ADDENDUM NO. 1 TO ALTERNATIVE EVALUATION REPORT

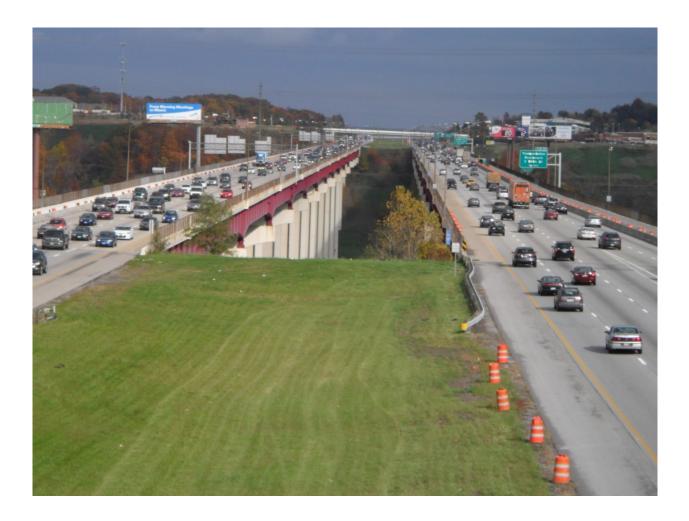
CUY-480-18.42 L/R, PID No. 90591

Interstate Route 480 over Cuyahoga River Valley

Independence, Valley View, and Garfield Heights Cuyahoga County, Ohio

February 17, 2014





ADDENDUM NO. 1 TO ALTERNATIVE EVALUATION REPORT CUY-480-18.42 L/R PID No. 90591

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EXECUTIVE SUMMARY

The proposed project began as a deck replacement on the Valley View Bridge carrying an average of 146,000 vehicles per day in 8 lanes of IR 480 over the Cuyahoga River Valley. About 8% of the traffic is heavy trucks. The twin structures are 4,155 feet long and up to 200 feet above the valley. The original reinforced concrete decks are 35 years old and have almost reached the end of their useful life.

The purpose of the project is to maintain the existing highway system in safe and serviceable condition. The bridge decks are deteriorating and in need of replacement to continue in a safe operating condition. The concrete bridge parapets do not meet current standards for interstate highway bridges.

An Alternatives Evaluation Report (AER) report by Richland Engineering Limited, dated November 22, 2013 was prepared. Several maintenance of traffic alternatives were developed and were presented in a separate Maintenance of Traffic Alternatives Analysis (MOTAA) report by Richland Engineering Limited, dated November 21, 2013.

The AER and MOTAA reports did not recommend a preferred alternative. ODOT's review of the documents agreed that the preliminary alternatives did not provide adequate capacity for maintaining traffic during construction and that the traffic capacity needed to increase. None of the preliminary alternatives were determined to be feasible. ODOT requested the development of two additional alternatives considering the need for traffic capacity increase.

The structures carry from 92,000 to 180,000 vehicles per day. The morning and evening peak hour distributions are nearly equal eastbound and westbound. ODOT District 12 prepared a basic freeway capacity analysis and Simplified Highway Forecasting Tool (SHIFT) forecast. The analysis suggested that 5 lanes in each direction are needed to meet demand for the design hour traffic 20 years forward. The estimated 2038 ADT is 182,000 with a Level of Service (LOS) = D.

Constructing a new bridge in the median is an advantage for minimizing impact to daily users during construction. For this reason, new alternatives were developed beginning with construction of a new bridge in the median similar to Alternative 5 in the AER. The two additional alternatives are: Alternative 6 – New Structure in Median and Re-Deck Existing Structures for a total of 6 lanes in each direction; and Alternative 7 – Two New 5 Lane Bridges.

Alternative 6 would build a new four lane bridge in the median and maintain four lanes of traffic in each direction with minimal disruption. The new bridge would be 85 feet wide and add two lanes in each direction. A new deck would be constructed full width on the existing eastbound and westbound structures. The final configuration would have six lanes in each direction.

Opinions of probable construction cost and a life cycle cost analysis were prepared for comparing alternatives.

Alternative 6 is the recommended preferred alternative for the following reasons:

- impacts to users during construction.
- 0 projects. Alternative 6 provides 6 lanes in each direction.
- Alternative 6 allows for full width bridge deck replacement on the existing structures. 0
- Alternative 6 is the lowest initial construction cost (\$255 M) of the feasible alternatives. 0
- Alternative 6 is the lowest net present value (\$245 M) of the feasible alternatives. 0
- Alternative 6 requires no additional right of way. 0
- Alternative 6 can be delivered in two sequential construction contracts for cash flow purposes. 0

• There are short term benefits for maintaining traffic during construction. There are minimal

Alternative 6 increased traffic capacity to meet future needs. There are long term benefits for increased traffic capacity for reduced congestion and future maintenance of traffic during repair



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INTRODUCTION

The proposed project began as a deck replacement on the twin structures carrying IR 480 over the Cuyahoga River Valley. The bridge crosses over the CSX Railroad, the Cuyahoga River, Cleveland Metroparks Ohio and Erie Canal Reservation and Towpath Trail, West Canal Road, the Ohio Canal, and Canal Road. (See Picture #1.)



Picture #1 – General view looking northwest.

The CUY-480-1842 L&R, Valley View Bridge was opened to traffic in 1978. Each four lane structure consists of a 69'-6" roadway face to face of parapet supported by continuous steel stringers, trussed steel floorbeams, and built-up haunched continuous steel plate girders on 75 to 185 feet tall concrete piers and abutments. The twin structures are 4,155 feet long. The original black steel reinforced concrete decks are 35 years old and have reached the end of their useful life. A superplasticized dense concrete overlay placed in 1990 has preserved the decks to this age.

The purpose of the project is to maintain the existing highway system in safe and serviceable condition. The bridge decks are deteriorating and in need of replacement to continue in a safe operating condition. The concrete bridge parapets do not meet current standards for interstate highway bridges.

The current traffic on the CUY-480-1842 L&R Bridge is estimated at an average of 146,000 vehicles per day with 8% trucks. The structures carry from 92,000 to 180,000 vehicles per day. The weekday

average daily traffic is 163,000 vehicles and the weekend average daily traffic is 104,000 vehicles. The morning and afternoon directional peak hours occur at the same times in both directions. Weekday morning peak hours are from 6:00 AM through 10:00 AM and the afternoon peak hours are 2:00 PM through 6:00 PM. These eight hours contribute 55% of the total average daily traffic volume. The morning and afternoon peak hour distributions are nearly equal eastbound and westbound. Maintaining traffic during construction and minimizing disruption to the traveling public is a primary concern in the project development.

Thirteen maintenance of traffic conceptual alternatives were developed and presented in a Maintenance of Traffic Alternatives Analysis (MOTAA) report dated November 21, 2013 by Richland Engineering Limited. Four of the conceptual alternatives were eliminated because the existing bridge deck cannot be widened more than two feet. One alternative was eliminated because there was no advantage over another alternative. The moveable median barrier and rapid deck replacement alternatives were determined not feasible. Alternative 6 - building express lanes in the median did not meet the initial purpose and need for the project and was determined to be too costly to be developed further.

The five remaining conceptual alternatives were developed in more detail in the Alternatives Evaluation Report (AER) by Richland Engineering Limited, dated November 22, 2013. The preliminary engineering study includes field inspections and investigations; data collection; structural analyses; preliminary designs; conceptual maintenance of traffic schemes; constructability evaluation; environmental inventory; and construction cost estimates for improvements. The AER includes a description of existing conditions; a number of detailed investigations and studies; and preliminary design drawings. Alternative comparison matrices and construction options are included.

The AER and MOTAA reports did not recommend a preferred alternative. Each of the five alternatives had issues that could not be resolved. ODOT's review of the documents resulted in a scope modification meeting on January 15, 2014. ODOT determined that alternatives that do not construct a new bridge in the median as the first step have an unacceptable impact on users during construction. ODOT requested the development of two additional alternatives and consideration of the need for a traffic capacity increase. A life cycle cost analysis and an addendum to the AER were requested. The information was developed as support for a project presentation to the ODOT Project Impact Advisory Council (PIAC) on February 14, 2014.

ODOT District 12 prepared a basic freeway capacity analysis and Simplified Highway Forecasting Tool (SHIFT) forecast. The analysis indicated that 5 lanes in each direction are needed to meet demand for the design hour traffic 20 years forward. The estimated 2038 ADT is 182,000 with a Level of Service (LOS) = D.

The two additional alternatives are: Alternative 6 – New Structure in Median and Re-Deck Existing Structures for a total of 6 lanes in each direction; and Alternative 7 – Two New 5 Lane Bridges. Alternative 6 is the same alternative that was eliminated in the MOTAA for not meeting the initial purpose and need for the project.

The purpose of this Addendum is to develop and present the two additional alternatives and comparative information including a life cycle cost analysis. Three alternatives developed in more detail in the November 22, 2013, Alternatives Evaluation Report were dismissed due to unacceptable mainline traffic



queues and delays for four construction seasons and for the magnitude of parallel route local road improvements needed. Other alternatives were dismissed because there was no increase in future traffic capacity.

A comparison of Alternatives 6 and 7 found:

- o Both had minimal impact on users during construction
- Both increased traffic capacity to meet future needs
- Alternative 6 allows for full width bridge deck replacement on the existing structures
- Alternative 6 provides two more lanes than Alternative 7
- Alternative 6 (\$255 M) is less initial construction cost than Alternative 7 (\$347 M)
- The Alternative 6 (\$245 M) net present value is less than Alternative 7 (\$305 M)
- Alternative 7 constructs all new bridges
- Alternative 6 requires no additional right of way and Alternative 7 does require additional permanent right of way
- Alternative 6 can be delivered in two sequential construction contracts for cash flow purposes

Alternative 6 – New Structure in Median and Re-Deck Existing Structures with 6 lanes in each direction - is the recommended preferred alternative. There are short term benefits for maintaining traffic during construction of the deck replacement project. There are long term benefits for the capacity increase for reduced congestion and future maintenance of traffic during repair projects.

MAINTENANCE OF TRAFFIC ALTERNATIVES

Two additional alternatives have been developed: Alternative 6 – New Structure in Median and Re-Deck Existing Structures and Alternative 7 – Two New Bridges. Alternative 6 is the same alternative that was eliminated in the MOTAA for not meeting the original purpose and need for the project.

Bridge Phased Construction Transverse Sections and Plan Views of Tie-in Roadway Alignments are included in the Appendix for Alternatives 6 and 7. The additional preliminary alternatives are described as follows:

Alternative 6 – New Structure in Median and Re-Deck Existing Structures

The alternative would build a new four lane bridge in the median and maintain four lanes of traffic in each direction with minimal disruption. The new bridge would be 85 feet wide and add two lanes in each direction. This concept was part of the HNTB preliminary engineering studies for the bridge in 1967. A new deck would be constructed on the existing eastbound and westbound structures. The final configuration would have six lanes in each direction.

<u>Bridge Construction</u> - Construct the new 85 feet wide out/out of deck westbound bridge in the median while traffic remains in the normal locations on the existing bridges. Eastbound traffic would temporarily be moved to the new median bridge. Replace the deck on the eastbound bridge in one year with no traffic on the bridge under construction. The proposed eastbound toe/toe parapets width would be 72 feet. Eastbound traffic would be moved to the re-decked eastbound structure and westbound traffic would temporarily be moved to the new median bridge. Replace the deck on the westbound be 72 feet. Eastbound traffic would be moved to the re-decked eastbound structure and westbound traffic would temporarily be moved to the new median bridge. Replace the deck on the westbound bridge in one year with no traffic on the bridge under construction. The proposed westbound toe/toe

parapets width would be 72 feet. The approach tie-in pavement work would be completed and traffic would be moved to the final locations.

<u>Construction Duration</u> – Three years is the estimated time to construct the new bridge in the median. Traffic on IR 480 would not be affected by this construction activity. An additional two years would be needed to complete the construction of the new deck on the eastbound and westbound bridges. The project construction duration is 5 years.

<u>User Delays During Construction</u> – There would be minimal disruption to traffic during construction. No lanes would be eliminated. Lanes would remain 12 feet wide. The disruption would be overnight changes of alignment from one bridge to another. Short term ramp closures from Transportation Boulevard and to the IR 77 ramps will be required to provide new pavement tie-in to the revised bridge alignment.

Alternative 7 – Two New Bridges

The alternative would build a new five lane eastbound bridge in the median and maintain four lanes of traffic in each direction with minimal disruption. A new five lane westbound bridge would be constructed on the north side of the new median bridge. The existing eastbound and westbound structures would be completely demolished. The final configuration would have five lanes in each direction.

<u>Bridge Construction</u> - Construct the new 84 feet toe/toe parapets eastbound structure in the median while traffic remains in the normal locations on the existing bridges. Westbound traffic would temporarily be moved to the new median bridge. Demolish the existing westbound bridge. Construct the new 84 feet toe/toe parapets westbound structure on the north side of the new median bridge. The approach tie-in pavement work would be completed and traffic would be moved to the final locations.

<u>Construction Duration</u> – Three years is the time estimated to construct the new bridge in the median. Traffic on IR 480 would not be affected by this construction activity. Construction of portions of the new westbound bridge substructure could begin during this time. An additional three years would be needed to complete the demolition of the existing westbound bridge and construct the new westbound bridge. The project construction duration is 6 years.

<u>User Delays During Construction</u> – There would be minimal disruption to traffic during construction. No lanes would be eliminated. Lanes would remain 12 feet wide. The disruption would be overnight changes of alignment from one bridge to another. Short term ramp closures from Transportation Boulevard and to the IR 77 ramps will be required to provide new pavement tie-in to the revised bridge alignment.

<u>Right of Way</u> – Alternative 7 is the only alternative that would require acquisition of additional right of way. A strip of permanent right of way about 26 feet wide would be needed through the valley on the north side of the existing right of way. The right of way area would be about 2.5 acres and is estimated to cost about \$300,000.



ECONOMIC ANALYSIS OF FEASIBLE ALTERNATIVES

Alternative 6 – New Bridge in Median, New Deck on WB & EB Bridges; and Alternative 7 – Two New Bridges have been determined to be feasible alternatives and will be further evaluated with a life cycle cost analysis. Alternative 1 - New Deck on WB & EB Bridges; Alternative 3.a – Widen Both Bridges; Alternative 3.b – Widen New EB Bridge; Alternative 3.c – Widen EB Superstructure and Substructure: and Alternative 5 – New Bridge in Median, New Deck on EB Bridge, Demolish WB Bridge are not considered feasible alternatives, but are included in the life cycle cost analysis for comparison.

Inspection and Routine Maintenance Costs

Annual bridge inspections are performed by Consultants. The cost for the 2014 annual inspection of the existing structures is \$43,315. The economic analysis used the following average cost per year for annual bridge inspection:

Alternative 1 - New Deck on WB & EB Bridges	\$50,000
Alternative 3.a – Widen Both Bridges	\$50,000
Alternative 3.b – Widen New EB Bridge	\$50,000
Alternative 3.c – Widen EB Superstructure and Substructure	\$55,000
Alternative 5 – New Steel Bridge in Median, New Deck on EB Bridge	\$50,000
Alternative 5 – New Concrete Bridge in Median, New Deck on EB Bridge	\$40,000
Alternative 6 – New Steel Bridge in Median, New Deck on WB & EB Bridges	\$70,000
Alternative 6 – New Concrete Bridge in Median, New Deck on WB & EB Bridg	es \$60,000
Alternative 7 – Two New Steel Bridges	\$50,000
Alternative 7 – Two New Concrete Bridges	\$40,000

Alternative 6 has a larger deck area than Alternative 7. A steel structure will have more maintenance required than a concrete structure. Routine maintenance by District personnel was estimated as follows for the different type structures:

Alternative 1 - New Deck on WB & EB Bridges	\$40,000
Alternative 3.a – Widen Both Bridges	\$40,000
Alternative 3.b – Widen New EB Bridge	\$40,000
Alternative 3.c – Widen EB Superstructure and Substructure	\$45,000
Alternative 5 – New Steel Bridge in Median, New Deck on EB Bridge	\$40,000
Alternative 5 – New Concrete Bridge in Median, New Deck on EB Bridge	\$30,000
Alternative 6 – New Steel Bridge in Median, New Deck on WB & EB Bridges	\$50,000
Alternative 6 – New Concrete Bridge in Median, New Deck on WB & EB Bridges	\$40,000
Alternative 7 – Two New Steel Bridges	\$40,000
Alternative 7 – Two New Concrete Bridges	\$30,000

Maintenance Intervals

The following maintenance intervals are estimated to maintain minimum condition coding levels:

\$ A concrete overlay should be placed at 20 year intervals on the concrete deck.

- \$ A concrete deck should be replaced after 50 years in service.
- intervals.
- patching and sealing; and replacing joint seals.

Construction Costs

Estimated quantities were developed for each construction or maintenance project. Unit costs were based on Estimator values and engineering judgment in reviewing past similar projects. Estimates were prepared for a base date of 1/1/2018 and inflation was included to the midpoint of construction as 1/1/2020. Opinions of probable construction costs are on a planning level basis.

For the purpose of this study, the initial construction cost for new concrete structure types and new steel structure types are estimated to be the same.

Detailed unit price opinions of probable construction cost estimates for Alternatives 6 and 7 are included in the Appendix. Opinions of probable construction cost estimates for other alternatives are in the Alternatives Evaluation Report dated November 22, 2013.

Residual Value

The residual value (or salvage value) is the value of the constructed project at the end of the 50 year study period. Alternative 6 reuses the existing substructure and existing steel superstructure. The existing structure would be 90 years old at the end of the study period. The substructure would have a residual value of 50% of the original substructure construction cost. The superstructure would have no residual value at the end of the study period.

The residual value of the new superstructure would be no value for a concrete structure type and 50% value of the steel structure type construction cost.

The residual value of a new substructure would be 75% of the substructure construction cost.

User Costs During Construction

The feasible alternatives, and future maintenance and rehabilitation projects provide for maintaining four or more lanes of traffic in each direction at all times. Therefore, no differential user costs would occur. There will be user delays due to construction activities and narrow lanes during construction, but costs are not considered significant and would be the same for all alternatives.

\$ An IZEU paint system at the expansion joints should be removed and repainted at 20 year

\$ Minor rehabilitation and repair work should be performed at 20 year intervals at the same time as the deck overlay work. The work may include: drainage repair; end slope repair; concrete



Life Cycle Costs

The life cycle cost includes all inspection, maintenance, repair, and construction over a 50 year time period. The 50 year time period was selected as the normal service life of a concrete deck.

Non-Cash Benefits

Other benefits are included in the economic analysis, but without an assigned cash value.

The economic benefit of keeping the IR 480 Bridge in service (i.e. retaining a structure over the Cuyahoga River Valley) far exceeds the costs of any of these alternatives. Therefore the alternative of abandoning the existing bridges and forcing motorists to use adjacent state routes was not considered. Also, keeping the IR 480 Bridge in service is an equal economic benefit to all alternatives, and therefore this economic effect was neglected in the computations.

Time Value of Money

Capital investment decisions usually involve comparison of benefits. However, money paid at two different points in time has different values. This difference in value is accounted for by comparing the net present value (NPV) of project alternatives using an appropriate discount rate.

