

Appendix J: Individual Bridge Repair Cost Estimates

Baseline Structural Repairs

Page 1 of 2

Priority of Repairs based on Deterioration 1 - High: There is advanced deterioration 2 - Moderate: Moderate deterioration throughout the bridge. 3 - Low: Bridge is in fair condition with little deterioration.				Priority of Repairs	Structural Baseline Repair Subtotal	Repair Description	Joint Replacement	Abutment Joint Elimination	Pier Joint Elimination	Bearing Conversions	Jack & Support Bridge Span	Structural Steel Repairs	Post-Tensioned Integral Straddle Pier	Concrete Patching Repair
						UNIT	LF	LF	LF	EA	EA	EA	EA	SQFT
Bridge ID	Milepoint	Route On	Route Under			PRICE	\$526	\$2,500	\$1,100	\$2,000	\$70,000	\$15,000	\$250,000	\$147
056B00209N	131.24	I-65	PHILLIPS LN	2	\$1,202,484			304						337
056B00210N	131.296	I-65	MANNING RD	3	\$836,261			272						446
056B00211N	131.396	I-65	E ENT TO FAIRGROUNDS	3	\$791,097			252						312
056B00212N	132.191	I-65	BRADLEY AVE, N ENT FRGRND	2	\$918,622			299						447
056B00213N	132.533	I-65	CRITTENDEN DR (KY 1631)	3	\$234,544	*	260							209
056B00205N	132.643	I-65	NORFOLK SOUTHERN RR	2	\$413,857	*	323							445
056B00180N	132.911	I-65	EASTERN PKWY	2	\$1,963,207			306	300	108	6			663
056B00181N	133.059	I-65	WARNOCK ST	3	\$566,937			202						316
056B00182N	133.334	I-65	BRANDEIS AVE	3	\$597,456			203						474
056B00179N (1)	133.873	I-65	CSX RR, BURNETT, HILL ST	1	\$2,845,206			246	496	196	10			2725
056B00208N	134.016	I-65 RAMP	PRESTON RAMP TO 65 SB	3	\$229,033			64						222
056B00207N	134.017	I-65	S PRESTON ST ON RAMP	3	\$582,916			203						288
056B00206N	134.088	I-65	WOODBINE ST	3	\$618,833			203						216
056B00187N	134.24	I-65	E ORMSBY AVE	3	\$721,859			224						228
056B00186N	134.435	I-65	OAK ST	3	\$841,018			278						276
056B00185N	134.507	I-65	FLOYD ST	3	\$447,919	*	419							239
056B00184N	134.619	I-65	ST CATHERINE ST	3	\$751,346			244						261
056B00183N-A (2)	134.744	I-65	S BROOK, E KENTUCKY ST	1	\$3,586,657	*	355		584	126	17	14		2429
056B00183N-B (3)	134.744	I-65	S BROOK, E KENTUCKY ST	1	\$3,876,657	*	355		584	126	17		2	2429
056B00190N	134.856	I-65	CALDWELL ST	3	\$723,048			232						334
056B00189N	134.956	I-65	E BRECKINRIDGE ST	3	\$721,706			227						257
056B00188N	135.073	I-65	COLLEGE ST	2	\$1,095,442			330						353
056B00191N-A (4)	135.273	I-65	JACOB, BROADWAY, GRAY ST	1	\$4,734,454		662	165	311	308	16			4334
056B00191N-B (5)	136.273	I-66	JACOB, BROADWAY, GRAY ST	1	\$4,771,954		662	165	311	308	16			4334
056B00192N	135.435	I-65	CHESTNUT ST	2	\$1,420,181		105	110	108	56	4			1960
056B00193N	135.584	I-65	BROOK ST, MUHAMMAD ALI	2	\$1,586,034	*	769		127	49	4			1549
056B00194N	135.601	I-65 SB RAMP	MUHAMMAD ALI	3	\$161,139			55						70
056B00196N	135.751	I-65 SB RAMP	FLOYD ST	2	\$376,862		75	75						175
056B00195R	135.755	I-65 NB	FLOYD ST	3	\$455,497			153						65
056B00197R	135.814	I-65 NB	LIBERTY ST	3	\$448,846			130						180
Total Quantity							2968	4777	1926	843	57	0	2	19810
Total Structural Repair Cost (6)					\$30,199,958		\$1,561,168	\$11,942,500	\$2,118,600	\$1,686,000	\$3,990,000	\$0	\$500,000	\$2,912,070

- (1) The repair for the Abutment 1 bearings at Girders 8-10 has been excluded from this estimate since KYTC has already ordered the repair.
- (2) Includes Crack Repairs using Structural Cover plating.
- (3) Includes Crack Repairs via encasement into a PT Integral Straddle Bent.
- (4) Estimate uses CATStrong on the Span 114 Girder 8 repair.
- (5) Estimate replaces Span 114 Girder 8 with a prestressed beam.
- (6) Cost does not include MOT, Mobilization, Demobilization, Clean/Repair Drainage, Contingency, etc. Totals use 183N-B & 191N-B.

* These Bridges do not meet the VDOT guidelines for Abutment Joint Elimination by Slab Extension

If a similar policy is adopted by KYTC, these will be Abutment Joint Replacements. However, after further study / policy development, some may be candidates for Elimination.

