YADKIN RIVER PEDESTRIAN/BIKE BRIDGE STUDY
COST ESTIMATE UPDATE

Towns of Elkin and Jonesville, North Carolina

M&C Commission No. 4470A

August 2023

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HICKORY, NC 28601
DESIGN COORDINATOR ● TIMOTHY J. TOWNSEND, P.E.
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I. INTRODUCTION

Based on discussions with the Piedmont Triad Regional Council (PTRC), we understand that the previously completed Yadkin River Pedestrian/Bike Bridge Study (**Appendix A**) performed in December 2020 by WSP needs to be updated to current costs to submit grant applications. Several options were considered in the original study, including a standard beam and deck bridge, a prefabricated truss bridge, and a complex bridge capable of spanning the entire river. Due to hydraulic concerns regarding river channel obstructions, due to bridge substructures, and the goal to minimize FEMA Flood Plan Maps impacts, the cost was only updated for the complex bridge option which would span the entire river in one span.

Figure 1: Vicinity Map

We have reviewed the existing bridge study and cost estimates prepared by WSP, and have updated the proposed bridge cost estimate. To escalate the cost from 2020 to 2023, we considered the effects on inflation, and compared that cost to a similar proposed complex pedestrian bridge currently under design by Mattern & Craig. Since that bridge has a similar construction, span length greater than 200 feet, shares the same aesthetic considerations, and features ramps at the bridge approaches, it is considered a comparable structure. The estimated cost per square foot of that structure was compared to the cost per square foot of this structure, and the prices were adjusted accordingly while factoring in inflation.

II. COST UPDATE

After consideration of inflation and a comparison with a similar proposed bridge project, currently under design by Mattern & Craig, we have selected an estimated cost per square foot of $1,600 and $500 for the bridge and ramp approaches respectively. A breakdown of the cost computation follows in **Tables 1, 2 and 3**. These estimated costs include consideration for increased material costs and increased time necessary to obtain materials to construct the bridge that have occurred since the original 2020 cost estimate.

Bridge Data Input			
Complex Construction			
Total Length of Span	**350**	ft	
Total Width (out-to-out)	**12**	ft	
Bridge Type	**cablestay**		
	Estimated Quantity	Estimated Cost per Unit	Estimated Cost
Complex Bridge	4200 SF	$ 1,600.00	**$ 6,720,000.00**
Total			**$ 6,720,000.00**

Table 1: Bridge Cost

Ramp Data Input			
Complex Construction			
Total Length of Span(s)	**420**	ft	
Total Width (out-to-out)	**12**	ft	
	Estimated Quantity	Estimated Cost per Unit	Estimated Cost
Approach Ramp	5040 SF	$ 500.00	**$ 2,520,000.00**
Total			**$ 2,520,000.00**

Table 2: Approach Ramp Cost

Total Project Cost Calculator			
Approaches			
Approaches - Assumed ADA Ramp of 420' total length		$	2,520,000.00
	Subtotal	**$**	**2,520,000.00**
Cost of Bridge			
Bridge Cost - Complex Bridge		$	6,720,000.00
	Subtotal	**$**	**6,720,000.00**
Construction Subtotal		**$**	**9,240,000.00**
Mobilization (10% of Construction Subtotal)		$	924,000.00
Construction Traffic Control (2.5% of Construction Subtotal)		$	231,000.000
Contingencies (20% of Construction Subtotal)		$	1,848,000.00
Construction Total		**$**	**12,243,000.00**
Design and Construction Management			
Preliminary Design (5% of Construction Total)		$	612,150.00
Final Design (10% of Construction Total)		$	1,224,300.00
Construction Administration, Inspection, Testing (8% of Construction Total)		$	979,440.00
Design and Construction Management Total		**$**	**2,815,890.00**
Total Estimated Cost		**$**	**15,058,890.00**

Table 3: 2023 Cost Breakdown

A comparison between the cost estimates in 2020 and 2023 is summarized in **Table 4** below.

	2020	2023
* Bridge Cost	$9,089,500	$12,243,000
Preliminary Design	$454,475	$612,150
Final Design	$908,950	$1,224,300
Construction Admin., Inspection, & Testing	$454,475	$979,440
Total Costs	**$10,907,400**	**$15,058,890**

* Includes costs of Approach, Bridge Mobilization (10%), Traffic Control (2.5%), and Contingencies (20%). See Appendix B for detailed breakdown of costs.

Table 4: Cost Comparison

For details of the previous cost estimates prepared by WSP in 2020, see **Appendix A**.

III. CONCLUSIONS AND RECOMMENDATIONS

The new bridge is to be constructed in the footprint of the original Hugh Chatham Memorial Bridge. This location was selected to try to avoid any issues with the FEMA floodplain. It is not guaranteed that this will be the case and should be investigated during the design and permitting phase.

Funding applications for this project shall consider utilizing the updated 2023 cost estimate for the most accurate reflection of costs. Please note that these estimated costs do not include any escalation for future inflation. The anticipated schedule for design and construction shall be based on the example schedule presented in the original bridge study (Figure xvii). The start date for Planning & Bridge Concept Development should be adjusted to the present timeline, with a suggested start date of Q2-Q4 of 2024.

APPENDIX A

YADKIN RIVER PEDESTRIAN/BIKE BRIDGE STUDY: SUPPLEMENTARY REPORT FOR THE YADKIN VALLEY REGIONAL BIKE PLAN (PREPARED BY WSP, DATED DECEMBER 16, 2020)

TOWNS OF ELKIN AND JONESVILLE

YADKIN RIVER PEDESTRIAN/BIKE BRIDGE STUDY

SUPPLEMENTARY REPORT FOR THE YADKIN VALLEY REGIONAL BIKE PLAN

DECEMBER 16, 2020

IMAGE BY DAVID SALLORS - HOT METAL BRIDGE IN PITTSBURGH, PENNSYLVANIA

wsp

YADKIN RIVER PEDESTRIAN/BIKE BRIDGE STUDY

SUPPLEMENTARY REPORT FOR THE YADKIN VALLEY REGIONAL BIKE PLAN

TOWNS OF ELKIN AND JONESVILLE

DATE: DECEMBER 16, 2020

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1 INTRODUCTION

1.1 PROJECT SUMMARY

As part of the Yadkin Regional Bike Plan, the towns of Elkin and Jonesville are proposing a new pedestrian/bike bridge to cross the Yadkin river and connect the two towns. The proposed bridge will be constructed in the footprint of the previous Hugh Chatham Memorial Bridge, a vehicular truss bridge constructed in 1931 and demolished in 2011. The goal is to construct an iconic pedestrian bridge that will attract visitors from the region and beyond and will be the highlight of the Yadkin Regional Bike Trail. This report will summarize potential options and engineer's opinion of costs associated with the goals of this project.

1.2 SUMMARY OF BRIDGE OPTIONS

This report will outline the key issues, opportunities, considerations for bridge alternatives, and what types of costs can be expected for a bridge to be constructed within the project parameters.

MAIN BRIDGE OPTIONS

There will be three bridge cost options presented in the following sections. These will be as follows:

- Standard Pedestrian Bridge
  - The low-cost option will consist of concrete beams supported by standard substructure elements.
- Prefabricated Truss
  - A mid-cost option will consist of a bridge utilizing painted prefabricated trusses. This option will closely resemble the previous Hugh Chatham Memorial Bridge. This will be a cost friendly option to give a signature look.
- Complex Bridge
  - A high-cost option will be an iconic complex bridge structure such as a cable stayed bridge or a structural steel arch bridge.

