

**FINAL  
LOOP ROAD STUDY**

**SU – 2006-10B  
SHIPPENSBURG UNIVERSITY  
Shippensburg, PA**

Prepared for:

**Shippensburg University  
1871 Old Main Drive  
Shippensburg, PA 17257**

MARCH 2009

Prepared by:

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Shippensburg University  
Loop Road Study  
Executive Summary

Purpose and Background

RETTEW Associates (RETTEW) developed a more detailed conceptual layout to provide a better understanding of costs for the construction of the proposed Loop Road. The detailed costs will provide Shippensburg University (University) the information necessary to pursue funding for the chosen concept and to determine the scope of the project that matches the available funds.

A more detailed layout was developed using mapping information from the University and the Shippensburg Foundation. A scoping field view meeting was held to determine the acceptable criteria of the project to meet the Pennsylvania Department of Transportation (PennDOT) and the Federal Highway Administration (FHWA) requirements as well as the environmental requirements. The final layout was developed based on these criteria. A detailed construction cost estimate was developed using the final layout and the unit cost information from PennDOT and from actual construction bids. At the direction of the University staff a number of alternatives were included in the cost estimates in addition to the base concept.

Anticipated Project Costs

Using the base project costs and the several alternatives requested by the University staff, seven (7) options were developed. The following summarizes the anticipated total project costs (construction and design) for each of the options for the project.

SHIPPENSBURG UNIVERSITY LOOP ROAD TOTAL PROJECT COST SUMMARY		
OPTION	DESCRIPTION	ANTICIPATED COSTS
Base Bid	3' Shoulder Section, no sidewalk or lighting	\$687,333.44
1	3' Shoulder Section, w/sidewalk, no lighting	\$816,679.69
2	3' Shoulder Section, w/lighting, no sidewalk	\$744,833.44
3	3' Shoulder Section, w/sidewalk and lighting	\$874,179.69
4	Curbed Section, no sidewalk or lighting	\$823,087.34
5	Curbed Section, w/sidewalk, no lighting	\$952,433.59
6	Curbed Section, w/sidewalk and lighting	\$1,009,933.59

Shippensburg University  
Loop Road Study  
Final Report

### **Purpose**

RETTEW Associates (RETTEW) has developed a more detailed conceptual layout and held a preliminary scoping field view with the Pennsylvania Department of Transportation (PennDOT) and Federal Highway Administration (FHWA) personnel to obtain design criteria and environmental clearance direction. This direction allowed RETTEW to provide Shippensburg University with detailed costs estimates for the construction and the design. The more detailed design criteria and the associated detailed costs will be used by the University to seek the additional funding needed for the project. It also allows the University to assess the scope of the project relative to the funding available.

### **Background and Methodology**

The University has obtained \$250,000 in federal funding for the project. There is a shortfall in funding for anticipated project costs developed in a previous concept. RETTEW met with the University staff to develop a more defined layout based on the needs of the University. The needs were defined at the initial meeting on February 28, 2008 with the University and the Shippensburg Foundation. Minutes are included in the Appendix. Additional information was supplied by the University and the Foundation (mapping, as-built plans of the Foundation facilities, stormwater calculations, and project plans from PennDOT for the proposed improvements to the intersection of the Foundation access road and Rt. 696). Following receipt of this information, RETTEW prepared a preliminary concept layout and reviewed the available capacity of the Foundation stormwater facilities to handle the additional runoff from the proposed roadway. This preliminary layout and information was provided to the University staff for review and comment. Several comments were received and incorporated into the preliminary layout. Upon agreement of the preliminary layout, a scoping field view meeting was held with personnel from PennDOT and FHWA to obtain preliminary determinations on the design criteria to be used for the project and directions on the environmental clearances needed. Minutes of that meeting are also included in the Appendix. Based on the direction at the scoping field view meeting, a final layout and detailed construction costs were developed for the base project, 3' shoulders w/o sidewalks or lighting. Detailed construction costs were also developed for several alternatives requested by the University, including curbed section, sidewalks, and lighting. These detailed costs and summary of the referenced options are discussed later in this report and included in the Appendix.

On February 26, 2009, the final review meeting was held with the University and the Shippensburg Foundation. Minor additions were requested during that meeting and those have been included in this report. Minutes are included in the Appendix.



## **Pedestrian/Bicycle Facilities**

Pedestrian/Bicycle Facilities will not be required by PennDOT for the project due to the alternate patterns that exist near the proposed roadway to accommodate these movements. An alternate for sidewalk has been shown on the typical section and a cost was included in the detailed estimate. The proposed sidewalk will be six feet in width and located on the southwest side of the proposed roadway. It is proposed to be constructed of bituminous material.

## **Lighting**

Lighting is not required for the project; however an alternative has been included in the detailed cost estimate. If provided, it is proposed to be located on the southwest side of the proposed roadway.

## **Separation to Adjacent Facilities**

It is recommended that the University explore the need for separation between the existing track and field facilities and the proposed roadway during the design process. No cost for these facilities has been included in the detailed cost estimate since the need is not considered likely.

