Appendix F: Summary of Repair Quantities

Summary of Repairs for Bridge 056B00209N - I-65 over Phillips Lane

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	304	LF
Deck:		
Latex overlay assume 2" thick	112.9	CUYD
Replace median barrier to remove logitudinal joint.	145	LF
Beams:		
Repair Beam 22 impact damage. See Miscellaneous for cost.		
Bearings:		
Bearing Repair. Beam 9 at Abutment not in contact.	1	EA
Clean and grease all abutment bearings.	48	EA
Blast Cleaning. Assume 3 sqft per bearing.	144	SQFT
Concrete Patching Repairs:		
Abutment nosing assume 2ft tall and 66ft long from CS3	132	SQFT
Pier 3 Column 5	9	SQFT
Misc. abutment delamination CS2	166	SQFT
Misc. pier patching	30	SQFT
Total	337	SQFT
Substructure Epoxy Injection		
Pier Cap Cracking CS2 & CS3	23	LF
Misc. Pier	50	LF
Total	73	LF
Concrete Sealing		
Abutment = (9' tall) x (304' long)	2736	SQFT
Abutment Height = 3' front face + 2' beam seat + 4' backwall = 9'		
Slope Protection Repair		
8' wide x 16' long x 2' deep		
Reinforced Concrete Slope Wall	14.22	SQYD
Structure Granular Backfill	9.48	CUYD
Clean and Paint		
Assume web is 2ft tall and flanges are 1ft wide.	7	LF
Paint girders on each side of longitudinal joint.	2030	SQFT
Paint girder after heat straightening repair.	500.5	SQFT
Total	2530.5	SQFT
Miscellaneous		
Heat Straightening of Steel Damage	$90,000	
Structural Steel Repairs - crossframe and stiffeners	$10,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	304	LF

Summary of Repairs for Bridge 056B00210N - I-65 over Manning Road

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	272	LF
Deck:		
Replace median barrier to remove longitudinal joint.	150	LF
Beams:		
No repairs noted		
Bearings:		
Clean and grease all abutment bearings	44	EA
Blast Cleaning. Assume 3 sqft per bearing.	132	SQFT
Concrete Patching Repairs:		
Abutment nosing assume 3ft tall and 132ft long from CS3	396	SQFT
Pier 2 Column 3	20	SQFT
Misc. pier patching	30	SQFT
Total	446	SQFT
Substructure Epoxy Injection		
Misc. Abutment	15	LF
Misc. Pier	50	LF
Total	65	LF
Concrete Sealing		
Abutment = (9' tall) x (272' long)	2448	SQFT
Abutment Height = 3' front face + 2' beam seat + 4' backwall = 9'		
Slope Protection Repair		
Undermining listed but no pictures so assume values	5.00	SQYD
	3.00	CUYD
Miscellaneous		
Remove Vegetation	$2,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	272	LF

Summary of Repairs for Bridge 056B00211N - I-65 over E Entrance to Fairgrounds

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	252	LF
Deck:		
Solid median barrier so longitudinal joint has already been removed.		
Beams:		
No repairs noted		
Bearings:		
Clean and grease all abutment bearings	44	EA
Blast Cleaning. Assume 3 sqft per bearing.	132	SQFT
4 bearings at Abutment 1 are not in contact with the beam seat.	4	EA
Reset all Abutment 1 and Pier 2 bearings	40	EA
Concrete Patching Repairs:		
Abutment backwall deterioration assume 3ft tall and 86ft long from CS3	258	SQFT
Misc. abutment delamination CS2	24	SQFT
Misc. pier patching	30	SQFT
Total	312	SQFT
Substructure Epoxy Injection		
Misc. Abutment	25	LF
Misc. Pier	50	LF
Total	75	LF
Concrete Sealing		
Abutment = (9' tall) x (252' long)	2268	SQFT
Abutment Height = 3' front face + 2' beam seat + 4' backwall = 9'		
Slope Protection Repair		
Undermining listed but no pictures so assume values	5.00	SQYD
	3.00	CUYD
Miscellaneous		
Remove Vegetation	$2,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	252	LF

Summary of Repairs for Bridge 056B00212N - I-65 over Bradley Ave, N Entrance to Fairgrounds

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	299	LF
Deck:		
Solid median barrier so longitudinal joint has already been removed.		
Beams:		
Clip the flange ends at Abutment 4. See Miscellaneous for cost.		
Bearings:		
Clean and grease all abutment bearings	36	EA
Blast Cleaning. Assume 3 sqft per bearing.	108	SQFT
Reset all Abutment 4 bearings	18	EA
Concrete Patching Repairs:		
Underside of deck at longitudinal joint at both abutments	20	SQFT
Abutment backwall deterioration assume 3ft tall and 120ft long from CS3	360	SQFT
Misc. abutment delamination CS2	37	SQFT
Misc. pier patching	30	SQFT
Total	447	SQFT
Substructure Epoxy Injection		
Misc. Abutment	55	LF
Misc. Pier	30	LF
Total	85	LF
Concrete Sealing		
Abutment = (9' tall) x (299' long)	2691	SQFT
Abutment Height = 3' front face + 2' beam seat + 4' backwall = 9'		
Slope Protection Repair		
Abutment 4 west end erosion 10' wide x 25' long x 3' deep		
Reinforced Concrete Slope Wall	27.8	SQYD
Structure Granular Backfill	27.8	CUYD
Miscellaneous		
Clip the flange ends at Abutment 4. Assume $1,000 per beam.	$18,000	
Regrade ditch and line with rip rap at base of abutments and add curb from end of bridge rail to drop box to collect water.	$10,000	
Remove Vegetation	$3,000	
Total	$31,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	299	LF

Summary of Repairs for Bridge 056B00213N - I-65 over Crittenden Dr (KY 1631)