ADDITIONAL ENHANCEMENTS

Along with the above bridge options, a few bridge enhancements will also be presented as ways to further enhance the users experience both visually and physically. These will be as follows:

- Bridge Lighting
- Canopy structures
- Land Bridge Features
- Overlooks
- Approaches

2 BRIDGE DETAILS

2.1 GEOMETRY

2.1.1 BRIDGE LOCATION

The proposed bridge will be constructed on the site of the demolished Hugh Chatham Memorial bridge connecting the towns of Elkin and Jonesville.

Figure i: Hugh Chatham Memorial Bridge (2007)

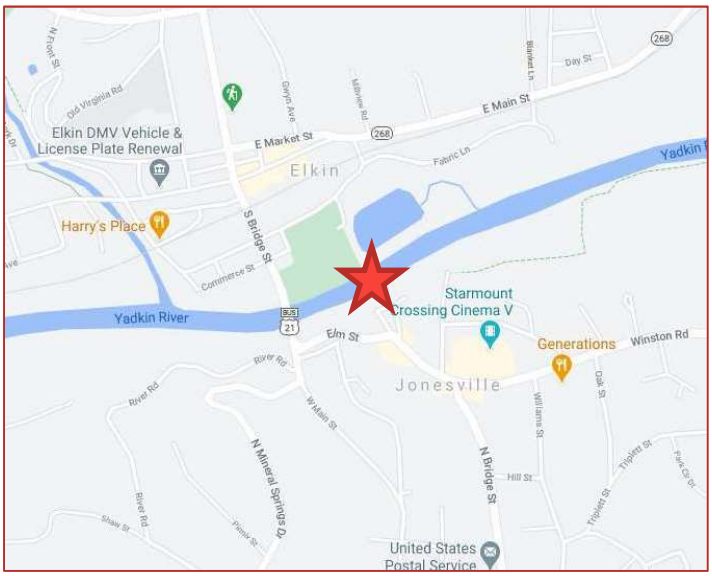


Figure ii: Bridge Locaion

FEMA FLOOD PLAIN

The location of this bridge is within a FEMA regulatory floodway. It is understood that if the proposed bridge does not increase the footprint or reduce the minimum low chord of the of the previous Hugh Chatham Memorial bridge this will not be an issue and will not result in a rise of the regulatory flood way.

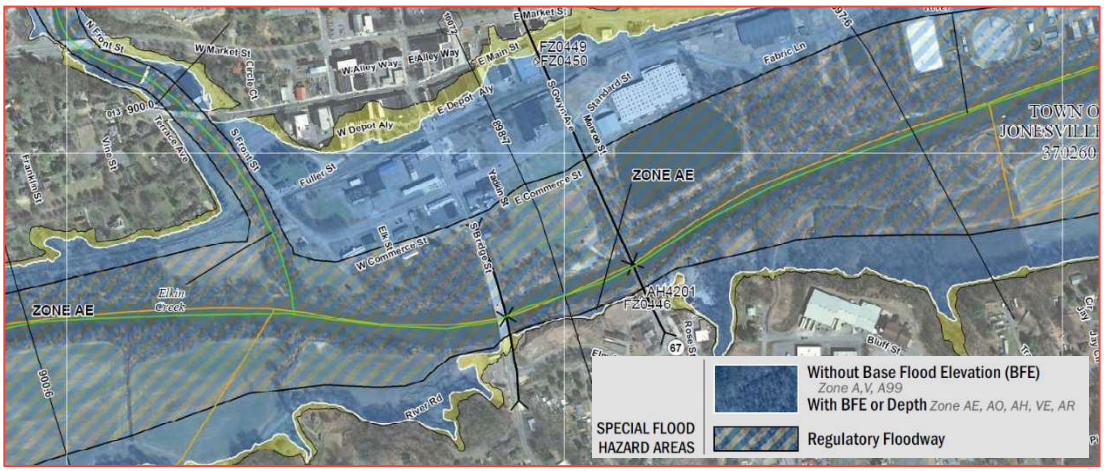


Figure iii: FEMA Floodplain Map

RIGHT-OF-WAY AND UTILITY IMPACTS

No Right-of-Way purchases are expected for the construction of the proposed bridge and are excluded from cost estimates. There are no known utility impacts. There is an existing sewer outfall on the Jonesville side of the river that that will need to be avoided during construction.

ENVIRONMENTAL CONSIDERATIONS

An environmental and natural systems investigation should be performed with a field review of the site. The perimeters of any wetlands should be flagged, and the site should be reviewed for any endangered species listed on register. Once these delineations have been made, the US Army Corps of Engineers (USACE), and NC Division of Environmental Quality (NCDEQ) will visit the site and concur or revise the flagging. Once the locations of environmental sensitive areas are known, design decisions can be made regarding avoidance or impact.

When environmental features are impacted USACE, and NCDEQ will require impact fees be paid, or mitigation for the impact. These cost of these fees, and mitigation will increase the project cost and should be factored into the client's design budget as they will need to be paid prior to obtaining federal permits.

2.1.2 BRIDGE GEOMETRY

The proposed bridge will be approximately 350' long to span the Yadkin River and accommodate the elevation changes present at the banks of the river. The large elevation difference of approximately 30' from one end of the bridge to the other will create the need for additional structures to accommodate ADA requirements. The options for these structures are outlined in Section 2.5.

Figure iv: Elevation Profile

For cost estimating, a bridge width of 12' was assumed. The bridge was assumed to be design to AASHTO LRFD Pedestrian Guide Specifications with a uniform Live Load of 90 psf along with a vehicular Live Load of 20,000 lbs.

2.2 CONVENTIONAL PEDESTRIAN BRIDGE

2.2.1 CONVENTIONAL BRIDGE DETAILS

The most cost-efficient option is to construct a convention girder bridge. This can consist of either prestressed concrete beams or steel I beams supporting a concrete deck. To enhance the appearance of a conventional bridge items such as custom railings and precast aesthetic panels can be added. The costs indicated in this report are calculated for a precast concrete girder bridge.

2.2.2 CONVENTIONAL BRIDGE EXAMPLES

A conventional pedestrian bridge will look much like a standard vehicular bridge. The following examples all show some type of aesthetic enhancement including custom railings, overlooks and fascia treatments.

Figure v: Minisa Bridge

Image by David Sailors

Figure vi: Mohawk Valley Gateway Overlook Pedestrian Bridge

Image by John Bear

2.2.3 CONVENTIONAL BRIDGE COSTS

Table 2.1 Conventional Bridge Costs

ITEM	COST
*Construction Total	$3,524,500
Design & Admin Total	$704,900
Total Bridge Cost	$4,229,400

*Includes costs of Approach, Bridge, Mobilization, Traffic Control and Contingencies.

Note: Costs are estimated to include minor aesthetic enhancements such as custom railings and light posts. Additional enhancements such as land bridge features and overlooks are an additional cost. See Appendix A for detailed breakdown of costs.

2.3 PREFABRICATED TRUSS BRIDGE

2.3.1 PREFABRICATED TRUSS BRIDGE DETAILS

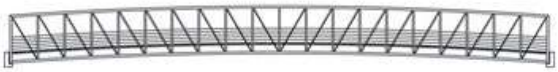
Utilizing prefabricated trusses, an appearance similar to that of the previous Hugh Chatham Memorial Bridge will be achieved. In this system, two main trusses will be fabricated off site by a Truss manufacturer and delivered on site in multiple truss sections. The contractor shall be responsible for the erection of trusses, construction of substructure and construction of the cast-in-place deck. Trusses are available in multiple configurations along with multiple options in finishes as detailed below.