Baseline Structural Repairs

Page 2 of 2

Priority of Repairs based on Deterioration 1 - High: There is advanced deterioration 2 - Moderate: Moderate deterioration throughout the bridge. 3 - Low: Bridge is in fair condition with little deterioration.				Priority of Repairs	Concrete Epoxy Injection	Concrete Sealing	Bearing Repair	Bearing Lubrication	Blast Cleaning	Reinf Conc Slope Wall	Structure Granular Backfill	Median Barrier Replacement	Clean and Paint Structural Steel	Concrete Overlay-Latex	Miscellaneous
					LF	SQFT	EACH	EACH	SQFT	SQYD	CUYD	LF	SQFT	CUYD	LS
					LF	SQFT	EACH	EACH	SQFT	SQYD	CUYD	LF	SQFT	CUYD	LS
Bridge ID	Milepoint	Route On	Route Under		\$107	\$4.09	\$1,750	\$372	\$8.92	\$240	\$62	\$352	\$11.00	\$1,504	\$1
056B00209N	131.24	I-65	PHILLIPS LN	2	73	2736	1	48	144	15	10	145	2531	113	100000
056B00210N	131.296	I-65	MANNING RD	3	65	2448		44	132	5	3	150			2000
056B00211N	131.396	I-65	E ENT TO FAIRGROUNDS	3	75	2268	44	44	132	5	3				2000
056B00212N	132.191	I-65	BRADLEY AVE, N ENT FRGRND	2	85	2691	18	36	108	28	28				31000
056B00213N	132.533	I-65	CRITTENDEN DR (KY 1631)	3	55	2340	19	36	108						4000
056B00205N	132.643	I-65	NORFOLK SOUTHERN RR	2	60	2907	30	30	90	267	356		420		5000
056B00180N	132.911	I-65	EASTERN PKWY	2	130	6516				5	3		4800		40000
056B00181N	133.059	I-65	WARNOCK ST	3	70	1616				5	3				
056B00182N	133.334	I-65	BRANDEIS AVE	3	100	1827				8	3				
056B00179N (1)	133.873	I-65	CSX RR, BURNETT, HILL ST	1	350	9650				16	6		9900		2000
056B00208N	134.016	I-65 RAMP	PRESTON RAMP TO 65 SB	3	115	512									22000
056B00207N	134.017	I-65	S PRESTON ST ON RAMP	3	180	1624		18	54						
056B00206N	134.088	I-65	WOODBINE ST	3	145	1624		26	78			128			2000
056B00187N	134.24	I-65	E ORMSBY AVE	3	115	1792	15	30	90	10	15	158	1050		
056B00186N	134.435	I-65	OAK ST	3	90	2502	2	32	96	5	3	158	1120		
056B00185N	134.507	I-65	FLOYD ST	3	115	3771	7	28	84	10	6	283	1260		25000
056B00184N	134.619	I-65	ST CATHERINE ST	3	110	2196	6	28	84	0	23	168			
056B00183N-A (2)	134.744	I-65	S BROOK, E KENTUCKY ST	1	750	8356						461	8706		376000
056B00183N-B (3)	134.744	I-65	S BROOK, E KENTUCKY ST	1	750	8356						461	8706		376000
056B00190N	134.856	I-65	CALDWELL ST	3	135	2088		30	90	5	3	158			2000
056B00189N	134.956	I-65	E BRECKINRIDGE ST	3	130	2043	1	30	90	5	26	158	1820		2000
056B00188N	135.073	I-65	COLLEGE ST	2	95	3630		42	126			158	1925		100000
056B00191N-A (4)	135.273	I-65	JACOB, BROADWAY, GRAY ST	1	856	17218	29	29	87			1208			609000
056B00191N-B (5)	136.273	I-66	JACOB, BROADWAY, GRAY ST	1	856	17218	29	29	87			1208			646500
056B00192N	135.435	I-65	CHESTNUT ST	2	215	9757						435			75000
056B00193N	135.584	I-65	BROOK ST, MUHAMMAD ALI	2	200	19330	29	65	195			345	5688		75000
056B00194N	135.601	I-65 SB RAMP	MUHAMMAD ALI	3	30	1210		8	24						2000
056B00196N	135.751	I-65 SB RAMP	FLOYD ST	2	70	2100		10	30					30	59000
056B00195R	135.755	I-65 NB	FLOYD ST	3	102	3519		20	60			80			2000
056B00197R	135.814	I-65 NB	LIBERTY ST	3	283	2990	8	16	48			98			
Total Quantity					4799	121261	209	650	1950	389	491	4291	39220	143	1574500
Total Structural Repair Cost (6)					\$513,493	\$495,957	\$365,750	\$241,800	\$17,394	\$93,360	\$30,442	\$1,510,432	\$431,420	\$215,072	\$1,574,500

- (1) The repair for the Abutment 1 bearings at Girders 8-10 has been excluded from this estimate since KYTC has already ordered the repair.
- (2) Includes Crack Repairs using Structural Cover plating.
- (3) Includes Crack Repairs via encasement into a PT Integral Straddle Bent.
- (4) Estimate uses CATStrong on the Span 114 Girder 8 repair.
- (5) Estimate replaces Span 114 Girder 8 with a prestressed beam.
- (6) Cost does not include MOT, Mobilization, Demobilization, Clean/Repair Drainage, Contingency, etc. Totals use 183N-B & 191N-B.

* These Bridges do not meet the VDOT guidelines for Abutment Joint Elimination by Slab Extension
If a similar policy is adopted by KYTC, these will be Abutment Joint Replacements. However, after further study / policy development, some may be candidates for Elimination.