## **Stormwater**

Based on the plans and stormwater report provided for the Foundation Conference Center project, the detention basin that was designed for that project appears to have excess capacity. We have estimated that the basin has available storage volume of 1.1 acre-feet. This estimate has been computed by subtracting the difference between the storage volume at the 100-year design water surface elevation and the storage volume at the emergency spillway elevation. As a point of reference, the estimated storage needed to store the 100-year runoff from the Loop Road extension would be 0.25 acre-feet. Any proposed use or modification of the Foundation basin for Loop Road would need to be coordinated with future Foundation projects. The change in grades along the centerline of Loop Road will ultimately limit the amount of impervious surface that can be directed to the Foundation basin so the University will need to consider directing some of the runoff to the existing stormwater facility located near the baseball field. Some modification to the existing University basin is anticipated and costs are included in the detailed cost estimate. The upstream runoff from the 5+ acres of athletic fields will also need to be accommodated by drainage facilities along the roadway.

## **Environmental Studies**

Due to the federal funds being used for the project, the necessary environmental clearance documents will need to be completed and approved during the preliminary design. As part of the scoping field view meeting held on December 3, 2009, a draft Categorical Exclusion Evaluation document was prepared. The various issues were reviewed and the direction is detailed in the meeting minutes that are included in the Appendix. The consensus of the group was that the project will require a CE Level 1b environment document. The general agreement was that:

- There are no hazardous waste issues present or anticipated.
- There will be no issues for the Pennsylvania Historical and Museum Commission.
- There is no public controversy for the project.
- The only noise and air pollution issues are those associated with construction.
- There are no anticipated Cultural Resource issues.
- There are no wetlands present on the site.

### **Foundation Access Road**

The existing access road to the Foundation will not require any improvements for the project. No costs for improvements have been included in the detailed cost estimates.

### **Cost Estimates**

The concept layout was designed using the existing aerial mapping from the University and the as-built drawings from the Foundation. No actual field survey was performed. The topography between the two (2) drawings matched closely; however, the contours were on slightly different datum. The contours on the University mapping were used and the Foundation contours were adjusted to match the University. This adjustment will result in some possible errors in some calculations of earthwork. The quantities were taken from the final layout and assumptions for the storm drainage and erosion and sedimentation items. Unit prices were developed using the PennDOT Engineering and Construction Management System (ECMS) Master Items Maintenance information on their website and actual bids from other similar projects. The costs were also estimated to reflect potential unit costs for the end of 2009.

For the base project estimate, 10-foot wide lanes with 3-foot wide paved shoulders were used. The base bid does not include any sidewalk or lighting. All runoff is directed toward the University athletic fields to not increase runoff onto the adjoining farm. The runoff will be captured with inlets in a swale along the roadway and conveyed to the Foundation basin or the University basin on the southern end of the roadway for control. The typical section is shown on the plans included in the Appendix.

Option 1 estimate includes the costs for the base project with a 6-foot wide bituminous sidewalk outside the swale. The sidewalk will slope toward the swale and therefore, no change in drainage system is anticipated. No lights are included in the cost.

Option 2 estimate includes the cost of the base project, plus lighting along the roadway. No sidewalk is included.

Option 3 estimate includes the costs of the base project, plus the sidewalk and lighting along the roadway.

Option 4 estimate has been adjusted to reflect 12-foot wide lanes and 8-inch concrete curbs on both sides of the roadway. The roadway will be crowned in the center and runoff will be directed to both sides. Therefore, additional inlets and cross pipes are needed. No sidewalk or lighting is included.

Option 5 estimate includes the costs for Option 3 plus a 6-foot wide bituminous sidewalk along the athletic field side of the roadway. No lights are included in the cost.

Option 6 estimate includes the costs for Option 3, plus the sidewalk and lighting along the roadway.

The detailed construction cost estimate is included in the Appendix. In addition, the detailed construction cost includes an assumed \$25,000 in unforeseen utility adjustments in the construction costs.

The summary of the construction costs are:

SHIPPENSBURG UNIVERSITY LOOP ROAD ESTIMATED TOTAL CONSTRUCTION COST SUMMARY		
OPTION	DESCRIPTION	ANTICIPATED COSTS
Base Bid	3' Shoulder Section, no sidewalk or lighting	\$549,866.75
1	3' Shoulder Section, w/sidewalk, no lighting	\$653,343.75
2	3' Shoulder Section, w/lighting, no sidewalk	\$595,866.75
3	3' Shoulder Section, w/sidewalk and lighting	\$699,343.75
4	Curbed Section, no sidewalk or lighting	\$658,469.88
5	Curbed Section, w/sidewalk, no lighting	\$761,946.88
6	Curbed Section, w/sidewalk and lighting	\$807,946.88

The total estimated project costs include the total construction costs plus estimated design and construction phase services. These have been shown on the detailed project costs sheets in the Appendix. A summary of these costs are as follows:

SHIPPENSBURG UNIVERSITY LOOP ROAD TOTAL PROJECT COST SUMMARY		
OPTION	DESCRIPTION	ANTICIPATED COSTS
Base Bid	3' Shoulder Section, no sidewalk or lighting	\$687,333.44
1	3' Shoulder Section, w/sidewalk, no lighting	\$816,679.69
2	3' Shoulder Section, w/lighting, no sidewalk	\$744,833.44
3	3' Shoulder Section, w/sidewalk and lighting	\$874,179.69
4	Curbed Section, no sidewalk or lighting	\$823,087.34
5	Curbed Section, w/sidewalk, no lighting	\$952,433.59
6	Curbed Section, w/sidewalk and lighting	\$1,009,933.59