TRUSS STYLES

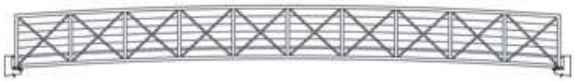
Below represents Truss styles from one manufacturer. Truss styles will vary depending on manufacturer. For the purposes of cost estimating in this report, the Capstone Pedestrian Truss was chosen. See Appendix A for more details about this truss configuration.

Keystone® Pedestrian Truss

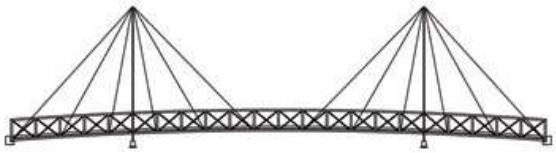
Capstone® Pedestrian Truss



Gateway® Pedestrian Truss



Link® Pedestrian Truss



Cable-Stayed Pedestrian Truss

FINISH OPTIONS

Manufacturers will typically provide many finish options. These could include the following:

1. Weathering Steel
2. Painted Steel
3. Painted Weathering Steel
4. Galvanized Steel

2.3.2 PREFABRICATED TRUSS EXAMPLES

Figure vii: Colorado Riverway Bridge (Capstone Truss Style, Weathering Steel).

Figure viii: 84th Street Crossing (Capstone Truss Style, Painted Steel).

Images by Contech Engineered Solutions.

2.3.3 PREFABRICATED BRIDGE COSTS

Table 2.2 Prefabricated Truss Bridge Costs

ITEM	COST
*Construction Total	$4,389,460
Design & Admin Total	$746,208
Total Bridge Cost	$5,135,668

*Includes costs of Approach, Bridge, Mobilization, Traffic Control and Contingencies.

Costs are calculated for a capstone style painted steel truss. See Appendix A for detailed breakdown of costs.

2.4 COMPLEX BRIDGE

2.4.1 COMPLEX BRIDGE DETAILS

Complex bridges offer the opportunity to create a one of a kind signature structure. The main difference to the other bridge options is the ability to have a single long span over the river. This could include a cable stayed bridge, structural arch bridge or a stress ribbon bridge. As shown in the figures below, large signature arches or towers are often the defining features. These types of bridges usually come at a considerably higher cost due to complex design and construction.

2.4.2 COMPLEX BRIDGE EXAMPLES

Figure ix: St. Patrick's Bridge

Image by Tom Cooper.

Figure x: Redhayes Bridge M5

Figure xi: Laukonsilta Pedestrian Bridge

Image by Tila Ettala.

2.4.3 COMPLEX BRIDGE COSTS

The costs listed below were based on bid tabs from "signature" pedestrian bridges constructed in North America. See Appendix A for detailed breakdown of costs.

Table 2.3 Complex Bridge Costs

ITEM	COST
*Construction Total	$8,746,500
Design & Admin Total	$1,486,905
Total Bridge Cost	$10,233,405

*Includes costs of Approach, Bridge, Mobilization, Traffic Control and Contingencies.

2.5 APPROACH OPTIONS

There are multiple options to provide pedetrians access from the ground 30' below on the Elkin side of the River. One option would be to provide switchback ADA ramps as shown in Figure xiii below. Instead of switchback ramps, a single inline ramp could also be provided. Due to FEMA floodplain restrictions, ramps will most likely have to be supported on an open air structure. It might be possible for MSE walls to be used but an analysis will have to be performed in order to see if it can be done without creating a worse condition that that of the previous bridge. Another option would be to provide a stair structure as shown in Figure xii. This would need to include an elevator to comply with ADA requirements. However, due to the flood plain the elevator could be susceptable to flooding causing maintenance and safety issues. Coordination with the rest of the Yadkin Water Trails should be done to accommodate any drop ins to the adjacent trails. The costs for one of these structures is an estimated $1,400,000.

Figure xii: Stair Structure

Figure xiii: Switchback Ramp

Images by David Sailors

2.6 ADDITIONAL ENHANCEMENTS

2.6.1 BRIDGE LIGHTING

A full lighting package will cost an estimated $200,000 to $1,000,000 depending on the level of lighting desired.

Figure xiv: American Tobacco Trail Bridge

2.6.2 OVERLOOKS AND CANOPY STRUCTURES

Overlooks will cost approximately the same cost per square foot of the type of bridge constructed.

Figure xv: Pensacola Bay Bridge

2.6.3 LAND BRIDGE FEATURES

Land Bridge features can come at a high costs due to the weight that is added to the bridge therefore increasing the size of the structural members of the bridge. The costs will vary greeatly depending on what type of land bridge features are used.

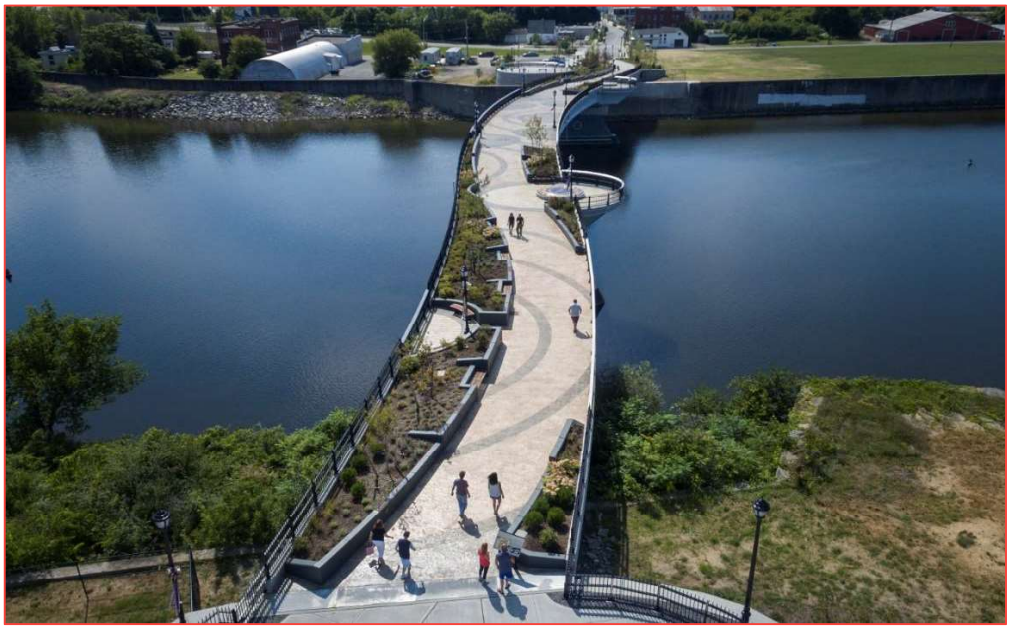


Figure xvi: Mohawk Valley Gateway Overlook Pedestrian Bridge

Image by John Bear

3 SUMMARY OF BRIDGE COSTS

Table 3.1 Cost Comparison

ITEM	CONVENTIONAL BRIDGE	PREFABRICATED TRUSS BRIDGE	LONG SPAN COMPLEX BRIDGE
*Bridge Cost	$3,524,500	$4,389,460	$9,089,500
Preliminary Design	$176,225	$175,578	$454,475
Final Design	$352,450	$351,157	$908,950
Construction Admin, Inspection & Testing	$176,225	$219,473	$454,475
Total Costs	$4,229,400	$5,135,668	$10,907,400

*Includes costs of Approach, Bridge, Mobilization (10%), Traffic Control (2.5%) and Contingencies (20%).
See Appendix A for detailed breakdown of costs.

