WOO/LUC-Chessie Circle;

Historic CSX Bridge Alternative Analysis

Ohio Department of Transportation, District 2

11/13/2015

DGL Consulting Engineers, LLC
3455 Briarfield Boulevard, Suite E
Maumee, Ohio 43537

www.dgl-ltd.com

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1.0 EXECUTIVE SUMMARY

The Wood County Port Authority (WCPA) has initiated plans which include the demolition of the CSXRR Bridge over the Maumee River. The bridge was built in 1902 as part of the Toledo Beltline Railway by the American Bridge Company. The defining feature on the bridge is the two span, Pratt through truss mounted to a turntable on the center pier which allows the spans to swing open. This rare use of bridge technology qualifies the structure as eligible for the National Register of Historic Places. The bridge has been closed since the 1980's and since that time has received no maintenance. In this time the bridge has deteriorated considerably. Inspections have rated the overall superstructure to be in poor condition and the substructures to be in critical condition according to the NBIS condition ratings.

In 2011, in cooperation with the Metroparks of Toledo, and others, the WCPA acquired ownership of the abandoned CSX Railroad Bridge as part of larger purchase of land to be used as a multi-purpose trail throughout Lucas and Wood Counties. Due to the historic status of the bridge, specifically the swing span and associated components, it is required that all feasible and prudent alternatives be considered prior to demolition (or replacement). As such, DGL has been contracted to explore the costs associated with the rehabilitation and replacement of the center swing spans, including the supporting piers.

- **Alternative #1: Rehabilitation of Historic Center Swing Spans**

  The existing structure must be rehabilitated to a state which is sufficient to support pedestrian and emergency vehicle loading. The process will involve careful removal, structural steel replacement, cleaning, painting and reinstallation of the superstructure onto rehabilitated piers. The substructure rehabilitation is primarily defined by extensive concrete repairs to the three existing piers.

- **Alternative #2: Replacement of Historic Center Swing Spans**

  A multi-span prestressed concrete I-beam structure on new wall type piers is proposed to replace the existing center swing spans. The bridge conforms to the 16'-0" trail width requirements and it is assumed that the existing Pratt truss was removed with care for potential adaptive use by a third party.

A number of previous inspections and reports were provided to be used in the evaluation of both alternatives. A combination of these existing reports and recent bid data were used to estimate the cost of each alternative. An 80 year life expectancy was assumed for each alternative and all costs were calculated for the present year, 2015. Construction costs for Alternative #1 were calculated to be $5,973,000 with a total life-cycle cost of $12,984,000. Construction costs for Alternative #2 were calculated to be $2,949,000 with total life-cycle costs of $3,828,000. The ratio of construction costs between Alternative #1 and Alternative #2 is 2.03 and the ratio of total life-cycle costs is 3.39.

2.0 INTRODUCTION

2.1 Project overview

DGL Consulting Engineers has been contracted by the Ohio Department of Transportation (ODOT) to perform an Alternatives Analysis regarding the potential rehabilitation or replacement of the historic CSX Railroad Bridge over the Maumee River. The bridge is located parallel to and just downstream of the Ohio Turnpike crossing over the Maumee River. It has been determined by the Office of Environmental Services (OES) that the unique nature of the center swing spans make the structure eligible for the National Register of Historic Places. As an eligible structure, it is required that all feasible and prudent alternatives to replacement be explored prior to demolition. In the event that it is not deemed a prudent use of public funds to rehabilitate and maintain the existing structure, efforts must also be made to explore potential relocation for another use.

The only contributing portions to the historic value of the bridge have been identified as the center swing spans and associated components. It has been determined prior to the preparation of the scope of work for this study, that only the rehabilitation of the swing spans Pratt Through Truss should be considered and that cost comparisons should be made only to the portions of a new structure which would replace the existing center spans.

Figure 1: Project Location Map

2.2 Bridge History

The 12 span CSXRR Bridge over the Maumee River was design by Waddell and Hedrick Consulting Engineers of Kansas City, KS and built by the American Bridge Company in 1902. It was built as part of the original 28.59 mile Toledo Beltline Railway which connected all major rail lines which ran through the city. The bridge is primarily defined by a central, riveted, Pratt, swing through truss accompanied by 8 simply supported, Pratt deck trusses. Two approach spans featuring 40' long built up girders complete the structure for a total of 12 spans and 1450 feet in total length. Research by the OES indicates that the bridge and associated railway were abandoned in the early 1980's by CSX. Existing damage to the lower chords of several of the southern spans is thought to be the result of a 1982 train derailment. The bridge changed ownership from CSX to the Wood County Port Authority in 2011 as part of a larger land purchase spearheaded by the Metroparks of Toledo with the intent to create a multi-use pedestrian trail along the west side corridor.

2.3 Existing Condition

The bridge has been closed and received no maintenances for over 30 years. Multiple reports, including the 2002 report by the Lucas County Engineer's Office and the 2010 report by the Office of Structural Engineering, indicate that the structure is in critical condition. Visual inspection shows that the majority of the protective paint system is gone and that significant corrosion has occurred throughout the primary structural members. Visual inspection and sounding of the piers show that significant spalling and deterioration have occurred on the face of the piers. The pier caps and abutments also display large amounts of section loss. The rails and cross ties have been removed as well as the machinery which operated the swing span turntable. Barriers have been installed at the approaches on either side of the bridge to discourage individuals from attempting to access the structure (See Figure 5) as trespassing on the structure may be dangerous. A more detailed summary of the findings from each inspection may be found in the background section of this report.

DGL completed a field visit on August 28th, 2015. This visit confirmed existing accounts of the bridge condition and a photographic summary of the field visit is presented on the next few pages.

Figure 2: Elevation of Existing CSX Bridge over the Maumee River

Figure 3: Transition from Deck Truss to Through Truss

Figure 4: Elevation of Center Swing Spans

Figure 5: Required Barricade at West Approach of Bridge

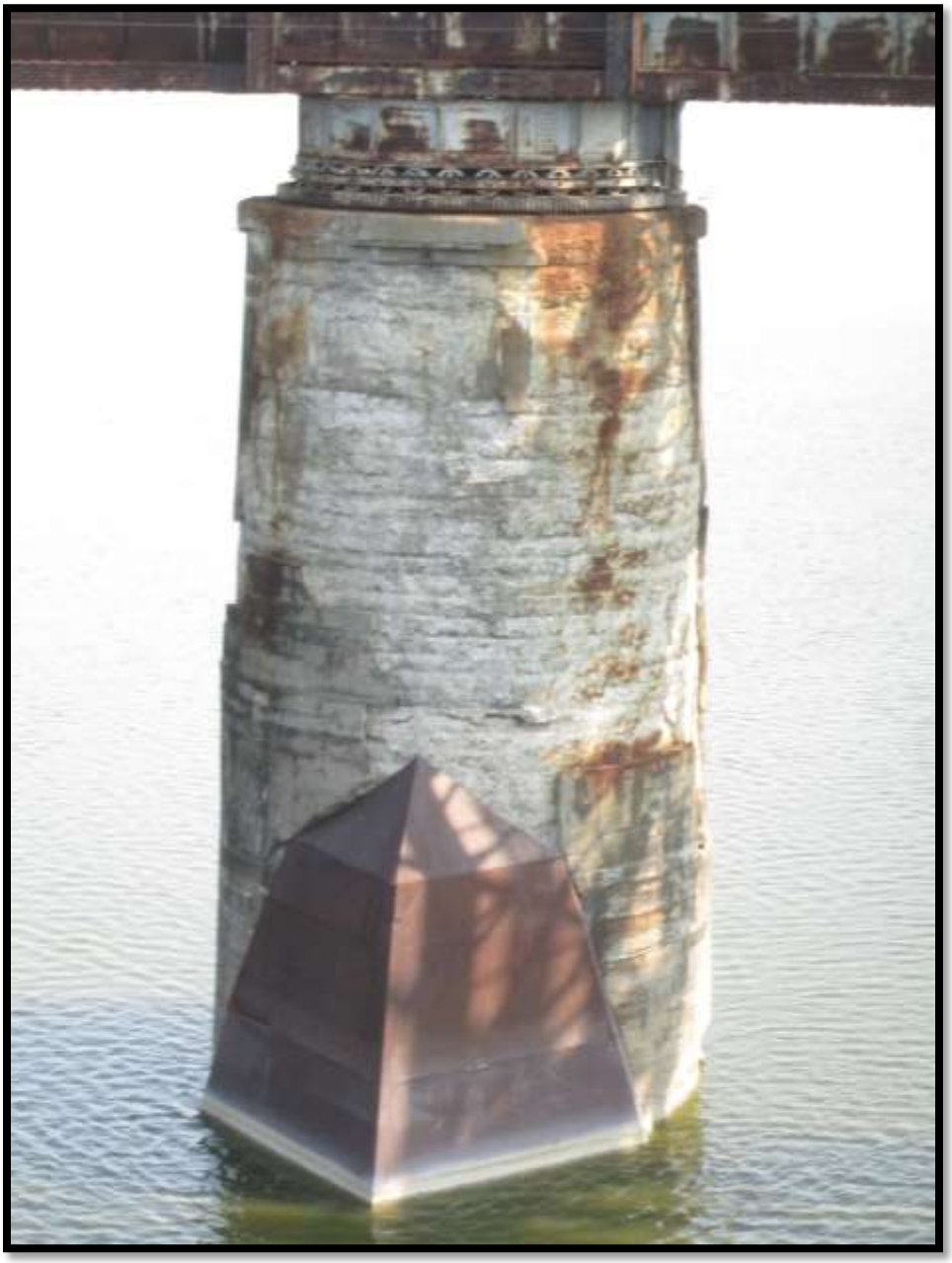

Figure 6: Center Pier with Turntable Components

3.0 BACKGROUND

3.1 *Preliminary Report: Proposed Backside Trail on the Abandoned CSX Railroad over the Maumee River.*

This report was prepared in December of 2002 by the Lucas County Engineer's Office for TMACOG. The report presented a cursory investigation into the condition of the abandoned CSX Bridge; including visual inspection from an inflatable boat as well as hands on inspection via climbing techniques.

The evaluation of the bridge found the substructures to be in very poor condition. The piers were described as having significant deterioration throughout the outer surface of concrete (little to no sound concrete) while the abutments displayed similar deterioration and crumbling of concrete near the bearings.

Inspection of the superstructure yielded significant corrosion issues. The report identified loss of section at the bearings, pin connections and many of the rivets, with some rivets at the point of disintegration. Reported visual inspection noted less than fifty percent paint coverage at the time of the report (2002). The investigation also notes a number of chord member deformations believed to be the result of the 1982 train derailment. Additional deformation had occurred in some members due to impacted rust.

Concerning potential rehabilitation, the report predicted that replacement of the substructures would likely be both necessary and cost effective. It was noted that the existing piers could possibly be safe for pedestrian, bike and light vehicular use; although more detailed investigation would be required. The summary indicated that rehabilitation is 40% more costly than replacement.

3.2 *ODOT Inter-office Communication RE: National Register Evaluation of Bridge and Cultural Resources Literature Review.*

This communication was sent by the Office of Environmental Services (OES) to the District 2 office on March 16, 2009. The document was prepared in response to a request by the District 2 office for a National Register eligibility evaluation for the Upper Maumee River crossing. The OES investigated both the Toledo Beltline and the bridge in question for historical significance.

The review determined that the Upper Maumee Bridge is eligible for the National Bridge Register under Criterion C as an enduring example of uncommon bridge technology. In addition, the structure may also qualify under Criterion A through the fact that it was erected by a prolific out-of-state bridge builder (American Bridge Company). It is noted by the OES that the center span Pratt Truss, pier and components are the only historically contributing elements of the structure.

The OES also provided insight into the impacts of rehabilitation or replacement on the significance of the structure and the rail line as a whole. They believe the conversion of the rail line to a bikeway will not impact the footprint or significance of the historic Beltline. In addition, the document states that neither rehabilitation nor the removal of non-contributing elements would alter the historic characterization of the bridge.

OES recommended an updated structural assessment of the Pratt through truss in order to best determine the potential for rehabilitation and/or reuse. They also revealed that there is no need for the swing bridge to be operational and that the U.S. Coast Guard has no problem if the bridge remains closed-to-navigation. This confirms that any rehabilitation or replacement project may be a fixed place structure.

3.3 *ODOT Inter-office Communication RE: CSX RR Corridor – Environmental Procedure Assessment of Rail Bridge over The Maumee River*

This communication summarizes the results of a field investigation of the Upper Maumee River crossing performed by the Office of Structural Engineering for District 2 in 2010. The Bridge Inspection Condition Ratings Table from the National Bridge Inspection Standards was utilized to perform the evaluation. The approach spans, deck truss spans, the swing through truss spans, and substructures were included. The previously existing rails and rail ties had been removed and therefore were not included.

The inspection found the approach spans to be in fair to poor condition. The girders displayed section loss between 1/16 and 1/8 inches while the cross frames were consistently bowed due to crevice corrosion between back to back angles. The lateral bracing system was found to be in poor condition with crevice corrosion at the connection plates along with broken rivets.

Throughout the main superstructure all truss members are built up box elements utilizing angles, plates, channel sections and some combination of lattice work. The top and bottom chords showed typical losses of up to 1/8 inch along with isolated areas of pitting along the web plates up to 3/16 inch. The vertical and diagonal element's web plates displayed isolated pitting up to 1/16 inch throughout the bridge. The most severe cases of corrosion were noted at the pin connections near the bearings.

Inspection of the gusset plates found them in poor condition overall. The upper chord gusset plates were in fair condition while section loss of 1/16 to 1/8 inches was typical throughout the lower gusset plates.

The review found the upper lateral bracing system to be in serious condition with minor section loss consistent throughout bracing members and isolated areas with

advanced corrosion. Cracked connection plates and broken rivets were found at many gusset plates within the bracing system.

The investigation also mentions the major impact damage located along 75 feet of the south, lower chord of span 1.

The evaluation of the swing Pratt through truss resulted in similar findings as the other spans with the superstructure in generally poor condition. In addition, it was noted that the motors which powered the swing assembly have been removed and that it is unlikely that the steel rollers were operable.

This study found all substructure units to be in critical condition. In general, pier concrete exhibited signs of severe delamination and spalling along the faces with two piers showing large spalls near the bearing seat. The report indicated spalling as great as one foot deep.

Concerning the footings and effects of scour, reference is made to the 1987 subaqueous inspection and report. The 1987 report indicated some scour issues were present and states that pumping of mud from the footings under rail traffic was observed prior to the bridge closure. The 2010 report from the Office of Structural Engineering asserts that 20+ years of no maintenance on the structure should mean that the subaqueous conditions have only worsened.

This report evaluated the possibility of rehabilitating the entire bridge. This would include massive substructure rehabilitation, including jacketing piers and replacing pier caps, as well labor intensive superstructure repairs to the gusset plates, bracing and truss members. The ultimate opinion of the authors was that **"the existing structure has fallen into such poor condition that the magnitude of the effort required to restore the bridge to a safe level of performance is not a feasible and prudent alternative."**

3.4 *Planning Level Report: West Side (CSXRR) Bike/Pedestrian Trail Crossing of the Maumee River.*

This report was prepared by Claude Brown & Associates for the Wood County Port Authority in 2012 as a planning level report. This report presents broad recommendations for preliminary design requirements, magnitude of costs, cost shares, permitting and anticipated issues. The report considered both the rehabilitation of the existing structure and the cost of a new structure. From a cost standpoint, the authors determined that the direct costs, uncertainties and future maintenance costs associated with rehabilitation of the existing structure make it the least attractive option. DGL has assessed the design requirements and generated cost estimates from this report in preparation of this alternatives analysis.

3.5 *Implementation Level Report: West Side (CSXRR) Bike/Pedestrian Trail Crossing of the Maumee River.*

This report was prepared by Claude Brown & Associates for the Wood County Port Authority in 2013 as an implementation level report. This report presents recommendations related to the benefits of grouping projects together in schedules. DGL has reviewed the demolition cost data from this report for use in the final demolition cost provided.

4.0 ALTERNATIVE EVALUATION

4.1 *Evaluation & Design Criteria*

Each of the options presented in the alternative evaluation assume that the all components outside of the center swing span have been removed. It is assumed that the proposed clear width of the trail is 20'-0". No new preliminary design work was performed by DGL. These alternatives are based on the span configurations, preliminary calculations and assessment of structural deficiencies as presented in the reports which are summarized in the background section of this study.

4.2 *Alternative #1: Rehabilitation of the Historic Center Swing Spans*

The first option is to rehabilitate the center two spans of the existing bridge to a state which is sufficient to carry pedestrian, bicycle, and light emergency vehicle traffic without altering the structure's historic integrity. The costs include rehabilitation of the three existing piers as well as the historic Pratt through truss. In order to facilitate efficient rehabilitation for both the substructure and superstructure, it was determined that the entire truss should be relocated to a nearby construction support area for refurbishing. The area should be sufficiently suited for paint and rust removal, cleaning of the steel components, steel detailing and re-painting. As a minimum, refurbished structural steel includes replacement of deteriorated or cracked plates, replacement of broken rivets and complete replacement of the structure's upper lateral bracing.

Prior to rehabilitation of the substructure, core samples are recommended for each of the three piers. Investigation of the scour at the existing footings should also be considered. Due to the wide spread and significant depth of delaminating concrete, the need for extensive concrete patching is unavoidable. The rehabilitation would also replace the top 2'-0" of each pier cap and replace the bearings for the superstructure. This study did not consider installation of a structural pier encasement for reasons relating to cosmetics and reduction of the waterway area. Costs do include the necessary excavation and cofferdams required to access the pier footing.

Alternative 1 also includes re-installation of the refurbished historic center truss and the installation of the proposed concrete deck, railing and lighting. It should be noted that per current standards this alternative is accompanied with a loss of functionality as the geometry of the existing truss reduces the clear width of the proposed bikeway to approximately 12 feet. The moveable components of the existing center span were considered to be refurbished in place and prepared for re-attachment of the original superstructure. These components are not considered operable and it is not expected that they are rehabilitated to operating condition.

4.3 *Alternative #2: Replacement of the Historic Center Swing Spans*

Alternative #2 proposes that a new structure is constructed which meets the proposed bikeway requirements and is of equal length of the existing historical center spans. It is assumed that the entire existing structure has been removed, including the piers, abutments and footings. In this scenario, the historic Pratt truss is considered to have been removed carefully, with it's current condition maintained, in order to be available for adaptive use by a third party.

The proposed structure in this case is a multi-span prestressed concrete I-beam superstructure on wall type piers. It is modeled after Alternative #1 from the 2012 planning level report prepared by Claude Brown & Associates (CB&A). The Lucas County report from 2002 also used this type of structure in estimating the cost for a replacement bridge. The provisions from the original CB&A Alternative #1 were modified to support a wider trail width and the use of new footings. These modifications increased the number of concrete I-beams per span to 5 and the top width of each pier wall to 25'. The span lengths remained the same as in the CB&A Alternative #1 which used existing footings and span configurations. Please see the 2012 planning level report titled "West Side (CSXRR) Bike/Pedestrian Trail Crossing of the Maumee River" for additional preliminary design considerations. This option also requires significant effort installing cofferdams and bracing for work on the substructure.

5.0 COST ANALYSIS

5.1 *Initial Construction Costs*

Due to the nature of the project, and the variety of supporting material available, the calculations of projected costs were determined using a combination of methods. These include review of estimates from existing reports related to the structure, specific estimates provided directly by ODOT, use of ODOT historical cost data and traditional engineering judgement. Estimates from previously prepared reports were adjusted as necessary to fit the adjusted scope of work and/or adjusted for inflation. Preliminary structure quantities were calculated for each alternative for all applicable items. All preliminary construction costs were assumed for the current year, 2015. Each alternative includes a base contingency for engineering, testing and construction services set at 20%. Also included for each alternative is a construction contingency factor which was set at 10%. However, considering the preliminary nature of this report and the deteriorated condition of the existing structure, this value was increased to 15% for the rehabilitation option (Alternative #1). The total preliminary construction cost estimates for Alternative #1 & #2 are $5,973,000 and $2,949,000, respectively. The full cost summaries can be found in Appendix A.

5.2 *Life-Cycle Cost Analysis*

Life-Cycle Cost Analysis was performed for each alternative. Yearly maintenance, bi-annual inspections, painting and future rehab work were all considered in determining these costs. The analysis is presented as the present value sum of each cost over the proposed 80 year life of the structure. Painting of the structure was estimated to occur every 20 years, and rehabilitation was anticipated at the half-life of the structure, around 40 years. Cost factors for general maintenance and inspection were determined as a best guess value through additional research of typical life-cycle costs. The rehabilitation reflects the costs assumed for re-decking of each alternative along with any necessary steel repair, concrete patching, railing improvement or bearing replacements. The final future life-cycle costs for Alternatives #1 & #2 are $7,011,000 and $879,000, respectively. Tables outlining these life-cycle costs can be found in Appendix A.

6.0 CONCLUSION

Table 1 illustrates the combined construction and future life-cycle costs. Evaluating simply the initial construction estimate, the cost to rehabilitate the bridge is nearly double the cost to build a replacement. Considering the results from a complete Life-Cycle Cost Analysis increases the relative cost of rehabilitation to nearly three and a half times that of construction a new bridge.

Table 1: Total Life-Cycle Cost Comparison

	Initial Construction Costs	Future Life-Cycle Costs	Total Life-Cycle Costs	Ratio of Construction Costs	Ratio of Total Life-Cycle Costs
Alternative #1: Rehabilitation	$5,973,000	$7,011,000	$12,984,000	**2.03**	**3.39**
Alternative #2: Replacement	$2,949,000	$879,000	$3,828,000		

7.0 APPENDICES

APPENDIX A

CONSTRUCTION & LIFE-CYCLE COST SUMMARIES

CSX RR Bridge Center Swing Spans Rehabilitation
Estimated Construction Cost
October 9, 2015

Item	Estimated Quantity	Unit	Description: CSX RR Bridge Rehabilitation Construction	Unit Price	Total
202	1	LUMP	Existing Structure Removed (Special)	$300,000	$300,000
503	1	LUMP	Cofferdams and Excavation Bracing	$480,000	$480,000
509	45000	LB	Epoxy Coated Reinforcing Steel	$1.05	$47,300
511	105	CY	Class QC2 Concrete with QC/QA, Superstructure	$596.00	$62,600
511	75	CY	Class QC1 Concrete with QC/QA, Pier Above Footings	$672.00	$50,400
512	1300	SY	Sealing of Concrete Surfaces (Non-Epoxy)	$13.00	$16,900
513	4500	LB	Replacement of Upper Lateral Bracing	$10.00	$45,000
513	1900	LB	Structural Steel, Misc.: Replaced Plates	$23.00	$43,700
513	1	LUMP	Structural Steel, Misc.: Truss Reinstallation	$250,000	$250,000
513	200	EACH	Replaced Rivets with Bolts	$132.50	$26,500
514	1	LUMP	Field Painting, Misc.: Cleaning and Painting	$1,705,000	$1,705,000
516	4	EACH	Elastomeric Bearing with Internal Laminates and Load Plate (Neoprene)	$1,250	$5,000
517	516	FT.	Railing, Pipe	$140.00	$72,200
519	6600	SF	Patching of Concrete Structure	$200.00	$1,320,000
-	-	-	Mussel Survey & Relocation	TBD	TBD
			Base Construction Sub-Total:		**$4,424,600**
			Design, Geotechnical & Construction Services	20%	**$884,920**
			Construction Contingencies:	15%	**$663,690**
			Subtotal:		**$5,973,210**
			TOTAL		***$5,973,000***

Proposed Scope of Work

1. Rehabilitate existing 2-Span Steel Pratt Through Truss by lifting off piers, refurbishing and reinstalling.
2. Estimate is based on all three existing piers to remain.
3. Estimate considers the construction method in which the truss is removed in manageable pieces and reinstalled after refurbishing.
4. Estimate did not include general project items such as Field Office, Construction Layout, or Mobilization.
5. Cofferdams excavation and bracing cost acknowledges the additional cost for barges and equipment access to work site.

DGL Consulting Engineers, LLC
3455 Briarfield Blvd. - Maumee, Ohio 43537
(419) 535-1015 - (419) 535-1429 fax
www.dgl-ltd.com

CSX RR Bridge Center Swing Spans Replacement
Estimated Construction Cost
October 9, 2015

Item	Estimated Quantity	Unit	Description: CSX RR Bridge Replacement Construction	Unit Price	Total
202	1	LUMP	Existing Structure Removed (Special)	$500,000	$500,000
503	1	LUMP	Cofferdams and Excavation Bracing	$480,000	$480,000
503	1	LUMP	Unclassified Excavation, Including Shale	$7,000	$7,000
509	170000	LB	Epoxy Coated Reinforcing Steel	$1.05	$178,500
511	185	CY	Class QC2 Concrete with QC/QA, Superstructure	$596.00	$110,300
511	25	CY	Class QC2 Concrete with QC/QA, Superstructure (Diaphragms)	$608.50	$15,200
511	650	CY	Class QC1 Concrete with QC/QA, Pier Above Footings	$672.00	$436,800
511	200	CY	Class QC1 Concrete with QC/QA, Footing	$307.00	$61,400
512	1500	SY	Sealing of Concrete Surfaces (Non-Epoxy)	$13.00	$19,500
515	10	EACH	Straight Strand Prestressed Concrete Bridge I-Beam Members, Level 2, Type 4 Mod. (60")	$39,000	$390,000
516	20	EACH	Elastomeric Bearing Pad, Misc.: Estimate 4" x 16" x 2'-0"	$250.00	$5,000
517	516	FT.	Railing, Misc.: Decorative	$125.00	$64,500
-	-	-	Mussel Survey & Relocation	TBD	TBD
			Base Construction Sub-Total:		**$2,268,200**
			Design, Geotechnical & Construction Services	20%	**$453,640**
			Construction Contingencies:	10%	**$226,820**
			Subtotal:		**$2,948,660**
			TOTAL		***$2,949,000***

Proposed Scope of Work

1. Replace existing 2-Span Steel Pratt Through Truss & Piers with a New Piers & Prestressed Concrete I-Beam Superstructure
2. Estimate is based on a 20'-0" trail width which is carried through over the bridge.
3. Estimate assumes that the superstructure is removed with care and set-aside for potential use by a third party.
4. Estimate did not include general project items such as Field Office, Construction Layout, or Mobilization.
5. Cofferdams excavation and bracing cost acknowledges the additional cost for barges and equipment access to work site.