**APPENDIX**

## MEETING MINUTES

Project: Shippensburg University, Loop Road Project

Project No: 07-02281-001

Meeting Date: 2/26/08

Report Date: 2/28/08

Location: Shippensburg University

Participants: Lance Bryson, Shippensburg University

Bruce Herring, Shippensburg University

Charles Goodhart, PennDOT

John Clinton, SU Foundation

Tom Klahr, RETTEW Associates

Max Shradley, RETTEW Associates

### Summary of Discussion:

1. We reviewed the plans for the Foundation's Conference Center and determined the drawings RETTEW Associates (RA) would like to have for background information for the project. John Clinton, SU Foundation, will obtain the following drawings from their design consultant and send to RA. The drawings requested are: C2, C3, C5, C6, C6.2, C6.3, C8.0, C8.1, C8.2, C8.3, C8.4, C8.5, C8.6, C8.7, and C8.8. In addition, RA requested a copy of the storm water and erosion and sedimentation control design calculations and reports.
2. Construction of a right-turn lane on SR 696 at the conference center driveway will begin this summer. Charles Goodhart, PennDOT, will send RA copies of any available plans showing the SR 696 improvements.
3. The need for various design items were discussed and their importance to Shippensburg University (SU). The roadway design will be "right-sized" and will fit within the same context of other campus roadways.
4. Lighting along the Loop Road will be needed for the traffic and pedestrians. Sidewalks and bike paths could be bituminous and shown as an alternate to be built in a later phase of the work. Curbing may be needed in some places depending on obstructions and runoff control.
5. No lane adjustments will be needed on the Loop Road approach to SR 696.
6. The posted campus speed is 15 mph. This would be the posted speed for Loop Road.
7. Normal traffic for Loop Road should include buses and trucks for the performing art center and deliveries to campus. Construction vehicles may use the road for future projects on campus and should be considered in the pavement design. The roadway design shall provide sufficient space for turning movements of these vehicles.

8. The Foundation is planning a project to update their storm water facilities for future projects this year and could include some improvements to accommodate runoff from Loop Road.
9. Several utility facilities are located within the project area, including gas, electric, a sewer force main, and the campus network. Utility coordination will be an important aspect of the project.
10. The Foundation will donate the right-of-way for the project.

These meeting minutes represent the writers understanding of the meeting discussions. The meeting minutes will be considered complete and accurate unless written corrections are received by the preparer within five (5) days of issue.

Prepared by:  
W. Max Shradley, Jr., PE  
Project Manager

## MEETING MINUTES

Project: Shippensburg Loop Road

Project No: 07-02281-001

Meeting Date: 12/3/08

Report Date: 12/12/08

Location: Shippensburg University, Reed Operations Center (ROC)

Participants: Bruce Herring (SU), Leona Barr (PennDOT), Jesse Sabitsky (PennDOT), Colleen Brown (PennDOT), John Burk (FHWA), Max Shradley (RETTEW), Timothy Falkenstein (RETTEW), Suzanne Stasiulatis (RETTEW), Tim Ebersole (SU), Lance Bryson (SU)

### Summary of Discussion:

On December 3, 2008 a meeting was held at Shippensburg University to discuss the proposed Loop Road, Shippensburg project. The purpose of this meeting was to coordinate with PennDOT professionals and project leaders at Shippensburg University to develop, through a scoping field view, an understanding of the feasibility of the proposed roadway project. Based on the understanding from the scoping field view meeting, RETTEW will be updating the conceptual layout and anticipated construction and project costs for the proposed Loop Road project. Additional funding for the project is needed by Shippensburg University before the project proceeds to design.

The meeting included a brief introduction of the individuals present, overview of the project, field view and photographic documentation, and review of the ECMS System CE/EA.

The Loop Road, Shippensburg project includes the construction of a short, approximately 1,700 linear foot, access road between an existing campus road and a conference center parking lot and exit, through existing outdoor athletic fields. The road will provide access to the Conference Center, just off of Rt. 696 from the campus and provide an alternate access to the north end of the campus. The planned road will run around the majority of the athletic field abutting the fence property line of a farm situated on the northeast boarder of the campus. An existing track-and-field discus throw cage will be removed due to the construction of the road.

At this time the University will require more funding to proceed with the design and construction work. Federal and other funding sources are being investigated. No survey has been done thus far. A traffic projection has not been developed, but a formal review of average traffic will be conducted as a first step in the design of the project.

Max Shradley handed out maps of the project and an urban design criteria summary outlining the "urban collector" and "urban local road" options for the proposed project from PennDOT Publication 13, Design Manual 2. The project was classified by HATS as an "urban collector," with a design for 20 mph to be signed 15 mph. However, it was identified by PennDOT that the road could be accepted as an "urban local road," and it was suggested that the Smart Transportation Guide, accessible on the PennDOT website, should be consulted in order to

identify further issues for design approval. As an "urban local road" there would only be shoulder width issues with the design. No curbs are necessary for the project but will be included if funding is available. It was discussed that the road project may consider an eight-foot extension of the road to accommodate bike traffic and a walking route provided funding is available.