Approximate Total Repair Summary

Priority of Repairs based on Deterioration 1 - High: There is advanced deterioration 2 - Moderate: Moderate deterioration throughout the bridge. 3 - Low: Bridge is in fair condition with little deterioration.				Priority of Repairs	Structural Baseline Repair Subtotal	ADDITIONAL for MOT, Mobilization, Demobilization, Clean/Repair Drainage, etc.	Contingency @10%	Approximate Bridge Total	Galvanic Protection - 30yr	Galvanic Protection - 30yr Bridge Cost	Approximate Bridge Total Including Galvanic Protection
Bridge ID	Milepoint	Route On	Route Under						LF	\$265 Per LF	
056B00209N	131.24	I-65	PHILLIPS LN	2	\$1,202,484	\$240,124	\$144,261	\$1,586,869	304	\$80,560	\$1,667,429
056B00210N	131.296	I-65	MANNING RD	3	\$836,261	\$221,813	\$105,807	\$1,163,881	272	\$72,080	\$1,235,961
056B00211N	131.396	I-65	E ENT TO FAIRGROUNDS	3	\$791,097	\$219,555	\$101,065	\$1,111,717	252	\$66,780	\$1,178,497
056B00212N	132.191	I-65	BRADLEY AVE, N ENT FRGRND	2	\$918,622	\$225,931	\$114,455	\$1,259,008	299	\$79,235	\$1,338,243
056B00213N	132.533	I-65	CRITTENDEN DR (KY 1631)	3	\$234,544	\$191,727	\$42,627	\$468,898	260	\$68,900	\$537,798
056B00205N	132.643	I-65	NORFOLK SOUTHERN RR	2	\$413,857	\$200,693	\$61,455	\$676,005	323	\$85,595	\$761,600
056B00180N	132.911	I-65	EASTERN PKWY	2	\$1,963,207	\$278,160	\$224,137	\$2,465,505	594	\$157,410	\$2,622,915
056B00181N	133.059	I-65	WARNOCK ST	3	\$566,937	\$208,347	\$77,528	\$852,813	202	\$53,530	\$906,343
056B00182N	133.334	I-65	BRANDEIS AVE	3	\$597,456	\$209,873	\$80,733	\$888,062	203	\$53,795	\$941,857
056B00179N (1)	133.873	I-65	CSX RR, BURNETT, HILL ST	1	\$2,845,206	\$322,260	\$316,747	\$3,484,212	742	\$196,630	\$3,680,842
056B00208N	134.016	I-65 RAMP	PRESTON RAMP TO 65 SB	3	\$229,033	\$191,452	\$42,048	\$462,533	64	\$16,960	\$479,493
056B00207N	134.017	I-65	S PRESTON ST ON RAMP	3	\$582,916	\$209,146	\$79,206	\$871,268	203	\$53,795	\$925,063
056B00206N	134.088	I-65	WOODBINE ST	3	\$618,833	\$210,942	\$82,977	\$912,752	203	\$53,795	\$966,547
056B00187N	134.24	I-65	E ORMSBY AVE	3	\$721,859	\$216,093	\$93,795	\$1,031,747	224	\$59,360	\$1,091,107
056B00186N	134.435	I-65	OAK ST	3	\$841,018	\$222,051	\$106,307	\$1,169,375	278	\$73,670	\$1,243,045
056B00185N	134.507	I-65	FLOYD ST	3	\$447,919	\$202,396	\$65,031	\$715,346	419	\$111,035	\$826,381
056B00184N	134.619	I-65	ST CATHERINE ST	3	\$751,346	\$217,567	\$96,891	\$1,065,805	244	\$64,660	\$1,130,465
056B00183N-A (2)	134.744	I-65	S BROOK, E KENTUCKY ST	1	\$3,586,657	\$359,333	\$394,599	\$4,340,589	355	\$94,075	\$4,434,664
056B00183N-B (3)	134.744	I-65	S BROOK, E KENTUCKY ST	1	\$3,876,657	\$373,833	\$425,049	\$4,675,539	355	\$94,075	\$4,769,614
056B00190N	134.856	I-65	CALDWELL ST	3	\$723,048	\$216,152	\$93,920	\$1,033,120	232	\$61,480	\$1,094,600
056B00189N	134.956	I-65	E BRECKINRIDGE ST	3	\$721,706	\$216,085	\$93,779	\$1,031,570	227	\$60,155	\$1,091,725
056B00188N	135.073	I-65	COLLEGE ST	2	\$1,095,442	\$234,772	\$133,021	\$1,463,235	330	\$87,450	\$1,550,685
056B00191N-A (4)	135.273	I-65	JACOB, BROADWAY, GRAY ST	1	\$4,734,454	\$416,723	\$515,118	\$5,666,294	1138	\$301,570	\$5,967,864
056B00191N-B (5)	136.273	I-66	JACOB, BROADWAY, GRAY ST	1	\$4,771,954	\$418,598	\$519,055	\$5,709,606	1138	\$301,570	\$6,011,176
056B00192N	135.435	I-65	CHESTNUT ST	2	\$1,420,181	\$251,009	\$167,119	\$1,838,309	323	\$85,595	\$1,923,904
056B00193N	135.584	I-65	BROOK ST, MUHAMMAD ALI	2	\$1,586,034	\$259,302	\$184,534	\$2,029,869	896	\$237,440	\$2,267,309
056B00194N	135.601	I-65 SB RAMP	MUHAMMAD ALI	3	\$161,139	\$188,057	\$34,920	\$384,116	55	\$14,575	\$398,691
056B00196N	135.751	I-65 SB RAMP	FLOYD ST	2	\$376,862	\$198,843	\$57,570	\$633,275	150	\$39,750	\$673,025
056B00195R	135.755	I-65 NB	FLOYD ST	3	\$455,497	\$202,775	\$65,827	\$724,099	153	\$40,545	\$764,644
056B00197R	135.814	I-65 NB	LIBERTY ST	3	\$448,846	\$202,442	\$65,129	\$716,417	130	\$34,450	\$750,867
Total Repair Cost (6)					\$30,199,958	\$6,549,998	\$3,674,996	\$40,424,952	9075	\$2,404,875	\$42,829,827

- (1) The repair for the Abutment 1 bearings at Girders 8-10 has been excluded from this estimate since KYTC has already ordered the repair.
- (2) Includes Crack Repairs using Structural Cover plating.
- (3) Includes Crack Repairs via encasement into a PT Integral Straddle Bent.
- (4) Estimate uses CATStrong on the Span 114 Girder 8 repair.
- (5) Estimate replaces Span 114 Girder 8 with a prestressed beam.
- (6) Totals use 183N-B & 191N-B.

I-65 Bridge Repairs - Unit Cost Price Summary

<u>Item Description</u>	<u>KYTC Item Number</u>	<u>Units</u>	<u>Unit Price</u>
<u>Joint Replacement</u>			
EXPAN JOINT REPLACE 3/4 IN (2018)	24897EC	LF	\$521.50
EXPAN JOINT REPLACE 1 1/2 IN (2018)	3294	LF	\$500
EXPAN JOINT REPLACE 2 IN (2018)	3295	LF	\$534.85
EXPAN JOINT REPLACE 2 1/2 IN (2018)	3296	LF	\$508.69
EXPAN JOINT REPLACE 3 IN (2018)	3297	LF	\$500
EXPAN JOINT REPLACE 3 IN (Westport Rd.)	3298	LF	\$525
EXPAN JOINT REPLACE 4 IN (2018)	3298	LF	\$592.68
EXPANSION JOINT REPLACE-5 IN (2018)	23034EN	LF	\$1,925

Ignoring the 5" joint use the average replacement cost: \$526

Joint Elimination

ELIMINATE TRANSVERSE JOINT (2018)	3300	LF	\$400.95
ELIMINATE TRANSVERSE JOINT (2017)	3300	LF	\$403.00
ELIMINATE TRANSVERSE JOINT (2016)	3300	LF	\$392.02
ELIMINATE TRANSVERSE JOINT (Westport Rd)		LF	\$1,099.00

The Westport Road link slab is more consistent with the type of joint elimination we are recommending for these bridges.

Use the bid cost from Westport Rd inflated to 2018 for Piers: \$1,100

Abutment Joint Elimination - Derived from Westport Rd: \$2,500

Bearings

BEARING REPLACEMENT (2018)	21969NN	EACH	\$2,900
BEARING REPLACEMENT (2017)	21969NN	EACH	\$1,467
BEARING REPLACEMENT (2016)	21969NN	EACH	\$13,636
BEARING REPLACEMENT (Westport rd.)	21969NN	EACH	\$1,642
BEARING PADS (2018)	23380EC	EACH	\$599
BEARING PADS (2017)	23380EC	EACH	\$300
BEARING PADS (2016)	23380EC	EACH	\$700
Bearing Pad and Pedestal From the 179N emergency repair		EACH	\$1,750
BEARING REPAIR (2018)	23853EC	EACH	\$3,450
BEARING REPAIR (2017)	23853EC	EACH	\$300
BEARING REPAIR (2016)	23853EC	Not Listed	
BEARING REPAIR (2015)	23853EC	EACH	\$8,675
BEARING LUBRICATION (2018)	24983EC	EACH	\$371.84
BEARING LUBRICATION (2017)	24983EC	Not Listed	

BEARING LUBRICATION (2016)	24983EC	Not Listed	
JACK & SUPPORT BRIDGE SPAN (Westport rd.)		EACH	\$70,000
JACK & SUPPORT BRIDGE SPAN (2018)	8435	LS	\$29,200
JACK & SUPPORT BRIDGE SPAN (2017)	8435	LS	\$49,786
JACK & SUPPORT BRIDGE SPAN (2018)	8435	LS	\$21,000