Discount Rate

The annual discount rate used in the analysis is 1.9%. The value is from the December 2013 Office of Management and Budget (OMB) Circular No. A-94, Appendix C, Real Discount Rate. FHWA literature and several life cycle cost analyses reference OMB Circular No. A-94. The December 2013 data is the latest available information.

Net Present Value

The net present value (NPV), or present worth, analysis method was used to compare the mutually exclusive alternatives at the study year 2018.

$$NPV = \sum_{t=0}^{n} \frac{RCF_{t}}{(1+i)^{t}}$$

 $RCF_t = Real Cash Flow$ i = Annual Discount Rate n = 50 years

The net present value is independent of inflation rate.

Annual Net Equivalent Value

The annual net equivalent value (ANEV) has been calculated to compare the annual cost of the alternatives.

$$ANEV = NP\sqrt{\frac{i \cdot (1+i)^n}{(1+i)^n - 1}}$$

NPV = Net Present Value i = Annual Discount Rate n = 50 years

Summary

The results of the life cycle cost analysis are tabulated:

LIFE CYCLE COST ANALYSIS SUMMARY										
Alternative	Net Present Value	Annual Net Equivalent Value								
 1 – Deck Replacement - Maintain 3 Lanes WB and 4 Lanes EB 	\$157,008,153	\$4,892,047								
Alternative 3.a – Widen Both Bridges	\$134,437,005	\$4,188,777								
Alternative 3.b – Widen New EB Bridge	\$165,840,342	\$5,167,240								
Alternative 3.c – Widen EB Superstructure and Substructure	\$172,926,151	\$5,388,019								
5 – New Steel WB Bridge in Median, New Deck on EB, Demolish WB Bridge	\$193,981,818	\$6,044,070								
5 – New Concrete WB Bridge in Median, New Deck on EB, Demolish WB Bridge	\$206,286,375	\$6,427,454								
6 – New Steel Bridge in Median, New Deck on WB & EB Bridges	\$244,689,522	\$7,624,016								
6 – New Concrete Bridge in Median, New Deck on WB & EB Bridges	\$259,335,299	\$8,080,348								
7- Two New Steel Bridges	\$304,801,547	\$9,496,982								
7- Two New Concrete Bridges	\$335,870,730	\$10,465,033								

The NPV of the alternatives is influenced in large part by the initial construction cost. The larger residual value of the new steel bridge alternatives lowers their NPV in relation to the new concrete bridge alternatives.

Alternative 6 – New Steel Bridge in Median, New Deck on WB & EB Bridges, Median Express Lanes has the lowest NPV of the alternatives that construct more than 8 lanes.



ALTERNATIVES COMPARISON

Construction cost estimates were prepared based on preliminary estimated quantities and unit prices using Estimator software. Estimates were prepared for a base date of 1/1/2018 and inflation was included to the midpoint of construction as 1/1/2020. Construction would extend from 2018 through 2022. Detailed unit price opinions of probable construction costs for Alternatives 6 and 7 are included in the Appendix. Opinions of probable construction costs for other alternatives are in the Alternatives Evaluation Report dated November 22, 2013. The full amount of the parallel route diverted traffic improvements including widening has been included for Alternatives 1 and 3.b in this tabulation.

	0	PINION OF PROBA	BLE INITIAL CON	STRUCTION COST	SUMMARY		
Feasible Alternative	1 – Deck Replacement - Maintain 3 Lanes WB and 4 Lanes EB	3.a – Widen Both Bridges	3.b – Widen New EB Bridge	3.c – Widen EB Superstructure & Substructure	5 – New WB Bridge in Median, New Deck on EB, Demolish WB Bridge	6 – New Bridge in Median, RE-Deck WB & EB Bridges	7 – Two New Bridges
Roadway	\$115,915	\$116,069	\$116,023	\$116,745	\$669,335	\$1,492,700	\$1,058,856
Erosion Control	\$170,746	\$170,746	\$170,745	\$246,217	\$360,186	\$311,403	\$284,125
Drainage	\$175,720	\$175,720	\$175,720	\$213,700	\$514,428	\$1,315,516	\$1,311,604
Pavement	\$988,630	\$1,098,788	\$1,096,821	\$1,104,572	\$2,402,575	\$5,556,559	\$3,876,940
Lighting	\$742,873	\$742,873	\$742,873	\$776,766	\$881,481	\$1,479,032	\$1,050,797
Traffic Control	\$256,138	\$260,529	\$264,307	\$350,088	\$361,457	\$733,320	\$407,504
Maintenance of Traffic	\$4,011,179	\$4,268,089	\$4,074,208	\$2,968,135	\$546,159	\$1,066,133	\$569,441
Maintenance of Traffic Temporary Drainage	\$69,700	\$1,541,255	\$1,012,410	\$55,750	\$0	\$0	\$0
Bridge CUY-480-1842L	\$25,275,398	\$25,275,398	\$25,275,398	\$25,275,398	\$92,487,559	\$25,275,398	\$105,238,422
Cost to Widen Existing Bridge CUY-480-1842L	\$0	\$3,247,501	\$0	\$0	\$0	\$0	\$0
Cost to Widen New Bridge CUY-480-1842L	\$0	\$4,398,025	\$0	\$0	\$0	\$4,398,025	\$0
New Bridge CUY-480-1842C	\$0	\$0	\$0	\$0	\$0	\$88,868,859	\$0
Bridge CUY-480-1842R	\$24,966,801	\$25,311,801	\$24,966,801	\$24,966,801	\$25,004,448	\$25,004,448	\$105,260,050
Cost to Widen New Bridge CUY-480-1842R	\$0	\$4,397,123	\$4,397,123	\$40,527,574	\$4,397,123	\$4,397,123	\$0
Miscellaneous	\$3,975,779	\$4,387,952	\$3,975,779	\$4,400,124	\$4,375,779	\$4,375,779	\$4,375,779
Design Contingency	\$9,112,332	\$11,308,780	\$9,940,232	\$15,150,281	\$19,800,079	\$24,641,144	\$33,515,028
Inflation	\$24,451,424	\$30,345,227	\$26,672,955	\$40,653,253	\$53,130,214	\$66,120,404	\$89,931,992
Total	\$94,312,635	\$117,045,876	\$102,881,395	\$156,805,404	\$204,930,823	\$255,035,844	\$346,880,538
Parallel Route Upgrade Existing Intersections	\$0	\$5,516,300	\$0	\$5,516,300	\$0	\$0	\$0
Parallel Route Diverted Traffic Improvements	\$51,774,900	\$0	\$51,774,900	\$0	\$0	\$0	\$0
Project Total	\$146,087,535	\$122,562,176	\$154,656,295	\$162,321,704	\$204,930,823	\$255,035,844	\$346,880,538



			AI	TERNATIVE COM	PARISON			
Alternative	Existing Condition	1 – Deck Replacement - Maintain 3 Lanes WB and 4 Lanes EB	3.a – Widen Both Bridges	3.b – Widen New EB Bridge	3.c – Widen EB Superstructure & Substructure	5 – New WB Bridge in Median, New Deck on EB, Demolish WB Bridge	6 – New Bridge in Median, New Deck on WB & EB Bridges	7- Two New Bridges
Number Lanes Maintained	4 WB & 4 EB	3 WB, 4 EB	4 WB & 4 EB	3 WB Phase 1&2, 4 WB – Phase 3&4; 4 EB	4 WB & 4 EB	4 WB & 4 EB	4 WB & 4 EB	4 WB & 4 EB
MOT Minimum Lane Width	NA	11'	10'	10'	11'	12'	12'	12'
Final Number of Lanes	8	8	8	8	10	8	12	10
New Westbound Bridge Width	69'-6"	70'-0"	72'-0"	70'-0"	70'-0"	72'-0"	72'-0"	84'-0"
New Median Bridge Width	NA	NA	NA	NA	NA	NA	40'-0" + 40'-0"	NA
New Eastbound Bridge Width	69'-6"	70'-0"	72'-0"	72'-0"	93'-0"	72'-0"	72'-0"	84'-0"
Design Exception	NA	Bridge Shoulder Width	None	WB Shoulder Width	WB Shoulder Width None		Bridge Shoulder Width on median bridge	None
Number of Scuppers added for MOT with ¹ /2" shoulder cross slope	NA	None	42	21	None None		None	None
Number MOT Phases	NA	4	4	4	5	1	2	2
Maximum MOT Queue Westbound	None	49 miles	13 miles	47 miles	9 miles 7 miles		7 miles	7 miles
Maximum MOT Queue Eastbound	None	12 miles	18 miles	12 miles	8 miles	2 miles	2 miles	2 miles
MOTEC Exception	NA	On Bridge & EB Approach	EB Approach	On Bridge & EB Approach	EB Approach	No	No	No
Parallel Route Improvements	NA	Existing and Diverted (\$51 M)	Existing (\$5.5 M)	Existing and Diverted (\$51 M)	Existing (\$5.5 M)	None	None	None
Project Cost	NA	\$146 M	\$123 M	\$155 M	\$162 M	\$205 M	\$255 M	\$347 M
Net Present Value (Steel Structures)	NA	\$157 M	\$134 M	\$166 M	\$173 M	\$194 M	\$245 M	\$305 M
Project Duration	NA	5 years	5 ¹ / ₂ years	5 years	6 years	5 years	5 years	6 years
Traffic Disruption	NA	4 construction seasons	4 construction seasons	4 construction seasons	5 construction seasons	None	None	None
Notes	NA	Close 1 WB lane for 4 seasons	10' lanes	10' lanes, Close 1 WB lane for 2 seasons	Preference not to widen existing bridge	No capacity increase	12 Lanes	Need additional permanent right of way
Reason Dismissed	NA	Queue Length, No Capacity Increase	Queue Length, 10' Lanes, No Capacity Increase	Queue Length, 10' Lanes, No Capacity Increase	No WB Capacity Increase	No Capacity Increase	Preferred	Higher Cost



EVALUATION AND RECOMMENDATION

Alternatives Evaluation

Alternative 1 - Maintain 3 Lanes Westbound and 4 Lanes Eastbound on Bridge

Alternative 1 is the second least construction cost of all the alternatives. It causes the most disruption to the daily users of IR 480. One westbound lane would be closed for four construction seasons. A MOTEC exception request is needed for reduced number of lanes westbound on the bridge and the eastbound approach to the bridge.

Parallel route intersection and roadway improvements along Granger Road and Rockside Road will require additional strip right of way and will affect utilities.

Alternative 1 has been removed from further consideration due to unacceptable mainline traffic queues and delays for four construction seasons; and for the magnitude of parallel route local road improvements needed for diverted traffic. In addition, there is no provision for future increased eastbound or westbound traffic capacity.

Alternative 3.a - Widen Existing and New Bridge Decks

Alternative 3.a is the least cost construction project. It maintains four lanes of traffic in each direction for the duration of the work. However, the maintained lane widths are only a narrow 10 feet. The 10 feet width is the minimum allowed, but is not typically used on interstate highways or zones this long. The lane width can be increased to 10'-6" for additional cost by reducing the shoulders from 3 feet to 2 feet. A MOTEC exception request is needed for reduced number of lanes on the eastbound approach to the bridge.

Alternative 3.a has been removed from further consideration due to unacceptable mainline traffic queues and delays for four construction seasons; and for narrow 10 feet maintenance of traffic lanes. In addition, there is no provision for future increased eastbound or westbound traffic capacity.

Alternative 3.b – Widen New Bridge Deck

The additional cost for widening the existing bridge to maintain eight lanes of traffic in Alternative 3.a is offset by the additional cost of parallel route improvements needed with the westbound lane closure in Alternative 3.b. Alternative 3.b has more impact on daily users than Alternative 3.a because one westbound lane is closed for two construction seasons. Alternative 3.a is preferred over Alternative 3.b.

Parallel route intersection and roadway improvements along Granger Road and Rockside Road will require additional strip right of way and will affect utilities.

Alternative 3.b has been removed from further consideration due to unacceptable mainline traffic queues and delays for four construction seasons; for narrow 10 feet maintenance of traffic lanes; and for the magnitude of parallel route local road improvements needed for diverted traffic. In addition, there is no provision for future increased eastbound or westbound traffic capacity.

Alternative 3.c – Widen Eastbound Superstructure and Substructure

Alternative 3.c is \$40 million (33%) more cost than Alternative 3.a. The advantage is that eight lanes of traffic are maintained at all times in minimum 11 feet lanes. No MOTEC exception request is needed.

There is also added permanent eastbound bridge width that can be utilized for a fifth and sixth additional lanes. The additional bridge width would also be useful for maintaining traffic for future maintenance projects.

Alternative 3.c has been removed from further consideration due to mainline traffic queues and delays with 11 feet lanes for five construction seasons; and for the complexity of widening the existing substructure and superstructure. In addition, there is no provision for future increased westbound traffic capacity.

Alternative 5 – New Westbound Bridge in Median

Alternative 5 is the highest cost of all the projects that provide 8 lanes in the final condition. Alternative 5 has minimal impact to daily users over the 5 year construction project because a new bridge is constructed in the median first. Eight 12 feet lanes of traffic are maintained at all times. There would only be very minor disruptions for changing lane positions and approach transitions. No MOTEC exception request is needed.

Alternative 5 has been removed from further consideration because there is no provision for future increased eastbound or westbound traffic capacity.

Constructing a new bridge in the median demonstrates an advantage for minimizing impact to daily users during construction. For this reason, Alternatives 6 and 7 were developed.

Alternative 6 - New Structure in Median and Re-Deck Existing Structures

Alternative 6 is the least initial construction cost of the feasible alternatives. It has minimal impact to daily users over the 5 year construction project because a new bridge is constructed in the median first. Eight 12 feet lanes of traffic are maintained at all times. There would only be very minor disruptions for changing lane positions and approach transitions. No MOTEC exception request is needed. Alternative 6 increases future capacity with four additional permanent lanes to meet future traffic needs.

Alternative 6 allows for full width bridge deck replacement on the existing structures. This avoids issues with secondary stresses from differential displacements during phased part-width construction. The contractor has control of the entire structure and is most likely to complete an entire bridge deck in one construction season.

Building the bridge decks full width also avoids the issue with re-distribution of new concrete parapet loads to the fascia girders that overloaded the pier cap cantilevers. No pier cap strengthening would be required if the deck is formed conventionally. If stay-in-place forms are used the caps at pier 12 would need to be strengthened with a carbon fiber wrap.



A design exception would be required for the new median bridge shoulder widths. There is not enough space between the existing structures to provide the required 12 feet shoulders. Shoulders of 6 feet left and 10 feet right could be constructed.

Alternative 6 is the recommended preferred alternative.

<u>Alternative 7 – Two New Bridges</u>

Alternative 7 is the highest cost of all the projects. It has minimal impact to daily users over the 6 year construction project because a new bridge is constructed in the median first. Eight 12 feet lanes of traffic are maintained at all times. There would only be very minor disruptions for changing lane positions and approach transitions. No MOTEC exception request is needed. Alternative 7 increases future capacity with two additional permanent lanes to meet future traffic needs.

Alternative 7 is the only alternative that would require acquisition of additional right of way. A strip of permanent right of way about 26 feet wide would be needed through the valley on the north side of the existing right of way. The right of way area would be about 2.5 acres and is estimated to cost about \$300,000.

Alternative 7 has been removed from further consideration because it is the highest initial construction cost and has the highest net present value.



Recommendation

Alternative 6 - New Structure in Median and Re-Deck Existing Structures is the recommended preferred alternative. A comparison of feasible Alternatives 6 and 7 found:

- Both had minimal impact on users during construction
- Both increased traffic capacity to meet future needs 0
- Alternative 6 allows for full width bridge deck replacement of the existing structures
- Alternative 6 provides two more lanes than Alternative 7 in the final condition
- Alternative 6 (\$255 M) is less initial construction cost than Alternative 7 (\$347 M) 0
- The Alternative 6 (\$245 M) net present value is less than the Alternative 7 (\$305 M) net present 0 value
- Alternative 6 requires no additional right of way and Alternative 7 does require additional 0 permanent right of way

Preferred Alternative 6 is the least cost feasible alternative. There are short term benefits for maintaining traffic during construction of the deck replacement project. There are long term benefits for the capacity increase for reduced congestion and future maintenance of traffic during repair projects.

Right of Way

No mainline IR 480 permanent or temporary right of way is required for construction of Alternative 6. The leased areas beneath the bridge should be vacated during construction. This would be for safety reasons during work on the bridge structures above. The contractor will also need to use the area for contractor equipment access to work on pier concrete repairs and the steel superstructure from below; and underground storm drainage repairs and improvements.

Environmental Impacts

Constructing additional piers within the existing right of way should have no environmental impact.

Suspending the mainline IR 480 lease agreements during the construction period and adding pier foundations would impact the MetroParks. ODOT leases a portion of the right-of-way under the IR 480 structures to Cleveland MetroParks as part of the Ohio and Erie Canal Reservation. The lease includes the right-of-way from the Ohio and Erie Canal west to the Cuyahoga River. There are no recreation facilities between West Canal Road and the Cuyahoga River. Any effect on the leased area should be coordinated with Cleveland MetroParks.

Structure Type Study

The next step in the project development should be a structure type study. The study should consider constructability. Setting new beams in the median will be difficult because of the proximity of the existing bridges. A gantry crane spanning between the existing bridges may be one solution for placing new beams.

The study should also consider bridge inspection of the finished structure. Snooper access will be limited to only the outside fascia girders. There will be no space between the existing and new bridges.

Inspection catwalks, ladders, and platforms may be needed in addition to inspection safety bars and cables. Concrete segmental box type structures would need to consider outside inspection access.

Possible new structure types may include:

- Haunched continuous steel girders with intermediate stringers and floorbeams (similar to the existing structure type) with composite concrete deck
- Haunched continuous steel beams with composite concrete deck
- o Continuous steel delta frame girders with intermediate stringers and floorbeams with composite concrete deck
- Continuous steel box beams with composite concrete deck
- Cast-in-place segmental continuous concrete twin box
- Precast segmental continuous concrete twin box
- Prestressed haunched continuous spliced concrete I-beams with composite concrete deck

The structure type study should be completed as part of a Stage 1 preliminary design submission. A value engineering study should be performed at the same time as the Stage 1 submission review.

Funding Strategy

A possible contracting strategy for funding cash flow purposes could consider two construction contracts for Alternative 6. Contract #1 could be sold in FY 2018 at an estimated \$140 Million. The first contract would be for the new structure in the median. Completion would be in 2020. Contract #2 would be sold in FY 2021 for re-decking the existing structures at an inflation adjusted estimated \$120 Million. The inflation adjusted total estimated cost would be \$260 Million. Completion would be in 2022.