During the field view, participants stopped at three locations along the length of the proposed road. The field view, lead by Max Shradley, stopped at the beginning of the road along an extension of a partially developed single-lane road south of the athletic fields (Photo 1). This portion of the road will be widened and improved for projected traffic. Continuing along the partially developed road, the participants stopped at the southern end of the athletic fields where the partially developed road ends and the athletic fields begin (Photo 2). The path of the proposed road through the athletic fields and the discus throw cage and the fence line of the farm (Photo 3), which will not be affected, were identified. A third stop was made at the end of the proposed road north of the athletic fields and south of the Conference Center (Photo 4). The road will cut through the eastern edge of the athletic field and continue through a row of dense brush landscaped in as a linear boarder. After the field view, the group returned to the office to discuss the CE/EA.

During the review of the CE/EA Package, PennDOT professionals reviewed and clarified sections in the document. This summary of the issues discussed at the meeting corrects or adds to information errors or gaps in the CE/EA Package that is currently on the online ECMS System. On the title page, it was noted the title should be, "The Loop Road, Shippensburg." Also, the "SR" indication 0011 should be removed, as well as the "Section," 066. It was also called to attention that the CE/EA will be approved at the district level. In the body of the document within the "Scoping Field View Part A," several questions were answered. As discussed previously, the estimated construction costs are TBD. In addition, Shippensburg University and the Shippensburg University Foundation will need to develop and execute easement agreements for the proposed Loop Road for the project to move forward. The current ADT, identified as 14,449 should be removed, and Shippensburg University estimates should be used.

#### SECTION A-1

In section A-1 of the CE/EA, "AQUATIC ENVIRONMENTAL RESOURCES," in the section "STREAMS, RIVERS & WATERCOURSES," it should be indicated that these resources are "not present." No other standing water, wetlands, floodplains or other resources are present. The only water resource identified in the vicinity was an irrigation well outside of the project area. It was identified that construction activities will effect soil erosion and sedimentation.

#### SECTION A-2

In section A-2, "LAND" resources evaluation is necessary for the CE/EA. Agricultural resources were noted as "not present." Only landscaped vegetation is "present." Unique geologic resources are "not present." Because the project will run through athletic fields, recreation facilities should be indicated as present. The remarks field for this section should include a description of the impacts. Wilderness, natural, and wild areas are "not present." National natural landmarks are "not present." While considering the "HAZARDOUS OR RESIDUAL WASTE SITES" section, it was identified that no Phase I is needed, but background research and references to this research should be identified.

#### SECTION A-3

In the "WILDLIFE" section A-3, it was indicated that no "Wildlife and Habitat" are present. A PNDI submission receipt will be required to be attached to the CEE.

#### SECTION A-4

Cultural resources, section A-4, were discussed and the project should not encounter any problems with compliance. No Cultural Resource Professionals (CRP)s were not present for the project scoping. However, it was the concensus of those present that no cultural resource issue exist on the site for the project. The project has sufficient information at this time to determine the effects to resources, and the project will go directly to PennDOT for Stipulation D review once the section is completed. In consideration of archaeology, the field has been graded in order to allow flat athletic fields. Due to the extent of land disturbance, it is very unlikely that the proposed road will have an impact on archaeological resources. In consideration of historic structures, there are no structures on-site, except the discus throw cage, which is not over 50 years of age. The farmstead on the northeast end of campus will not require investigation because it is located out of the project area.

#### SECTION A-6

In regard to "AIR QUALITY AND NOISE," section A-6, it should be noted that no sensitive receptors are present.

#### SECTION A-7

Section A-7 considers socioeconomic concerns. The "PUBLIC FACILITIES AND SERVICES," section will not require bicycle or pedestrian facilities. The accommodating bike and pedestrian path will be considered during construction. It was also noted that in the "ENVIRONMENTAL JUSTICE," section there will be no impacts to low income or special groups. In addition, there will be no displacement of people, businesses or farms.

#### SECTION A-8

During review of Section A-8, it was noted that temporary impacts may arise during construction. E&S measures and Air/Noise considerations are applicable.

In the last section "Scoping Field View Part B, Section D," it was identified that an NPDES permit will be required.

It was emphasized that evaluation determinations for the project under PennDOT will extend for three years. It may take up to a year to process all forms for the project. It was suggested that some form of action toward the project goals be initiated at this point to stay within these time frames. No PennDOT Qualified Professionals (QP)s will be required for the project at this time.

The meeting minutes represent the writer's understanding of the meeting discussions. The meeting minutes will be considered complete and accurate unless written corrections are received by the preparer within five (5) days of issue.

Shippensburg Loop Road Scoping Field View  
Photo Documentation - 12-3-08  
RETTEW Project No.: 07-02281-001



Photo 1: Facing north, viewing the proposed beginning of the Loop Road, Shippensburg.



Photo 2: Facing north, viewing the section of land identified for the proposed Loop Road, Shippensburg.



Photo 3: Facing south, viewing the existing fence line of a farm outside of Shippensburg University.



Photo 4: Facing south, viewing the end of the section of land for the proposed Loop Road, Shippensburg.