For a previous cost estimate prepared by Lutman Architecture, Inc. dated 2/7/2020, see Appendix A-3.

3.1 NEXT STEPS

Once the desired option is selected, the next step will be to identify the funding for the project. Identifying the funding will be an important step in determining the design and construction schedule. If any Federal funds are to be used, this could add additional processes into the schedule to satisfy Federal fund requirements.

As mentioned, the new bridge is to be constructed in the footprint of the original Hugh Chatham Memorial Bridge to avoid any issues with the FEMA floodplain. However, it is not guaranteed that this will be the case. To avoid any issues during the design and permitting phase, the approach and bridge options that are selected should be presented to the State to confirm that the new bridge will not create a rise in the 100-year BFEs or if they will require any additional Hydraulic modeling.

SCHEDULE

Below is an estimated example schedule for design and construction assuming funding is secured, and the project can be begin in Q3 of 2021.

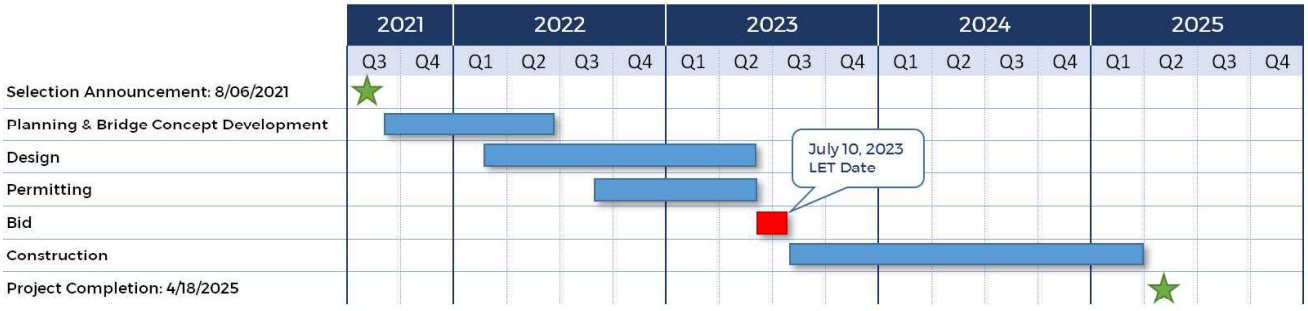


Figure xvii: Example Schedule

APPENDIX

A DOCUMENTATION

APPENDIX

A-1 COST DETAILS

Made By: MJW Checked by: JPS

Date: 11-11-2020 Date: 11-20-2020

YADKIN RIVER PEDESTRIAN BRIDGE
PROBABLE OPINION OF COST

Bridge Data Input

Conventional Construction

Total Length of Span(s)	**350**	ft
Total Width (out-to-out)	**12**	ft
Bridge Type	**concrete girder**	
Curved?	**no**	

	Estimated Quantity		Estimated Cost per Unit		Estimated Cost
Cost of Conventional Construction					
Assumed	4,200	SF	$300.00	$	**1,260,000.00**
Subtotal				$	**1,260,000.00**

TOTAL	$	**1,260,000.00**

Made By: MJW Checked by: JPS

Date: 11-11-2020 Date: 11-20-2020

YADKIN RIVER PEDESTRIAN BRIDGE
PROBABLE OPINION OF COST

Bridge Data Input

Prefabricated Truss Construction

Total Length of Span(s)	**350**	ft
Total Width (out-to-out)	**12**	ft
Bridge Type	**proprietary truss**	
Curved?	**no**	

	Estimated Quantity		Estimated Cost per Unit		Estimated Cost
Cost of Prefabricated Truss Painted Steel Truss Construction					
* Two 175' Steel Truss Spans	1		$884,800.00	$	**884,800.00**
Erection Cost	1		$500,000.00	$	**500,000.00**
C.I.P. Concrete Deck Cost	78	cu.y	$1,000.00	$	**78,000.00**
Substructure & Foundations		3	$150,000.00	$	**450,000.00**
Subtotal				$	**1,912,800.00**
Total (Painted Steel Option)				$	**1,912,800.00**

Note:
* Cost for galvanizing is approximately 30% higher for each span.
* Cost for using weathering steel is approximately 10% lower for each span.

Made By: MJW Checked by: JPS

Date: 11-11-2020 Date: 11-20-2020

YADKIN RIVER PEDESTRIAN BRIDGE
PROBABLE OPINION OF COST

Bridge Data Input

Complex Construction (i.e. "Signature")

Total Length of Span(s)	**350**	ft
Total Width (out-to-out)	**12**	ft
Bridge Type	**cablestay**	
Curved?	**no**	

	Estimated Quantity		Estimated Cost per Unit		Estimated Cost
Cost of Complex Construction					
Assumed	4,200	SF	$1,300.00	$	**5,460,000.00**
Subtotal				$	**5,460,000.00**
TOTAL				$	**5,460,000.00**

Note:
Cost per unit based on bid tabs from "signature" pedestrian bridges constructed in North America.

Made By: MJW Checked by: JPS

Date: 11-11-20 Date: 11-20-20

YADKIN RIVER PEDESTRIAN BRIDGE
PROBABLE OPINION OF COST

Probable Opinion of Cost

Total Project Cost Calculator

Approaches			
Approaches - Assumed ADA Ramp of 420' total length		$	1,400,000.00
	Subtotal	$	1,400,000.00
Cost of Bridge			
Bridge Cost ("Conventional Bridge")		$	1,260,000.00
	Subtotal	$	1,260,000.00
	Construction Subtotal	$	2,660,000.00
Mobilization (10% of Construction Subtotal)		$	266,000.00
Construction Traffic Control (2.5% of Construction Subtotal)		$	66,500.00
Contingencies (20% of Construction Subtotal)		$	532,000.00
CONSTRUCTION TOTAL		$	3,524,500.00
Design and Construction Management			
Preliminary Design (5% of Total Construction Cost)		$	176,225.00
Final Design (10% of Total Construction Cost)		$	352,450.00
Construction Administration, Inspection, Testing (5% of Total Construction Cost)		$	176,225.00
TOTAL DESIGN AND CONSTRUCTION ADMINISTRATION COST		$	704,900.00
TOTAL ESTIMATED COST	*	$	4,229,400.00

*2020 Dollars

Note:
Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.

When reviewing and providing comments in regards to the cost estimate, the Client should understand that WSP has no control over costs or the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the estimated costs provided herein are based on our qualifications and expertise. WSP makes no warranty as to the accuracy of these estimated costs as compared to bid or actual costs.

Made By: MJW Checked by: JPS

Date: 11-11-20 Date: 11-20-20

YADKIN RIVER PEDESTRIAN BRIDGE
PROBABLE OPINION OF COST

Probable Opinion of Cost

Total Project Cost Calculator

Approaches			
Approaches - Assumed ADA Ramp of 420' total length		$	1,400,000.00
	Subtotal	$	1,400,000.00
Cost of Bridge			
Bridge Cost ("Truss Bridge")		$	1,912,800.00
	Subtotal	$	1,912,800.00
	Construction Subtotal	$	3,312,800.00
Mobilization (10% of Construction Subtotal)		$	331,280.00
Construction Traffic Control (2.5% of Construction Subtotal)		$	82,820.00
Contingencies (20% of Construction Subtotal)		$	662,560.00
CONSTRUCTION TOTAL		$	4,389,460.00
Design and Construction Management			
Preliminary Design (4% of Total Construction Cost)		$	175,578.00
Final Design (8% of Total Construction Cost)		$	351,157.00
Construction Administration, Inspection, Testing (5% of Total Construction Cost)		$	219,473.00
TOTAL DESIGN AND CONSTRUCTION ADMINISTRATION COST		$	746,208.00
TOTAL ESTIMATED COST	*	$	5,135,668.00

***2020 Dollars**

Note:
Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.

