

Appendix E. Bridge and Roadway Estimates

This page is intentionally left blank.

Current River Bridge

Alternative 1A, Option 1 – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:	of:	ESTIMATE	
Job #:	No:				

G0804 Replacement - Filled Arch Option (No phasing)

Bridge Length =	612	Ft.	Skew =	0	degrees
New Bridge Width =	40.83	Ft.	New Arch Width =	35	Ft.
Cantilever Width =	4.583	Ft.	Side Wall Area (DGN) =	1060	ft ²
Pier 2 Width =	40.5	ft.	New Side Wall Thk =	12	in.
Pier 2 Length =	13	ft.	Arch End Area (130' Span) =	290	ft ²
Pier 3&4 Width =	43.5	ft.	Pier 2 Area =	165	ft ²
Pier 3&4 Length =	14	ft.	Pier 3 & 4 Area =	300	ft ²
Pier 5 Width =	43.5	ft.	Pier 5 Area =	450	ft ²
Pier 5 Length =	20	ft.	# Girders (End Spans) =	5	
End Span Lengths (NU53) =	102	ft.	Wing Length =	15	ft.

Item	Quantity	Unit Cost	Estimated Cost
Arch Backfill			
(202-60.40)	3890 Cu. Yd.	\$25	\$97,250
	<i>Filled Arch - Assume 33' wide fill x side wall area (measured in CAD)</i>		
Class 1 Excavation			
(206-10.00)	2530 Cu. Yd.	\$50	\$126,500
	Abut. Excav. Depth = 5 ft.		
	Pier 2 Excav. Depth = 12 ft.		
	Pier 3 & 4 Excav. Depth = 17 ft.		
	Pier 5 Excav. Depth = 27 ft.		
Cofferdams			
(206-60.02)	1 Lump Sum	\$1,000,000	\$1,000,000
	<i>Assume \$250,000 each</i>		
Ornamental Pedestrian Fence			
(607-99.03)	612 LF.	\$160	\$97,920
Galvanized Structural Steel Pile (12")			
(702-12.12)	324 LF.	\$75	\$24,300
	Approx. Pile Length (EB 1) = 24 ft		
	Approx. Pile Length (EB 6) = 30 ft		
	# Piles/End Bent = 6		
Dynamic Pile Testing			
(702-50.01)	2 Ea.	\$2,500	\$5,000
Pile Point Reinforcement			
(702-70.00)	12 Ea.	\$125	\$1,500
Class B Concrete (Substructure)			
(703-20.03)	2,460 Cu. Yd.	\$900	\$2,214,000
	<i>Include side walls, 6'x12" pilasters and support brackets w/ foundations</i>		
	<i>Include new floorbeam braces (10 per span - 15"x27"x33')</i>		
Class B-2 Concrete (Arch)			
(703-20.03)	1130 Cu. Yd.	\$2,000	\$2,260,000
	<i>Use end areas from DGN file and multiply by 35' wide arch</i>		
Slab on Filled Arch			
(703-42.14)	1860 Sq. Yd.	\$200	\$372,000
Barrier Curb			
(703-42.15)	1290 LF.	\$95	\$122,550
Slab on Concrete NU-Girder			
(703-42.15)	930 Sq. Yd.	\$315	\$292,950



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:		of:	ESTIMATE
Job #:		No:			

Form Liners

(703-46.20)

400	Sq. Yd.	\$100	\$40,000
<i>Back of Barrier and new Pilasters at piers (approx. 5' wide x 25' tall)</i>			

NU 53, Prestressed Concrete NU-Girder

(705-60.23)

1010	LF.	\$240	\$242,400
------	-----	-------	-----------

Reinforcing Steel

(706-10.60)

489,300	Lb.	\$1.40	\$685,020
<i>Assume 130# per CY of concrete for Substr. 150# for the Arch concrete</i>			

Steel Intermediate Diaphragm (NU Girder)

(712-33.01)

16	Ea.	\$1,000	\$16,000
<i>Two in each end span per bay</i>			

Slab Drain

(712-36.10)

84	Ea.	\$500	\$42,000
<i>Assume new VC on bridge to help drainage. Spa. @ 15' across bridge</i>			

Drainage System on Structure

(712-99.01)

1	Lump Sum	\$80,000	\$80,000
---	----------	----------	----------

Misc. Bridge Rail

(712-99.03)

1290	LF.	\$110	\$141,900
------	-----	-------	-----------

Vertical Drain at End Bent

(715-10.01)

2	Ea.	\$3,060	\$6,120
<i>Assume \$45/ft. Roadway width + 2 wings</i>			

Laminated Neoprene Bearing (Tapered)

(716-10.03)

10	Ea.	\$375	\$3,750
----	-----	-------	---------

Laminated Neoprene Bearing Assembly

(716-20.00)

10	Ea.	\$2,000	\$20,000
----	-----	---------	----------

Strip Seal Expansion Joint System

(717-20.01)

90	LF.	\$400	\$36,000
----	-----	-------	----------

Total New Bridge Cost =	\$7,927,200
--------------------------------	--------------------

Unit Cost =	\$317 / Sq. Ft.
--------------------	------------------------

Not including approach slab

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 100+00 to Sta. 113+47 across Current River. Estimate does not include costs for bridges.

Figure A-1: Alternative 1A,2A, 5B North Option 1 - Temp Shoofly Bridge; Remove Ped Bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	1984	\$55	\$109,141	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$20,000	\$20,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	3	\$7,000	\$21,000	
EXCAVATION - CLASS A	CY	8539	\$8	\$64,041	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	4269	\$20	\$85,388	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	3411	\$12	\$40,935	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
TEMPORARY SHORING	LS	1	\$50,000	\$50,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	146	\$55	\$8,033	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$771,537	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$195,384.20	
TOTAL CONSTRUCTION COST				\$976,921	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/16/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Temporary Bridge (24' Rdwy)
 (102.5'-136'-136'-136'-102.5')

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2160500	Removal of Bridges (Temp Structure)	1	L.S.	\$160,160	\$160,160
2	7011107	Drilled Shafts (4 Ft. 6 In. Dia.)	160.0	Lin. Ft.	\$900	\$144,000
3	7011206	Rock Sockets (4 Ft. 0 In. Dia.)	160.0	Lin. Ft.	\$950	\$152,000
4	7011300	Video Camera Inspection	8.0	Each	\$225	\$1,800
5	7011400	Foundation Inspection Holes	360.0	Lin. Ft.	\$130	\$46,800
6	7011600	Sonic Logging Testing	8.0	Each	\$2,000	\$16,000
7	7021212	Galvanized Structural Steel Piles (12 In.)	990.0	Lin. Ft.	\$80	\$79,200
8	7027000	Pile Point Reinforcement	18.0	Each	\$125	\$2,250
9	7032003	Class B Concrete (Substructure)	173.3	Cu. Yd.	\$750	\$129,955
10	7056024	NU 63 (1600), Prestressed Concrete NU-Girder	2452.0	Lin. Ft.	\$300	\$735,600
11	7061060	Reinforcing Steel (Bridges)	17516	Lbs	\$1.20	\$21,019
12	7121160	Steel Grid Floor (Open)	16221.1	Sq. Ft.	\$20	\$324,423
13	7134000	Bridge Guardrail (Thrie Beam)	1232.0	Lin. Ft.	\$240	\$295,680
14	7161003	Laminated Neoprene Bearing Pad (Tapered)	30.0	Each	\$400	\$12,000
					Sub-Total (A) =	\$2,120,890
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$132</i>

This page is intentionally left blank.

Current River Bridge

Alternative 1A, Option 2 – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:	of:	ESTIMATE	
Job #:	No:				

G0804 Replacement - Filled Arch Option (No phasing)

Bridge Length =	612	Ft.	Skew =	0	degrees
New Bridge Width =	40.83	Ft.	New Arch Width =	35	Ft.
Cantilever Width =	4.583	Ft.	Side Wall Area (DGN) =	1060	ft ²
Pier 2 Width =	40.5	ft.	New Side Wall Thk =	12	in.
Pier 2 Length =	13	ft.	Arch End Area (130' Span) =	290	ft ²
Pier 3&4 Width =	43.5	ft.	Pier 2 Area =	165	ft ²
Pier 3&4 Length =	14	ft.	Pier 3 & 4 Area =	300	ft ²
Pier 5 Width =	43.5	ft.	Pier 5 Area =	450	ft ²
Pier 5 Length =	20	ft.	# Girders (End Spans) =	5	
End Span Lengths (NU53) =	102	ft.	Wing Length =	15	ft.

Item	Quantity	Unit Cost	Estimated Cost
Arch Backfill			
(202-60.40)	3890 Cu. Yd.	\$25	\$97,250
	<i>Filled Arch - Assume 33' wide fill x side wall area (measured in CAD)</i>		
Class 1 Excavation			
(206-10.00)	2530 Cu. Yd.	\$50	\$126,500
	Abut. Excav. Depth = 5 ft.		
	Pier 2 Excav. Depth = 12 ft.		
	Pier 3 & 4 Excav. Depth = 17 ft.		
	Pier 5 Excav. Depth = 27 ft.		
Cofferdams			
(206-60.02)	1 Lump Sum	\$1,000,000	\$1,000,000
	<i>Assume \$250,000 each</i>		
Ornamental Pedestrian Fence			
(607-99.03)	612 LF.	\$160	\$97,920
Galvanized Structural Steel Pile (12")			
(702-12.12)	324 LF.	\$75	\$24,300
	Approx. Pile Length (EB 1) = 24 ft		
	Approx. Pile Length (EB 6) = 30 ft		
	# Piles/End Bent = 6		
Dynamic Pile Testing			
(702-50.01)	2 Ea.	\$2,500	\$5,000
Pile Point Reinforcement			
(702-70.00)	12 Ea.	\$125	\$1,500
Class B Concrete (Substructure)			
(703-20.03)	2,460 Cu. Yd.	\$900	\$2,214,000
	<i>Include side walls, 6'x12" pilasters and support brackets w/ foundations</i>		
	<i>Include new floorbeam braces (10 per span - 15"x27"x33')</i>		
Class B-2 Concrete (Arch)			
(703-20.03)	1130 Cu. Yd.	\$2,000	\$2,260,000
	<i>Use end areas from DGN file and multiply by 35' wide arch</i>		
Slab on Filled Arch			
(703-42.14)	1860 Sq. Yd.	\$200	\$372,000
Barrier Curb			
(703-42.15)	1290 LF.	\$95	\$122,550
Slab on Concrete NU-Girder			
(703-42.15)	930 Sq. Yd.	\$315	\$292,950



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:		of:	ESTIMATE
Job #:		No:			

Form Liners

(703-46.20)

400	Sq. Yd.	\$100	\$40,000
<i>Back of Barrier and new Pilasters at piers (approx. 5' wide x 25' tall)</i>			

NU 53, Prestressed Concrete NU-Girder

(705-60.23)

1010	LF.	\$240	\$242,400
------	-----	-------	-----------

Reinforcing Steel

(706-10.60)

489,300	Lb.	\$1.40	\$685,020
<i>Assume 130# per CY of concrete for Substr. 150# for the Arch concrete</i>			

Steel Intermediate Diaphragm (NU Girder)

(712-33.01)

16	Ea.	\$1,000	\$16,000
<i>Two in each end span per bay</i>			

Slab Drain

(712-36.10)

84	Ea.	\$500	\$42,000
<i>Assume new VC on bridge to help drainage. Spa. @ 15' across bridge</i>			

Drainage System on Structure

(712-99.01)

1	Lump Sum	\$80,000	\$80,000
---	----------	----------	----------

Misc. Bridge Rail

(712-99.03)

1290	LF.	\$110	\$141,900
------	-----	-------	-----------

Vertical Drain at End Bent

(715-10.01)

2	Ea.	\$3,060	\$6,120
<i>Assume \$45/ft. Roadway width + 2 wings</i>			

Laminated Neoprene Bearing (Tapered)

(716-10.03)

10	Ea.	\$375	\$3,750
----	-----	-------	---------

Laminated Neoprene Bearing Assembly

(716-20.00)

10	Ea.	\$2,000	\$20,000
----	-----	---------	----------

Strip Seal Expansion Joint System

(717-20.01)

90	LF.	\$400	\$36,000
----	-----	-------	----------

Total New Bridge Cost =	\$7,927,200
--------------------------------	--------------------

Unit Cost =	\$317 / Sq. Ft.
--------------------	------------------------

Not including approach slab

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 300+00 to Sta. 312+78 across Current River. Estimate does not include costs for bridges.

Figure A-2: Alternative 1A,2A,5B North Option 2 - Temp Shoofly Bridge Downstream of Ped Bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	1801	\$55	\$99,051	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$20,000	\$20,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	2	\$7,000	\$14,000	
EXCAVATION - CLASS A	CY	2961	\$8	\$22,204	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	1480	\$20	\$29,605	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	7332	\$12	\$87,981	
BORROW	CY	2891	\$2	\$5,782	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
TEMPORARY SHORING	LS	1	\$50,000	\$50,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	146	\$55	\$8,033	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$709,656	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$179,914.01	
TOTAL CONSTRUCTION COST				\$899,570	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/16/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Temporary Bridge (24' Rdwy)
 (102.5'-136'-136'-136'-102.5')

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2160500	Removal of Bridges (Temp Structure)	1	L.S.	\$160,160	\$160,160
2	7011107	Drilled Shafts (4 Ft. 6 In. Dia.)	160.0	Lin. Ft.	\$900	\$144,000
3	7011206	Rock Sockets (4 Ft. 0 In. Dia.)	160.0	Lin. Ft.	\$950	\$152,000
4	7011300	Video Camera Inspection	8.0	Each	\$225	\$1,800
5	7011400	Foundation Inspection Holes	360.0	Lin. Ft.	\$130	\$46,800
6	7011600	Sonic Logging Testing	8.0	Each	\$2,000	\$16,000
7	7021212	Galvanized Structural Steel Piles (12 In.)	990.0	Lin. Ft.	\$80	\$79,200
8	7027000	Pile Point Reinforcement	18.0	Each	\$125	\$2,250
9	7032003	Class B Concrete (Substructure)	173.3	Cu. Yd.	\$750	\$129,955
10	7056024	NU 63 (1600), Prestressed Concrete NU-Girder	2452.0	Lin. Ft.	\$300	\$735,600
11	7061060	Reinforcing Steel (Bridges)	17516	Lbs	\$1.20	\$21,019
12	7121160	Steel Grid Floor (Open)	16221.1	Sq. Ft.	\$20	\$324,423
13	7134000	Bridge Guardrail (Thrie Beam)	1232.0	Lin. Ft.	\$240	\$295,680
14	7161003	Laminated Neoprene Bearing Pad (Tapered)	30.0	Each	\$400	\$12,000
					Sub-Total (A) =	\$2,120,890
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$132</i>

This page is intentionally left blank.

Current River Bridge

Alternative 1B – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:	of:	ESTIMATE	
Job #:	No:				

G0804 Replacement - Filled Arch Option (No phasing)

Bridge Length =	612	Ft.	Skew =	0	degrees
New Bridge Width =	40.83	Ft.	New Arch Width =	35	Ft.
Cantilever Width =	4.583	Ft.	Side Wall Area (DGN) =	1060	ft ²
Pier 2 Width =	40.5	ft.	New Side Wall Thk =	12	in.
Pier 2 Length =	13	ft.	Arch End Area (130' Span) =	290	ft ²
Pier 3&4 Width =	43.5	ft.	Pier 2 Area =	165	ft ²
Pier 3&4 Length =	14	ft.	Pier 3 & 4 Area =	300	ft ²
Pier 5 Width =	43.5	ft.	Pier 5 Area =	450	ft ²
Pier 5 Length =	20	ft.	# Girders (End Spans) =	5	
End Span Lengths (NU53) =	102	ft.	Wing Length =	15	ft.