LOOP ROAD CONCEPT DESIGN  
SHIPPENSBURG UNIVERSITY

URBAN DESIGN CRITERIA SUMMARY  
Publication 13M (DM-2)

	COLLECTORS	LOCAL ROADS	PROPOSED
DESIGN SPEED (mph)	40 (DESIRABLE) 30 (MINIMUM)	30 (DESIRABLE) 20 (MINIMUM)	20
PAVEMENT WIDTHS	12'-0" (DESIRABLE) 10' - 0" (MINIMUM)	12'-0" (DESIRABLE) 10' - 0" (MINIMUM)	10'
SHOULDER WIDTHS	10'-0" (DESIRABLE) 8' - 0" (MINIMUM)	10'-0" (DESIRABLE) 6' - 0" (MINIMUM)	3'
CROSS SLOPES	6% (MAXIMUM) 2% (MINIMUM)	6% (MAXIMUM) 2% (MINIMUM)	2%
VERTICAL GRADES (LEVEL)	@ 30 mph 9% (MAXIMUM) 0.5% (MINIMUM)	15% (MAXIMUM) 4% (DESIRABLE) 0.3% (MINIMUM)	2.18% MAXIMUM 0.41% MINIMUM
HORIZONTAL RADIUS	510 ft. (DESIRABLE) 275 ft. (MINIMUM)	275 ft. (DESIRABLE) 115 ft. (MINIMUM)	310' MAXIMUM 275' MINIMUM
CLEAR ZONE WIDTHS	1' - 6" FROM OUTSIDE EDGE OF SHLDR OR FROM FRONT FACE OF CURB	1' - 6" FROM OUTSIDE EDGE OF SHLDR OR FROM FRONT FACE OF CURB	4.5'
PARKING LANES	NA	NA	NONE
VERTICAL CLEARANCES	14' - 6" (MINIMUM)	14' - 6" (MINIMUM)	NA

## MEETING MINUTES

Project: Shippensburg Loop Road  
Project No: 07-02281-001  
Meeting Date: 2/26/09  
Report Date: 3/5/09  
Location: Shippensburg University, Reed Operations Center (ROC)  
Participants: See Attached Sign-in Sheet

### **Summary of Discussion:**

On February 26, 2009 a meeting was held at Shippensburg University to discuss the final report for the Loop Road study. The purpose of this meeting was to present the final report and results and to obtain any feedback and comments.

The Loop Road, Shippensburg project includes the construction of a short, approximately 1,200 linear foot access road between an existing campus road and a conference center parking lot and exit through existing outdoor athletic fields. The road will provide access to the Conference Center, just off of Rt. 696 from the campus and provide an alternate access to the north end of the campus. The planned road will run around the majority of the athletic field abutting the fence property line of a farm situated on the northeast border of the campus. An existing track-and-field discus throw cage will be removed due to the construction of the road.

There was discussion regarding the new roadway and possible safety concerns with the existing baseball field and athletic fields during practice and events such as the PIAA Track and Field events. These concerns involve the management of pedestrian traffic to and from the parking area and from stray balls. The general consensus of those present was that these issues currently exist and that opening the roadway may cause some increase and more safety concerns but these could be dealt with by closing the roadway during large events, or other actions. The group felt that the road benefits outweighed the issues and that these issues could be dealt with during the events. The installation of fencing and screening to prevent the stray balls from entering the roadway was discussed and seen as a possible solution.

John Clinton of the University Foundation requested that the report add a cost estimate for the inclusion of lighting with the base road estimate. Lance Bryson, SU, noted that the cost of installing conduits for lighting and other on-campus utilities should be added into the base bid and deleted from the lighting since that work would be done during road construction. RETTEW will make these final revisions to the report.

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Meeting Minutes, 3-5-09

Project : Loop Road, Shippensburg

There was discussion regarding funding and schedule. Charles Goodhart of PennDOT assured us that their review for the project would be handled quickly. SU will be working to obtain additional funding for the construction and will contact PennDOT about releasing the current funds to begin the design of the project. It was estimated that the project could be ready for bidding within 6 months from the date of notice to proceed, depending on reviews by outside agencies.

The meeting minutes represent the writer's understanding of the meeting discussions. The meeting minutes will be considered complete and accurate unless written corrections are received by the preparer within five (5) days of issue.

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SHIPPENSBURG UNIVERSITY  
 LOOP ROAD – CONCEPT  
 FINAL REVIEW MEETING  
 February 26, 2009

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CHARLES GOODHART	PennDOT 8-0	387-2510	cgoodhart@state.pa.us