	Quantity	Units
Joint Replacement		
Abutment Joint Replacement	260	LF
Deck:		
Solid median barrier so longitudinal joint has already been removed.		
Beams:		
No repairs noted		
Bearings:		
Clean and grease all abutment bearings	36	EA
Blast Cleaning. Assume 3 sqft per bearing.	108	SQFT
Shim the Abutment 1 bearing at Beam 12	1	EA
Rest all Abutment 4 bearings	18	EA
Concrete Patching Repairs:		
Underside of deck at longitudinal joint at both abutments	40	SQFT
Abutment backwall deterioration assume 2ft tall and 44ft long from CS3	88	SQFT
Pier 3 Column 7 patching	6	SQFT
Misc. abutment delamination CS2	45	SQFT
Misc. pier patching	30	SQFT
Total	209	SQFT
Substructure Epoxy Injection		
Misc. Abutment	25	LF
Misc. Pier	30	LF
Total	55	LF
Concrete Sealing		
Abutment = (9' tall) x (260' long)	2340	SQFT
Abutment Height = 3' front face + 2' beam seat + 4' backwall = 9'		
Miscellaneous		
Drainage repair at end of bridge	$4,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	260	LF

Summary of Repairs for Bridge 056B00205N - I-65 over Norfolk Southern Railroad

	Quantity	Units
Joint Replacement		
Abutment Joint Replacement	323	LF
Deck:		
Solid median barrier so longitudinal joint has already been removed.		
Beams:		
No repairs noted		
Bearings:		
Clean and grease all abutment bearings	30	EA
Blast Cleaning. Assume 3 sqft per bearing.	90	SQFT
Reset over expanded bearings at both abutments (CS3)	30	EA
Concrete Patching Repairs:		
Underside of deck at longitudinal joint at both abutments	40	SQFT
Abutment backwall deterioration assume 3ft tall and 82ft long from CS3	246	SQFT
Barrier spall	24	SQFT
Misc. abutment delamination CS2	85	SQFT
Misc. pier patching	50	SQFT
Total	445	SQFT
Substructure Epoxy Injection		
Misc. Abutment	25	LF
Misc. Pier	35	LF
Total	60	LF
Concrete Sealing		
Abutment = (9' tall) x (323' long)	2907	SQFT
Abutment Height = 3' front face + 2' beam seat + 4' backwall = 9'		
Slope Protection Repair		
60' long x 40' wide x 4' deep average		
Reinforced Concrete Slope Wall	266.7	SQYD
Structure Granular Backfill	355.6	CUYD
Clean and Paint		
Assume web is 2ft tall and flanges are 1ft wide.	7	LF
Paint the exterior beams at the abutments for a length of 15ft	420	SQFT
Miscellaneous		
Remove Vegetation	$5,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	323	LF

Summary of Repairs for Bridge 056B00180N - I-65 over Eastern Parkway

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	306	LF
Pier Joint Elimination	300	LF
Deck:		
Solid median barrier so longitudinal joint has already been removed.		
Beams:		
Clip beam flanges at abutments and repair beams ends at pier that are in contact. See miscellaneous for cost.		
Bearings:		
Bearing Conversions - Replace all bearings due to pier joint elimination and CS3 condition of abutment bearings	108	EA
Jack and Support Bridge Span	6	EA
Concrete Patching Repairs:		
Underside of deck at joints to be replaced with joint elimination	0	SQFT
Abutment backwall deterioration assume 3ft tall and 27ft long from CS3	81	SQFT
Assume 3' x 3' pier cap w/ 53' (CS3) repair. Average of 3 sides.	477	SQFT
Misc. abutment delamination CS2	75	SQFT
Misc. pier patching	30	SQFT
Total	663	SQFT
Substructure Epoxy Injection		
Misc. Abutment	40	LF
Misc. Pier	90	LF
Total	130	LF
Concrete Sealing		
Abutment = (10' tall) x (306' long)	3060	SQFT
Abutment Height = 3' front face + 2' beam seat + 5' backwall = 10'		
Pier caps - coat entire cap = (12' perimeter) x (288' long)	3456	SQFT
Total	6516	SQFT
Slope Protection Repair		
Minor erosion, but no pictures. Assumed values		
Reinforced Concrete Slope Wall	5.00	SQYD
Structure Granular Backfill	3.00	CUYD
Clean and Paint		
Assume web is 2.5ft tall flanges are 1ft wide.	8	LF
Paint half of the girders ends 10ft out at the piers and abutments	4800	SQFT
Miscellaneous		
Clip beam flanges at abutments and repair beams ends at pier that are in contact.	$40,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	306	LF
Galvanic Cathodic Protection at Existing Pier Joints	288	LF
Total	594	LF

Summary of Repairs for Bridge 056B00181N - I-65 over Warnock St

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	202	LF
Deck:		
Solid median barrier so longitudinal joint has already been removed.		
Beams:		
No repairs noted		
Bearings:		
Abutment bearings have already been replaced		
Concrete Patching Repairs:		
Underside of deck at joints to be replaced with joint elimination	0	SQFT
Abutment backwall deterioration assume 3ft tall and 42ft long from CS3	126	SQFT
Misc. abutment delamination CS2	160	SQFT
Misc. pier patching	30	SQFT
Total	316	SQFT
Substructure Epoxy Injection		
Misc. Abutment	40	LF
Misc. Pier	30	LF
Total	70	LF
Concrete Sealing		
Abutment = (8' tall) x (202' long)	1616	SQFT
Abutment Height = 3' front face + 2' beam seat + 3' backwall = 8'	0	SQFT
	1616	SQFT
Slope Protection Repair		
Undermining listed but no pictures so assume values	5.00	SQYD
	3.00	CUYD
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	202	LF

Summary of Repairs for Bridge 056B00182N - I-65 over Brandeis Ave

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	203	LF
Deck:		
Solid median barrier so longitudinal joint has already been removed.		
Beams:		
See concrete patching for repairs		
Bearings:		
Abutment bearings have already been replaced		
Concrete Patching Repairs:		
Underside of deck at joints to be replaced with joint elimination	0	SQFT
Abutment backwall deterioration assume 3ft tall and 63ft long from CS3	189	SQFT
End of beams - 2ft tall by 1ft wide by 13ft long (CS3)	65	SQFT
Misc. abutment and diaphragm delamination CS2	180	SQFT
Misc. beam patching	25	SQFT
Misc. pier patching	15	SQFT
Total	474	SQFT
Substructure Epoxy Injection		
Misc. Abutment	50	LF
Misc. Beam	40	LF
Misc. Pier	10	LF
Total	100	LF
Concrete Sealing		
Abutment = (9' tall) x (203' long)	1827	SQFT
Abutment Height = 3' front face + 2' beam seat + 4' backwall = 9'	0	SQFT
	1827	SQFT
Slope Protection Repair		
Abutment 1 slope protection failure 6' wide x 12' long x 1' deep		
Reinforced Concrete Slope Wall	8.00	SQYD
Structure Granular Backfill	2.67	CUYD
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	203	LF

Summary of Repairs for Bridge 056B00179N - I-65 over CSX Railroad, Burnett, Hill St.