Item	Quantity	Unit Cost	Estimated Cost
Arch Backfill			
(202-60.40)	3890 Cu. Yd.	\$25	\$97,250
	<i>Filled Arch - Assume 33' wide fill x side wall area (measured in CAD)</i>		
Class 1 Excavation			
(206-10.00)	2530 Cu. Yd.	\$50	\$126,500
	Abut. Excav. Depth = 5 ft.		
	Pier 2 Excav. Depth = 12 ft.		
	Pier 3 & 4 Excav. Depth = 17 ft.		
	Pier 5 Excav. Depth = 27 ft.		
Cofferdams			
(206-60.02)	1 Lump Sum	\$1,000,000	\$1,000,000
	<i>Assume \$250,000 each</i>		
Ornamental Pedestrian Fence			
(607-99.03)	612 LF.	\$160	\$97,920
Galvanized Structural Steel Pile (12")			
(702-12.12)	324 LF.	\$75	\$24,300
	Approx. Pile Length (EB 1) = 24 ft		
	Approx. Pile Length (EB 6) = 30 ft		
	# Piles/End Bent = 6		
Dynamic Pile Testing			
(702-50.01)	2 Ea.	\$2,500	\$5,000
Pile Point Reinforcement			
(702-70.00)	12 Ea.	\$125	\$1,500
Class B Concrete (Substructure)			
(703-20.03)	2,460 Cu. Yd.	\$900	\$2,214,000
	<i>Include side walls, 6'x12" pilasters and support brackets w/ foundations</i>		
	<i>Include new floorbeam braces (10 per span - 15"x27"x33')</i>		
Class B-2 Concrete (Arch)			
(703-20.03)	1130 Cu. Yd.	\$2,000	\$2,260,000
	<i>Use end areas from DGN file and multiply by 35' wide arch</i>		
Slab on Filled Arch			
(703-42.14)	1860 Sq. Yd.	\$200	\$372,000
Barrier Curb			
(703-42.15)	1290 LF.	\$95	\$122,550
Slab on Concrete NU-Girder			
(703-42.15)	930 Sq. Yd.	\$315	\$292,950



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:		of:	ESTIMATE
Job #:		No:			

Form Liners

(703-46.20)

400	Sq. Yd.	\$100	\$40,000
<i>Back of Barrier and new Pilasters at piers (approx. 5' wide x 25' tall)</i>			

NU 53, Prestressed Concrete NU-Girder

(705-60.23)

1010	LF.	\$240	\$242,400
------	-----	-------	-----------

Reinforcing Steel

(706-10.60)

489,300	Lb.	\$1.40	\$685,020
<i>Assume 130# per CY of concrete for Substr. 150# for the Arch concrete</i>			

Steel Intermediate Diaphragm (NU Girder)

(712-33.01)

16	Ea.	\$1,000	\$16,000
<i>Two in each end span per bay</i>			

Slab Drain

(712-36.10)

84	Ea.	\$500	\$42,000
<i>Assume new VC on bridge to help drainage. Spa. @ 15' across bridge</i>			

Drainage System on Structure

(712-99.01)

1	Lump Sum	\$80,000	\$80,000
---	----------	----------	----------

Misc. Bridge Rail

(712-99.03)

1290	LF.	\$110	\$141,900
------	-----	-------	-----------

Vertical Drain at End Bent

(715-10.01)

2	Ea.	\$3,060	\$6,120
<i>Assume \$45/ft. Roadway width + 2 wings</i>			

Laminated Neoprene Bearing (Tapered)

(716-10.03)

10	Ea.	\$375	\$3,750
----	-----	-------	---------

Laminated Neoprene Bearing Assembly

(716-20.00)

10	Ea.	\$2,000	\$20,000
----	-----	---------	----------

Strip Seal Expansion Joint System

(717-20.01)

90	LF.	\$400	\$36,000
----	-----	-------	----------

Total New Bridge Cost =	\$7,927,200
--------------------------------	--------------------

Unit Cost =	\$317 / Sq. Ft.
--------------------	------------------------

Not including approach slab

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 200+00 to Sta. 212+66 across Current River. Estimate does not include costs for bridges.

Figure A-3: Alternative 1B and 2B North - New Bridge; Remove Ped Bridge; Single-lane temp shoo-fly bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
WORK ZONE TRAFFIC SIGNAL SYSTEM	EACH	1	\$12,000	\$12,000	alternating traffic across bridge
TEMPORARY PAVING	SY	1758	\$55	\$96,685	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$20,000	\$20,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	2	\$7,000	\$14,000	
EXCAVATION - CLASS A	CY	5876	\$8	\$44,072	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	2938	\$20	\$58,762	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	2991	\$12	\$35,892	
BORROW	CY		\$2		
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
TEMPORARY SHORING	LS	1	\$50,000	\$50,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	146	\$55	\$8,033	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$712,445	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$180,611.13	
TOTAL CONSTRUCTION COST				\$903,056	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/12/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Replace on Existing Alignment
 Br. Option (102'-136'-136'-136'-102') Pl. Girder (W/ Peds)

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2061000	Class I Excavation	1128	Cu. Yd.	\$50	\$56,408
2	6079903	(72 In.) Pedestrian Fence (Structures)	1300.0	Lin. Ft.	\$160	\$208,000
3	7011107	Drilled Shafts (6 Ft. 0 In. Dia.)	142.0	Lin. Ft.	\$1,200	\$170,400
4	7011206	Rock Sockets (5 Ft. 6 In. Dia.)	160.0	Lin. Ft.	\$900	\$144,000
5	7011300	Video Camera Inspection	8.0	Each	\$650	\$5,200
6	7011400	Foundation Inspection Holes	240.0	Lin. Ft.	\$130	\$31,200
7	7011600	Sonic Logging Testing	8.0	Each	\$2,000	\$16,000
8	7021212	Galvanized Structural Steel Piles (12 In.)	420.0	Lin. Ft.	\$80	\$33,600
9	7027000	Pile Point Reinforcement	6.0	Each	\$125	\$750
10	7026000	Pre-Bore for Piling	270.0	Lin. Ft.	\$150	\$40,500
11	7032003	Class B Concrete (Substructure)	272.4	Cu. Yd.	\$850	\$231,553
12	7034212	Slab on Steel	1088.0	Sq. Yd.	\$275	\$299,200
13	7034620	Form Liners	604.4	Sq. Yd.	\$100	\$60,444
14	7039903	Misc. Barrier Curb	1298.0	Lin. Ft.	\$100	\$129,800
15	7061060	Reinforcing Steel (Bridges)	64020	Lbs	\$1.40	\$89,628
16	7121122	Fab. Structural LA Steel (Plate Girder) A709, Gr 50W	408349	Lbs	\$1.75	\$714,611
17	7123610	Slab Drain	1.0	L.S.	\$120,000	\$120,000
18	7129903	Misc. Bridge Rail (One Tube Structural Steel)	1298.0	Lin. Ft.	\$100	\$129,800
19	7151001	Vertical Drain at End Bents	2.0	Each	\$1,000	\$2,000
20	7162000	Laminated Neoprene Bearing Pad Assembly	12.0	Each	\$2,100	\$25,200
21	7172001	Strip Seal Expansion Joint System	32	Lin. Ft.	\$425	\$13,600
					Sub-Total (A) =	\$2,521,893
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$258</i>

This page is intentionally left blank.

Current River Bridge

Alternative 2A, Option 1 – Cost Estimate

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/12/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Replace on Existing Alignment
 Br. Option (102'-136'-136'-136'-102') Pl. Girder (W/ Peds)

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2061000	Class I Excavation	1266	Cu. Yd.	\$50	\$63,282
2	5031010A	Bridge Approach Slab (Major Road)	136.3	Sq. Yd.	\$250	\$34,074
3	6079903	(72 In.) Pedestrian Fence (Structures)	650.0	Lin. Ft.	\$160	\$104,000
4	7011107	Drilled Shafts (6 Ft. 0 In. Dia.)	213.0	Lin. Ft.	\$1,200	\$255,600
5	7011206	Rock Sockets (5 Ft. 6 In. Dia.)	240.0	Lin. Ft.	\$900	\$216,000
6	7011300	Video Camera Inspection	12.0	Each	\$650	\$7,800
7	7011400	Foundation Inspection Holes	360.0	Lin. Ft.	\$130	\$46,800
8	7011600	Sonic Logging Testing	12.0	Each	\$2,000	\$24,000
9	7021212	Galvanized Structural Steel Piles (12 In.)	980.0	Lin. Ft.	\$80	\$78,400
10	7027000	Pile Point Reinforcement	14.0	Each	\$125	\$1,750
11	7026000	Pre-Bore for Piling	630.0	Lin. Ft.	\$150	\$94,500
12	7032003	Class B Concrete (Substructure)	514.1	Cu. Yd.	\$850	\$437,022
13	7034212	Slab on Steel	2776.7	Sq. Yd.	\$275	\$763,583
14	7034620	Form Liners	1137.8	Sq. Yd.	\$100	\$113,778
15	7039903	Misc. Barrier Curb	1298.0	Lin. Ft.	\$100	\$129,800
16	7061060	Reinforcing Steel (Bridges)	107202	Lbs	\$1.40	\$150,083
17	7121122	Fab. Structural LA Steel (Plate Girder) A709, Gr 50W	1045000	Lbs	\$1.75	\$1,828,750
18	7123610	Slab Drain	1.0	L.S.	\$120,000	\$120,000
19	7129903	Misc. Bridge Rail (One Tube Structural Steel)	1298.0	Lin. Ft.	\$100	\$129,800
20	7151001	Vertical Drain at End Bents	2.0	Each	\$3,500	\$7,000
21	7162000	Laminated Neoprene Bearing Pad Assembly	30.0	Each	\$2,100	\$63,000
22	7172001	Strip Seal Expansion Joint System	89	Lin. Ft.	\$425	\$37,970
					Sub-Total (A) =	\$4,706,991
					Price/Sq. Ft. (Bridge Items) =	\$188

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 100+00 to Sta. 113+47 across Current River. Estimate does not include costs for bridges.

Figure A-1: Alternative 1A,2A, 5B North Option 1 - Temp Shoofly Bridge; Remove Ped Bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	1984	\$55	\$109,141	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$20,000	\$20,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	3	\$7,000	\$21,000	
EXCAVATION - CLASS A	CY	8539	\$8	\$64,041	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	4269	\$20	\$85,388	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	3411	\$12	\$40,935	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
TEMPORARY SHORING	LS	1	\$50,000	\$50,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	146	\$55	\$8,033	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$771,537	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$195,384.20	
TOTAL CONSTRUCTION COST				\$976,921	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/16/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Temporary Bridge (24' Rdwy)
 (102.5'-136'-136'-136'-102.5')

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2160500	Removal of Bridges (Temp Structure)	1	L.S.	\$160,160	\$160,160
2	7011107	Drilled Shafts (4 Ft. 6 In. Dia.)	160.0	Lin. Ft.	\$900	\$144,000
3	7011206	Rock Sockets (4 Ft. 0 In. Dia.)	160.0	Lin. Ft.	\$950	\$152,000
4	7011300	Video Camera Inspection	8.0	Each	\$225	\$1,800
5	7011400	Foundation Inspection Holes	360.0	Lin. Ft.	\$130	\$46,800
6	7011600	Sonic Logging Testing	8.0	Each	\$2,000	\$16,000
7	7021212	Galvanized Structural Steel Piles (12 In.)	990.0	Lin. Ft.	\$80	\$79,200
8	7027000	Pile Point Reinforcement	18.0	Each	\$125	\$2,250
9	7032003	Class B Concrete (Substructure)	173.3	Cu. Yd.	\$750	\$129,955
10	7056024	NU 63 (1600), Prestressed Concrete NU-Girder	2452.0	Lin. Ft.	\$300	\$735,600
11	7061060	Reinforcing Steel (Bridges)	17516	Lbs	\$1.20	\$21,019
12	7121160	Steel Grid Floor (Open)	16221.1	Sq. Ft.	\$20	\$324,423
13	7134000	Bridge Guardrail (Thrie Beam)	1232.0	Lin. Ft.	\$240	\$295,680
14	7161003	Laminated Neoprene Bearing Pad (Tapered)	30.0	Each	\$400	\$12,000
					Sub-Total (A) =	\$2,120,890
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$132</i>

Current River Bridge

Alternative 2A, Option 2 – Cost Estimate

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/12/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Replace on Existing Alignment
 Br. Option (102'-136'-136'-136'-102') Pl. Girder (w/o Peds)

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2061000	Class I Excavation	1204	Cu. Yd.	\$50	\$60,200
2	5031010A	Bridge Approach Slab (Major Road)	136.3	Sq. Yd.	\$250	\$34,074
3	7011107	Drilled Shafts (6 Ft. 0 In. Dia.)	142.0	Lin. Ft.	\$1,200	\$170,400
4	7011206	Rock Sockets (5 Ft. 6 In. Dia.)	160.0	Lin. Ft.	\$900	\$144,000
5	7011300	Video Camera Inspection	8.0	Each	\$650	\$5,200
6	7011400	Foundation Inspection Holes	240.0	Lin. Ft.	\$130	\$31,200
7	7011600	Sonic Logging Testing	8.0	Each	\$2,000	\$16,000
8	7021212	Galvanized Structural Steel Piles (12 In.)	700.0	Lin. Ft.	\$80	\$56,000
9	7027000	Pile Point Reinforcement	10.0	Each	\$125	\$1,250
10	7026000	Pre-Bore for Piling	450.0	Lin. Ft.	\$150	\$67,500
11	7032003	Class B Concrete (Substructure)	350.2	Cu. Yd.	\$850	\$297,664
12	7034212	Slab on Steel	2028.6	Sq. Yd.	\$275	\$557,877
13	7034620	Form Liners	835.6	Sq. Yd.	\$100	\$83,556
14	7039903	Misc. Barrier Curb	1298.0	Lin. Ft.	\$100	\$129,800
15	7061060	Reinforcing Steel (Bridges)	73353	Lbs	\$1.40	\$102,694
16	7121122	Fab. Structural LA Steel (Plate Girder) A709, Gr 50W	816698	Lbs	\$1.75	\$1,429,222
17	7123610	Slab Drain	1.0	L.S.	\$120,000	\$120,000
18	7129903	Misc. Bridge Rail (One Tube Structural Steel)	1298.0	Lin. Ft.	\$100	\$129,800
19	7151001	Vertical Drain at End Bents	2.0	Each	\$2,000	\$4,000
20	7162000	Laminated Neoprene Bearing Pad Assembly	24.0	Each	\$2,100	\$50,400
21	7172001	Strip Seal Expansion Joint System	67	Lin. Ft.	\$425	\$28,620
					Sub-Total (A) =	\$3,519,456
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$193</i>

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 300+00 to Sta. 312+78 across Current River. Estimate does not include costs for bridges.