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Life-Cycle Cost Analysis

Alternative #1: Rehabilitation			
Initial Cost of Structure:		$5,973,000	
Analysis Period (years):		80	
	Frequency (Years)	Cost Factor	Total Cost (Current Year $)
Maintenance Costs*	1	0.05%	$235,934
Inspection Costs*	1	0.20%	$943,734
Painting Costs	20	28.55%	$5,115,000
Rehabilitation Costs	40	12.00%	$716,760
Total Life-Cycle Costs Present Value:			**$7,011,000**

***Maintenance and inspection cost factors based on LCCA information determined by the Prestressed Concrete Association of Pennsylvania**

Alternative #2: Replacement			
Initial Cost of Structure:		$2,949,000	
Analysis Period (years):		80	
	Frequency (Years)	Cost Factor	Total Cost (Current Year $)
Maintenance Costs*	1	0.05%	$116,486
Inspection Costs*	1	0.15%	$349,457
Painting Costs	20	0.00%	$0
Rehabilitation Costs	40	14.00%	$412,860
Total Life-Cycle Costs Present Value:			**$879,000**

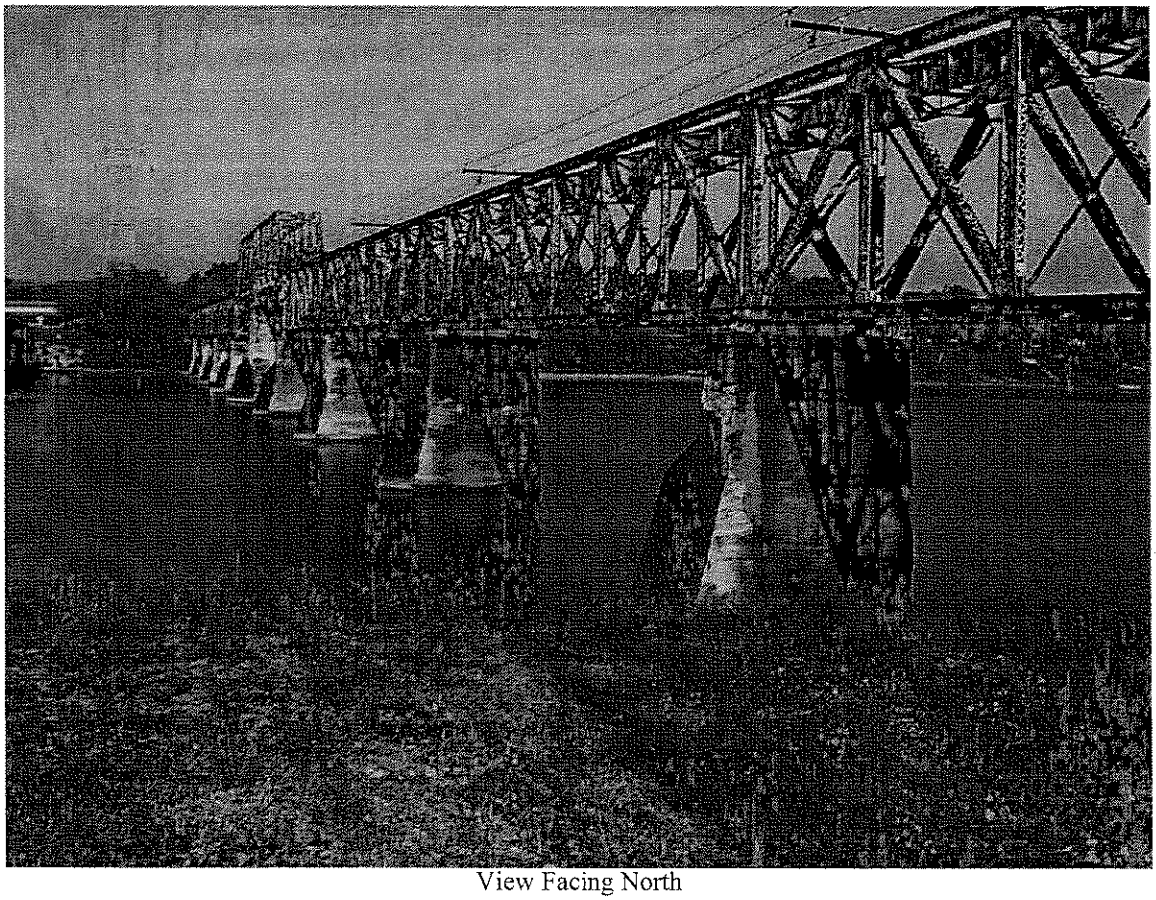
***Maintenance and inspection cost factors based on LCCA information determined by the Prestressed Concrete Association of Pennsylvania**

APPENDIX B

2002 TMACAOG REPORT

PRELIMINARY REPORT

PROPOSED BACKSIDE TRAIL ON THE ABANDONED CSX RAILROAD OVER THE MAUMEE RIVER



View Facing North

PREPARED FOR
TOLEDO METROPOLITAN AREA COUNCIL OF GOVERNMENTS

DECEMBER, 2002

PREPARED BY

Office of the County Engineer

One Government Center – Suite 870
Toledo, Ohio 43604-2258

Keith G. Earley, P.E., P.S.
County Engineer

Phone: 419-213-4540
FAX: 419-213-4598

EXECUTIVE SUMMARY

A request was directed to the Lucas County Engineer, Keith Earley, P.E., P.S. through Ron Myers, E.I. by the Backside Trail Taskforce under the direction of the Toledo Metropolitan Area Council of Governments (TMACOG) to investigate possible costs associated with constructing a pedestrian/bikeway trail over the existing CSX Abandoned Railroad Bridge over the Maumee River. Bryan Zienta, P.E., Assistant Bridge Engineer for The Lucas County Engineer's Office prepared the preliminary study and report. A visual site investigation using climbing techniques and an inflatable boat was performed in November of the year 2002 to determine the condition of the existing structure.

The existing structure is in critical condition. There is advanced deterioration of some of the primary structural elements of the bridge. The piers and some of the pier caps have advanced concrete deterioration, some of the bearing plates are deformed due to rust, the abutments have a large amount of section loss due to concrete deterioration, some of the riveted connections are disintegrated due to rust, there is a large amount of surface rust over the entire structure, some of the pin connections are showing signs of section loss and some of the lower chords of the deck trusses are bent.

Two options were considered to place a pedestrian/bikeway trail across the Maumee River where the abandoned CSX railroad bridge presently rests. The first option considered is to rehabilitate the existing structure. This would include items such as replace/repair the existing abutments and piers, clean and paint the existing steel, remove and replace disintegrated rivets, replace/reinforce/repair steel members as needed, place a new deck on the superstructure and place a new pedestrian railing. The second option considered was to remove the existing bridge and replace it with a new bridge.

This report gives a cursory view of the existing conditions of the CSX Bridge and gives a general estimate of some of the costs associated with the replacement or rehabilitation of the existing CSX Bridge to safely carry pedestrian, bike and light vehicular traffic across the Maumee River.

The existing abandoned CSX railroad bridge crossing the Maumee River would need a large amount of restoration to make the bridge safe for pedestrian/bikeway traffic. According to the costs calculated for this report, it would be less expensive to remove the existing bridge and build a new bridge in its' place.

PRELIMINARY REPORT

PROPOSED BACKSIDE TRAIL ON THE ABANDONED CSX RAILROAD OVER THE MAUMEE RIVER

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INTRODUCTION

Acknowledgement and References

Following is a list of some of the reference material used for the preparation of this report:

Subaqueous Repair Cost Estimate for the River Piers of the CSX Railroad Upriver Bridge over the Maumee River Lucas County Ohio dated September, 1987 prepared by Burgess & Niple, Limited for the Ohio Department of Transportation Rail Division that was supplied by The Toledo Metropolitan Area Council of Governments (TMACOG).

Upriver Bridge/Backside Feasibility Study prepared for TMACOG in June of 1989 by Burgess & Niple, Limited in association with Dansard-Grohnke-Long, Limited and Mainline Management Services, Inc.

One copy of the General Plan (24" x 36") for the Maumee River Bridge produced by American Bridge Co. for T.R and T Construction Co. furnished by CSX Corporation through Diane Reamer-Evans of TMACOG.

The 2025 Transportation Plan, Revised Bicycle Network produced by TMACOG.

The Bridge Inspector's Training Manual 70 produced by the U.S. Department of Transportation, Federal Highway Administration.

The Ohio Department of Transportation Bridge Inspection Manual dated 2001.

A bid tabulation for the north fork of the Wabash Cannonball Trail Bridge No. 2715 over Swan Creek and A bid tabulation for LUC/WOO-20-18.92/0.00 (Maumee-Perrysburg Bridge over the Maumee River) from The Ohio Department of Transportation.

Purpose and Scope

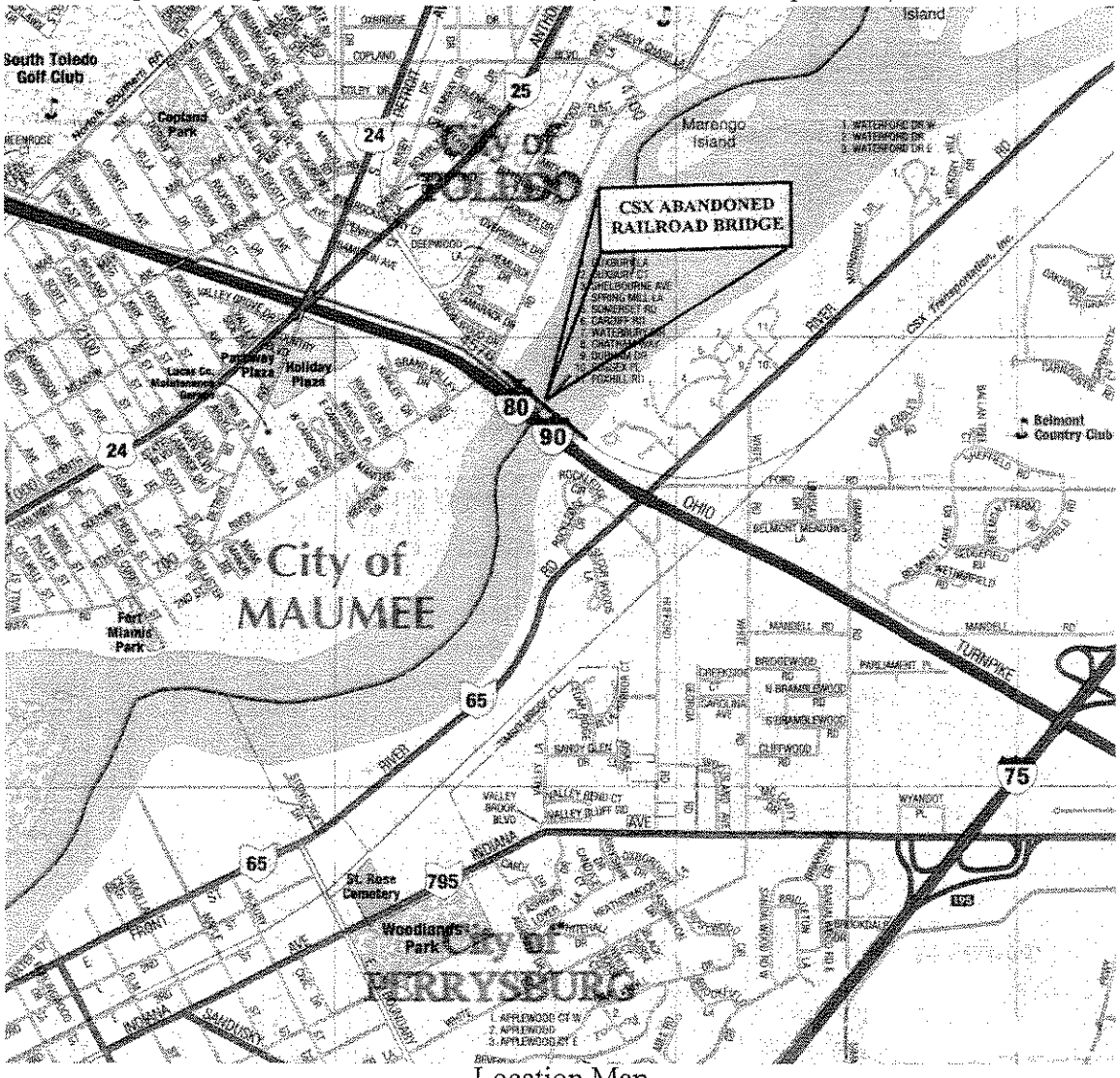
This study addresses the feasibility of creating a pedestrian/bikeway crossing the Maumee River either using the abandoned CSX Railroad Bridge (CSX Bridge) or removing the existing bridge and constructing a new pedestrian/bikeway bridge.

The first alternative is defined as making a cursory determination of the appropriate action necessary to correct deficiencies in the existing CSX Bridge appropriate for the proposed pedestrian/bikeway trail, by making a preliminary design sketch of the proposed pedestrian/bikeway to be attached to the existing CSX Bridge and by estimating the costs associated with this alternative. The second alternative is defined as estimating the cost of removing the existing CSX Bridge, by making a preliminary sketch of a possible replacement bridge and by estimating the costs associated with this alternative.

Some of the items considered during the study were the impact of construction on the environment, navigational clearance and lights, right-of-way requirements, utilities on or near the bridge, current design criteria for geometric, structural and hydraulic needs, construction time and future maintenance. These items were considered for appropriate modification of the existing bridge from current conditions and removal of the existing bridge for replacement with a new bridge to comply with current design criteria for geometric, structural and hydraulic needs.

Location

The CSX Bridge crosses the Maumee River between the city of Toledo in Lucas County and the township of Perrysburg in Wood County and is located just east of the Ohio Turnpike Bridge over the Maumee River (see location map below).



Location Map

EXISTING BRIDGE TYPE AND CONDITION

Inspection

A visual site investigation using climbing techniques and an inflatable raft was performed in November, 2002 by Bryan Zienta, P.E. who is the Assistant Bridge Engineer under the supervision of Jim O'Hearn, P.E., P.S. who is the Bridge Engineer working for the Lucas County Engineer, Keith G. Earley, P.E., P.S.

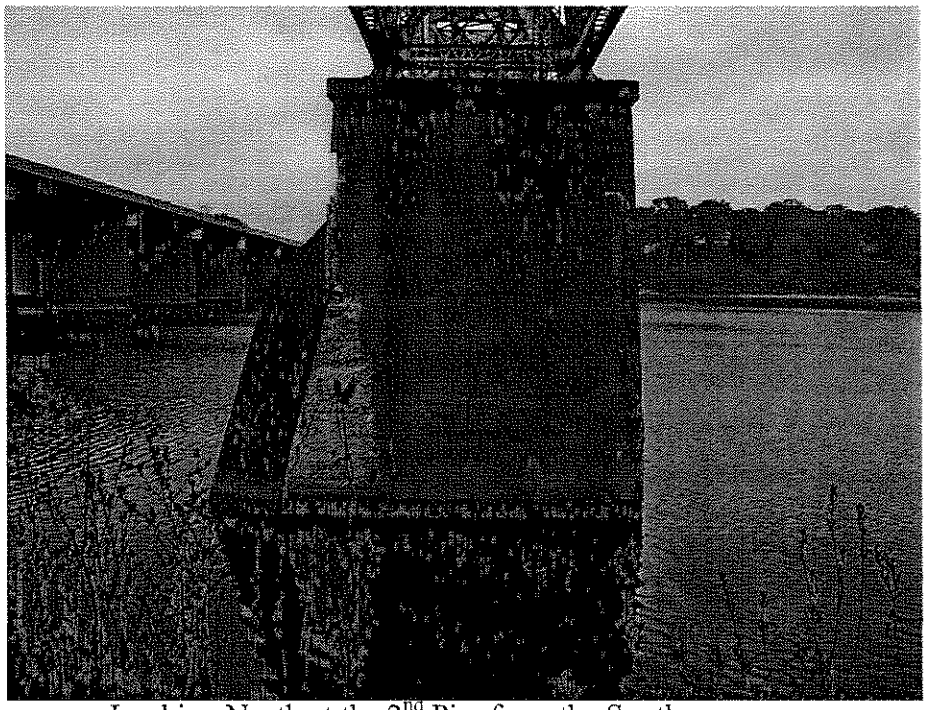
Subaquous Diving Services, Inc. performed an underwater inspection of the piers during the week of August 31st, 1987 for Burgess & Niple, Limited. A summary of the underwater inspection can be found in a report titled Subaquous Repair Cost Estimate for the River Piers of the CSX Railroad Upriver Bridge over the Maumee River Lucas County, Ohio dated September, 1987 prepared by Burgess & Niple, Limited for the Ohio Department of Transportation Rail Division.

One copy of the General Plan (24" x 36") for the Maumee River Bridge produced by American Bridge Co. for T.R and T Construction Co. furnished by CSX Corporation through Diane Reamer-Evans of TMACOG was used for reference.

Piers

There are 11 wall type concrete piers supporting the existing CSX Bridge over the Maumee River. 10 of the piers are 38.75' in height while the center pier is approximately 54' high. The piers are supported by spread footings.

There does not appear to be any settlement or misalignment of the existing piers. There is a significant amount of deterioration of the existing piers with a large amount of section loss. The outer surface of the concrete on the piers is falling away in large sections. The majority of the outer surface of the piers that has not fallen away is not sound concrete. Voids are visible between the outer surface and the body of the piers. The concrete behind the outer surface appears to be segregated and crumbling. The pier caps are also deteriorated. The majority of the pier caps sound hollow and some of the pier caps have a large amount of section loss due to concrete deterioration. All of the pier caps are showing signs of distress. There is evidence on the third pier from the south that the bearing for the truss has dropped slightly into the pier cap.



Looking North at the 2nd Pier from the South

Abutments

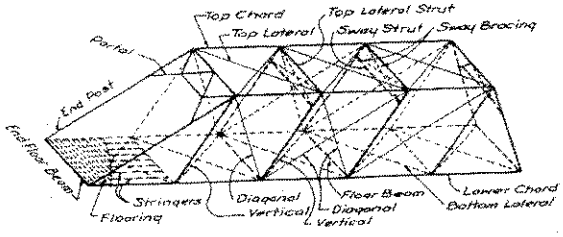
The existing abutments are wall type abutments on spread footing approximately 26' high including the backwalls that appear to be in proper alignment and elevation. The abutment seats are crumbling around the bearings. The abutments have a significant amount of concrete deterioration.

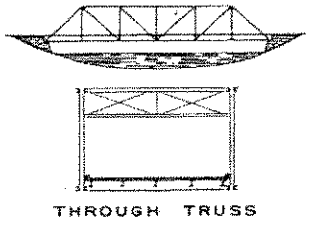
West Wingwall of the North Abutment (Facing North)

Face & Bearing Area of the North Abutment (Facing North West)

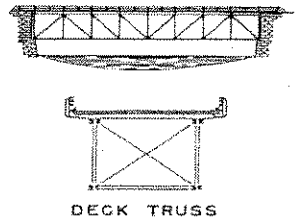
Superstructure

The existing superstructure consists of 11 separate bridges placed end to end. The 11 bridges are composed of three different bridge types. The two end bridges each spanning 40' c/c bearings from the abutments to the first piers consist of built up steel girders. The draw (swing) bridge is supported by the center pier consisting of a continuous two span steel through truss spanning 253'. Each of the remaining 8 bridges span 143.5' to 145' from pier to pier and consist of steel deck trusses. The total span of the combination of bridges is 1,490'. See diagrams below for a description of some of the typical elements of trusses for information.



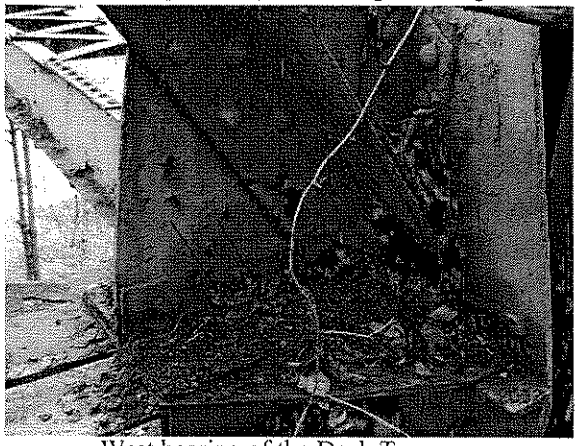

THROUGH TRUSS

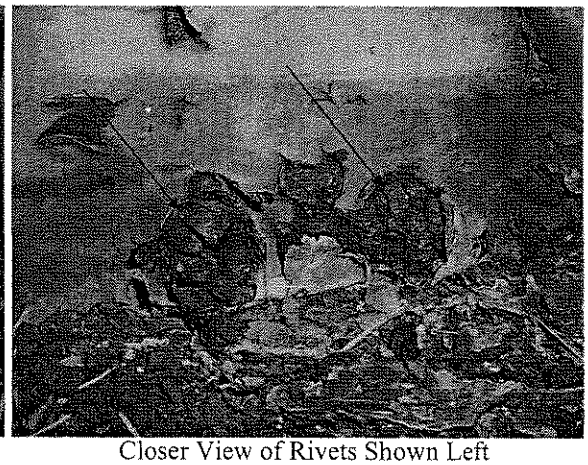
From Bridge Inspector's Training Manual 70
U.S. Department of Transportation
Federal Highway Administration


DECK TRUSS

The bearing plates have section lost due to rust, particularly on the two end piers. Rust has formed between some of the plates causing the plates to deform.

Some of the rivets have a large amount of section loss. The heads of some of the rivets have deteriorated to the point that they disintegrate by hand force. A large amount of the rivets have at least some section loss. The rivets on horizontal surface appear to be in the worst condition. If rehabilitation is an option, a large number of the rivets should be replaced, possibly with high strength bolts.


West bearing of the Deck Truss
at the 1st Pier South from the North


Closer View of Rivets Shown Left

Base Plate Rivet, West bearing of the Deck Truss at the 1st Pier South from the North

Vertical Plate Rivet, West bearing of the Deck Truss at the 1st Pier South from the North

The existing paint on the structure is in very poor condition. The existing paint was not tested for lead. It should be assumed that the existing paint on this structure is a lead based paint unless proven otherwise. The paint is flaking off the steel elements of the structure exposing the structural steel. Looking at the structure, there is more "brown" (exposed and rusted steel) visible than "gray" (painted steel). This would indicate greater than 50% of the paint has fallen off the structure.

Some of the lower chords of the deck trusses have been compressed in the south spans. This is evident from the bending up of the steel lattice braces on the lower chords. There was a train derailment in 1982 on the south spans that could be the cause of the compression of the lower chords.

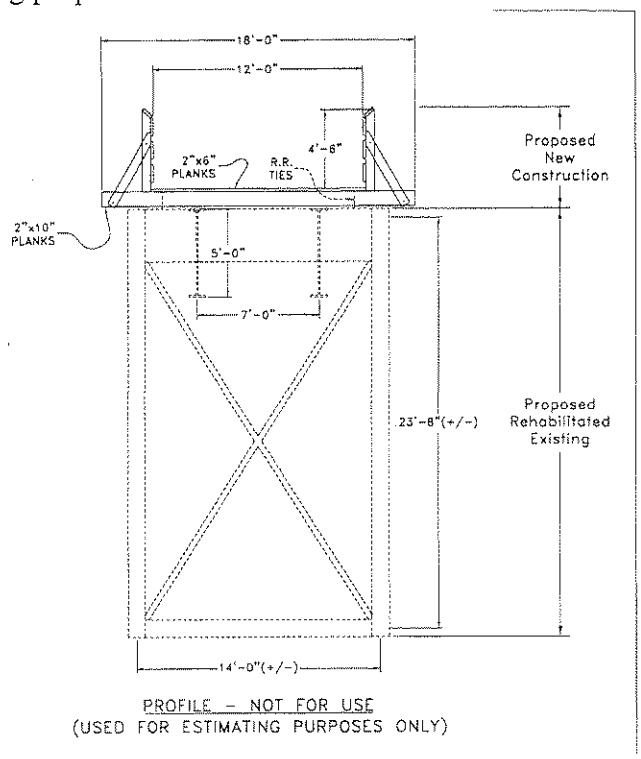
Some of the vertical members of the deck trusses have rust between the steel plates and/or shapes and is deforming the steel members. Surface rust is visible over the majority of the structures elements.

The deck trusses have pin connections. Some of the pins are showing signs of minor section loss. The end posts at the pin connections have section loss due to rust.

There is no deck on the existing structure. The railroad ties have been removed from this structure.

EVALUATION AND ALTERNATES CONSIDERED

The first alternative considered to create a pedestrian/bikeway crossing over the Maumee River was rehabilitation and modification of the existing CSX Bridge. There is no deck on the existing bridge. A possible new deck configuration (see below) was determined for estimating purposes.



PROFILE - NOT FOR USE
(USED FOR ESTIMATING PURPOSES ONLY)

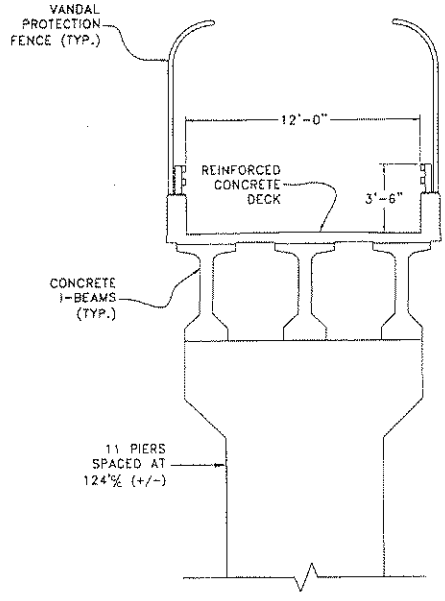
The existing paint should be removed, the steel should be cleaned and the structure should be re-painted. Assuming the existing paint is lead based, special care would have to be taken when removing the paint. The paint would be considered a hazardous material and would require full containment. Some of the steel surfaces would be difficult to clean and paint due to the configuration of the structure.

Due to the extensive amount of deterioration of the existing abutments, replacement was assumed to be cost effective.

The visual inspection revealed piers that are not structurally sound. The previous recommendation from Burgess & Niple in 1987 was to place a structural encasement around the existing piers and support the bridge on the structural encasement. Another option presented was replacement of the existing piers. One problem to consider is that the placement of a structural encasement around the existing piers would reduce the waterway area for the Maumee River. It is possible that the existing piers could be safe for pedestrian, bike and light vehicle use. Core samples would need to be taken to determine if the piers have sufficient strength to carry the loads. However, a comparison of the report prepared in 1987 by Burgess & Niple to present conditions indicates significant additional deterioration. If the existing piers could handle design loading

presently, it may not be long before the piers could no longer support the design loads. Replacement of the existing piers was the option used for the estimates made in this report.

The second alternative considered was to create a pedestrian/bikeway crossing over the Maumee River was removal of the existing CSX Bridge and replacement with a new bridge to be built for pedestrian/bike and light vehicular traffic. A possible new bridge configuration (see below) was used for estimating purposes only.