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	246	LF
Pier Joint Elimination	496	LF
Deck:		
Solid median barrier so longitudinal joint has already been removed.		
Beams:		
Cracks in 1995 inspection report are in secondary members and are not in need of repair.		
Bearings:		
Abutment 1 bearings at Beams 7 - 10 are scheduled to be replaced in emergency repair		
Bearing Conversions - Replace all bearings due to pier joint elimination	196	EA
Jack and Support Bridge Span	10	EA
Concrete Patching Repairs:		
Full depth deck patching	16	SQFT
Abutment backwall deterioration assume 5ft tall and 101ft long from CS3	505	SQFT
Pier Caps assume 3/4 full perimeter of CS3 (198ft) 3ft wide x 4ft tall	2079	SQFT
Misc. abutment delamination CS2	50	SQFT
Misc. pier patching	75	SQFT
Total	2725	SQFT
Substructure Epoxy Injection		
Misc. Abutment	100	LF
Misc. Pier	250	LF
Total	350	LF
Concrete Sealing		
Abutment = (11' tall) x (246' long)	2706	SQFT
Abutment Height = 4' front face + 2' beam seat + 5' backwall = 11'		
Pier caps - coat entire cap = (14' perimeter) x (496' long)	6944	SQFT
Pier Cap Perimeter = 3' * 2 + 4' * 2 = 14'		
Total	9650	SQFT
Slope Protection Repair		
6' wide x 12' long x 1' deep at 2 locations		
Reinforced Concrete Slope Wall	16.00	SQYD
Structure Granular Backfill	5.33	CUYD
Clean and Paint		
Assume 3ft tall web and 1ft wide flanges and add 10% for diaphragms	9	LF
Paint the girder ends 5ft out at each bearing	9900	SQFT
Miscellaneous		
Remove Vegetation	$2,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	246	LF
Galvanic Cathodic Protection at Existing Pier Joints	496	LF
Total	742	LF

Summary of Repairs for Bridge 056B00208N - I-65 Ramp over Preston Ramp to I-65 SB

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	64	LF
Deck:		
Ramp bridge so no longitudinal joint.		
Beams:		
See concrete patching for beam repairs.		
Bearings:		
Abutment bearings have already been replaced		
Concrete Patching Repairs:		
Full depth deck patching	20	SQFT
Abutment backwall deterioration assume 3ft tall and 19ft long from CS2&3	57	SQFT
Misc. beam patching CS2 + CS3	125	SQFT
Misc. pier patching	20	SQFT
Total	222	SQFT
Substructure Epoxy Injection		
Misc. Abutment	65	LF
Misc. Pier	50	LF
Total	115	LF
Concrete Sealing		
Abutment = (8' tall) x (64' long)	512	SQFT
Abutment Height = 3' front face + 2' beam seat + 3' backwall = 8'		
Miscellaneous		
Guard rail repairs	$20,000	
Remove Vegetation	$2,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	64	LF

Summary of Repairs for Bridge 056B00207N - I-65 over S Preston St on Ramp

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	203	LF
Deck:		
Solid median barrier so longitudinal joint has already been removed.		
Beams:		
See concrete patching for beam repairs.		
Bearings:		
Abutment bearings have already been replaced		
Clean and grease Pier 3 moveable bearings	18	EA
Blast Cleaning. Assume 3 sqft per bearing.	54	SQFT
Concrete Patching Repairs:		
Full depth deck patching	20	SQFT
Abutment backwall deterioration assume 3ft tall and 30ft long from CS3	90	SQFT
Pier Caps	0	SQFT
Misc. abutment delamination CS2	54	SQFT
Misc. beam patching CS2 + CS3	64	SQFT
Misc. pier patching	60	SQFT
Total	288	SQFT
Substructure Epoxy Injection		
Misc. Abutment	65	LF
Misc. Beam	65	LF
Misc. Pier	50	LF
Total	180	LF
Concrete Sealing		
Abutment = (8' tall) x (203' long)	1624	SQFT
Abutment Height = 3' front face + 2' beam seat + 3' backwall = 8'		
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	203	LF

Summary of Repairs for Bridge 056B00206N - I-65 over Woodbine St

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	203	LF
Deck:		
Replace median barrier to remove longitudinal joint.	128	LF
Beams:		
See concrete patching for beam repairs.		
Bearings:		
Abutment bearings have already been replaced		
Clean and grease Pier 3 moveable bearings and 8 abutment bearings	26	EA
Blast Cleaning. Assume 3 sqft per bearing.	78	SQFT
Concrete Patching Repairs:		
Full depth deck patching	0	SQFT
Abutment backwall deterioration assume 3ft tall and 10ft long from CS3	30	SQFT
Bridge rail patching CS3	55	SQFT
Misc. abutment delamination CS2	40	SQFT
Misc. beam patching CS3	61	SQFT
Misc. pier patching	30	SQFT
Total	216	SQFT
Substructure Epoxy Injection		
Misc. Abutment	65	LF
Misc. Beam	35	LF
Misc. Pier	45	LF
Total	145	LF
Concrete Sealing		
Abutment = (8' tall) x (203' long)	1624	SQFT
Abutment Height = 3' front face + 2' beam seat + 3' backwall = 8'		
Miscellaneous		
Remove Vegetation	$2,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	203	LF