Figure A-2: Alternative 1A,2A,5B North Option 2 - Temp Shoofly Bridge Downstream of Ped Bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	1801	\$55	\$99,051	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$20,000	\$20,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	2	\$7,000	\$14,000	
EXCAVATION - CLASS A	CY	2961	\$8	\$22,204	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	1480	\$20	\$29,605	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	7332	\$12	\$87,981	
BORROW	CY	2891	\$2	\$5,782	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
TEMPORARY SHORING	LS	1	\$50,000	\$50,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	146	\$55	\$8,033	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$709,656	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$179,914.01	
TOTAL CONSTRUCTION COST				\$899,570	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/16/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Temporary Bridge (24' Rdwy)
 (102.5'-136'-136'-136'-102.5')

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2160500	Removal of Bridges (Temp Structure)	1	L.S.	\$160,160	\$160,160
2	7011107	Drilled Shafts (4 Ft. 6 In. Dia.)	160.0	Lin. Ft.	\$900	\$144,000
3	7011206	Rock Sockets (4 Ft. 0 In. Dia.)	160.0	Lin. Ft.	\$950	\$152,000
4	7011300	Video Camera Inspection	8.0	Each	\$225	\$1,800
5	7011400	Foundation Inspection Holes	360.0	Lin. Ft.	\$130	\$46,800
6	7011600	Sonic Logging Testing	8.0	Each	\$2,000	\$16,000
7	7021212	Galvanized Structural Steel Piles (12 In.)	990.0	Lin. Ft.	\$80	\$79,200
8	7027000	Pile Point Reinforcement	18.0	Each	\$125	\$2,250
9	7032003	Class B Concrete (Substructure)	173.3	Cu. Yd.	\$750	\$129,955
10	7056024	NU 63 (1600), Prestressed Concrete NU-Girder	2452.0	Lin. Ft.	\$300	\$735,600
11	7061060	Reinforcing Steel (Bridges)	17516	Lbs	\$1.20	\$21,019
12	7121160	Steel Grid Floor (Open)	16221.1	Sq. Ft.	\$20	\$324,423
13	7134000	Bridge Guardrail (Thrie Beam)	1232.0	Lin. Ft.	\$240	\$295,680
14	7161003	Laminated Neoprene Bearing Pad (Tapered)	30.0	Each	\$400	\$12,000
					Sub-Total (A) =	\$2,120,890
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$132</i>

Current River Bridge

Alternative 2B – Cost Estimate

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/12/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Replace on Existing Alignment
 Br. Option (102'-136'-136'-136'-102') Pl. Girder (w/o Peds)

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2061000	Class I Excavation	1204	Cu. Yd.	\$50	\$60,200
2	5031010A	Bridge Approach Slab (Major Road)	136.3	Sq. Yd.	\$250	\$34,074
3	7011107	Drilled Shafts (6 Ft. 0 In. Dia.)	142.0	Lin. Ft.	\$1,200	\$170,400
4	7011206	Rock Sockets (5 Ft. 6 In. Dia.)	160.0	Lin. Ft.	\$900	\$144,000
5	7011300	Video Camera Inspection	8.0	Each	\$650	\$5,200
6	7011400	Foundation Inspection Holes	240.0	Lin. Ft.	\$130	\$31,200
7	7011600	Sonic Logging Testing	8.0	Each	\$2,000	\$16,000
8	7021212	Galvanized Structural Steel Piles (12 In.)	700.0	Lin. Ft.	\$80	\$56,000
9	7027000	Pile Point Reinforcement	10.0	Each	\$125	\$1,250
10	7026000	Pre-Bore for Piling	450.0	Lin. Ft.	\$150	\$67,500
11	7032003	Class B Concrete (Substructure)	350.2	Cu. Yd.	\$850	\$297,664
12	7034212	Slab on Steel	2028.6	Sq. Yd.	\$275	\$557,877
13	7034620	Form Liners	835.6	Sq. Yd.	\$100	\$83,556
14	7039903	Misc. Barrier Curb	1298.0	Lin. Ft.	\$100	\$129,800
15	7061060	Reinforcing Steel (Bridges)	73353	Lbs	\$1.40	\$102,694
16	7121122	Fab. Structural LA Steel (Plate Girder) A709, Gr 50W	816698	Lbs	\$1.75	\$1,429,222
17	7123610	Slab Drain	1.0	L.S.	\$120,000	\$120,000
18	7129903	Misc. Bridge Rail (One Tube Structural Steel)	1298.0	Lin. Ft.	\$100	\$129,800
19	7151001	Vertical Drain at End Bents	2.0	Each	\$2,000	\$4,000
20	7162000	Laminated Neoprene Bearing Pad Assembly	24.0	Each	\$2,100	\$50,400
21	7172001	Strip Seal Expansion Joint System	67	Lin. Ft.	\$425	\$28,620
					Sub-Total (A) =	\$3,519,456
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$193</i>

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 200+00 to Sta. 212+66 across Current River. Estimate does not include costs for bridges.

Figure A-3: Alternative 1B and 2B North - New Bridge; Remove Ped Bridge; Single-lane temp shoo-fly bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
WORK ZONE TRAFFIC SIGNAL SYSTEM	EACH	1	\$12,000	\$12,000	alternating traffic across bridge
TEMPORARY PAVING	SY	1758	\$55	\$96,685	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$20,000	\$20,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	2	\$7,000	\$14,000	
EXCAVATION - CLASS A	CY	5876	\$8	\$44,072	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	2938	\$20	\$58,762	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	2991	\$12	\$35,892	
BORROW	CY		\$2		
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
TEMPORARY SHORING	LS	1	\$50,000	\$50,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	146	\$55	\$8,033	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$712,445	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$180,611.13	
TOTAL CONSTRUCTION COST				\$903,056	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/12/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Replace on Existing Alignment
 Br. Option (102'-136'-136'-136'-102') Pl. Girder (W/ Peds)

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2061000	Class I Excavation	1128	Cu. Yd.	\$50	\$56,408
2	6079903	(72 In.) Pedestrian Fence (Structures)	1300.0	Lin. Ft.	\$160	\$208,000
3	7011107	Drilled Shafts (6 Ft. 0 In. Dia.)	142.0	Lin. Ft.	\$1,200	\$170,400
4	7011206	Rock Sockets (5 Ft. 6 In. Dia.)	160.0	Lin. Ft.	\$900	\$144,000
5	7011300	Video Camera Inspection	8.0	Each	\$650	\$5,200
6	7011400	Foundation Inspection Holes	240.0	Lin. Ft.	\$130	\$31,200
7	7011600	Sonic Logging Testing	8.0	Each	\$2,000	\$16,000
8	7021212	Galvanized Structural Steel Piles (12 In.)	420.0	Lin. Ft.	\$80	\$33,600
9	7027000	Pile Point Reinforcement	6.0	Each	\$125	\$750
10	7026000	Pre-Bore for Piling	270.0	Lin. Ft.	\$150	\$40,500
11	7032003	Class B Concrete (Substructure)	272.4	Cu. Yd.	\$850	\$231,553
12	7034212	Slab on Steel	1088.0	Sq. Yd.	\$275	\$299,200
13	7034620	Form Liners	604.4	Sq. Yd.	\$100	\$60,444
14	7039903	Misc. Barrier Curb	1298.0	Lin. Ft.	\$100	\$129,800
15	7061060	Reinforcing Steel (Bridges)	64020	Lbs	\$1.40	\$89,628
16	7121122	Fab. Structural LA Steel (Plate Girder) A709, Gr 50W	408349	Lbs	\$1.75	\$714,611
17	7123610	Slab Drain	1.0	L.S.	\$120,000	\$120,000
18	7129903	Misc. Bridge Rail (One Tube Structural Steel)	1298.0	Lin. Ft.	\$100	\$129,800
19	7151001	Vertical Drain at End Bents	2.0	Each	\$1,000	\$2,000
20	7162000	Laminated Neoprene Bearing Pad Assembly	12.0	Each	\$2,100	\$25,200
21	7172001	Strip Seal Expansion Joint System	32	Lin. Ft.	\$425	\$13,600
					Sub-Total (A) =	\$2,521,893
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$258</i>

Current River Bridge

Alternative 3, Option 1 – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:	of:	ESTIMATE	
Job #:	No:				

G0804 Replacement - Filled Arch Option (No phasing)

Bridge Length =	612	Ft.	Skew =	0	degrees
New Bridge Width =	40.83	Ft.	New Arch Width =	35	Ft.
Cantilever Width =	4.583	Ft.	Side Wall Area (DGN) =	1060	ft ²
Pier 2 Width =	40.5	ft.	New Side Wall Thk =	12	in.
Pier 2 Length =	13	ft.	Arch End Area (130' Span) =	290	ft ²
Pier 3&4 Width =	43.5	ft.	Pier 2 Area =	165	ft ²
Pier 3&4 Length =	14	ft.	Pier 3 & 4 Area =	300	ft ²
Pier 5 Width =	43.5	ft.	Pier 5 Area =	450	ft ²
Pier 5 Length =	20	ft.	# Girders (End Spans) =	5	
End Span Lengths (NU53) =	102	ft.	Wing Length =	15	ft.

Item	Quantity	Unit Cost	Estimated Cost
Arch Backfill			
(202-60.40)	3890 Cu. Yd.	\$25	\$97,250
	<i>Filled Arch - Assume 33' wide fill x side wall area (measured in CAD)</i>		
Class 1 Excavation			
(206-10.00)	2530 Cu. Yd.	\$50	\$126,500
	Abut. Excav. Depth = 5 ft.		
	Pier 2 Excav. Depth = 12 ft.		
	Pier 3 & 4 Excav. Depth = 17 ft.		
	Pier 5 Excav. Depth = 27 ft.		
Cofferdams			
(206-60.02)	1 Lump Sum	\$1,000,000	\$1,000,000
	<i>Assume \$250,000 each</i>		
Ornamental Pedestrian Fence			
(607-99.03)	612 LF.	\$160	\$97,920
Galvanized Structural Steel Pile (12")			
(702-12.12)	324 LF.	\$75	\$24,300
	Approx. Pile Length (EB 1) = 24 ft		
	Approx. Pile Length (EB 6) = 30 ft		
	# Piles/End Bent = 6		
Dynamic Pile Testing			
(702-50.01)	2 Ea.	\$2,500	\$5,000
Pile Point Reinforcement			
(702-70.00)	12 Ea.	\$125	\$1,500
Class B Concrete (Substructure)			
(703-20.03)	2,460 Cu. Yd.	\$900	\$2,214,000
	<i>Include side walls, 6'x12" pilasters and support brackets w/ foundations</i>		
	<i>Include new floorbeam braces (10 per span - 15"x27"x33')</i>		
Class B-2 Concrete (Arch)			
(703-20.03)	1130 Cu. Yd.	\$2,000	\$2,260,000
	<i>Use end areas from DGN file and multiply by 35' wide arch</i>		
Slab on Filled Arch			
(703-42.14)	1860 Sq. Yd.	\$200	\$372,000
Barrier Curb			
(703-42.15)	1290 LF.	\$95	\$122,550
Slab on Concrete NU-Girder			
(703-42.15)	930 Sq. Yd.	\$315	\$292,950



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:		of:	ESTIMATE
Job #:		No:			

Form Liners

(703-46.20)

400	Sq. Yd.	\$100	\$40,000
<i>Back of Barrier and new Pilasters at piers (approx. 5' wide x 25' tall)</i>			

NU 53, Prestressed Concrete NU-Girder

(705-60.23)

1010	LF.	\$240	\$242,400
------	-----	-------	-----------

Reinforcing Steel

(706-10.60)

489,300	Lb.	\$1.40	\$685,020
<i>Assume 130# per CY of concrete for Substr. 150# for the Arch concrete</i>			

Steel Intermediate Diaphragm (NU Girder)

(712-33.01)

16	Ea.	\$1,000	\$16,000
<i>Two in each end span per bay</i>			

Slab Drain

(712-36.10)

84	Ea.	\$500	\$42,000
<i>Assume new VC on bridge to help drainage. Spa. @ 15' across bridge</i>			

Drainage System on Structure

(712-99.01)

1	Lump Sum	\$80,000	\$80,000
---	----------	----------	----------

Misc. Bridge Rail

(712-99.03)

1290	LF.	\$110	\$141,900
------	-----	-------	-----------

Vertical Drain at End Bent

(715-10.01)

2	Ea.	\$3,060	\$6,120
<i>Assume \$45/ft. Roadway width + 2 wings</i>			

Laminated Neoprene Bearing (Tapered)

(716-10.03)

10	Ea.	\$375	\$3,750
----	-----	-------	---------

Laminated Neoprene Bearing Assembly

(716-20.00)

10	Ea.	\$2,000	\$20,000
----	-----	---------	----------

Strip Seal Expansion Joint System

(717-20.01)

90	LF.	\$400	\$36,000
----	-----	-------	----------

Total New Bridge Cost = \$7,927,200**Unit Cost = \$317 / Sq. Ft.***Not including approach slab*

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume reconstruction of Route 19 from Sta. 1627+50 to Sta. 1647+18 across Current River. Estimate does not include costs for bridges.

Figure A-4: Alternatives 3 and 4 North Option 1 - New Bridge on Offset alignment; Remove Ped Bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$50,000	\$50,000	assumes flagging, temp barrier, signs, etc
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF SURFACINGS	SY	8000	\$3	\$24,000	
REMOVAL OF IMPROVEMENTS	LS	1	\$25,000	\$25,000	
CLEARING AND GRUBBING	ACRE	5	\$7,000	\$35,000	
EXCAVATION - CLASS A	CY	8613	\$8	\$64,597	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	4306	\$20	\$86,130	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	9725	\$12	\$116,695	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$50,000	\$50,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
PAVEMENT					
DRIVEWAY RECONSTRUCTION	EACH	2	\$10,000	\$20,000	
ROUTE 19 RECONSTRUCTION	SY	4564	\$55	\$251,003	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$25,000	\$25,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$1,065,425	
CONSTRUCTION SURVEYING	LS		1%	\$10,654	
CONTINGENCIES	LS		25%	\$269,020	
TOTAL CONSTRUCTION COST				\$1,345,099	

Current River Bridge

Alternative 3, Option 2 – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:	of:	ESTIMATE	
Job #:	No:				

G0804 Replacement - Filled Arch Option (No phasing)

Bridge Length =	612	Ft.	Skew =	0	degrees
New Bridge Width =	40.83	Ft.	New Arch Width =	35	Ft.
Cantilever Width =	4.583	Ft.	Side Wall Area (DGN) =	1060	ft ²
Pier 2 Width =	40.5	ft.	New Side Wall Thk =	12	in.
Pier 2 Length =	13	ft.	Arch End Area (130' Span) =	290	ft ²
Pier 3&4 Width =	43.5	ft.	Pier 2 Area =	165	ft ²
Pier 3&4 Length =	14	ft.	Pier 3 & 4 Area =	300	ft ²
Pier 5 Width =	43.5	ft.	Pier 5 Area =	450	ft ²
Pier 5 Length =	20	ft.	# Girders (End Spans) =	5	
End Span Lengths (NU53) =	102	ft.	Wing Length =	15	ft.

Item	Quantity	Unit Cost	Estimated Cost
Arch Backfill			
(202-60.40)	3890 Cu. Yd.	\$25	\$97,250
	<i>Filled Arch - Assume 33' wide fill x side wall area (measured in CAD)</i>		
Class 1 Excavation			
(206-10.00)	2530 Cu. Yd.	\$50	\$126,500
	Abut. Excav. Depth = 5 ft.		
	Pier 2 Excav. Depth = 12 ft.		
	Pier 3 & 4 Excav. Depth = 17 ft.		
	Pier 5 Excav. Depth = 27 ft.		
Cofferdams			
(206-60.02)	1 Lump Sum	\$1,000,000	\$1,000,000
	<i>Assume \$250,000 each</i>		
Ornamental Pedestrian Fence			
(607-99.03)	612 LF.	\$160	\$97,920
Galvanized Structural Steel Pile (12")			
(702-12.12)	324 LF.	\$75	\$24,300
	Approx. Pile Length (EB 1) = 24 ft		
	Approx. Pile Length (EB 6) = 30 ft		
	# Piles/End Bent = 6		
Dynamic Pile Testing			
(702-50.01)	2 Ea.	\$2,500	\$5,000
Pile Point Reinforcement			
(702-70.00)	12 Ea.	\$125	\$1,500
Class B Concrete (Substructure)			
(703-20.03)	2,460 Cu. Yd.	\$900	\$2,214,000
	<i>Include side walls, 6'x12" pilasters and support brackets w/ foundations</i>		
	<i>Include new floorbeam braces (10 per span - 15"x27"x33')</i>		
Class B-2 Concrete (Arch)			
(703-20.03)	1130 Cu. Yd.	\$2,000	\$2,260,000
	<i>Use end areas from DGN file and multiply by 35' wide arch</i>		
Slab on Filled Arch			
(703-42.14)	1860 Sq. Yd.	\$200	\$372,000
Barrier Curb			
(703-42.15)	1290 LF.	\$95	\$122,550
Slab on Concrete NU-Girder			
(703-42.15)	930 Sq. Yd.	\$315	\$292,950



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:		of:	ESTIMATE
Job #:		No:			

Form Liners

(703-46.20)

400	Sq. Yd.	\$100	\$40,000
<i>Back of Barrier and new Pilasters at piers (approx. 5' wide x 25' tall)</i>			

NU 53, Prestressed Concrete NU-Girder

(705-60.23)

1010	LF.	\$240	\$242,400
------	-----	-------	-----------

Reinforcing Steel

(706-10.60)

489,300	Lb.	\$1.40	\$685,020
<i>Assume 130# per CY of concrete for Substr. 150# for the Arch concrete</i>			

Steel Intermediate Diaphragm (NU Girder)

(712-33.01)

16	Ea.	\$1,000	\$16,000
<i>Two in each end span per bay</i>			

Slab Drain

(712-36.10)

84	Ea.	\$500	\$42,000
<i>Assume new VC on bridge to help drainage. Spa. @ 15' across bridge</i>			

Drainage System on Structure

(712-99.01)

1	Lump Sum	\$80,000	\$80,000
---	----------	----------	----------

Misc. Bridge Rail

(712-99.03)

1290	LF.	\$110	\$141,900
------	-----	-------	-----------

Vertical Drain at End Bent

(715-10.01)

2	Ea.	\$3,060	\$6,120
<i>Assume \$45/ft. Roadway width + 2 wings</i>			

Laminated Neoprene Bearing (Tapered)

(716-10.03)

10	Ea.	\$375	\$3,750
----	-----	-------	---------

Laminated Neoprene Bearing Assembly

(716-20.00)

10	Ea.	\$2,000	\$20,000
----	-----	---------	----------

Strip Seal Expansion Joint System

(717-20.01)

90	LF.	\$400	\$36,000
----	-----	-------	----------

Total New Bridge Cost =	\$7,927,200
--------------------------------	--------------------

Unit Cost =	\$317 / Sq. Ft.
--------------------	------------------------

Not including approach slab

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume reconstruction of Route 19 from Sta. 1627+50 to Sta. 1647+32 across Current River. Estimate does not include costs for bridges.