Bearing Conversion/Replacement - Avg of 2017 & 2018 with Westport Rd:	\$2,000
Bearing Repair - Assume jack and shim:	\$1,750
Bearing Lubrication:	\$372
Jack and Support Bridge Span - Westport Rd	\$70,000

Concrete Patching Repair

CONCRETE PATCHING REPAIR (2018)	22146EN	SQFT	\$137.83
CONCRETE PATCHING REPAIR (2017)	22146EN	SQFT	\$159.41
CONCRETE PATCHING REPAIR (2016)	22146EN	SQFT	\$144.68
Concrete Repairs (CS2 Delamination) (From TDOT)	604-10.54	SQFT	\$137.12
Concrete (CS3 Spall) (From TDOT)	604-10.05	SQFT	\$126.91
Concrete Repairs (CS3 Beam Repair) (From TDOT)	604-10.42	SQFT	\$138.94
CONCRETE REPAIR (Westport Rd)		SQYD	\$504.00
CONC CLASS M FULL DEPTH PATCH (2018)	08526	CUYD	\$799.35
CONC CLASS M FULL DEPTH PATCH (2017)	08526	CUYD	\$947.82
CONC CLASS M FULL DEPTH PATCH (2016)	08526	CUYD	\$431.38
CONC CLASS M FULL DEPTH PATCH (Westport Rd)	08526	CUYD	\$635.00
Average for the Full Depth Patch:		CUYD	\$703.39

Assume a 9" slab 1 CUYD is 36 SQFT so a full depth patch would be \$20/SQFT

Use Concrete Patching Repair on all concrete repairs (substructure, deck, and beams).

Use the KYTC Average Cost for Concrete Patching Repair:	SQFT	\$147
--	-------------	--------------

Concrete Epoxy Injection

Epoxy Injection (Injection) (From TDOT)	604-10.58	Gallon	\$115.86
Epoxy Injection Repair (From TDOT)	604-10.62	LF	\$72.70
Epoxy Injection (CS2) (20 LF/gallon) (From TDOT)		LF	\$78.49
Epoxy Injection (CS3) (10 LF/gallon) (From TDOT)		LF	\$84.29
EPOXY INJECTION CRACK REPAIR (2018)	23744EC	LF	\$106.99
EPOXY INJECTION CRACK REPAIR (2017)	23744EC	Not Listed	
EPOXY INJECTION CRACK REPAIR (2016)	23744EC	Not Listed	
EPOXY INJECTION CRACK REPAIR (2015)	23744EC	LF	\$20.00

Use the KYTC Cost for Epoxy Injection 2018:	\$107
--	--------------

Concrete Sealing

CONCRETE SEALING (2018)	23378EC	SQFT	\$4.09
CONCRETE SEALING (2017)	23378EC	Not Listed	
CONCRETE SEALING (2016)	23378EC	Not Listed	
CONCRETE SEALING (2015)	23378EC	SQFT	\$3.00

Use the KYTC Cost for Concrete Sealing 2018: \$4.09

Blast Cleaning

BLAST CLEANING (2018)	08549	SQYD	\$8.92
BLAST CLEANING (2017)	08549	SQYD	\$6.73
BLAST CLEANING (2016)	08549	SQYD	\$8.79

Use 2018 price for Blast Cleaning: \$8.92

Concrete Slope Wall Repairs

REINF CONC SLOPE WALL-6 IN (2018)	08016	SQYD	\$107.06
REINF CONC SLOPE WALL-6 IN (2017)	08016	SQYD	\$200.00
REINF CONC SLOPE WALL-6 IN (2016)	08016	SQYD	\$105.36
FLOWABLE FILL (2018)	2220	CUYD	\$167.18
FLOWABLE FILL (2017)	2220	CUYD	\$136.32
FLOWABLE FILL (2016)	2220	CUYD	\$170.31
PNEUMATIC BACKSTOWING (2018)	20667ED	TON	\$66.00
PNEUMATIC BACKSTOWING (2017)	20667ED	TON	\$100.00
STRUCTURE GRANULAR BACKFILL (2018)	2231	CUYD	\$51.26
STRUCTURE GRANULAR BACKFILL (2017)	2231	CUYD	\$46.11
STRUCTURE GRANULAR BACKFILL (2016)	2231	CUYD	\$47.22
STRUCTURE GRANULAR BACKFILL (2018)	2231	TON	\$82
REMOVE CONCRETE SIDEWALK (2018)	2721	SQYD	\$22.21
REMOVE CONCRETE SIDEWALK (2017)	2721	SQYD	\$14.35
REMOVE CONCRETE SIDEWALK (2016)	2721	SQYD	\$42.00

Assume a premium of 1.2 since these repairs are smaller than the typical bid item.

Assume remove bad concrete slope wall and fill with gravel and then replace concrete slope

Use Reinforced Concrete Slope Wall 2017 for removal and new SQYD \$240
Use Structure Granular Backfill 2018 CUYD \$62

Median Barrier Retrofit

2012 I-65 Rehab (Bidder 1)	LF	\$130
2012 I-65 Rehab (Bidder 2)	LF	\$305
2012 I-65 Rehab (Bidder 3)	LF	\$225
	Avg =	\$220

RSMeans historical cost index to inflate cost from 2012 to 2018

2012 =	194.6	
2018 =	222.9	115%

National Highway Construction historical cost index to inflate cost from 2012 to 2018

March 2012 =	1.5769	
September 2018 =	1.8468	117%

NAVFAC Building historical cost index to inflate cost from 2012 to 2018

Jan 2012 =	4527	
September 2018 =	5645	125%
	Use	125%

2012 I-65 Rehab Adjusted to 2018	LF	\$275.00
----------------------------------	----	----------

SINGLE SLOPE MEDIAN BARRIER (2018)	24654ED	LF	\$263.95
------------------------------------	---------	----	----------

REMOVE CONC MEDIAN BARRIER (2018)	21935EN	LF	\$88.35
-----------------------------------	---------	----	---------

Use Single Slope Barrier and Removal for Median Barrier	LF	\$352
--	-----------	--------------

Clean and Painting Structural Steel

SPOT PAINTING EXISTING STEEL STRUCTURES (From TDOT)	SQFT	\$12.90
---	------	---------

Use spot painting cost from Tom Mathews with KYTC	SQFT	\$11.00
--	-------------	----------------

Deck Overlay

CONCRETE OVERLAY-LATEX (2018)	8534	CUYD	\$1,503.54
CONCRETE OVERLAY-LATEX (2017)	8534	CUYD	\$1,408.20
CONCRETE OVERLAY-LATEX (2016)	8534	CUYD	\$1,379.28

Use 2018 price for Concrete Overlay-Latex	CUYD	\$1,504
--	-------------	----------------

Cathodic Protection

0.6lb Anodes (20yr), Spa @ 2ft, Cost per row, Excludes labor*	LF per Row	\$35
1.2lb Anodes (30yr), Spa @ 2ft, Cost per row, Excludes labor*	LF per Row	\$45
Labor to install a single row	LF per Row	\$8

Pucks are for spot repairs, Spa @ 2ft, Excludes labor*	Each	\$35
Labor to install a single puck	Each	\$5

*Material cost from Vector Corrosion

Concrete Patching with Galvanic Anode Protection**	511E81300	SQFT	\$165
Concrete, Misc.: Embedded Galvanic Anode**	844S10001	EACH	\$45

**Values are from ODOT 2018 average bid tabs

The cathodic protection cost from Vector Corrosion are similar or higher than the cost from ODOT when used with the KYTC Concrete Patching Cost. Therefore use the unit cost from vector corrosion.