Summary of Repairs for Bridge 056B00187N - I-65 over E Ormsby Ave

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	224	LF
Deck:		
Replace median barrier to remove longitudinal joint.	158	LF
Beams:		
No repairs noted		
Bearings:		
Clean and grease all abutment bearings	30	EA
Blast Cleaning. Assume 3 sqft per bearing.	90	SQFT
Reset CS3 bearings	15	EA
Concrete Patching Repairs:		
Full depth deck patching	40	SQFT
Abutment backwall deterioration assume 3ft tall and 22ft long from CS3	66	SQFT
Bridge rail patching CS3	15	SQFT
Misc. abutment delamination CS2	59	SQFT
Misc. pier patching	48	SQFT
Total	228	SQFT
Substructure Epoxy Injection		
Misc. Abutment	65	LF
Misc. Pier	50	LF
Total	115	LF
Concrete Sealing		
Abutment = (8' tall) x (224' long)	1792	SQFT
Abutment Height = 3' front face + 2' beam seat + 3' backwall = 8'		
Slope Protection Repair		
Erosion holes list, but no pics so assume values		
Reinforced Concrete Slope Wall	10.00	SQYD
Structure Granular Backfill	15.00	CUYD
Clean and Paint		
Assume web is 2ft tall and flanges are 1ft wide.	7	LF
Paint the girder ends 5ft out	1050	SQFT
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	224	LF

Summary of Repairs for Bridge 056B00186N - I-65 over Oak St

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	278	LF
Deck:		
Replace median barrier to remove longitudinal joint.	158	LF
Beams:		
No repairs noted		
Bearings:		
Clean and grease all abutment bearings	32	EA
Blast Cleaning. Assume 3 sqft per bearing.	96	SQFT
Reset CS3 bearings	2	EA
Concrete Patching Repairs:		
Full depth deck patching	40	SQFT
Abutment backwall deterioration assume 3ft tall and 37ft long from CS3	111	SQFT
Misc. abutment delamination CS2	45	SQFT
Misc. pier patching	80	SQFT
Total	276	SQFT
Substructure Epoxy Injection		
Misc. Abutment	40	LF
Misc. Pier	50	LF
Total	90	LF
Concrete Sealing		
Abutment = (9' tall) x (278' long)	2502	SQFT
Abutment Height = 4' front face + 2' beam seat + 3' backwall = 9'		
Slope Protection Repair		
Erosion holes list, but no pics so assume values		
Reinforced Concrete Slope Wall	5.00	SQYD
Structure Granular Backfill	3.00	CUYD
Clean and Paint		
Assume web is 2ft tall and flanges are 1ft wide.	7	LF
Paint the girder ends 5ft out	1120	SQFT
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	278	LF

Summary of Repairs for Bridge 056B00185N - I-65 over Floyd St

	Quantity	Units
Joint Replacement		
Abutment Joint Replacement	419	LF
Deck:		
Replace median barrier to remove longitudinal joint.	283	LF
Beams:		
No repairs noted		
Bearings:		
Clean and grease all abutment bearings	28	EA
Blast Cleaning. Assume 3 sqft per bearing.	84	SQFT
Reset CS3 bearings	7	EA
Concrete Patching Repairs:		
Full depth deck patching	60	SQFT
Abutment backwall deterioration assume 3ft tall and 13ft long from CS3	39	SQFT
Misc. abutment delamination CS2	60	SQFT
Misc. pier patching	80	SQFT
Total	239	SQFT
Substructure Epoxy Injection		
Misc. Abutment	55	LF
Misc. Pier	60	LF
Total	115	LF
Concrete Sealing		
Abutment = (9' tall) x (419' long)	3771	SQFT
Abutment Height = 4' front face + 2' beam seat + 3' backwall = 9'		
Slope Protection Repair		
Erosion holes list, but no pics so assume values		
Reinforced Concrete Slope Wall	10.00	SQYD
Structure Granular Backfill	6.00	CUYD
Clean and Paint		
Assume web is 3ft tall and flanges are 1ft wide.	9	LF
Paint the girder ends 5ft out	1260	SQFT
Miscellaneous		
Correct missing drain pipes	$25,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	419	LF

Summary of Repairs for Bridge 056B00184N - I-65 over St Catherine St

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	244	LF
Deck:		
Replace median barrier to remove longitudinal joint.	168	LF
Beams:		
No repairs noted		
Bearings:		
Clean and grease all abutment bearings	28	EA
Blast Cleaning. Assume 3 sqft per bearing.	84	SQFT
Reset CS3 bearings	6	EA
Concrete Patching Repairs:		
Full depth deck patching	40	SQFT
Abutment backwall deterioration assume 3ft tall and 39ft long from CS3	117	SQFT
Misc. abutment delamination CS2	52	SQFT
Misc. pier patching	52	SQFT
Total	261	SQFT
Substructure Epoxy Injection		
Misc. Abutment	70	LF
Misc. Pier	40	LF
Total	110	LF
Concrete Sealing		
Abutment = (9' tall) x (244' long)	2196	SQFT
Abutment Height = 4' front face + 2' beam seat + 3' backwall = 9'		
Slope Protection Repair		
fill in top of embankment at Abutment 4 - 5ft wide x 122ft x 1ft deep		
Reinforced Concrete Slope Wall	0.00	SQYD
Structure Granular Backfill	22.59	CUYD
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	244	LF

Summary of Repairs for Bridge 056B00183N-A - I-65 over S Brook, E Kentucky St.

	Quantity	Units	Unit Price	Bridge Estimate
Joint Rehabilitation				
Abutment Joint Replacement	355	LF		
Pier Joint Elimination	584	LF		
Deck:				
Replace median barrier to remove longitudinal joint.	461	LF		
Beams:				
Repair cracks in girders using structural cover plating	14	EA		
Bearings:				
Bearing Conversions - Replace all non-elastomeric bearings due to pier joint elimination and CS3 condition.	126	EA		
Jack and Support Bridge Span	17	EA		
Concrete Patching Repairs:				
Full depth deck patching	500	SQFT		
Abutment backwall deterioration assume 10ft tall and 127ft long from CS3	1270	SQFT		
Bridge Rail CS3	129	SQFT		
Misc. abutment delamination CS2	430	SQFT		
Misc. pier patching	100	SQFT		
Total	2429	SQFT		
Piers 1S-3S & 3R have been repaired once already so use full concrete encasement on these piers with cathodic protection.				
Caps are 50ft long, assume 4ft by 4ft by 8" thick - cap concrete	79.0	CUYD	$635.33	$50,198.91
Columns are 4ft by 5ft by 8" thick, assume 16ft tall - col concrete	85.33333	CUYD	$635.33	$54,214.83
Assume 150LB of reinforcement per CUYD	24652	LB	$1.18	$29,089.19
Assume remove 90% of concrete put back	148	CUYD	$425.96	$63,004.22
Total LF of Cathodic Protection space at 2ft	3328	LF	$35	$116,480.00
Add a 20% premium for the height of the piers and working above ground				$62,597.43
Total - Place cost under miscellaneous				$375,584.57
Substructure Epoxy Injection				
Misc. Abutment	450	LF		
Misc. Pier	300	LF		
Total	750	LF		
Concrete Sealing				
Abutments - Seal Repairs Only	1700	SQFT		
Seal Piers 1S - 3S & 3R	6656	SQFT		
	8356	SQFT		
Clean and Paint				
All CS3 and CS4 Steel Protective Coating	8706	SQFT		
Miscellaneous				
Piers 1S-3S & 3R concrete repairs	$376,000			
Enhanced Durability				
Galvanic Cathodic Protection at Existing Abutment Joints	355	LF		
Already included on pier repairs				