Figure A- 5: Alternatives 3 and 4 North Option 2 - New Bridge on Offset alignment; Ped Bridge Remains

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$50,000	\$50,000	assumes flagging, temp barrier, signs, etc
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF SURFACINGS	SY	8000	\$3	\$24,000	
REMOVAL OF IMPROVEMENTS	LS	1	\$25,000	\$25,000	
CLEARING AND GRUBBING	ACRE	5	\$7,000	\$35,000	
EXCAVATION - CLASS A	CY	19136	\$8	\$143,523	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	9568	\$20	\$191,364	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	12950	\$12	\$155,397	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$50,000	\$50,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
PAVEMENT					
DRIVEWAY RECONSTRUCTION	EACH	2	\$10,000	\$20,000	
ROUTE 19 RECONSTRUCTION	SY	4631	\$55	\$254,730	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$25,000	\$25,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$1,292,015	
CONSTRUCTION SURVEYING	LS		1%	\$12,920	
CONTINGENCIES	LS		25%	\$326,234	
TOTAL CONSTRUCTION COST				\$1,631,169	

Current River Bridge

Alternative 4, Option 1 – Cost Estimate

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/12/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Replace on Existing Alignment
 Br. Option (102'-136'-136'-136'-102') Pl. Girder (W/ Peds)

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2061000	Class I Excavation	1266	Cu. Yd.	\$50	\$63,282
2	5031010A	Bridge Approach Slab (Major Road)	136.3	Sq. Yd.	\$250	\$34,074
3	6079903	(72 In.) Pedestrian Fence (Structures)	650.0	Lin. Ft.	\$160	\$104,000
4	7011107	Drilled Shafts (6 Ft. 0 In. Dia.)	213.0	Lin. Ft.	\$1,200	\$255,600
5	7011206	Rock Sockets (5 Ft. 6 In. Dia.)	240.0	Lin. Ft.	\$900	\$216,000
6	7011300	Video Camera Inspection	12.0	Each	\$650	\$7,800
7	7011400	Foundation Inspection Holes	360.0	Lin. Ft.	\$130	\$46,800
8	7011600	Sonic Logging Testing	12.0	Each	\$2,000	\$24,000
9	7021212	Galvanized Structural Steel Piles (12 In.)	980.0	Lin. Ft.	\$80	\$78,400
10	7027000	Pile Point Reinforcement	14.0	Each	\$125	\$1,750
11	7026000	Pre-Bore for Piling	630.0	Lin. Ft.	\$150	\$94,500
12	7032003	Class B Concrete (Substructure)	514.1	Cu. Yd.	\$850	\$437,022
13	7034212	Slab on Steel	2776.7	Sq. Yd.	\$275	\$763,583
14	7034620	Form Liners	1137.8	Sq. Yd.	\$100	\$113,778
15	7039903	Misc. Barrier Curb	1298.0	Lin. Ft.	\$100	\$129,800
16	7061060	Reinforcing Steel (Bridges)	107202	Lbs	\$1.40	\$150,083
17	7121122	Fab. Structural LA Steel (Plate Girder) A709, Gr 50W	1045000	Lbs	\$1.75	\$1,828,750
18	7123610	Slab Drain	1.0	L.S.	\$120,000	\$120,000
19	7129903	Misc. Bridge Rail (One Tube Structural Steel)	1298.0	Lin. Ft.	\$100	\$129,800
20	7151001	Vertical Drain at End Bents	2.0	Each	\$3,500	\$7,000
21	7162000	Laminated Neoprene Bearing Pad Assembly	30.0	Each	\$2,100	\$63,000
22	7172001	Strip Seal Expansion Joint System	89	Lin. Ft.	\$425	\$37,970
					Sub-Total (A) =	\$4,706,991
					Price/Sq. Ft. (Bridge Items) =	\$188

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume reconstruction of Route 19 from Sta. 1627+50 to Sta. 1647+18 across Current River. Estimate does not include costs for bridges.

Figure A-4: Alternatives 3 and 4 North Option 1 - New Bridge on Offset alignment; Remove Ped Bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$50,000	\$50,000	assumes flagging, temp barrier, signs, etc
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF SURFACINGS	SY	8000	\$3	\$24,000	
REMOVAL OF IMPROVEMENTS	LS	1	\$25,000	\$25,000	
CLEARING AND GRUBBING	ACRE	5	\$7,000	\$35,000	
EXCAVATION - CLASS A	CY	8613	\$8	\$64,597	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	4306	\$20	\$86,130	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	9725	\$12	\$116,695	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$50,000	\$50,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
PAVEMENT					
DRIVEWAY RECONSTRUCTION	EACH	2	\$10,000	\$20,000	
ROUTE 19 RECONSTRUCTION	SY	4564	\$55	\$251,003	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$25,000	\$25,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$1,065,425	
CONSTRUCTION SURVEYING	LS		1%	\$10,654	
CONTINGENCIES	LS		25%	\$269,020	
TOTAL CONSTRUCTION COST				\$1,345,099	

This page is intentionally left blank.

Current River Bridge

Alternative 4, Option 2 – Cost Estimate

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/12/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Replace on Existing Alignment
 Br. Option (102'-136'-136'-136'-102') Pl. Girder (W/ Peds)

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2061000	Class I Excavation	1266	Cu. Yd.	\$50	\$63,282
2	5031010A	Bridge Approach Slab (Major Road)	136.3	Sq. Yd.	\$250	\$34,074
3	6079903	(72 In.) Pedestrian Fence (Structures)	650.0	Lin. Ft.	\$160	\$104,000
4	7011107	Drilled Shafts (6 Ft. 0 In. Dia.)	213.0	Lin. Ft.	\$1,200	\$255,600
5	7011206	Rock Sockets (5 Ft. 6 In. Dia.)	240.0	Lin. Ft.	\$900	\$216,000
6	7011300	Video Camera Inspection	12.0	Each	\$650	\$7,800
7	7011400	Foundation Inspection Holes	360.0	Lin. Ft.	\$130	\$46,800
8	7011600	Sonic Logging Testing	12.0	Each	\$2,000	\$24,000
9	7021212	Galvanized Structural Steel Piles (12 In.)	980.0	Lin. Ft.	\$80	\$78,400
10	7027000	Pile Point Reinforcement	14.0	Each	\$125	\$1,750
11	7026000	Pre-Bore for Piling	630.0	Lin. Ft.	\$150	\$94,500
12	7032003	Class B Concrete (Substructure)	514.1	Cu. Yd.	\$850	\$437,022
13	7034212	Slab on Steel	2776.7	Sq. Yd.	\$275	\$763,583
14	7034620	Form Liners	1137.8	Sq. Yd.	\$100	\$113,778
15	7039903	Misc. Barrier Curb	1298.0	Lin. Ft.	\$100	\$129,800
16	7061060	Reinforcing Steel (Bridges)	107202	Lbs	\$1.40	\$150,083
17	7121122	Fab. Structural LA Steel (Plate Girder) A709, Gr 50W	1045000	Lbs	\$1.75	\$1,828,750
18	7123610	Slab Drain	1.0	L.S.	\$120,000	\$120,000
19	7129903	Misc. Bridge Rail (One Tube Structural Steel)	1298.0	Lin. Ft.	\$100	\$129,800
20	7151001	Vertical Drain at End Bents	2.0	Each	\$3,500	\$7,000
21	7162000	Laminated Neoprene Bearing Pad Assembly	30.0	Each	\$2,100	\$63,000
22	7172001	Strip Seal Expansion Joint System	89	Lin. Ft.	\$425	\$37,970
					Sub-Total (A) =	\$4,706,991
					Price/Sq. Ft. (Bridge Items) =	\$188

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume reconstruction of Route 19 from Sta. 1627+50 to Sta. 1647+32 across Current River. Estimate does not include costs for bridges.

Figure A- 5: Alternatives 3 and 4 North Option 2 - New Bridge on Offset alignment; Ped Bridge Remains

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$50,000	\$50,000	assumes flagging, temp barrier, signs, etc
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF SURFACINGS	SY	8000	\$3	\$24,000	
REMOVAL OF IMPROVEMENTS	LS	1	\$25,000	\$25,000	
CLEARING AND GRUBBING	ACRE	5	\$7,000	\$35,000	
EXCAVATION - CLASS A	CY	19136	\$8	\$143,523	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	9568	\$20	\$191,364	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	12950	\$12	\$155,397	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$50,000	\$50,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
PAVEMENT					
DRIVEWAY RECONSTRUCTION	EACH	2	\$10,000	\$20,000	
ROUTE 19 RECONSTRUCTION	SY	4631	\$55	\$254,730	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$25,000	\$25,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$1,292,015	
CONSTRUCTION SURVEYING	LS		1%	\$12,920	
CONTINGENCIES	LS		25%	\$326,234	
TOTAL CONSTRUCTION COST				\$1,631,169	

This page is intentionally left blank.

Current River Bridge

Alternative 5A – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Rehab	Checked:	DGB	Date:	10/2/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

G0804 Rehab - Filled Arch Option (Phased/Non-phased Construction)

Bridge Length =	602	Ft.	Skew =	0	deg
Exist. Bridge Width =	21.67	Ft.	21.67	Ft. along skew	
New Bridge Width =	40.83	Ft.			
Cantilever Width =	4.583	Ft.	Existing Arch Width =	14	Ft.
Widening =	19.16	Ft.	New Arch Width =	35	Ft.
Average Abutment Length =	23.5	ft.	Arch Ring Arc Length (60') =	65	Ft
Abut. Footing Width =	3.5	ft.	Arch Ring Arc Length (130') =	140	Ft
Pier 2 Width =	20.5	ft.	130' Side Wall Area (DGN) =	1060	ft ²
Pier 2 Length =	13	ft.	60' Side Wall Area (DGN) =	990	ft ²
Pier 3&4 Width =	23.5	ft.	New Side Wall Thk =	12	in.
Pier 3&4 Length =	14	ft.	Arch Ring End Area (60' Span) =	110	ft ²
Pier 5 Width =	23.5	ft.	Arch Ring End Area (130' Span) =	290	ft ²
Pier 5 Length =	20	ft.	Pier 2 Area =	165	ft ²
			Pier 3 & 4 Area =	300	ft ²
			Pier 5 Area =	450	ft ²

Item	Quantity	Unit Cost	Estimated Cost
Arch Backfill			
(202-60.40)	3830 Cu. Yd.	\$25	\$95,750
	<i>Filled Arch - Assume 10' wide fill added each side x Avg. Side Wall Height</i>		
Class 1 Excavation			
(206-10.00)	1800 Cu. Yd.	\$50	\$90,000
	Abut. Excav. Depth = 15 ft.		
	Pier 2 Excav. Depth = 12 ft.		
	Pier 3 & 4 Excav. Depth = 17 ft.		
	Pier 5 Excav. Depth = 27 ft.		
Cofferdams			
(206-60.02)	1 Lump Sum	\$1,000,000	\$1,000,000
	<i>Include all piers in same pay item</i>		
Removal of Existing Bridge Decks - Non. Comp.			
(216-25.00)	5,518 Sq. Ft.	\$9.00	\$49,661
	<i>Remove slab cantilevers both sides</i>		
Partial Removal of Exist. Bridge Deck			
(216-99.01)	49.0 Cu. Yd.	\$1,000	\$49,000
	<i>Remove slab cantilever support brackets. Say 16" deep by 15" wide. Also remove pilasters at piers (assume average 20' tall. 6' x 12")</i>		
Ornamental Pedestrian Fence			
(607-99.03)	602 LF.	\$160	\$96,320
Class B Concrete (Substructure)			
(703-20.03)	1,510 Cu. Yd.	\$900	\$1,359,000
	<i>Include side walls and support brackets w/ foundations</i>		
	<i>Add 4.5' wide new cantilevers (7" thick). Add new OH brackets. 76 total bracket locations (2*(2*4+3*10)) = 76. Pier Areas measured from DGN</i>		
	<i>Add new 6' wide x 12" thick x 20' (average) high pilasters at piers.</i>		
Class B-2 Concrete (Arch)			
(703-20.03)	850 Cu. Yd.	\$2,000	\$1,700,000
	<i>Use end areas from DGN file and multiply by 15' widening</i>		
Slab on Filled Arch			
(703-42.14)	2740 Sq. Yd.	\$200	\$548,000
Barrier Curb			
(703-42.15)	1210 LF.	\$95	\$114,950



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Rehab	Checked:	DGB	Date:	10/2/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

Form Liners

(703-46.20)

380	Sq. Yd.	\$100	\$38,000
<i>Back of Barrier Curbs and new Pilasters at piers (approx. 5' wide x 25' tall)</i>			

Substructure Repair (Formed)

(704-01.01)

940	Sq. Ft.	\$135	\$126,900
<i>Assume 5% of arch surface area needs repair. Assume 500 SF more for side walls and tie beams</i>			

Embedded Galvanic Anodes

(704-99.01)

2000	Ea.	\$100	\$200,000
------	-----	-------	-----------

Reinforcing Steel (Bridges)

(706-10.60)

331,350	Lb.	\$1.40	\$463,890
<i>Assume 135# per CY of concrete for Substr. 150# for the Arch concrete</i>			

Slab Drain

(712-36.10)

90	Ea.	\$500	\$45,000
----	-----	-------	----------

Drainage System on Structure

(712-99.01)

1	Lump Sum	\$80,000	\$80,000
---	----------	----------	----------

Misc. Bridge Rail

(712-99.03)

1210	LF.	\$110	\$133,100
------	-----	-------	-----------

Strip Seal

(717-20.02)

90	LF.	\$100	\$9,000
----	-----	-------	---------

Total Bridge Cost =	\$6,198,600
----------------------------	--------------------

Unit Cost =	\$252 / Sq. Ft.
--------------------	------------------------

* - without phasing

Phasing Premium =	\$1,239,720
--------------------------	--------------------

Assume 20%

Total Bridge Cost =	\$7,438,320
----------------------------	--------------------

Unit Cost =	\$303 / Sq. Ft.
--------------------	------------------------

* - with phasing

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. No construction of shoofly or offset alignment. Estimate does not include costs for bridges.

