work be limited to a particular season or window of opportunity? If yes, explain the limitations and provide proposed solution. ☑ ☐

    Construction work on steam & condensate piping shall be limited to late spring (after April 15th), summer, and early fall months (before October 15th). Additionally, construction work that will result in steam & condensate outages shall be coordinated with the campus's annual steam outage which normally occurs approximately the 3rd week of May, immediately following Spring Commencement. Construction work on chilled water distribution piping shall be limited to late fall (after October 15th), winter, and early spring (before April 15th) months. Tunnel exterior repairs shall be limited to late spring (after May 15th), and summer (before September 1st) months.

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? ☑ ☐

    The project will improve functionality and decrease maintenance costs and work load in the distribution tunnel system, in that: (1) water infiltration control measures will be decreased; (2) water infiltration will decrease, preventing corrosion; (3) renewed insulation areas decrease heat loss (steam & condensate systems); (4) renewed insulation areas decrease heat gain (chilled water); (5) elimination of condensation issues will decrease moisture level in tunnel; and (6) corrosion remediation will be significantly reduced

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. ☐ ☑