Assume 5 rows of anodes per abutment (20yr):	LF	\$215
Assume 5 rows of anodes per abutment (30yr):	LF	\$265
Assume 1 puck per 4 sqft of concrete repair:	SQFT	\$10

Concrete Encasement

CONCRETE-CLASS A (2018)	8100	CUYD	\$635.33
STEEL REINFORCEMENT-EPOXY COATED (2018)	8151	LB	\$1.18
REMOVE CONCRETE MASONRY (2018)	2403	CUYD	\$425.96

Prestress Beam Repair

PPC I-BEAM HN 54 49 (2018)	24463ED	LF	\$350
PPC I-BEAM HN 54 49 (2017)	24463ED	LF	\$310
PPC I-BEAM HN 54 49 (2016)	24463ED	LF	\$320

Use 2018 HN 54 49 price with a 10% increase due to only using 1 beam line. \$385.0

CONCRETE-CLASS AA (2018)	8104	CUYD	\$733.26
STEEL REINFORCEMENT-EPOXY COATED (2018)	8151	LB	\$1.18
REMOVE CONCRETE MASONRY (2018)	2403	CUYD	\$425.96

BEARING PADS (2018)	23380EC	EACH	\$599
BEARING PADS (2017)	23380EC	EACH	\$300
BEARING PADS (2016)	23380EC	EACH	\$700

Use a Bearing Pad average EACH \$533

FRP Wrap

Composite Fiber Encasement (2018) (TDOT)	604-10.83	SQFT	\$24.68
Composite Fiber Encasement (2017) (TDOT)	604-10.83	SQFT	\$32.90
Composite Fiber Encasement (2016) (TDOT)	604-10.83	SQFT	\$17.57

Composite Fiber Wrap System (2018) (ODOT)	519E00100	SQFT	\$51
---	-----------	------	------

Use ODOT Average for FRP Wrap		SQFT	\$51
--------------------------------------	--	-------------	-------------

Heat Straightening

HEAT STRAIGHTENING (2018)	23594EC	LS	\$135,000
HEAT STRAIGHTENING (2010)	23594EC	LS	\$28,000
HEAT STRAIGHTENING (TDOT 3-29-2019 Letting)***	602-10.81	LS	\$175,000

***This repair is on two different spans so divide cost by two.

Cost does not include crossframe repairs.

Use TDOT prices for Heat Straightening		LS	\$90,000
---	--	-----------	-----------------

Development of Superstructure Replacement Cost

Using Palmer's design projects of PCI Beam bridges of similar length determine the square foot cost of the superstructure from the closeout form.

Superstructure Estimate - Muhlenberg Co	\$66.25/SQFT
Superstructure Estimate - Graves Co KY-80	\$64.70/SQFT
Superstructure Estimate - Graves Co US45	\$70.59/SQFT
Superstructure Estimate - Scott Co	\$65.43/SQFT
Superstructure Bid Cost - Scott Co	\$58.10/SQFT

Due to working over the railroad use a Superstructure Replacement cost of \$75/SQFT

Development of Intergal Endbent Cost

Using Palmer's design projects with intergal endbents and PCI Beams use the closeout form to determine the LF cost of an intergal endbent.

Intergal End Bent - Muhlenberg Estimate

Structure Granular Backfill	232	CY	\$44.59	\$10,344.88
Masonry Coating	134	SY	\$8.02	\$1,074.68
Structure Excavation Common	143	CY	\$22.58	\$3,228.94
Test Pile	119	LF	\$109.70	\$13,054.30
HP14x73	922	LF	\$55	\$50,710.00
Pile Points	20	EA	\$126.48	\$2,529.60
Conc Class A	86	CY	\$538.35	\$46,298.10
Conc Class AA	64	CY	\$695.49	\$44,511.36
Steel Reinf	8274	LB	\$0.97	\$8,025.78

Steel Reinf Epoxy	7436	LB	\$1.05	\$7,807.80
Armored Edge	146	LF	\$101.02	\$14,748.92
Approach Slab	406	SY	\$204.25	\$82,925.50
Mech Coupler #5	20	EA	\$34.35	\$687.00
Mech Coupler #8	16	EA	\$46.26	\$740.16
Mech Coupler #5 Epoxy	22	EA	\$44.31	\$974.82
Subtotal =				\$287,661.84
Add 20% for uncertainties and inflation				\$57,532.37
Total =				\$345,194.21

Bridge Width 75 ft

Muhlenberg Intergal EndBent Cost per LF \$2,301

Intergral End Bent - Scott Co Estimate

Structure Granular Backfill	759	CY	\$41.33	\$31,369.47
Masonry Coating	887	SY	\$15.22	\$13,500.14
Structure Excavation Common		CY		\$0.00
Test Pile	64	LF	\$305.31	\$19,539.84
HP14x117	807	LF	\$92	\$73,840.50
Pile Points	28	EA	\$129.38	\$3,622.64
Conc Class A	108	CY	\$500.14	\$54,015.12
Conc Class AA	172	CY	\$567.70	\$97,644.40
Steel Reinf	15470	LB	\$1.01	\$15,624.70
Steel Reinf Epoxy	5035	LB	\$1.01	\$5,085.35
Armored Edge	208	LF	\$131.14	\$27,277.12
Subtotal =				\$341,519.28
Add 20% for uncertainties and inflation				\$68,303.86
Total =				\$409,823.14

Bridge Width 106.33 ft

Scott Co Intergal EndBent Est per LF \$1,927

Intergral End Bent - Scott Co Bid Prices

Structure Granular Backfill	759	CY	\$38.00	\$28,842.00
Masonry Coating	887	SY	\$8.00	\$7,096.00
Structure Excavation Common		CY	\$12.00	\$0.00
Test Pile	64	LF	\$88.00	\$5,632.00
HP14x117	807	LF	\$88	\$71,016.00
Pile Points	28	EA	\$110.00	\$3,080.00
Conc Class A	108	CY	\$353.00	\$38,124.00
Conc Class AA	172	CY	\$353.00	\$60,716.00
Steel Reinf	15470	LB	\$0.89	\$13,768.30
Steel Reinf Epoxy	5035	LB	\$0.98	\$4,934.30
Armored Edge	208	LF	\$36.00	\$7,488.00
Subtotal =				\$240,696.60