PROFILE - NOT FOR USE
(USED FOR ESTIMATING PURPOSES ONLY)

SUMMARY

Most of the costs associated with the two options studied are summarized here for comparison. The estimated costs shown here are preliminary and should not be used for construction or demolition. The two options are as follows:

Option #1 – Rehabilitate & Modify	
Preliminary Engineering	$150,000
Construction Engineering	$50,000
Construction	
Steel Repair	$32,000
Cleaning & Painting	$1,550,640
Decking, Flooring & Railing	$692,000
Abutment Removal & Replacements	$71,930
Pier Removal & Replacements	$602,299
Additional Construction Items	$243,250
Subtotal	$3,392,000+/-
Contingency Items @ 20% +/-	$678,000
TOTAL	**$4,070,000**

Option #2 - Replacement	
Preliminary Engineering	$150,000
Construction Engineering	$50,000
Construction	$2,450,000
Subtotal	$2,650,000
Contingency Items @ 10% +/-	$265,000
TOTAL	**$2,915,000**

Proposed Backside Trial on the Abandoned CSX R.R. Bridge Over The Maumee River

Construction Cost Estimate Calculations Rehabilitation & Modification
(see report for a diagram)

1/6/2003

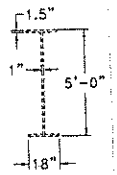
Steel Repair

Assume 20 replacment rivits are needed / deck truss end
2 ends / truss
8 deck trusses
320 replacement rivits are neede

Estimate it takes 1 hour for an iron worker to replace 1 rivit
wages = $40/hr. +/-
est. materials, wages, equipment, safty gear, etc.. = (wages)(2.5)
estimated cost = ($40)(2.5)(320) $32,000

Cleaning & Painting

a. Girder



estimated girder size

circumference = (2)(5')+(2)(18")+(2)(17") = 15.8333'
area = (15.8333')(2 girders)(1,490') = 47,183 sf
Bid for Bridge No. 2715 (similar) = ($37,976)/(2,983sf) = $12.73/sf
estimated cost = (47,183sf)($12.73/sf) $601,000

b. Trusses
estimated area
2 vertical trusses = (2)(23'-8")(1,490') = 66,750 sf
+ (7x10) vertical floorbeams & braces = (70)(23'-8")(15) = 24,854 sf
+(6x10) horizontal deck & braces = (120)(1)(28) = 3,360 sf
total = 94,964 sf
estimated cost = ($10/sf)(94,964sf) $949,640

Subtotal = *$1,550,640*

Decking, Flooring & Railing

a. Decking and flooring
(12' wide)(1,490' long) = 17,880 sf
estimated cost = ($22/sf)(17,880 sf) $394,000

b. Railing
estimated cost = (2 sides)(1,490'/side)($100/lf) $298,000

Subtotal = *$692,000*

Abutment Removal & Replacement

a. Portions of Structure Removed
trusses must be supported - estimated 10k removal, 40k support $50,000

b. Class C Concrete, Abutments Including Footings
(45 C.Y.)(*$353/C.Y.) $15,930

c. Unclassified Excavation $6,000

Subtotal = *$71,930*

Pier Removal & Replacement

estimate the replacement cost to be equal to the structure removal cost for building a new structure due to additional cost of supporting trusses during construction (see quantity calculations for the new bridge).

a. Portions of Structure Removed $208,070

b. Shale Excavation
MPB bids range from $100 to $32/ C.Y. averaging $66/C.Y.
(122 C.Y.)($66/C.Y.) = $8,052

c. Cofferdams, Cribs and Sheeting $92,000

d. Class C Concrete, Piers Above Footings
(789 C.Y.)(*$349/C.Y.) $275,361

e. Class C Concrete, Footings
(49 C.Y.)(*$384/C.Y.) $18,816

Subtotal = *$602,299*

Additional Construction Items

a. Field Office, Type B
(6 Months)(*$1,375/mo.) $8,250

b. Construction Layout Stakes
Minor - Similar to Bridge 103 = $5,000 average $5,000

c. Mobilization
Estimate 3/4 equipment for MPB
MPB bids range from $143k to $400k averaging $306k
(3/4)($306,000) $230,000

Subtotal = *$243,250*

ESTIMATED GRAND TOTAL = $3,192,119

Proposed Backside Trail on the Abandoned CSX R.R. Bridge over The Maumee River

Construction Quantity Calculations for a Possible New Structure
(see report for a diagram)

1/6/2003

ITEM	DESCRIPTION
201	Clearing and Grubbing
	Lump Sum
202	Structure Removed
	Lump Sum
205	Shale Excavation
	Estimate (10' l)(5' h)(6' w)(11 piers) = 122 C.Y.
503	Cofferdams, Cribs and Sheeting
	11 Each (1 for each pier)
503	Unclassified Excavation
	Lump Sum
509	Epoxy Coated Reinforcing Steel
	(covered in concrete prices)
511	Class S Concrete, Superstructure
	(15' wide)(6" thick)(1,490' long) = 413 C.Y.
511	Class C Concrete, Piers Above Footings
	(11ea.)[stem - (8' w)(4' t)(56' h)+ cap - (3' h)(4' t)(12' w)] = 789 C.Y.
511	Class C Concrete, Abutments Including Footings
	Assume 45 C.Y. total
511	Class C Concrete, Footings
	(11ea.)(10' l)(2' h)(6' w) estimated = 49 C.Y.
515	Precast I-Beam, (60")
	(3ea./span)(12 spans) = 36 ea.
515	Intermediate Diaphrams
	(9 per span)(12 spans) = 108 Each
516	Preformed Elastomeric Compression Joint
	Assume (5 ea.)(15' l) = 75 L.F.
516	1" Preformed Expansion Joint Filler
	Not Significant
516	Elastomeric Bearings w/ Internal Laminats
	(2 ea./beam)(3 beams/span)(12 spans) = 72 Each
517	Railing (Conc. Parapet w/ Twins Steel Tube)
	(2sides)(1,490'/side) = 2,980 L.F.
518	Special - Keyway Drain
	(4 ea./span)(12 spans) = 48 Each
518	Drip Strip
	(1,490'/side)(2sides) = 2,980 L.F.
607	Special - Vandal Protection Fence, 10' curved
	(1,490'/side)(2sides) = 2,980 L.F.
646	Centerline
	0.28 Miles
864	Sealing of Concrete Surfaces (Epoxy-Urethane)
	(5.5' width/side/ft)(2 sides)(1,490') = 16,390 S.F.
806	Field Office, Type B
	6 Months
623	Construction Layout Stakes
	Lump Sum
624	Mobilization
	Lump Sum

Proposed Backside Trial on the Abandoned CSX R.R. Bridge Over The Maumee River

Construction Cost Estimate Calculations for a Possible New Structure
(see report for a diagram)

ITEM	DESCRIPTION	1/6/2003 Estimate
201	Clearing and Grubbing (estimated to be minor - similar to bride no. 103 Centenial Rd.)	$17,000
202	Structure Removed Maumee-Perrysburg Bridge (MPB) bids ranged from $150k to $525k with the average being $326k. MPB Deck Area = 32,683 s.f.+/- CSX Deck Area = 20,860 s.f. +/- ($326,000)(20,860)/(32,683)	$208,070
205	Shale Excavation MPB bids range from $100 to $32/ C.Y. averaging $66/C.Y. (122 C.Y.)($66/C.Y.) =	$8,000
503	Cofferdams, Cribs and Sheeting MPB bids range from $250k to $1,250k averaging $800k MPB pier footing area =(783sf/ea)(6ea)= 4,698sf+/- CSX footing area = (60sf/ea)(11ea)=660sf+/- ($800,000)(660)/(4,698)	$112,000
503	Unclassified Excavation standard abutments similar to Br. 103 = $6,000 average Lump Sum	$6,000
509	Epoxy Coated Reinforcing Steel (covered in unit price for concrete)	
511	Class S Concrete, Superstructure (413 C.Y.)(*$437/C.Y.)	$180,481
511	Class C Concrete, Piers Above Footings (789 C.Y.)(*$349/C.Y.)	$275,000
511	Class C Concrete, Abutments Including Footings (45 C.Y.)(*$353/C.Y.)	$15,930
511	Class C Concrete, Footings (49 C.Y.)(*$384/C.Y.)	$19,000
515	Precast I-Beam, (60") (12 spans)(3 ea./span)(*$17,190 ea.)	$618,810
515	Intermediate Diaphrams (108 Each)(*$771/ea.)	$83,268
516	Preformed Elastomeric Compression Joint (75 L.F.)(*$27/L.F.)	$2,025
516	Elastomeric Bearings w/ Internal Laminats (72 Each)(*$255/ea.)	$18,360
517	Railing (Conc. Parapet w/ Twins Steel Tube) (2,980 L.F.)(*$141/L.F.)	$420,180
518	Special - Keyway Drain (48 Each)($200 est.)	$9,600
518	Drip Strip (2,980 L.F.)(*$7/L.F.)	$10,860
607	Special - Vandal Protection Fence, 10' curved (2,980 L.F.)(*$62/L.F.)	$184,760
646	Centerline (0.28 Miles)(6,000/mi. from Bridge 103)	$1,680
864	Sealing of Concrete Surfaces (Epoxy-Urethane) (16,390 S.F.)(*$9/S.F.)	$15,210
806	Field Office, Type B (6 Months)(*$1,375/mo.)	$8,250
623	Construction Layout Stakes Minor - Similar to Bridge 103 = $5,000 average	$5,000
624	Mobilization Estimate 3/4 equipment for MPB MPB bids range from $143k to $400k averaging $306k (3/4)($306,000)	$230,000
	TOTAL ESTIMATE =	**$2,449,484**

* - Average unit price from 2001 ODOT Bid Tabulations

APPENDIX C

2009 ODOT INTER-OFFICE COMMUNICATION

OHIO DEPARTMENT OF TRANSPORTATION

INTER-OFFICE COMMUNICATION

Office of Environmental Services

TO: David Dysard, District 2 DDD DATE: March 16, 2009

Attention: Richard Perse, District 2 DEC

FROM: Timothy M. Hill, Administrator, Office of Environmental Services

SUBJECT: Cultural Resources Preliminary Evaluation

PROJECT: LUC/WOO Abandoned CSX Maumee River Swing Bridge and Proposed Backline Trail

RE: National Register evaluation of bridge and cultural resources literature review

PID: 80544

Project Description

The City of Toledo proposes to build a bikeway on an 11.384-mile section of an abandoned railroad. The abandoned railroad was once part of a beltline that surrounds the city. This segment of the line spans the Maumee River and is located in both Lucas and Wood counties. No new right-of-way is expected for the work.

In December 2008 your office contacted the Office of Environmental Services, Cultural Resource Division to provide a National Register eligibility evaluation for the Upper Maumee River crossing and perform a literature review to identify cultural resource sites within the abandoned eleven-mile-long segment of the Chessie Seaboard Express (CSX)-owned railroad.

Area of Potential Effect (APE)

The project starts at railroad Mile Post 5 (MP-5) near the corner of Laskey Road and Jackman Road. The project follows the railroad right-of-way south, through Bowman Park, Ottawa Park, The University of Toledo, Medical University of Toledo, and Schneider Park. The railroad continues southeast across the Maumee River into Wood County, and the project terminates at the west side of Bates Road, near Mile-post 16 (MP-16). See Figure 1.

Literature Review

The railroad segment which passes through the Medical University of Ohio was previously surveyed in 1978 for the proposed Westwood Ave to Hill Avenue project and also in 2006 for the Medical University of Ohio, Advanced Technology Park expansion. Another previous survey was conducted where the railroad intersects Dorr Street. On the east side of the Maumee, a previous survey was conducted where the WW Knight Nature Preserve is located along the west side of the APE corridor.

No previously recorded history/architecture sites are located within or immediately adjacent to the existing railroad within the proposed Bikeway segment. One previously recorded archaeological site was recorded near the bridge in 1979. The Turnpike Bridge Site (WO-0072) is a prehistoric lithic scatter located on the eastern bank of the Maumee River, between the turnpike bridge and the CSX railroad.

History/Architecture

Toledo Beltline Railway

The Toledo Railway and Terminal Company completed a 28.59 mile beltline around the city in September 1, 1903 (1903 *Annual Report of the Commissioner of Railroads and Telegraphs*). Prior to the completed TTRR beltline, in the late 1800's, the Toledo Beltline Railway (B&O) and Michigan Central (NYC) rail lines were constructed to bypass and go around the city. In 1903, the Toledo Railroad and Terminal Company's "beltway" connected with every railroad entering Toledo. In 1906 the line was sold under receivership to its connecting railroads; reorganized; and became the Toledo Railway and Terminal Company (TTRR) on January 1, 1908. In 1914 the Hocking Valley Railroad acquired nearly 10 percent interest in the TTRR (2007 *The Hocking Valley Railway*).

Our research indicates that the APE portion of the beltway and bridge were mostly abandoned in the early 1980's by CSX, around the time of federal deregulation of the railroads but has an easement agreement with Norfolk Southern for part of the line. Cartographic sources indicate that the APE includes the only single track segment of the beltline, spanning the upper Maumee and continuing north toward Copeland Boulevard. See Figures 2 and 3.

Upper Maumee River Swing Bridge

The abandoned swing bridge is located 11.5 miles from the mouth of the Maumee River where it empties into Lake Erie. It was designed by the American Bridge Company and constructed in 1903 by the Toledo Railroad and Terminal Construction Company. It spans 1450 feet across the Maumee with a 49 foot vertical clearance. The bridge features a center pivot swing span with 11 spans total. The two approach spans are 40 foot built up girders. The center span is a double cantilever continuous 253 foot long two-span riveted Pratt through truss supported on a center pier. The remaining 8 spans are riveted Pratt deck trusses of 143.5 to 145 foot spans (2002 TMACOG). See Figures 4 and 5.

Center bearing, swing-span bridges are among the least common bridge types found in the country and are considered significant. Late nineteenth and early twentieth century examples possess a high level of significance if they retain their integrity. Character-defining features that contribute to integrity include a swing span, central pier of masonry or concrete, pivot, and end rests. Other features such as operational machinery, and abutments, piers or wingwalls may also be character-defining features (2005 NCHRP).

The report for the Toledo Metropolitan Area Council of Governments (TMACOG) for the proposed Backside Trail completed in December of 2002 by the Office of the County Engineer, states that the bridge is in critical condition. The report states that the piers and abutments have section loss and deterioration and that there is a large amount of surface rust over the entire structure, some of the pin connections are showing signs of section loss and a few of the lower deck chords are bent which may be due to a derailment that happened in 1982 on the south spans (2002 TMACOG).

Copies of the subaqueous study of the piers conducted for Burgess and Niple in 1987, *The Upriver Bridge/Backside Feasibility Study* conducted by Burgess and Niple in 1989 and the American Bridge Co.'s General Plan for the Maumee River Bridge (circa 1902) were requested by our staff in January 2009. We would like to have the opportunity to review these documents whenever your staff can provide them or they become available.

Our staff has not confirmed if the swing span was ever opened or featured the machinery to operate. It was built at a time when commercial activity on the Maumee was shifting down river. Swing bridges are easier to erect in place without disturbing navigation than other movable bridges. Our research does not indicate that there was ever a fender system in place to protect the opened span. The fender systems were sometimes used as falsework during construction (2003 Koglin).

The Ohio Department of Transportation's Historic Bridge Database contains two vehicular swing bridges, one in Cleveland and the other in McConnelsville. The Harmar Village Bridge is a former B&O Railroad swing truss and part of the National Register-listed Harmar Historic District crossing the Muskingum River in Marietta. All three are rim-bearing swing spans dating from 1901 to 1914 respectively. The Lower Maumee River Bridge is located at the northern Maumee crossing of the beltway line and it is also a center bearing bridge. It has been altered and updated over the years but still operable as of 2003 (2009 Berry).

Ohio built a total of 71 iron railroad bridges between 1902 and 1903, according to the Commissioner of Railroads and Telegraphs Annual Report for that year.

David Dysard, District 2 DDD March 16, 2009
CSX Maumee River Swing Bridge and Proposed Bikeway
PID: 80544

The American Bridge Company was incorporated in 1900 by JP Morgan as part of a consolidation of 28 steel fabricators and constructors which included the Toledo Bridge Company. The American Bridge Company became a subsidiary of the U.S. Steel Corporation in 1901. A private company since 1987; American Bridge Co. is noted for constructing the San Francisco Bay Bridge, the Sears Tower, and recently, the world's largest movable bridge (Woodrow Wilson Bascule Bridge over the Potomac River) in Washington D.C. (1901/2009 American Bridge Company).

There are three American Bridge Company-built vehicular bridges in ODOT's Historic Bridge Database dating from 1923 to 1949. All three structures are eligible for the National Register. A center-bearing vehicular swing span truss was built by the American Bridge Company in 1914 and carried State Route 555 over the Muskingum River. It is no longer extant.

National Register Eligibility
It is our staff's opinion that the Toledo Beltline may possess significance within the context Toledo's industrial heritage, as rare example of a beltline, and also for its brief association with the Hocking Valley Railroad. However, it is beyond the scope of this undertaking to evaluate the National Register eligibility of the railroad line in its entirety based on the scope of this project. It is our opinion that elements that would make this rail line significant will not be altered by converting the abandoned segment of the APE to a bikeway. The proposed project will retain the footprint of the railroad along the 11.384-mile bike trail.

Our staff has determined that the Upper Maumee Bridge meets National Register eligibility under Criterion C as a surviving example of an uncommon type of bridge technology. We consider the center-bearing swing span Pratt truss, its pier, and rests, the only significant elements of the structure. It also carries significance under Criterion A for its association with a prolific out-of-state bridge builder (American Bridge Company, PA).

Archaeology
Based on the literature review, previous surveys and disturbed nature of the APE, an archaeological reconnaissance survey is not considered necessary at this point unless, the scope of work deviates more than ten feet beyond the existing rail right-of-way.

Conclusions
It is our staff's opinion that conversion of the abandoned railroad corridor into a bikeway will not affect the characteristics that make the Toledo Beltline historically significant. The removal of the bridge will not affect the Beltline's original configuration or context.

Retaining or making necessary alterations to contributing elements of the bridge (i.e. Pratt through truss center swing-span, pier, and movable components) with in-kind materials or for safety reasons may have no adverse effect to the historic property under 36 CFR Part 800. Final determinations of eligibility and effect will be made in consultation with the OSHPO.

Also, removal or alteration of non-contributing elements (i.e. approach spans, approach piers, abutments and all decking material) would not alter the characteristics of the bridge that make the resource eligible for the National Register of Historic Places.

Recommendations

Based on our historic evaluation of the bridge, we recommend an updated structural analysis of the center-span Pratt through truss and its pier to determine what alternatives are feasible for reusing it. The Office of Structural Engineering suggested that a structural assessment should be based on AASHTO's *Guidelines for Historic Bridge Rehabilitation and Replacement* and the *Guide Specifications for Design of Pedestrian Bridges* which only requires 85 pounds per square foot live loads.

Staff members from ODOT's Office of Structural Engineering have offered to conduct a field inspection and structural analysis of the bridge for pedestrian loads. Please let us know if you would like us to request an in-house inspection of the bridge.

Correspondence with the U.S. Coast Guard discovered that there are no records of requests to open the bridge within the past 15 years. The river is considered navigable at this crossing but the Coast Guard would have no objections to allow the bridge to remain in the closed-to-navigation position. Additionally, there would be no permit required if a fixed place structure were proposed (Striffler, 2009).

In accordance with Stipulation 2(B)(3) of the *Programmatic Agreement Among The Federal Highway Administration, The Advisory Council On Historic Preservation, The Ohio Historical Society, State Historic Preservation Office, And The State Of Ohio, Department Of Transportation Regarding The Implementation Of The Federal-Aid Highway Program In Ohio (Agreement No 12642)* executed July 17, 2006, and in compliance with 36 CFR Section 800.4(c)(2), ODOT-OES has determined the following:

1. The 1903 American Bridge Company-built Upper Maumee RR Bridge's center swing span, meets National Register eligibility under Criterion C as a rare example of its type, with the Pratt through truss swing span, center pier and movable components as the contributing elements of the bridge. The approach spans, approach piers, abutments and all decking material are considered non-contributing elements. It is also eligible under Criterion A for being constructed by the American Bridge Company, a prolific out-of-state bridge builder.

For Section 106 purposes for the proposed bikeway, we propose the National Register boundary as the existing 253-foot center swing span Pratt truss of the Upper Maumee Bridge with its associated components as contributing.

2. The proposed bikeway project will have no effect to elements that would render the Toledo Beltline railroad eligible for the National Register of Historic Places as a component within Toledo's industrial heritage, its distinguishing configuration which encircles the city, and minor association with the Hocking Valley Railroad.

3. As long as the work is limited to the existing railroad right-of-way and previously surveyed areas, the potential for impacting undisturbed archaeological remains is unlikely.

Once available, please provide us with a project package and mapping, including any areas of additional right-of-way. Please include a description of work associated with the other bridge structures located within the APE. We will make an official Section 106 finding for the subject project once we receive these items.

A copy of this IOC should be attached to the appropriate environmental document. If you have any questions or comments regarding this determination, they may be addressed to Thomas P. Barrett, Staff Historian at tom.barrett@dot.state.oh.us or 614-466-3932.

TMH/tpb

c: Mark Epstein, SHPO, w/attachments ; Adam Johnson, FHWA; Project File; Reading file;

References

AASHTO, *Guide Specifications for Design of Pedestrian Bridges*, 1997

AASHTO, *Guidelines for Historic Bridge Rehabilitation and Replacement*, 2008

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Berry, Dale J., Michiganrailroads.com, 2009

Commissioner of Railroads and Telegraphs, *Thirty-sixth Annual Report*, 1903

Continental Appraisal Company and County Engineer's Office, *Preliminary Report Proposed Backside Trail on the Abandoned CSX Railroad Over the Maumee River*, prepared for Toledo Metropolitan Area Council of Governments (TMACG), 2002

Koglin, Terry L., *Movable Bridge Engineering*, 2003

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Parsons Brinckerhoff and Engineering Industrial Heritage, *A Context for Common Historic Bridge Types*, 2005

Transystems/Lichtenstein, *Draft Protocol for Defining Levels of Significance, 2007-08 Ohio Historic Bridge Inventory Phase 1A*, 2008

Primary Sources

Striffler, Scot. M., Bridge Program Manager, Ninth Coast Guard District Bridge Program, email, March 10 and 12, 2009

David Dysard, District 2 DDD March 16, 2009
CSX Maumee River Swing Bridge and Proposed Bikeway
PID: 80544

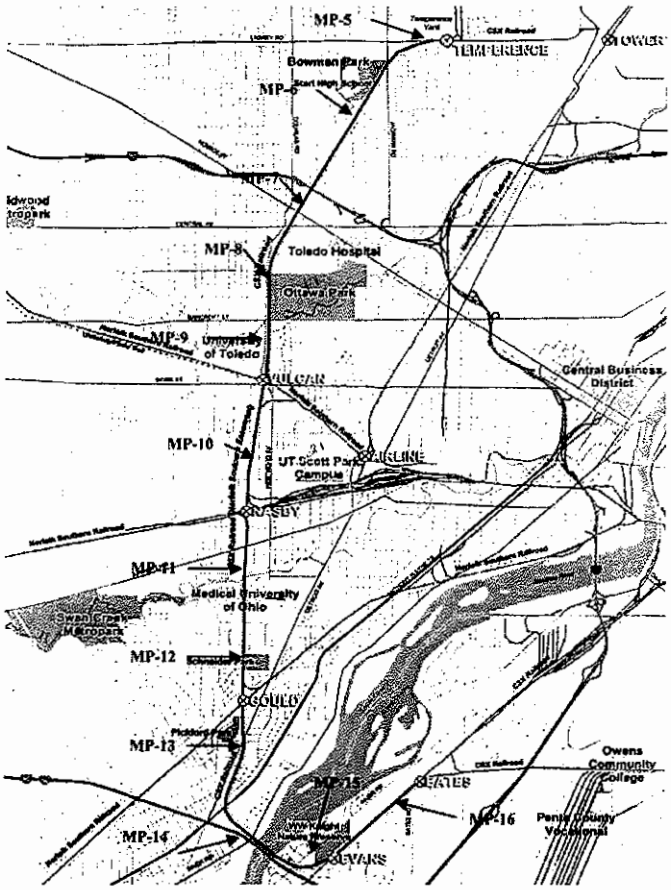

Figure 1. Backline Trail APE in red.

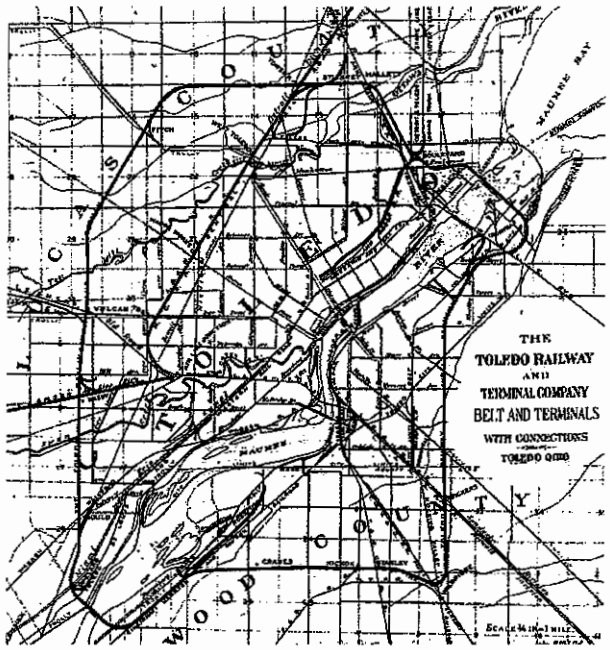

Figure 2. 1903 Map of entire beltline. The APE is located in the bottom left corner.

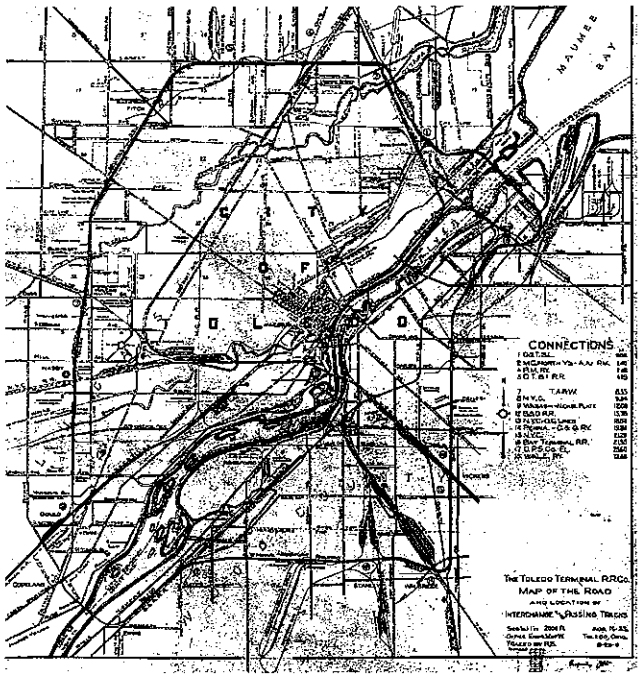

Figure 3. 1933 map of beltline around Toledo with showing single tracks in APE (bottom left corner).

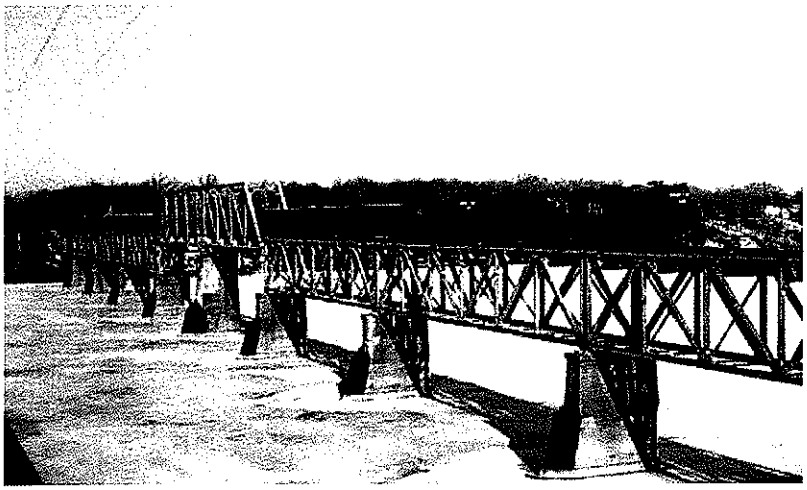

Figure 4. Train crossing bridge circa 1970's.

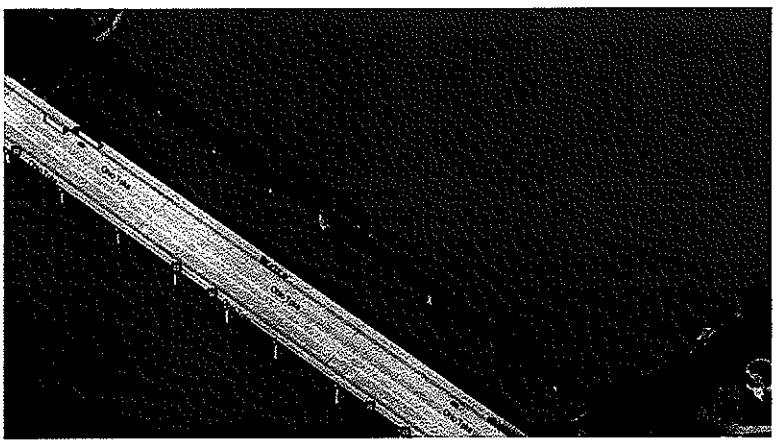

Figure 5. This a recent aerial view of the structure, showing its proximity to the Ohio Turnpike.

APPENDIX D

2010 ODOT INTER-OFFICE COMMUNICATION

Inter-office Communication

To: Mike Ligibel P.E., Planning & Program Admin, District 2 Date: February 16, 2010

From: Tim Keller, P.E., Administrator, Office of Structural Engineering

Subject: Toledo - CSX RR Corridor - Environmental Procedure
Assessment of Rail Bridge over The Maumee River

By: Mike Loeffler, P.E., Bridge Operations and Maintenance Engineer

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The Office of Structural Engineering has conducted a preliminary field review of a 12 span railroad bridge spanning The Maumee River. The bridge is currently closed to all traffic. The bridge was designed by Waddell and Hedrick Consulting Engineers of Kansas City, KS, and erected by the American Bridge Company of New York in 1902. The information is documented by two placards on the end posts of the swing portion of the bridge. The structure consists of two girder approach spans, eight simply supported deck trusses, and a two span turntable swing through truss. The total length of the structure is approximately 1490 feet.

State and federal guidelines for evaluating the condition of bridges have been developed to promote uniformity in the inspections of various bridges. Condition ratings are used to describe the existing, in-place bridge as compared to the as-built condition. Condition codes are used to provide an overall characterization of the general condition of the entire component being rated. The following table was used as a guide in evaluating the condition of the various members and fracture critical members of the bridge.

NBIS Bridge Inspection Condition Ratings NBIS	
9 - Excellent	
8 - Very Good	No problems noted
7 - Good	Some minor problems
6 - Satisfactory	Structural elements show some minor deterioration
5 - Fair	All primary structural elements are sound but have minor section loss, deterioration, spalling or scour
4 - Poor	Advanced section loss, deterioration, spalling or scour
3 - Serious	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present
2 - Critical	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken
1 - Imminent Failure	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but correction action may put back in light service
0 - Failed	Out of service - beyond corrective action

Deck

The rails and rail cross ties have been remove. Therefore no items associated with the deck items were evaluated.

Approach Spans

The girders are in fair condition [5]. The top flanges have a uniform section loss of a 1/16 inch with additional areas of pitting adding 1/8 inch of loss. The lower flanges at the bearings have significant section losses.

The cross frames are in fair condition [5]. Cross frames are located approximately every 15 feet. The lower struts of the crossframes are comprised of back to back angles. All of the back to back angles are exhibiting bowing from crevice corrosion up to 2” in.

The lateral bracing is in poor condition [4]. The upper and lower lateral bracing located in the plane of the top and bottom plane of the girder flanges are in poor condition. The connection plates have broken rivets and crevice corrosion.

Deck Truss Spans

The superstructure is in poor condition [4]. The truss members are built up riveted box member comprised of angle, plates, and channel sections. All truss members have a combination of lattices work on the bottom, or top and bottom.

The top and bottom chord exhibits typical losses up to 1/8" along the web plates and bottom lattice bars throughout all spans. Other isolated areas along the top chord exhibited pitting to 3/16" along the full height of the web plates. Impacted rust up to 2" was noted between the web plates and flange angles.

Span 1 has major impact damage to the south lower chord presenting distortion in the horizontal or vertical alignment. The damage extends for approximately 3 panel points (75 feet)

The vertical members and diagonal members are in fair condition [5] overall with isolated members exhibiting pitting, up to 1/16" along the web plates and lattice bars throughout all spans. The verticals with the worst cases of section loss were typically noted at the pin locations at the bearings.