ADDENDUM NO. 1 TO ALTERNATIVE EVALUATION REPORT

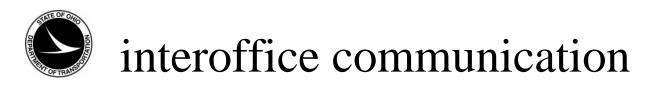
CUY-480-18.42 L/R, PID No. 90591

APPENDIX

Simplified Capacity Analysis Design Year Traffic Life Cycle Cost Analysis Annual Costs – Alternative 1 – New Deck on WB & EB Bridges Annual Costs – Alternative 3.a – Widen Both Bridges Annual Costs – Alternative 3.b – Widen New EB Bridge Annual Costs – Alternative 3.c – Widen EB Superstructure and Substructure Annual Costs – Alternative 5 – New Steel Bridge in Median, New Deck on EB Bridge, Demolish WB Bridge Annual Costs – Alternative 5 – New Concrete Bridge in Median, New Deck on EB Bridge, Demolish WB Bridge Annual Costs – Alternative 6 – New Steel Bridge in Median, New Deck on WB & EB Bridges Annual Costs – Alternative 6 – New Concrete Bridge in Median, New Deck on WB & EB Bridges Annual Costs – Alternative 7 – Two New Steel Bridges Annual Costs – Alternative 7 – Two New Concrete Bridges **Residual Value Opinions of Probable Construction Cost** Alternative 6 - New Structure in Median and Re-Deck Existing Structures Alternative 6 – Contract 1 of 2 Alternative 6 – Contract 2 of 2 Alternative 6 – LCCA Overlay at 20 Year Intervals Alternative 6 – LCCA Zone Paint Existing Steel at 20 Year Intervals Alternative 6 – LCCA Zone Paint New Steel at 20 Year Intervals Alternative 7 - Two New Structures Alternative 7 – LCCA Overlay at 20 Year Intervals Alternative 7 – LCCA Zone Paint New Steel at 20 Year Intervals Alternative Drawings Alternative 6 - New Structure in Median and Re-Deck Existing Structures - Bridge Phases Alternative 6 - New Structure in Median and Re-Deck Existing Structures - Approach Tie-In Drawings Alternative 7 - Two New Structures - Bridge Phases Alternative 7 - Two New Structures - Approach Tie-In Drawings







TO: Michael Kubek, District 12 Planning Engineer	DATE:	January 14, 2014					
FROM: Brian Blayney, Traffic Planning Engineer							
SUBJECT: Simplified Capacity Analysis, CUY-480-18.42, PID 90591	1						

To follow-up our 12/19/13 conference call with key Central Office staff, as requested I have used the SHIFT tool to forecast for design year traffic volumes for the link of I-480 between the I-77 and the Transportation Blvd, the segment containing the bridges in the subject project. SHIFT results for Design Year 2038 are summarized as follows:

CUY 00480 18	.25 - 18.69
2013 ADT:	150,000
2038 ADT:	182,000
К:	0.09
2038 DHV:	16,000
D:	0.53
T24:	0.05
TD:	0.02

These values can be input into HCS to approximate the capacity of basic freeway segments for different lane configurations. Under the following simple assumptions, estimated capacities for 4 and 5 lane sections are summarized in the table below:

- 1. Only "design hour" is considered (D*DHV = 8480.)
- 2. I-480 EB uphill grade modeled as specific grade, 2.62% uphill for 2.10 miles
- 3. Preferential lane use to/from adjacent interchanges and weaving movements are not accounted for. Lane loadings are assumed to be equal.

PID 90591 Simplified Capacity Analysis										
Basic Number of Lanes	I-480 EB Uphill	I-480 WB Downhill								
	(Density pc/mi/lane)	(Density pc/mi/lane)								
4 Lanes Each Direction	LOS E (42.8)	LOS E (40.3)								
5 Lanes Each Direction	LOS D (29.0)	LOS D (27.8)								

Under this simplified analysis, it appears that 5 lanes of travel in each direction can be expected to produce a satisfactory level of service in this segment for design year traffic as forecast by SHIFT, comfortably within the LOS D density range of 26 to 35 pc/mi/lane.

Please contact me if you have any questions or require additional details.

LDH:MJK:BMB

c: S. Deer; P. Sritalapat; B. Kruse; D. Palmer (REL); PID 90591

ANNUAL COSTS

All costs in 2018 dollars, no cost of money included

ALTERNATIVE 1 - New Deck on EB & WB Bridge

Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost	Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost
2018	\$50,000	\$40,000	Initial Construction	\$146,000,000	\$0	\$146,090,000	2018	\$50,000	\$40,000	Initial Construction	\$123,000,000	\$0	\$123,090,000
2019	\$50,000	\$40,000		\$0	\$0	\$90,000	2019	\$50,000	\$40,000		\$0	\$0	\$90,000
2020	\$50,000	\$40,000	Paint Existing Structures	\$5,000,000	\$0	\$5,090,000	2020	\$50,000	\$40,000	Paint Existing Structure	\$5,000,000	\$0	\$5,090,000
2021	\$50,000	\$40,000		\$0	\$0	\$90,000	2021	\$50,000	\$40,000		\$0	\$0	\$90,000
2022	\$50,000	\$40,000		\$0	\$0	\$90,000	2022	\$50,000	\$40,000		\$0	\$0	\$90,000
2023	\$50,000	\$40,000		\$0	\$0	\$90,000	2023	\$50,000	\$40,000		\$0	\$0	\$90,000
2024	\$50,000	\$40,000		\$0	\$ 0	\$90,000	2024	\$50,000	\$40,000		\$0	\$O	\$90,000
2025	\$50,000	\$40,000		\$0	\$0	\$90,000	2025	\$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000
2026	\$50,000	\$40,000		\$0	\$0	\$90,000	2026 2027	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000
2027	\$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2028	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000
2028 2029	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2029	\$50,000	\$40,000		\$0	\$0	\$90,000
2029	\$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2030	\$50,000	\$40,000		\$0	\$0	\$90,000
2031	\$50,000	\$40,000		\$0	\$0 \$0	\$90,000	2031	\$50,000	\$40,000		\$0	\$0	\$90,000
2032	\$50,000	\$40,000		\$0	\$0	\$90,000	2032	\$50,000	\$40,000		\$0	\$0	\$90,000
2033	\$50,000	\$40,000		\$0	\$0	\$90,000	2033	\$50,000	\$40,000		\$0	\$0	\$90,000
2034	\$50,000	\$40,000		\$0	\$0	\$90,000	2034	\$50,000	\$40,000		\$0	\$0	\$90,000
2035	\$50,000	\$40,000		\$0	\$0	\$90,000	2035	\$50,000	\$40,000		\$0	\$0	\$90,000
2036	\$50,000	\$40,000		\$0	\$0	\$90,000	2036	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000
2037	\$50,000	\$40,000		\$0	\$0	\$90,000	2037 2038	\$50,000 \$50,000	\$40,000 \$40,000	Overlay & Repair	م ں \$15,000,000	\$0 \$0	\$90,000 \$15,090,000
2038	\$50,000	\$40,000	Overlay & Repair	\$15,000,000	\$0 \$0	\$15,090,000	2039	\$50,000	\$40,000	Overlay & Repair	\$0	\$0 \$0	\$90,000
2039 2040	\$50,000 \$50,000	\$40,000 \$40,000	Paint Existing Structures	\$0 \$5,000,000	\$0 \$0	\$90,000 \$5,090,000	2040	\$50,000	\$40,000	Paint Existing Structure	\$5,000,000	\$0	\$5,090,000
2040	\$50,000 \$50,000	\$40,000	Faint Existing Structures	\$0,000,000 \$0	\$0 \$0	\$90,000	2041	\$50,000	\$40,000		\$0	\$0	\$90,000
2042	\$50,000	\$40,000		\$0	\$0	\$90,000	2042	\$50,000	\$40,000		\$0	\$0	\$90,000
2043	\$50,000	\$40,000		\$0	\$0	\$90,000	2043	\$50,000	\$40,000		\$0	\$0	\$90,000
2044	\$50,000	\$40,000		\$0	\$0	\$90,000	2044	\$50,000	\$40,000		\$0	\$0	\$90,000
2045	\$50,000	\$40,000		\$0	\$0	\$90,000	2045	\$50,000	\$40,000		\$0	\$0	\$90,000
2046	\$50,000	\$40,000		\$0	\$0	\$90,000	2046	\$50,000	\$40,000		\$0	\$0	\$90,000
2047	\$50,000	\$40,000		\$0	\$0	\$90,000	2047	\$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000
2048	\$50,000	\$40,000		\$0	\$0	\$90,000	2048 2049	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000
2049	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2049	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000
2050 2051	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000	2051	\$50,000	\$40,000		\$0 \$0	\$0	\$90,000
2052	\$50,000	\$40,000		\$0	\$0	\$90,000	2052	\$50,000	\$40,000		\$0	\$0	\$90,000
2053	\$50,000	\$40,000		\$0	\$0	\$90,000	2053	\$50,000	\$40,000		\$0	\$0	\$90,000
2054	\$50,000	\$40,000		\$0	\$0	\$90,000	2054	\$50,000	\$40,000		\$0	\$0	\$90,000
2055	\$50,000	\$40,000		\$0	\$0	\$90,000	2055	\$50,000	\$40,000		\$0	\$0	\$90,000
2056	\$50,000	\$40,000		\$0	\$0	\$90,000	2056	\$50,000	\$40,000		\$0	\$0	\$90,000
2057	\$50,000	\$40,000		\$0	\$0	\$90,000	2057	\$50,000	\$40,000	Overlay & Beneir	\$0 \$15,000,000	\$0 \$0	\$90,000
2058	\$50,000	\$40,000	Overlay & Repair	\$15,000,000	\$0 ¢0	\$15,090,000	2058 2059	\$50,000 \$50,000	\$40,000 \$40,000	Overlay & Repair	\$15,000,000 \$0	\$0 \$0	\$15,090,000 \$90,000
2059	\$50,000	\$40,000	Paint Existing Structures	\$0 \$5,000,000	\$0 \$0	\$90,000 \$5,000,000	2060	\$50,000	\$40,000	Paint Existing Structure	\$5,000,000	\$0	\$5,090,000
2060 2061	\$50,000 \$50,000	\$40,000 \$40,000	Faint Existing Structures	\$5,000,000 \$0	\$0 \$0	\$5,090,000 \$90,000	2061	\$50,000	\$40,000	. and Existing Outdould	\$0,000,000	\$0	\$90,000
2062	\$50,000	\$40,000		\$0	\$0 \$0	\$90,000	2062	\$50,000	\$40,000		\$0	\$0	\$90,000
2063	\$50,000	\$40,000		\$0	\$0	\$90,000	2063	\$50,000	\$40,000		\$0	\$0	\$90,000
2064	\$50,000	\$40,000		\$0	\$0	\$90,000	2064	\$50,000	\$40,000		\$0	\$0	\$90,000
2065	\$50,000	\$40,000		\$0	\$0	\$90,000	2065	\$50,000	\$40,000		\$0	\$0	\$90,000
2066	\$50,000	\$40,000		\$0	\$0	\$90,000	2066	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 (\$42,000,000)	\$90,000 (\$41,010,000)
2067	\$50,000	\$40,000		\$0	(\$42,000,000)	(\$41,910,000)	2067	\$50,000	\$40,000		\$0	(\$42,000,000)	(\$41,910,000)
TOTAL	\$2,500,000	\$2,000,000		\$191,000,000	(\$42,000,000)	\$153,500,000	TOTAL	\$2,500,000	\$2,000,000		\$168,000,000	(\$42,000,000)	\$130,500,000
NPV at 1.9%	\$1,604,728	\$1,283,783		\$170,508,175	(\$16,388,533)	\$157,008,153	NPV at 1.9%	\$1,604,728	\$1,283,783		\$147,937,027	(\$16,388,533)	\$134,437,005
ANEV at 1.9%	\$50,000	\$40,000		\$5,312,680	(\$510,633)	\$4,892,047	ANEV at 1.9%	\$50,000	\$40,000		\$4,609,410	(\$510,633)	\$4,188,777

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ANNUAL COSTS

ALTERNATIVE 3.a - Replace Decks, Widen Both Bridges

LIFE CYCLE COST ANALYSIS

All costs in 2018 dollars, no cost of money included

Richland Engineering Limited

ALTERNATIVE 3.b - Replace Decks, Widen New EB Bridge

ANNUAL COSTS

ALTERNATIVE 3.c - Replace Decks, Widen EB Superstructure and Substructure

Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost	Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost
2018	\$50,000	\$40,000	Initial Construction	\$155,000,000	\$0	\$155,090,000	2018	\$55,000	\$45,000	Initial Construction	\$162,000,000	\$0	\$162,100,000
2019	\$50,000	\$40,000		\$0	\$0	\$90,000	2019	\$55,000	\$45,000		\$0	\$0	\$100,000
2020	\$50,000 \$50,000	\$40,000	Paint Existing Structure	\$5,000,000	\$0 \$0	\$5,090,000	2020	\$55,000	\$45,000	Paint Existing Structure	\$5,000,000	\$0 \$0	\$5,100,000
2021 2022	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2021 2022	\$55,000 \$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000 \$100,000
2022	\$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2023	\$55,000	\$45,000		\$0 \$0	\$0 \$0	\$100,000
2024	\$50,000	\$40,000		\$0	\$0	\$90,000	2024	\$55,000	\$45,000		\$0	\$0	\$100,000
2025	\$50,000	\$40,000		\$0	\$0	\$90,000	2025	\$55,000	\$45,000		\$0	\$0	\$100,000
2026	\$50,000	\$40,000		\$0	\$0	\$90,000	2026	\$55,000	\$45,000		\$0	\$0	\$100,000
2027	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000 \$00,000	2027	\$55,000 \$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000
2028 2029	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2028 2029	\$55,000 \$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000 \$100,000
2029	\$50,000	\$40,000		\$0 \$0	\$0	\$90,000	2030	\$55,000	\$45,000		\$0 \$0	\$0 \$0	\$100,000
2031	\$50,000	\$40,000		\$0	\$0	\$90,000	2031	\$55,000	\$45,000		\$0	\$0	\$100,000
2032	\$50,000	\$40,000		\$0	\$0	\$90,000	2032	\$55,000	\$45,000		\$0	\$0	\$100,000
2033	\$50,000	\$40,000		\$0	\$0	\$90,000	2033	\$55,000	\$45,000		\$0	\$0	\$100,000
2034	\$50,000	\$40,000		\$0	\$0	\$90,000	2034	\$55,000	\$45,000		\$0	\$0	\$100,000
2035	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2035 2036	\$55,000 \$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000
2036 2037	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000	2030	\$55,000 \$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000 \$100,000
2038	\$50,000	\$40,000	Overlay & Repair	\$15,000,000	\$0	\$15,090,000	2038	\$55,000	\$45,000	Paint, Overlay & Repair	\$18,000,000	\$0	\$18,100,000
2039	\$50,000	\$40,000		\$0	\$0	\$90,000	2039	\$55,000	\$45,000		\$0	\$0	\$100,000
2040	\$50,000	\$40,000	Paint Existing Structure	\$5,000,000	\$0	\$5,090,000	2040	\$55,000	\$45,000	Paint Existing Structure	\$5,000,000	\$0	\$5,100,000
2041	\$50,000	\$40,000		\$0	\$0	\$90,000	2041	\$55,000	\$45,000		\$0	\$0	\$100,000
2042	\$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2042	\$55,000	\$45,000		\$0 \$0	\$0 *0	\$100,000
2043 2044	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2043 2044	\$55,000 \$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000 \$100,000
2044	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2044	\$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000
2046	\$50,000	\$40,000		\$0	\$0 \$0	\$90,000	2046	\$55,000	\$45,000		\$0	\$0 \$0	\$100,000
2047	\$50,000	\$40,000		\$0	\$0	\$90,000	2047	\$55,000	\$45,000		\$0	\$O	\$100,000
2048	\$50,000	\$40,000		\$0	\$0	\$90,000	2048	\$55,000	\$45,000		\$0	\$0	\$100,000
2049	\$50,000	\$40,000		\$0	\$0	\$90,000	2049	\$55,000	\$45,000		\$0	\$0 \$0	\$100,000
2050	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2050 2051	\$55,000 \$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000
2051 2052	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000	2052	\$55,000 \$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000 \$100,000
2053	\$50,000	\$40,000		\$0 \$0	\$0	\$90,000	2053	\$55,000	\$45,000		\$0	\$0	\$100,000
2054	\$50,000	\$40,000		\$0	\$0	\$90,000	2054	\$55,000	\$45,000		\$0	\$0	\$100,000
2055	\$50,000	\$40,000		\$0	\$0	\$90,000	2055	\$55,000	\$45,000		\$0	\$0	\$100,000
2056	\$50,000	\$40,000		\$0	\$0	\$90,000	2056	\$55,000	\$45,000		\$0	\$0	\$100,000
2057	\$50,000	\$40,000	Overlay & Repair	\$0 \$15,000,000	\$0 \$0	\$90,000 \$15,000,000	2057	\$55,000 \$55,000	\$45,000 \$45,000	Daint Quarlay & Danair	\$0 \$18,000,000	\$0 \$0	\$100,000
2058 2059	\$50,000 \$50,000	\$40,000 \$40,000	Overlay & Repair	\$15,000,000 \$0	\$0 \$0	\$15,090,000 \$90,000	2058 2059	\$55,000 \$55,000	\$45,000 \$45,000	Paint, Overlay & Repair	\$18,000,000 \$0	\$0 \$0	\$18,100,000 \$100,000
2060	\$50,000	\$40,000	Paint Existing Structure	\$5,000,000	\$0	\$5,090,000	2060	\$55,000	\$45,000	Paint Existing Structure	\$5,000,000	\$0	\$5,100,000
2061	\$50,000	\$40,000	5	\$0	\$O	\$90,000	2061	\$55,000	\$45,000	Ŭ	\$0	\$0	\$100,000
2062	\$50,000	\$40,000		\$0	\$0	\$90,000	2062	\$55,000	\$45,000		\$0	\$0	\$100,000
2063	\$50,000	\$40,000		\$0 ***	\$0	\$90,000	2063	\$55,000	\$45,000		\$0	\$0 \$0	\$100,000
2064	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2064	\$55,000 \$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000 \$100,000
2065 2066	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2065 2066	\$55,000 \$55,000	\$45,000 \$45,000		\$0 \$0	\$0 \$0	\$100,000 \$100,000
2067	\$50,000	\$40,000		\$0	(\$42,000,000)	(\$41,910,000)	2067	\$55,000	\$45,000		\$0 \$0	(\$51,000,000)	(\$50,900,000)
TOTAL	\$2,500,000	\$2,000,000		\$200,000,000	(\$42,000,000)	\$162,500,000	TOTAL	\$2,750,000	\$2,250,000		\$213,000,000	(\$51,000,000)	\$167,000,000
NPV at 1.9%	\$1,604,728	\$1,283,783		\$179,340,364	(\$16,388,533)	\$165,840,342	NPV at 1.9%	\$1,765,201	\$1,444,256		\$189,617,056	(\$19,900,362)	\$172,926,151
ANEV at 1.9%	\$50,000	\$40,000		\$5,587,873	(\$510,633)	\$5,167,240	ANEV at 1.9%	\$55,000	\$45,000		\$5,908,073	(\$620,054)	\$5,388,019