Summary of Repairs for Bridge 056B00183N-B - I-65 over S Brook, E Kentucky St.

	Quantity	Units	Unit Price	Bridge Estimate
Joint Rehabilitation				
Abutment Joint Replacement	355	LF		
Pier Joint Elimination	584	LF		
Deck:				
Replace median barrier to remove longitudinal joint.	461	LF		
Beams:				
Repair cracks in girders via encasement into a PT Integral Straddle Bent	2	EA		
Bearings:				
Bearing Conversions - Replace all non-elastomeric bearings due to pier joint elimination and CS3 condition.	126	EA		
Jack and Support Bridge Span	17	EA		
Concrete Patching Repairs:				
Full depth deck patching	500	SQFT		
Abutment backwall deterioration assume 10ft tall and 127ft long from CS3	1270	SQFT		
Bridge Rail CS3	129	SQFT		
Misc. abutment delamination CS2	430	SQFT		
Misc. pier patching	100	SQFT		
Total	2429	SQFT		
Piers 1S-3S & 3R have been repaired once already so use full concrete encasement on these piers with cathodic protection.				
Caps are 50ft long, assume 4ft by 4ft by 8" thick - cap concrete	79.0	CUYD	$635.33	$50,198.91
Columns are 4ft by 5ft by 8" thick, assume 16ft tall - col concrete	85.33333	CUYD	$635.33	$54,214.83
Assume 150LB of reinforcement per CUYD	24652	LB	$1.18	$29,089.19
Assume remove 90% of concrete put back	148	CUYD	$425.96	$63,004.22
Total LF of Cathodic Protection space at 2ft	3328	LF	$35	$116,480.00
Add a 20% premium for the height of the piers and working above ground				$62,597.43
Total - Place cost under miscellaneous				$375,584.57
Substructure Epoxy Injection				
Misc. Abutment	450	LF		
Misc. Pier	300	LF		
Total	750	LF		
Concrete Sealing				
Abutments - Seal Repairs Only	1700	SQFT		
Seal Piers 1S - 3S & 3R	6656	SQFT		
	8356	SQFT		
Clean and Paint				
All CS3 and CS4 Steel Protective Coating	8706	SQFT		
Miscellaneous				
Piers 1S-3S & 3R concrete repairs	$376,000			
Enhanced Durability				
Galvanic Cathodic Protection at Existing Abutment Joints	355	LF		
Already included on pier repairs				

Summary of Repairs for Bridge 056B00190N - I-65 over Caldwell St

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	232	LF
Deck:		
Replace median barrier to remove longitudinal joint.	158	LF
Beams:		
No repairs noted		
Bearings:		
Clean and grease all abutment bearings	30	EA
Blast Cleaning. Assume 3 sqft per bearing.	90	SQFT
Concrete Patching Repairs:		
Full depth deck patching	40	SQFT
Abutment backwall deterioration assume 3ft tall and 58ft long from CS3	174	SQFT
Bridge Rail CS3	30	SQFT
Misc. abutment delamination CS2	50	SQFT
Misc. pier patching	40	SQFT
Total	334	SQFT
Substructure Epoxy Injection		
Misc. Abutment	70	LF
Misc. Pier	65	LF
Total	135	LF
Concrete Sealing		
Abutment = (9' tall) x (232' long)	2088	SQFT
Abutment Height = 4' front face + 2' beam seat + 3' backwall = 9'		
Slope Protection Repair		
4ft wide x 4ft long x 2ft deep		
Reinforced Concrete Slope Wall	1.78	SQYD
Structure Granular Backfill	1.19	CUYD
Miscellaneous		
Remove Vegetation	$2,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	232	LF

Summary of Repairs for Bridge 056B00189N - I-65 over E Breckinridge St.

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	227	LF
Deck:		
Replace median barrier to remove longitudinal joint.	158	LF
Beams:		
The KYTC load raters determined that distortion of Girders 1 to 3 due to the fire does not require mitigation.		
Bearings:		
Clean and grease all abutment bearings	30	EA
Blast Cleaning. Assume 3 sqft per bearing.	90	SQFT
Reset the Abutment 4 west exterior bearing	1	EA
Concrete Patching Repairs:		
Full depth deck patching	40	SQFT
Abutment backwall deterioration assume 3ft tall and 24ft long from CS3	72	SQFT
Abutment beam seat fire damage assume 3ft tall and 10ft long	30	SQFT
Fire damage to underside of deck	30	SQFT
Misc. abutment delamination CS2	45	SQFT
Misc. pier patching	40	SQFT
Total	257	SQFT
Substructure Epoxy Injection		
Misc. Abutment	80	LF
Misc. Pier	50	LF
Total	130	LF
Concrete Sealing		
Abutment = (9' tall) x (227' long)	2043	SQFT
Abutment Height = 4' front face + 2' beam seat + 3' backwall = 9'		
Slope Protection Repair		
Fill in top of embankment at Abutment 4 - 6ft wide x 114ft x 1ft deep		
Reinforced Concrete Slope Wall	5.00	SQYD
Structure Granular Backfill	25.33	CUYD
Clean and Paint		
Assume web is 2ft tall and flanges are 1ft wide.	7	LF
Paint end of exterior beams and at longitudinal joint 10ft from bearing	560	SQFT
Paint girders 1 to 4 in Span 1 (45ft).	1260	SQFT
Total	1820	SQFT
Miscellaneous		
Remove Vegetation	$2,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	227	LF

Summary of Repairs for Bridge 056B00188N - I-65 over College St.