The gusset plates are in poor condition [4] overall, with typical 1/16" – 1/8" losses, typically alone the lower gusset plates. The upper chord gusset plates were in fair condition. Isolated gusset plates exhibited pitting between 40-50% of the surface area on the exterior and interior faces.

The upper lateral bracing is in serious condition [3]. Bracing members have areas of minor section loss with isolated areas of advanced section loss. The gusset plates connecting the bracing to the upper chord exhibited many locations of broken rivets and cracked connection plates.

The floorbeams are in fair condition [5], exhibiting minor pitting up to 1/16".

Swing Through Truss Spans

The once movable portion of truss bridge is a swing bridge, which is swung open by pivoting atop of the center pier in the horizontal plane. The truss pivots upon a series of 6 inch diameter steel wheel arranged in a 25 foot circular ring. The steel wheels rest upon a steel rail supported by a steel frame. Two electric motors and gearing located just below the tracks, placed on the outside wall of the circular ring, provide powered to move the bridge. A breaking system and locks are located on the adjacent piers.

The superstructure is in poor condition [4]. The truss members are built up riveted box member comprised of angle, plates, and channel sections. the Truss member conditions mimic findings in the deck trusses.

All motors to power the swing structure have been removed. The 6 inch wheels exhibits the effects of age and weather and do not seem operable. Steel frame and supports are in fair condition.

Substructure

The substructure is in critical condition [3]. The concrete substructure units are wall type pier with spread footing founded on rock. The pier concrete has significant areas of delaminations and spalling. Two piers have large spalls affecting the bearing capacity of the pier seat. Significant deterioration is evident on all piers at the water line. Three piers have spalled areas greater than one foot deep.

An in-depth subaqueous inspection and cost estimate was performed in 1987 for the river piers. The report found scouring effects at two locations. The reports state “Prior to the closure, it was reported that one or more river piers were “pumping mud” under rail traffic”. The report listed all the substructure units in poor condition. In the twenty three years since that report no work or maintenance has been performed on the substructure. Therefore we are assuming the conditions have worsened as to the scour.

Bridge Replacement Alternatives:

Rehabilitated Structure – The rehabilitation of the current structure will have to consider a new deck will have to conform to the truss type floor system being supported from panel point to panel point spanning 25 feet. Assuming concrete, the additional thickness, width, number of deflection joints, and expansion joints will add greatly to the rehabilitation cost. Superstructure steel repairs to gusset plates, bracing, and truss members will be labor intensive. The structure will require a new paint system. The condition of Span 2 lends itself to replacement versus rehabilitation.

Annual maintenance cost can vary considerably and are a function of many factors including maintaining agency practices, structure age, structure type, and trail usage requirements. The painting of the steel truss will remain a high-maintenance cost.

Substructure rehabilitation will require massive concrete replacement and repair. Jacketing the piers walls and adding new pier seats was costly in the 1987, with additional work to the piers cost can be expected to reach two million for substructure work alone.

The existing structure will have to be analyzed to ensure capacity requires can meet with current specifications in the rehabilitated configuration.

New Structure – The cost of a new structure based upon square footage of 1500 feet by 12 feet at a unit cost $175 a square foot would be approximately 3.2 million.

Summary and Recommendations

The following cost estimate is a preliminary cost estimates based upon the Office of Structural Engineering judgment. It is the current opinion of this Office replacing the structure with a new structure is considerably more economical then rehabilitating the existing structure.

Finally the concept of rehabilitation needs to be brought into context. The existing structure has fallen into such poor condition that the magnitude of the effort required to restore the bridge to a safe level of performance is not feasible and prudent alternative.

Should you have any questions concerning our review comments for the above referenced project, please contact our office.

TK:ML
c: Tom Barrett – Office of Environmental Services
Susan Gasborro - Office of Environmental Services
File

APPENDIX E

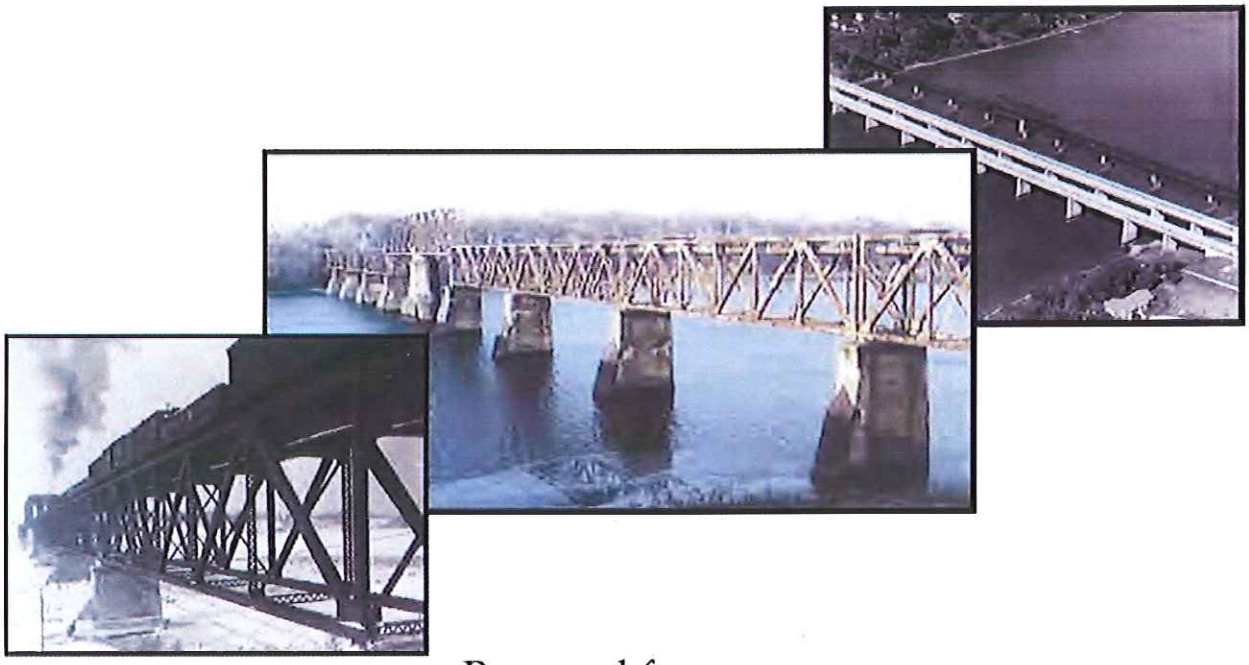
2012 PLANNING LEVEL REPORT

Planning-Level Report

WEST SIDE (CSXRR) BIKE/PEDESTRIAN TRAIL CROSSING of the MAUMEE RIVER

Between

RIVER ROAD (LUCAS COUNTY) & S.R. 65 (WOOD COUNTY)



Prepared for

WOOD COUNTY PORT AUTHORITY

MARCH 16, 2012

Prepared by

Claude Brown & Associates
Consulting Engineers
2727 N. Holland-Sylvania Rd.
Suite C
Toledo, OH 43615
Tel (419) 531-5128

Claude Brown & Associates
Consulting Engineers
2727 N Holland-Sylvania Rd., Suite C Toledo, OH 43615 Telephone (419) 531-5128

PLANNING-LEVEL REPORT
WEST SIDE (CSXRR) BIKE/PEDESTRIAN TRAIL
CROSSING OF THE MAUMEE RIVER
BETWEEN RIVER RD. (LUCAS COUNTY) & SR 65 (WOOD COUNTY)

TABLE of CONTENTS

EXECUTIVE SUMMARY

The Wood County Port Authority (WCPA) plans to construct a multi-use Bike-Hike Trail between River Road in Toledo, Lucas County, Ohio and River Road (SR-65) in Perrysburg, Wood County, Ohio. This section of trail will cross the Maumee River at the site of the existing, abandoned CSX Railroad Bridge.

WCPA retained Claude Brown & Associates (CB&A) to review previous reports and information regarding the existing bridge and to determine requirements and costs associated with a replacement or rehabilitated structure.

It appears that removing and replacing the existing bridge Superstructure, Piers, and Abutments is the apparent most economical alternative, especially when maintenance and life-cycle costs are considered. This conclusion is based upon previous reports (ODOT, 2010; Lucas County Engineer, 2002; Burgess & Niple, Ltd., 1987) and upon CB&A observations, consultation with contractors and suppliers, and estimated costs for the different alternatives.

For the new bridge construction, several alternatives were considered with two different pier spacings (see *Design Alternatives Considered,* page 5). The apparent most economical alternative appears to be the Prestressed Concrete, Modified AASHTO Type IV I-Beams with new piers at the same locations as the existing bridge piers, on the existing footings (re-using existing footings).

The estimated total project cost (order of magnitude) is approximately $7.9 Million, which includes a total construction cost of approximately $5.7 Million, including total demolition costs of approximately $1.2 Million. This estimated cost is based on the Prestressed Concrete I-Beam option mentioned above (see Figure 1, Page 8).

Any new structure will be subject to permitting and/or review by a number of agencies, including the US Coast Guard; the Ohio Office of Historical Preservation; the Ohio Department of Transportation; and other authorities. Permitting time varies widely by project; 12 to 15 months is a reasonable expectation for this project. Either ODOT or the US Coast Guard could be the lead agency for permitting, most likely ODOT.

BACKGROUND

The proposed project is part of a planned, 11.6-mile bicycle and pedestrian path in Lucas and Wood Counties, land for which was purchased from CSX Railroad by the Metroparks of Toledo in October of 2011, in cooperation with the City of Toledo, The Trust for Public Land, the University of Toledo, the Wood County Port Authority and the Wood County Park District. Parts of the proposed trail, known as the "Westside Corridor," have been parceled off to the five agencies, with the Wood County Port Authority controlling that portion between River Road in the City of Toledo and SR-65 in Wood County, which includes the Maumee River crossing.

The entire 11.6-mile corridor starts East of Bates Road in Perrysburg Township (just outside the City of Rossford) and ends at Laskey Road just East of Jackman Road in the City of Toledo.

The Toledo Metropolitan Area Council of Governments (TMACOG) has established a Westside Coordinating Committee (WCC) to coordinate overall development of the Westside Corridor. The WCC has recommended that the path improvements be done in five (5) phases, with the first phase recommended for development being the Maumee River Crossing by the Wood County Port Authority (WCPA).

As the first step toward programming this first-phase project, the WCPA engaged Claude Brown & Associates to prepare this planning-level report to address the following:

- Recommend preliminary design requirements for the project;
- Consider construction options and recommend the most economical alternative;
- Develop order of magnitude of cost for construction and project overall, along with an estimate of the local share;
- Discuss future permitting and programming issues with TMACOG, ODOT, and US Coast Guard;
- Present recommendations and anticipated issues and/or options as project moves forward to programming and design.

RECOMMENDATIONS and CONCLUSIONS

1. *Rehabilitation* – After reviewing the previous reports and the estimated costs for rehabilitating the existing superstructure and substructures, it appears that the costs, uncertainties, and future maintenance issues with rehabilitating the existing structure make it the least desirable alternative (See Figure 1, Page 8 and Figure 2, Page 9)

2. *Removal and Replacement* – The existing Railroad Bridge superstructure (steel trusses and deck framing), piers, and abutments, should be removed and replaced with a new structure, re-using the existing pier footings.

3. *Apparent Most Economical Alternative* – The apparent most economical alternative is the Prestressed Concrete I-Beam option (Alternative #1; see Figure 1, Page 8). This Alternate should be pursued as the "Preferred Alternate" in the Programming/Permitting process (Item 5 Below)

4. *Additional Testing, Inspections, and Investigations* – All of the alternate designs, except the concrete box beam option, assume re-use of all existing pier footings. Therefore, further investigation may be required in order to determine existing conditions, including any scouring issues, before final design commences.

   Reference should be made to the ODOT Bridge Design Manual (BDM), Section 403, *Concrete Repair/Restoration,* which is included in the Appendix.

5. *Permitting* – The programming and permitting process should be initiated with ODOT as soon as possible by programming the project.

PRELIMINARY DESIGN REQUIREMENTS

1. *Trail Standard* – The trail design consists of a 12'-wide asphalt surface with ¼" per foot maximum cross-slope, per *ODOT Design Guidance for Bicycle Facilities,* by the Office of Local Projects of the Ohio Department of Transportation. Maximum longitudinal grade is 4%. The trail must comply with all relevant ADA requirements. For estimating purposes, the pavement section was assumed to consist of a 3-inch layer of asphalt concrete over an 8-inch layer of compacted stone.

2. *Deck Width* – Bridge Deck should provide 14 feet clear width, per *ODOT Design Guidance for Bicycle Facilities.*

3. *Deck Slope* – Per ODOT *Bridge Design Manual*:
   a. Per Section 209.9 - Minimum Transverse Slope = ¼" per foot (preferably in one direction)
   b. Per Section 209.3 – Minimum Longitudinal Slope (with Parapets) = 0.3%

4. *Design Loading*:
   a. Per *AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges*:
      i. Pedestrian Loading* — 90 lb. per square ft.
      ii. Vehicle Loading* — H-10
      * Considered Separately (non-Concurrent)

   b. Per ODOT *Bridge Design Manual*
      i. Vehicle Loading * (301.4.2) — H15-44
      ii. Future Wearing Surface (302.1.3.2) — 60 lb per square ft.
      * Considered separately from AASHTO Pedestrian Loading

   c. Other Loadings:
      i. Allow for Future Utilities (suggested) — 5-10 lb. per sq. ft.

5. *Railings* – Railings should be 54" (4'-6") in height, per *ODOT Design Guidance for Bicycle Facilities.* The standard 42" ODOT Twin-Tube Bridge Railing with Concrete Parapets was adapted for the cost estimates that follow, except for the Steel Truss Alternative. (see Detailed Estimate Sheets in the Appendix)

6. *Waterway Clearances/Hydraulics* – per the US Coast Guard Ninth District Office, the vertical clearance to Low Water should match the minimum clearance of the existing Ohio Turnpike crossing to the Southwest. The required horizontal clearances will depend upon placement of the center pier; if the existing center pier location is re-used – which is proposed in all of the alternatives considered – there should be 65 feet clear on either side of the center pier. If there is no pier at the center of the span to split the navigable channel, there should be 100 feet horizontal clearance between obstructions. These clearances are subject to final approval through the US Coast Guard permitting process. All of the proposed

design alternatives comply with these clearances.

There are no apparent issues due to this project in regard to the River Hydraulics.

7. *Trail Connections* – In Wood County, the proposed bike/hike trail will connect to SR-65 (River Rd.), which is under consideration for paved bike berms (no programming). In Lucas County, the trail connects to a signed bike route along River Rd.

8. *Tentative Schedule for Estimating Purposes*

Program, Environmental Clearance & Detailed Construction Plans	30 months
Utility Relocation, Structure Removal, & New Construction	24 months
	54 Months

DESIGN ALTERNATIVES CONSIDERED

Five design alternatives were considered (costs for each option are summarized in Figure 1, Page 8). All of the alternates considered re-use the existing footings with the same pier spacing/locations as the existing CSXRR Bridge, with the exception of the Concrete Box Beam option, for which shorter spans were needed. Rehabilitation of the existing steel-truss superstructure was not considered. As has been discussed in previous reports, this option does not appear to be a practical alternative for numerous reasons. The design alternatives were (See Drawings in the Appendix, pp. 24-27):

1. *Prestressed Concrete I-Beams* – An AASHTO (ODOT) Modified Type IV (66″) was used in this alternate. This alternate appears to be the most economical initial construction cost. It would also have the lowest ongoing maintenance (life-cycle) costs. Most of these beams would be 145 feet in length and weigh approximately 69 tons. The Precast Fabricator consulted for this report indicated that beams of this size could be

transported to this site. However, this is near the maximum practical limit that can be hauled and handled, and further investigation needs to be done in order to verify that beams of this size can be transported to the site. *(See Page 18 for Detailed Costs).*

2. *Steel Girders* – A preliminary composite design (per the AASHTO LRFD Specification for the Design of Pedestrian Bridges) indicated an approximate rolled beam size of W44x290, which was used for estimating purposes. It may be that a plate girder design is more practical, and verification of the availability and cost of such a large rolled section should be verified. Additional design investigations need to be done in order to verify and complete this design. These girders would be spliced in order to make hauling and handling much easier than the concrete beam alternatives. *(See Page 19 for Detailed Costs).*

3. *Steel Trusses* – A preliminary design and prices were obtained from two different suppliers for this alternate. This alternate might be considered the best from the standpoints of aesthetics, project schedule, and constructability. *(See Page 20 for Detailed Costs). (See Photo, Appendix Page 28)*

4. *Prestressed Concrete Box Beams* – This alternative was limited by the manufacturers' recommended maximum span length of approximately 100 feet. Accordingly, only the center-pier footing was re-used and all other piers and footings were at new locations using maximum 100-foot spans. The advantage of this design is that the deck thickness can be reduced and there is much less deck forming required, thereby reducing deck costs significantly. The estimated additional demolition costs for this alternative arise from extra cofferdams and/or underwater demolition work and removal of the existing footings. *(See Page 21 for Detailed Costs).*

5. *Prestressed Concrete I-Beams on the Existing Piers and Footings with Rehabilitation and Extension of the Existing Piers* – This alternate would obviously have the most uncertainty concerning costs. In previous reports, these piers have been described as "wall piers." The rehabilitation issue is not a structural issue, but a question of the amount of work (and thus cost) that needs to be done in order to patch and reconstruct the existing concrete surfaces to prevent further deterioration and result in a new, lasting, durable surface. (See Existing Structure Photos in the Appendix) [Note: The maximum total unfactored vertical load per pier is

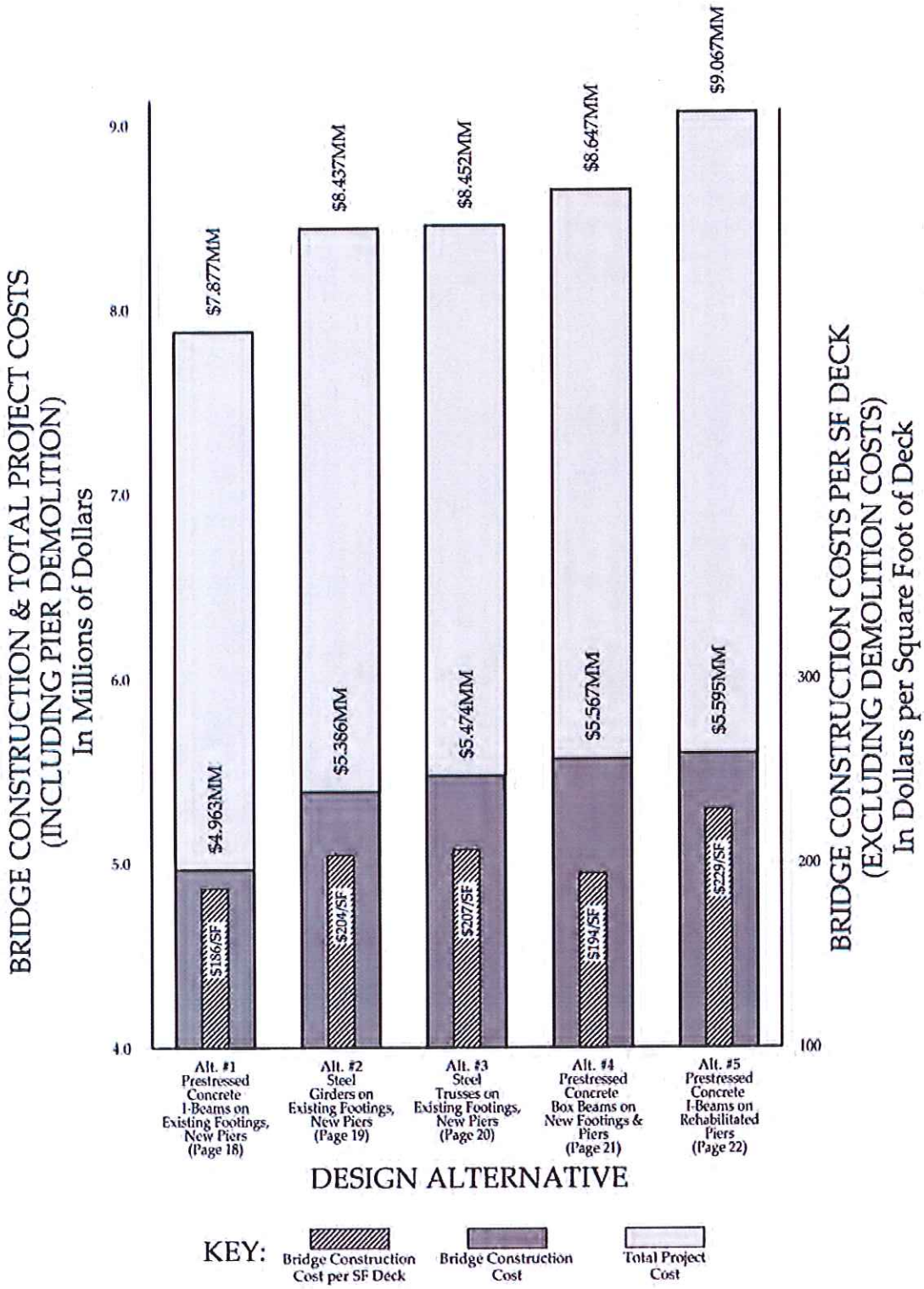
approximately 1,200 kips, neglecting lateral loads; assuming a 12" thickness for the pier wall, this translates to only approximately 160 psi (compression) in the wall]. *(See Page 22 for Detailed Costs).*

By re-using the existing footings (Alternatives #1, #2, #3, and #5), cofferdams can be used for demolition of the existing piers as well as construction of the new piers.

Steel alternatives, either girders or trusses, would use ASTM A709 (or A588) - 50W (weathering) steel, which would not have to be painted. This produces a significant savings in maintenance costs; however, this type of steel has been known to cause staining on concrete piers as rainwater runs off the steel and down the pier. This is not a structural issue but could be an aesthetic problem. This issue can be addressed by partial painting of girders or trusses.

It should be noted that the spans (126 feet to 145 feet) between the existing pier locations exceed the typical maximum recommended span lengths for precast I-Beams and rolled-section steel girders (per ODOT Bridge Design Manual).

Figure 1.
Bar Graph of Construction and Total Project Costs



ALTERNATE PROJECT COSTS

Figure 2.
Planning-Level Project Costs

Item	Alternate 1	Alternate 2	Alternate 3	Alternate 4	Alternate 5
	Use Existing Pier Locations (New Piers on Existing Footings)			*Use New Pier Locations*	*Rehabilitate Ex. Piers*
	Conc I-Beam	Steel Girder	Steel Truss	Conc Box Beam	Conc I-Beam
Project Mgmt/ Environmental Clearance	$200,000	$200,000	$200,000	$200,000	$225,000
Design/Survey & Testing	$485,000	$485,000	$400,000	$485,000	$600,000
Right-of-Way	$392,000	$392,000	$392,000	$392,000	$392,000
Superstructure Demolition	$700,000	$700,000	$700,000	$700,000	$700,000
Construction (Bridge)	$4,900,000	$5,400,000	$5,500,000	$5,600,000	$5,600,000
Construction (Trail)	$100,000	$100,000	$100,000	$100,000	$100,000
Construction Total (Bridge + Demo + Trail)	$5,700,000	$6,200,000	$6,300,000	$6,400,000	$6,400,000
Contingency*	$400,000	$425,000	$425,000	$435,000	$600,000
Testing & Inspection (ODOT)	$700,000	$735,000	$735,000	$735,000	$850,000
TOTAL	$7,877, 000	$8,437,000	$8,452,000	$8,647,000	$9,067,000
Order of Magnitude Cost	$7,900,000	$8,500,000	$8,500,000	$8,700,000	$9,100,000

* The contingency includes approximately 5% for Construction (except Alternate #5, which includes 7%) plus a lump sum of $115,000 for Navigation Lighting, bicycle racks, planting buffers, landscaping, fencing of abutting residential properties, and decorative uplighting of the bridge.
NOTE: The $50,000 contingency for bicycle and landscaping features might be performed by locals and used as a match. Costs for a trail head parking area were not considered.

Figure 3.
Alternate Matrix

Key: 1 – Best; 2 – Good; 3 – Adequate; 4 – Poor

Factor	Alternate 1	Alternate 2	Alternate 3	Alternate 4	Alternate 5
	Use Existing Pier Locations (New Piers on Existing Footings)			*Use New Pier Locations*	*Rehabilitate Ex. Piers*
	Conc I-Beam	Steel Girder	Steel Truss	Conc Box Beam	Conc I-Beam
Cost	1	3	2	3	4
Aesthetics	2	2	1	2	2
Maintenance	1	3	3	2	4
Useful Life	1	1	2	1	4
Schedule	1	1	1	2	4
TOTAL	***6***	***10***	***9***	***10***	***18***

Notes:

No Public Input at this time

Factors were given equal weight

FUTURE PROGRAMMING and ESTIMATE of LOCAL COST

Figure 4.
Costs and Local Share

	Current Estimate	Projected Estimate *(See Notes Below)*	Local Share
Project Mgmt/ Environmental Clearance	$200,000	$200,000	$200,000 (100%)
Design/Survey	$460,000	$460,000	$460,000 (100%)
Right-of-Way	$392,000	$392,000	$392,000 (100%)
Superstructure Demolition	$700,000	$735,000*	$0 (0%)
Construction (Bridge)	$5,400,000	$5,950,000 LESS $1,265,000** $4,685,000	$937,000 (20%)
Construction (Trail)	$100,000	$110,000	$22,000 (20%)
Construction Total	$6,200,000	$6,795,000	
Contingency	$425,000	$465,000	$93,000 (20%)
Testing & Inspection (ODOT)	$720,000	$735,000	$147,000 (20%)
TOTAL (ROUNDED)	$8,400,000	$9,050,000	$2,251,000 (25%)

* 100% Federal

**Federal Funds Available = $2,000,000 - $735,000 (Demo) = $1,265,000
Additional Funds Needed = $9,000,000 - $2,251,000 (Local) = $6,749,000
$6,749,000 - $2,000,000 (Available) = $4,749,000

Notes:

- Projected Estimate is based on the tentative schedule of 54 months with increases due to inflation
- Estimated local share equals $2,251,000 less $392,000 R/W = $1,859,000
- Local Share equals Approximately 25%
- Local Funding (Now) $660,000
  Local Funding (Two Years) $1,199,000
  Total $1,859,000
- Future Programming: A figure of $9,000,000 is suggested.

OTHER DESIGN ISSUES/CONSIDERATIONS

1. *Permitting* – Contact has been made with the United States Coast Guard (USCG), Ohio Department of Transportation (ODOT), and the Toledo Metropolitan Council of Governments (TMACOG). ODOT will most likely be the lead agency for permitting this project (lead agency is determined after the application is received and a meeting of permitting agencies has taken place). The ODOT permit acts an "umbrella" under which all other relevant agencies' permits will fall. Other permitting entities, such as the State Office of Historical Preservation, the American Council on Historic Preservation, the Ohio Department of Natural Resources, the United States Environmental Protection Agency, and the US Army Corps of Engineers, among others, report their approvals to the lead agency, who, having examined the application for compliance with their own requirements, issues the permit. The lead agency can process their portion of the application concurrently with the other agencies, but cannot actually issue the permit until all other authorities have signed off.

   The typical period from initial programming with ODOT to issuance of a permit for a project such as this is approximately 12 to 15 months, including a legally-required 30-day period for public notice and comment (Refer to flowchart of the ODOT Project Development Process [PDP], which appears in the Appendix on Page 32). The time required to obtain a permit can vary widely, depending particularly upon the Historical and Environmental findings.

   For further explanation of the permitting process, reference should be made to Section 203.4 of the ODOT *Bridge Design Manual* (BDM) and Appendix Page 32.

   The Trust for Public Land prepared an environmental document pursuant to the right of way purchase. This document will be a great help in obtaining clearance for demolition and construction in the Maumee River.

   The programming and permitting process should be initiated with ODOT as soon as possible by programming the project.

2. *Construction Schedule/Phasing* – A tentative schedule of 54 months was established for estimating purposes (see Preliminary Design Requirements, Page 5), including two construction seasons, which is very

aggressive for a project not yet programmed and with uncertain funding.

It should be noted that the annual Walleye spawning season will limit the construction schedule.

Consideration was given to splitting the removal (superstructure and/or piers) as a separate construction phase. Normally, demolition contractors are subcontractors rather than general contractors; considering the bonding requirements, mobilization cost, permitting requirements, material delivery time, and other issues, one contract for construction, including demolition, appears to be the most cost effective approach.

3. *Testing and Inspection* – It appears that use of the existing footings is possible, but additional inspections/testing of the footing(s) that are proposed for re-use may be required in order to verify that they are in satisfactory condition. Footing(s) to be re-used should also be examined for evidence of scour.