All costs in 2018 dollars, no cost of money included

ANNUAL COSTS All costs in 2018 dollars, no cost of money included

ALTERNATIVE :	5 - New Steel I	Bridge in Media	n, New Deck on EB Bridge	, Demolish WB Bri	idge						Construction		
		Routine	Construction	Construction Project	Residual		Year	Inspection	Routine Maintenance	Construction Project	Project Cost	Residual Value	Cost
Үеаг	Inspection	Maintenance	Project	Cost	Value	Cost	2018	\$40,000	\$30,000	Initial Construction	\$205,000,000	\$0	\$205,070,000
							2019	\$40,000	\$30,000		\$0	\$0	\$70,000
2018	\$50,000	\$40,000	Initial Construction	\$205,000,000	\$0	\$205,090,000	2020	\$40,000	\$30,000	Paint Existing Structure	\$3,000,000	\$0	\$3,070,000
2019	\$50,000	\$40,000	Delet Evisting Obvision	\$0	\$0	\$90,000	2021	\$40,000	\$30,000		\$0	\$0	\$70,000
2020 2021	\$50,000 \$50,000	\$40,000 \$40,000	Paint Existing Structure	\$3,000,000 \$0	\$0 \$0	\$3,090,000 \$90,000	2022	\$40,000	\$30,000		\$0	\$0	\$70,000
2022	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2023	\$40,000	\$30,000		\$0	\$0	\$70,000
2023	\$50,000	\$40,000		\$0	\$0	\$90,000	2024	\$40,000	\$30,000		\$0	\$0	\$70,000
2024	\$50,000	\$40,000		\$0	\$0	\$90,000	2025	\$40,000	\$30,000		\$0	\$0	\$70,000
2025	\$50,000	\$40,000		\$0	\$0	\$90,000	2026	\$40,000	\$30,000		\$0	\$0	\$70,000
2026	\$50,000	\$40,000		\$0	\$0	\$90,000	2027	\$40,000	\$30,000		\$0	\$0	\$70,000
2027	\$50,000	\$40,000		\$O	\$0	\$90,000	2028	\$40,000	\$30,000		\$0 *0	\$0 \$0	\$70,000 \$70,000
2028 2029	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2029 2030	\$40,000 \$40,000	\$30,000 \$30,000		\$0 \$0	\$0 \$0	\$70,000
2029	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2030	\$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000
2031	\$50,000	\$40,000		\$0	\$0	\$90,000	2032	\$40,000	\$30,000		\$0	\$0	\$70,000
2032	\$50,000	\$40,000		\$0	\$0	\$90,000	2033	\$40,000	\$30,000		\$0	\$0	\$70,000
2033	\$50,000	\$40,000		\$0	\$0	\$90,000	2034	\$40,000	\$30,000		\$0	\$0	\$70,000
2034	\$50,000	\$40,000		\$0	\$0	\$90,000	2035	\$40,000	\$30,000		\$0	\$0	\$70,000
2035	\$50,000	\$40,000		\$0	\$0	\$90,000	2036	\$40,000	\$30,000		\$0	\$0	\$70,000
2036	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2037	\$40,000	\$30,000		\$0	\$0	\$70,000
2037 2038	\$50,000 \$50,000	\$40,000 \$40,000	Paint, Overlay & Repair	هں \$17,000,000	\$0 \$0	\$90,000 \$17,090,000	2038	\$40,000	\$30,000	Overlay & Repair	\$15,000,000	\$0	\$15,070,000
2039	\$50,000	\$40,000	Tant, Ovenay a Nepan	\$0	\$0	\$90,000	2039	\$40,000	\$30,000		\$0	\$0	\$70,000
2040	\$50,000	\$40,000	Paint Existing Structure	\$3,000,000	\$0	\$3,090,000	2040	\$40,000	\$30,000	Paint Existing Structure	\$3,000,000	\$0	\$3,070,000
2041	\$50,000	\$40,000	· ·	\$0	\$0	\$90,000	2041 2042	\$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000 \$70,000
2042	\$50,000	\$40,000		\$0	\$0	\$90,000	2042	\$40,000 \$40,000	\$30,000 \$30,000		\$0 \$0	\$0 \$0	\$70,000
2043	\$50,000	\$40,000		\$0	\$0	\$90,000	2043	\$40,000 \$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000
2044	\$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2045	\$40,000	\$30,000		\$0	\$0	\$70,000
2045 2046	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2046	\$40,000	\$30,000		\$0	\$0	\$70,000
2040	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0	\$90,000	2047	\$40,000	\$30,000		\$0	\$0	\$70,000
2048	\$50,000	\$40,000		\$0	\$0	\$90,000	2048	\$40,000	\$30,000		\$0	\$0	\$70,000
2049	\$50,000	\$40,000		\$0	\$0	\$90,000	2049	\$40,000	\$30,000		\$0	\$0	\$70,000
2050	\$50,000	\$40,000		\$0	\$0	\$90,000	2050	\$40,000	\$30,000		\$0	\$0	\$70,000
2051	\$50,000	\$40,000		\$0	\$0	\$90,000	2051	\$40,000	\$30,000		\$0	\$0	\$70,000
2052	\$50,000	\$40,000		\$0 \$0	\$0	\$90,000	2052	\$40,000	\$30,000		\$0	\$0 \$0	\$70,000
2053 2054	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2053	\$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000
2054	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2054 2055	\$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000 \$70,000
2056	\$50,000	\$40,000		\$0	\$0	\$90,000	2055	\$40,000 \$40,000	\$30,000 \$30,000		\$0 \$0	\$0 \$0	\$70,000
2057	\$50,000	\$40,000		\$0	\$0	\$90,000	2057	\$40,000	\$30,000		\$0 \$0	\$0	\$70,000
2058	\$50,000	\$40,000	Paint, Overlay & Repair	\$17,000,000	\$0	\$17,090,000	2058	\$40,000	\$30,000	Overlay & Repair	\$15,000,000	\$0	\$15,070,000
2059	\$50,000	\$40,000		\$0	\$0	\$90,000	2059	\$40,000		· · · · · · · · · · · · · · · · · · ·	\$0	\$0	\$70,000
2060	\$50,000	\$40,000	Paint Existing Structure	\$3,000,000	\$0	\$3,090,000	2060	\$40,000		Paint Existing Structure	\$3,000,000	\$0	\$3,070,000
2061 2062	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2061	\$40,000			\$0	\$0	\$70,000
2063	\$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2062	\$40,000			\$0	\$0	\$70,000
2064	\$50,000	\$40,000		\$0	\$0	\$90,000	2063	\$40,000			\$O	\$0	\$70,000
2065	\$50,000	\$40,000		\$0	\$0	\$90,000	2064	\$40,000			\$0 \$0	\$0 \$0	\$70,000 \$70,000
2066	\$50,000	\$40,000		\$0	\$0	\$90,000	2065 2066	\$40,000 \$40,000			\$0 \$0	\$0 \$0	\$70,000 \$70,000
2067	\$50,000	\$40,000		\$0	(\$91,000,000)	(\$90,910,000)	2000	\$40,000			\$0 \$0	(\$52,000,000)	(\$51,930,000)
TOTAL	\$2,500,000	\$2,000,000		\$248,000,000	(\$91,000,000)	\$161,500,000	TOTAL	\$2,000,000			\$244,000,000	(\$52,000,000)	\$195,500,000
NPV at 1.9%	\$1,604,728	\$1,283,783		\$226,601,795	(\$35,508,489)	\$193,981,818	NPV at 1.9%	\$1,283,783			\$224,330,321	(\$20,290,565)	\$206,286,375
ANEV at 1.9%	\$50,000	\$40,000		\$7,060,440	(\$1,106,371)	\$6,044,070	ANEV at 1.9%	\$40,000			\$6,989,666	(\$632,212)	\$6,427,454

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Richland Engineering Limited

ANNUAL COSTS

ALTERNATIVE 5 - New Concrete Bridge in Median, New Deck on EB Bridge, Demolish WB Bridge

All costs in 2018 dollars, no cost of money included

ANNUAL COSTS

All costs in 2018 dollars, no cost of money included

	6 - New Steel E	Bridge in Media	n, New Deck on WB & EB E	Bridges								Construction		
		Routine	Construction	Construction Project	Residual			Year	Inspection	Routine Maintenance	Construction Project	Project Cost	Residual Value	Cost
Year	Inspection	Maintenance	Project	Cost	Value	Cost		2018	\$60,000	\$40,000	Initial Construction	\$255,000,000	\$0	\$255,100,000
2019	¢70.000	¢50,000	Initial Construction	\$255 000 000	¢0,	¢255 420 000		2019	\$60,000	\$40,000		\$0	\$0	\$100,000
2018 2019	\$70,000 \$70,000	\$50,000 \$50,000	Initial Construction	\$255,000,000 \$0	\$0 \$0	\$255,120,000 \$120,000		2020	\$60,000	\$40,000	Paint Existing Structures	\$5,000,000	\$0	\$5,100,000
2019	\$70,000	\$50,000	Paint Existing Structures	\$5,000,000	\$0 \$0	\$5,120,000		2021	\$60,000	\$40,000	-	\$0	\$0	\$100,000
2021	\$70,000	\$50,000		\$0	\$0	\$120,000		2022	\$60,000	\$40,000		\$0	\$0	\$100,000
2022	\$70,000	\$50,000		\$0	\$0	\$120,000		2023	\$60,000	\$40,000		\$0	\$0	\$100,000
2023	\$70,000	\$50,000		\$0	\$0	\$120,000		2024	\$60,000	\$40,000		\$0	\$0	\$100,000
2024	\$70,000	\$50,000		\$0	\$0	\$120,000		2025	\$60,000	\$40,000		\$0 \$0	\$0 *0	\$100,000
2025	\$70,000	\$50,000		\$0 \$0	\$0 \$0	\$120,000		2026	\$60,000	\$40,000		\$0 \$0	\$0 \$0	\$100,000 \$100,000
2026 2027	\$70,000 \$70,000	\$50,000 \$50,000		\$0 \$0	\$0 \$0	\$120,000 \$120,000		2027 2028	\$60,000 \$60,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$100,000
2027	\$70,000	\$50,000		\$0 \$0	\$0 \$0	\$120,000		2028	\$60,000	\$40,000		\$0 \$0	\$0 \$0	\$100,000
2029	\$70,000	\$50,000		\$0	\$0	\$120,000		2023	\$60,000	\$40,000		\$0	\$0	\$100,000
2030	\$70,000	\$50,000		\$0	\$0	\$120,000		2031	\$60,000	\$40,000		\$0	\$0	\$100,000
2031	\$70,000	\$50,000		\$0	\$0	\$120,000		2032	\$60,000	\$40,000		\$0	\$0	\$100,000
2032	\$70,000	\$50,000		\$0	\$0	\$120,000		2033	\$60,000	\$40,000		\$0	\$0	\$100,000
2033	\$70,000	\$50,000		\$0 ©	\$0	\$120,000		2034	\$60,000	\$40,000		\$0	\$0	\$100,000
2034 2035	\$70,000 \$70,000	\$50,000 \$50,000		\$0 \$0	\$0 \$0	\$120,000 \$120,000		2035	\$60,000	\$40,000		\$0	\$0	\$100,000
2035	\$70,000	\$50,000		\$0 \$0	\$0 \$0	\$120,000		2036	\$60,000	\$40,000		\$0	\$0	\$100,000
2037	\$70,000	\$50,000		\$0	\$0	\$120,000		2037	\$60,000	\$40,000		\$0	\$0	\$100,000
2038	\$70,000	\$50,000	Paint, Overlay & Repair	\$25,000,000	\$0	\$25,120,000		2038	\$60,000	\$40,000	Overlay & Repair	\$23,000,000	\$0 *0	\$23,100,000
2039	\$70,000	\$50,000		\$0	\$0	\$120,000		2039	\$60,000	\$40,000	Paint Existing Structures	\$0 \$5,000,000	\$0 \$0	\$100,000 \$5,100,000
2040	\$70,000	\$50,000	Paint Existing Structures	\$5,000,000	\$0	\$5,120,000		2040 2041	\$60,000 \$60,000	\$40,000 \$40,000	Paint Existing Structures	\$5,000,000 \$0	\$0 \$0	\$100,000
2041	\$70,000	\$50,000		\$0	\$0	\$120,000		2041	\$60,000	\$40,000		\$0 \$0	\$0	\$100,000
2042	\$70,000 \$70,000	\$50,000		\$0 \$0	\$0 \$0	\$120,000		2042	\$60,000	\$40,000		\$0 \$0	\$0	\$100,000
2043 2044	\$70,000 \$70,000	\$50,000 \$50,000		\$0 \$0	\$0 \$0	\$120,000 \$120,000		2044	\$60,000	\$40,000		\$0	\$0	\$100,000
2044	\$70,000	\$50,000		\$0 \$0	\$0 \$0	\$120,000		2045	\$60,000	\$40,000		\$0	\$0	\$100,000
2046	\$70,000	\$50,000		\$0	\$0	\$120,000		2046	\$60,000	\$40,000		\$0	\$0	\$100,000
2047	\$70,000	\$50,000		\$0	\$0	\$120,000		2047	\$60,000	\$40,000		\$0	\$0	\$100,000
2048	\$70,000	\$50,000		\$0	\$0	\$120,000		2048	\$60,000	\$40,000		\$0	\$0	\$100,000
2049	\$70,000	\$50,000		\$0	\$0	\$120,000		2049	\$60,000	\$40,000		\$0	\$O	\$100,000
2050	\$70,000 \$70,000	\$50,000 \$50,000		\$0 \$0	\$0 \$0	\$120,000 \$120,000		2050	\$60,000	\$40,000		\$0 \$0	\$0 \$0	\$100,000
2051 2052	\$70,000 \$70,000	\$50,000 \$50,000		\$0 \$0	\$0 \$0	\$120,000		2051	\$60,000	\$40,000		\$0 \$0	\$0 \$0	\$100,000 \$100,000
2053	\$70,000	\$50,000		\$0	\$0	\$120,000		2052 2053	\$60,000 \$60,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$100,000
2054	\$70,000	\$50,000		\$0	\$0	\$120,000		2053	\$60,000			\$0 \$0	\$0 \$0	\$100,000
2055	\$70,000	\$50,000		\$0	\$0	\$120,000		2055	\$60,000	\$40,000		\$Ŭ	\$0	\$100,000
2056	\$70,000	\$50,000		\$0	\$0	\$120,000		2056	\$60,000	\$40,000		\$0	\$0	\$100,000
2057	\$70,000	\$50,000		\$0	\$O	\$120,000		2057	\$60,000			\$0	\$0	\$100,000
2058	\$70,000 \$70,000	\$50,000	Paint, Overlay & Repair	\$25,000,000	\$0 \$0	\$25,120,000		2058	\$60,000		Overlay & Repair	\$23,000,000	\$0	\$23,100,000
2059 2060	\$70,000 \$70,000	\$50,000 \$50,000	Paint Existing Structures	مو \$5,000,000	\$0 \$0	\$120,000 \$5,120,000		2059	\$60,000			\$0	\$0	\$100,000
2061	\$70,000	\$50,000	T and Existing Official Co	\$0	\$0	\$120,000		2060	\$60,000		Paint Existing Structures	\$5,000,000	\$0	\$5,100,000
2062	\$70,000	\$50,000		\$0	\$0	\$120,000		2061	\$60,000			\$0 \$0	\$0	\$100,000
2063	\$70,000	\$50,000		\$0	\$0	\$120,000		2062	\$60,000			\$0 \$0	\$0 \$0	\$100,000
2064	\$70,000	\$50,000		\$0	\$0	\$120,000		2063	\$60,000			\$0 \$0	\$0 \$0	\$100,000 \$100,000
2065	\$70,000	\$50,000		\$0 \$0	\$0 \$0	\$120,000		2064 2065	\$60,000 \$60,000			\$0 \$0	\$0 \$0	\$100,000
2066	\$70,000 \$70,000	\$50,000 \$50,000		\$0 \$0	\$0 (\$123.000.000)	\$120,000 (\$122,880,000)		2065	\$60,000			\$0 \$0	\$0 \$0	\$100,000
2067	\$70,000	\$50,000		\$0	(\$123,000,000)	(\$122,880,000)		2007	\$60,000			\$0	(\$78,000,000)	(\$77,900,000)
TOTAL	\$3,500,000	\$2,500,000		\$320,000,000	(\$123,000,000)	\$203,000,000		TOTAL	\$3,000,000			\$316,000,000	(\$78,000,000)	\$243,000,000
NPV at 1.9%	\$2,246,620	\$1,604,728		\$288,833,164	(\$47,994,991)	\$244,689,522		NPV at 1.9%	\$1,925,674			\$286,561,690	(\$30,435,848)	\$259,335,299
ANEV at 1.9%	\$70,000	\$50,000		\$8,999,440	(\$1,495,424)	\$7,624,016		ANEV at 1.9%	\$60,000			\$8,928,666	(\$948,318)	\$8,080,348
								ANEV at 1.3%	φυυ,υυυ	φ+0,000		Ψ0, 3 20,000	(40-0,010)	ψ0,000,040