Add 20% for uncertainties and inflation			\$48,139.32
			Total = \$288,835.92
Bridge Width	106.33	ft	
Scott Co Intergal EndBent Bid per LF			\$1,358

Use \$2,300 per LF for an Intergal Endbent

Maintenance and Control of Traffic

The following are the average bids from the Westport Road project

RELOCATE TEMP CONC BARRIER	\$8,906
SIGNS	\$4,993
MAINTAIN & CONTROL TRAFFIC	\$67,031
MAINTAIN & CONTROL TRAFFIC	\$77,865
MAINTAIN & CONTROL TRAFFIC	\$52,031
MAINTAIN & CONTROL TRAFFIC	\$48,933
PORTABLE CHANGEABLE MESSAGE SIGN	\$16,713
ARROW PANEL	\$4,010
RELOCATE CRASH CUSHION	\$7,000
CONCRETE BARRIER WALL TYPE 9T	\$58,688
PAVE STRIPING-TEMP REM TAPE-B	\$41,278
PAVE STRIPING-TEMP REM TAPE-W	\$56,116
PAVE STRIPING-TEMP REM TAPE-Y	\$16,575
PAVE STRIPING -DUR TY 1-6 IN W	\$7,000
PAVE STRIPING -DUR TY 1-6 IN Y	\$3,664
CRASH CUSHION TYPE VI CLASS CT	\$15,500
Total MOT for the Project	\$486,303

MOT per TWIN bridge on Westprt Rd =	\$243,151
-------------------------------------	-----------

The following are the average bids from the I-65 and I-264 project from the March 22, 2019 Letting

RELOCATE TEMP CONC BARRIER	\$47,520
BARRICADE-TYPE III	\$750
TEMPORARY SIGNS	\$4,172
MAINTAIN & CONTROL TRAFFIC	\$35,000
MAINTAIN & CONTROL TRAFFIC	\$35,000
MAINTAIN & CONTROL TRAFFIC	\$136,250
MAINTAIN & CONTROL TRAFFIC	\$28,750
MAINTAIN & CONTROL TRAFFIC	\$10,750
LANE CLOSURE	\$37,500
PORTABLE CHANGEABLE MESSAGE SIGN	\$15,000
ARROW PANEL	\$5,625
RELOCATE CRASH CUSHION	\$9,000
INSTALL TEMP CRASH CUSHION	\$18,375

CONCRETE BARRIER WALL TYPE 9T	\$101,200
PAVE STRIPING-PERM PAINT-4 IN	\$2,373
PAVE STRIPING-PERM PAINT-6 IN	\$7,380
PAVE STRIPING-TEMP REM TAPE-B	\$5,875
PAVE STRIPING-TEMP REM TAPE-W	\$17,000
PAVE STRIPING-TEMP REM TAPE-Y	\$17,000
POLICE OFFICER WITH VEHICLE	\$14,820
Total MOT for the Project	<u>\$549,340</u>

MOT Per Bridge on I-65 and I-264 Project	\$109,868
--	-----------

Use an Average MOT cost per bridge of the 2 projects	\$180,000
---	------------------

Use 1.5% for Demobilization

Use 3.5% to repair the drainage throughout the corridor and for unforeseen expenses.

Post-Tensioned Integral Pier Cap Study

Kennedy - 2 Girder

Concrete f'c=5500	48	CY
PT bars Grade 150	4368	lbs
Reinforcing steel, Grade 60	9600	lbs
Temporary falsework	1	LS

Kennedy - 3 Girder

Concrete f'c=5500	81	CY
PT bars Grade 150	9462	lbs
Reinforcing steel, Grade 60	16200	lbs
Temporary falsework	1	LS

Post-Tensioned Straddle Pier

Delaware US 301

	116.5' out-out	8.58' deep x 9.5' wide	Unit Cost	Cap Cost
PT = 37 0.6" strand tendons (12) =	134,695 cu in =	37,984 lbs	\$ 5.00	\$ 189,919
	Concrete =	352 CY	\$ 1,000	\$ 351,701
	Reinforcing steel, Grade 60 =	30000 lbs	\$ 1.25	\$ 37,500
	Temporary falsework =	1 LS	\$ 50,000	\$ 50,000
				\$ 629,120

Proportion Quantities based on Square of the span

Brook-Kentucky ~ 60'	==>	27%	==>	\$ 153,610
Temporary falsework =		1 LS		\$ 50,000

			Unit Cost	
Add 6' diameter Columns =	34	LF	\$ 800	\$ 27,200
High Load Mult-Rot Bearings =	2	EA	\$ 10,000	\$ 20,000

Cost for Converting Current to PT Straddle Pier = \$ 250,810

FOR NEW CONSTRUCTION:

Add 7' diameter Drilled Shafts (Common) =	40	LF	\$ 1,100	\$ 44,000
---	----	----	----------	-----------

Cost for Converting Current to PT Straddle Pier = \$ 294,810

I-65 Bridges Planning Study

From I-264 to Ohio River Bridges

Jefferson County

Joint Elimination Criteria

Bridge ID	Route Under	Type	Bridge Length (FT)	Skew	Joint Elimination Criteria OK?	Abutment Joints to Eliminate (LF)	Pier Joints to Eliminate (LF)
209N	PHILLIPS LN	Steel	145		OK	304	
210N	MANNING RD	Steel	150		OK	272	
211N	E ENT TO FAIRGROUNDS	Steel	151		OK	252	
212N	BRADLEY AVE, N ENT FRGRND	Steel	136	36 deg Skew	OK	299	
213N	CRITTENDEN DR (KY 1631)	Steel	229	Curved & 39 deg Skew	NG	0	
205N	NORFOLK SOUTHERN RR	Steel	367	Curved & 48 deg Skew	NG	0	
180N	EASTERN PKWY	Steel	214	39 deg Skew	OK	306	300
181N	WARNOCK ST	Concrete	130		OK	202	
182N	BRANDEIS AVE	Concrete	138		OK	203	
179N	CSX RR, BURNETT, HILL ST	Steel	338	30 deg Skew	OK	246	496
208N	PRESTON RAMP TO 65 SB	Concrete	140	30 deg Skew	OK	64	
207N	S PRESTON ST ON RAMP	Concrete	139		OK	203	
206N	WOODBINE ST	Concrete	128		OK	203	
187N	E ORMSBY AVE	Steel	158		OK	224	
186N	OAK ST	Steel	158	21 deg Skew	OK	278	
185N	FLOYD ST	Steel	283	59 deg Skew	NG	0	
184N	ST CATHERINE ST	Steel	168	31 deg Skew	OK	244	
183N	S BROOK, E KENTUCKY ST	Steel	461	59 deg Skew	NG	0	584
190N	CALDWELL ST	Steel	158		OK	232	
189N	E BRECKINRIDGE ST	Steel	158		OK	227	
188N	COLLEGE ST	Steel	158		OK	330	
191N	JACOB, BROADWAY, GRAY ST	BOTH	1208		OK	165	311
192N	CHESTNUT ST	Concrete	435		OK	110	108
193N	BROOK ST, MUHAMMAD ALI	Steel	345	Curved & 65 deg Skew	NG	0	127
194N	MUHAMMAD ALI	Steel	64		OK	55	
196N	FLOYD ST	Steel	127		OK	75	
195R	FLOYD ST	Steel	80	32 deg Skew	OK	153	
197R	LIBERTY ST	Steel	98	30 deg Skew	OK	130	