4. *Utilities/Easements* - The only utility directly attached to the existing CSXRR Bridge are de-energized, out-of-service electric conductors owned by Toledo Edison. This line can be removed when the existing steel superstructure is dismantled. Care should be taken to confirm the line is de-energized before any work begins.

   The most obvious utility in the project area is a high-voltage transmission line owned by Toledo Edison. This line crosses the Maumee River between the existing CSXRR Bridge and the adjacent Ohio Turnpike Bridge. This line should not interfere with proposed construction, but as a potential overhead obstruction, contractors will have to plan and take care to avoid it when using cranes.

   The project site property is subject to an easement to Toledo Edison recorded in Volume 671, Page 460.

   A 48" Water Main crosses the Maumee River near the project site, beneath the channel bottom, running between the existing CSXRR and Ohio Turnpike Bridges, approximately coincident with the center of the electric transmission line above. This water line should not interfere with any proposed construction activity. The line jogs to the Northeast on the Wood County side, but is far enough off the proposed centerline of the

multi-use trail so as to present no anticipated problems. The property is subject to the requirements of the Water Main Agreement between the City of Toledo and Perrysburg Township, dated December 20, 2000.

Portions of the property on the Wood County side (Parcel #P60-300-701400950101) are subject to an easement for drainage recorded in Volume 243, Page 91, Wood County Records.

A storm drain outlet crosses the property on the Lucas County side (Parcel #15-99001); no known easement is recorded, but the pipe, located to the Northeast of the existing and proposed structures, is far enough away to present no anticipated problems.

Provisions for future utilities should be considered in the final bridge design. An allowance of 5 to 10 pounds per square foot is suggested.

5. *Grades and Drainage* – The grades shown on the conceptual design used for cost estimates are preliminary and may not be final design grades. The grades were controlled by the Lucas County approach. The bridge deck elevation was established by limiting the trail to a 4% slope between River Road and the bridge.

   Setting the deck elevation based on the slope of the incoming trail results in an elevation higher than would be required to meet the minimum channel clearances. The deck grade used for these preliminary estimates dictated a pier height several feet higher than would be needed to meet the minimum navigation clearances, and indeed higher than any of the existing piers except the center pier.

   The final longitudinal grades of the bridge deck may be influenced by the drainage system of the deck and could affect the final pier heights. For estimating purposes, all of the pier heights were assumed to be the same for each alternate design.

   Scuppers spaced at approximately 100 feet on each side of the deck were priced for estimating purposes. The stormwater drainage from the bridge could be an issue with the OEPA and should be considered in the final design and permitting.

6. *Viewing Decks* – Eight viewing decks are shown in the conceptual drawings and included in the cost estimates. The suggested size is approximately 5 feet by 15 feet. The viewing decks could also serve as "rest" areas, with space for a bench and bike rack. Cost per viewing deck is estimated at $10,000 to $15,000 each.

7. *Design-Build* – Typically, Design-Build is used when a project has an aggressive schedule and flexible design alternatives and construction methods are desired. In this area, the design-build project delivery system is mostly used in the private sector. Therefore, the traditional method of consultant selection, design, and bidding would be the best option.

8. *Aesthetics* – No recommendation is made regarding the best type of structure from an aesthetic standpoint; this determination will be made at a later date, most likely with public input.

   The preliminary design standards being reviewed for adoption by the Westside Coordination Committee (seven Agencies) were reviewed and a lump-sum amount was added (see Contingency, Figure 2, Page 9) for these standard features and plantings. In the 66-foot-wide Right of Way section, the standards being considered leave adequate space for landscaping/plantings/fencing.

9. *Street Lighting* – Cost estimates do not include any street lighting.

10. *Signature Bridge* – The suggested programming cost of $9,000,000 for the project does not include the cost of a "Signature"-type bridge. With unknown Federal funding of $4.75 million, this option was not pursued further for this study. An estimated additional cost of $350,000 would be a good construction budget number for an ornamental rail similar to the Summit Street bridge over the Ottawa River in the City of Toledo. This added to the apparent most economical alternative of Alternate 1 (Concrete I-Beam) means the options of Alternate 2 (Steel Beam) and Alternate 3 (Steel Truss) are three good options with which to proceed at a reasonable cost.

METHODOLOGY AND LIMITATIONS

Except as noted below, costs shown in the detailed estimates were taken from Bid and Item data in the Ohio Department of Transportation's Construction Management System. This system is updated daily with actual bid prices for each ODOT item.

Within the data for each ODOT item, projects similar in scope to the proposed pedestrian bridge (ie, similar quantities for a particular item) were selected, and the average bid price for that item in those projects was the cost used for this report.

Other sources of cost data include the Ohio Prestresser's Association (costs for Prestressed Concrete Box Beams and I Beams); Contractors and Fabricators (Demolition, Structural Steel, Concrete Rehabilitation); RS Means Construction Cost Data (Cofferdams); and Steel Truss Suppliers (Steel Truss options).

Costs were projected (adjusted for inflation) using data from the January, 2012 report of the ODOT Bid Analysis and Review Team.

Users of this report should be aware of the following limitations:

- All designs used for estimating purposes are preliminary in nature and a compete detailed design was not performed.
- Costs are based on these preliminary designs and are thus approximations to be used for planning and budgeting purposes only.
- Cost projections are based upon the best estimates available at this time, but are obviously subject to change with economic conditions.
- Existing conditions should be verified, particularly as relate to the existing concrete footings and any other existing items that may be re-used or rehabilitated. If the footings have deteriorated and cannot be re-used, this will add to the project costs.
- Any grades shown were taken from record drawings and are approximate. Different record sources may have used different datum references. No surveying work was performed for this report. All grades should be verified before design work advances.
- Cofferdam costs could vary significantly due to the existing conditions (especially water depth) at the time of construction, and due to the construction methods used.

- It should be noted that the drawings for the existing railroad bridge that were provided to CB&A did NOT include the original construction drawings for the existing piers and footings.
- Demolition and Rehabilitation costs can vary widely due to many factors, and actual bid costs may differ significantly from the assumptions in this report.

REFERENCES USED

References used in the preparation of this report include:

- Original Drawings for the Steel Truss Superstructure of the Existing CSXRR Bridge, by American Bridge Company, 1901
- Pier Repair Drawings for the existing bridge, by Toledo Terminal RR Co., 1926
- Drawing of Boundary Survey of subject area by Zaranec Surveying Co., dated 7/7/2011.
- *ODOT Design Guidance for Bicycle Facilities*, by the Office of Local Projects of the Ohio Department of Transportation, October, 2005
- *AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges*, American Association of State Highway and Transportation Officials
- *AASHTO LRFD Bridge Specifications*, 4th Edition, 2007 (with 2008 Interim Revisions)
- *ODOT Bridge Design Manual (BDM) 2007* (Note: Section 403 of the 2007 BDM refers users to Section 403 of the 2004 BDM).
- *Subaqueous Repair Cost Estimate for the River Piers of the CSX Railroad Upriver Bridge over the Maumee River, Lucas County, Ohio*, by Burgess & Niple, Limited, 1987.
- *Preliminary Report: Proposed Backside Trail on the Abandoned CSX Railroad over the Maumee River*, Office of the Lucas County Engineer, 2002
- ODOT Inter-Office Communication RE: *Toledo – CSX RR Corridor – Environmental Procedure Assessment of Rail Bridge over the Maumee River*, from the ODOT Office of Structural Engineering, dated Feb. 16, 2010

CB&A STAFF (AUTHORS OF THIS REPORT)

Claude M. Brown III, P.E.
Mark O'Dell, P.E.
John H. Crandall

Multi-Use Trail River Crossing at Abandoned CSXRR Bridge

Alternate #1

PLANNING LEVEL ESTIMATE for

PRESTRESSED CONCRETE I-BEAM BRIDGE

WITH **NEW PIERS** AT SAME LOCATION AS EXISTING BRIDGE PIERS, ON EXISTING FOOTINGS

March, 2012

ITEM	DESCRIPTION	UNIT	QTY	UNIT COST	EXTENSION
201	Clearing & Grubbing	LUMP	1	$ 20,900.00	$20,900
202	Structure Removed (Ex. Piers & Abutments Only)	LUMP	1	$ 500,000.00	$500,000
503	Shale Excavation	CY	100	$ 264.00	$26,400
503	Cofferdams, Cribs, Sheeting	LUMP	1	$ 500,000.00	$500,000
503	Unclassified Excavation	LUMP	1	$ 7,386.00	$7,386
505	Pile Driving Equipment Mobilization	LUMP	1	$ 18,500.00	$18,500
507	HP 12x53 Bearing Piles, Furnished	FT	1212	$ 23.29	$28,227
507	HP 12x53 Bearing Piles, Driven	FT	1212	$ 10.76	$13,041
509	Epoxy Coated Rebar	LB	357296	$ 0.83	$296,556
511	Class S Concrete, Superstructure	CY	713	$ 560.00	$399,280
511	Class C Concrete, Piers Above Footings	CY	1372	$ 490.00	$672,280
511	Class C Concrete, Abutments Incl. Ftgs	CY	105	$ 580.00	$60,900
511	Class C Concrete, Footings	CY	45	$ 352.00	$15,840
512	Sealing of Concrete (Epoxy-Urethane)	SY	6142	$ 12.64	$77,635
513	Steel Plate at Icebreakers	LB	124965	$ 0.95	$118,717
513	Steel for Viewing Decks	LB	14400	$ 2.95	$42,480
515	AASHTO Mod Type IV I Beams (66")	LF	4488	$ 300.00	$1,346,400
515	Diaphragms	EA	98	$ 1,100.00	$107,800
516	Preformed Elastomeric Compr or Exp. Joint	LF	176	$ 30.00	$5,280
516	Elastomeric Bearings w/ Internal Laminate	EA	72	$ 229.00	$16,488
517	Railing (Concrete Parapet w/ HSS) As Per Plan	LF	3068	$ 105.00	$322,140
518	Scuppers	EA	30	$ 1,214.00	$36,420
518	Drip Strip	LF	2988	$ 8.15	$24,352
619	Field Office, Type B	LUMP	1	$ 10,200.00	$10,200
623	Construction Layout Stakes	LUMP	1	$ 6,200.00	$6,200
624	Mobilization	LUMP	1	$ 283,130.00	$283,130
646	Striping	LUMP	1	$ 6,500.00	$6,500
	TOTAL				**$4,963,052**

Note: $4,963,052 - $500,000 (demo) = $4,463,052 / 24,000 SF Deck Area = $186±/SF

Multi-Use Trail River Crossing at Abandoned CSXRR Bridge

Alternate #2
PLANNING LEVEL ESTIMATE for
STEEL-GIRDER BRIDGE
WITH **NEW PIERS** AT SAME LOCATION AS EXISTING BRIDGE PIERS, ON EXISTING FOOTINGS
March, 2012

ITEM	DESCRIPTION	UNIT	QTY	UNIT COST	EXTENSION
201	Clearing & Grubbing	LUMP	1	$ 20,900.00	$20,900
202	Structure Removed (Piers & Abutments Only)	LUMP	1	$ 500,000.00	$500,000
503	Cofferdams, Cribs, Sheeting	LUMP	1	$ 500,000.00	$500,000
503	Unclassified Excavation	LUMP	1	$ 7,386.00	$7,386
505	Pile Driving Equipment Mobilization	LUMP	1	$ 18,500.00	$18,500
507	HP 12x53 Bearing Piles, Furnished	FT	1212	$ 23.29	$28,227
507	HP 12x53 Bearing Piles, Driven	FT	1212	$ 10.76	$13,041
509	Epoxy Coated Rebar	LB	357296	$ 0.83	$296,556
511	Class S Concrete, Superstructure	CY	712	$ 560.00	$398,720
511	Class C Concrete, Piers Above Footings	CY	1372	$ 490.00	$672,280
511	Class C Concrete, Abutments Incl. Ftgs	CY	105	$ 580.00	$60,900
511	Class C Concrete, Footings	CY	45	$ 352.00	$15,840
512	Sealing of Concrete (Epoxy-Urethane)	SY	5564	$ 12.64	$70,329
513	Steel Beams, Cross Frames	LB	1346675	$ 1.40	$1,885,345
513	Steel Plate at Icebreakers	LB	124965	$ 0.95	$118,717
513	Welded Shear Studs	EA	7475	$ 2.58	$19,286
513	Steel for Viewing Decks	LB	14400	$ 2.95	$42,480
516	Preformed Elastomeric Compr./Exp. Joint	LF	176	$ 30.00	$5,280
516	Rocker Bearing Device	EA	6	$ 1,461.30	$8,768
516	Elastomeric Bearings w/ Internal Laminate	EA	66	$ 229.00	$15,114
517	Railing (Concrete Parapet w/ HSS) As Per Plan	LF	3068	$ 105.00	$322,140
518	Scuppers	EA	30	$ 1,214.00	$36,420
518	Drip Strip	LF	2988	$ 8.15	$24,352
619	Field Office, Type B	LUMP	1	$ 10,200.00	$10,200
623	Construction Layout Stakes	LUMP	1	$ 6,200.00	$6,200
624	Mobilization	LUMP	1	$ 283,130.00	$283,130
646	Striping	LUMP	1	$ 6,500.00	$6,500
	TOTAL				**$5,386,610**

Note: $5,386,610 - $500,000 (demo) = $4,886,610 / 24,000 SF Deck Area = $204±/SF

Multi-Use Trail River Crossing at Abandoned CSXRR Bridge

Alternate #3

PLANNING LEVEL ESTIMATE for

STEEL TRUSS BRIDGE by WHEELER CO.

WITH NEW PIERS AT SAME LOCATION AS EXISTING BRIDGE PIERS, ON EXISTING FOOTINGS

March, 2012

ITEM	DESCRIPTION	UNIT	QTY	UNIT COST	EXTENSION
201	Clearing & Grubbing	LUMP	1	$ 20,900.00	$ 20,900
202	Structure Removed (Piers & Abutments Only)	LUMP	1	$ 500,000.00	$ 500,000
503	Cofferdams, Cribs, Sheeting	LUMP	1	$ 500,000.00	$ 500,000
503	Unclassified Excavation	LUMP	1	$ 7,386.00	$ 7,386
505	Pile Driving Equipment Mobilization	LUMP	1	$ 18,500.00	$ 18,500
507	HP 12x53 Bearing Piles, Furnished	FT	1212	$ 23.29	$ 28,227
507	HP 12x53 Bearing Piles, Driven	FT	1212	$ 10.76	$ 13,041
509	Epoxy Coated Rebar	LB	281774	$ 0.83	$ 233,872
511	Class S Concrete, Superstructure	CY	400	$ 390.00	$ 156,000
511	Class C Concrete, Piers Above Footings	CY	1428	$ 490.00	$ 699,720
511	Class C Concrete, Abutments Incl. Ftgs	CY	105	$ 580.00	$ 60,900
512	Sealing of Concrete (Epoxy-Urethane)	SY	2390	$ 12.64	$ 30,210
513	Steel Trusses, Supplied	LUMP	1	$ 1,900,000.00	$ 1,900,000
513	Steel Trusses, Installed	LUMP	1	$ 794,000.00	$ 794,000
513	Steel Plate at Icebreakers	LB	124965	$ 0.95	$ 118,717
516	Preformed Elastomeric Compression Joint	LF	75	$ 27.00	$ 2,025
516	Rocker Bearing Device	EA	6	$ 1,461.30	$ 8,768
516	Elastomeric Bearings w/ Internal Laminate	EA	66	$ 229.00	$ 15,114
518	Scuppers	EA	30	$ 1,214.00	$ 36,420
518	Drip Strip	LF	2988	$ 8.15	$ 24,352
619	Field Office, Type B	LUMP	1	$ 10,200.00	$ 10,200
623	Construction Layout Stakes	LUMP	1	$ 6,200.00	$ 6,200
624	Mobilization	LUMP	1	$ 283,130.00	$ 283,130
646	Striping	LUMP	1	$ 6,500.00	$ 6,500
	TOTAL				**$ 5,474,182**

Note: $5,474,182 - $500,000 (demo) = $4,974,182 / 24,000 SF Deck Area = $207±/SF

Multi-Use Trail River Crossing at Abandoned CSXRR Bridge

Alternate #4

PLANNING LEVEL ESTIMATE for

PRESTRESSED CONCRETE BOX BEAM BRIDGE

WITH NEW PIERS & NEW FOOTINGS AT NEW LOCATIONS (100-FOOT MAX. SPANS)

March, 2012

ITEM	DESCRIPTION	UNIT	QTY	UNIT COST	EXTENSION
201	Clearing & Grubbing	LUMP	1	$ 20,900.00	$20,900
202	Structure Removed (Ex. Piers, Abutmts, Ftgs)	LUMP	1	$ 900,000.00	$900,000
503	Shale Excavation	CY	100	$ 264.00	$26,400
503	Cofferdams, Cribs, Sheeting	LUMP	1	$ 500,000.00	$500,000
503	Unclassified Excavation	LUMP	1	$ 7,386.00	$7,386
505	Pile Driving Equipment Mobilization	LUMP	1	$ 18,500.00	$18,500
507	HP 12x53 Bearing Piles, Furnished	FT	1212	$ 23.29	$28,227
507	HP 12x53 Bearing Piles, Driven	FT	1212	$ 10.76	$13,041
509	Epoxy Coated Rebar	LB	370817	$ 0.83	$307,778
511	Class S Concrete, Superstructure*	CY	532	$ 390.00	$207,480
511	Class C Concrete, Piers Above Footings	CY	1973	$ 490.00	$966,770
511	Class C Concrete, Abutments Incl. Ftgs	CY	105	$ 580.00	$60,900
511	Class C Concrete, Footings	CY	307	$ 352.00	$108,064
512	Sealing of Concrete (Epoxy-Urethane)	SY	6142	$ 12.64	$77,635
513	Steel Plate at Icebreakers	LB.	180505	$ 0.95	$171,480
513	Steel for Viewing Decks	LB	14400	$ 2.95	$42,480
515	42x48w Prestressed Conc Box Beams	LF	5984	$ 232.00	$1,388,288
516	Preformed Elastomeric Compr or Exp Joint	LF	240	$ 30.00	$7,200
516	Elastomeric Bearings w/ Internal Laminate	EA	96	$ 229.00	$21,984
517	Railing (Concrete Parapet w/ HSS) As Per Plan	LF	3068	$ 105.00	$322,140
518	Scuppers	EA	30	$ 1,214.00	$36,420
518	Drip Strip	LF	2988	$ 8.15	$24,352
619	Field Office, Type B	LUMP	1	$ 10,200.00	$10,200
623	Construction Layout Stakes	LUMP	1	$ 10,200.00	$10,200
624	Mobilization	LUMP	1	$ 283,130.00	$283,130
646	Striping	LUMP	1	$ 6,500.00	$6,500
	TOTAL				**$5,567,456**
	* Since limited conc formwork req'd pricing is at the lower end of bids for this work item				

Note: $5,567,456 - $900,000 (demo) = $4,667,456 / 24,000 SF Deck Area = $194±/SF

Multi-Use Trail River Crossing at Abandoned CSXRR Bridge

Alternate #5
PLANNING LEVEL ESTIMATE for
PRESTRESSED CONCRETE I-BEAM BRIDGE
WITH EXISTING PIERS REHABILITATED
March, 2012

ITEM	DESCRIPTION	UNIT	QTY	UNIT COST	EXTENSION
201	Clearing & Grubbing	LUMP	1	$ 20,900.00	$ 20,900
202	Structure Removed - Ex. Railroad Truss	LUMP	1	$ -	$ -
202	Structure Removed - Piers (Partial) & Abutments	LUMP	1	$ 100,000.00	$ 100,000
503	Cofferdams, Cribs, Sheeting	LUMP	1	$ 500,000.00	$ 500,000
503	Unclassified Excavation	LUMP	1	$ 7,386.00	$ 7,386
505	Pile Driving Equipment Mobilization	LUMP	1	$ 18,500.00	$ 18,500
507	HP 12x53 Bearing Piles, Furnished	FT	1212	$ 23.29	$ 28,227
507	HP 12x53 Bearing Piles, Driven	FT	1212	$ 10.76	$ 13,041
509	Epoxy Coated Rebar	LB	268967	$ 0.83	$ 223,243
511	Class S Concrete, Superstructure	CY	712	$ 560.00	$ 398,720
511	Class C Concrete, Piers Above Footings	CY	300	$ 490.00	$ 147,000
511	Class C Concrete, Abutments Incl. Ftgs	CY	105	$ 580.00	$ 60,900
511	Class C Concrete, Footings	CY	0	$ 352.00	$ -
512	Sealing of Concrete (Epoxy-Urethane)	SY	5564	$ 12.64	$ 70,329
513	Steel for Viewing Decks	LB	14400	$ 2.95	$ 42,480
515	AASHTO Mod Type IV I Beams (66")	LF	4488	$ 300.00	$ 1,346,400
515	Diaphragms	EA	98	$ 1,100.00	$ 107,800
516	Preformed Elastomeric Compr/Exp Joint	LF	176	$ 30.00	$ 5,280
516	Elastomeric Bearings w/ Internal Laminate	EA	72	$ 229.00	$ 16,488
517	Railing (Concrete Parapet w/ HSS) As Per Plan	LF	3068	$ 105.00	$ 322,140
518	Scuppers	EA	30	$ 1,214.00	$ 36,420
518	Drip Strip	LF	2988	$ 8.15	$ 24,352
520	Pneumatically Placed Mortar	SF	30000	$ 60.00	$ 1,800,000
619	Field Office, Type B	LUMP	1	$ 10,200.00	$ 10,200
623	Construction Layout Stakes	LUMP	1	$ 6,200.00	$ 6,200
624	Mobilization	LUMP	1	$ 283,130.00	$ 283,130
646	Striping	LUMP	1	$ 6,500.00	$ 6,500
	TOTAL				**$ 5,595,636**

Note: $5,595,636 - $100,000 (demo) = $5,495,636 / 24,000 SF Deck Area = $229±/SF

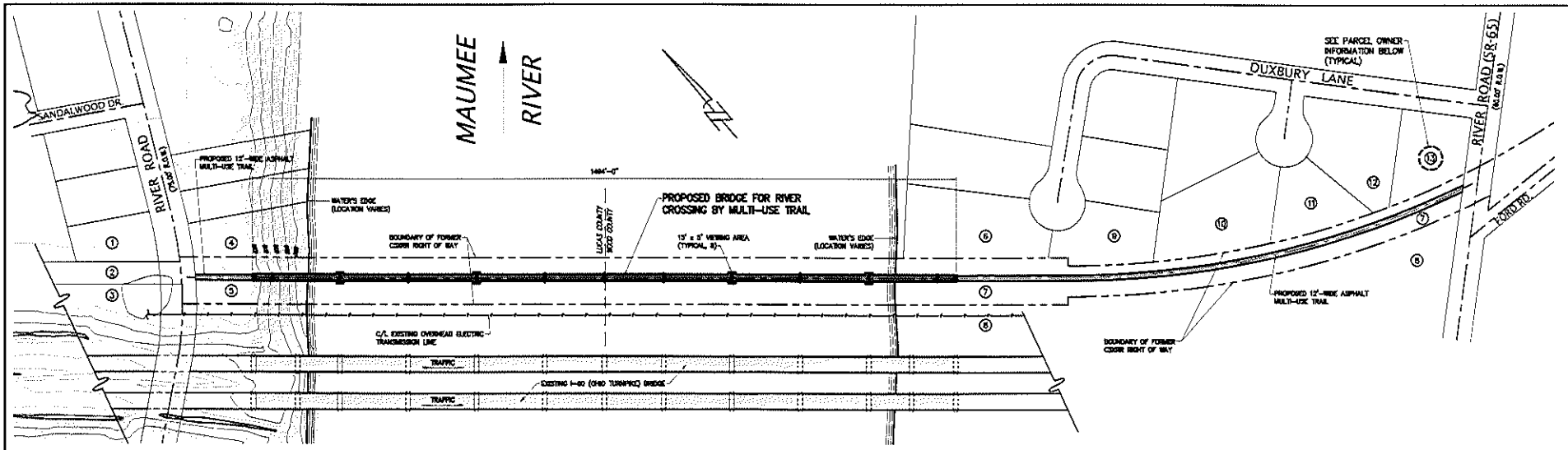
Multi-Use Trail River Crossing at Abandoned CSXRR Bridge

PLANNING LEVEL ESTIMATE for

ASPHALT MULTI-USE TRAIL

March, 2012

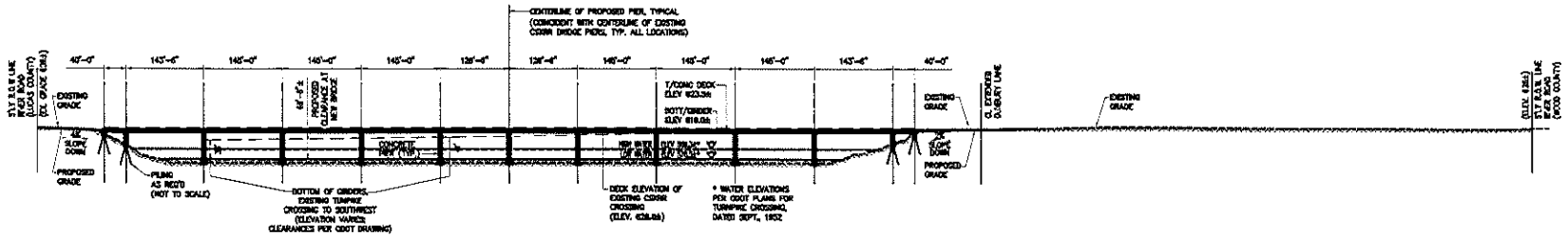
ITEM	DESCRIPTION	UNIT	QTY	UNIT COST	EXTENSION
201	Clearing & Grubbing (Incl. in Bridge Estimiates)	-	-	$ -	
203	Excavation (Topsoil Strip)	CY	563	$ 15.37	$8,653
204	Subgrade Compaction	SY	1829	$ 2.10	$3,841
304	Aggregate Base	CY	408	$ 43.82	$17,879
407	Tack Coat	GAL	85	$ 2.60	$221
408	Prime Coat	GAL	676	$ 2.45	$1,656
448	Asphalt Concrete Courses	CY	141	$ 176.42	$24,875
608	Detectable Warnings (Truncated Domes)	EA	2	$ 1,500.00	$3,000
641	Pavement Marking (Centerline Stripe)	LUMP	1	$ 2,000.00	$2,000
659	Seed & Mulch (Class 2 - Roadside Mix)	SY	10560	$ 0.56	$5,914
690	Steel Bollard (Hinged)	EA	8	$ 563.00	$4,504
	Drainage (25%±)	LUMP	1	$ 15,000.00	$15,000
	Signage	LUMP	1	$ 1,500.00	$1,500
	2 Intersections (Adjustments)	EA	2	$ 2,500.00	$5,000
	2 Security Gates	EA	2	$ 2,500.00	$5,000
	TOTAL				**$99,043**



RIVER CROSSING CONCEPTUAL PLAN - STEEL GIRDER, STEEL TRUSS & CONCRETE I-BEAM OPTIONS

(ALTERNATES 1, 2, 3 & 5)

0 50 100 200



RIVER CROSSING CONCEPTUAL PROFILE - STEEL GIRDER, STEEL TRUSS & CONCRETE I-BEAM OPTIONS

(ALTERNATES 1, 2, 3 & 5)