F:\2013\113012 IR 480\90591\admin\estimate\LCCA Annual Costs.xls

Richland Engineering Limited

ANNUAL COSTS

All costs in 2018 dollars, no cost of money included

ALTERNATIVE 6 - New Concrete Bridge in Median, New Deck on WB & EB Bridges

ANNUAL COSTS

ALTERNATIVE 7 - Two New Steel Bridges

ALTERNATIVE 7 - Two New Concrete Bridges

Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost	Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost
2018	\$50,000	\$40,000	Initial Construction	\$347,000,000	\$0	\$347,090,000	2018	\$40,000	\$30,000	Initial Construction	\$347,000,000	\$0	\$347,070,000
2019	\$50,000	\$40,000		\$0	\$O	\$90,000	2019	\$40,000	\$30,000		\$0	\$0	\$70,000
2020	\$50,000	\$40,000		\$0	\$0	\$90,000	2020	\$40,000	\$30,000		\$0	\$0	\$70,000
2021	\$50,000	\$40,000		\$0	\$ 0	\$90,000	2021	\$40,000	\$30,000		\$0	\$0	\$70,000
2022	\$50,000	\$40,000		\$0	\$0	\$90,000	2022	\$40,000	\$30,000		\$0	\$0	\$70,000
2023	\$50,000	\$40,000		\$0	\$0 *0	\$90,000	2023	\$40,000	\$30,000		\$0 *0	\$0	\$70,000
2024 2025	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000	2024 2025	\$40,000	\$30,000 \$30,000		\$0 \$0	\$0 \$0	\$70,000
2025	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2026	\$40,000 \$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000 \$70,000
2027	\$50,000	\$40,000		\$0	\$0	\$90,000	2027	\$40,000	\$30,000		\$0	\$0	\$70,000
2028	\$50,000	\$40,000		\$0	\$0	\$90,000	2028	\$40,000	\$30,000		\$0	\$0	\$70,000
2029	\$50,000	\$40,000		\$0	\$0	\$90,000	2029	\$40,000	\$30,000		\$0	\$O	\$70,000
2030	\$50,000	\$40,000		\$0	\$0	\$90,000	2030	\$40,000	\$30,000		\$0	\$0	\$70,000
2031	\$50,000	\$40,000		\$0	\$0	\$90,000	2031	\$40,000	\$30,000		\$0	\$0	\$70,000
2032	\$50,000	\$40,000		\$O	\$0	\$90,000	2032	\$40,000	\$30,000		\$0	\$0	\$70,000
2033 2034	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2033 2034	\$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000
2034	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2034	\$40,000 \$40,000	\$30,000 \$30,000		\$0 \$0	\$0 \$0	\$70,000 \$70,000
2036	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2035	\$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000
2037	\$50,000	\$40,000		\$0	\$0	\$90,000	2037	\$40,000	\$30,000		\$0	\$0	\$70,000
2038	\$50,000	\$40,000	Paint, Overlay & Repair	\$22,000,000	\$0	\$22,090,000	2038	\$40,000	\$30,000	Overlay & Repair	\$19,000,000	\$0	\$19,070,000
2039	\$50,000	\$40,000		\$0	\$0	\$90,000	2039	\$40,000	\$30,000	•	\$0	\$0	\$70,000
2040	\$50,000	\$40,000		\$0	\$0	\$90,000	2040	\$40,000	\$30,000		\$0	\$0	\$70,000
2041	\$50,000	\$40,000		\$0	\$0	\$90,000	2041	\$40,000	\$30,000		\$0	\$0	\$70,000
2042	\$50,000	\$40,000		\$0	\$O	\$90,000	2042	\$40,000	\$30,000		\$0	\$0 \$0	\$70,000
2043 2044	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000	2043 2044	\$40,000	\$30,000 \$30,000		\$0 \$0	\$0 \$0	\$70,000
2044	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2044	\$40,000 \$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000 \$70,000
2046	\$50,000	\$40,000		\$0	\$0 \$0	\$90,000	2046	\$40,000	\$30,000		\$0	\$0 \$0	\$70,000
2047	\$50,000	\$40,000		\$0	\$0	\$90,000	2047	\$40,000	\$30,000		\$0	\$0	\$70,000
2048	\$50,000	\$40,000		\$0	\$0	\$90,000	2048	\$40,000	\$30,000		\$0	\$0	\$70,000
2049	\$50,000	\$40,000		\$0	\$0	\$90,000	2049	\$40,000	\$30,000		\$0	\$0	\$70,000
2050	\$50,000	\$40,000		\$0	\$0	\$90,000	2050	\$40,000	\$30,000		\$0	\$0	\$70,000
2051	\$50,000 \$50,000	\$40,000		\$0 #0	\$0	\$90,000	 2051	\$40,000	\$30,000		\$0 *0	\$0 \$0	\$70,000
2052 2053	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2052 2053	\$40,000 \$40,000	\$30,000 \$30,000		\$0 \$0	\$0 \$0	\$70,000 \$70,000
2054	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000	2054	\$40,000 \$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000
2055	\$50,000	\$40,000		\$0	\$0	\$90,000	2055	\$40,000	\$30,000		\$0	\$0	\$70,000
2056	\$50,000	\$40,000		\$0	\$0	\$90,000	2056	\$40,000	\$30,000		\$0	\$0	\$70,000
2057	\$50,000	\$40,000		\$0	\$0	\$90,000	2057	\$40,000	\$30,000		\$0	\$0	\$70,000
2058	\$50,000	\$40,000	Paint, Overlay & Repair	\$22,000,000	\$0	\$22,090,000	2058	\$40,000	\$30,000	Overlay & Repair	\$19,000,000	\$0	\$19,070,000
2059	\$50,000	\$40,000		\$0	\$0 *0	\$90,000	2059	\$40,000	\$30,000		\$0	\$0	\$70,000
2060 2061	\$50,000 \$50,000	\$40,000 \$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2060 2061	\$40,000 \$40,000	\$30,000 \$30,000		\$0 \$0	\$0 \$0	\$70,000 \$70,000
2062	\$50,000 \$50,000	\$40,000		\$0 \$0	\$0 \$0	\$90,000 \$90,000	2062	\$40,000 \$40,000	\$30,000		\$0 \$0	\$0 \$0	\$70,000
2063	\$50,000	\$40,000		\$0	\$0	\$90,000	2063	\$40,000	\$30,000		\$0	\$0	\$70,000
2064	\$50,000	\$40,000		\$0	\$0	\$90,000	2064	\$40,000	\$30,000		\$0	\$0	\$70,000
2065	\$50,000	\$40,000		\$0	\$0	\$90,000	2065	\$40,000	\$30,000		\$0	\$0	\$70,000
2066	\$50,000	\$40,000		\$0	\$0	\$90,000	2066	\$40,000	\$30,000		\$0	\$0	\$70,000
2067	\$50,000	\$40,000		\$0	(\$163,000,000)	(\$162,910,000)	2067	\$40,000	\$30,000		\$0	(\$73,000,000)	(\$72,930,000)
TOTAL	\$2,500,000	\$2,000,000		\$391,000,000	(\$163,000,000)	\$232,500,000	TOTAL	\$2,000,000	\$1,500,000		\$385,000,000	(\$73,000,000)	\$315,500,000
NPV at 1.9%	\$1,604,728	\$1,283,783		\$365,516,154	(\$63,603,118)	\$304,801,547	NPV at 1.9%	\$1,283,783	\$962,837		\$362,108,942	(\$28,484,832)	\$335,870,730
ANEV at 1.9%	\$50,000	\$40,000		\$11,388,723	(\$1,981,741)	\$9,496,982	ANEV at 1.9%	\$40,000	\$30,000		\$11,282,561	(\$887,528)	\$10,465,033

All costs in 2018 dollars, no cost of money included

CUY-480-18.42 L/R PID No. 90591

LCCA - Residual Value

Alternative Reused existing substructure **(Alt 1)	Original Cost \$83,988,000	Factor 50%	1 - Steel \$41,994,000	3.a - Steel \$41,994,000	3.b - Steel \$41,994,000	3.c - Steel \$41,994,000	5 - Steel	5 - Concrete	6 - Steel	6 - Concrete	7 - Steel	7 - Concrete
New substructure widening (Alt 3.c)	\$18,551,000	50%				\$9,275,500						
Reused existing substructure *(Alt 5)	\$41,994,000	50%					\$20,997,000	\$20,997,000				
Reused existing substructure **(Alt 6)	\$83,988,000	50%							\$41,994,000	\$41,994,000		
Reused existing steel superstructure ** (Alt 1)	\$153,366,000	0%	\$0	\$0	\$0	\$0						
New superstructure widening (Alt 3.c)	\$30,321,000	0%				\$0						
Reused existing steel superstructure * (Alt 5)	\$76,683,000	0%					\$0	\$0				
Reused existing steel superstructure ** (Alt 6)	\$153,366,000	0%							\$0	\$0		
New substructure (Alt 5)	\$41,994,000	75%					\$31,495,500	\$31,495,500				
New substructure (Alt 6)	\$47,365,000	75%							\$35,523,750	\$35,523,750		
New substructure (Alt 7)	\$97,911,000	75%									\$73,433,250	\$73,433,250
New steel superstructure (Alt 5)	\$76,683,000	50%					\$38,341,500					
New steel superstructure (Alt 6)	\$90,604,000	50%							\$45,302,000			
New steel superstructure (Alt 7)	\$179,175,000	50%									\$89,587,500	
New concrete superstructure (Alt 5)	\$76,683,000	0%						\$0				
New concrete superstructure (Alt 6)	\$90,604,000	0%								\$0		
New concrete superstructure (Alt 7)	\$179,175,000	0%										\$0
Residual Value	•		\$41,994,000	\$41,994,000	\$41,994,000	\$51,269,500	\$90,834,000	\$52,492,500	\$122,819,750	\$77,517,750	\$163,020,750	\$73,433,250
* Lloo Alt Eb modion structure v 1												

* Use Alt 5b median structure x 1

** Use Alt 5b median structure x 2

Line # Item Number

Description Supplemental Description

Group 0100: ROADWAY

0005 201E11000 CLEARING AND GRUBBING	1.00	LS	\$10,000.00	\$10,000.00
0006 202E20010 HEADWALL REMOVED	1.00	EACH	\$268.80	\$268.80
0007 202E23000 PAVEMENT REMOVED	25,678.00	SY	\$8.01	\$205,680.78
0008 202E23010 PAVEMENT REMOVED, ASPHALT	100.00	SY	\$30.00	\$3,000.00
0009 202E32000 CURB REMOVED	264.00	FT	\$5.04	\$1,330.56
0010 202E35100 PIPE REMOVED, 24" AND UNDER	1,124.00	FT	\$13.06	\$14,679.44
0011 202E38000 GUARDRAIL REMOVED	3,301.00	FT	\$1.28	\$4,225.28
0012 202E58100 CATCH BASIN REMOVED	15.00	EACH	\$312.41	\$4,686.15
0013 202E70100 SPECIAL - PIPE CLEANOUT	550.00	FT	\$11.29	\$6,209.50
0014 203E10000 EXCAVATION	46,011.00	CY	\$6.81	\$313,334.91
0015 203E20000 EMBANKMENT	60,876.00	CY	\$4.53	\$275,768.28
0016 204E10000 SUBGRADE COMPACTION	91,731.00	SY	\$1.72	\$157,777.32
0017 204E45000 PROOF ROLLING	46.00	HOUR	\$178.98	\$8,233.08
0018 209E60200	35.00	STA	\$246.54	\$8,628.90
LINEAR GRADING 0019 606E13000	4,284.00	FT	\$13.48	\$57,748.32
GUARDRAIL, TYPE 5 0020 606E26100	4.00	EACH	\$1,550.82	\$6,203.28
ANCHOR ASSEMBLY, TYPE E 0021 606E26500	4.00	EACH	\$675.70	\$2,702.80
ANCHOR ASSEMBLY, TYPE T 0022 606E35000	5.00	EACH	\$1,198.06	\$5,990.30
BRIDGE TERMINAL ASSEMBLY, TYPE 0023 606E35100 BRIDGE TERMINAL ASSEMBLY, TYPE	3.00	EACH	\$367.06	\$1,101.18
0024 606E60022 IMPACT ATTENUATOR, TYPE 2 (UNIE	3.00	EACH	\$19,442.75	\$58,328.25
0025 622E10160 CONCRETE BARRIER, SINGLE SLOP	3,148.00		\$54.03	\$170,086.44
0026 622E10100 CONCRETE BARRIER, SINGLE SLOP	1,859.00	FT	\$95.06	\$176,716.54
	_, D1		Total for Orous 0100,01 10	0 700 44

Group 0200: EROSION CONTROL

0209 601E20000 CRUSHED AGGREGATE SLOPE F	99.00 PROTECTION	SY	\$33.70	\$3,336.30
0211 659E00300 TOPSOIL	3,454.00	CY	\$20.89	\$72,154.06
0212 659E10000 SEEDING AND MULCHING	31,112.00	SY	\$0.45	\$14,000.40
0213 659E14000 REPAIR SEEDING AND MULCHIN	1,556.00 G	SY	\$0.90	\$1,400.40

10:55:13AM Monday, February 10, 2014

Estimate CUY90591

Estimated Cost:\$188,915,440.20 Contingency: 35.00% Estimated Total: \$255,035,844.27

CUY-480-18.42: ALTERNATIVE 6 Base Date: 01/01/18 Spec Year: 13 Unit System: E Work Type: BRIDGE REHABILITATION Highway Type: 446 ON 304 Urban/Rural Type: URBAN CLASS Season: SPRING County: CUYAHOGA Midpoint of Latitude: 412435 Midpoint of Longitude: 0813745 District: 12 Federal/State Project Number:

Estimate Type: Preliminary Submission (Inflation 1-1-2020) Prepared by Richland Engineering Limited on 01/31/14

Total for Group 0100:\$1,492,700.11

Estimate: CUY90591

Richland Engineering Limited

Line # <u>Item Number</u> <u>Description</u> <u>Supplemental Description</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
0214 659E20000 COMMERCIAL FERTILIZER	5.00	TON	\$500.00	\$2,500.00
0215 659E31000 LIME	6.43	ACRE	\$400.00	\$2,572.00
0216 659E35000 WATER	169.00	MGAL	\$2.60	\$439.40
0217 832E15000 STORM WATER POLLUTION PREV		LS	\$15,000.00	\$15,000.00
0218 832E30000 EROSION CONTROL	200,000.00	EACH	\$1.00	\$200,000.00
				100 50

Total for Group 0200:\$311,402.56

Group 0300: DRAINAGE

GIOUP 0300. DRAINAGE				
0027 602E20000 CONCRETE MASONRY	2.00	CY	\$1,505.67	\$3,011.34
0028 605E11110 6" SHALLOW PIPE UNDERDRAINS WIT	52,253.00 H FABRIC		\$10.55	\$551,269.15
0029 611E06100 15" CONDUIT, TYPE C	220.00	FT	\$46.54	\$10,238.80
0030 611E07400 18" CONDUIT, TYPE B	1,866.00	FT	\$54.08	\$100,913.28
0031 611E07600 18" CONDUIT, TYPE C	88.00	FT	\$66.86	\$5,883.68
0032 611E10400 24" CONDUIT, TYPE B	3,549.00	FT	\$104.29	\$370,125.21
0033 611E10600 24" CONDUIT, TYPE C	238.00	FT	\$65.73	\$15,643.74
0034 611E12100 27" CONDUIT, TYPE C	8.00	FT	\$152.51	\$1,220.08
0035 611E22600 54" CONDUIT, TYPE C	20.00	FT	\$174.52	\$3,490.40
0036 611E26400 72" CONDUIT, TYPE C	140.00	FT	\$500.00	\$70,000.00
0037 611E98150 CATCH BASIN, NO. 3	2.00	EACH	\$2,468.98	\$4,937.96
0038 611E98180 CATCH BASIN, NO. 3A	2.00	EACH	\$2,105.02	\$4,210.04
0039 611E98300 CATCH BASIN, NO. 5	10.00	EACH	\$2,912.35	\$29,123.50
0040 611E98370 CATCH BASIN, NO. 6	3.00	EACH	\$2,138.28	\$6,414.84
0041 611E98471 CATCH BASIN, NO. 2-2B, AS PER PLAN BRIDGE DOWNSPOUT COLLECTION	12.00 N	EACH	\$4,000.00	\$48,000.00
0042 611E99574 MANHOLE, NO. 3	10.00	EACH	\$2,675.22	\$26,752.20
0043 611E99654 MANHOLE ADJUSTED TO GRADE	2.00	EACH	\$560.77	\$1,121.54
0044 839E30000 TRENCH DRAIN WITH STANDARD GRA	1,000.00 ATE	FT	\$63.16	\$63,160.00
			Total for Group 030	0:\$1.315.515.76

I otal for Group 0300:\$1,315,515.76

Group 0400: PAVEMENT

0045 254E01000 118,942.00 SY \$1.24 \$147,488.08 PAVEMENT PLANING, ASPHALT CONCRETE

10:55:13AM Monday, February 10, 2014

Estimate: CUY90591								
Line #	Item Number							

Quantity Units Unit Price

Description Supplemental Description

0046 302E46000	27,712.00	CY	\$87.97	\$2,437,824.64
ASPHALT CONCRETE BASE, PG64-22	2			
0047 304E20000	15,271.00	CY	\$44.36	\$677,421.56
AGGREGATE BASE	10,27 1.00	01	\$11.00	φ0/7,121.00
0049 407E10000	2 607 00		<u> </u>	¢10 406 27
	3,607.00	GAL	\$2.91	\$10,496.37
TACK COAT		.	Aa aa	• · • · • · · · ·
0050 407E14000	7,258.00	GAL	\$2.68	\$19,451.44
TACK COAT FOR INTERMEDIATE CO	URSE			
0051 408E10000	36,277.00	GAL	\$2.98	\$108,105.46
PRIME COAT				
0052 411E10000	206.00	CY	\$49.87	\$10,273.22
STABILIZED CRUSHED AGGREGATE		-	•	÷ -, -
0053 442E10050	8,735.00	CY	\$147.73	\$1,290,421.55
ASPHALT CONCRETE SURFACE COL	,		· -	ψ1,200,421.00
				\$000 000 07
0054 442E10150	6,637.00		\$126.11	\$836,992.07
ASPHALT CONCRETE INTERMEDIATI				
0055 448E46061	64.00	-	\$235.26	\$15,056.64
ASPHALT CONCRETE INTERMEDIAT	E COURSE, '	TYPE 1,	UNDER GUARDRAIL, PG64-22, AS PER PLAN	
0057 609E26001	200.00	FT	\$15.14	\$3,028.00
CURB, TYPE 6, AS PER PLAN				

Group 0700: LIGHTING

•				
0058 625E10490 LIGHT POLE, CONVENTIONAL	73.00	-	\$1,833.22	\$133,825.06
0059 625E10614 LIGHT POLE ANCHOR BOLTS ON S	292.00 TRUCTURE	EACH	\$100.00	\$29,200.00
0060 625E13404 LIGHT TOWER, BBBBBB110	2.00	EACH	\$13,635.44	\$27,270.88
0061 625E14000 LIGHT POLE FOUNDATION, 24" X 6	42.00 DEEP	EACH	\$1,028.77	\$43,208.34
0062 625E15400 LIGHT TOWER FOUNDATION, 42" X	2.00 25' DEEP	EACH	\$7,000.00	\$14,000.00
0063 625E23200 NO. 4 AWG 5000 VOLT DISTRIBUTI	148,000.00 ON CABLE	FT	\$2.56	\$378,880.00
0064 625E23400 NO. 10 AWG POLE AND BRACKET	13,910.00 CABLE	FT	\$1.02	\$14,188.20
0065 625E25400 CONDUIT, 2", 725.04	41,000.00	FT	\$11.63	\$476,830.00
0066 625E26250 LUMINAIRE, CONVENTIONAL	78.00	EACH	\$330.45	\$25,775.10
0067 625E26260 LUMINAIRE, HIGH MAST	12.00	EACH	\$727.78	\$8,733.36
0068 625E29901 JUNCTION BOX, AS PER PLAN	73.00	EACH	\$1,487.36	\$108,577.28
0069 625E30700 PULL BOX, 725.08, 18"	44.00	EACH	\$698.87	\$30,750.28
0070 625E33001 STRUCTURE GROUNDING SYSTEM			\$50,000.00	\$150,000.00
0071 625E34000 POWER SERVICE	6.00	EACH	\$2,609.20	\$15,655.20
0072 625E60010 LIGHT POLE REMOVED FOR REER	42.00 ECTION	EACH	\$250.00	\$10,500.00
0073 625E75350 LIGHT TOWER REMOVED	2.00	EACH	\$1,340.40	\$2,680.80

Total for Group 0400:\$5,556,559.03

Estimate: CUY90591

Richland Engineering Limited

Line # Item Number Description Supplemental Description	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
0074 625E75400 LIGHT POLE REMOVED	39.00	EACH	\$170.89	\$6,664.71
0076 625E75508	42.00	EACH	\$54.60	\$2,293.20