Project: Shippensburg University - Loop Road

Computed By: \_\_\_\_\_ WMS

Date: 3/6/09

Checked By: \_\_\_\_\_ JDS

Proj. No.: 07-02281-001

	<b>Base Bid - 3'</b> Shoulder Section, no sidewalk or lighting.	<b>Option 1 - 3'</b> Shoulder Section w/sidewalk, no lighting.	<b>Option 2 - 3'</b> Shoulder Section w/lighting, no sidewalk.	<b>Option 3 - 3'</b> Shoulder Section w/sidewalks and lighting.	<b>Option 4 - Curbed</b> Section, no sidewalk or lighting.	<b>Option 5 - Curbed</b> Section w/sidewalks, no lighting.	<b>Option 6 - Curbed</b> Section w/sidewalks and lighting.
Roadway Construction Costs	\$453,145.00	\$543,125.00	\$493,145.00	\$583,125.00	\$547,582.50	\$637,562.50	\$677,562.50
Utilities	\$25,000.00	\$25,000.00	\$25,000.00	\$25,000.00	\$25,000.00	\$25,000.00	\$25,000.00
<b>SUBTOTAL</b>	<b>\$478,145.00</b>	<b>\$568,125.00</b>	<b>\$518,145.00</b>	<b>\$608,125.00</b>	<b>\$572,582.50</b>	<b>\$662,562.50</b>	<b>\$702,562.50</b>
Contingency (15%)	\$71,721.75	\$85,218.75	\$77,721.75	\$91,218.75	\$85,887.38	\$99,384.38	\$105,384.38
<b>TOTAL CONSTRUCTION COSTS</b>	<b>\$549,866.75</b>	<b>\$653,343.75</b>	<b>\$595,866.75</b>	<b>\$699,343.75</b>	<b>\$658,469.88</b>	<b>\$761,946.88</b>	<b>\$807,946.88</b>
Preliminary Design (5%)	\$27,493.34	\$32,667.19	\$29,793.34	\$34,967.19	\$32,923.49	\$38,097.34	\$40,397.34
Final Design (10%)	\$54,986.68	\$65,334.38	\$59,586.68	\$69,934.38	\$65,846.99	\$76,194.69	\$80,794.69
Inspection (10%)	\$54,986.68	\$65,334.38	\$59,586.68	\$69,934.38	\$65,846.99	\$76,194.69	\$80,794.69
<b>TOTAL ESTIMATED PROJECT COSTS</b>	<b>\$687,333.44</b>	<b>\$816,679.69</b>	<b>\$744,833.44</b>	<b>\$874,179.69</b>	<b>\$823,087.34</b>	<b>\$952,433.59</b>	<b>\$1,009,933.59</b>

Right-of-way costs were not included in the above estimated project costs since the value of the easements between the University and the Foundation are unknow without appraisals.

**Base Bid** = Not Alternate Costs included.

**Option 1** = Base Bid Cost + Alt. B

**Option 2** = Base Bid Cost + Alt C

**Option 2** = Base Bid Cost + Alt. B + Alt C

**Option 3** = Base Bid Cost + Alt. A

**Option 4** = Base Bid Cost + Alt. A + Alt. B

**Option 5** = Base Bid Cost + Alt. A + Alt. B + Alt. C



We answer to you.

**PRELIMINARY CONSTRUCTION COST OPINION**

Project: Shippensburg University - Loop Road

Computed By: WMS

Date: 3/6//2009

Checked By: JDS

Proj. No.: 07-02281-001

PENNDOT ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
<b>LOOP ROAD W/SHOULDERS - BASE BID</b>					
0201-0001	Clearing and Grubbing	LS	1	\$8,500.00	\$8,500.00
0203-0001	Class 1 Excavation	CY	1000	\$14.00	\$14,000.00
0204-0150	Class 4 Excavation	CY	500	\$20.00	\$10,000.00
--	Embankment (For Information Only)	CY	1000	\$0.00	\$0.00
0205-0001	Borrow Excavation	CY	300	\$15.00	\$4,500.00
0212-0001	Geotextile, Class 1	LF	900	\$1.75	\$1,575.00
0309-0422	Superpave Asphalt Mixture Design, HMA Base Course, PG 64-22, 0.3 TO < 3 ESALs, 25.0 mm, 4" Depth	SY	3600	\$20.00	\$72,000.00
0350-0106	Subbase, 6" Depth	SY	5000	\$7.00	\$35,000.00
0409-0442	Superpave Asphalt Mixture Design, HMA Wearing Course, PG 64-22, 0.3 TO < 3 ESALs, 12.5 mm, 1 1/2" Depth, SRL-H	SY	4000	\$6.00	\$24,000.00
0409-6440	Superpave Asphalt Mixture Design, HMA Binder Course, PG 64-22, 0.3 TO < 3 ESALs, 19.0 mm, 2" Depth	SY	4000	\$7.00	\$28,000.00
0601-0315	24" Thermoplastic Pipe, Group I, 15' - 1.5' Fill	LF	300	\$80.00	\$24,000.00
0604-0313	18" Perforated Thermoplastic Pipe, Group IP, 15' - 1.5' Fill	LF	400	\$50.00	\$20,000.00
0604-0315	24" Perforated Thermoplastic Pipe, Group IP, 15' - 1.5' Fill	LF	300	\$70.00	\$21,000.00
0605-2060	Type M Inlet	EA	10	\$2,300.00	\$23,000.00
0605-2600	Type D Endwall	EA	3	\$1,800.00	\$5,400.00
0608-0001	Mobilization	LS	1	\$30,000.00	\$30,000.00
0620-0400	Terminal Section, Single	EA	4	\$100.00	\$400.00
0620-1075	Type 2S Guide Rail	LF	225	\$75.00	\$16,875.00
0630-0001	Plain Cement Concrete Curb	LF	70	\$75.00	\$5,250.00
0686-0050	Construction Surveying, Type D	LS	1	\$10,000.00	\$10,000.00
0802-0001	Topsoil, Furnish and Place	CY	400	\$35.00	\$14,000.00
0804-0011	Seeding and Soil Supplement, Formula B	LB	35	\$15.00	\$525.00



We answer to you.