0 50 100 200

PARCEL OWNERS

LUCAS COUNTY

① 03-33591
ROSE, TOMMY L. & BETH A
4576 RIVER ROAD
TOLEDO, OH 43614

② 15-99007
WOOD COUNTY PORT AUTHORITY
932 DIXIE HWY.
ROSSFORD, OH 43460

③ 18-70122
AMERICAN FIRST TITLE AGENCY, INC., TRUSTEE
P.O. BOX 873
SYLVANIA, OH 43560

④ 15-02747
HELMINSKI, RAYMOND A. & JEAN T.
4573 RIVER ROAD
TOLEDO, OH 43614

⑤ 15-99001
WOOD COUNTY PORT AUTHORITY
932 DIXIE HWY.
ROSSFORD, OH 43460

PARCEL OWNERS

WOOD COUNTY

⑥ PRO-300-701402008000
VANHOYE, MARILYN M., TRUSTEE
29852 DUXBURY LN.
PERRYSBURG, OH 43551

⑦ PRO-300-701403980101
WOOD COUNTY PORT AUTHORITY
932 DIXIE HWY.
ROSSFORD, OH 43460

⑧ PRO-300-701402010000
OHIO TURNPIKE COMMISSION
682 PROSPECT ST.
BEREA, OH 44017

⑨ PRO-300-701402008000
OBRON, KATHLEEN E.
29839 DUXBURY LN.
PERRYSBURG, OH 43551

⑩ PRO-300-701402004000
O'DONNELL, PAMELA E.
29857 DUXBURY CT.
PERRYSBURG, OH 43551

⑪ PRO-300-701402003000
MOORE, THOMAS K. & SUELLEN S.
29863 DUXBURY CT.
PERRYSBURG, OH

⑫ PRO-300-701402002000
WOZNIAK, JOHN JR & JANET
29525 DUXBURY CT.
PERRYSBURG, OH

⑬ PRO-300-701402001000
CONLEY, CURTIS R. & KAY A.
29407 DUXBURY LN.
PERRYSBURG, OH 43551

LEGEND

OVERHEAD UTILITY

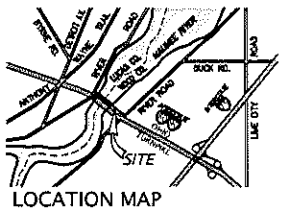
SUBJECT PARCEL BOUNDARY

OTHER PARCEL BOUNDARIES

(n) PARCEL OWNERSHIP INFORMATION

NOTE: ELEVATIONS WERE TAKEN FROM CONSTRUCTION DRAWINGS FOR THE TURNPIKE CROSSING, DATED SEPT., 1952

PRELIMINARY/CONCEPTUAL PLAN NOT FOR CONSTRUCTION



LOCATION MAP

NO SCALE

PLANS PREPARED BY
CLAUDE BROWN & ASSOCIATES
CONSULTING ENGINEERS
2727 N. Holland-Sylvania Rd., Suite C
Toledo, OH 43615 Tel (419) 531-5128

PROPOSED MAUMEE RIVER CROSSING FOR MULTI-USE TRAIL
WOOD COUNTY PORT AUTHORITY
932 DIXIE HIGHWAY
ROSSFORD, OHIO 43460

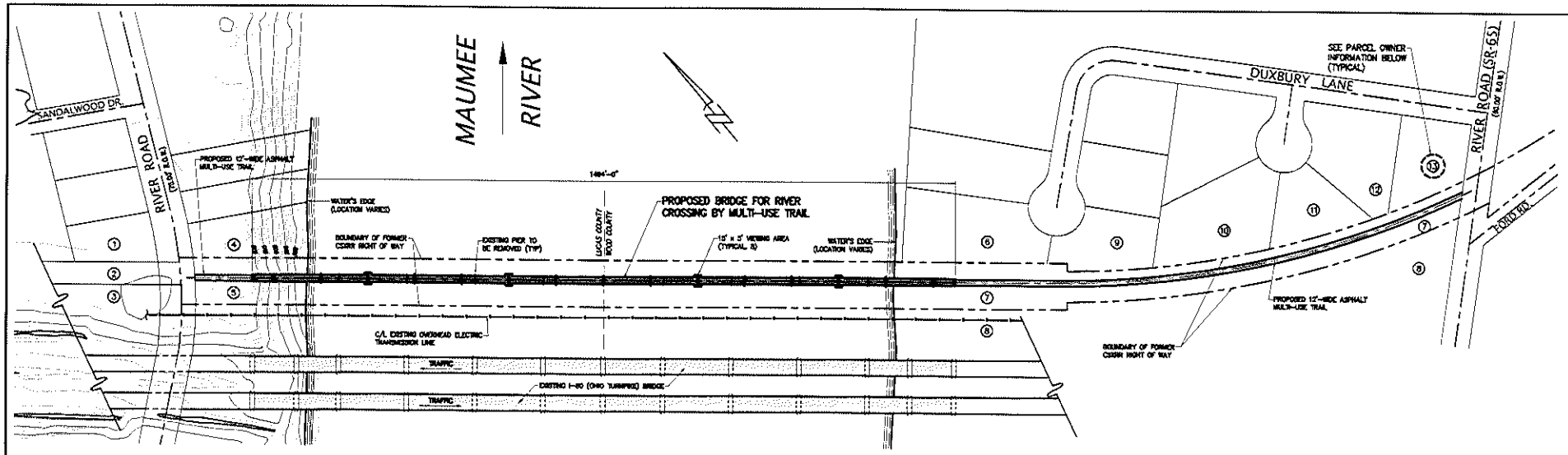
DATE	ISSUE
2/1/12	REVIEW
2/2/12	REVIEW
2/7/12	REVIEW
2/21/12	VWS DECK LOCS.
2/29/12	I BEAM
3/7/12	ADD HWL

DATE	ISSUE

SHEET TITLE: CONCEPTUAL PLAN & PROFILE

JOB No.

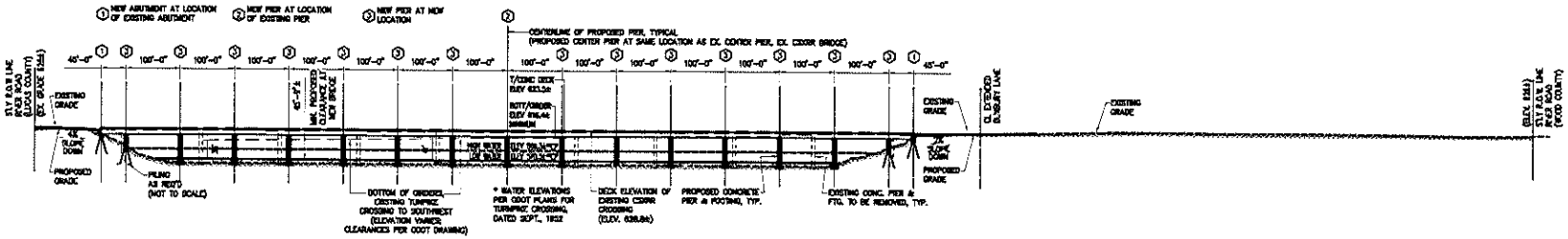
DATE: FEBRUARY, 2012



RIVER CROSSING CONCEPTUAL PLAN - CONCRETE BOX BEAM OPTION

(ALTERNATE 4)

0 50 100 200



RIVER CROSSING CONCEPTUAL PROFILE - CONCRETE BOX BEAM OPTION

(ALTERNATE 4)

0 50 100 200

PARCEL OWNERS

LUCAS COUNTY

① 03-33581
ROSE, TOMMY L. & BETH A
4576 RIVER ROAD
TOLEDO, OH 43614

② 13-99007
WOOD COUNTY PORT AUTHORITY
932 DIXIE HWY.
ROSSFORD, OH 43460

③ 18-70132
AMERICAN FIRST TITLE AGENCY, INC., TRUSTEE
P.O. BOX 675
SYLVANIA, OH 43560

④ 18-02747
HOLLANSKI, RAYMOND A. & JEAN T.
4575 RIVER ROAD
TOLEDO, OH 43614

⑤ 13-99001
WOOD COUNTY PORT AUTHORITY
932 DIXIE HWY.
ROSSFORD, OH 43460

PARCEL OWNERS

WOOD COUNTY

⑥ P80-300-7014020080000
SWARTZ, MARILYN M., TRUSTEE
29852 DUXBURY LN.
PERRYSBURG, OH 43551

⑦ P80-300-7014000050101
WOOD COUNTY PORT AUTHORITY
932 DIXIE HWY.
ROSSFORD, OH 43460

⑧ P80-300-7014020010000
OHIO TURNPIKE COMMISSION
682 PROSPECT ST.
BEREA, OH 44017

⑨ P80-300-7014020060000
OBRIEN, KATHLEEN C.
29836 DUXBURY LN.
PERRYSBURG, OH 43551

⑩ P80-300-7014020040000
O'DONNELL, PAMELA E.
29057 DUXBURY CT.
PERRYSBURG, OH 43551

⑪ P80-300-7014020030000
MOORE, THOMAS K. & SUELLEN S.
29063 DUXBURY CT.
PERRYSBURG, OH

⑫ P80-300-7014020020000
WOLLMOCK, JOHN & JANET
29025 DUXBURY CT.
PERRYSBURG, OH

⑬ P80-300-7014020010000
CONLEY, CURTIS R. & KAY A.
29407 DUXBURY LN.
PERRYSBURG, OH 43551

LEGEND

OVERHEAD UTILITY

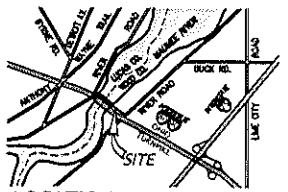
SUBJECT PARCEL BOUNDARY

OTHER PARCEL BOUNDARIES

⑥ PARCEL OWNERSHIP INFORMATION

NOTE: ELEVATIONS WERE TAKEN FROM CONSTRUCTION DRAWINGS FOR THE TURNPIKE CROSSING, DATED SEPT., 1952

PRELIMINARY/CONCEPTUAL PLAN NOT FOR CONSTRUCTION



LOCATION MAP

NO SCALE

PLANS PREPARED BY
CLAUDE BROWN & ASSOCIATES
CONSULTING ENGINEERS
2727 N. Holland-Sylvania Rd., Suite C
Toledo, OH 43615 Tel (419) 531-5128

PROPOSED MAUMEE RIVER CROSSING FOR MULTI-USE TRAIL
WOOD COUNTY PORT AUTHORITY
932 DIXIE HIGHWAY
ROSSFORD, OHIO 43460

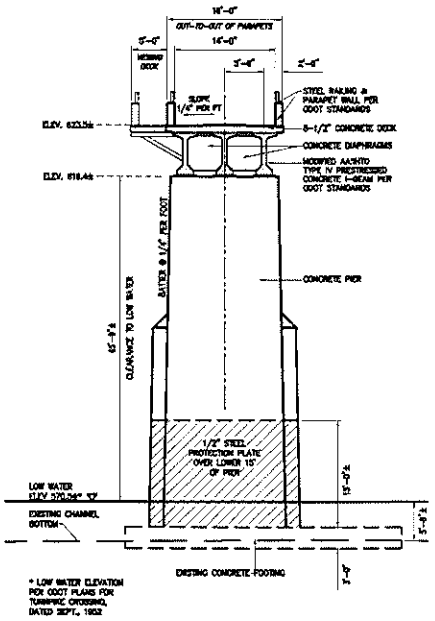
DATE	ISSUE
2/14/12	REVIEW
2/25/12	VRG DECK LOCS
2/28/12	LiCo COUNTOURS
2/28/12	BOX BEAM ONLY

DATE	ISSUE

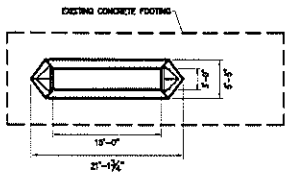
SHEET TITLE: CONCEPTUAL PLAN & PROFILE

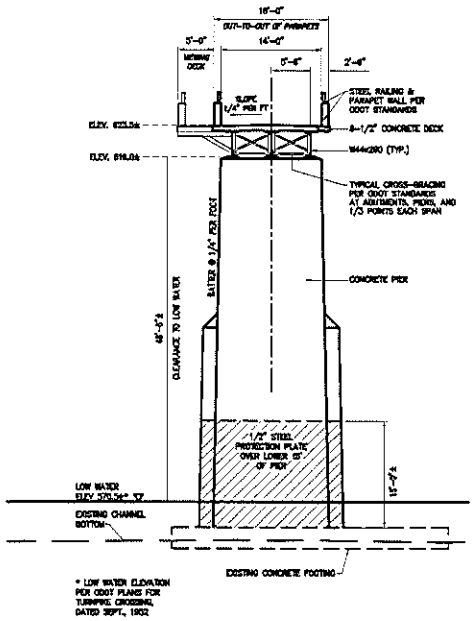
JOB No.

DATE: FEBRUARY, 2012

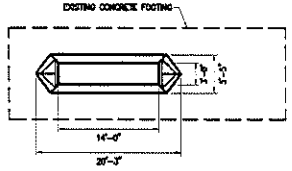


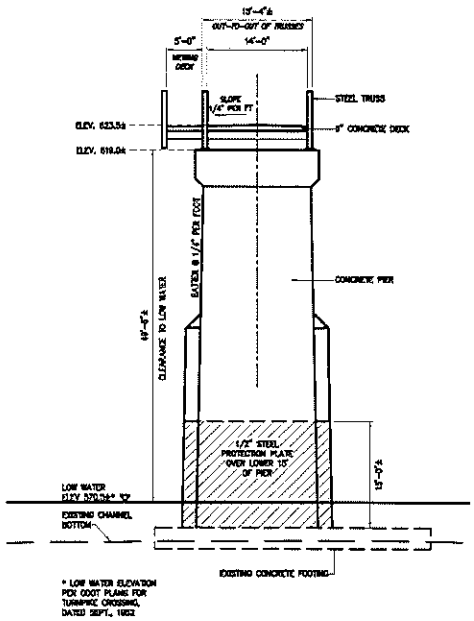
Alternate #1
CONCRETE I-BEAM OPTION



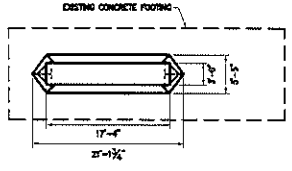


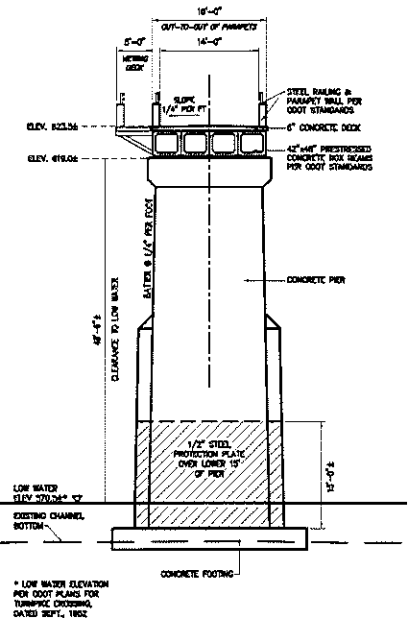
Alternate #2
STEEL GIRDER OPTION



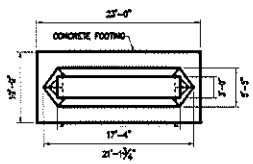


Alternate #3
STEEL TRUSS OPTION





Alternate #4
CONCRETE BOX BEAM OPTION



TYPICAL PIER ELEVATIONS AND PLANS (CONCEPTUAL)

0 4 8 16

BRIDGE DESIGN INFORMATION

MATERIALS

STRUCTURAL STEEL: A709, GRADE 50W
REBAR STEEL: A615, GRADE 60
CONCRETE: f'c = 4,500 psi

LOADING

PER AASHTO LRFD – PEDESTRIAN BRIDGE:

PEDESTRIAN LOADING (PL)*	90 LB/SQUARE FOOT
VEHICLE LOADING (LL)*	H-10

* CONSIDERED SEPARATELY (NON-CONCURRENT)

PER ODOT BRIDGE DESIGN MANUAL:

VEHICLE LOADING**	H15-44
FUTURE WEARING SURFACE	60 LB/SQUARE FOOT

** CONSIDERED SEPARATELY FROM AASHTO PEDESTRIAN LOAD

OTHER LOADINGS

ALLOW FOR FUTURE UTILITIES	5-10 LB/SQUARE FOOT

NOTE: THIS PRELIMINARY DESIGN IS FOR ESTIMATING PURPOSES ONLY

NOTE: ELEVATIONS WERE TAKEN FROM CONSTRUCTION DRAWINGS FOR THE TURNPIKE CROSSING, DATED SEPT., 1952

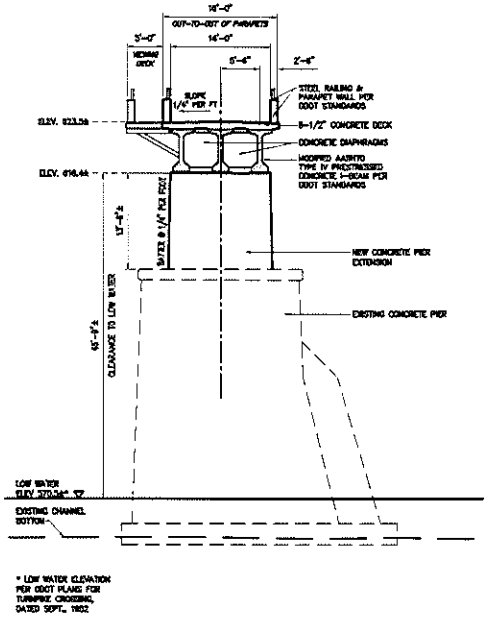
PLANS PREPARED BY
CLAUDE BROWN & ASSOCIATES
CONSULTING ENGINEERS
2727 N. Holland-Sylvania Rd., Suite C
Toledo, OH 43615 Tel (419) 531-5128

PROPOSED MAUMEE RIVER CROSSING FOR MULTI-USE TRAIL
WOOD COUNTY PORT AUTHORITY
932 DIXIE HIGHWAY
ROSSFORD, OHIO 43460

DATE	ISSUE
2/7/12	REVIEW
2/8/12	REVIEW
2/14/12	PVMT SECTION
2/21/12	TRAIL HEAD
2/23/12	FTO PLANS
2/24/12	TRUSS OPT
3/1/12	WRG COURSE
3/7/12	UTILS OUT

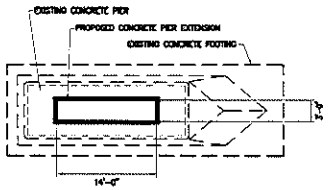
DATE	ISSUE

SHEET TITLE: CONCEPTUAL PLANS & ELEVATIONS
JOB No.:
DATE: FEBRUARY, 2012
26



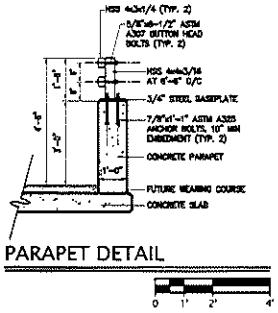
* LOW WATER ELEVATION PER ODOT PLANS FOR TURNPIKE CROSSING, DATED SEPT., 1952

(Alternate #5)
STEEL GIRDER OPTION, RE-USING EXISTING PIERS



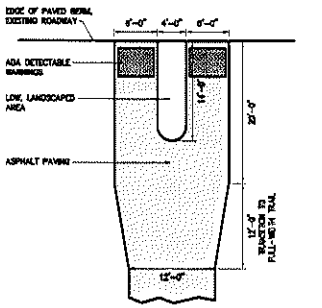
PIER ELEVATION & PLAN (CONCEPTUAL)

SCALE: 1/8" = 1'-0"



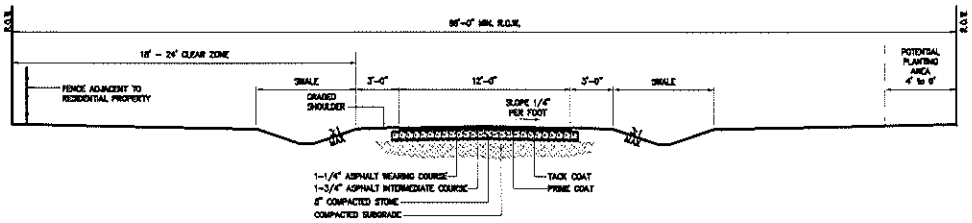
PARAPET DETAIL

0 1" 2" 4"



TYPICAL TRAIL HEAD

0 4 8 16



TRAIL PAVEMENT SECTION

0 2 4 8

NOTE: ELEVATIONS WERE TAKEN FROM CONSTRUCTION DRAWINGS FOR THE TURNPIKE CROSSING, DATED SEPT., 1952

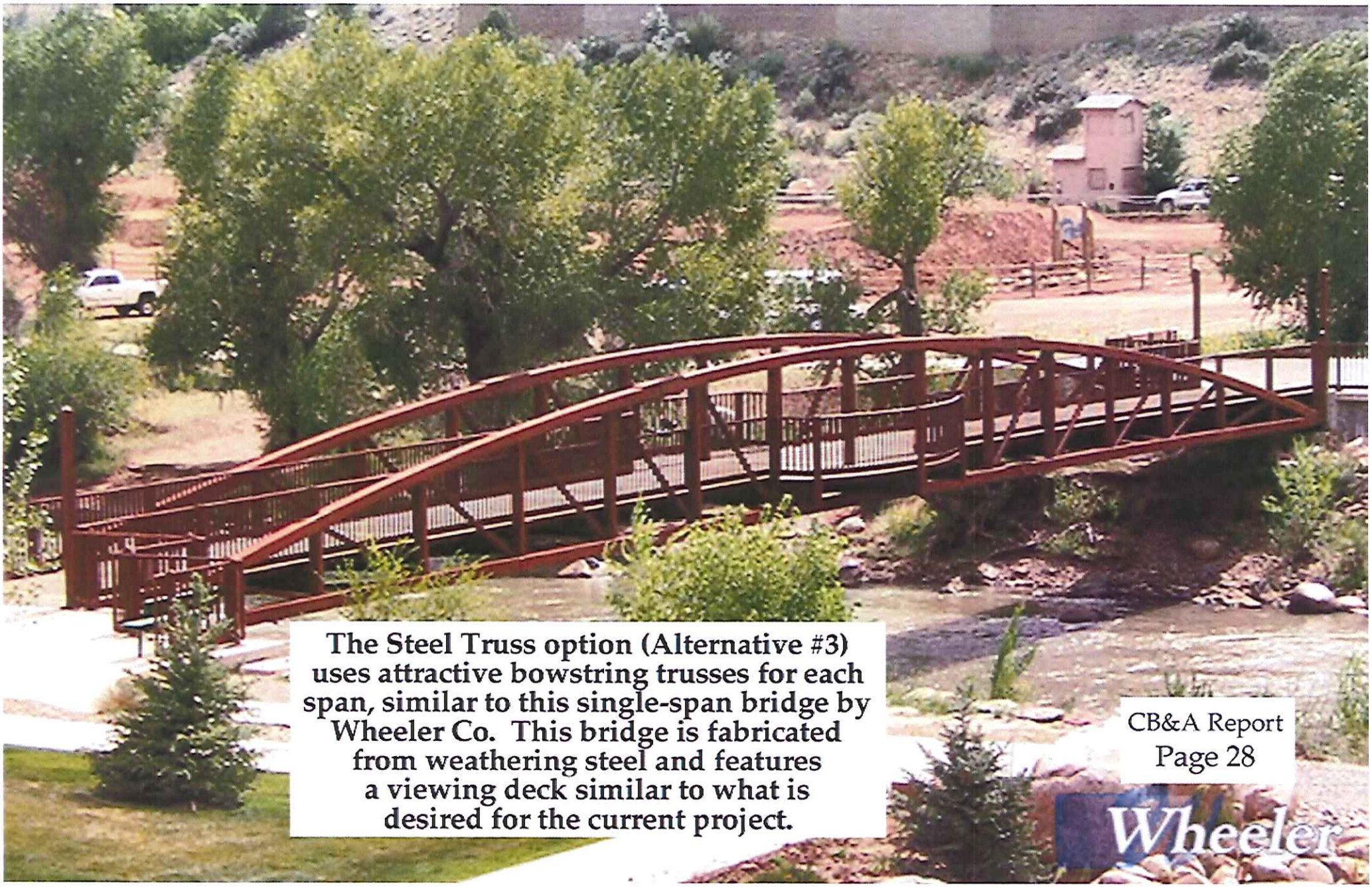
NOTE: THIS PRELIMINARY DESIGN IS FOR ESTIMATING PURPOSES ONLY

PLANS PREPARED BY
CLAUDE BROWN & ASSOCIATES
CONSULTING ENGINEERS
2727 N. Holland-Sylvania Rd., Suite C
Toledo, OH 43615 Tel (419) 531-5128

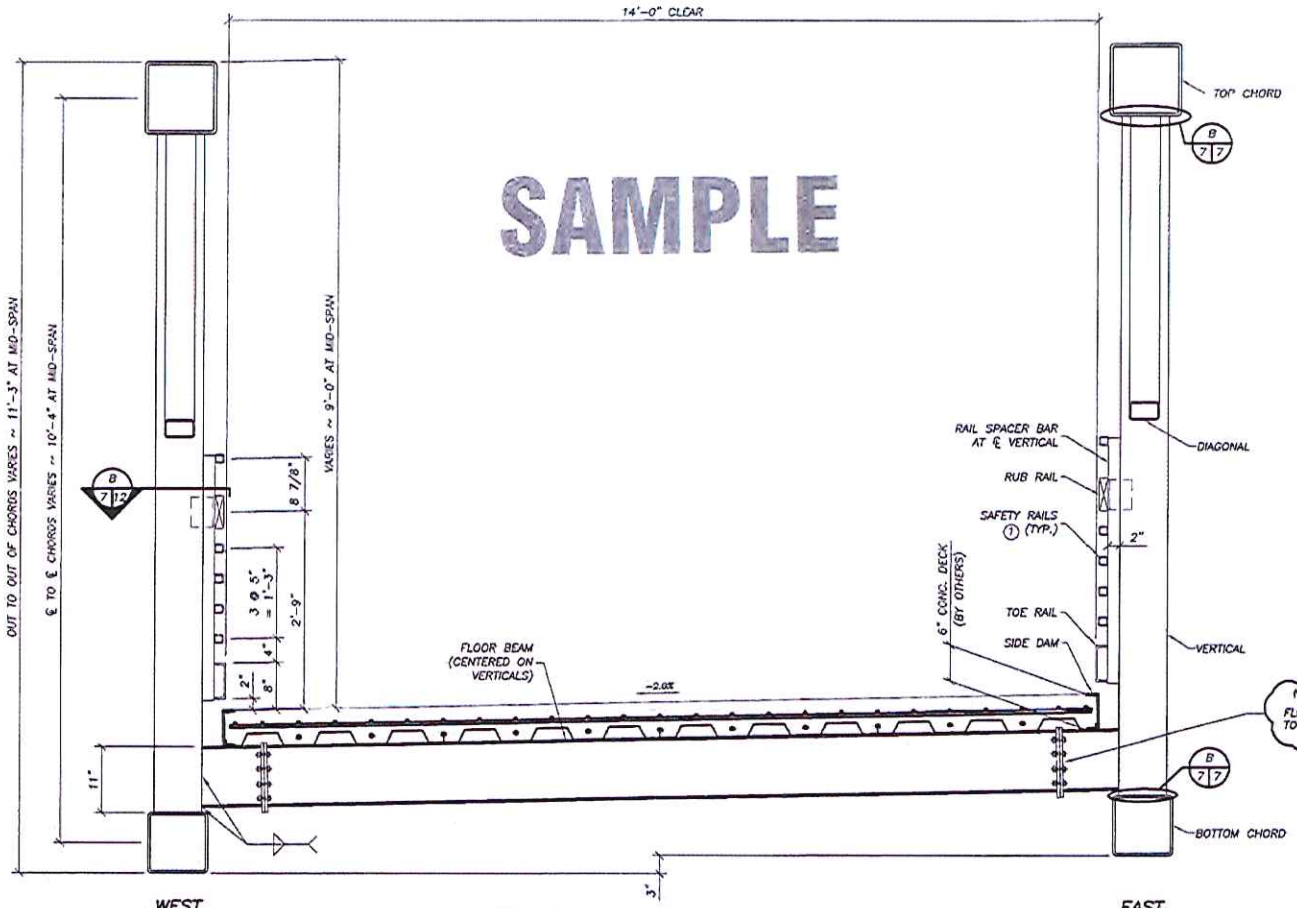
PROPOSED MAUMEE RIVER CROSSING FOR MULTI-USE TRAIL
WOOD COUNTY PORT AUTHORITY
932 DIXIE HIGHWAY
ROSSFORD, OHIO 43460

DATE	ISSUE
2/24/12	REVIEW
2/27/12	DC PRIM OPT
3/1/12	MNG COURSE

SHEET TITLE: CONCEPTUAL DETAILS
JOB No.:
DATE: FEBRUARY, 2012
27



The Steel Truss option (Alternative #3) uses attractive bowstring trusses for each span, similar to this single-span bridge by Wheeler Co. This bridge is fabricated from weathering steel and features a viewing deck similar to what is desired for the current project.

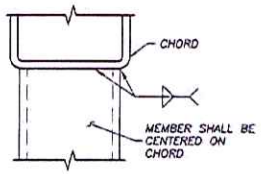


A/3|7 SPAN 2 TYPICAL MID-SPAN SECTION VIEW

KEY NOTES:

① SAFETY RAIL TO CONTAIN A 4" SPHERE UP TO 33" ABOVE THE DECK AND A 6" SPHERE FROM 33" ABOVE THE DECK TO 42" ABOVE THE DECK.