0076 625E75508 LUMINAIRE REMOVED FOR REUSE

Total for Group 0700:\$1,479,032.41

Group 0800: TRAFFIC CONTROL

	-			
0077 621E10010 RPM, LOW PROFILE, WHITE	552.00	EACH	\$27.98	\$15,444.96
0078 626E00100 BARRIER REFLECTOR	323.00	EACH	\$6.06	\$1,957.38
0079 630E02100 GROUND MOUNTED SUPPORT, NO. 2 I	108.00 POST	FT	\$9.05	\$977.40
0080 630E03100 GROUND MOUNTED SUPPORT, NO. 3 I	72.00	FT	\$9.58	\$689.76
0081 630E04100 GROUND MOUNTED SUPPORT, NO. 4 I	120.00	FT	\$11.09	\$1,330.80
0082 630E20701 OVERHEAD SIGN SUPPORT, TYPE TC-	6.00		\$12,000.00 AS PER PLAN	\$72,000.00
0083 630E31101 OVERHEAD SIGN SUPPORT, TYPE TC-	2.00	EACH	\$12,000.00	\$24,000.00
0084 630E45500 OVERHEAD SIGN SUPPORT, TYPE TC-	10.00	EACH	\$31,125.84	\$311,258.40
0085 630E80200 SIGN, GROUND MOUNTED EXTRUSHE	181.00		\$16.84	\$3,048.04
0086 630E80224 SIGN, OVERHEAD EXTRUSHEET	5,670.00	SF	\$18.47	\$104,724.90
0087 630E84510 RIGID OVERHEAD SIGN SUPPORT FOL			\$2,882.39	\$80,706.92
0088 630E84900 REMOVAL OF GROUND MOUNTED SIG	13.00	EACH		\$182.00
0089 630E85400 REMOVAL OF GROUND MOUNTED MA	7.00	EACH	\$100.84	\$705.88
0090 630E86002 REMOVAL OF GROUND MOUNTED POS	26.00	EACH	\$13.87	\$360.62
0091 630E87401 REMOVAL OF OVERHEAD MOUNTED S	32.00	EACH	\$800.00	\$25,600.00
0092 630E89706 REMOVAL OF OVERHEAD SIGN SUPPO	3.00	EACH	\$986.77	\$2,960.31
0093 630E89800 REMOVAL OF OVERHEAD SIGN SUPPO	2.00	EACH	\$1,200.00	\$2,400.00
0094 630E89802 REMOVAL OF OVERHEAD SIGN SUPPO	5.00	EACH	\$1,532.32	\$7,661.60
0095 646E10000 EDGE LINE, 4"		MILE		\$37,930.22
0096 646E10100 LANE LINE, 4"	15.02	MILE	\$2,102.59	\$31,580.90
0097 646E10300 CHANNELIZING LINE, 8"	5,000.00	FT	\$1.56	\$7,800.00
			Tatal far Oracum 0000.07	

Total for Group 0800:\$733,320.09

\$21,808.60

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Group 1200: MAINTENANCE OF TRAFFIC

0100 614E12800 4,310.00 EACH \$5.06 WORK ZONE RAISED PAVEMENT MARKER

Estimate: CUY90591

Line # Item Number Description Supplemental Description	<u>Quantity</u>	<u>Unit</u>
0101 614E13300 BARRIER REFLECTOR, TYPE B	1,094.00	EAC

0101 614E13300 BARRIER REFLECTOR, TYPE B	1,094.00	EACH	\$5.10	\$5,579.40
0102 614E13360 OBJECT MARKER, TWO WAY	541.00	EACH	\$10.31	\$5,577.71
0103 614E18002 MAINTAINING TRAFFIC, MISC.: TEMPORARY LIGHTING	1.00	LS	\$25,000.00	\$25,000.00
0104 614E20100 WORK ZONE LANE LINE, CLASS I, 6	28.06 42 PAINT	MILE	\$809.72	\$22,720.74
0105 614E22001 WORK ZONE EDGE LINE, CLASS I, A WHITE	40.55 AS PER PLAN	MILE	\$694.09	\$28,145.35
0107 614E23200 WORK ZONE CHANNELIZING LINE,	70,508.00 CLASS I, 642		\$0.41	\$28,908.28
0108 614E24000 WORK ZONE DOTTED LINE, CLASS	5,630.00 I	FT	\$0.39	\$2,195.70
0109 615E20000 PAVEMENT FOR MAINTAINING TRA	25,965.00 FFIC, CLASS		\$22.50	\$584,212.50
0114 622E41000 PORTABLE BARRIER, 32"	17,084.00	FT	\$9.40	\$160,589.60
0120 622E41010 PORTABLE BARRIER, 50"	3,582.00	FT	\$11.55	\$41,372.10
0131 622E41020 PORTABLE BARRIER, 32", BRIDGE	8,310.00 MOUNTED	FT	\$16.85	\$140,023.50

Group 1500: CUY-480-1842 L: ALTERNATIVE 6

0233 202E11203 1.00 LS \$9,000,000.00	\$9,000,000.00
PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	* =
0234 202E22900 268.00 SY \$26.24	\$7,032.32
	* / = = = = = =
0235 202E75000 8,311.00 FT \$2.13	\$17,702.43
FENCE REMOVED	* ~~ ~~ ~~ ~~
0236 202E98000 1.00 LS \$60,000.00	\$60,000.00
REMOVAL MISC.:	
METAL SUBDECKING	* 00 5 00 00
0237 202E98000 1.00 LS \$20,500.00	\$20,500.00
REMOVAL MISC.:	
EXISTING DRAINAGE CLEANOUT	
0238 503E11101 1.00 LS \$55,000.00	\$55,000.00
COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN 0239 503E21100 189.00 CY \$121.39	\$22,942.71
	\$22,942.71
UNCLASSIFIED EXCAVATION 0240 509E10001 2,768,814.00 LB \$1.00	¢0 769 914 00
0240 509E10001 2,768,814.00 LB \$1.00 EPOXY COATED REINFORCING STEEL, AS PER PLAN	\$2,768,814.00
0241 509E20001 750.00 LB \$2.54	\$1,905.00
REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	\$1,905.00
0242 510E10000 60.00 EACH \$22.97	\$1,378.20
DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	ψ1,070.20
0243 511E34446 8.990.00 CY \$661.81	\$5,949,671,90
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	\$6,545,671.56
0244 511E34450 1,341.00 CY \$463.33	\$621,325.53
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	φ021,020.00
0245 511E44110 117.00 CY \$442.90	\$51,819.30
CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	\$01,010.00

Total for Group 1200:\$1,066,133.48

Estimate:	CUY90591
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Line # Item Number	<u>Quantity</u>	<u>Units</u>	Unit Price	
Description				
Supplemental Description				

0246 512E10100 SEALING OF CONCRETE SURFACES (I	12,600.00 EPOXY-UR		\$19.82 E)	\$249,732.00
0247 512E33000 TYPE 2 WATERPROOFING	10.00	SY	\$32.04	\$320.40
0248 512E74000 REMOVAL OF EXISTING COATINGS FR	96.00 OM CONC		\$23.11 URFACES	\$2,218.56
0249 513E20000 1 WELDED STUD SHEAR CONNECTORS	32,332.00	EACH	\$3.36	\$444,635.52
0250 513E90000 STRUCTURAL STEEL, MISC.: STRINGER BRACING	36,573.00	LB	\$20.00	\$731,460.00
0251 513E95000 STRUCTURAL STEEL, MISC.: INSPECTION CABLE	467.00	FT	\$8.00	\$3,736.00
0252 513E95000 STRUCTURAL STEEL, MISC.: INSPECTION HANDRAIL	25.00		\$45.00	\$1,125.00
0253 513E95030 STRUCTURAL STEEL, MISC.: DRILLING STRUCTURAL STEEL (1" DIA	19.00 METER H		\$700.00	\$13,300.00
0254 513E95030 STRUCTURAL STEEL, MISC.: <i>K FRAME COPE REPAIR</i>		EÁCH	\$2,300.00	\$71,300.00
0255 513E95030 STRUCTURAL STEEL, MISC.: DOG BONE REPAIR	15.00	EACH	\$700.00	\$10,500.00
0256 514E00050 SURFACE PREPARATION OF EXISTING	400.00 STRUCT		\$31.00 EEL	\$12,400.00
0257 514E00056 FIELD PAINTING OF EXISTING STRUCT	400.00	SF	\$8.00	\$3,200.00
0258 514E00060 FIELD PAINTING STRUCTURAL STEEL	400.00	SF	\$4.00	\$1,600.00
0259 514E00066 FIELD PAINTING STRUCTURAL STEEL	400.00	SF	\$4.00	\$1,600.00
0260 514E27800 FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTING	1.00	LS	\$4,800.00	\$4,800.00
0261 516E11211	146.00		\$498.14	\$72,728.44
STRUCTURAL EXPANSION JOINT INCL				<i> </i>
0262 516E13900 2" PREFORMED EXPANSION JOINT FIL	102.00		\$10.44	\$1,064.88
0263 518E12300 SCUPPERS, INCLUDING SUPPORTS	20.00	EACH	\$1,800.00	\$36,000.00
0264 518E21200 POROUS BACKFILL WITH FILTER FAB	145.00 RIC	CY	\$84.05	\$12,187.25
0265 518E62100 STRUCTURE DRAINAGE, MISC.: DOWNSPOUT REPLACEMENT	60.00	FT	\$214.00	\$12,840.00

SCUPPE 0264 518 POROUS 0265 518E STRUCTU DOWNSPOUT REPLACEMENT \$17,600.00 0266 518E62200 80.00 EACH \$220.00 STRUCTURE DRAINAGE, MISC.: TROUGH CONDUCTOR REPLACEMENT \$20,000.00 0267 518E62200 10.00 EACH \$2,000.00 STRUCTURE DRAINAGE, MISC .: VERTICAL DOWNSPOUT SUPPORT REPAIR 0268 518E62200 4.00 EACH \$2,000.00 \$8,000.00 STRUCTURE DRAINAGE, MISC.: DRAINAGE TROUGH BRACING REPAIR

Richland Engineering Limited

Extension

Estimate: CUY90591				Richland Engineering Limited
Line # Item Number Description Supplemental Description	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
0269 518E62200 STRUCTURE DRAINAGE, MISC.: DRAINAGE TROUGH FLASHING REF		EACH	\$4,500.00	\$18,000.00
0270 518E62200 STRUCTURE DRAINAGE, MISC.: DRAINAGE SYSTEM BOLT AND NUT		EACH	\$700.00	\$5,600.00
0271 518E62200 STRUCTURE DRAINAGE, MISC.: DOWNSPOUT COLLAR REPAIR		EACH	\$2,000.00	\$20,000.00
0272 519E11101 PATCHING CONCRETE STRUCTURE	13,588.00 , AS PER PL		\$90.16	\$1,225,094.08
0273 526E25001 REINFORCED CONCRETE APPROAC	467.00 CH SLABS (T=		\$209.00 PER PLAN	\$97,603.00
0274 530E00400 SPECIAL - STRUCTURE, MISC.: INSPECTION MANHOLE COVER (RE			\$1,000.00 REUSE)	\$4,000.00
0275 530E00600 SPECIAL - STRUCTURE, MISC.: STAY-IN-PLACE DECK FORMS	278,419.00		\$10.00	\$2,784,190.00
0276 530E00600 SPECIAL - STRUCTURE, MISC.: COMPOSITE FIBER WRAP SYSTEM	1,150.00	SF	\$100.00	\$115,000.00
0277 530E00800 SPECIAL - STRUCTURE, MISC.: MILL FINAL DECK SURFACE	32,321.00		\$5.00	\$161,605.00
0278 607E39901 VANDAL PROTECTION FENCE, 6' ST	8,311.00 RAIGHT, CO		\$61.98 BRIC, AS PER PLAN	\$515,115.78
0279 607E50901 GATE, TYPE CL, AS PER PLAN	8.00	EACH	\$1,593.89	\$12,751.12
0280 690E71000 SPECIAL - ASBESTOS ABATEMENT	1.00	LS	\$6,000.00	\$6,000.00

Group 1501: CUY-480-1842 L: ALTERNATIVE
PROPOSED BRIDGE DECK
0281 503E21100 7.00 CY
UNCLASSIFIED EXCAVATION
0282 509E10001 1,089,349.00 LB
EPOXY COATED REINFORCING STEEL, AS PER PLAN
0283 509E20001 22.00 LB
REINFORCING STEEL, REPLACEMENT OF EXISTING R
0284 511E34446 4,079.00 CY
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK
0285 511E44110 2.00 CY
CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING
0286 512E10100 4.00 SY
SEALING OF CONCRETE SURFACES (EPOXY-URETHA
0287 516E11211 4.00 FT
STRUCTURAL EXPANSION JOINT INCLUDING ELASTO
0288 516E12200 8.00 FT
STRUCTURAL STEEL EXPANSION JOINT
0289 518E21200 3.00 CY
POROUS BACKFILL WITH FILTER FABRIC
0290 518E63300 1.00 LS
STRUCTURE DRAINAGE, MISC.:
EXTEND DRAINAGE TROUGH

Total for Group 1500:\$25,275,398.42

/E 6 - ADDITIONAL COST TO WIDEN

\$1	21.39	\$849.73
\$1	.00	\$1,089,349.00
	.54)RCING STEEL, AS PER PLAN	\$55.88
\$6	61.81	\$2,699,522.99
\$4 FOOTI	42.90 ING	\$885.80
\$1: NE)	9.82	\$79.28
	98.14 C STRIP SEAL, AS PER PLAN	\$1,992.56
\$4	,000.00	\$32,000.00
\$8 [,]	4.05	\$252.15
\$6	0,000.00	\$60,000.00

Estimate:	CUY90591
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Richland Engineering Limited

Line # Item Number Description Supplemental Description	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
0291 526E25001 REINFORCED CONCRETE APPROACH	2.00 SLABS (T=	-	\$209.00 PER PLAN	\$418.00
0292 530E00400 SPECIAL - STRUCTURE, MISC.: SIGN SUPPORT	3.00	EACH	\$16,000.00	\$48,000.00
0293 530E00600 SPECIAL - STRUCTURE, MISC.: COMPOSITE FIBER WRAP SYSTEM	4,600.00	SF	\$100.00	\$460,000.00
0295 530E00800 SPECIAL - STRUCTURE, MISC.: MILL FINAL DECK SURFACE	924.00	SY	\$5.00	\$4,620.00

Total for Group 1501:\$4,398,025.39

Group 1505: CUY-480-1842 M: ALTERNATIVE 6

Group 1505. C	01-400-1042 IVI. P			0	
0298 503E1110 COFFERDAMS	1 AND EXCAVATION BR	1.00 ACING, AS F		\$50,000.00 N	\$50,000.00
0299 503E2110 UNCLASSIFIEI	0 D EXCAVATION	15,992.00		\$54.16	\$866,126.72
0300 503E3112 SHALE EXCAV	ATION	440.00		\$42.15	\$18,546.00
	EQUIPMENT MOBILIZA			\$20,000.00	\$20,000.00
0302 506E1110 STATIC LOAD	TEST	1.00		\$5,000.00	\$5,000.00
0303 506E1220 SUBSEQUENT	0 STATIC LOAD TEST	16.00	EACH	\$2,500.00	\$40,000.00
	IP12X53, FURNISHED	,	FT	\$39.22	\$80,008.80
0305 507E0025 STEEL PILES H	IP12X53, DRIVEN	1,814.00		\$8.20	\$14,874.80
	LACE REINFORCED CO		LES, DRI		\$1,450,736.30
0307 507E0065 14" CAST-IN-P	0 _ACE REINFORCED CC	161,081.00 NCRETE PII		\$44.09 RNISHED	\$7,102,061.29
0308 509E1000 EPOXY COATE	1 5, D REINFORCING STEE	557,045.00 L, AS PER F		\$1.00	\$5,557,045.00
0309 511E3444 CLASS QC2 C0	6 DNCRETE WITH QC/QA	12,544.00 , BRIDGE DE		\$661.81	\$8,301,744.64
0310 511E3445 CLASS QC2 C0	0 DNCRETE WITH QC/QA	2,738.00 , BRIDGE DE		\$463.33 RAPET)	\$1,268,597.54
0311 511E4201 CLASS QC1 C0	0 DNCRETE, PIER ABOVE	16,130.00 FOOTINGS		\$815.00	\$13,145,950.00
0312 511E4411 CLASS QC1 C0	0 DNCRETE, ABUTMENT	373.00 NOT INCLUI		\$482.00 OTING	\$179,786.00
0313 511E4651 CLASS QC1 C0	0 DNCRETE, FOOTING	9,091.00	CY	\$408.00	\$3,709,128.00
0314 512E1010		31,209.00 (EPOXY-UR		\$11.99)	\$374,195.91
0315 513E1030		275,032.00		\$1.52	\$33,858,048.64
0316 513E2000		154,388.00	EACH	\$3.36	\$518,743.68
0317 513E9500 STRUCTURAL INSPECTION (0 STEEL, MISC.:	30,400.00	FT	\$8.00	\$243,200.00

Description Supplemental Description 0318 513E95000 200.00 FT STRUCTURAL STEEL, MISC .: INSPECTION HANDRAIL 1,068,000.00 SF 0319 514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIAT 0320 514E00066 1,068,000.00 SF FIELD PAINTING STRUCTURAL STEEL, FINISH COAT 0321 516E11211 170.00 FT STRUCTURAL EXPANSION JOINT INCLUDING ELASTC 0322 516E12400 340.00 FT SPECIAL - MODULAR EXPANSION JOINT 124.00 SF 0323 516E13900 2" PREFORMED EXPANSION JOINT FILLER 0324 518E12300 20.00 EAC SCUPPERS, INCLUDING SUPPORTS 147.00 CY 0325 518E21200 POROUS BACKFILL WITH FILTER FABRIC 139.00 FT 0326 518E40000 6" PERFORATED CORRUGATED PLASTIC PIPE 0327 518E40010 128.00 FT 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, I 0328 518E51100 1,371.00 FT 8" PIPE DOWNSPOUT, INCLUDING SPECIALS 0329 523E20000 32.00 EAC DYNAMIC LOAD TESTING 0330 523E20500 32.00 EAC RESTRIKE 0331 526E30001 567.00 SY REINFORCED CONCRETE APPROACH SLABS (T=17"), 0332 530E00400 4.00 EAC SPECIAL - STRUCTURE, MISC .: INSPECTION MANHOLE COVER 163,751.00 SF 0333 530E00600 SPECIAL - STRUCTURE, MISC .: STAY-IN-PLACE DECK FORMS 0334 607E39901 8,300.00 FT VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED 0335 607E50901 10.00 EAC GATE, TYPE CL, AS PER PLAN

Estimate: CUY90591

Line # Item Number

Group 1510: CUY-480-1842 R: ALTERNATIVE 6

0153 202E11203 PORTIONS OF STRUCTURE REMO		LS FOOT :	\$9,000,000.00 SPAN, AS PER PLAN	\$9,000,000.00
0154 202E22900 APPROACH SLAB REMOVED	311.00	SY	\$26.24	\$8,160.64
0155 202E75000 FENCE REMOVED	8,311.00	FT	\$2.13	\$17,702.43
0156 202E98000 REMOVAL MISC.: METAL SUBDECKING	1.00	LS	\$60,000.00	\$60,000.00
0157 202E98000 REMOVAL MISC.: EXISTING DRAINAGE CLEANOUT	1.00	LS	\$20,500.00	\$20,500.00
0158 503E11101 COFFERDAMS AND EXCAVATION E		LS PER PL/	\$30,000.00 AN	\$30,000.00

			Richland Engineering Limited
<u>Quantity</u>	<u>Units</u>	Unit Price	Extension
200.00	FT	\$45.00	\$9,000.00
)68,000.00 , INTERME	SF DIATE CO	\$4.00 OAT	\$4,272,000.00
, 68,000.00 , FINISH CC	SF	\$4.00	\$4,272,000.00
170.00 _UDING EL/	FT ASTOME	\$498.14 RIC STRIP SEAL, AS PER PLAN	\$84,683.80
340.00 NT	FT	\$800.00	\$272,000.00
124.00 _LER	SF	\$10.21	\$1,266.04
20.00	EACH	\$1,800.00	\$36,000.00
147.00 RIC	CY	\$78.91	\$11,599.77
139.00 TIC PIPE	FT	\$9.77	\$1,358.03
128.00 PLASTIC P	FT IPE, INCI	\$12.85 LUDING SPECIALS	\$1,644.80
1,371.00 ECIALS	FT	\$440.00	\$603,240.00
32.00	EACH	\$3,343.17	\$106,981.44
32.00	EACH	\$2,509.25	\$80,296.00
567.00 SLABS (T=	SY ₌17"), AS	\$244.29 PER PLAN	\$138,512.43
4.00	EACH	\$1,650.00	\$6,600.00
63,751.00	SF	\$10.00	\$1,637,510.00
,	FT ATED FA	\$61.98 BRIC, AS PER PLAN	\$514,434.00
10.00	EACH	\$1,593.89	\$15,938.90
		Total for Group 150	05:\$88,868,858.53