	FULL INTEGRAL	SEMI-INTEGRAL	CONVENTIONAL CANTILEVER ABUTMENT WITH DECK SLAB EXTENSION	
			STRAIGHT	CURVED
Steel bridges	300 feet for 0° skew 150 feet for 30° skew	450 feet 30° max. skew	450 feet 45° max. skew	300 feet 30° max. skew
Concrete bridges	500 feet for 0° skew 250 feet for 30° skew	750 feet 30° max. skew	750 feet 45° max. skew n/a	
Total movement at abutment	1.5"	2.25"	2.25"	1.5"

*Note: Table adapted from VDOT

I-65 Bridges Planning Study

From I-264 to Ohio River Bridges
Jefferson County

FHWA National Highway Construction Cost Index - March 2008 = 1.564

September 2018 = 1.847

Ratio = 118.1%

Case Study:

NAVFAC Cost Index - June 2008 = 4688

I-265 (Gene Snyder Freeway) over Westport Road and Ramp

September 2018 = 5645

Ratio = 120.4%

Date Let: 07-25-08

Turner Building Cost Index - 2008 = 908

Time: 11/20/08

Third Quarter 2018 = 1105

Ratio = 121.7%

RSMeans Cost Index - July 2008 = 180.4

July 2018 = 222.9

Ratio = 123.6%

ESCALATION to 2019: USE = 125%

	Item Description	Quantity	Unit	Bidder 1	Bidder 2	Bidder 3	AVERAGE BID	2019 Unit	
								Cost	2019 Total
10	RELOCATE TEMP CONC BARRIER	2,250	LF	3.00	5.00	1.50	3.17	3.96	\$ 8,906
20	SIGNS	856	SQFT	5.00	3.00	6.00	4.67	5.83	\$ 4,993
30	MAINTAIN & CONTROL TRAFFIC	1	LS	57,875.00	95,000.00	8,000.00	53,625.00	67,031	\$ 67,031
40	MAINTAIN & CONTROL TRAFFIC	1	LS	41,875.00	100,000.00	45,000.00	62,291.67	77,865	\$ 77,865
50	MAINTAIN & CONTROL TRAFFIC	1	LS	41,875.00	75,000.00	8,000.00	41,625.00	52,031	\$ 52,031
60	MAINTAIN & CONTROL TRAFFIC	1	LS	34,438.00	75,000.00	8,000.00	39,146.00	48,933	\$ 48,933
70	PORTABLE CHANGEABLE MESSAGE SIGN	7	EACH	1,500.00	2,230.00	2,000.00	1,910.00	2,388	\$ 16,713
80	ARROW PANEL	5	EACH	500.00	1,275.00	150.00	641.67	802	\$ 4,010
90	RELOCATE CRASH CUSHION	3	EACH	2,000.00	2,100.00	1,500.00	1,866.67	2,333	\$ 7,000
100	CONCRETE BARRIER WALL TYPE 9T	2,250	LF	22.60	20.00	20.00	20.87	26	\$ 58,688
110	EXPANSION JOINT REPLACEMENT 3 IN.	508.1	LF	299.54	550.00	410.00	419.85	525	\$ 266,655
120	ARMORED EDGE FOR CONCRETE	508.1	LF	31.00	130.00	70.00	77.00	96	\$ 48,905
130	ELIMINATE TRANSVERSE JOINT	303.1	LF	638.58	1,300.00	700.00	879.53	1,099	\$ 333,231
140	JACK & SUPPORT BRIDGE SPAN	12	EACH	35,447.50	28,000.00	100,000.00	54,482.50	68,103	\$ 817,238
150	PAVE STRIPING-TEMP REM TAPE-B	12,950	LF	2.75	2.40	2.50	2.55	3.19	\$ 41,278
160	PAVE STRIPING-TEMP REM TAPE-W	30,470	LF	1.75	1.67	1.00	1.47	1.84	\$ 56,116
170	PAVE STRIPING-TEMP REM TAPE-Y	9,000	LF	1.75	1.67	1.00	1.47	1.84	\$ 16,575
180	PAVE STRIPING -DUR TY 1-6 IN W	1,597	LF	3.50	3.37	3.65	3.51	4.38	\$ 7,000
190	PAVE STRIPING -DUR TY 1-6 IN Y	836	LF	3.50	3.37	3.65	3.51	4.38	\$ 3,664
200	CONCRETE-CLASS A	44.9	CUYD	3,001.32	800.00	1,200.00	1,667.11	2,084	\$ 93,566
210	CONCRETE-CLASS AA	96.8	CUYD	2,264.78	1,100.00	1,400.00	1,588.26	1,985	\$ 192,179
220	STEEL REINFORCEMENT	5,904	LB	1.12	1.25	2.50	1.62	2.03	\$ 11,980
230	STEEL REINFORCEMENT-EPOXY COATED	63,365	LB	1.38	1.35	2.75	1.83	2.28	\$ 144,682
240	EPOXY SAND SLURRY	993.8	SQYD	28.00	28.00	28.00	28.00	35	\$ 34,783
250	REMOVE EPOXY BITUMINOUS FOREIGN OVERLAY	5,254.2	SQYD	8.05	8.00	8.00	8.02	10	\$ 52,651
260	CONC CLASS M FULL DEPTH PATCH	123.3	CUYD	900.00	600.00	25.00	508.33	635	\$ 78,347
270	CONCRETE OVERLAY-LATEX	237	CUYD	971.43	1,335.00	1,335.00	1,213.81	1,517	\$ 359,591
280	BLAST CLEANING	6,220	SQYD	19.00	6.00	6.00	10.33	13	\$ 80,342
290	CRASH CUSHION TYPE VI CLASS CT	3	EACH	4,000.00	6,400.00	2,000.00	4,133.33	5,167	\$ 15,500
300	CONCRETE REPAIR	159	SQYD	400.00	610.00	200.00	403.33	504	\$ 80,163
310	BEARING REPLACEMENT	102	EACH	740.00	2,000.00	1,200.00	1,313.33	1,642	\$ 167,450
320	BRIDGE DECK REMOVAL	1	LS	20,000.00	35,000.00	45,000.00	33,333.33	41,667	\$ 41,667
330	BRIDGE DECK REMOVAL	1	LS	20,000.00	35,000.00	45,000.00	33,333.33	41,667	\$ 41,667
340	GIRDER REPAIR	16	EACH	1,000.00	1,800.00	1,000.00	1,266.67	1,583	\$ 25,333
350	DEMobilization	1	LS	35,358.79	42,000.00	44,247.21	40,535.33	50,669	\$ 50,669
TOTAL BIDS				2,377,000	2,806,702	2,994,061			3,407,401