PRELIMINARY CONSTRUCTION COST OPINION

Project: Shippensburg University - Loop Road

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PENNDOT ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
0804-0014	Seeding - Formula E	LB	20	\$15.00	\$300.00
0805-0022	Mulching, Straw	TN	0.5	\$500.00	\$250.00
0806-0051	Erosion Control, Mulch Blanket	SY	700	\$1.60	\$1,120.00
0845-0002	Unforseen Water Pollution Control	PDA	--	\$1,000.00	\$1,000.00
0850-0032	Rock, Class R-4	CY	15	\$60.00	\$900.00
0865-0001	Silt Barrier Fence, 18" Height	LF	1500	\$3.00	\$4,500.00
0901-0001	Maintenance and Protection of Traffic	LS	1	\$2,000.00	\$2,000.00
0964-0001	4" White Epoxy Pavement Markings	LF	2400	\$1.00	\$2,400.00
0964-0002	4" Yellow Epoxy Pavement Markings	LF	2400	\$1.00	\$2,400.00
9865-0001	Sediment Bag Inlet Protection	EA	15	\$150.00	\$2,250.00
9910-0001	Relocate Transformer and Light Pole ( Approx. Sta 17+00 )	LS	1	\$18,000.00	\$18,000.00
9999-0001	Stormwater Management Facility	LS	1	\$10,000.00	\$10,000.00
9999-0002	Relocate Batting Cage	LS	1	\$5,000.00	\$5,000.00
9999-0003	Remove and Store Discus Cage	LS	1	\$5,000.00	\$5,000.00
9999-004	Conduit, Lighting	LS	1	\$30,000.00	\$30,000.00
					\$0.00
					\$0.00
<b>TOTAL ESTIMATED CONSTRUCTION COST - BASE BID</b>					<b>\$453,145.00</b>



We answer to you.

**PRELIMINARY CONSTRUCTION COST OPINION**

Project: Shippensburg University - Loop Road

Computed By: WMS

Date: 3/6//2009

Checked By: JDS

Proj. No.: 07-02281-001

PENNDOT ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
<b>ALTERNATE A - ADD CURBS</b>					
0204-0150	Class 4 Excavation	CY	150	\$20.00	\$3,000.00
0212-0001	Geotextile, Class 1	LF	250	\$1.75	\$437.50
0601-0313	18" Thermoplastic Pipe, Group I, 15' - 1.5' Fill	LF	160	\$60.00	\$9,600.00
0605-2010	Type C Inlet	EA	18	\$2,400.00	\$43,200.00
0605-2060	Type M Inlet <b>DELETE</b>	EA	-10	\$2,300.00	(\$23,000.00)
0630-0001	Plain Cement Concrete Curb	LF	2400	\$25.00	\$60,000.00
9865-0001	Sediment Bag Inlet Protection	EA	8	\$150.00	\$1,200.00
					\$0.00
					\$0.00
					\$0.00
<b>TOTAL ESTIMATED CONSTRUCTION COST -- ALTERNATE A</b>					<b>\$94,437.50</b>
<b>ALTERNATE B - ADD WALKWAYS</b>					
0203-0001	Class 1 Excavation	CY	250	\$18.80	\$4,700.00
0350-0106	Subbase, 6" Depth	SY	850	\$9.00	\$7,650.00
0409-0342	Superpave Asphalt Mixture Design, HMA Wearing Course, PG 64-22, < 0.3 ESALs, 12.5 mm, 1 1/2" Depth, SRL-H	SY	850	\$8.00	\$6,800.00
0409-6340	Superpave Asphalt Mixture Design, HMA Binder Course, PG 64-22, < 0.3 ESALs, 19.0 mm, 2" Depth	SY	850	\$9.00	\$7,650.00
0676-0001	Cement Concrete Sidewalk	SY	810	\$78.00	\$63,180.00
					\$0.00
					\$0.00
<b>TOTAL ESTIMATED CONSTRUCTION COST -- ALTERNATE B</b>					<b>\$89,980.00</b>