Figure A-1: Alternative 5A North - Phased Traffic Control

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$100,000	\$100,000	assumes flagging, temp barrier, signs, etc
WORK ZONE TRAFFIC SIGNAL SYSTEM	EACH	1	\$12,000	\$12,000	alternating traffic across bridge
EROSION CONTROL					
EROSION CONTROL	LS		\$20,000		
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
ASPHALT PAVEMENT SAW CUTTING	FOOT		\$1		
CLEARING AND GRUBBING	ACRE		\$7,000		
EXCAVATION - CLASS A	CY		\$8		
EXCAVATION - CLASS C	CY		\$20		
EMBANKMENT IN PLACE	CY		\$12		
DRAINAGE AND SEWERS					
DRAINAGE	LS		\$20,000		
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS		\$250,000		
TEMPORARY SHORING	LS		\$50,000		
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	146	\$55	\$8,033	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS		\$15,000		
BID ITEMS SUBTOTAL				\$173,033	
CONSTRUCTION SURVEYING	LS			\$5,000.00	
CONTINGENCIES	LS		25%	\$44,508.17	
TOTAL CONSTRUCTION COST				\$222,541	

Current River Bridge

Alternative 5B, Option 1 – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Rehab	Checked:	DGB	Date:	10/2/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

G0804 Rehab - Filled Arch Option (Phased/Non-phased Construction)

Bridge Length =	602	Ft.	Skew =	0	deg
Exist. Bridge Width =	21.67	Ft.	21.67	Ft. along skew	
New Bridge Width =	40.83	Ft.			
Cantilever Width =	4.583	Ft.	Existing Arch Width =	14	Ft.
Widening =	19.16	Ft.	New Arch Width =	35	Ft.
Average Abutment Length =	23.5	ft.	Arch Ring Arc Length (60') =	65	Ft
Abut. Footing Width =	3.5	ft.	Arch Ring Arc Length (130') =	140	Ft
Pier 2 Width =	20.5	ft.	130' Side Wall Area (DGN) =	1060	ft ²
Pier 2 Length =	13	ft.	60' Side Wall Area (DGN) =	990	ft ²
Pier 3&4 Width =	23.5	ft.	New Side Wall Thk =	12	in.
Pier 3&4 Length =	14	ft.	Arch Ring End Area (60' Span) =	110	ft ²
Pier 5 Width =	23.5	ft.	Arch Ring End Area (130' Span) =	290	ft ²
Pier 5 Length =	20	ft.	Pier 2 Area =	165	ft ²
			Pier 3 & 4 Area =	300	ft ²
			Pier 5 Area =	450	ft ²

Item	Quantity	Unit Cost	Estimated Cost
Arch Backfill			
(202-60.40)	3830 Cu. Yd.	\$25	\$95,750
	<i>Filled Arch - Assume 10' wide fill added each side x Avg. Side Wall Height</i>		
Class 1 Excavation			
(206-10.00)	1800 Cu. Yd.	\$50	\$90,000
	Abut. Excav. Depth = 15	ft.	
	Pier 2 Excav. Depth = 12	ft.	
	Pier 3 & 4 Excav. Depth = 17	ft.	
	Pier 5 Excav. Depth = 27	ft.	
Cofferdams			
(206-60.02)	1 Lump Sum	\$1,000,000	\$1,000,000
	<i>Include all piers in same pay item</i>		
Removal of Existing Bridge Decks - Non. Comp.			
(216-25.00)	5,518 Sq. Ft.	\$9.00	\$49,661
	<i>Remove slab cantilevers both sides</i>		
Partial Removal of Exist. Bridge Deck			
(216-99.01)	49.0 Cu. Yd.	\$1,000	\$49,000
	<i>Remove slab cantilever support brackets. Say 16" deep by 15" wide. Also remove pilasters at piers (assume average 20' tall. 6' x 12")</i>		
Ornamental Pedestrian Fence			
(607-99.03)	602 LF.	\$160	\$96,320
Class B Concrete (Substructure)			
(703-20.03)	1,510 Cu. Yd.	\$900	\$1,359,000
	<i>Include side walls and support brackets w/ foundations</i>		
	<i>Add 4.5' wide new cantilevers (7" thick). Add new OH brackets. 76 total bracket locations (2*(2*4+3*10)) = 76. Pier Areas measured from DGN</i>		
	<i>Add new 6' wide x 12" thick x 20' (average) high pilasters at piers.</i>		
Class B-2 Concrete (Arch)			
(703-20.03)	850 Cu. Yd.	\$2,000	\$1,700,000
	<i>Use end areas from DGN file and multiply by 15' widening</i>		
Slab on Filled Arch			
(703-42.14)	2740 Sq. Yd.	\$200	\$548,000
Barrier Curb			
(703-42.15)	1210 LF.	\$95	\$114,950



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Rehab	Checked:	DGB	Date:	10/2/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

Form Liners

(703-46.20)

380 Sq. Yd. **\$100** \$38,000
Back of Barrier Curbs and new Pilasters at piers (approx. 5' wide x 25' tall)

Substructure Repair (Formed)

(704-01.01)

940 Sq. Ft. **\$135** \$126,900
Assume 5% of arch surface area needs repair. Assume 500 SF more for side walls and tie beams

Embedded Galvanic Anodes

(704-99.01)

2000 Ea. **\$100** \$200,000

Reinforcing Steel (Bridges)

(706-10.60)

331,350 Lb. **\$1.40** \$463,890
Assume 135# per CY of concrete for Substr. 150# for the Arch concrete

Slab Drain

(712-36.10)

90 Ea. **\$500** \$45,000

Drainage System on Structure

(712-99.01)

1 Lump Sum **\$80,000** \$80,000

Misc. Bridge Rail

(712-99.03)

1210 LF. **\$110** \$133,100

Strip Seal

(717-20.02)

90 LF. **\$100** \$9,000

Total Bridge Cost = \$6,198,600**Unit Cost = \$252 / Sq. Ft.**

* - without phasing

Phasing Premium = \$1,239,720

Assume 20%

Total Bridge Cost = \$7,438,320**Unit Cost = \$303 / Sq. Ft.**

* - with phasing

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 100+00 to Sta. 113+47 across Current River. Estimate does not include costs for bridges.

Figure A-1: Alternative 1A,2A, 5B North Option 1 - Temp Shoofly Bridge; Remove Ped Bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	1984	\$55	\$109,141	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$20,000	\$20,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	3	\$7,000	\$21,000	
EXCAVATION - CLASS A	CY	8539	\$8	\$64,041	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	4269	\$20	\$85,388	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	3411	\$12	\$40,935	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
TEMPORARY SHORING	LS	1	\$50,000	\$50,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	146	\$55	\$8,033	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$771,537	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$195,384.20	
TOTAL CONSTRUCTION COST				\$976,921	

Current River Bridge

Alternative 5B, Option 2 – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Rehab	Checked:	DGB	Date:	10/2/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

G0804 Rehab - Filled Arch Option (Phased/Non-phased Construction)

Bridge Length =	602	Ft.	Skew =	0	deg
Exist. Bridge Width =	21.67	Ft.	21.67	Ft. along skew	
New Bridge Width =	40.83	Ft.			
Cantilever Width =	4.583	Ft.	Existing Arch Width =	14	Ft.
Widening =	19.16	Ft.	New Arch Width =	35	Ft.
Average Abutment Length =	23.5	ft.	Arch Ring Arc Length (60') =	65	Ft
Abut. Footing Width =	3.5	ft.	Arch Ring Arc Length (130') =	140	Ft
Pier 2 Width =	20.5	ft.	130' Side Wall Area (DGN) =	1060	ft ²
Pier 2 Length =	13	ft.	60' Side Wall Area (DGN) =	990	ft ²
Pier 3&4 Width =	23.5	ft.	New Side Wall Thk =	12	in.
Pier 3&4 Length =	14	ft.	Arch Ring End Area (60' Span) =	110	ft ²
Pier 5 Width =	23.5	ft.	Arch Ring End Area (130' Span) =	290	ft ²
Pier 5 Length =	20	ft.	Pier 2 Area =	165	ft ²
			Pier 3 & 4 Area =	300	ft ²
			Pier 5 Area =	450	ft ²

Item	Quantity	Unit Cost	Estimated Cost
Arch Backfill			
(202-60.40)	3830 Cu. Yd.	\$25	\$95,750
	<i>Filled Arch - Assume 10' wide fill added each side x Avg. Side Wall Height</i>		
Class 1 Excavation			
(206-10.00)	1800 Cu. Yd.	\$50	\$90,000
	Abut. Excav. Depth = 15 ft.		
	Pier 2 Excav. Depth = 12 ft.		
	Pier 3 & 4 Excav. Depth = 17 ft.		
	Pier 5 Excav. Depth = 27 ft.		
Cofferdams			
(206-60.02)	1 Lump Sum	\$1,000,000	\$1,000,000
	<i>Include all piers in same pay item</i>		
Removal of Existing Bridge Decks - Non. Comp.			
(216-25.00)	5,518 Sq. Ft.	\$9.00	\$49,661
	<i>Remove slab cantilevers both sides</i>		
Partial Removal of Exist. Bridge Deck			
(216-99.01)	49.0 Cu. Yd.	\$1,000	\$49,000
	<i>Remove slab cantilever support brackets. Say 16" deep by 15" wide. Also remove pilasters at piers (assume average 20' tall. 6' x 12")</i>		
Ornamental Pedestrian Fence			
(607-99.03)	602 LF.	\$160	\$96,320
Class B Concrete (Substructure)			
(703-20.03)	1,510 Cu. Yd.	\$900	\$1,359,000
	<i>Include side walls and support brackets w/ foundations</i>		
	<i>Add 4.5' wide new cantilevers (7" thick). Add new OH brackets. 76 total bracket locations (2*(2*4+3*10)) = 76. Pier Areas measured from DGN</i>		
	<i>Add new 6' wide x 12" thick x 20' (average) high pilasters at piers.</i>		
Class B-2 Concrete (Arch)			
(703-20.03)	850 Cu. Yd.	\$2,000	\$1,700,000
	<i>Use end areas from DGN file and multiply by 15' widening</i>		
Slab on Filled Arch			
(703-42.14)	2740 Sq. Yd.	\$200	\$548,000
Barrier Curb			
(703-42.15)	1210 LF.	\$95	\$114,950



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Rehab	Checked:	DGB	Date:	10/2/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

Form Liners

(703-46.20)

380	Sq. Yd.	\$100	\$38,000
<i>Back of Barrier Curbs and new Pilasters at piers (approx. 5' wide x 25' tall)</i>			

Substructure Repair (Formed)

(704-01.01)

940	Sq. Ft.	\$135	\$126,900
<i>Assume 5% of arch surface area needs repair. Assume 500 SF more for side walls and tie beams</i>			

Embedded Galvanic Anodes

(704-99.01)

2000	Ea.	\$100	\$200,000
------	-----	-------	-----------

Reinforcing Steel (Bridges)

(706-10.60)

331,350	Lb.	\$1.40	\$463,890
<i>Assume 135# per CY of concrete for Substr. 150# for the Arch concrete</i>			

Slab Drain

(712-36.10)

90	Ea.	\$500	\$45,000
----	-----	-------	----------

Drainage System on Structure

(712-99.01)

1	Lump Sum	\$80,000	\$80,000
---	----------	----------	----------

Misc. Bridge Rail

(712-99.03)

1210	LF.	\$110	\$133,100
------	-----	-------	-----------

Strip Seal

(717-20.02)

90	LF.	\$100	\$9,000
----	-----	-------	---------

Total Bridge Cost =	\$6,198,600
----------------------------	--------------------

Unit Cost =	\$252 / Sq. Ft.
--------------------	------------------------

* - without phasing

Phasing Premium =	\$1,239,720
--------------------------	--------------------

Assume 20%

Total Bridge Cost =	\$7,438,320
----------------------------	--------------------

Unit Cost =	\$303 / Sq. Ft.
--------------------	------------------------

* - with phasing

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 300+00 to Sta. 312+78 across Current River. Estimate does not include costs for bridges.

Figure A-2: Alternative 1A,2A,5B North Option 2 - Temp Shoofly Bridge Downstream of Ped Bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	1801	\$55	\$99,051	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$20,000	\$20,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	2	\$7,000	\$14,000	
EXCAVATION - CLASS A	CY	2961	\$8	\$22,204	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	1480	\$20	\$29,605	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	7332	\$12	\$87,981	
BORROW	CY	2891	\$2	\$5,782	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
TEMPORARY SHORING	LS	1	\$50,000	\$50,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	146	\$55	\$8,033	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$709,656	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$179,914.01	
TOTAL CONSTRUCTION COST				\$899,570	

Current River Bridge

Alternative 6 – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:		of:	ESTIMATE
Job #:		No:			

G0804 Replacement - Filled Arch Option (Phased Construction)

Bridge Length =	612	Ft.	Skew =	0	degrees
New Bridge Width =	40.83	Ft.	New Arch Width =	35	Ft.
Cantilever Width =	4.583	Ft.	Side Wall Area (DGN) =	1060	ft ²
Pier 2 Width =	40.5	ft.	New Side Wall Thk =	12	in.
Pier 2 Length =	13	ft.	Arch End Area (130' Span) =	290	ft ²
Pier 3&4 Width =	43.5	ft.	Pier 2 Area =	165	ft ²
Pier 3&4 Length =	14	ft.	Pier 3 & 4 Area =	300	ft ²
Pier 5 Width =	43.5	ft.	Pier 5 Area =	450	ft ²
Pier 5 Length =	20	ft.			
End Span Lengths (NU53) =	102	ft.	# Girders (End Spans) =	5	
Wing Length =	15	ft.			

Item	Quantity	Unit Cost	Estimated Cost
Arch Backfill			
(202-60.40)	3890 Cu. Yd.	\$25	\$97,250
	<i>Filled Arch - Assume 33' wide fill x side wall area (measured in CAD)</i>		
Class 1 Excavation			
(206-10.00)	2530 Cu. Yd.	\$50	\$126,500
	Abut. Excav. Depth = 5	ft.	
	Pier 2 Excav. Depth = 12	ft.	
	Pier 3 & 4 Excav. Depth = 17	ft.	
	Pier 5 Excav. Depth = 27	ft.	
Cofferdams			
(206-60.02)	1 Lump Sum	\$1,000,000	\$1,000,000
	<i>Assume \$250,000 each</i>		
Ornamental Pedestrian Fence			
(607-99.03)	612 LF.	\$160	\$97,920
Galvanized Structural Steel Pile (12")			
(702-12.12)	324 LF.	\$75	\$24,300
	Approx. Pile Length (EB 1) = 24	ft	
	Approx. Pile Length (EB 6) = 30	ft	
	# Piles/End Bent = 6		
Pile Point Reinforcement			
(702-70.00)	12 Ea.	\$125	\$1,500
Class B Concrete (Substructure)			
(703-20.03)	2,460 Cu. Yd.	\$900	\$2,214,000
	<i>Include side walls, 6'x12" pilasters and support brackets w/ foundations</i>		
	<i>Include new floorbeam braces (10 per span - 15"x27"x33')</i>		
Class B-2 Concrete (Arch)			
(703-20.03)	1130 Cu. Yd.	\$2,000	\$2,260,000
	<i>Use end areas from DGN file and multiply by 35' wide arch</i>		
Slab on Filled Arch			
(703-42.14)	1860 Sq. Yd.	\$200	\$372,000
Barrier Curb			
(703-42.15)	1290 LF.	\$95	\$122,550



Project:	MoDOT Rte. 19 Concepts	Computed:	JDM	Date:	9/18/2019
Subject:	G0804 Replacement	Checked:	DGB	Date:	10/2/2019
Task:	Concept Cost Estimate	Page:		of:	ESTIMATE
Job #:		No:			

Slab on Concrete NU-Girder

(703-42.15) 930 Sq. Yd. \$315 \$292,950

Form Liners

(703-46.20) 400 Sq. Yd. \$100 \$40,000
Back of Barriers and new Pilasters at piers (approx. 5' wide x 25' tall)

NU 53, Prestressed Concrete NU-Girder

(705-60.23) 1010 LF. \$240 \$242,400

Reinforcing Steel

(706-10.60) 489,300 Lb. \$1.40 \$685,020
Assume 130# per CY of concrete for Substr. 150# for the Arch concrete

Steel Intermediate Diaphragm (NU Girder)

(712-33.01) 16 Ea. \$1,000 \$16,000
Two in each end span per bay

Slab Drain

(712-36.10) 84 Ea. \$500 \$42,000
Assume new VC on bridge to help drainage. Spa. @ 15' across bridge

Drainage System on Structure

(712-99.01) 1 Lump Sum \$80,000 \$80,000

Misc. Bridge Rail

(712-99.03) 1290 LF. \$110 \$141,900

Vertical Drain at End Bent

(715-10.01) 2 Ea. \$3,060 \$6,120
Assume \$45/ft. Roadway width + 2 wings

Laminated Neoprene Bearing (Tapered)

(716-10.03) 10 Ea. \$375 \$3,750

Laminated Neoprene Bearing Assembly

(716-20.00) 10 Ea. \$2,000 \$20,000

Strip Seal Expansion Joint System

(717-20.01) 90 LF. \$400 \$36,000

Total New Bridge Cost =	\$7,922,200
--------------------------------	--------------------

Unit Cost =	\$317 / Sq. Ft.
--------------------	------------------------

Not including phasing premium

Phasing Premium =	\$1,584,440
--------------------------	--------------------

Assume 20%

TOTAL COST =	\$9,506,640
---------------------	--------------------

Unit Cost =	\$380 / Sq. Ft.
--------------------	------------------------

Including phasing premium

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume reconstruction of Route 19 from Sta. 1627+50 to Sta. 1647+09 across Current River. Estimate does not include costs for bridges.