SPAN DEFINITION		
SPAN 1	13191	35'-1 1/4"
SPAN 2	13190	151'-9 1/2"
SPAN 3	13192	51'-1 1/4"



B/7|7 CONNECTION TO CHORD DETAIL

DO NOT SCALE DRAWINGS

SHEET TITLE:
SPAN 2 SECTION DETAILS

35'-1 1/4" ~ 151'-9 1/2" ~ 51'-1 1/4"
PEDESTRIAN BRIDGES, 12'-0" WALKWAY
FOX RIVER CANAL BRIDGE
VILLAGE OF LITTLE CHUTE, WISCONSIN
PROJECT NO. BM4-1040

Wheeler Lumber, LLC
9330 JAMES AVE. S.
BLOOMINGTON, MN 55431

DATE: 1/19/12		TRACKING NO. T16655	SHEET NO.
CHK: BJR	DWN: NBB	ORDER NO. W13190-94	7 OF 19

403 CONCRETE REPAIR/RESTORATION (OTHER THAN DECK REPAIR)

403.1 GENERAL

Repairing concrete that is more than superficially damaged is expensive and problematic. Since many members can be completely replaced for less than the cost of extensive repair, aggressive replacement of deteriorated members should be pursued. Salvaging concrete containing corroding reinforcing steel or critically saturated aggregate does not often result in a long lasting component since the substrate concrete repaired is only marginally better than the unsound concrete removed. Any time there are major and extensive repairs being proposed to concrete structures, in depth and thorough investigation of the condition of the concrete will be required. This investigation shall include, but is not limited to, hand investigation with a chipping hammer, drilling into unsound concrete to determine the depth of deterioration, and concrete cores. In the past, the extent of concrete deterioration actually encountered in the field has far exceeded the amount anticipated in the design stage on certain projects.

403.2 PATCHING

It is the designer's responsibility to evaluate the repair areas and determine the most suitable repair method.

To serve as a guide to the designer, the following criteria have been established to help in the patching selection evaluation.

Item 519, Patching Concrete Structures, As Per Plan, should be used where the repair depth is 3 inches [75 mm] or greater and the surface can be readily formed and concrete placed. This type of patch is the most durable due to its depth and the utilization of reinforcing bars to tie it together. Where extensive curb repair is encountered, the patching should be paid for on a lineal foot [lineal meter] basis. This will require a pay item for: Item Special, Patching Concrete Structure, misc. A plan note will be required describing the work and tying it to CMS Item 519.

Item 520, Pneumatically Placed Mortar, should generally be used where the repair surface cannot be readily formed and concrete placed, where the depth of repair is between 1 and 6 inches [25 and 150 mm], and where at least 150 square feet [15 m^2] of repair area is involved.

The detail plans shall show and detail the locations of the areas that require patching repairs. Additionally, Item 519 needs a plan note requiring the surfaces to be patched and the exposed reinforcing steel to be abrasively cleaned within 24 hours of application of patching material (or erection of forms if the forms would render the area inaccessible to blasting). See the note in Section 600 of this Manual.

Trowelable mortar should generally be specified when the repair depth is less than 1½ inches [40 mm] deep, and the repair area is less than 150 square feet [15 m^2]. Trowelable mortar should also be specified in lieu of pneumatically placed mortar for the case where the depth of patch is equal to or less than 3 inches [75 mm] and the quantity is less than 150 square feet [15 m^2]. 3 inches [75 mm] is the maximum depth of patch that should be attempted with this type of mortar.

A pay item, Item 843, Patching Concrete Structures with Trowelable Mortar, should be used and reference should be made to a Supplemental Specification 843.

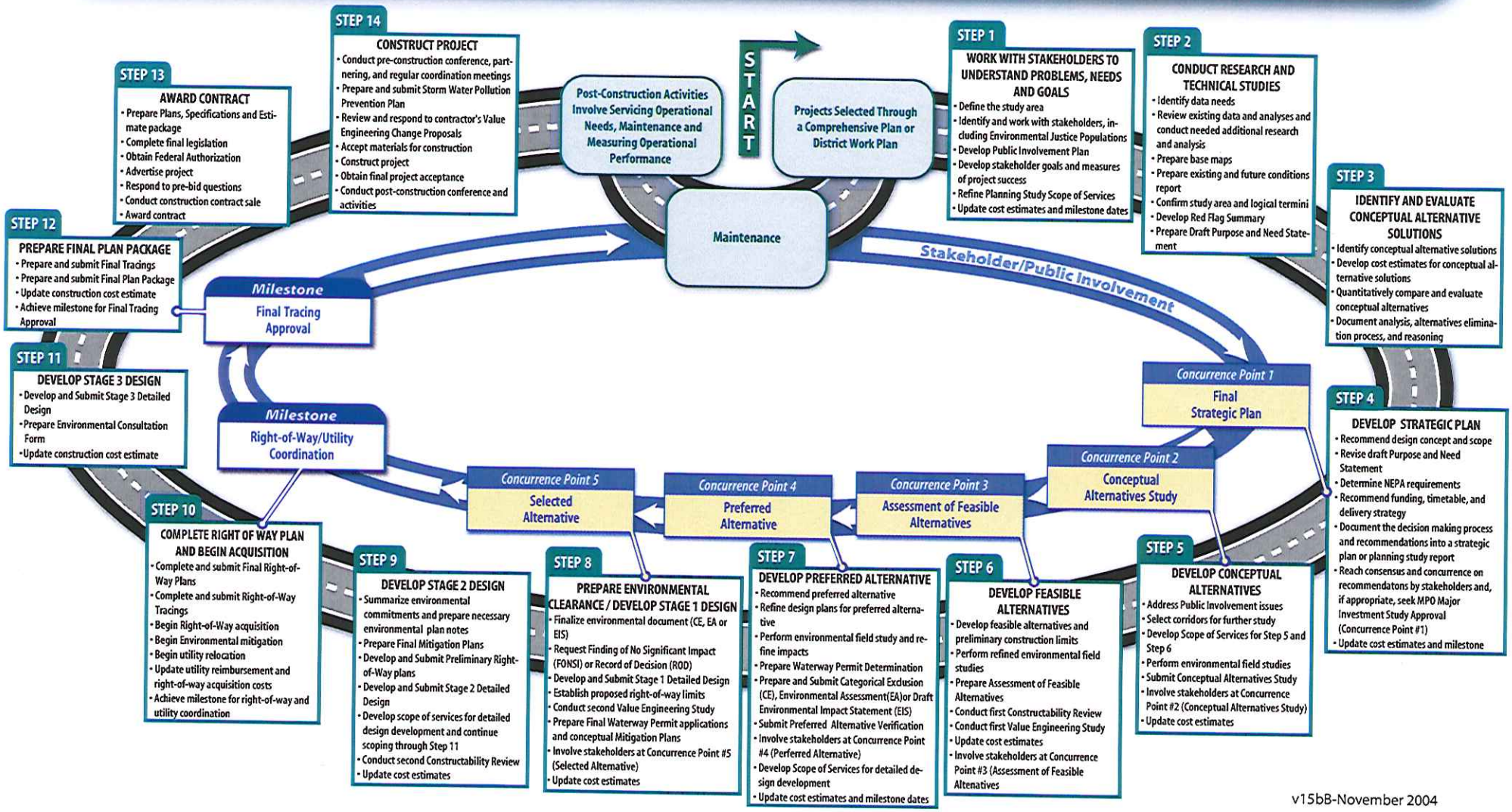
The designer shall outline the areas to be repaired on the structure and also show where these areas are on details in the plans.

403.3 CRACK REPAIR

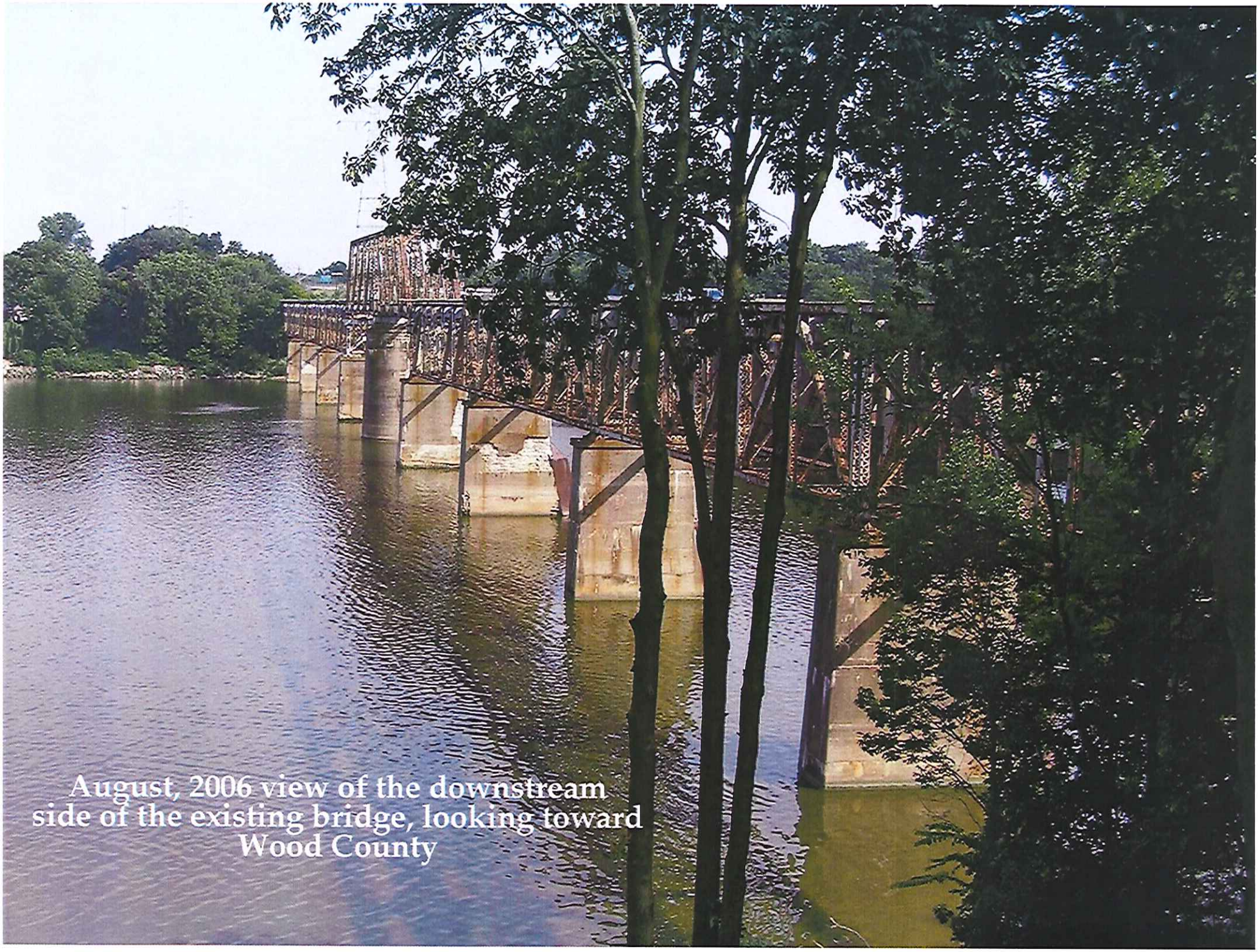
Cracks can be repaired by epoxy injection for which a proposal note is available. The location of the cracks shall be shown in the plans and marked in the field.

Ohio Department of Transportation

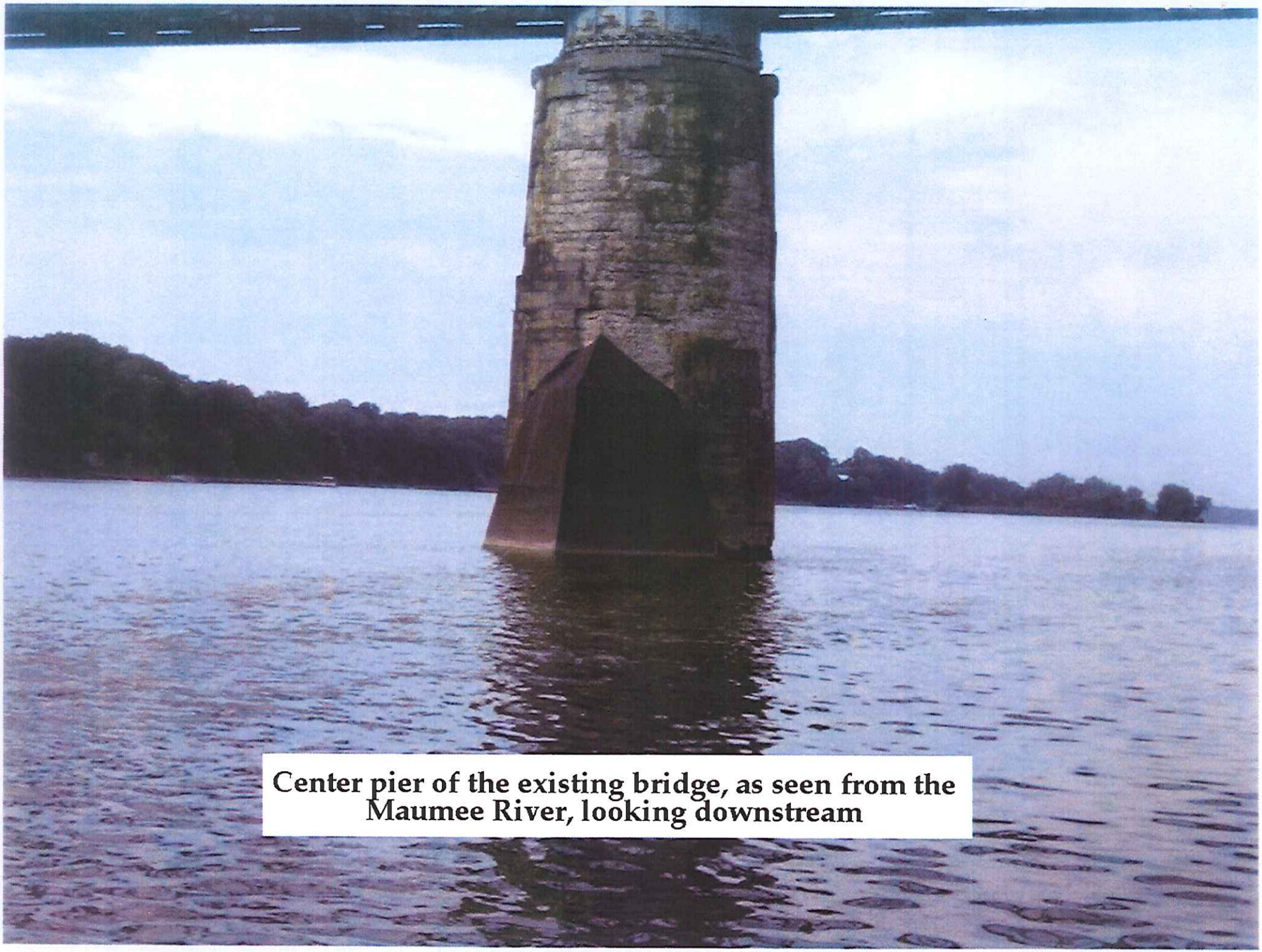
Project Development Process (PDP) for Major Projects



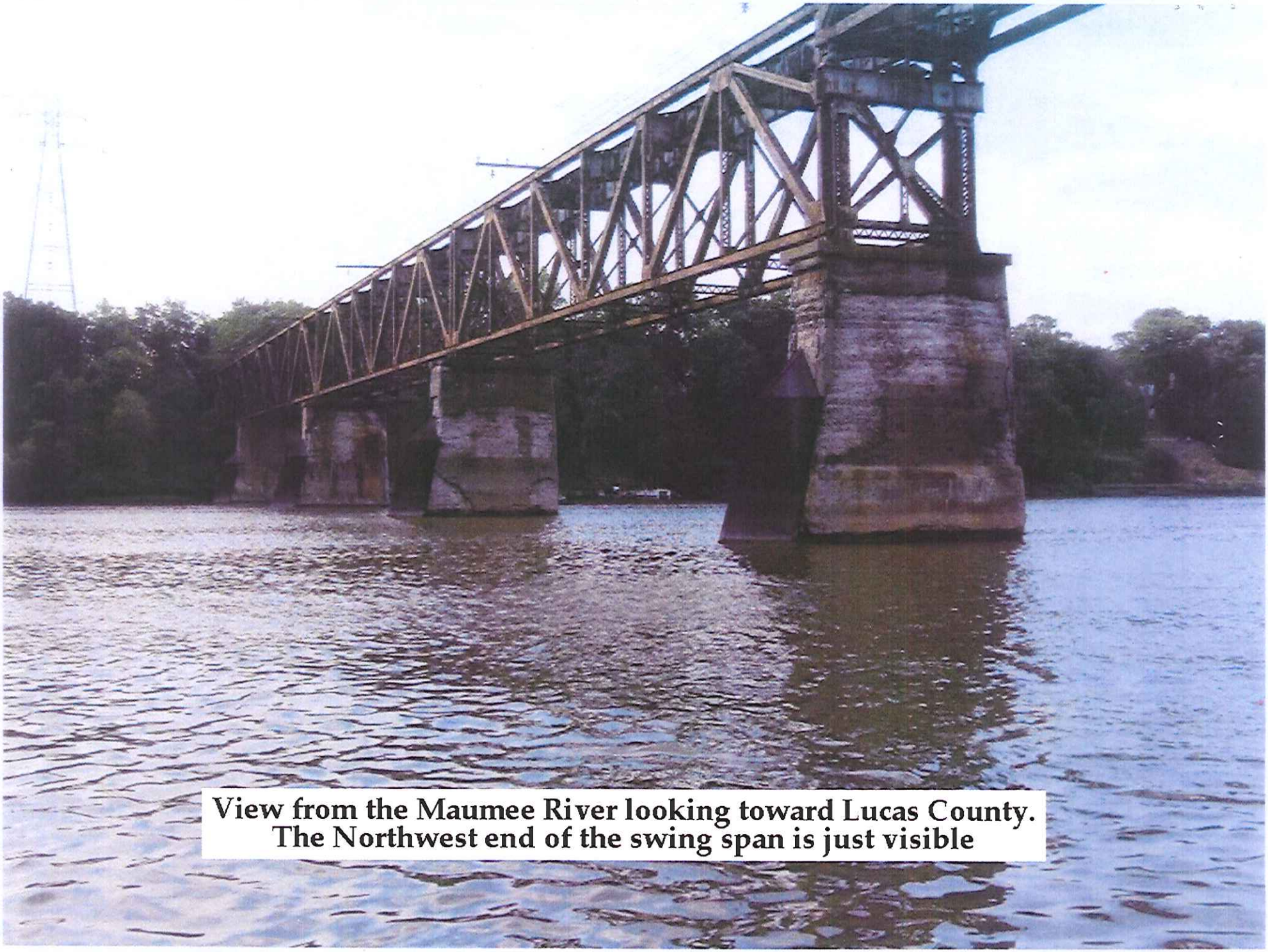
v15bB-November 2004



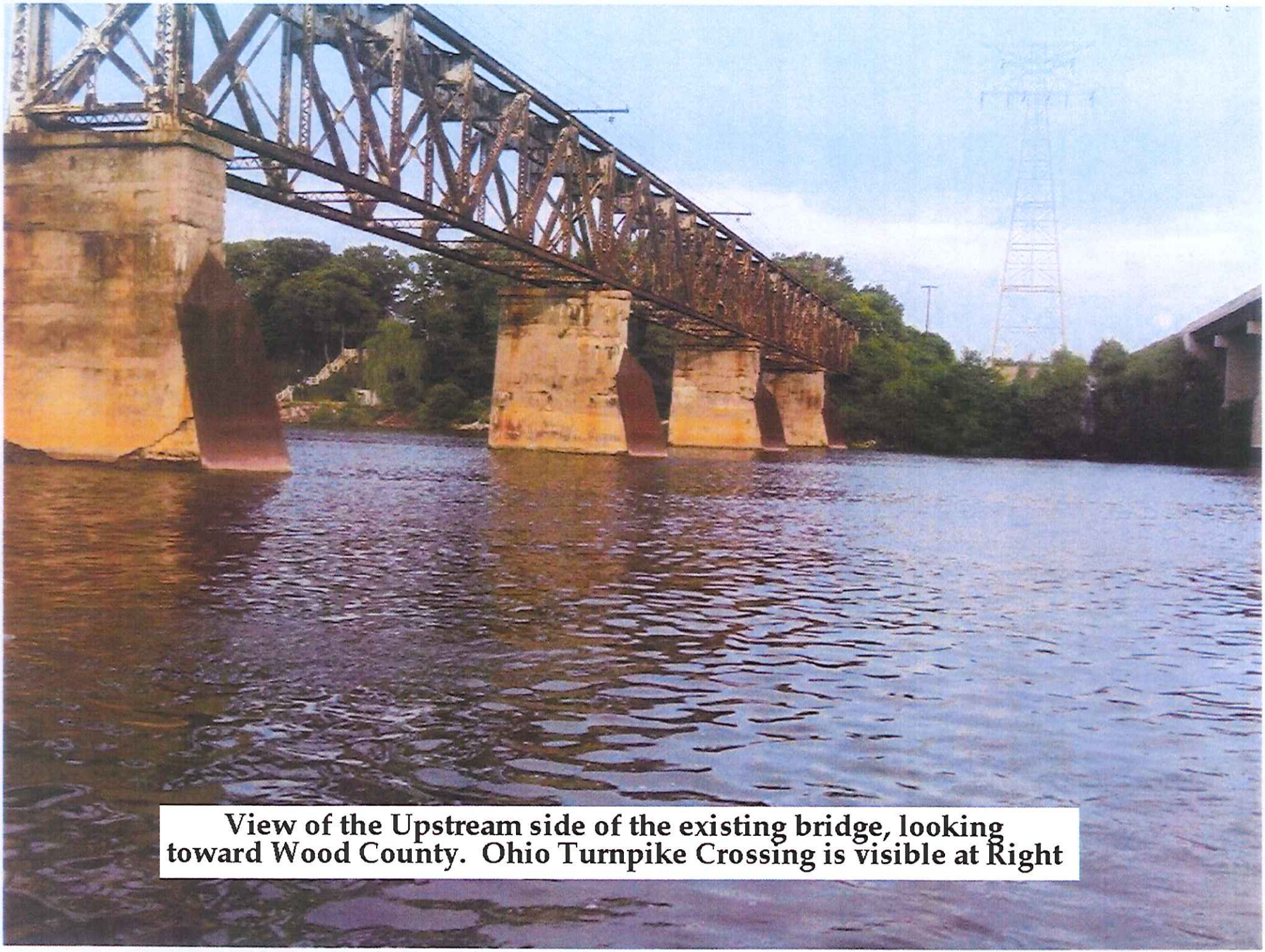
August, 2006 view of the downstream side of the existing bridge, looking toward Wood County



Center pier of the existing bridge, as seen from the Maumee River, looking downstream



View from the Maumee River looking toward Lucas County. The Northwest end of the swing span is just visible

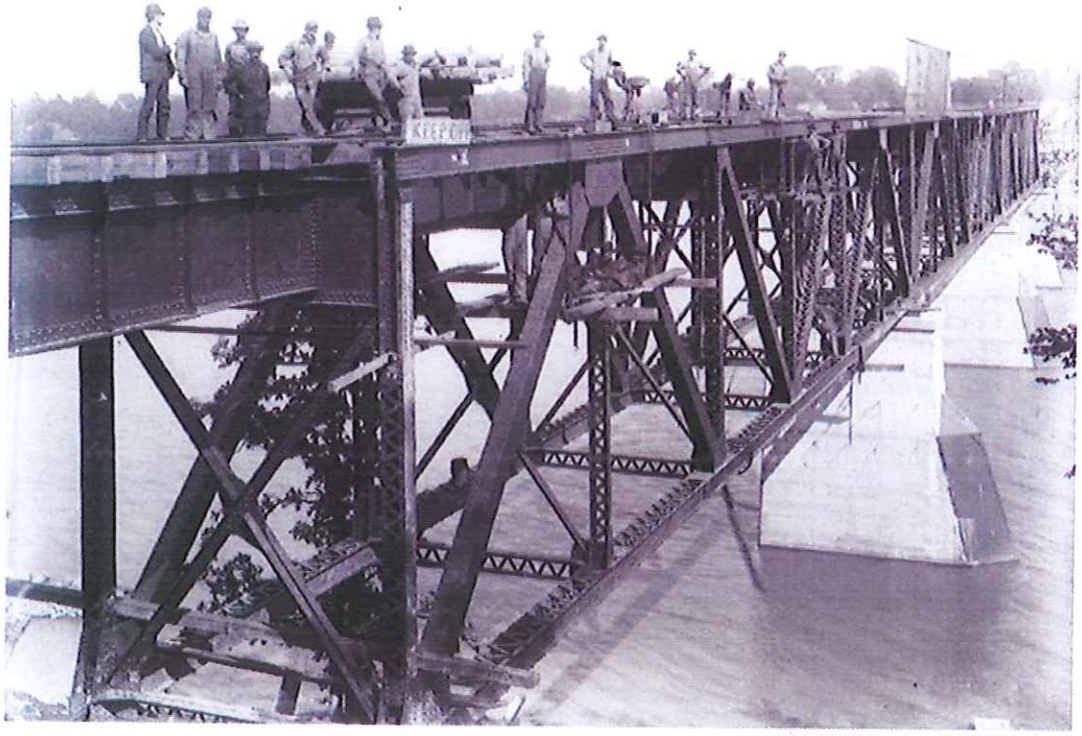


View of the Upstream side of the existing bridge, looking toward Wood County. Ohio Turnpike Crossing is visible at Right

Historic Photos of the Existing CSXRR Bridge

Historic Photos of the Existing CSXRR Bridge

Historic Photos of the Existing CSXRR Bridge



Historic Photos of the Existing CSXRR Bridge

APPENDIX F

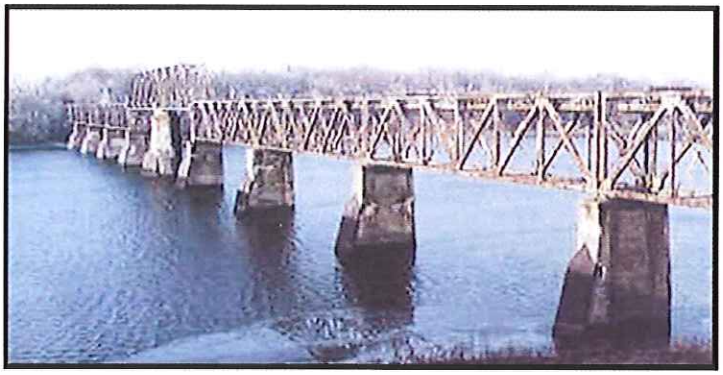
2013 IMPLEMENTATION LEVEL REPORT

Implementation-Level Report

WEST SIDE (CSXRR) BIKE/PEDESTRIAN TRAIL CROSSING of the MAUMEE RIVER

Between

RIVER ROAD (LUCAS COUNTY) & S.R. 65 (WOOD COUNTY)



Prepared for

WOOD COUNTY PORT AUTHORITY

JANUARY, 2013

Prepared by

Claude Brown & Associates
Consulting Engineers
2727 N. Holland-Sylvania Rd.
Suite C
Toledo, OH 43615
Tel (419) 531-5128

Claude Brown & Associates
Consulting Engineers
2727 N Holland-Sylvania Rd., Suite C Toledo, OH 43615 Telephone (419) 531-5128

IMPLEMENTATON-LEVEL REPORT
WEST SIDE (CSXRR) BIKE/PEDESTRIAN TRAIL
CROSSING OF THE MAUMEE RIVER
BETWEEN RIVER RD. (LUCAS COUNTY) & SR 65 (WOOD COUNTY)

TABLE of CONTENTS

BACKGROUND

The purpose of this report was to follow-up on a planning level report prepared by Claude Brown & Associates (CB & A) for the Wood County Port Authority (WCPA) in March 2012. The goal of this report phase was to actually program a demolition and bridge replacement project with the Ohio Department of Transportation (ODOT). The programming requirements include projected costs, schedule, funding and potential stakeholders and/or partnerships.

The WCPA is a member of Westside Corridor Coordinating Committee (WCCC) which is consortium of public agencies with the Toledo Metropolitan Area Council of Governments (TMACOG) that purchased the right of way of the former Toledo Terminal Railroad from the C.S.X. R.R. The other partners include the City of Toledo, University of Toledo, Metroparks of the Toledo Area and the Wood County Park District. Key to the acquisition of this right of way was the local match funding from Metroparks of Toledo (MOT) and the ownership of the old R.R. structure over the Maumee River by the WCPA. The total cost of the Railroad acquisition was about $6,572,000.

The WCCC has broken the approximate 11 mile corridor into several components for construction with Component No. 1 being the removal of the old CSX RR bridge over the Maumee River (WCPA) and Component No. 2 being the trail between River Rd. and Glanzman Rd. (MOT). The estimated cost of the right of way in Component 1 & 2 is about $900,000 of which about 48% was local funds. With this advanced right of way acquisition, no additional right of way is anticipated for construction. The right of way cost is referenced on page 13 to estimate the overall total local share.