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	330	LF
Deck:		
Replace median barrier to remove longitudinal joint.	158	LF
Beams:		
Repair impact damage to Girder 1 in Span 2. See Miscellaneous for cost.		
Bearings:		
Clean and grease all abutment bearings	42	EA
Blast Cleaning. Assume 3 sqft per bearing.	126	SQFT
Concrete Patching Repairs:		
Full depth deck patching	80	SQFT
Abutment backwall deterioration assume 3ft tall and 30ft long from CS3	90	SQFT
Bridge rail repair CS3	50	SQFT
Misc. abutment delamination CS2	73	SQFT
Misc. pier patching	60	SQFT
Total	353	SQFT
Substructure Epoxy Injection		
Misc. Abutment	60	LF
Misc. Pier	35	LF
Total	95	LF
Concrete Sealing		
Abutment = (11' tall) x (330' long)	3630	SQFT
Abutment Height = 6' front face + 2' beam seat + 3' backwall = 11'		
Clean and Paint		
Assume web is 2ft tall and flanges are 1ft wide.	7	LF
Paint ends of beams at abutments 5ft out.	1470	SQFT
Paint girder after heat straightening repair.	455	SQFT
Total	1925	SQFT
Miscellaneous		
Heat Straightening of Steel Damage	$90,000	
Structural Steel Repairs - crossframe and stiffeners	$10,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	330	LF

Summary of Repairs for Bridge 056B00191N-A - I-65 over Jacob, Broadway, and Gray St.

	Quantity	Units
Joint Rehabilitation		
Abutment Joint Elimination at all Abutments	165	LF
Pier Joint Elimination - Piers B-1, A-5, 109, 118	311	LF
Pier Joint Replacement - 103, 106, 112, 115, 121	662	LF
Deck:		
Replace median barrier to remove longitudinal joint.	1208	LF
Beams:		
See Miscellaneous for repair to the Span 114 Beams.		
See Concrete Patching Repairs for concrete beam repairs.		
Bearings:		
Bearing Conversions - Replace the bearings at Piers 106, 107, 109, 111, and 112 due to pier joint elimination. Spans 107-109 have 24 beam lines and Spans 110-112 have 21 beam lines.	180	EA
Bearing Conversions - Replace the bearings at Piers 115, 116, 118, 120, and 121 due to pier joint elimination. Spans 116-121 have 16 beam lines.	128	EA
Total	308	EA
Jack and Support Bridge Span - Spans 116-121	8	EA
Jack and Support Bridge Span - Spans 107-112	8	EA
Total	16	EA
Clean and grease CS3 moveable rocker bearings	29	EA
Blast Cleaning. Assume 3 sqft per bearing.	87	SQFT
Reset CS3 moveable rocker bearing	29	EA
Concrete Patching Repairs:		
Full depth deck patching	99	SQFT
Abutment backwall deterioration assume 3ft tall and 17ft long from CS3	51	SQFT
Misc. abutment delamination CS2	30	SQFT
Misc. Beam CS3 - excludes Span 114 Beam	104	SQFT
Pier 121 patching	400	SQFT
Pier 118 patching	350	SQFT
Pier 115 patching	200	SQFT
Pier 112 patching	550	SQFT
Pier 109 patching	550	SQFT
Pier 106 patching	750	SQFT
Pier 103 patching	800	SQFT
Misc. pier patching	450	SQFT
Total	4334	SQFT

Repairing Span 114 Beam 8 with CATStrong			Unit Price	Bridge Estimate
CATStrong on Span 114 with a 30% increase for indirect cost	1	EA	$581,100	$581,100
Add 4 rows of cathodic protection the entire length of the beam	496	LF	$53	$26,288
MOT setups based on Intech pricing adjusted for multi lane city street	28	days	$1,360	$38,080
Total for CatStrong				$645,468

Summary of Repairs for Bridge 056B00191N-A - I-65 over Jacob, Broadway, and Gray St.

Repairing Span 114 Beam 8 with FRP Wrap			Unit Price	Bridge Estimate
Assume entire length of Beam 8 will be wrapped full height, Spans 113 to 115	4071	SQFT	$51	$207,621
Add 4 rows of cathodic protection the entire length of the beam	496	LF	$53	$26,288
MOT setups based on Intech pricing adjusted for multi lane city street	28	days	$1,360	$38,080
Total for FRP Wrap				$271,989
Use an average cost of CATStrong and FRP Wrap - Place cost under miscellaneous				$458,729

Substructure Epoxy Injection		
Misc. Abutment	60	LF
Misc. Beam	196	LF
Misc. Pier	600	LF
Total	856	LF

Concrete Sealing		
Abutment = (10' tall) x (165' long)	1650	SQFT
Abutment Height = 4' front face + 2' beam seat + 4' backwall = 10'		
Pier caps - coat entire cap = (16' perimeter avg.) x (973' long)	15568	SQFT
Total	17218	SQFT

Miscellaneous	
Replace Entire Drainage System	$150,000
CATStrong	$459,000
Total	$609,000

Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	165	LF
Galvanic Cathodic Protection at Existing Pier Joints	973	LF
Total	1138	LF

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

CONTACT INFORMATION:

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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) *Unforeseen expenses that may arise during the repair process due to minor delays, additional parts, etc.*		**$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) *Unforeseen expenses that may arise during the repair process due to minor delays, additional parts, etc.*		**$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			$ 395.00	day	
	#	Mobilization-DeMobilization	$ 200.00	line item			
		^ Only (1) charge for Traffic Control regardless of No. of type(s)					
**		Fuel Surcharge "May Apply" UP TO>	$ 100.00	per unit, per day			

Summary of Repairs for Bridge 056B00191N-B - I-65 over Jacob, Broadway, and Gray St.