Figure A-6: Alternative 6 and 7 North - Slight alignment shift; Remove Ped Bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$50,000	\$50,000	assumes flagging, temp barrier, signs, etc
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF SURFACINGS	SY	8000	\$3	\$24,000	
REMOVAL OF IMPROVEMENTS	LS	1	\$25,000	\$25,000	
CLEARING AND GRUBBING	ACRE	5	\$7,000	\$35,000	
EXCAVATION - CLASS A	CY	5994	\$8	\$44,953	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	2997	\$20	\$59,937	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	5562	\$12	\$66,741	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$50,000	\$50,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
PAVEMENT					
DRIVEWAY RECONSTRUCTION	EACH	2	\$10,000	\$20,000	
ROUTE 19 RECONSTRUCTION	SY	4522	\$55	\$248,706	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	incl. Sta. 1660+50 to Sta. 1666+50; west side
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$25,000	\$25,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$967,337	
CONSTRUCTION SURVEYING	LS		1%	\$9,673.37	
CONTINGENCIES	LS		25%	\$244,252.64	
TOTAL CONSTRUCTION COST				\$1,221,263	

Current River Bridge

Alternative 7 – Cost Estimate

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/12/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Current River Bridge - Replace on Existing Alignment
 Br. Option (102'-136'-136'-136'-102') Pl. Girder (w/o Peds)

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2061000	Class I Excavation	1204	Cu. Yd.	\$50	\$60,200
2	5031010A	Bridge Approach Slab (Major Road)	136.3	Sq. Yd.	\$250	\$34,074
3	7011107	Drilled Shafts (6 Ft. 0 In. Dia.)	142.0	Lin. Ft.	\$1,200	\$170,400
4	7011206	Rock Sockets (5 Ft. 6 In. Dia.)	160.0	Lin. Ft.	\$900	\$144,000
5	7011300	Video Camera Inspection	8.0	Each	\$650	\$5,200
6	7011400	Foundation Inspection Holes	240.0	Lin. Ft.	\$130	\$31,200
7	7011600	Sonic Logging Testing	8.0	Each	\$2,000	\$16,000
8	7021212	Galvanized Structural Steel Piles (12 In.)	700.0	Lin. Ft.	\$80	\$56,000
9	7027000	Pile Point Reinforcement	10.0	Each	\$125	\$1,250
10	7026000	Pre-Bore for Piling	450.0	Lin. Ft.	\$150	\$67,500
11	7032003	Class B Concrete (Substructure)	350.2	Cu. Yd.	\$850	\$297,664
12	7034212	Slab on Steel	2028.6	Sq. Yd.	\$275	\$557,877
13	7034620	Form Liners	835.6	Sq. Yd.	\$100	\$83,556
14	7039903	Misc. Barrier Curb	1298.0	Lin. Ft.	\$100	\$129,800
15	7061060	Reinforcing Steel (Bridges)	73353	Lbs	\$1.40	\$102,694
16	7121122	Fab. Structural LA Steel (Plate Girder) A709, Gr 50W	816698	Lbs	\$1.75	\$1,429,222
17	7123610	Slab Drain	1.0	L.S.	\$120,000	\$120,000
18	7129903	Misc. Bridge Rail (One Tube Structural Steel)	1298.0	Lin. Ft.	\$100	\$129,800
19	7151001	Vertical Drain at End Bents	2.0	Each	\$2,000	\$4,000
20	7162000	Laminated Neoprene Bearing Pad Assembly	24.0	Each	\$2,100	\$50,400
21	7172001	Strip Seal Expansion Joint System	67	Lin. Ft.	\$425	\$28,620
					Sub-Total (A) =	\$3,519,456
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$193</i>

Staging Premium = 20%	\$703,891
Sub-Total (B)	\$703,891
Total (A+B)	\$4,223,347
Price / sq.ft. (Bridge Items)	\$232

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume reconstruction of Route 19 from Sta. 1627+50 to Sta. 1647+09 across Current River. Estimate does not include costs for bridges.

Figure A-6: Alternative 6 and 7 North - Slight alignment shift; Remove Ped Bridge

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$50,000	\$50,000	assumes flagging, temp barrier, signs, etc
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF SURFACINGS	SY	8000	\$3	\$24,000	
REMOVAL OF IMPROVEMENTS	LS	1	\$25,000	\$25,000	
CLEARING AND GRUBBING	ACRE	5	\$7,000	\$35,000	
EXCAVATION - CLASS A	CY	5994	\$8	\$44,953	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	2997	\$20	\$59,937	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	5562	\$12	\$66,741	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$50,000	\$50,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER CURRENT RIVER	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS	1	\$250,000	\$250,000	
PAVEMENT					
DRIVEWAY RECONSTRUCTION	EACH	2	\$10,000	\$20,000	
ROUTE 19 RECONSTRUCTION	SY	4522	\$55	\$248,706	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	incl. Sta. 1660+50 to Sta. 1666+50; west side
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$25,000	\$25,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$967,337	
CONSTRUCTION SURVEYING	LS		1%	\$9,673.37	
CONTINGENCIES	LS		25%	\$244,252.64	
TOTAL CONSTRUCTION COST				\$1,221,263	

This page is intentionally left blank.

Spring Valley Bridge

Alternative 1A – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Replacement	Checked:	JDM	Date:	9/25/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

J0420 Replacement - In Kind - On Alignment (Concrete Approaches)

New Bridge Length = 540 ft
New Bridge Width = 28 ft

Item	Quantity	Unit Cost	Estimated Cost
Class 1 Excavation (206-10.00)	120 Cu. Yd.	\$50	\$6,000
Class 2 Excavation (206-20.00)	1795 Cu. Yd.	\$60	\$107,700
Cofferdams (206-60.02)	1 Lump Sum	\$500,000	\$500,000
Bridge Approach Slab (Minor Road) (503-10.11A)	116 Sq. Yd.	\$215	\$24,940
Drilled Shaft (6'-0" Dia.) (701-11.06)	87 LF	\$1,200	\$104,400
Rock Socket (5'-6" Dia.) (701-12.06)	32 LF	\$900	\$28,800
Video Camera Inspection (701-13.00)	4 Ea.	\$650	\$2,600
Foundation Inspection Hole (701-14.00)	72 LF	\$120	\$8,640
Sonic Logging Testing (701-16.00)	4 Ea.	\$2,000	\$8,000
Galvanized Structural Steel Pile (12") (702-12.12)	497 LF	\$75	\$37,275
Dynamic Pile Testing (702-50.01)	2 Ea.	\$5,000	\$10,000
Pile Point Reinforcement (702-70.00)	14 Ea.	\$125	\$1,750
Class B Concrete (Substructure) (703-20.03)	780 Cu. Yd.	\$900	\$702,000
<i>Includes thrust blocks and new pier/end bent concrete</i>			
Class B-2 Concrete (Spandrel Columns) (703-20.03)	152 Cu. Yd.	\$1,000	\$152,000
Class B-2 Concrete (Arch) (703-20.03)	220 Cu. Yd.	\$2,000	\$440,000
Slab on Concrete NU Girder (703-42.14)	1223 Sq. Yd.	\$320	\$391,360



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Replacement	Checked:	JDM	Date:	9/25/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

Slab on Concrete Spandrel Arch
(703-42.14)

475 Sq. Yd. \$350 \$166,250

Barrier Curb
(703-42.15)

1155 LF \$95 \$109,725

Form Liners
(703-46.20)

494 Sq. Yd. \$100 \$49,400

NU 53, Prestressed Concrete NU-Girder
(705-60.23)

1568 LF \$250 \$392,000

Reinforcing Steel (Epoxy Coated)
(706-10.00)

386,314 Lb. \$1.40 \$540,839

Assume 130#/CY for substr concrete and 150#/CY of arch concrete

Steel Int. Diaphragms for P/S Conc. NU Girder
(712-33.01)

18 Ea. \$1,000 \$18,000

Slab Drain
(712-36.10)

108 Ea. \$340 \$36,720

Misc. Bridge Rail
(712-99.03)

1155 LF \$110 \$127,050

Vertical Drain at End Bents
(715-10.01)

2 Ea. \$2,500 \$5,000

Laminated Neoprene Bearing Pad
(716-10.02)

24 Ea. \$260 \$6,240

Laminated Neoprene Bearing Pad Assembly
(716-20.00)

8 Ea. \$2,200 \$17,600

Strip Seal
(717-20.02)

62 LF \$100 \$6,200

Total Bridge Cost = \$4,000,500

Unit Cost = \$263 / Sq. Ft.

Not including bridge approach slab

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 400+00 to Sta. 413+71 across Spring Valley. Estimate does not include costs for bridges.

Figure A-7: Alternatives 1A,1B,2,5A,5B South - Shoofly Bridge Upstream

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	2733	\$55	\$150,332	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	3	\$7,000	\$21,000	
EXCAVATION - CLASS A	CY	4391	\$8	\$32,932	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	2195	\$20	\$43,909	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	9680	\$12	\$116,166	
BORROW	CY	3094	\$2	\$6,188	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER SPRING VALLEY	LS				See Bridge Costs
TEMPORARY SHORING	LS	1	\$100,000	\$100,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	145	\$55	\$7,962	8" asphalt; Type 5 aggregate base (6")
ROUTE 19 TIE-IN MILL/OVERLAY	SY		\$25		2" thickness
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$626,488	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$159,122.07	
TOTAL CONSTRUCTION COST				\$795,610	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/16/2019

Project: J9P3305: Rte 19 Arch Bridges Rehab. Study

Project Number: 019-2126

By: GCL

Description: Spring Valley Bridge - Temporary Bridge (24' Rdwy)
(40' - 110' - 10 @ 40')

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2160500	Removal of Bridges (Temp Structure)	1	L.S.	\$65,825	\$65,825
2	7021214	Galvanized Structural Steel Piles (14 in)	611.8	Lin. Ft.	\$75	\$45,885
3	7021316	Galvanized Cast-in-Place Concrete Piles (16 in)	2635.6	Lin. Ft.	\$125	\$329,450
4	7026000	Pre-bore for Piling	1238.0	Lin. Ft.	\$110	\$136,180
5	7032003	Class B Concrete (Substructure)	23.1	Cu. Yd.	\$850	\$19,644
6	7061060	Reinforcing Steel (Bridges)	2774	Lbs	\$1.20	\$3,329
7	7121000	Fabricated Structural Carbon Steel (Misc)	75000	Lbs	\$3.50	\$262,500
8	7181020	Transporting and Erecting Superstructure (10 - 40' Spans)	1	L.S.	\$375,000	\$375,000
9	7181020A	Transporting and Erecting Superstructure (1 - 110' Span)	1	L.S.	\$50,000	\$50,000
10	7181030	Removing and Storing Superstructure (10 - 40' Spans)	1	L.S.	\$165,000	\$165,000
11	7181030A	Removing and Storing Superstructure (1 - 110' Span)	1	L.S.	\$20,000	\$20,000
					Sub-Total (A) =	\$1,472,813
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$102</i>

This page is intentionally left blank.

Spring Valley Bridge

Alternative 1B – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Replacement	Checked:	JDM	Date:	10/10/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

J0420 Replacement - In Kind - On Alignment (Steel PL Girder Approaches)

New Bridge Length = 540 ft
New Bridge Width = 28 ft

Item	Quantity	Unit Cost	Estimated Cost
Class 1 Excavation (206-10.00)	120 Cu. Yd.	\$50	\$6,000
Class 2 Excavation (206-20.00)	1795 Cu. Yd.	\$60	\$107,700
Cofferdams (206-60.02)	1 Lump Sum	\$500,000	\$500,000
Bridge Approach Slab (Minor Road) (503-10.11A)	107 Sq. Yd.	\$215	\$23,005
Drilled Shaft (6'-0" Dia.) (701-11.10)	87 LF	\$1,200	\$104,400
Rock Socket (5'-6" Dia.) (701-12.09)	32 LF	\$900	\$28,800
Video Camera Inspection (701-13.00)	4 Ea.	\$650	\$2,600
Foundation Inspection Hole (701-14.00)	72 LF	\$120	\$8,640
Sonic Logging Testing (701-16.00)	4 Ea.	\$2,000	\$8,000
Galvanized Structural Steel Pile (12") (702-12.12)	497 LF	\$75	\$37,275
Dynamic Pile Testing (702-50.01)	2 Ea.	\$5,000	\$10,000
Pile Point Reinforcement (702-70.00)	14 Ea.	\$125	\$1,750
Class B Concrete (Substructure) (703-20.03)	780 Cu. Yd.	\$900	\$702,000
<i>Includes thrust blocks and new pier/end bent concrete</i>			
Class B-2 Concrete (Spandrel Columns) (703-20.03)	152 Cu. Yd.	\$1,000	\$152,000
Class B-2 Concrete (Arch) (703-20.03)	220 Cu. Yd.	\$2,000	\$440,000
Slab on Steel (703-42.12)	1223 Sq. Yd.	\$275	\$336,325



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Replacement	Checked:	JDM	Date:	10/10/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

Slab on Concrete Spandrel Arch
(703-42.14)

475 Sq. Yd. \$350 \$166,250

Barrier Curb
(703-42.15)

1155 LF \$95 \$109,725

Form Liners
(703-46.20)

494 Sq. Yd. \$100 \$49,400

Reinforcing Steel (Epoxy Coated)
(706-10.00)

386,314 Lb. \$1.40 \$540,839

Fabricated Structural Steel (Plate Girder)
712-11.22

473,132 Lb. \$1.75 \$827,981

Assume 130#/CY for substr concrete and 150#/CY of arch concrete

Slab Drain
(712-36.10)

108 Ea. \$340 \$36,720

Drainage System on Structure
(712-99.01)

1 Lump Sum \$80,000 \$80,000

Misc. Bridge Rail
(712-99.03)

1155 LF \$110 \$127,050

Vertical Drain at End Bents
(715-10.01)

2 Ea. \$2,500 \$5,000

Laminated Neoprene Bearing Pad Assembly
(716-20.00)

16 Ea. \$2,200 \$35,200

Strip Seal Expansion Joint System
(717-20.01)

62 LF \$425 \$26,350

Total Bridge Cost = \$4,473,000

Unit Cost = \$294 / Sq. Ft.

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 400+00 to Sta. 413+71 across Spring Valley. Estimate does not include costs for bridges.

Figure A-7: Alternatives 1A,1B,2,5A,5B South - Shoofly Bridge Upstream

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	2733	\$55	\$150,332	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	3	\$7,000	\$21,000	
EXCAVATION - CLASS A	CY	4391	\$8	\$32,932	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	2195	\$20	\$43,909	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	9680	\$12	\$116,166	
BORROW	CY	3094	\$2	\$6,188	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER SPRING VALLEY	LS				See Bridge Costs
TEMPORARY SHORING	LS	1	\$100,000	\$100,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	145	\$55	\$7,962	8" asphalt; Type 5 aggregate base (6")
ROUTE 19 TIE-IN MILL/OVERLAY	SY		\$25		2" thickness
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$626,488	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$159,122.07	
TOTAL CONSTRUCTION COST				\$795,610	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/16/2019

Project: J9P3305: Rte 19 Arch Bridges Rehab. Study

Project Number: 019-2126

By: GCL

Description: Spring Valley Bridge - Temporary Bridge (24' Rdwy)
(40' - 110' - 10 @ 40')

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2160500	Removal of Bridges (Temp Structure)	1	L.S.	\$65,825	\$65,825
2	7021214	Galvanized Structural Steel Piles (14 in)	611.8	Lin. Ft.	\$75	\$45,885
3	7021316	Galvanized Cast-in-Place Concrete Piles (16 in)	2635.6	Lin. Ft.	\$125	\$329,450
4	7026000	Pre-bore for Piling	1238.0	Lin. Ft.	\$110	\$136,180
5	7032003	Class B Concrete (Substructure)	23.1	Cu. Yd.	\$850	\$19,644
6	7061060	Reinforcing Steel (Bridges)	2774	Lbs	\$1.20	\$3,329
7	7121000	Fabricated Structural Carbon Steel (Misc)	75000	Lbs	\$3.50	\$262,500
8	7181020	Transporting and Erecting Superstructure (10 - 40' Spans)	1	L.S.	\$375,000	\$375,000
9	7181020A	Transporting and Erecting Superstructure (1 - 110' Span)	1	L.S.	\$50,000	\$50,000
10	7181030	Removing and Storing Superstructure (10 - 40' Spans)	1	L.S.	\$165,000	\$165,000
11	7181030A	Removing and Storing Superstructure (1 - 110' Span)	1	L.S.	\$20,000	\$20,000
					Sub-Total (A) =	\$1,472,813
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$102</i>

This page is intentionally left blank.