When reviewing and providing comments in regards to the cost estimate, the Client should understand that WSP has no control over costs or the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the estimated costs provided herein are based on our qualifications and expertise. WSP makes no warranty as to the accuracy of these estimated costs as compared to bid or actual costs.

Made By: MJW Checked by: JPS

Date: 11-11-20 Date: 11-20-20

YADKIN RIVER PEDESTRIAN BRIDGE
PROBABLE OPINION OF COST

Probable Opinion of Cost

Total Project Cost Calculator

Approaches		
Approaches - Assumed ADA Ramp of 420' total length		$ 1,400,000.00
	Subtotal	$ 1,400,000.00
Cost of Bridge		
Bridge Cost ("Complex Bridge")		$ 5,460,000.00
	Subtotal	$ 5,460,000.00
	Construction Subtotal	$ 6,860,000.00
Mobilization (10% of Construction Subtotal)		$ 686,000.00
Construction Traffic Control (2.5% of Construction Subtotal)		$ 171,500.00
Contingencies (20% of Construction Subtotal)		$ 1,372,000.00
CONSTRUCTION TOTAL		$ 9,089,500.00
Design and Construction Management		
Preliminary Design (5% of Total Construction Cost)		$ 454,475.00
Final Design (10% of Total Construction Cost)		$ 908,950.00
Construction Administration, Inspection, Testing (5% of Total Construction Cost)		$ 454,475.00
TOTAL DESIGN AND CONSTRUCTION ADMINISTRATION COST		$ 1,817,900.00
TOTAL ESTIMATED COST		* $ 10,907,400.00

***2020 Dollars**

Note:
Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.

When reviewing and providing comments in regards to the cost estimate, the Client should understand that WSP has no control over costs or the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the estimated costs provided herein are based on our qualifications and expertise. WSP makes no warranty as to the accuracy of these estimated costs as compared to bid or actual costs.

APPENDIX

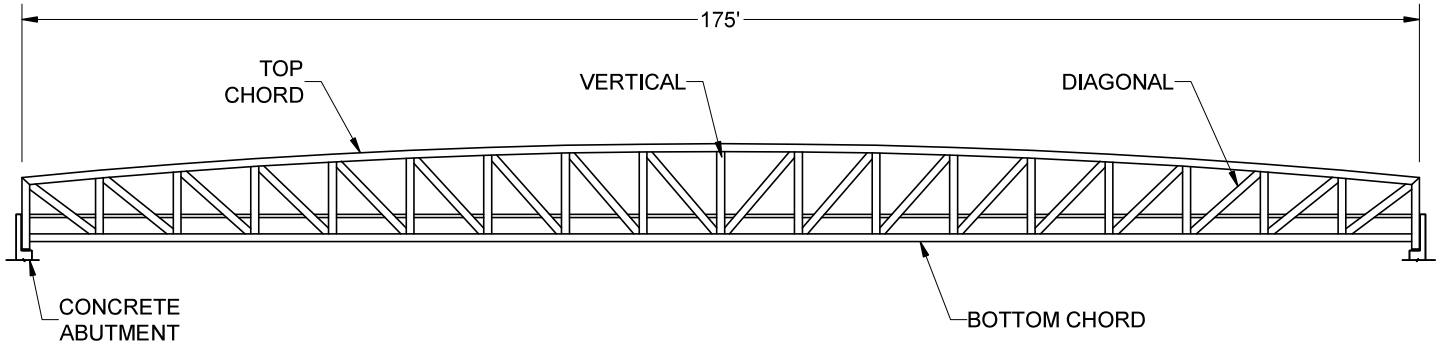
A-2 SUPPLEMENTAL TRUSS BRIDGE INFORMATION

BRIDGE SUMMARY

Capstone Pedestrian Bridge 175' Span x 12' Width

Deck Type: Concrete

Bridge Finish: Weathering Steel



BRIDGE ELEVATION

The graphic information and details contained in these plans is schematic in nature. The plans, elevations and sections have been developed automatically in a way that demonstrates your current input in a relative and proportional manner. The details included in these plans have been selected to represent commonly built construction assemblies. These are not Engineering drawings, and as such, the details may vary in the final design for your project depending on many variables that are selected in your final scope of work and specifications.

PRELIMINARY
NOT FOR CONSTRUCTION

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTINENTAL BRIDGE

CONTECH DYOB® DRAWING

Capstone® 175' Span x 12' Width
Yadkin River
Pedestrian Bridge
Jonesville, North Carolina

PROJECT NUMBER: 5159	DATE: 11/13/2020
DESIGNED: DYOB	DRAWN: DYOB
CHECKED:	APPROVED:
SHEET NO.: 1 OF 4	

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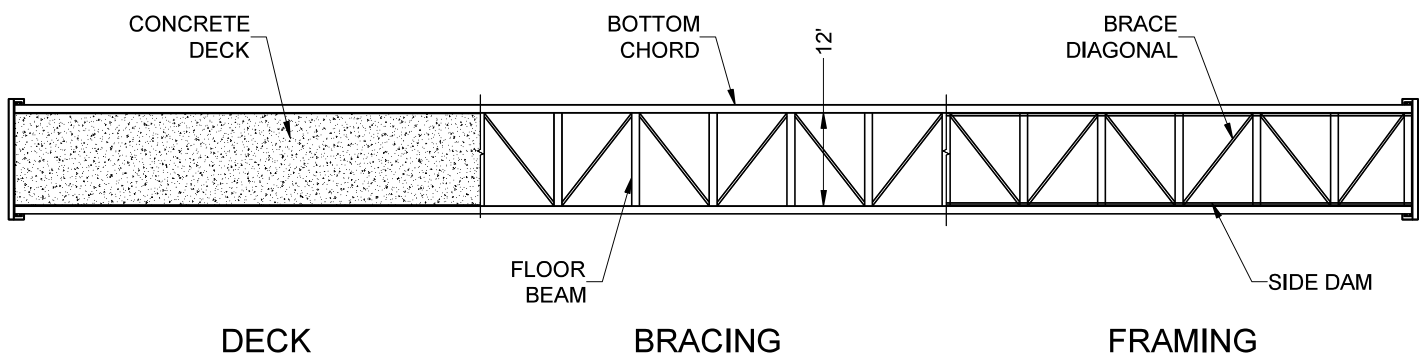