	Quantity	Units
Joint Rehabilitation		
Abutment Joint Elimination at all Abutments	165	LF
Pier Joint Elimination - Piers B-1, A-5, 109, 118	311	LF
Pier Joint Replacement - 103, 106, 112, 115, 121	662	LF
Deck:		
Replace median barrier to remove longitudinal joint.	1208	LF
Beams:		
See Miscellaneous for repair to the Span 114 Beams.		
See Concrete Patching Repairs for concrete beam repairs.		
Bearings:		
Bearing Conversions - Replace the bearings at Piers 106, 107, 109, 111, and 112 due to pier joint elimination. Spans 107-109 have 24 beam lines and Spans 110-112 have 21 beam lines.	180	EA
Bearing Conversions - Replace the bearings at Piers 115, 116, 118, 120, and 121 due to pier joint elimination. Spans 116-121 have 16 beam lines.	128	EA
Total	308	EA
Jack and Support Bridge Span - Spans 116-121	8	EA
Jack and Support Bridge Span - Spans 107-112	8	EA
Total	16	EA
Clean and grease CS3 moveable rocker bearings	29	EA
Blast Cleaning. Assume 3 sqft per bearing.	87	SQFT
Reset CS3 moveable rocker bearing	29	EA
Concrete Patching Repairs:		
Full depth deck patching	99	SQFT
Abutment backwall deterioration assume 3ft tall and 17ft long from CS3	51	SQFT
Misc. abutment delamination CS2	30	SQFT
Misc. Beam CS3 - excludes Span 114 Beam	104	SQFT
Pier 121 patching	400	SQFT
Pier 118 patching	350	SQFT
Pier 115 patching	200	SQFT
Pier 112 patching	550	SQFT
Pier 109 patching	550	SQFT
Pier 106 patching	750	SQFT
Pier 103 patching	800	SQFT
Misc. pier patching	450	SQFT
Total	4334	SQFT

Replace Beamline 8 in Spans 113, 114, & 115 with a prestressed beam.
Spans are: 92.42' - 123.58' - 92.42' = 309'
Existing Top of Deck to bottom of Beam = 5'-7"
Existing beam spacing 8'-0 1/2"
Based on the Florida-I Beam Tables a FIB 54" will work for a 124' span with 10'-0" beam spacing
54" beam with a 8" deck is 5'-2" so the clearance will work.
The FIB 54" is comparable to a HN 54 49.

Summary of Repairs for Bridge 056B00191N-B - I-65 over Jacob, Broadway, and Gray St.

			Unit Price	Bridge Estimate
HN 54 49	309	LF	$385	$118,965
Replace 11' of deck (8' beam spacing and 3' overhang)	89.2	CUYD	$733.26	$65,386
Removal of Deck and Beam	226.5	CUYD	$425.96	$96,482
Epoxy coated reinforcement 300lbs per CUYD of concrete	26751	LB	$1.18	$31,567
Add Pier Extensions to P113 and P114 - 3.5' x 3.5' x 5.75'	5.22	CUYD	$635.33	$3,315
Pier Extension Rebar 200 Lbs per CUYD	1044	LB	$1.18	$1,231
Bearing Pads	4	EA	$533	$2,132
MOT for below (similar cost as CatStrong)		LS		$50,000
MOT for I-65 from Westport Road		LS		$78,000
MOT signs from Westport Rd		LS		$5,000
MOT portable changeable message sign	3	each	$2,333	$6,999
MOT Arrow Panel from Westport Rd	2	each	$802	$1,604
MOT Concrete Barrier Wall from Westport road	750	LF	$26	$19,500
MOT Travel and Mobilization				$10,000
Place cathodic anode pucks at 2ft in deck	155	each	$40	$6,180
Total Beam Replacement - Place cost under miscellaneous				$496,361

Substructure Epoxy Injection		
Misc. Abutment	60	LF
Misc. Beam	196	LF
Misc. Pier	600	LF
Total	856	LF

Concrete Sealing		
Abutment = (10' tall) x (165' long)	1650	SQFT
Abutment Height = 4' front face + 2' beam seat + 4' backwall = 10'		
Pier caps - coat entire cap at joints = (16' perimeter avg.) x (973' long)	15568	SQFT
Total	17218	SQFT

Miscellaneous	
Replace Entire Drainage System	$150,000
Beam Replacement	$496,500
Total	$646,500

Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	165	LF
Galvanic Cathodic Protection at Existing Pier Joints	973	LF
Total	1138	LF

Summary of Repairs for Bridge 056B00192N - I-65 over Chestnut St.

	Quantity	Units
Joint Rehabilitation		
Abutment Joint Elimination	110	LF
Pier Joint Elimination - Pier 7	108	LF
Pier Joint Replacement - Pier 3	105	LF
Deck:		
Replace median barrier to remove longitudinal joint.	435	LF
Beams:		
See Concrete Patching Repairs for concrete beam repairs.		
Bearings:		
Bearing Conversions - Replace the bearings at Piers 3, 4, and the north abutment due to pier joint elimination. There are 14 beam lines per span.	56	EA
Jack and Support Bridge Span - Spans 4, 5, & 8	4	EA
Concrete Patching Repairs:		
Deck patching (CS3)	20	SQFT
Pier cap patching	1100	SQFT
Misc. beam patching	30	SQFT
Column patching	800	SQFT
Barrier patching	10	SQFT
No spalls or delamination at abutment	0	SQFT
Total	1960	SQFT
Substructure Epoxy Injection		
Abutment vertical cracking	135	LF
Misc. pier cap	80	LF
Total	215	LF
Concrete Sealing		
Abutment = (23' tall) x (110' long)	2530	SQFT
Abutment Height = 17' front face + 2' beam seat + 4' backwall = 23'		
Pier caps - coat entire cap at joints = (15' perimeter avg.) x (213' long)	3195	SQFT
Beam ends at existing joints	4032	SQFT
Total	9757	SQFT
Miscellaneous		
Replace Entire Drainage System	$75,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	110	LF
Galvanic Cathodic Protection at Existing Pier Joints	213	LF
Total	323	LF