Spring Valley Bridge

Alternative 2 – Cost Estimate

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/12/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Spring Valley Bridge - Replace on Existing Alignment
 Alt #2 - Br. Option 2 (136'-152'-152'-111') Pl. Girder

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2061000	Class I Excavation	1242	Cu. Yd.	\$50	\$62,097
2	5031010A	Bridge Approach Slab (Major Road)	118.5	Sq. Yd.	\$250	\$29,630
3	7011107	Drilled Shafts (6 Ft. 0 In. Dia.)	102.0	Lin. Ft.	\$1,200	\$122,400
4	7011206	Rock Sockets (5 Ft. 6 In. Dia.)	120.0	Lin. Ft.	\$900	\$108,000
5	7011300	Video Camera Inspection	6.0	Each	\$650	\$3,900
6	7011400	Foundation Inspection Holes	180.0	Lin. Ft.	\$130	\$23,400
7	7011600	Sonic Logging Testing	6.0	Each	\$2,000	\$12,000
8	7021212	Galvanized Structural Steel Piles (12 In.)	990.0	Lin. Ft.	\$80	\$79,200
9	7027000	Pile Point Reinforcement	18.0	Each	\$125	\$2,250
10	7032003	Class B Concrete (Substructure)	261.6	Cu. Yd.	\$850	\$222,392
11	7034212	Slab on Steel	1690.1	Sq. Yd.	\$275	\$464,772
12	7034620	Form Liners	566.0	Sq. Yd.	\$100	\$56,600
13	7039903	Misc. Barrier Curb	1164.0	Lin. Ft.	\$100	\$116,400
14	7061060	Reinforcing Steel (Bridges)	51899	Lbs	\$1.40	\$72,659
15	7121122	Fab. Structural LA Steel (Plate Girder) A709, Gr 50W	761743	Lbs	\$1.75	\$1,333,050
16	7123610	Slab Drain	1.0	L.S.	\$120,000	\$120,000
17	7129903	Misc. Bridge Rail (One Tube Structural Steel)	1164.0	Lin. Ft.	\$100	\$116,400
18	7151001	Vertical Drain at End Bents	2.0	Each	\$3,500	\$7,000
19	7162000	Laminated Neoprene Bearing Pad Assembly	20.0	Each	\$2,100	\$42,000
20	7172001	Strip Seal Expansion Joint System	63	Lin. Ft.	\$425	\$26,920
					Sub-Total (A) =	\$3,021,069
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$199</i>

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 400+00 to Sta. 413+71 across Spring Valley. Estimate does not include costs for bridges.

Figure A-7: Alternatives 1A,1B,2,5A,5B South - Shoofly Bridge Upstream

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	2733	\$55	\$150,332	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	3	\$7,000	\$21,000	
EXCAVATION - CLASS A	CY	4391	\$8	\$32,932	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	2195	\$20	\$43,909	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	9680	\$12	\$116,166	
BORROW	CY	3094	\$2	\$6,188	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER SPRING VALLEY	LS				See Bridge Costs
TEMPORARY SHORING	LS	1	\$100,000	\$100,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	145	\$55	\$7,962	8" asphalt; Type 5 aggregate base (6")
ROUTE 19 TIE-IN MILL/OVERLAY	SY		\$25		2" thickness
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$626,488	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$159,122.07	
TOTAL CONSTRUCTION COST				\$795,610	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/16/2019

Project: J9P3305: Rte 19 Arch Bridges Rehab. Study

Project Number: 019-2126 **By:** GCL

Description: Spring Valley Bridge - Temporary Bridge (24' Rdwy)
(40' - 110' - 10 @ 40')

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2160500	Removal of Bridges (Temp Structure)	1	L.S.	\$65,825	\$65,825
2	7021214	Galvanized Structural Steel Piles (14 in)	611.8	Lin. Ft.	\$75	\$45,885
3	7021316	Galvanized Cast-in-Place Concrete Piles (16 in)	2635.6	Lin. Ft.	\$125	\$329,450
4	7026000	Pre-bore for Piling	1238.0	Lin. Ft.	\$110	\$136,180
5	7032003	Class B Concrete (Substructure)	23.1	Cu. Yd.	\$850	\$19,644
6	7061060	Reinforcing Steel (Bridges)	2774	Lbs	\$1.20	\$3,329
7	7121000	Fabricated Structural Carbon Steel (Misc)	75000	Lbs	\$3.50	\$262,500
8	7181020	Transporting and Erecting Superstructure (10 - 40' Spans)	1	L.S.	\$375,000	\$375,000
9	7181020A	Transporting and Erecting Superstructure (1 - 110' Span)	1	L.S.	\$50,000	\$50,000
10	7181030	Removing and Storing Superstructure (10 - 40' Spans)	1	L.S.	\$165,000	\$165,000
11	7181030A	Removing and Storing Superstructure (1 - 110' Span)	1	L.S.	\$20,000	\$20,000
					Sub-Total (A) =	\$1,472,813
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$102</i>

Spring Valley Bridge

Alternative 3A – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Replacement	Checked:	JDM	Date:	9/25/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

J0420 Replacement - In Kind - On Alignment (Concrete Approaches)

New Bridge Length = 540 ft
New Bridge Width = 28 ft

Item	Quantity	Unit Cost	Estimated Cost
Class 1 Excavation (206-10.00)	120 Cu. Yd.	\$50	\$6,000
Class 2 Excavation (206-20.00)	1795 Cu. Yd.	\$60	\$107,700
Cofferdams (206-60.02)	1 Lump Sum	\$500,000	\$500,000
Bridge Approach Slab (Minor Road) (503-10.11A)	116 Sq. Yd.	\$215	\$24,940
Drilled Shaft (6'-0" Dia.) (701-11.06)	87 LF	\$1,200	\$104,400
Rock Socket (5'-6" Dia.) (701-12.06)	32 LF	\$900	\$28,800
Video Camera Inspection (701-13.00)	4 Ea.	\$650	\$2,600
Foundation Inspection Hole (701-14.00)	72 LF	\$120	\$8,640
Sonic Logging Testing (701-16.00)	4 Ea.	\$2,000	\$8,000
Galvanized Structural Steel Pile (12") (702-12.12)	497 LF	\$75	\$37,275
Dynamic Pile Testing (702-50.01)	2 Ea.	\$5,000	\$10,000
Pile Point Reinforcement (702-70.00)	14 Ea.	\$125	\$1,750
Class B Concrete (Substructure) (703-20.03)	780 Cu. Yd.	\$900	\$702,000
<i>Includes thrust blocks and new pier/end bent concrete</i>			
Class B-2 Concrete (Spandrel Columns) (703-20.03)	152 Cu. Yd.	\$1,000	\$152,000
Class B-2 Concrete (Arch) (703-20.03)	220 Cu. Yd.	\$2,000	\$440,000
Slab on Concrete NU Girder (703-42.14)	1223 Sq. Yd.	\$320	\$391,360



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Replacement	Checked:	JDM	Date:	9/25/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

Slab on Concrete Spandrel Arch
(703-42.14)

475 Sq. Yd. \$350 \$166,250

Barrier Curb
(703-42.15)

1155 LF \$95 \$109,725

Form Liners
(703-46.20)

494 Sq. Yd. \$100 \$49,400

NU 53, Prestressed Concrete NU-Girder
(705-60.23)

1568 LF \$250 \$392,000

Reinforcing Steel (Epoxy Coated)
(706-10.00)

386,314 Lb. \$1.40 \$540,839

Assume 130#/CY for substr concrete and 150#/CY of arch concrete

Steel Int. Diaphragms for P/S Conc. NU Girder
(712-33.01)

18 Ea. \$1,000 \$18,000

Slab Drain
(712-36.10)

108 Ea. \$340 \$36,720

Misc. Bridge Rail
(712-99.03)

1155 LF \$110 \$127,050

Vertical Drain at End Bents
(715-10.01)

2 Ea. \$2,500 \$5,000

Laminated Neoprene Bearing Pad
(716-10.02)

24 Ea. \$260 \$6,240

Laminated Neoprene Bearing Pad Assembly
(716-20.00)

8 Ea. \$2,200 \$17,600

Strip Seal
(717-20.02)

62 LF \$100 \$6,200

Total Bridge Cost = \$4,000,500

Unit Cost = \$263 / Sq. Ft.

Not including bridge approach slab

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume reconstruction of Route 19 from Sta. 1700+00 to Sta. 1723+51 across Spring Valley. Estimate does not include costs for bridges.

Figure A-8: Alternatives 3A, 3B, & 4 South - New Bridge Upstream

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$50,000	\$50,000	assumes flagging, temp barrier, signs, etc
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF SURFACINGS	SY	8000	\$3	\$24,000	
REMOVAL OF IMPROVEMENTS	LS	1	\$25,000	\$25,000	
CLEARING AND GRUBBING	ACRE	5	\$7,000	\$35,000	
EXCAVATION - CLASS A	CY	32682	\$8	\$245,118	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	16341	\$20	\$326,823	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	20239	\$12	\$242,867	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$50,000	\$50,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER SPRING VALLEY	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS		\$250,000		
PAVEMENT					
DRIVEWAY RECONSTRUCTION	EACH	4	\$10,000	\$40,000	
ROUTE 19 RECONSTRUCTION	SY	6438	\$55	\$354,096	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	825	\$20	\$16,500	incl. Sta. 1660+50 to Sta. 1666+50; west side
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$25,000	\$25,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$1,496,403	
CONSTRUCTION SURVEYING	LS		1%	\$14,964.03	
CONTINGENCIES	LS		25%	\$377,841.84	
TOTAL CONSTRUCTION COST				\$1,889,209	

Spring Valley Bridge

Alternative 3B – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Replacement	Checked:	JDM	Date:	10/10/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

J0420 Replacement - In Kind - On Alignment (Steel PL Girder Approaches)

New Bridge Length = 540 ft
New Bridge Width = 28 ft

Item	Quantity	Unit Cost	Estimated Cost
Class 1 Excavation (206-10.00)	120 Cu. Yd.	\$50	\$6,000
Class 2 Excavation (206-20.00)	1795 Cu. Yd.	\$60	\$107,700
Cofferdams (206-60.02)	1 Lump Sum	\$500,000	\$500,000
Bridge Approach Slab (Minor Road) (503-10.11A)	107 Sq. Yd.	\$215	\$23,005
Drilled Shaft (6'-0" Dia.) (701-11.10)	87 LF	\$1,200	\$104,400
Rock Socket (5'-6" Dia.) (701-12.09)	32 LF	\$900	\$28,800
Video Camera Inspection (701-13.00)	4 Ea.	\$650	\$2,600
Foundation Inspection Hole (701-14.00)	72 LF	\$120	\$8,640
Sonic Logging Testing (701-16.00)	4 Ea.	\$2,000	\$8,000
Galvanized Structural Steel Pile (12") (702-12.12)	497 LF	\$75	\$37,275
Dynamic Pile Testing (702-50.01)	2 Ea.	\$5,000	\$10,000
Pile Point Reinforcement (702-70.00)	14 Ea.	\$125	\$1,750
Class B Concrete (Substructure) (703-20.03)	780 Cu. Yd.	\$900	\$702,000
<i>Includes thrust blocks and new pier/end bent concrete</i>			
Class B-2 Concrete (Spandrel Columns) (703-20.03)	152 Cu. Yd.	\$1,000	\$152,000
Class B-2 Concrete (Arch) (703-20.03)	220 Cu. Yd.	\$2,000	\$440,000
Slab on Steel (703-42.12)	1223 Sq. Yd.	\$275	\$336,325



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Replacement	Checked:	JDM	Date:	10/10/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

Slab on Concrete Spandrel Arch
(703-42.14)

475 Sq. Yd. \$350 \$166,250

Barrier Curb
(703-42.15)

1155 LF \$95 \$109,725

Form Liners
(703-46.20)

494 Sq. Yd. \$100 \$49,400

Reinforcing Steel (Epoxy Coated)
(706-10.00)

386,314 Lb. \$1.40 \$540,839

Fabricated Structural Steel (Plate Girder)
712-11.22

473,132 Lb. \$1.75 \$827,981

Assume 130#/CY for substr concrete and 150#/CY of arch concrete

Slab Drain
(712-36.10)

108 Ea. \$340 \$36,720

Drainage System on Structure
(712-99.01)

1 Lump Sum \$80,000 \$80,000

Misc. Bridge Rail
(712-99.03)

1155 LF \$110 \$127,050

Vertical Drain at End Bents
(715-10.01)

2 Ea. \$2,500 \$5,000

Laminated Neoprene Bearing Pad Assembly
(716-20.00)

16 Ea. \$2,200 \$35,200

Strip Seal Expansion Joint System
(717-20.01)

62 LF \$425 \$26,350

Total Bridge Cost = \$4,473,000

Unit Cost = \$294 / Sq. Ft.

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume reconstruction of Route 19 from Sta. 1700+00 to Sta. 1723+51 across Spring Valley. Estimate does not include costs for bridges.

Figure A-8: Alternatives 3A, 3B, & 4 South - New Bridge Upstream

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$50,000	\$50,000	assumes flagging, temp barrier, signs, etc
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF SURFACINGS	SY	8000	\$3	\$24,000	
REMOVAL OF IMPROVEMENTS	LS	1	\$25,000	\$25,000	
CLEARING AND GRUBBING	ACRE	5	\$7,000	\$35,000	
EXCAVATION - CLASS A	CY	32682	\$8	\$245,118	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	16341	\$20	\$326,823	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	20239	\$12	\$242,867	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$50,000	\$50,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER SPRING VALLEY	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS		\$250,000		
PAVEMENT					
DRIVEWAY RECONSTRUCTION	EACH	4	\$10,000	\$40,000	
ROUTE 19 RECONSTRUCTION	SY	6438	\$55	\$354,096	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	825	\$20	\$16,500	incl. Sta. 1660+50 to Sta. 1666+50; west side
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$25,000	\$25,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$1,496,403	
CONSTRUCTION SURVEYING	LS		1%	\$14,964.03	
CONTINGENCIES	LS		25%	\$377,841.84	
TOTAL CONSTRUCTION COST				\$1,889,209	

Spring Valley Bridge

Alternative 4 – Cost Estimate

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/12/2019
Project: J9P3305: Rte 19 Arch Bridges Rehab. Study
Project Number: 019-2126 **By:** GCL
Description: Spring Valley Bridge - Replace on Existing Alignment
 Alt #2 - Br. Option 2 (136'-152'-152'-111') Pl. Girder

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2061000	Class I Excavation	1242	Cu. Yd.	\$50	\$62,097
2	5031010A	Bridge Approach Slab (Major Road)	118.5	Sq. Yd.	\$250	\$29,630
3	7011107	Drilled Shafts (6 Ft. 0 In. Dia.)	102.0	Lin. Ft.	\$1,200	\$122,400
4	7011206	Rock Sockets (5 Ft. 6 In. Dia.)	120.0	Lin. Ft.	\$900	\$108,000
5	7011300	Video Camera Inspection	6.0	Each	\$650	\$3,900
6	7011400	Foundation Inspection Holes	180.0	Lin. Ft.	\$130	\$23,400
7	7011600	Sonic Logging Testing	6.0	Each	\$2,000	\$12,000
8	7021212	Galvanized Structural Steel Piles (12 In.)	990.0	Lin. Ft.	\$80	\$79,200
9	7027000	Pile Point Reinforcement	18.0	Each	\$125	\$2,250
10	7032003	Class B Concrete (Substructure)	261.6	Cu. Yd.	\$850	\$222,392
11	7034212	Slab on Steel	1690.1	Sq. Yd.	\$275	\$464,772
12	7034620	Form Liners	566.0	Sq. Yd.	\$100	\$56,600
13	7039903	Misc. Barrier Curb	1164.0	Lin. Ft.	\$100	\$116,400
14	7061060	Reinforcing Steel (Bridges)	51899	Lbs	\$1.40	\$72,659
15	7121122	Fab. Structural LA Steel (Plate Girder) A709, Gr 50W	761743	Lbs	\$1.75	\$1,333,050
16	7123610	Slab Drain	1.0	L.S.	\$120,000	\$120,000
17	7129903	Misc. Bridge Rail (One Tube Structural Steel)	1164.0	Lin. Ft.	\$100	\$116,400
18	7151001	Vertical Drain at End Bents	2.0	Each	\$3,500	\$7,000
19	7162000	Laminated Neoprene Bearing Pad Assembly	20.0	Each	\$2,100	\$42,000
20	7172001	Strip Seal Expansion Joint System	63	Lin. Ft.	\$425	\$26,920
					Sub-Total (A) =	\$3,021,069
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$199</i>

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume reconstruction of Route 19 from Sta. 1700+00 to Sta. 1723+51 across Spring Valley. Estimate does not include costs for bridges.

