

All Agency Project Request

2011 - 2013 Biennium

<u>Agency</u>	<u>Institution</u>	<u>Building No.</u>	<u>Building Name</u>
University of Wisconsin	Stevens Point	285-0K-9934	Utility - Site Data Communications

<u>Project No.</u>	<u>Project Title</u>
12A1G	STP Campus Fiber Optic Upgr

Project Intent

This project upgrades the campus network signal utility by installing a single mode fiber optic cable ring connecting all campus nodes to provide greater network capacity, increased network reliability, and fiber path redundancy.

Project Description

The project includes an initial comprehensive study of the current infrastructure, project intent, and proposed scope including proposed fiber optic cable pathway route for impacts to land use, utilities, walkways, and streets. The goal is to evaluate the proposed and possible alternate routes to minimize potential adverse impacts. Documents available for review include the UW-System Signal Utility Survey, Campus Master Plan, East Campus Space Study, New Chemistry/Biology Pre-design documents and City of Stevens Point utility installation requirements.

Project work includes installing a single mode (SM) fiber in a ring fashion from the campus node in Student Services Data Center to the Learning Resources Center Data Center node, the Knutzen Hall node, and the Roach Hall node. Fiber strand counts for each building will be increased to 36 SM. The fiber will be installed in existing or new concrete encased signal ductbanks or by direct burial in HDPE conduit. Direct buried fiber will be installed by directional bore under concrete sidewalks where they exist for protection. Direct bury pathway will consist of at least two 2-inch conduits with hand holes as needed to pull fiber cable. Building signal service entrances and main distribution frame (MDF) rooms in the four nodal buildings will be upgraded to provide a proper environment for equipment and network service staff. Electronic equipment will be purchased to light the fiber and support network operation.

Three new fiber pathway links between campus nodes will be constructed. Pathway 1 installs approximately 400 LF of new fiber between the north side of the Student Services Building, Dreyfus University Center, and the Communication Arts Center. Pull and termination space will be provided in the University Center and Communication Arts buildings. Approximately 900 LF of new fiber pathway will be installed from the Dreyfus University Center and Communication Arts building west to the west side of Reserve Street, then north to Portage Street, and then west on Portage Street to the south side of Learning Resources Center. Fiber will terminate in the Learning Resources Center Data Center node.

Pathway 2 installs approximately 1,700 LF of new fiber from the Student Services Building along the west side of Fremont Street to the Fourth Avenue and Reserve Street intersection. Approximately 1,300 LF of new fiber pathway will be installed from the intersection north along the east side of Reserve Street to the Moses Creek utility corridor. The pathway will then extend northeast along the corridor to Illinois Avenue and then north to existing Pit S60 located east of the Allen Center. Approximately 450 LF of new fiber pathway will be installed west from Pit S60 to the Roach Hall node. New fiber to be installed in the Moses Creek utility corridor and along Illinois Ave south of Pit S60 will be installed in new ductbank provided under a separate Campus Primary Electric Switchgear Replacement project (12A1H).

Pathway 3 installs approximately 2,100 LF of new fiber between Pit S60 and Pit S78, just south of the Maintenance and Materiel Building, and approximately 450 LF of fiber will be installed between Pit S78 and Pit S01. Fiber will be installed between Pit S01 and the Knutzen Hall node through a new conduit being installed under the North Debot Residence Hall Renovation project (11A2C).

Project Justification

All Agency Project Request

2011 - 2013 Biennium

The campus fiber optic backbone upgrade is needed to meet current and future requirements for the university's data, voice, video, environmental, and safety systems which communicate over the fiber. Increasing academic, student and administrative use of the data network is exceeding the capacity of the multi-mode fiber backbone. Also, it is anticipated that the campus fiber optic cable infrastructure will be used to distribute video signals. This will greatly increase network traffic volume.

In 1993, between 18 and 36 strands of multimode fiber were installed to allow 10 megabits per second (Mbps) of traffic across the backbone. Several years ago, the campus backbone transmission speed was increased to 100 Mbps. Now network traffic between buildings must increase to 1,000 Mbps to support greater network traffic. However, multimode fiber optic cable will not support 1,000 Mbps if the length of fiber exceeds 550 meters. Several campus buildings are beyond 550 meters from the campus central node in the Learning Resource Center including the Student Services node, the Knutzen Hall node, and the Roach Hall node.

A redundant fiber optic ring configuration is needed to support the critical systems that now rely on this infrastructure. Building security, fire alarm, and environmental control systems are connected through the campus fiber network. The present fiber plant has single pathways that connect multiple buildings. A cable break could leave several buildings without security, fire alarm reporting, environmental controls, and functioning voice and data networks.

UW System signal survey project (03H1K) surveyed the existing signal utility infrastructure including all ductbanks, signal pits, building entrances, MDF rooms, and the signal cables contained in these structures. The survey identified where the infrastructure is deficient in terms of capacity or quality. The signal conduits in many areas of campus are well beyond conduit maximum fills. The signal ductbank infrastructure between the Learning Resources Center and the ductbanks in the Franklin Street utility corridor are at capacity. New capacity is desperately needed to route new fiber from the central node in Learning Resources Center to other buildings.

A/E Consultant Requirements

A/E Selection Required?

Consultants should have specific expertise and experience in the design of campus fiber optic networks and fiber pathway infrastructure. 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:		\$463,400	
Haz Mats:		\$0	
Construction Total:		\$463,400	
Contingency:	15%	\$69,500	
A/E Design Fees:	8%	\$37,100	
DFD Mgmt Fees:	4%	\$21,300	
Equipment/Other:		\$230,000	
		\$821,300	

Funding Source

GFSB - Utilities Repair & Renovation [Z080]	
PRSB - Utilities Repair & Renovation [T570]	
Agency/Institution Cash <input type="checkbox"/>	
Gifts	
Grants	
Building Trust Funds [BTF]	
Other Funding Source	

Total

\$484,600	
\$336,700	
\$0	
\$0	
\$0	
\$0	
\$0	
\$821,300	

Project Schedule

Project Contact

All Agency Project Request

2011 - 2013 Biennium

SBC Approval: 02/2012
A/E Selection: 03/2012
Bid Opening: 03/2013
Construction Start: 05/2013
Substantial Completion: 12/2013
Project Close Out: 03/2014

Contact Name: Carl A. Rasmussen
Email: <crassmuss@uwsp.edu>
Telephone No.: (715) 346-2781 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. Alternate pedestrian pathways will be provided as necessary to accommodate project work.

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?

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

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

Completion of this project will improve signal utility capacity and the core fiber optic network.

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.

All Agency Project Request

2011 - 2013 Biennium

Portions of the 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?

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.