EXECUTIVE SUMMARY

The original intent of the study was to program a bridge removal and replacement project with ODOT for the former CSX RR structure over the Maumee River as a component of the Westside Corridor Bike-Hike system. However, the cost far exceeded the ability of the Wood County Port Authority (WCPA) to fund the local share estimated at about $570,000 to $1,200,000. It also was improbable that additional Federal Funding of approximately $5,200,000 could be obtained at this time.

The focus then shifted to full and partial removal of the existing structure with replacement delayed to some future time. Detailed project estimates showed that partial removal could be accomplished at maximum local share cost of $45,000 to WCPA, but full removal (preferred by the WCPA) could have a local cost of about $205,000 and a need for additional federal funding of approximately $800,000. These removal options place emphasis on the use of the existing bike trail crossing on the Maumee-Perrysburg Bridge. The Lucas County connections are shown on pages 4 and 6. On the Wood County side, there are two alternatives that the WCPA is discussing with the local units of government. These alternates are shown on pages 4 and 6.

In consultation with others, the WCPA then considered partnering with the Metroparks of the Toledo Area to build the first section of the Westside Corridor Bike-Hike system and to take alternate bids on both partial and full bridge removal. In a preliminary funding meeting with the TMACOG staff, it appears that approximately $600,000 of additional funding might be available for the joint project. In addition to a cost savings to both agencies, the joint project approach has several other advantages as follows:

- Initiates construction on Westside Corridor System
- Includes trail head facility construction
- Allows local contractors with subs for bridge removal
- Provides actual bids for removal options (Full & Partial)
- No change in schedule for full removal
- Leads to L.P.A. certification for WCPA
- Less TMACOG transportation alternative bike trail funding

Based on this study, the WCPA has determined to proceed with the joint project for construction of the Bike-Hike trail (between River Rd. and Glanzman Rd.), the River Rd. trail head, and full bridge removal with a fall back position of partial removal. The draft co-operation agreement is shown in Appendix A and the scope-of-services meeting and field review is scheduled for February 19, 2013.

RECOMMENDATIONS

1) PREFERRED ALTERNATIVE:

The preferred alternative for programming with O.D.O.T. is to combine bridge removal over the Maumee River between River Road (Lucas County) and S.R. 65 (Wood County) with the Westside Corridor Bike –Hike trail section between River Road and Glazman Road in Lucas County. The combined conceptual project cost estimate is estimated at $3,775,000 for full bridge removal to $2,803,000 for partial bridge removal.

The local share of the total project cost is estimated as follows (see page 13):

Component 2 with partial bridge removal = $155,000 to $200,000
Component 2 with full bridge removal = $360,000 to $405,000

2) TRAIL CONNECTIONS:

By not replacing the existing bridge at this time, the connection between Pickford Park (Glazman Road) and WW Knight Nature Preserve (SR 65) via the Maumee-Perrysburg Bridge is very important. The connections under consideration are shown in Figure 1 (page 6) and are as follows:

a) City of Toledo – connect via River Rd. to Toledo Zoo/Walbridge Park –
b) City of Toledo – connect to UT Health Science Campus
c) City of Maumee – connect to Wabash Cannonball Trails – connect to Maumee-Perrysburg bridge.
d) City of Rossford / Perrysburg Township / Wood County Park District – two alternate routes under consideration connecting the cities and WW Knight Preserve.

3) PARNERSHIP AGREEMENT:

A draft co-operation agreement is shown in Appendix A

4) PROJECT PROGRAMMING:

A scope of services meeting with ODOT is scheduled for Tuesday, February 19, 2013, followed by a field review.

ALTERNATES CONSIDERED

REMOVE AND REPLACE BRIDGE

The first alternate considered was full removal and replacement of the CSXRR Bridge in accordance with the Phase 1 Planning-Level Study.

Two conceptual scenarios were developed based around a project cost of approximately $9,000,000 from the Phase 1 study. The first scenario "A" estimated at 36 months (to open bids), would be for the Wood County Port Authority (WCPA) to front end the design and environmental clearance using its own funds as local match. This approach could result in a total of $400,000 reduction in project cost to $8,600,000 (see page 9). This approach means WCPA would be committing to at least a local share totaling $570,000 and would need to find an additional $5,000,000 of federal dollars to match the remaining federal funding of approximately $2,000,000.

The next scenario "B" was estimated to take 48 months (to open bids) and utilize the maximum federal dollars. With the longer time, project cost increased to $9,200,000 and the local share was estimated at $570,000 to $675,000. The additional Federal share would increase from about $5,000,000 to $5,400,000 (see page 9).

After consulting with Richard Martinko and the WCPA, it was determined that both scenarios would be quite a financial risk for WCPA even with local partnerships that might be able to fund local share. Consequently, it was decided that only bridge removal would be done as part of the initial project.

FULL AND PARTIAL BRIDGE REMOVAL

The bridge demolition alternate considered two scenarios. The first was for full removal of the CSXRR bridge (superstructure; piers; footers; and abutments) along with a field office and mobilization. The second scenario was for superstructure removal and the upper 17' +/- of the center pier with an 8" reinforced concrete cap. Project costs were developed for design, environmental clearance, construction contingencies, testing and inspection. Resulting costs are shown on page 11.

ODOT Central Office (Office of estimating) reviewed the Claude Brown & Associates removal estimates and revised these upward about 12% for full removal and 30% for partial removal, which were used for this report..

Unit costs were used in accordance with the Phase 1 report (Planning-Level). Complete removal would require a local share between $160,000 and $205,000 depending on additional federal funding with TMACOG. Partial removal would use approximately $1,860,000 of the remaining $2,040,000 of federal funds, leaving approximately $180,000 for construction of the next priority project for the Westside trail corridor.

COMBINING BRIDGE REMOVAL OPTIONS WITH METROPARKS TRAIL

Again, conferring with Richard Martinko and members of the WCPA, project costs were developed for the Metroparks Bike-Hike Trail between River Rd. and Glanzman Rd. (Component 2). These costs are shown on Page 12 and the estimated construction cost compares closely with the WCCC costs. A trail head along River Rd. as suggested by the WCCC development plan was added to Component 2.

This project estimate was then combined with the partial and full bridge removal project estimates for presentation to the WCPA board. The results are shown on page 13.

After a meeting between MOT and WCPA, it was determined to proceed with a joint project and to develop two sets of plans to be let as one project. One set would be for the bike-hike trail including a trail head along River Rd. and the other set would be for bridge removal with alternate bids for full and partial removal.

To be sure that funding is available for the Metro Parks trail (Component 2) and partial bridge removal, a preliminary funding meeting was held with TMACOG staff and it appears some additional funding may be available. The MOT and WCPA co-operation agreement calls for not only obtaining these funds (estimated at $605,000), but also calls for co-operating to obtain an additional $767,000 of unfunded cost for full removal (see page 13).

CSX Railroad Bridge
CONCEPTUAL PROJECT COSTS
FULL BRIDGE REMOVAL & REPLACEMENT

	SCENARIO A *Min. Time*		SCENARIO B *Max Time*	
Time Line to Open Bids (Study Start 2/12)	36 Months		48 Months	
Remaining Time (9/12)	29 Months		41 Months	
Design/Environmental	$570,000		$685,000	
Right of Way	$392,000		$392,000	
Construction	$6,250,000		$6,620,000	
Contingencies	$625,000		$660,000	
Testing & Inspection	$763,000		$843,000	
TOTAL	$8,600,000		$9,200,000	
MOST LIKELY FUNDING:				
Local	$1,600,000	(18.6%)	$1,200,000	(13.0%)
Federal	$7,000,000		$8,000,000	
TOTAL	$8,600,000		$9,200,000	
Additional Federal Funding	$5,000,000		$5,400,000	
Additional Local	$1,200,000		$1,350,000	

The local share for the WCPA is at a minimum of at least $675,000, which is 50% of the local share for Scenario "B." Most likely partners would be members of the Toledo Metropolitan Area Council of Governments (TMACOG) and/or the Westside Corridor Coordinating Committee (WCCC), which would slow funding and progress on other sections of the trail. While it is anticipated that Federal funding for bike trails will become more difficult in the future, in this case, the local share is a bigger issue. In order to accelerate the schedule, WCPA would have to advance design/environmental at $570,000.

CSX Railroad Bridge
CONCEPTUAL PROJECT COSTS
REMOVAL ONLY

FULL REMOVAL

Construction Estimate for Demolition	
Pier & Ftr. Removal	$500,000
5440 CY @ $92/	
Cofferdams *(Lump)*	$500,000
**Superstructure	$700,000
Removal *(Lump [Net])*	
Subtotal	*$1,700,000**
Field Office *(Lump)*	$5,000
Mobilization *(Lump)*	$140,000
Total	*$1,845,300*
Call it	$1,850,000

PARTIAL REMOVAL

Construction Estimate for Demolition (Superstructure & Pier)	
Pier Removal	$105,000
600 CY @ $175/	
Pier Cap	$40,330
74 CY @ $545/	
**Superstructure	$700,000
Removal *(Lump [Net])*	
Subtotal	*$845,330**
Field Office *(Lump)*	$5,000
Mobilization *(Lump)*	$140,000
Total	*$990,330*
Call it	$990,000

**Superstructure Removal

Removal (Lump)	$1,000,000
Salvage (Lump)	$300,000
Net (Lump)	$700,000

Based on approximately 2,000,000 lbs.

Costs from ODOT Central Office (Used for Project Cost)

	Complete Removal	Superstructure & Pier
* Subtotal from ODOT	$1,930,000	$1,150,000
Field Office	$5,000	$5,000
Mobilization	$140,000	$140,000
ODOT Total	*$2,075,000*	*$1,295,000*

PROJECT COSTS

ITEM	FULL REMOVAL	PARTIAL REMOVAL
Design/Enviro.	$ 235,000	$ 235,000
Demolition (Net)	$ 2,075,000	$ 1,295,000
Contingency	$ 310,000	$ 195,000
Testing and Inspection	$ 215,000	$ 138,000
	$ 2,835,000	$ 1,863,000
Available Federal	$ 2,040,000	$ 2,040,000
Additional Funding	$ 795,000	$ -0-
Remaining Federal	-0-	$ 177,000

WESTSIDE CORRIDOR BIKE – HIKE TRAIL
METROPARKS (RIVER RD. TO GLANZMAN RD.)

Project Estimate

Design/Environmental	$65,000	
Construction*	$700,000	
Contingency	$105,000	
Constr. Engineering	$70,000	**
	$940,000	

* Preliminary conceptual estimate for Construction

$80/ft x 0.9 x 5280 =	$380,000	
14′ x 75′ x $200 =	$210,000	
	$590,000	(Compares to WCCC estimate of $582,000 by LCE)
Add Trail Head (Lump) =	$100,000	
	$690,000	(Say $700,000) **

Funding Using TMACOG Enhancement

Design (100%)	$65,000	+ 20% Match of ($940K - $65K = $875K)
	$175,000	(0.20 x $875K) 20% match
	$240,000	Metroparks $240K÷$940K = 25.5%

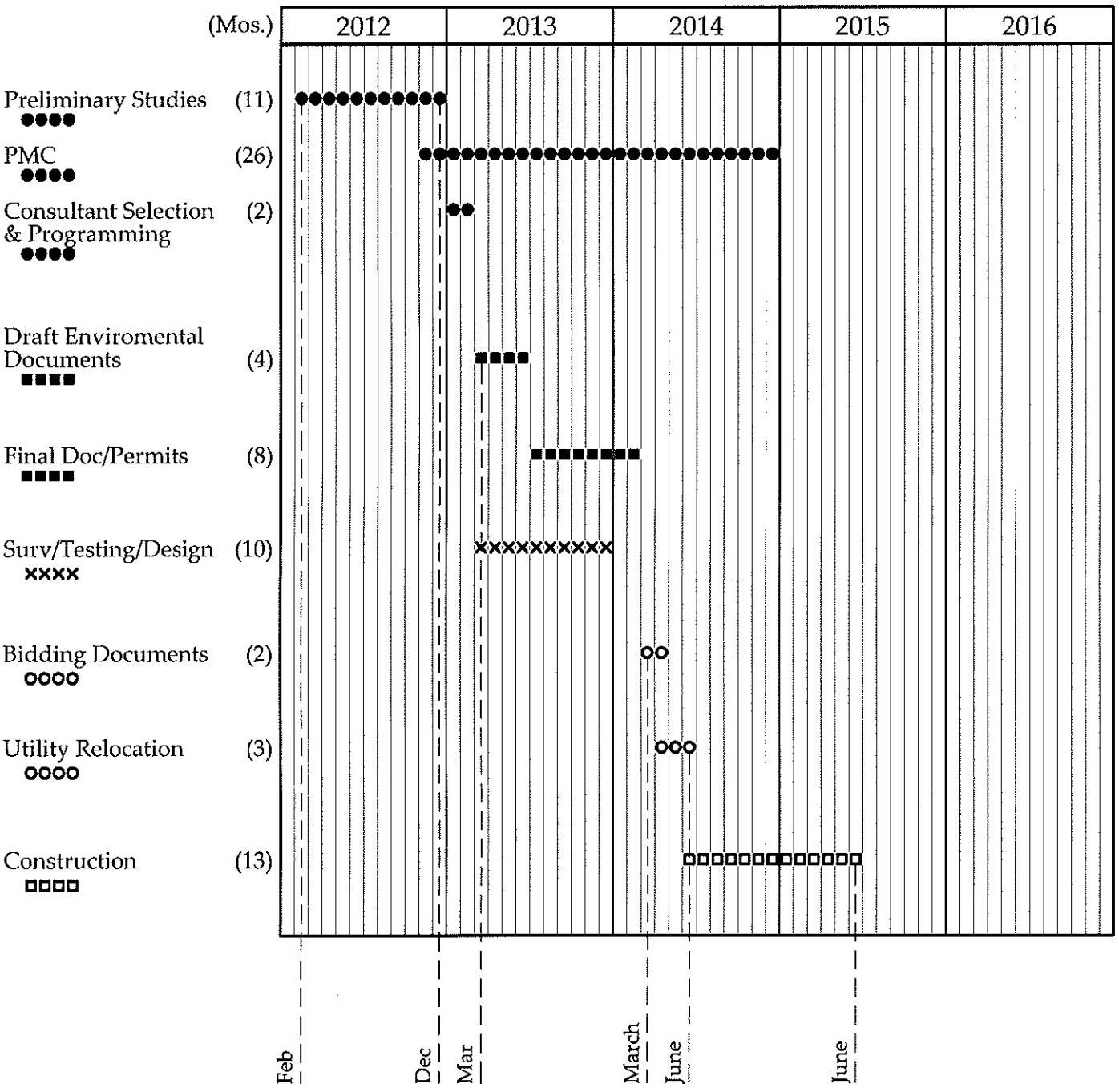
CSX Railroad Bridge
CONCEPTUAL PROJECT COSTS
PREFERRED ALTERNATIVE

	COMPONENT 2 (MOT) with PARTIAL REMOVAL (WCPA) *Component 1*		COMPONENT 2 (MOT) with FULL REMOVAL (WCPA) *Component 2*	
Design/Environmental/PMC	$300,000		$300,000	
Construction	$1,995,000		$2,775,000	
Contingencies	$300,000		$415,000	
Testing & Inspection	$208,000		$285,000	
TOTAL	$2,803,000		$3,775,000	
Less Remaining Federal	$2,043,000		$2,043,000	
	$760,000		$1,732,000	
Potential TMACOG Bike	$605,000		$605,000	
Unfunded	-0-		$767,000	
Local	$155,000	(5.5%) Low	$360,000	(9.5%) Low
Potential PMC	$45,000		$45,000	
	$200,000	(7.1%) High	$405,000	(10.7%) High

Adjust for Advanced R/W

Total (From Above)	$2,803,000		$3,775,000	
Add R/W	$898,000		$898,000	
	$3,701,000		$4,673,000	
Local (From Above – High)	$200,000		$405,000	
Local R/W Match	$437,000		$437,000	
	$637,000	(17.2%)	$842,000	(18.0%)

PROPOSED OVERALL SCHEDULE
(At Minimum Time Line)



	Total	*Remaining*
Time Line to Bid	26 mos.	15 mos.
Time Line to Build	14 mos.	14 mos.
	40 mos.	29 mos.

OTHER PROJECT INFORMATION

Follow up items to Phase 1 Study:

1. The Lucas County Engineers office has reviewed the Phase One study (Planning Level Report) and correspondence is shown in Appendix B.

2. During this Phase Two study a verbal confirmation that the pre-stressed Concrete I beams can be delivered to the site was obtained from a fabricator, who visited the site.

Phase 2 Study

1. It would be best to let these projects together as one contract, but a waiver is necessary from ODOT because the general contractor would be doing less than 50% of the work if a sub-contractor is used for the bridge demolition.

2. Opportunity for University of Toledo student involvement appears to be limited, but is still a possibility.

ACKNOWLEDGEMENTS

The following people were contacted and supplied information to Claude Brown & Associates in the preparation of this report. Their counsel, advise and input is greatly appreciated.

Barry Barger	Prestress Services Industries, LLC
Joe Camp	City of Maumee
Dave Dysard	City of Toledo
Keith G. Earley	Lucas County Engineer
Michael Gramza	ODOT District 2
Warren Henry	TMACOG
Rex H. Huffman	Wood County Port Authority
Cheryl Johnson	Wood County Port Authority
Michael Ligibel	ODOT District 2 (Retired)
Katherine B. MacPherson	MacPherson Architects
Thomas R. Uhler	Wood County Port Authority
Bryan Zienta	Lucas County Bridge Engineer
Richard Martinko	U of T – Intermodal Transportation Inst.
David Zenk	Metroparks of the Toledo Area
John Zvanovec	Metroparks of the Toledo Area
Imad Bdeiri	ODOT District 2
Jeff Lohse	Chief Deputy, Lucas County Engineer

APPENDIX A

DRAFT
COOPERATIVE AGREEMENT
(NOT THE FINAL DOCUMENT)

This agreement is by and between the Board of the Wood County Port Authority (herein and after referred to as **Port**) and the Board of the Metropolitan Park District of the Toledo Area (herein and after referred to as **Metroparks**).

Witnesseth

Whereas, the **Port** and **Metroparks** are members of the Toledo Metropolitan Area Council of Governments and the Westside Corridor Coordinating Committee (hereinafter referred to as the **WCCC**), and

Whereas, the **WCCC** has co-operated to acquire the right of way of the former Toledo Terminal Railroad from the CSX Railroad, and

Whereas, the **WCCC** has developed standards for construction of improvements along the right of way of said former Toledo Terminal Railroad, and

Whereas, the **Metroparks** is responsible for the section of the Westside Corridor bike/hike trail between River Rd. and Glanzman Rd. in the City of Toledo, Lucas County, Ohio, and

Whereas, the **Port** is responsible for the adjacent section of the Westside Corridor bike/hike trail between between River Rd. (SR-65) in Perrysburg Township, Wood County, Ohio, and River Rd. in the City of Toledo, Lucas County, Ohio, and

Whereas, the **Port** and the **Metroparks** desire to remove as much as possible of the former CSX Railroad bridge across the Maumee River and construct a twelve (12) foot wide asphalt bike/hike trail between River Rd. and Glanzman Rd., along with a new structure over the Anthony Wayne Trail (SR-25) and a trail head along River Rd. Said improvements include storm drainage, signage, pavement markings, landscaping, and other related work (hereinafter referred to as the **Project**, and

Whereas, the **Port** and the **Metroparks**, along with the **WCCC**, agree the construction of said **Project** including the removal of said CSX RR bridge would be beneficial to the citizens of both Lucas County and Wood County, and

APPENDIX A

Whereas, the **Port** and the **Metroparks** can reduce its costs by co-operating with a Joint **Project**,

Now Therefore, the **Port** and the **Metroparks**, for mutual benefits herein contained and specified, have agreed and hereby agree as follows:

1. The **Port** will be the lead agency for the **Project** and will prepare the necessary and detailed construction plans in accordance with the Ohio Department of Transportation (**ODOT**) standards and specifications and, when possible, the standards of the **WCCC**. Said construction plans will be prepared as two sets of plans; one for the removal of the CSX RR bridge (bid both as full and partial removal) and the other set for the bike/hike trail between River Rd. and Glanzman Rd. including a new structure over the Anthony Wayne Trail (SR-25) and a trail head along River Rd., in Lucas County.

2. The **Port** will prepare the construction cost estimate, co-ordinate for utility adjustments, and provide for contract administration, advertising, bidding, and administration of the construction work including inspection and testing.

3. No additional right of way is anticipated for the **Project**, but should it be necessary, the **Metroparks** will provide at **Project** cost for right of way inside Lucas County including acquisition services such as title work, appraising and negotiations in accordance with **ODOT** procedures. Likewise, if right of way is necessary in Wood County, the **Port** will provide for right of way at **Project** cost in accordance with **ODOT** procedures.

4. The **Port** will provide overall **Project** management including plan review through its consultant and any ineligible expense will be at its cost. The **Metroparks** will serve as **Project** coordinator with **ODOT**, at its cost, and be the **ODOT** point of contact.

5. The **Port** and the **Metroparks** will co-operate and support each other to obtain additional **Project** funding sources of approximately $767,000, now shown as "Unfunded" on Exhibit "A."

APPENDIX A

6. The **Port** will obtain the acknowledgement and consent of the Wood County Commissioners and the Wood County Engineer in regards to this Agreement and **Project**. The **Metroparks** will obtain the acknowledgement of the Lucas County Commissioners and the Lucas County Engineer in regards to this Agreement and **Project**.

7. The **Port** shall invoice **Metroparks** for its local share of the **Project** costs. Said payment shall be received prior to bidding by the **Port**. At this time, the local shares are estimated as follows:

Bike/Hike Trail With Full Bridge Removal		Bike/Hike Trail With Partial Bridge Removal	
Port	$180,000	Port	-0- *
Metroparks	$180,000	Metroparks	$155,000
	$360,000		$155,000

* Assumes project management costs are all eligible. If not, could be $45,000.

8. After the bid opening by **Port**, should there be a shortage of **Project** funding, the **Port** will convene a meeting with the **Metroparks** and others to see if the shortage can be funded.

9. As lead agency, the **Port** will be responsible to provide an overall accounting of **Project** costs to the **Metroparks** after the actual construction quantities are finalized and the **Project** closed out with **ODOT**. The **Port** will invoice or refund to the **Metroparks** in accordance with the intent of this Agreement.

10. It is the intent of this Agreement that the **Port** and **Metroparks** shall each properly and expeditiously discharge any requirements that devolve upon them from time to time during the **Project** period.

11. Attached to this Agreement is the current estimate for the **Project** (Exhibit "A"), which gives the approximate levels of financial participation for the **Port** and **Metroparks**, along with other funding sources and additional potential funding sources.

APPENDIX A

IN WITNESS WHEREOF, the **Port** and **Metroparks** have adopted the provisions of this Agreement and have directed the execution of same by their duly authorized representatives on the date(s) hereinafter shown.

Approved as to Form:

Rex H. Huffman, Esq.
Legal Counsel

Date: _____

WOOD COUNTY PORT AUTHORITY

_____

Cheryl Johnson
President

_____

(Type Name) **XXX**
Secretary

Date: _____

Approved as to Form:

Dave Smigeiski
Legal Counsel

Date: _____

METROPOLITAN PARK DISTRICT OF THE TOLEDO AREA BOARD OF COMMISSIONERS

_____

Scott J. Savage
President

_____

Steve Madewell
Executive Director

Date: _____

APPENDIX A

EXHIBIT A to DRAFT COOPERATION AGREEMENT

Current Project Estimates

	River Rd. / Glanzman Rd. *(Metroparks)*	Partial Removal *(Port)*	Full Removal *(Port)*	Total Cost Full Removal *(Joint Project)*
Project Management	In House	$45,000	$45,000	$45,000
Design & Enviro	$65,000	$190,000	$190,000	$255,000
Construction	$700,000	$1,295,000	$2,075,000	$2,775,000
Contingencies	$105,000	$195,000	$195,000	$415,000
Construction Inspection/Testing	$70,000	$138,000	$215,000	$285,000
	$940,000	$1,863,000	$2,835,000	$3,775,000

Potential Federal Funding

Federal Share with Full Removal = $3,775,000 - $2,043,000 = $1,732,000
$1,732,000 x 80% = $1,385,600 (Say $1,385,000)

Federal Share with Partial Removal = $2,803,000 - $2,043,000 = $760,000
$760,000 x 80% = $608,000 (Say $605,000)

APPENDIX A

EXHIBIT A to DRAFT COOPERATION AGREEMENT

Total Project Funding Options

River Rd. to Glanzman with Full Removal:	Local:	$360,000
	Federal:	$2,043,000
	TMACOG:	$605,000
	Unfunded:	$767,000
		$3,775,000
River Rd. to Glanzman with Partial Removal:	Local:	$155,000
	Federal:	$2,043,000
	TMACOG:	$605,000
		$2,803,000

Financial Plan

LOCAL PARTNERS	FULL REMOVAL	PARTIAL REMOVAL
Metroparks	$180,000	$155,000
Port	$180,000	- 0 -
	$360,000	$155,000
OTHER FUNDING SOURCES		
TMACOG (Application Pending)	$605,000	$605,000
Additional Proj. Funding	$767,000	- 0 -
Federal (Earmark)	$2,043,000	$2,043,000
	$3,775,000	$2,803,000

APPENDIX B

Review of *"West Side (CSXRR) Bike/Pedestrian Trail Crossing of the Maumee River"* prepared by Claude Brown & Associates dated March 16, 2012.

1. The estimates shown are using the existing footings. Per the 1987 dive inspection, I suspect the existing footings will not be acceptable for re-use. I agree that further testing will be needed. There was undermining of pier #2 in 1987. For budgeting purposes, I would suggest being more conservative.
2. The sixth paragraph indicates that ODOT or the US Coast Guard could do the permitting. The US Coast Guard only does their permit and ODOT could do a CE Level 1 Permit. This project will most likely need a more extensive environmental investigation and ODOT would require a prequalified consultant be hired to perform the environmental investigation.
3. Railings – I believe a vandal protection fence may be desirable on the proposed bridge.
4. Steel Alternatives – Weathering steel still needs to be painted in the future and is not as great of a maintenance savings as previously thought. I agree that painting of the ends of the beams could reduce the amount of rust staining on the abutment and should be considered if this type of bridge is chosen.
5. I would suggest that you may want to increase the cost estimate of the concrete. Placement of the concrete is going to cause issues and increase the concrete costs and reinforcing steel placement costs.
6. The itemized costs appear to be appropriate, however, use of a 5% contingency appears to be way too low with the amount of uncertainty at this point in the project development process. 5% would be low with a final set of plans with a set bid date. Also, the inflationary costs don't appear to have been applied to the construction costs shown on page 9.

APPENDIX B

Claude Brown & Associates
Consulting Engineers
2727 N. Holland-Sylvania Rd., Suite C Toledo, OH 43615 Telephone (419) 531-5128

May 24, 2012

Bryan Zienta
Bridge Engineer
Lucas County Engineers Office
One Government Center, Suite 870
Toledo, OH 43604-2258

RE: Review Comments for Westside (CSX RR) Bike/Pedestrian Trail Crossing of the Maumee River

Dear Bryan:

Thank you for taking time to review the Planning Level Report prepared for the Wood County Port Authority (WCPA) dated March 2012. The purpose of the report was to address some conceptual issues for the WCPA and to recommend the apparent most economical alternative along with project costs (order of magnitude and a tentative schedule).

The next phase of the study which has been authorized by the WCPA is to confirm the apparent most economical alternate, determine potential funding, stake holders and partners with possible implementation of a project (programming with ODOT).

With this background, our responses to your comments date March 16, 2012 are as follows:

1. We concur that further testing will be required before construction and most likely before detailed design.
2. We concur with your comments ODOT will most likely be lead agency and it's anticipated a path 2 or 3 process with an alternative evaluation report (AER) will be necessary. (Refer to new ODOT Project Development Process).
3. A protective vandal fence is not anticipated at this time due to appearance and light boat usage. (see Section 305.2 of BDM)
4. We concur with comments in regard to steel alternative at this time. We are confirming concrete I beam alternative.

5. You may be correct, but comment would be relevant to all alternatives. The conceptual alternatives and costs were reviewed with only one contractor at this time.
6. The minimum contingency was 5% plus a lump sum of $115,000, which is about 7% for the concrete I beam. It was determined that alternates 1, 2, & 3 could all be completed for a project cost of about $8,400,000 total dollars, which was projected to $9,050,000.00 on page 9. The final contingency varies between 6.5% and 15.75% dependent on the final alternate. The 15.75% applies to the concrete I beam alternative

Again, thank you for taking the time to review and comment on the planning level report. Your cooperation is greatly appreciated.

Regards,

Claude (Butch) M. Brown, III, P.E.
Claude Brown & Associates

cc: John Crandall, Project Manager