BRIDGE PLAN

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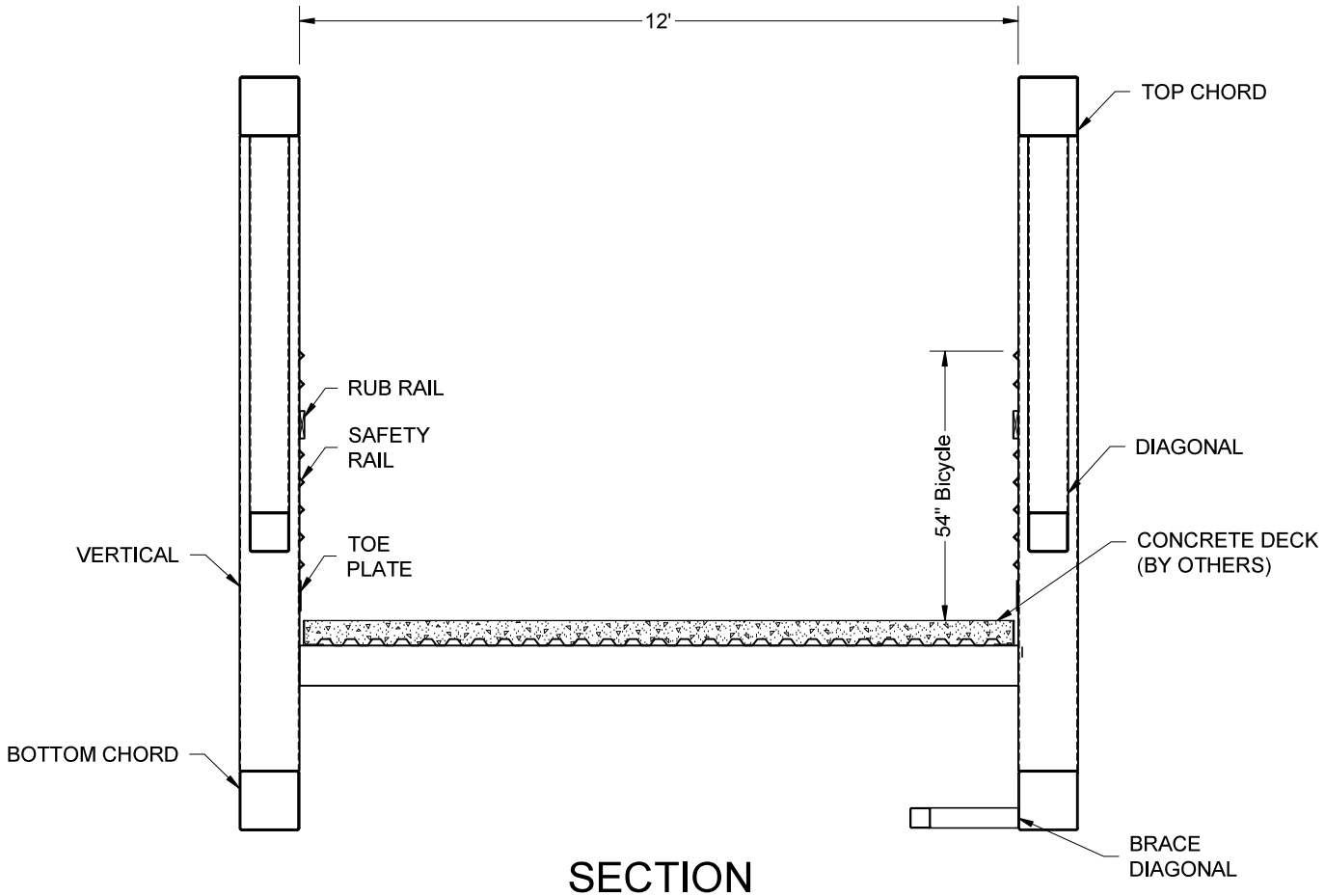
800-338-1122 513-645-7000 513-645-7993 FAX

CONTINENTAL BRIDGE

CONTECH DYOB® DRAWING

Capstone® 175' Span x 12' Width
Yadkin River
Pedestrian Bridge
Jonesville, North Carolina

PROJECT NUMBER: 5159	DATE: 11/13/2020
DESIGNED: DYOB	DRAWN: DYOB
CHECKED:	APPROVED:
SHEET NO.: 2 OF 4	



SECTION

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CONTINENTAL BRIDGE

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Pedestrian Bridge
Jonesville, North Carolina

PROJECT NUMBER:	DATE:
5159	11/13/2020
DESIGNED: DYOB	DRAWN: DYOB
CHECKED:	APPROVED:
SHEET NO.: 3 OF 4	

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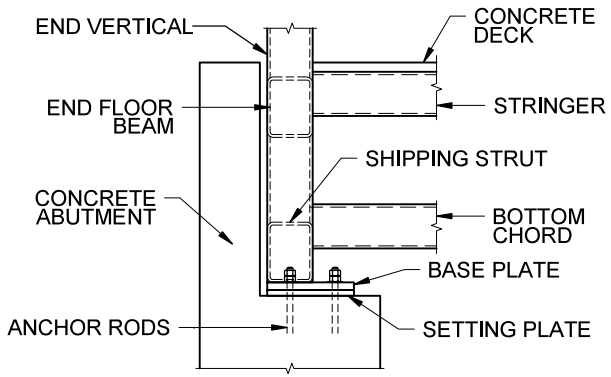
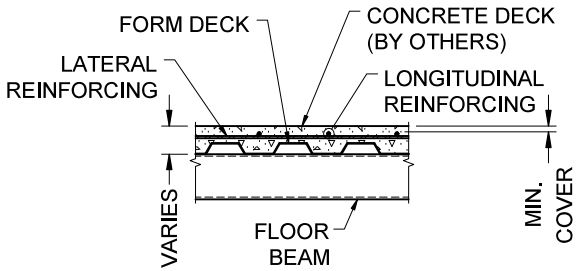
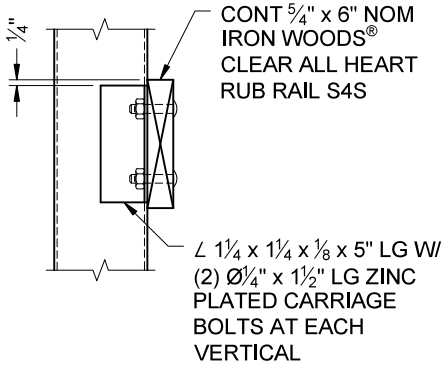


BEARING SIDE VIEW

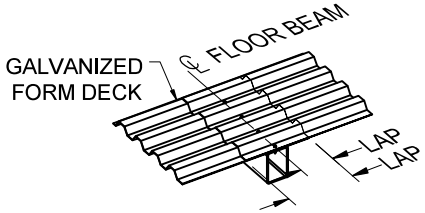
INFORMATION PROVIDED FOR REPRESENTATION ONLY.
ACTUAL BEARING DIAGRAMS TO BE BASED ON FINAL DESIGN.