Summary of Repairs for Bridge 056B00193N - I-65 over Brook St and Muhammad Ali

	Quantity	Units
Joint Rehabilitation		
Abutment Joint Replacement	454	LF
Pier Joint Replacement - Piers 2, 3, and 4	315	LF
Pier Joint Elimination - Pier 5	127	LF
Deck:		
Replace median barrier to remove longitudinal joint.	345	LF
Beams:		
No repairs noted		
Bearings:		
Bearing Conversions - Replace the bearings at Piers 4, 5, and Abutment 6 due to pier joint elimination. Spans have 14 beam lines	49	EA
Jack and Support Bridge Span	4	EA
Clean and grease pier bearings not replaced	65	EA
Assume 3sqft per bearing for blast cleaning	195	SQFT
Reset moveable bearings not replaced	29	EA
Concrete Patching Repairs:		
Abutment breastwall deterioration assume 2ft tall and 179ft long from CS3	358	SQFT
Misc. abutment delamination CS2	66	SQFT
Underside of deck patching	50	SQFT
Pier cap patching	650	SQFT
Column patching	250	SQFT
Barrier patching	175	SQFT
Total	1549	SQFT
Substructure Epoxy Injection		
Abut Cracking Vertical	100	LF
Pier Cap	100	LF
Total	200	LF
Concrete Sealing		
Abutment = (27' tall) x (454' long)	12258	SQFT
Abutment Height = 20' front face + 2' beam seat + 5' backwall = 27'		
Pier caps - coat entire cap at joints = (16' perimeter avg.) x (442' long)	7072	SQFT
Total	19330	SQFT
Clean and Paint		
Pain the girder ends with CS3 and CS4 paint failure	5688	SQFT
Miscellaneous		
Replace Entire Drainage System	$75,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	454	LF
Galvanic Cathodic Protection at Existing Pier Joints	442	LF
Total	896	LF

Summary of Repairs for Bridge 056B00194N - I-65 SB Ramp over Muhammad Ali

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	55	LF
Deck:		
Ramp bridge so no longitudinal joint.		
Beams:		
No repairs noted		
Bearings:		
Clean and grease all abutment bearings	8	EA
Blast Cleaning. Assume 3 sqft per bearing.	24	SQFT
Concrete Patching Repairs:		
Deck patching (CS3)	60	SQFT
Misc. abutment (CS2)	10	SQFT
Total	70	SQFT
Substructure Epoxy Injection		
Misc. abutment	30	LF
Total	30	LF
Concrete Sealing		
Abutment = (22' tall) x (55' long)	1210	SQFT
Abutment Height = 17' front face + 2' beam seat + 3' backwall = 22'		
Miscellaneous		
Remove vegetation on abutments and beams.	$2,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	55	LF

Summary of Repairs for Bridge 056B00196N - I-65 SB Ramp over Floyd St.

	Quantity	Units	Unit Price	Bridge Estimate
Joint Rehabilitation				
Abutment Joint Elimination	75	LF		
Pier Joint Replacement - Piers 2 and 3.	75	LF		
Deck:				
Ramp bridge so no longitudinal joint.				
Latex overlay assume 2" thick	29.5	CUYD		
Beams:				
No repairs noted no steel span. See Concrete Patching for end span beam repairs.				
Bearings:				
Clean and grease pier bearing under steel beams	10	EA		
Blast Cleaning. Assume 3 sqft per bearing.	30	SQFT		
Concrete Patching Repairs:				
Pier 2 patching	20	SQFT		
Underside of deck patching	50	SQFT		
Abutment patching	80	SQFT		
Misc. beam patching	25	SQFT		
Total	175	SQFT		
Incase the entire Pier 3 face and use cathodic protection			Unit Price	Bridge Estimate
Pier is 37ft wide by 17ft tall by 8" thick	15.5	CUYD	$635.33	$9,867.22
Assume 150LB of reinforcement per CUYD	2330	LB	$1.18	$2,748.96
Assume remove 90% of concrete put back	14	CUYD	$425.96	$5,953.97
Total LF of Cathodic Protection space at 2ft	314.5	LF	$53	$16,668.50
Add a 10% premium for the height of the piers and working above ground				$3,523.87
Total - Place cost under Miscellaneous				$38,762.53
Substructure Epoxy Injection				
Misc. Abutment	40	LF		
Misc. Pier	30	LF		
Total	70	LF		
Concrete Sealing				
Abutment = (6' tall) x (75' long)	450	SQFT		
Pier = (22' tall) x (75' long)	1650	SQFT		
Pier Height = 17' front face + 2' beam seat + 3' backwall = 22'				
Total	2100	SQFT		
Miscellaneous				
Pier 3 Concrete Repairs	$39,000			
Drain Pipe Repair	$20,000			
Total	$59,000			
Enhanced Durability				
Galvanic Cathodic Protection at Existing Abutment Joints	75	LF		
Galvanic Cathodic Protection at Existing Pier Joints	75	LF		
Total	150	LF		

Summary of Repairs for Bridge 056B00195R - I-65 NB over Floyd St.

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	153	LF
Deck:		
Remove longitudinal joint.	80	LF
Beams:		
No beam repairs noted.		
Bearings:		
Clean and grease all abutment bearings	20	EA
Blast Cleaning. Assume 3 sqft per bearing.	60	SQFT
Concrete Patching Repairs:		
Misc. abutment patching	65	SQFT
Substructure Epoxy Injection		
Abutment vertical cracking, full height	102	LF
Concrete Sealing		
Abutment = (23' tall) x (153' long)	3519	SQFT
Abutment Height = 18' front face + 2' beam seat + 3' backwall = 23'		
Miscellaneous		
Remove vegetation on abutments and beams.	$2,000	
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	153	LF

Summary of Repairs for Bridge 056B00197R - I-65 NB over Liberty St.

	Quantity	Units
Joint Elimination		
Abutment Joint Elimination	130	LF
Deck:		
Remove longitudinal joint.	98	LF
Beams:		
No beam repairs noted.		
Bearings:		
Clean and grease all abutment bearings	16	EA
Blast Cleaning. Assume 3 sqft per bearing.	48	SQFT
Reset all Abutment 2 bearings	8	EA
Concrete Patching Repairs:		
Underside of deck	40	SQFT
Abut 2 Under Girder 6	30	SQFT
Misc. abutment patching CS3 & CS2	110	SQFT
Total	180	SQFT
Substructure Epoxy Injection		
Abutment vertical cracking (12 x full height)	240	LF
Abutment horizontal cracking at top of wall	43	LF
Total	283	LF
Concrete Sealing		
Abutment = (23' tall) x (130' long)	2990	SQFT
Abutment Height = 18' front face + 2' beam seat + 3' backwall = 23'		
Enhanced Durability		
Galvanic Cathodic Protection at Existing Abutment Joints	130	LF