Repair Plan
Retrofit of Damaged Bridge Girder
(056B00191N - KY 562 over I-65 over Broadway Bridge in Jefferson County, D05)



CONTACT INFORMATION:

Design, Procurement, Supervision, Construction and CatStrong Supplier:
University of Kentucky (Lexington, KY)

Issam Harik: (859) 257-3116 (Office);
Abheetha Peiris: (859) 257-7227 (Office);

(859) 229-3430 (Mobile); Harik@uky.edu
(859) 536-2595 (Mobile); Abheetha.Peiris@uky.edu

Table 1: Summary Cost Estimates for UK Personnel, Travel, Rental Equipment, Project Materials and Construction Supervision (Refer to General Notes on Page 4 of 4)

	Subject	Budget	Total Budget
1	Personnel (Design)		
	Thirty (30) Man Days for planning, inspection, design, procurement, reporting, etc. @ \$1,200/Day (including administrative costs and all benefits)	\$36,000	
	Total for Personnel (Design)		\$36,000
2	Personnel (Construction Supervision)		
	Twenty eight (28) Man Days for construction supervision @ 1,200/Day (including admin cost and all benefits) – See Note 2	\$33,600	
	Total for Personnel (Construction Supervision)		\$33,600
3	Travel		
	Includes lodging, mileage and per diem	\$10,000	
	Total for Travel		\$10,000
4	Materials and Supplies		
	CatStrong Material + Epoxy and Coatings	\$20,000	
	Repair mortar + Blast media + Zinc Primer + Bonding Agent	\$9,000	
	Misc. Supplies (Mixing, Cleaning, Application equipment etc.)	\$5,000	
	Total for Material		\$34,000
5	Sub Total		\$113,600
6	Unforeseen Expenses (~10% of Line 5) <i>Unforeseen expenses that may arise during the repair process due to minor delays, additional parts, etc.</i>		\$11,400
7	Total Direct Costs (TDC) (Sum of Lines 5 and 6)		\$125,000
8	UK Indirect Costs (IC) (UKIC)x(Line 7) = Z Note: Indirect costs, IC, can be up to 53% depending on the type of project		\$Z
9	Total Costs (TDC + IC) (Sum of Lines 7 and 8)		\$125,000 + \$Z

Table 2: Summary Cost Estimates for Construction (Refer to General Notes on Page 4 of 4)

	Subject	Budget	Total Budget
1	Rentals		
	Man lift, Sand blaster, Air compressor, Pneumatic hammers, Mortar mixer etc. (4 week rental) - See Note 2	\$24,000	
	Total for Rentals		\$24,000
2	Construction		
	Eight (8) person construction crew, 28 day work period at \$1200/Day - See Notes 2 and 3	\$224,000	
	Total for Construction		\$268,800
3	Sub Total		\$292,800
4	Unforeseen Expenses (~10% of Line 3) <i>Unforeseen expenses that may arise during the repair process due to minor delays, additional parts, etc.</i>		\$29,200
5	Total Direct Costs (TDC) (Sum of Lines 3 and 4)		\$322,000
6	UK Indirect Costs (UKIC) (UKIC)x(Line 5) = Z Note: UK Indirect costs, UKIC, can be up to 53% depending on the type of project, and will only be charged if UK is hiring the contractor to conduct the repairs.		\$Z
7	Total Costs (TDC + IC) (Sum of Lines 5 and 6)		\$322,000 + \$Z

General Notes for Tables 1 and 2:

1. The cost estimates are for the retrofit of one RC girder of the bridge (056B191N). It should be noted that the cost of retrofitting multiple beams of the same bridge, or any other damage in the bridge would be cost efficient and cannot be linearly extrapolated from this estimate.
2. The estimate conservatively assumes a work period of 28 work days. Unless traffic control can be changed easily, this may include few days for repair mortar/epoxy setup and curing. Any additional days beyond the 28 days will be calculated at the cost rates provided.
3. Kentucky Transportation Center/University of Kentucky does not have the capability to carry out the retrofit construction. This will be sub-contracted to a construction firm
4. Setup of traffic control and lane closures is not included in the cost estimates. Retrofit construction is assumed to be carried out in two stages, where stage 1 is over the eastbound lanes and Stage 2 is over the westbound lanes of Broadway (or vice versa). It is assumed that when Eastbound Broadway is shut down for retrofit construction, traffic would be diverted to one or more of the westbound lanes and vice versa.
5. Construction is assumed to be during regular work times and work days, any night time/weekend work would require revision of the cost estimates.

Intech Contracting, LLC

859-272-0352

issued 07/06/18

D-5 Routine Insp. For Ohio River Bridges Project 2018

	Service	Price	Per	Price	Per	Over 8/day Per Hour OT Price
**	Mark V Snooper (w/1 certified driver-operator)	\$ 8,500.00	week	\$2,425.00	day	\$ 169.75
**	Aspen A-62 (w/ 1 certified driver-operator)	\$ 10,500.00	week	\$3,000.00	day	\$ 210.00
**	Manlift - 60'	\$ 3,000.00	week	\$ 857.00	day	\$ 59.99
**	Manlift - 80'	\$ 3,500.00	week	\$1,000.00	day	\$ 70.00
**	Manlift - 120'	\$ 6,000.00	week	\$1,715.00	day	\$ 120.05
	Traffic Control-Ramp Closure			\$ 900.00	setup	\$ 63.00
	Traffic Control-Single Lane Closure [City Street]			\$ 975.00	setup	\$ 68.25
	Traffic Control-Single Lane Closure [Interstate]			\$1,075.00	setup	\$ 75.25
	Traffic Control-Double Lane Closure [Interstate]			\$1,500.00	setup	\$ 105.00
**	TMA-"Truck Mounted Crash Attenuator" (w/ Driver)			\$ 570.00	day	\$ 39.90
	Police Officers [required w/ any lane closure on Interstate]		each	\$ 600.00	day	
	Extra Certified Operator					\$ -
	Mobilization-DeMobilization					
	^ Only (1) charge for Traffic Control regardless of No. of type(s)		\$ 200.00	line item		
**	Fuel Surcharge "May Apply"	UP TO>	\$ 100.00	per unit, per day		