CONCRETE DECK REINFORCING



RUB RAIL DETAIL



FORM DECK DETAIL

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CONTINENTAL BRIDGE

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Pedestrian Bridge
Jonesville, North Carolina

PROJECT NUMBER:	DATE:
5159	11/13/2020
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SHEET NO.: 4 OF 4	

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APPENDIX

A-3 PREVIOUS COST ESTIMATE

Luttman
ARCHITECTURE, INC.
637 Williamson Road, Unit #202, Mooresville, NC 28117
CELEBRATING 20 YEARS

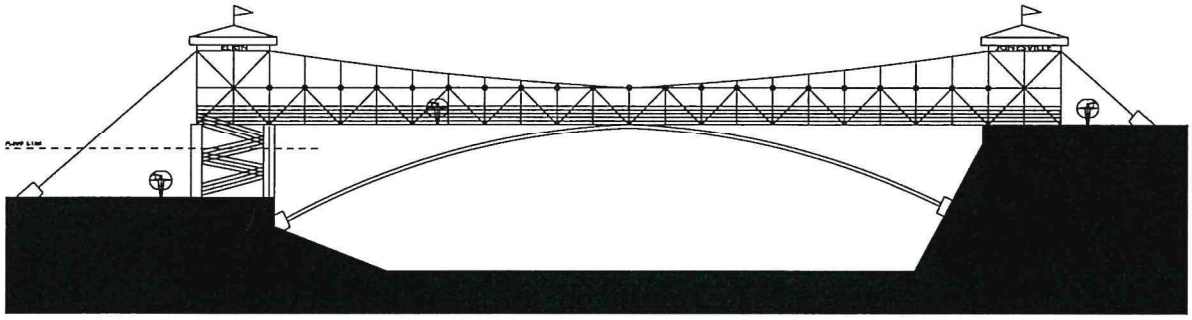
VISIONARY DESIGNS

Elkin/Jonesville Pedestrian Bridge 2/7/2020

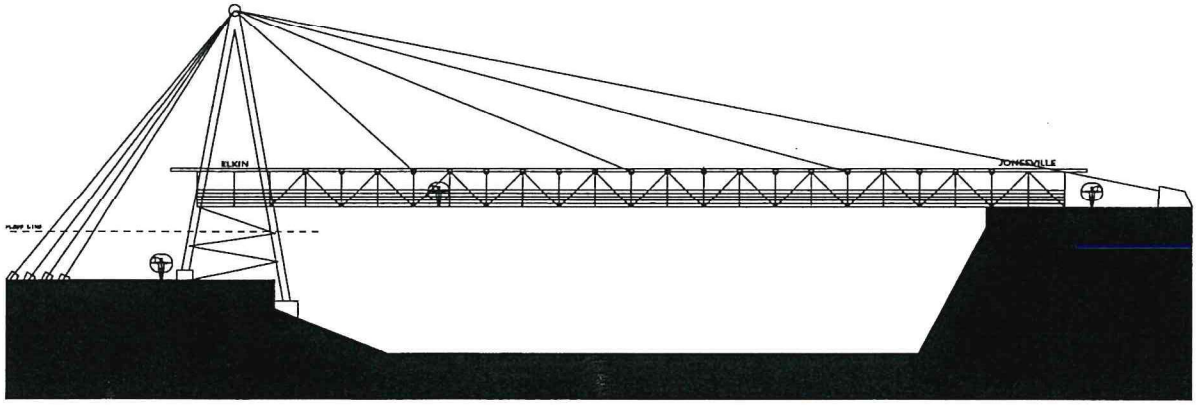
Designs:

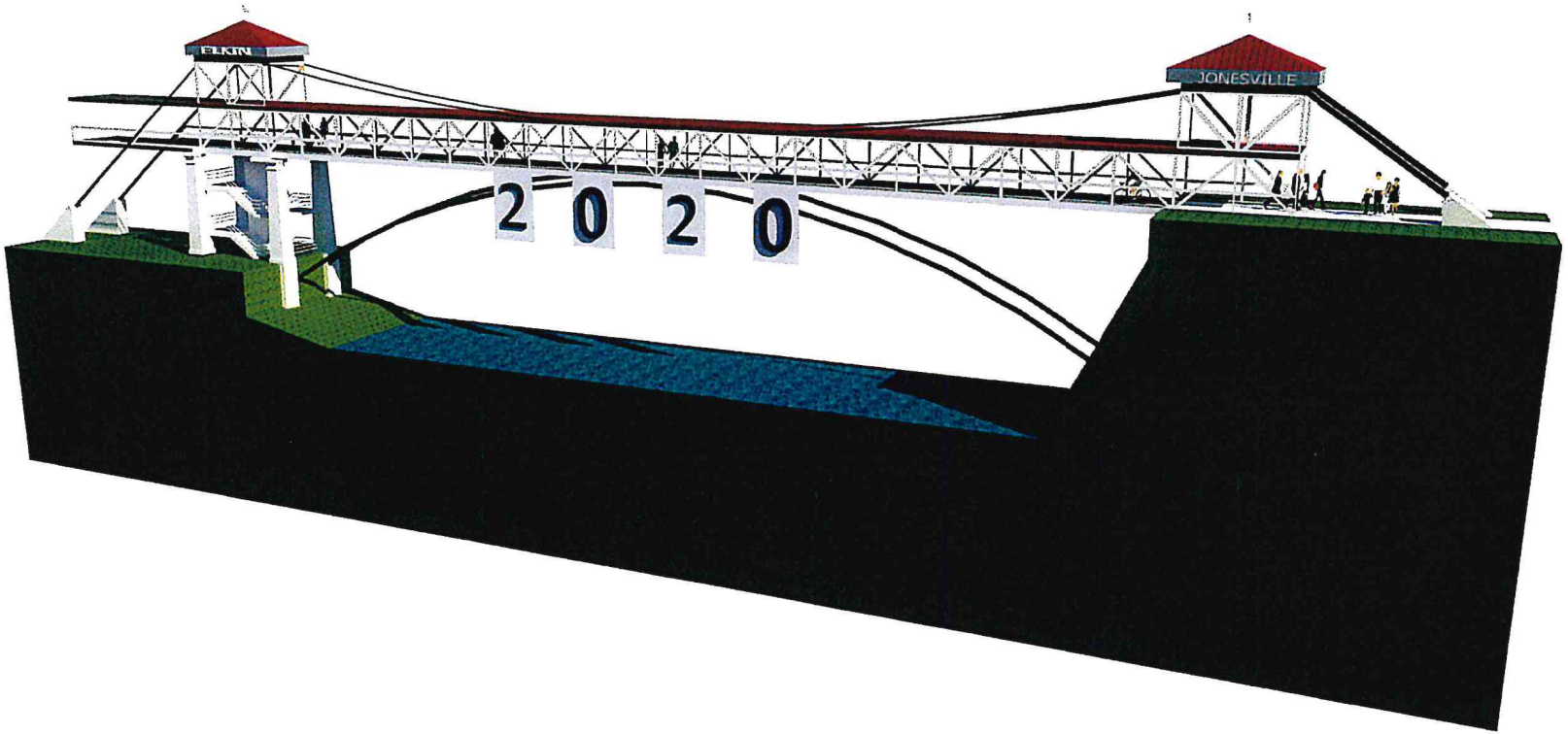
Option #1 – "The design is very elegant" and is reminiscent of some bridges previously constructed on and around that site. The truss form harkens back to a long span covered bridge and the arches feel more like the concrete vehicular bridge from the 1950s.

Two iconic towers rise on both side of banks. These are visual elements of color and identification of the towns. The towers anchor the cable stays and can be a repeated elements holding other portions of the bridge connecting Elkins main street.