**PRELIMINARY CONSTRUCTION COST OPINION**

Project: Shippensburg University - Loop Road

Computed By: WMS

Date: 3/6//2009

Checked By: JDS

Proj. No.: 07-02281-001

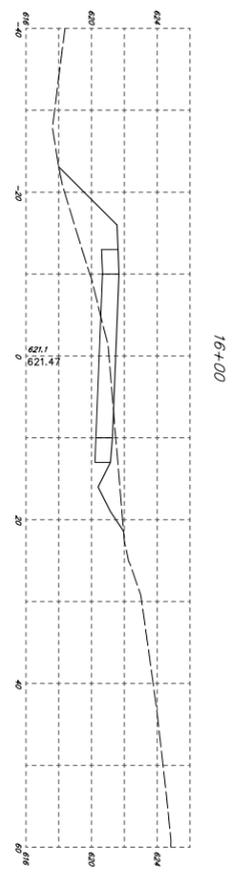
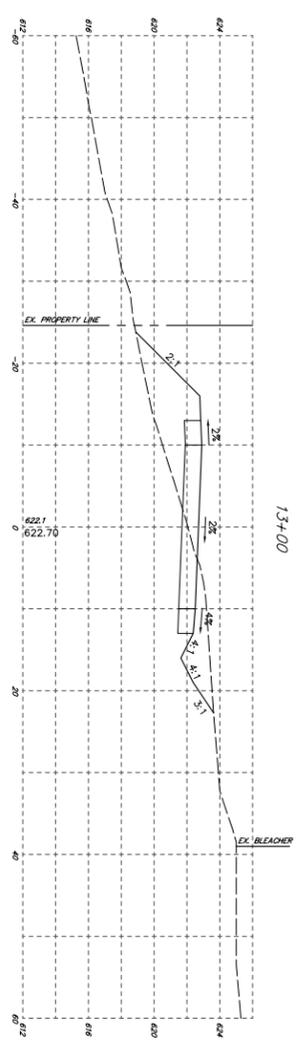
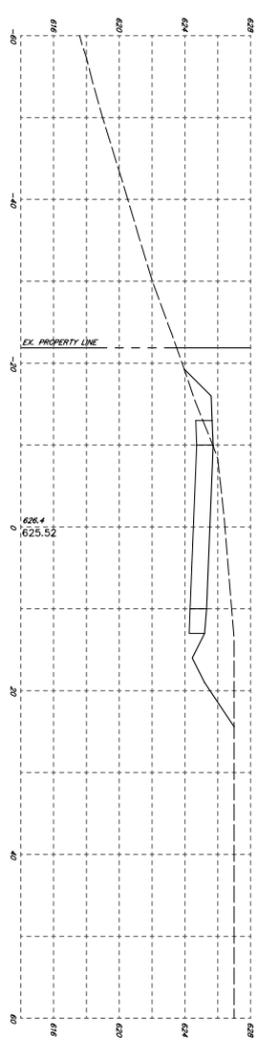
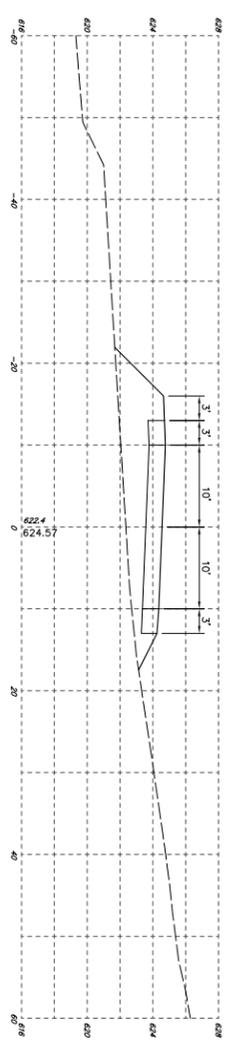
PENNDOT ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
<b>ALTERNATE C - ADD LIGHTING</b>					
9910-0002	Lighting System, w/o conduit	LS	1	\$40,000.00	\$40,000.00
					\$0.00
					\$0.00
					\$0.00
<b>TOTAL ESTIMATED CONSTRUCTION COST -- ALTERNATE C</b>					\$40,000.00

RETTEW Associates, Inc. is not a construction contractor and therefore probable construction cost opinions are based solely upon our experience with construction. This requires RETTEW to make a number of assumptions as to actual conditions which will be encountered on the site; the specific decisions of other design professionals engaged; the means and methods of construction the contractor will employ; contractors' techniques in determining prices and market conditions at the time, and other factors over which RETTEW has no control. Our indications or opinions in this area are based on an understanding of prevailing costs, but do not provide any guarantee for bid or negotiated construction costs. Given these assumptions which must be made, RETTEW states that the above probable construction cost opinion is a fair and reasonable estimate for construction costs. Cost associated with underground utility relocations/adjustments are not included in this estimate.





NOTE:  
 TOPOGRAPHY AND CONTOURS BASED ON EXISTING  
 TOPIC PROVIDED BY SHIPPENSBURG UNIVERSITY  
 AND SHIPPENSBURG UNIVERSITY FOUNDATION AND  
 IS NOT THE RESULT OF AN ACTUAL FIELD SURVEY.



HORIZ. SCALE: 1" = 10'  
 VERT. SCALE: 1" = 5'

NOT FOR CONSTRUCTION/NOT FOR BIDDING

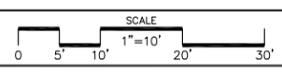
ROADWAY CROSS SECTIONS  
 DRAFT CONCEPT  
 FOR  
**LOOP ROAD**  
 SHIPPENSBURG UNIVERSITY



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 Environmental Consultants

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MANAGER: W. MAX SHRADLEY, PE	XREFS:
DESIGN BY: JS	CHKD BY: WMS
SURV. CHIEF: JS	FIELDBOOK NO.
DRAWN BY: JS	CHKD BY: WMS

DRAWING REFERENCE:  
 J:\07\07-02281-001\Cadd\Civmun\07-02281-001-Xsections.dwg

FOR RETTEW ASSOCIATES BY:		NO.	DATE	REVISION
		2	12/08/08	REMOVED CURB AND ADDED SHOULDERS
		1	9/18/08	REVISED ALIGNMENT AROUND ELEC. POLES