Figure A-8: Alternatives 3A, 3B, & 4 South - New Bridge Upstream

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$50,000	\$50,000	assumes flagging, temp barrier, signs, etc
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF SURFACINGS	SY	8000	\$3	\$24,000	
REMOVAL OF IMPROVEMENTS	LS	1	\$25,000	\$25,000	
CLEARING AND GRUBBING	ACRE	5	\$7,000	\$35,000	
EXCAVATION - CLASS A	CY	32682	\$8	\$245,118	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	16341	\$20	\$326,823	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	20239	\$12	\$242,867	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$50,000	\$50,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER SPRING VALLEY	LS				See Bridge Costs
TEMPORARY CAUSEWAY	LS		\$250,000		
PAVEMENT					
DRIVEWAY RECONSTRUCTION	EACH	4	\$10,000	\$40,000	
ROUTE 19 RECONSTRUCTION	SY	6438	\$55	\$354,096	8" asphalt; Type 5 aggregate base (6")
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	825	\$20	\$16,500	incl. Sta. 1660+50 to Sta. 1666+50; west side
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$25,000	\$25,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$1,496,403	
CONSTRUCTION SURVEYING	LS		1%	\$14,964.03	
CONTINGENCIES	LS		25%	\$377,841.84	
TOTAL CONSTRUCTION COST				\$1,889,209	

This page is intentionally left blank.

Spring Valley Bridge

Alternative 5A – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Rehab	Checked:	JDM	Date:	9/25/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

J0420 Rehab (New concrete approach spans; retain existing arch)

New Bridge Length = 540 ft
New Bridge Width = 28 ft
Arch Span Length = 155 ft

Item	Quantity	Unit Cost	Estimated Cost
Class 1 Excavation (206-10.00)	120 Cu. Yd.	\$50	\$6,000
Removal of Bridge (Approaches) (216-05.00)	1 Lump Sum	\$180,435	\$180,435
Bridge Approach Slab (Minor Road) (503-10.11A)	120 Sq. Yd.	\$215	\$25,800
Drilled Shaft (5'-0" Dia.) (701-11.06)	214 LF Bent 2 Length = 23 Ft. Bent 3 Length = 25 Ft. Bent 6 Length = 26 Ft. Bent 7 Length = 17 Ft. Bent 8 Length = 16 Ft.	\$1,100	\$235,400
Rock Socket (4'-6" Dia.) (701-12.06)	150 LF <i>Assume all are 8'-0" Long</i>	\$800	\$120,000
Video Camera Inspection (701-13.00)	10 Ea.	\$650	\$6,500
Foundation Inspection Hole (701-14.00)	250 LF	\$120	\$30,000
Sonic Logging Testing (701-16.00)	10 Ea.	\$2,000	\$20,000
Galvanized Structural Steel Pile (12") (702-12.12)	497 LF	\$75	\$37,275
Dynamic Pile Testing (702-50.01)	2 Ea.	\$5,000	\$10,000
Pile Point Reinforcement (702-70.00)	14 Ea.	\$125	\$1,750
Class B Concrete (Substructure) (703-20.03)	356 Cu. Yd. Column Size = 3 Ft. X Cap Length = 40 Ft. Cap Size = 4 Ft. X Column Height = 20 Ft. Web Wall thickness = 1.75 Ft.	\$900 3 Ft. 4.5 Ft. <i>(Approx. Average)</i>	\$320,400



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Rehab	Checked:	JDM	Date:	9/25/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

Class B-2 Concrete (Spandrel Columns)
(703-20.03)

152 Cu. Yd. \$1,000 \$152,000
Including Spandrel Caps

Slab on Concrete I Girder
(703-42.14)

1200 Sq. Yd. \$320 \$384,000

Slab on Concrete Spandrel Arch
(703-42.14)

490 Sq. Yd. \$350 \$171,500

Barrier Curb
(703-42.15)

1155 LF \$95 \$109,725

Form Liners
(703-46.20)

541 Sq. Yd. \$100 \$54,100

Substructure Repair (Formed)
(704-01.01)

233 Sq. Ft. \$130 \$30,290

Embedded Galvanic Anodes
(704-99.01)

600 Ea. \$100 \$60,000

Type 4, Prestressed Concrete I-Girder
(705-60.02)

1532 LF \$190 \$291,080

Reinforcing Steel (Epoxy Coated)
(706-10.00)

753,600 Lb. \$1.40 \$1,055,040

Steel Int. Diaphragms for P/S Conc. I-Girder
(712-33.01)

21 Ea. \$800 \$16,800

Drainage System on Structure
(712-99.01)

1 Lump Sum \$120,000 \$120,000

Misc. Bridge Rail
(712-99.03)

1155 LF \$110 \$127,050

Vertical Drain at End Bents
(715-10.01)

2 Ea. \$2,500 \$5,000

Laminated Neoprene Bearing Pad
(716-10.02)

48 Ea. \$260 \$12,480

Laminated Neoprene Bearing Pad Assembly
(716-20.00)

8 Ea. \$2,200 \$17,600

Strip Seal
(717-20.02)

76 LF \$400 \$30,400

Total Bridge Cost =	\$3,630,600	Unit Cost =	\$238 / Sq. Ft.
----------------------------	--------------------	--------------------	------------------------

Not including bridge approach slab

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 400+00 to Sta. 413+71 across Spring Valley. Estimate does not include costs for bridges.

Figure A-7: Alternatives 1A,1B,2,5A,5B South - Shoofly Bridge Upstream

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	2733	\$55	\$150,332	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	3	\$7,000	\$21,000	
EXCAVATION - CLASS A	CY	4391	\$8	\$32,932	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	2195	\$20	\$43,909	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	9680	\$12	\$116,166	
BORROW	CY	3094	\$2	\$6,188	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER SPRING VALLEY	LS				See Bridge Costs
TEMPORARY SHORING	LS	1	\$100,000	\$100,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	145	\$55	\$7,962	8" asphalt; Type 5 aggregate base (6")
ROUTE 19 TIE-IN MILL/OVERLAY	SY		\$25		2" thickness
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$626,488	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$159,122.07	
TOTAL CONSTRUCTION COST				\$795,610	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/16/2019

Project: J9P3305: Rte 19 Arch Bridges Rehab. Study

Project Number: 019-2126

By: GCL

Description: Spring Valley Bridge - Temporary Bridge (24' Rdwy)
(40' - 110' - 10 @ 40')

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2160500	Removal of Bridges (Temp Structure)	1	L.S.	\$65,825	\$65,825
2	7021214	Galvanized Structural Steel Piles (14 in)	611.8	Lin. Ft.	\$75	\$45,885
3	7021316	Galvanized Cast-in-Place Concrete Piles (16 in)	2635.6	Lin. Ft.	\$125	\$329,450
4	7026000	Pre-bore for Piling	1238.0	Lin. Ft.	\$110	\$136,180
5	7032003	Class B Concrete (Substructure)	23.1	Cu. Yd.	\$850	\$19,644
6	7061060	Reinforcing Steel (Bridges)	2774	Lbs	\$1.20	\$3,329
7	7121000	Fabricated Structural Carbon Steel (Misc)	75000	Lbs	\$3.50	\$262,500
8	7181020	Transporting and Erecting Superstructure (10 - 40' Spans)	1	L.S.	\$375,000	\$375,000
9	7181020A	Transporting and Erecting Superstructure (1 - 110' Span)	1	L.S.	\$50,000	\$50,000
10	7181030	Removing and Storing Superstructure (10 - 40' Spans)	1	L.S.	\$165,000	\$165,000
11	7181030A	Removing and Storing Superstructure (1 - 110' Span)	1	L.S.	\$20,000	\$20,000
					Sub-Total (A) =	\$1,472,813
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$102</i>

This page is intentionally left blank.

Spring Valley Bridge

Alternative 5B – Cost Estimate



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Rehab	Checked:	JDM	Date:	9/25/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

J0420 Rehab (New steel plate girder approach spans; retain existing arch)

New Bridge Length = 540 ft
New Bridge Width = 28 ft
Arch Span Length = 155 ft

Item	Quantity	Unit Cost	Estimated Cost
Class 1 Excavation (206-10.00)	120 Cu. Yd.	\$50	\$6,000
Removal of Bridge (Approaches) (216-05.00)	1 Lump Sum	\$180,435	\$180,435
Bridge Approach Slab (Minor Road) (503-10.11A)	120 Sq. Yd.	\$215	\$25,800
Drilled Shaft (5'-0" Dia.) (701-11.06)	214 LF Bent 2 Length = 23 Ft. Bent 3 Length = 25 Ft. Bent 6 Length = 26 Ft. Bent 7 Length = 17 Ft. Bent 8 Length = 16 Ft.	\$1,100	\$235,400
Rock Socket (4'-6" Dia.) (701-12.06)	150 LF <i>Assume all are 8'-0" Long</i>	\$800	\$120,000
Video Camera Inspection (701-13.00)	10 Ea.	\$650	\$6,500
Foundation Inspection Hole (701-14.00)	250 LF	\$120	\$30,000
Sonic Logging Testing (701-16.00)	10 Ea.	\$2,000	\$20,000
Galvanized Structural Steel Pile (12") (702-12.12)	497 LF	\$75	\$37,275
Dynamic Pile Testing (702-50.01)	2 Ea.	\$5,000	\$10,000
Pile Point Reinforcement (702-70.00)	14 Ea.	\$125	\$1,750
Class B Concrete (Substructure) (703-20.03)	356 Cu. Yd. Column Size = 3 Ft. X Cap Length = 40 Ft. Cap Size = 4 Ft. X Column Height = 20 Ft. Web Wall thickness = 1.75 Ft.	\$900 3 Ft. 4.5 Ft. <i>(Approx. Average)</i>	\$320,400



Project:	MoDOT Rte. 19 Concepts	Computed:	DGB	Date:	9/16/2019
Subject:	J0420 Rehab	Checked:	JDM	Date:	9/25/2019
Task:	Prelim. Cost Estimate	Page:	1	of:	ESTIMATE
Job #:	No:				

Class B-2 Concrete (Spandrel Columns)
(703-20.03)

152 Cu. Yd. \$1,000 \$152,000
Including Spandrel Caps

Slab on Steel
(703-42.12)

1200 Sq. Yd. \$275 \$330,000

Slab on Concrete Spandrel Arch
(703-42.14)

490 Sq. Yd. \$350 \$171,500

Barrier Curb
(703-42.15)

1155 LF \$95 \$109,725

Form Liners
(703-46.20)

541 Sq. Yd. \$100 \$54,100

Substructure Repair (Formed)
(704-01.01)

233 Sq. Ft. \$130 \$30,290

Embedded Galvanic Anodes
(704-99.01)

600 Ea. \$100 \$60,000

Fabricated Structural Steel (Plate Girder)
712-11.22

420,360 Lb. \$1.75 \$735,629

Reinforcing Steel (Epoxy Coated)
(706-10.00)

753,600 Lb. \$1.40 \$1,055,040

Drainage System on Structure
(712-99.01)

1 Lump Sum \$120,000 \$120,000

Misc. Bridge Rail
(712-99.03)

1155 LF \$110 \$127,050

Vertical Drain at End Bents
(715-10.01)

2 Ea. \$2,500 \$5,000

Laminated Neoprene Bearing Pad
(716-10.02)

0 Ea. \$260 \$0

Laminated Neoprene Bearing Pad Assembly
(716-20.00)

28 Ea. \$2,200 \$61,600

Strip Seal Expansion Joint System
(717-20.01)

76 LF \$400 \$30,400

Total Bridge Cost =	\$4,035,900	Unit Cost =	\$265 / Sq. Ft.
----------------------------	--------------------	--------------------	------------------------

CONCEPT STUDY - OPINION OF PROBABLE CONSTRUCTION COSTS

ROUTE 19 ARCH BRIDGES REHAB STUDY

HDR

DESCRIPTION: Route 19 two-lane minor rural highway. Project limits assume construction of shoofly along Route 19 from Sta. 400+00 to Sta. 413+71 across Spring Valley. Estimate does not include costs for bridges.

Figure A-7: Alternatives 1A,1B,2,5A,5B South - Shoofly Bridge Upstream

ITEM	UNIT	QUANTITY	UNIT COST	ITEM COST	COMMENT
MOBILIZATION AND TRAFFIC CONTROL					
TEMPORARY TRAFFIC CONTROL	LS	1	\$35,000	\$35,000	assumes flagging, temp barrier, signs, etc
TEMPORARY PAVING	SY	2733	\$55	\$150,332	8" asphalt; 6" aggregate base
EROSION CONTROL					
EROSION CONTROL	LS	1	\$25,000	\$25,000	
ROADWORK					
REMOVAL OF IMPROVEMENTS	LS	1	\$15,000	\$15,000	
CLEARING AND GRUBBING	ACRE	3	\$7,000	\$21,000	
EXCAVATION - CLASS A	CY	4391	\$8	\$32,932	Assumes 2/3 cut volume is Class A
EXCAVATION - CLASS C	CY	2195	\$20	\$43,909	Assumes 1/3 cut volume is Class C
EMBANKMENT IN PLACE	CY	9680	\$12	\$116,166	
BORROW	CY	3094	\$2	\$6,188	
DRAINAGE AND SEWERS					
DRAINAGE	LS	1	\$20,000	\$20,000	
BRIDGES					
BRIDGE DEMOLITION	LS				See Bridge Costs
ROUTE 19 OVER SPRING VALLEY	LS				See Bridge Costs
TEMPORARY SHORING	LS	1	\$100,000	\$100,000	
PAVEMENT					
ROUTE 19 RECONSTRUCTION	SY	145	\$55	\$7,962	8" asphalt; Type 5 aggregate base (6")
ROUTE 19 TIE-IN MILL/OVERLAY	SY		\$25		2" thickness
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
GUARDRAIL, MGS	FOOT	300	\$20	\$6,000	
GUARDRAIL, BRIDGE APPROACH TRANSITION SECTION	EACH	4	\$3,000	\$12,000	
GUARDRAIL, TYPE A CRASHWORTHY END TERMINAL (MASH)	EACH	4	\$2,500	\$10,000	
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
SIGNING AND STRIPING	LS	1	\$10,000	\$10,000	
OTHER					
SEEDING AND MULCHING	LS	1	\$15,000	\$15,000	
BID ITEMS SUBTOTAL				\$626,488	
CONSTRUCTION SURVEYING	LS			\$10,000.00	
CONTINGENCIES	LS		25%	\$159,122.07	
TOTAL CONSTRUCTION COST				\$795,610	

ENGINEER'S ESTIMATE - CONCEPTUAL CONSTRUCTION COST



Client: MoDOT **Date:** 9/16/2019

Project: J9P3305: Rte 19 Arch Bridges Rehab. Study

Project Number: 019-2126

By: GCL

Description: Spring Valley Bridge - Temporary Bridge (24' Rdwy)
(40' - 110' - 10 @ 40')

These Costs do not include PE, RW, Permitting, Inspection Costs. Unit Prices are FY 2020.

BID FORM #	MODOT BID ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
BRIDGE CONSTRUCTION BID ITEMS						
1	2160500	Removal of Bridges (Temp Structure)	1	L.S.	\$65,825	\$65,825
2	7021214	Galvanized Structural Steel Piles (14 in)	611.8	Lin. Ft.	\$75	\$45,885
3	7021316	Galvanized Cast-in-Place Concrete Piles (16 in)	2635.6	Lin. Ft.	\$125	\$329,450
4	7026000	Pre-bore for Piling	1238.0	Lin. Ft.	\$110	\$136,180
5	7032003	Class B Concrete (Substructure)	23.1	Cu. Yd.	\$850	\$19,644
6	7061060	Reinforcing Steel (Bridges)	2774	Lbs	\$1.20	\$3,329
7	7121000	Fabricated Structural Carbon Steel (Misc)	75000	Lbs	\$3.50	\$262,500
8	7181020	Transporting and Erecting Superstructure (10 - 40' Spans)	1	L.S.	\$375,000	\$375,000
9	7181020A	Transporting and Erecting Superstructure (1 - 110' Span)	1	L.S.	\$50,000	\$50,000
10	7181030	Removing and Storing Superstructure (10 - 40' Spans)	1	L.S.	\$165,000	\$165,000
11	7181030A	Removing and Storing Superstructure (1 - 110' Span)	1	L.S.	\$20,000	\$20,000
					Sub-Total (A) =	\$1,472,813
					<i>Price/Sq. Ft. (Bridge Items) =</i>	<i>\$102</i>

This page is intentionally left blank.