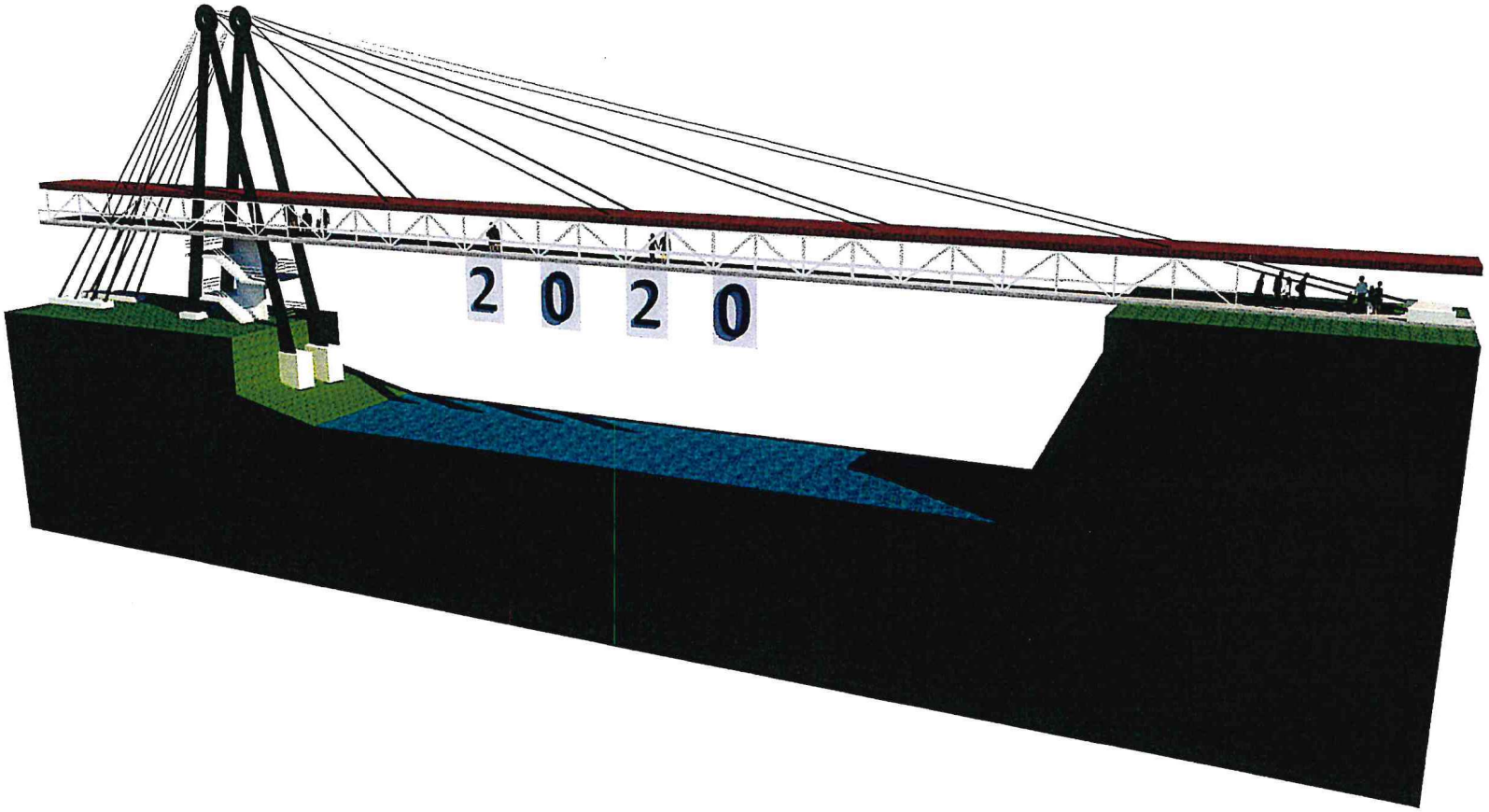
Option #2 – "This design is strikingly modern". There will be a large tower holding the cable stays to the span. The tower could be of a dramatic color and most certainly will not be forgotten based on the iconic shape.





ELKIN/JONESVILLE PEDESTRIAN BRIDGE

Luttman ARCHITECTURE, INC.



ELKIN/JONESVILLE PEDESTRIAN BRIDGE

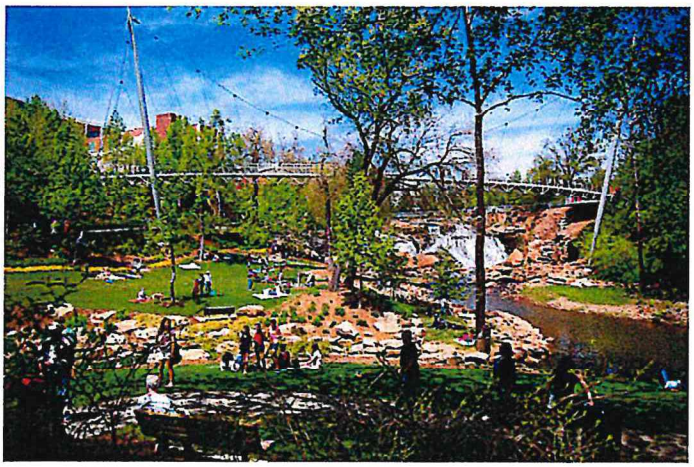
Luttman ARCHITECTURE, INC.

Costs:

I contacted Vannoy Construction - Road Division (Jefferson NC) to see if they would be interested in assisting the Towns of Elkin and Jonesville in preparing a ROM (rough order of magnitude) price for a Visionary Pedestrian Bridge to be constructed across the Yadkin River and connecting the two towns.

Since this is a very conceptual number that would need a lot more information to get more detailed, they used a few other projects to compare as a reference point. See below for some of the other projects they referenced.

Examples and resources used to determine Rough Order of Magnitude Preliminary Pricing:



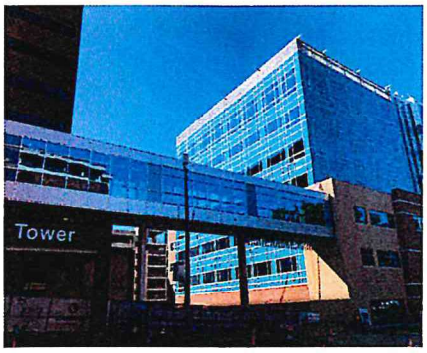
LIBERTY BRIDGE

Greenville's unique Liberty Bridge honors Liberty Corporation founder W. Frank Hipp and his children, Francis M. Hipp, Herman N. Hipp, B. Calhoun Hipp, and Dorothy Hipp Gunter for their commitment and contribution to the Greenville community.

The $4.5 million structure was funded by the City of Greenville's Hospitality Tax, which must be spent on tourism-related facilities.

TAR RIVER PEDESTRIAN BRIDGE STUDY

	Bridge	River Park North Approach	No-Rise (Flood Study)	Potential Design + Permitting	Potential Mitigation	Total
Potential Cost: **Low**	$3,000,000	$510,000	$60,000	$700,000	$3,000,000	$7,270,000
Potential Cost: **High**	$4,000,000	$1,020,000	$100,000	$1,000,000	$5,000,000	$11,120,000
Length	450 LF + 500 LF (ramp)	1,700 LF				
Additional Considerations	Proposed bridge would likely require flood mitigation, which could include the proposed living shoreline to Town Common. The low and high cost include aesthetic enhancements, while more aesthetic enhancements are budgeted for within the high estimate.	The proposed connection could include at-grade concrete paths and/or boardwalks.	Flood study will be required for no-rise certification of proposed structures within the floodplain/floodway. Additional study may be required. The first step (low cost) would determine what is feasible to obtain a no-rise.		Proposed living shoreline at Town Common is estimated between $1.5-2 million. Additional mitigation may be required.	Total cost does n include the conne tion between Gre Street and River I North.



NOVANT PEDESTRIAN BRIDGE

Based on these and other Vannoy projects we would estimate your **Option 1 around $7 Million and Option 2 around $8 Million.** These can obviously swing lower or higher depending on how simplified or complex the options get but we feel this is a good range for what you are currently looking at. This does not include any amenities buildings or adjacent event spaces.