Estimate: CUY90591

Richland Engineering Limited Line # Item Number Quantity Units Unit Price Extension Description Supplemental Description 0159 503E21100 130.00 CY \$121.39 \$15,780.70 UNCLASSIFIED EXCAVATION 0160 509E10001 2,807,716.00 LB \$1.00 \$2,807,716.00 EPOXY COATED REINFORCING STEEL, AS PER PLAN \$2,095.50 0161 509E20001 825.00 LB \$2.54 REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN 60.00 EACH \$22.97 \$1,378.20 0162 510E10000 DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT 0163 511E34446 9,152.00 CY \$6,056,885.12 \$661.81 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK \$463.33 0164 511E34450 1,341.00 CY \$621,325.53 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET) 0165 511E44110 168.00 CY \$442.90 \$74,407.20 CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING 0166 512E10100 11,900.00 SY \$235,858.00 \$19.82 SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) 0167 512E33000 5.00 SY \$32.04 \$160.20 **TYPE 2 WATERPROOFING** 0168 512E74000 46.00 SY \$23.11 \$1,063.06 REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES 132,332.00 EACH \$3.36 \$444,635.52 0169 513E20000 WELDED STUD SHEAR CONNECTORS 0170 513E90000 36,573.00 LB \$20.00 \$731,460.00 STRUCTURAL STEEL, MISC .: STRINGER BRACING 0171 513E95000 491.00 FT \$8.00 \$3,928.00 STRUCTURAL STEEL, MISC .: INSPECTION CABLE 0172 513E95000 75.00 FT \$45.00 \$3,375.00 STRUCTURAL STEEL, MISC .: INSPECTION HANDRAIL 0173 513E95030 8.00 EACH \$700.00 \$5,600.00 STRUCTURAL STEEL. MISC .: DRILLING STRUCTURAL STEEL (1" DIAMETER HOLE) 0174 513E95030 24.00 EACH \$1,200.00 \$28,800.00 STRUCTURAL STEEL, MISC .: STRINGER TO FLOORBEAM REPAIR \$11,500.00 5.00 EACH \$2,300.00 0175 513E95030 STRUCTURAL STEEL, MISC.: K FRAME COPE REPAIR 0176 513E95030 50.00 EACH \$700.00 \$35,000.00 STRUCTURAL STEEL. MISC .: DOG BONE REPAIR \$12,400.00 0177 514E00050 400.00 SF \$31.00 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL \$3,200.00 0178 514E00056 400.00 SF \$8.00 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT 0179 514E00060 \$1,600.00 400.00 SF \$4.00 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT 0180 514E00066 400.00 SF \$4.00 \$1,600.00 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT \$4,800.00 0181 514E27800 1.00 LS \$4,800.00 FIELD PAINTING, MISC .: SURFACE PREPARATION OF EXISTING STEEL, SOLVENT CLEAN, SYSTEM OZEU 0182 516E11211 161.00 FT \$498.14 \$80,200.54 STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN \$626.40 0183 516E13900 60.00 SF \$10.44 2" PREFORMED EXPANSION JOINT FILLER

Estimate: CUY90591

Description

Line # Item Number Quantity Units Unit Price Supplemental Description

0184 518E12300 SCUPPERS, INCLUDING SUPPORTS	20.00	EACH	\$1,800.00	\$36,000.00
0185 518E21200 POROUS BACKFILL WITH FILTER FABRIC	75.00	CY	\$84.05	\$6,303.75
0186 518E62100 STRUCTURE DRAINAGE, MISC.: DOWNSPOUT REPLACEMENT	60.00	FT	\$214.00	\$12,840.00
0187 518E62200 STRUCTURE DRAINAGE, MISC.: TROUGH CONDUCTOR REPLACEMENT	80.00	EACH	\$220.00	\$17,600.00
0188 518E62200 STRUCTURE DRAINAGE, MISC.: VERTICAL DOWNSPOUT SUPPORT REP	5.00 A <i>IR</i>	EACH	\$2,000.00	\$10,000.00
0189 518E62200 STRUCTURE DRAINAGE, MISC.: DRAINAGE TROUGH BRACING REPAIR	4.00	EACH	\$2,000.00	\$8,000.00
0190 518E62200 STRUCTURE DRAINAGE, MISC.: DRAINAGE TROUGH FLASHING REPAIR	4.00	EACH	\$4,500.00	\$18,000.00
0191 518E62200 STRUCTURE DRAINAGE, MISC.: DRAINAGE SYSTEM BOLT AND NUT REP		EACH INT	\$700.00	\$4,900.00
0192 518E62200 STRUCTURE DRAINAGE, MISC.: DOWNSPOUT COLLAR REPAIR	10.00	EACH	\$2,000.00	\$20,000.00
	,646.00 PER PL		\$90.16	\$779,523.36
0194 526E25001 REINFORCED CONCRETE APPROACH S	517.00	SY	\$209.00 PER PLAN	\$108,053.00
0196 530E00400 SPECIAL - STRUCTURE, MISC.:	4.00	EACH	\$1,000.00	\$4,000.00
INSPECTION MANHOLE COVER (REMOV				
0197 530E00600 284 SPECIAL - STRUCTURE, MISC.: STAY-IN-PLACE DECK FORMS	,381.00	SF	\$10.00	\$2,843,810.00
0198 530E00600 1 SPECIAL - STRUCTURE, MISC.: COMPOSITE FIBER WRAP SYSTEM	,150.00	SF	\$100.00	\$115,000.00
0200 530E00800 32 SPECIAL - STRUCTURE, MISC.: MILL FINAL DECK SURFACE	,321.00	SY	\$5.00	\$161,605.00
	,311.00		\$61.98	\$515,115.78
VANDAL PROTECTION FENCE, 6' STRAID				
0202 607E50901 GATE, TYPE CL, AS PER PLAN	10.00	EACH		\$15,938.90
0203 690E71000 SPECIAL - ASBESTOS ABATEMENT	1.00	LS	\$6,000.00	\$6,000.00
			Total for Group 1510:\$25.0	004 447 83

Group 1511: CUY-480-1842 R:	ALTERNA	TIVE	6 - ADDITIONAL COST	TO WIDEN
PROPOSED BRIDGE DECK				
0219 503E21100	6.00	CY	\$121.39	\$728.34
UNCLASSIFIED EXCAVATION				
0220 509E10001	1,089,221.00	LB	\$1.00	\$1,089,221.00

EPOXY COATED REINFORCING STEEL, AS PER PLAN

I otal for Group 1510:\$25,004,447.83

Line # Item Number	<u>Quantity</u>	<u>Units</u>	Unit Price
Description			
Supplemental Description			

Extension

0221 509E20001	21.00	LB	\$2.54	\$53.34
REINFORCING STEEL, REPLACEMENT	OF EXIST	ING REII	NFORCING STEEL, AS PER PLAN	
0222 511E34446	4,079.00	CY	\$661.81	\$2,699,522.99
CLASS QC2 CONCRETE WITH QC/QA, E	BRIDGE D	ECK		
0223 511E44110	1.00	CY	\$442.90	\$442.90
CLASS QC1 CONCRETE, ABUTMENT N	OT INCLU	DING FC	OTING	
0224 512E10100	2.00	SY	\$19.82	\$39.64
SEALING OF CONCRETE SURFACES (E	POXY-UR	ETHANE	=)	
0225 516E11211	4.00	FT	\$498.14	\$1,992.56
STRUCTURAL EXPANSION JOINT INCL	UDING EL	ASTOME	RIC STRIP SEAL, AS PER PLAN	
0226 516E12200	8.00	FT	\$4,000.00	\$32,000.00
STRUCTURAL STEEL EXPANSION JOIN	IT			
0227 518E21200	1.00	CY	\$84.05	\$84.05
POROUS BACKFILL WITH FILTER FABR	lC			
0228 518E63300	1.00	LS	\$60,000.00	\$60,000.00
STRUCTURE DRAINAGE, MISC.:				
EXTEND DRAINAGE TROUGH				
0229 526E25001	2.00		\$209.00	\$418.00
REINFORCED CONCRETE APPROACH				
0230 530E00400	3.00	EACH	\$16,000.00	\$48,000.00
SPECIAL - STRUCTURE, MISC.:				
SIGN SUPPORT				
0231 530E00600	4,600.00	SF	\$100.00	\$460,000.00
SPECIAL - STRUCTURE, MISC.:				
COMPOSITE FIBER WRAP SYSTEM				
0232 530E00800	924.00	SY	\$5.00	\$4,620.00
SPECIAL - STRUCTURE, MISC.:				
MILL FINAL DECK SURFACE				

Total for Group 1511:\$4,397,122.82

Group 9000: INCIDENTALS

0204 614E11000 MAINTAINING TRAFFIC	1.00	LS	\$2,000,000.00	\$2,000,000.00
0205 619E16020 FIELD OFFICE, TYPE C	62.00	MNTH	\$2,028.70	\$125,779.40
0206 623E10001 CONSTRUCTION LAYOUT STAKES, A	1.00 S PER PLAN		\$250,000.00	\$250,000.00
0207 624E10000 MOBILIZATION	1.00	LS	\$2,000,000.00	\$2,000,000.00

Total for Group 9000:\$4,375,779.40

Group 9999: DESIGN CONTINGENCY

0208 PRELIMINARY: 15% DESIGN CONTINGENCY	1.00 Y	LS	\$24,641,144.37	\$24,641,144.37
			Total for Group 9999:\$24,64	41,144.37

Line # Item Number Description Supplemental Description

Group 0100: ROADWAY

0005 201E11000 CLEARING AND GRUBBING	1.00	LS	\$5,000.00	\$5,000.00
0006 202E20010 HEADWALL REMOVED	1.00	EACH	\$268.80	\$268.80
0008 202E23010 PAVEMENT REMOVED, ASPHALT	50.00	SY	\$30.00	\$1,500.00
0013 202E70100 SPECIAL - PIPE CLEANOUT	550.00	FT	\$11.29	\$6,209.50
0014 203E10000 EXCAVATION	1,362.00	CY	\$12.36	\$16,834.32
0015 203E20000 EMBANKMENT	3,199.00	CY	\$8.47	\$27,095.53

Group 0200: EROSION CONTROL

0217 832E15000	1.00	1.5	\$5,000,00	\$5,000.00
0211 002110000	1.00	20	φ0,000.00	\$0,000.00
STORM WATER POLLUTION F				
STORIVI WATER POLLUTION P				
0040 000 000	E0 000 00		¢1 00	¢50,000,00
0218 832E30000	50,000.00	EACH	Φ 1.00	\$50,000.00
EROSION CONTROL				

Group 0300: DRAINAGE

0027 602E20000 CONCRETE MASONRY	2.00	CY
0028 605E11110	300.00	FT
6" SHALLOW PIPE UNDERDRAINS WITH	H FABRIC	WRA
0031 611E07600 18" CONDUIT, TYPE C	80.00	FT
0032 611E10400 24" CONDUIT, TYPE B	3,549.00	FT
0033 611E10600 24" CONDUIT, TYPE C	226.00	FT
0035 611E22600 54" CONDUIT, TYPE C	20.00	FT
0036 611E26400 72" CONDUIT, TYPE C	140.00	FT
0041 611E98471 CATCH BASIN, NO. 2-2B, AS PER PLAN BRIDGE DOWNSPOUT COLLECTION	12.00	EAC
0042 611E99574 MANHOLE, NO. 3	10.00	EAC
0043 611E99654 MANHOLE ADJUSTED TO GRADE	2.00	EAC

Group 0400: PAVEMENT

0047	304E20000	85.00	CY
AG	GREGATE BASE		

Group 0700: LIGHTING

10:49:04AM Monday, February 10, 2014

Estimate CUY90591

Estimated Cost:\$105,897,310.59 Contingency: 35.00% Estimated Total: \$142,961,369.30

CUY-480-18.42: ALTERNATIVE 6 - CONTRACT 1 OF 2 Base Date: 01/01/18 Spec Year: 13 Unit System: E Work Type: BRIDGE REHABILITATION Highway Type: 446 ON 304 Urban/Rural Type: URBAN CLASS Season: SPRING County: CUYAHOGA Midpoint of Latitude: 412435 Midpoint of Longitude: 0813745 District: 12 Federal/State Project Number: Estimate Type: Preliminary Submission (Inflation 1-1-2020) Prepared by Richland Engineering Limited on 01/31/14

Total for Group 0100:\$56,908.15

Total for Group 0200:\$55,000.00

	\$1,505.67	\$3,011.34
P	\$10.55	\$3,165.00
	\$67.54	\$5,403.20
	\$104.29	\$370,125.21
	\$65.99	\$14,913.74
	\$174.52	\$3,490.40
	\$500.00	\$70,000.00
H	\$4,000.00	\$48,000.00
H	\$2,675.22	\$26,752.20
H	\$560.77	\$1,121.54

Total for Group 0300:\$545,982.63

\$6,140.40

\$72.24

Total for Group 0400:\$6,140.40

Estimate: CUY90591

Richland Engineering Limited

Line # Item Nun Description Supplemental		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	Extension
<u>ouppiomentai</u>	becomption				
0058 625E104 LIGHT POLE,	90 CONVENTIONAL	31.00	EACH	\$1,833.22	\$56,829.82
0059 625E106		124.00 JCTURE	EACH	\$100.00	\$12,400.00
0063 625E232 NO. 4 AWG 50	00 00 VOLT DISTRIBUTION	39,000.00 CABLE	FT	\$2.56	\$99,840.00
0064 625E234 NO. 10 AWG F)0 OLE AND BRACKET CAE	3,410.00 BLE	FT	\$1.23	\$4,194.30
0065 625E254 CONDUIT, 2",		12,500.00	FT	\$11.63	\$145,375.00
0066 625E262 LUMINAIRE, C	50 ONVENTIONAL	31.00	EACH	\$330.45	\$10,243.95
0068 625E299		31.00	EACH	\$1,487.36	\$46,108.16
0069 625E307 PULL BOX, 72		11.00	EACH	\$720.87	\$7,929.57
0070 625E330			EACH N	\$50,000.00	\$50,000.00
0071 625E340 POWER SER\		2.00	EACH	\$2,609.20	\$5,218.40
				Tatal	Crown 0700.0400 400 00

Total for Group 0700:\$438,139.20

Group 1505: CUY-480-1842 M: ALTERNATIVE 6

			•	
0298 503E11101	1.00	LS	\$50,000.00	\$50,000.00
COFFERDAMS AND EXCAVATION BI	RACING, AS I	PER PLA	N	
0299 503E21100	15,992.00	CY	\$54.16	\$866,126.72
UNCLASSIFIED EXCAVATION				
0300 503E31120	440.00	CY	\$42.15	\$18,546.00
SHALE EXCAVATION				
0301 505E11100	1.00	LS	\$20,000.00	\$20,000.00
PILE DRIVING EQUIPMENT MOBILIZ				
0302 506E11100	1.00	LS	\$5,000.00	\$5,000.00
STATIC LOAD TEST			A a a a a a a a a a a	• •• •• ••
0303 506E12200	16.00	EACH	\$2,500.00	\$40,000.00
SUBSEQUENT STATIC LOAD TEST	0.040.00	FT	# 00.00	\$ 22,222,222
	2,040.00	FI	\$39.22	\$80,008.80
STEEL PILES HP12X53, FURNISHED		FT	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	¢4407400
0305 507E00250	1,814.00	FI	\$8.20	\$14,874.80
STEEL PILES HP12X53, DRIVEN 0306 507E00600	152,870.00	CT	\$9.49	\$1,450,736.30
14" CAST-IN-PLACE REINFORCED C			T	\$1,430,730.30
0307 507E00650				\$7,102,061.29
14" CAST-IN-PLACE REINFORCED C				φ/,102,001.25
	5,557,045.00		\$1.00	\$5,557,045.00
EPOXY COATED REINFORCING STE			\$1100	\$0,001,01000
0309 511E34446			\$661.81	\$8,301,744.64
CLASS QC2 CONCRETE WITH QC/Q	·			+-,, -
0310 511E34450	1,341.00		\$463.33	\$621,325.53
CLASS QC2 CONCRETE WITH QC/Q	A, BRIDGE D	ECK (PA	RAPET)	
0311 511E42010			\$815.00	\$13,145,950.00
CLASS QC1 CONCRETE, PIER ABOV	E FOOTINGS	5		
0312 511E44110		CY		\$179,786.00
CLASS QC1 CONCRETE, ABUTMEN				
0313 511E46510	9,091.00	CY	\$408.00	\$3,709,128.00
CLASS QC1 CONCRETE, FOOTING				

Estimate: CUY90591						
Des	<u>Item Number</u> <u>cription</u> plemental Description					
0314	512E10100					

0314 512E10100 SEALING OF CONCRETE SURFACES	31,209.00 S (EPOXY-UR		\$11.99 E)	\$374,195.91
	2,275,032.00		\$1.52	\$33,858,048.64
0316 513E20000 WELDED STUD SHEAR CONNECTO	154,388.00	EACH	\$3.36	\$518,743.68
0317 513E95000 STRUCTURAL STEEL, MISC.: INSPECTION CABLE	30,400.00	FT	\$8.00	\$243,200.00
0318 513E95000 STRUCTURAL STEEL, MISC.: INSPECTION HANDRAIL	200.00	FT	\$45.00	\$9,000.00
	1,068,000.00 EL. INTERME		\$4.00 OAT	\$4,272,000.00
	1,068,000.00	SF	\$4.00	\$4,272,000.00
0321 516E11211 STRUCTURAL EXPANSION JOINT IN	170.00	FT	\$498.14 RIC STRIP SEAL, AS PER PLAN	\$84,683.80
0322 516E12400 SPECIAL - MODULAR EXPANSION J	340.00		\$800.00	\$272,000.00
0323 516E13900 2" PREFORMED EXPANSION JOINT	124.00	SF	\$10.21	\$1,266.04
0324 518E12300 SCUPPERS, INCLUDING SUPPORTS	20.00	EACH	\$1,800.00	\$36,000.00
0325 518E21200 POROUS BACKFILL WITH FILTER FA	147.00	CY	\$78.91	\$11,599.77
0326 518E40000 6" PERFORATED CORRUGATED PL/	139.00	FT	\$9.77	\$1,358.03
0327 518E40010 6" NON-PERFORATED CORRUGATE	128.00		\$12.85 LUDING SPECIALS	\$1,644.80
0328 518E51100 8" PIPE DOWNSPOUT, INCLUDING S	1,371.00		\$440.00	\$603,240.00
0329 523E20000 DYNAMIC LOAD TESTING		EACH	\$3,343.17	\$106,981.44
0330 523E20500 RESTRIKE	32.00	EACH	\$2,509.25	\$80,296.00
0331 526E30001 REINFORCED CONCRETE APPROA	567.00 CH SLABS (T:	-	\$244.29 9 PER PLAN	\$138,512.43
0332 530E00400 SPECIAL - STRUCTURE, MISC.: INSPECTION MANHOLE COVER		EACH		\$6,600.00
0333 530E00600 SPECIAL - STRUCTURE, MISC.: STAY-IN-PLACE DECK FORMS	163,751.00	SF	\$10.00	\$1,637,510.00
0334 607E39901 VANDAL PROTECTION FENCE, 6' ST	8,300.00 RAIGHT, CO		\$61.98 BRIC. AS PER PLAN	\$514,434.00
0335 607E50901 GATE, TYPE CL, AS PER PLAN	,	EACH	•	\$15,938.90
			Total for Group 15	05:\$88,221,586.52
Group 9000: INCIDENTALS				

