

Course name: **CAT 2781**: ETD Capstone  
 Division: Science, Math, and Engineering (**SME**)  
 Project: Real World Design for Xenia Pedestrian Bridge  
 Community Partners: Friends of Xenia Station

## LEARNING OBJECTIVE

This Service Learning project enabled a team of students from various disciplines to solve a real world design problem and to interact directly with an actual client. This collaboration with a 501c3 organization afforded the students the experience of meeting client demands and maintain conformance with federal, state and local regulations. As members of the Miami Valley community it also provided an opportunity to find a safe solution to a pedestrian traffic issue.



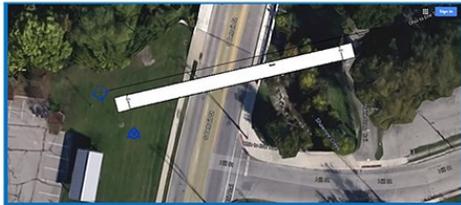
## PROJECT DESCRIPTION

The project partner was Friends of Xenia Station, chaired by Dennis Lewis, P.E. Architectural Technology, Civil Engineering Technology and Construction Management Technology students compiled a total of 855 hours conducting research, performing data collection, designing and producing architectural/ civil construction plan sheets for a pedestrian/bicycle bridge across US 68 in Xenia, Ohio. The final construction documents will enable the Friends of Xenia Station to solicit grant funding for the project.



Xenia Station Pedestrian Bridge Estimate	
Description	Total
Division: SITE CONSTRUCTION	\$2,881.20
Division: CONCRETE	\$3,741.23
Division: METALS	\$124,320.58
Division: WOOD AND PLASTICS	\$613.20
Division: FINISHES	\$12,657.19
Division: ELECTRICAL	\$3,176.58
Subtotal:	\$147,389.98
Estimate Total:	\$198,457.35

Profiles can be viewed online at [ctl.sinclair.edu](http://ctl.sinclair.edu)



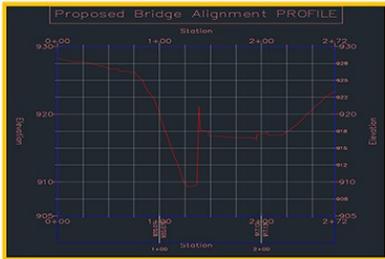
**SITE**



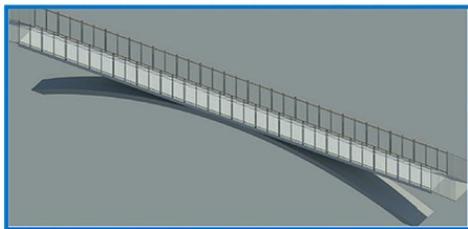
**OPTION #1 NEW CONSTRUCTION**



**OPTION #2 BRIDGE RELOCATION**



**SITE PROFILE VIEW**



**DESIGN EXAMPLE #1**



**DESIGN EXAMPLE #1**

## RESULTS

The final deliverables, although not sealed by the registered architect and civil/structural engineer provide the client a solution to the design problem as presented by Dennis Lewis, chair of Friends of Xenia Station. ETD Capstone students are required to report their weekly time based upon various tasks associated with the project and to provide reflection on the week's activities. Based upon the responses from the three students, they learned to communicate more effectively between their members, conduct research at various state and local agency offices, leverage the local network of professional architects, engineers and surveyors to gain valuable real-world solutions, hone their skills in ESRI ArcMap, Microsoft Project, Autodesk Revit and Civil 3D software, and prepare an integrated set of sheets for construction.

## OUTCOMES

This project posed a large challenge to this team of students, as the site requires considerable preparation to accommodate the bridge design. Environmental issues related to impacts to Shawnee Creek by the bridge design and utilities made the students aware of NPDES federal storm water discharge requirements. The fact that there was an actual client for this project served as a motivation element that pressed the students to perform at a high level. In my discussions with Mr. Lewis, he seemed genuinely impressed at the final set of construction documents and the professionalism demonstrated by Sinclair Capstone students.

## SUBMITTED BY:

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