Group	9000: INCIDENTALS		
	614E11000	1.00	LS
MAI	NTAINING TRAFFIC		
0205	619E16020	30.00	MNT
FIE	LD OFFICE, TYPE C		

Page 3 of 5

Richland Engineering Limited

Quantity Units Unit Price

	\$500,000.00	\$500,000.00
Н	\$2,028.70	\$60,861.00

Estimate: CUY90591				Richland Engineering Limited	
Line # Item Number Description Supplemental Description	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>	
0206 623E10001 CONSTRUCTION LAYOUT STAKES,	1.00 AS PER PLAN		\$200,000.00	\$200,000.00	
0207 624E10000 MOBILIZATION	1.00	LS	\$2,000,000.00	\$2,000,000.00	
			Total for Group 9	000:\$2,760,861.00	
Group 9999: DESIGN CONTINGENCY					
0208 PRELIMINARY: 15% DESIGN CONTIN	1.00 NGENCY	LS	\$13,812,692.69	\$13,812,692.69	

Total for Group 9999:\$13,812,692.69

Line # Item Number

Description Supplemental Description

Group 0100: ROADWAY

	0005 201E11000 CLEARING AND GRUBBING	1.00	LS	\$5,000.00	\$5,000.00
1	0007 202E23000 PAVEMENT REMOVED	25,678.00	SY	\$8.01	\$205,680.78
	0008 202E23010 PAVEMENT REMOVED, ASPHALT	50.00	SY	\$30.00	\$1,500.00
	0009 202E32000 CURB REMOVED	264.00	FT	\$5.04	\$1,330.56
	0010 202E35100 PIPE REMOVED, 24" AND UNDER	1,124.00	FT	\$13.06	\$14,679.44
	0011 202E38000 GUARDRAIL REMOVED	3,301.00	FT	\$1.28	\$4,225.28
	0012 202E58100 CATCH BASIN REMOVED	15.00	EACH	\$312.41	\$4,686.15
	0014 203E10000 EXCAVATION	44,649.00	CY	\$6.85	\$305,845.65
	0015 203E20000 EMBANKMENT	57,677.00		\$4.58	\$264,160.66
	0016 204E10000 SUBGRADE COMPACTION	91,731.00	SY	\$1.72	\$157,777.32
	0017 204E45000 PROOF ROLLING	46.00		\$178.98	\$8,233.08
_	0018 209E60200 LINEAR GRADING	35.00	STA	\$246.54	\$8,628.90
	0019 606E13000 GUARDRAIL, TYPE 5	4,284.00	FT	\$13.48	\$57,748.32
_	0020 606E26100 ANCHOR ASSEMBLY, TYPE E	4.00	EACH	\$1,550.82	\$6,203.28
	0021 606E26500 ANCHOR ASSEMBLY, TYPE T	4.00	EACH		\$2,702.80
	0022 606E35000 BRIDGE TERMINAL ASSEMBLY, TYPE		EACH	\$1,198.06	\$5,990.30
	0023 606E35100 BRIDGE TERMINAL ASSEMBLY, TYPE		EACH	\$367.06	\$1,101.18
	0024 606E60022 IMPACT ATTENUATOR, TYPE 2 (UNID	IRECTIONA		\$19,442.75	\$58,328.25
	0025 622E10160 CONCRETE BARRIER, SINGLE SLOPE			\$54.03	\$170,086.44
	0026 622E10100 CONCRETE BARRIER, SINGLE SLOPE	1,859.00 5, TYPE B1	FT	\$95.06	\$176,716.54

Group 0200: EROSION CONTROL

0209 601E20000 CRUSHED AGGREGATE SLOPE PRO		SY	\$33.70	\$3,336.30
0211 659E00300 TOPSOIL	3,454.00	CY	\$20.89	\$72,154.06
0212 659E10000 SEEDING AND MULCHING	31,112.00	SY	\$0.45	\$14,000.40
0213 659E14000 REPAIR SEEDING AND MULCHING	1,556.00	SY	\$0.90	\$1,400.40
0214 659E20000 COMMERCIAL FERTILIZER	5.00	TON	\$500.00	\$2,500.00
0215 659E31000 LIME	6.43	ACRE	\$400.00	\$2,572.00

10:50:54AM Monday, February 10, 2014

Estimate CUY90591

Estimated Cost:\$85,476,214.02 Contingency: 35.00% Estimated Total: \$115,392,888.93

CUY-480-18.42: ALTERNATIVE 6 - CONTRACT 2 OF 2 Base Date: 01/01/18 Spec Year: 13 Unit System: E Work Type: BRIDGE REHABILITATION Highway Type: 446 ON 304 Urban/Rural Type: URBAN CLASS Season: SPRING County: CUYAHOGA Midpoint of Latitude: 412435 Midpoint of Longitude: 0813745 District: 12 Federal/State Project Number: Estimate Type: Preliminary Submission (Inflation 1-1-2020)

Prepared by Richland Engineering Limited on 01/31/14

Total for Group 0100:\$1,460,624.93

Estimate: CUY90591

Richland Engineering Limited

Line # Item Number Description Supplemental Description	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
0216 659E35000 WATER	169.00	MGAL	\$2.60	\$439.40
0217 832E15000 STORM WATER POLLUTION PR	1.00 REVENTION PLAN	LS	\$10,000.00	\$10,000.00
0218 832E30000 EROSION CONTROL	150,000.00	EACH	\$1.00	\$150,000.00
			Total for G	Group 0200:\$256,402.56
Group 0300: DRAINAGE				
0027 602E20000 CONCRETE MASONRY	2.00	CY	\$1,505.67	\$3,011.34
0028 605E11110 6" SHALLOW PIPE UNDERDRAI	51,549.00 NS WITH FABRIC	FT WRAP	\$10.55	\$543,841.95
0029 611E06100	220.00	FT	\$46.54	\$10,238.80

0029 611E06100 15" CONDUIT, TYPE C	220.00	FT	\$46.54	\$10,238.80
0030 611E07400 18" CONDUIT, TYPE B	1,866.00	FT	\$54.08	\$100,913.28
0031 611E07600 18" CONDUIT, TYPE C	8.00	FT	\$86.08	\$688.64
0033 611E10600 24" CONDUIT, TYPE C	12.00	FT	\$82.82	\$993.84
0034 611E12100 27" CONDUIT, TYPE C	8.00	FT	\$152.51	\$1,220.08
0037 611E98150 CATCH BASIN, NO. 3	2.00	EACH	\$2,468.98	\$4,937.96
0038 611E98180 CATCH BASIN, NO. 3A	2.00	EACH	\$2,105.02	\$4,210.04
0039 611E98300 CATCH BASIN, NO. 5	10.00	EACH	\$2,912.35	\$29,123.50
0040 611E98370 CATCH BASIN, NO. 6	3.00	EACH	\$2,138.28	\$6,414.84
0044 839E30000 TRENCH DRAIN WITH STANDARD GRA	1,000.00 \TE	FT	\$63.16	\$63,160.00

Total for Group 0300:\$768,754.27

Group 0400: PAVEMENT

0045	254E01000	118,942.00	SY	\$1.24	\$147,488.08
PAV	'EMENT PLANING, ASPHALT CON	CRETE			
0046	302E46000	27,712.00	CY	\$87.97	\$2,437,824.64
ASP	HALT CONCRETE BASE, PG64-22				
0047	304E20000	15,271.00	CY	\$44.36	\$677,421.56
AGG	GREGATE BASE				
0049	407E10000	3,607.00	GAL	\$2.91	\$10,496.37
TAC	K COAT				
0050	407E14000	14,516.00	GAL	\$2.56	\$37,160.96
TAC	K COAT FOR INTERMEDIATE COL	JRSE			
0051	408E10000	36,277.00	GAL	\$2.98	\$108,105.46
PRI	ME COAT				
0052	411E10000	206.00	CY	\$49.87	\$10,273.22
STA	BILIZED CRUSHED AGGREGATE				
0053	442E10050	8,735.00	CY	\$147.73	\$1,290,421.55
ASP	HALT CONCRETE SURFACE COU	RSE, 12.5MI	M, TYPE	B (446)	
0054	442E10150	6,637.00	-	\$126.11	\$836,992.07
ASP	HALT CONCRETE INTERMEDIATE	COURSE, 1	9MM, T`	YPE B (446)	

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Estimate: CUY90591 Line # Item Number

Quantity Units Unit Price

Description Supplemental Description

0055 448E46061	64.00 CY \$235.26	\$15.056.64
	ATE COURSE, TYPE 1, UNDER GUARDRAIL, PG64-22,	+ - ,
	ATE COURSE, TIPE T, UNDER GUARDRAIL, PO04-22,	AS FER FLAN
0057 609E26001	200.00 FT \$15.14	\$3.028.00
CURB. TYPE 6. AS PER PLAN		+-,
CORD, TIPE 0, AS PER PLAN		

Group 0700: LIGHTING

0058 625E10490 LIGHT POLE, CONVENTIONAL	42.00	EACH	\$1,833.22	\$76,995.24
0059 625E10614 LIGHT POLE ANCHOR BOLTS ON S	168.00 FRUCTURE	EACH	\$100.00	\$16,800.00
0060 625E13404 LIGHT TOWER, BBBBBB110	2.00		\$13,635.44	\$27,270.88
0061 625E14000 LIGHT POLE FOUNDATION, 24" X 6'		EACH	\$1,028.77	\$43,208.34
0062 625E15400 LIGHT TOWER FOUNDATION, 42" X	25' DEEP		\$7,000.00	\$14,000.00
0063 625E23200 NO. 4 AWG 5000 VOLT DISTRIBUTIC			\$2.56	\$307,200.00
0064 625E23400 NO. 10 AWG POLE AND BRACKET C			\$1.06	\$11,130.00
0065 625E25400 CONDUIT, 2", 725.04	33,000.00	FT	\$11.63	\$383,790.00
0066 625E26250 LUMINAIRE, CONVENTIONAL	47.00	EACH	\$330.45	\$15,531.15
0067 625E26260 LUMINAIRE, HIGH MAST	12.00	EACH	\$727.78	\$8,733.36
0068 625E29901 JUNCTION BOX, AS PER PLAN	42.00	EACH	\$1,487.36	\$62,469.12
0069 625E30700 PULL BOX, 725.08, 18"	44.00	EACH	\$698.87	\$30,750.28
0070 625E33001 STRUCTURE GROUNDING SYSTEM			\$50,000.00	\$100,000.00
0071 625E34000 POWER SERVICE	4.00	EACH	\$2,609.20	\$10,436.80
0072 625E60010 LIGHT POLE REMOVED FOR REERE	42.00 ECTION	EACH	\$250.00	\$10,500.00
0073 625E75350 LIGHT TOWER REMOVED	2.00	EACH	\$1,340.40	\$2,680.80
0074 625E75400 LIGHT POLE REMOVED	39.00	EACH	\$170.89	\$6,664.71
0076 625E75508 LUMINAIRE REMOVED FOR REUSE	42.00	EACH	\$54.60	\$2,293.20

Group 0800: TRAFFIC CONTROL

0077 621E10010	552.00	EACH	\$27.98	\$15,444.96
RPM, LOW PROFILE, WHITE				
0078 626E00100	323.00	EACH	\$6.06	\$1,957.38
BARRIER REFLECTOR				
0079 630E02100	108.00	FT	\$9.05	\$977.40
GROUND MOUNTED SUPPORT, NO. 2	POST			
0080 630E03100	72.00	FT	\$9.58	\$689.76
GROUND MOUNTED SUPPORT, NO. 3	POST			

Total for Group 0400:\$5,574,268.55

Total for Group 0700:\$1,130,453.88

Estimate: C	UY90591
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_0000000					rtioniana Engineering Einitea
Line #	Item Number	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	Extension
Des	cription				
Sup	plemental Description				
0081	630E04100	120.00	FT	\$11.09	\$1,330.80
GRC	DUND MOUNTED SUPPORT, NO. 4	POST			
	630E20701			\$12,000.00	\$72,000.00
	RHEAD SIGN SUPPORT, TYPE TO				
	630E31101	2.00	EACH	\$12,000.00	\$24,000.00
OVE	RHEAD SIGN SUPPORT, TYPE TO				
	630E45500			\$31,125.84	\$311,258.40
	RHEAD SIGN SUPPORT, TYPE TO	,			
	630E80200	181.00	SF	\$16.84	\$3,048.04
	N, GROUND MOUNTED EXTRUSH				
	630E80224	5,670.00	SF	\$18.47	\$104,724.90
	N, OVERHEAD EXTRUSHEET				
	630E84510		EACH	\$2,882.39	\$80,706.92
	ID OVERHEAD SIGN SUPPORT FC				
	630E84900		EACH	\$14.00	\$182.00
	IOVAL OF GROUND MOUNTED SI			• · · • • • ·	^
	630E85400			\$100.84	\$705.88
	IOVAL OF GROUND MOUNTED MA				* ****
0090			EACH		\$360.62
	IOVAL OF GROUND MOUNTED PO				* • = ••• ••
0091	630E87401			\$800.00	\$25,600.00
	10VAL OF OVERHEAD MOUNTED				\$ 0,000,01
0092	630E89706			\$986.77	\$2,960.31
	10VAL OF OVERHEAD SIGN SUPF				\$ 2,400,00
				\$1,200.00	\$2,400.00
	10VAL OF OVERHEAD SIGN SUPF				¢7.001.00
				\$1,532.32	\$7,661.60
	IOVAL OF OVERHEAD SIGN SUPF 646E10000			\$1,993.18	¢27.020.02
	G46E10000 GE LINE, 4"	19.03		φ1,993.10	\$37,930.22
	646E10100	15.02	MILE	\$2,102.59	\$31,580.90
	E LINE, 4"	-			. ,
	646E10300	5,000.00	FT	\$1.56	\$7,800.00
CHA	NNELIZING LINE, 8"				

Group 1200: MAINTENANCE OF TRAFFIC

•				
0100 614E12800	4,310.00	EACH	\$5.06	\$21,808.60
WORK ZONE RAISED PAVEMENT MA	RKER			
0101 614E13300	1,094.00	EACH	\$5.10	\$5,579.40
BARRIER REFLECTOR, TYPE B				
0102 614E13360	541.00	EACH	\$10.31	\$5,577.71
OBJECT MARKER, TWO WAY				
0103 614E18002	1.00	LS	\$25,000.00	\$25,000.00
MAINTAINING TRAFFIC, MISC.:				
TEMPORARY LIGHTING		-	•	• • • • • • • • •
0104 614E20100	28.06	MILE	\$809.72	\$22,720.74
WORK ZONE LANE LINE, CLASS I, 64				
0105 614E22001	40.55	MILE	\$694.09	\$28,145.35
WORK ZONE EDGE LINE, CLASS I, AS	S PER PLAN			
WHITE				
0107 614E23200	70,508.00	FT	\$0.41	\$28,908.28
WORK ZONE CHANNELIZING LINE, C	LASS I, 642	PAINT		
0108 614E24000	5,630.00	FT	\$0.39	\$2,195.70
WORK ZONE DOTTED LINE, CLASS I				

Total for Group 0800:\$733,320.09

Richland Engineering Limited

Estimate: CUY90591				Richland Engineering Limited
Line # Item Number Description Supplemental Description	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
0109 615E20000 PAVEMENT FOR MAINTAINING TRAFF	25,965.00 FIC, CLASS		\$22.50	\$584,212.50
0114 622E41000 PORTABLE BARRIER, 32"	17,084.00	FT	\$9.40	\$160,589.60
0120 622E41010 PORTABLE BARRIER, 50"	3,582.00	FT	\$11.55	\$41,372.10
0131 622E41020 PORTABLE BARRIER, 32", BRIDGE MO	8,310.00 DUNTED	FT	\$16.85	\$140,023.50

Group 1500: CUY-480-1842 L: ALTERNATIVE 6

0233 202E11203 PORTIONS OF STRUCTURE REMOVE	1.00		\$9,000,000.00	\$9,000,000.00
0234 202E22900 APPROACH SLAB REMOVED	268.00		\$26.24	\$7,032.32
0235 202E75000 FENCE REMOVED	8,311.00	FT	\$2.13	\$17,702.43
0236 202E98000 REMOVAL MISC.: <i>METAL SUBDECKING</i>	1.00	LS	\$60,000.00	\$60,000.00
0237 202E98000 REMOVAL MISC.: EXISTING DRAINAGE CLEANOUT	1.00	LS	\$20,500.00	\$20,500.00
0238 503E11101	1.00		\$55,000.00	\$55,000.00
COFFERDAMS AND EXCAVATION BR 0239 503E21100	ACING, AS I 189.00		N \$121.39	\$22,942.71
UNCLASSIFIED EXCAVATION	100.00	01	φ121.00	φ22,042.71
EPOXY COATED REINFORCING STE	,768,814.00 EL, AS PER F		\$1.00	\$2,768,814.00
0241 509E20001	750.00			\$1,905.00
REINFORCING STEEL, REPLACEMEN 0242 510E10000 DOWEL HOLES WITH NONSHRINK, N	60.00	EACH	\$22.97	\$1,378.20
0243 511E34446 CLASS QC2 CONCRETE WITH QC/QA	8,990.00	CY	\$661.81	\$5,949,671.90
0244 511E34450 CLASS QC2 CONCRETE WITH QC/QA	1,341.00	CY	\$463.33 RAPET)	\$621,325.53
0245 511E44110 CLASS QC1 CONCRETE, ABUTMENT	117.00	CY	\$442.90	\$51,819.30
0246 512E10100	12,600.00	SY	\$19.82	\$249,732.00
SEALING OF CONCRETE SURFACES				• • • • •
0247 512E33000 TYPE 2 WATERPROOFING	10.00		\$32.04	\$320.40
0248 512E74000	96.00		\$23.11	\$2,218.56
REMOVAL OF EXISTING COATINGS F				¢444.005.50
0249 513E20000 WELDED STUD SHEAR CONNECTOR	132,332.00 S	EACH	\$3.30	\$444,635.52
0250 513E90000 STRUCTURAL STEEL, MISC.: STRINGER BRACING	36,573.00		\$20.00	\$731,460.00
0251 513E95000 STRUCTURAL STEEL, MISC.: INSPECTION CABLE	467.00	FT	\$8.00	\$3,736.00
0252 513E95000 STRUCTURAL STEEL, MISC.: INSPECTION HANDRAIL	25.00	FT	\$45.00	\$1,125.00

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Total for Group 1200:\$1,066,133.48

Estimate:	CUY90591
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Monday, February 10, 2014

Richland Engineering Limited Line # Item Number Quantity Units Unit Price Extension Description Supplemental Description 19.00 EACH \$700.00 \$13,300.00 0253 513E95030 STRUCTURAL STEEL, MISC .: DRILLING STRUCTURAL STEEL (1" DIAMETER HOLE) 0254 513E95030 31.00 EACH \$2,300.00 \$71,300.00 STRUCTURAL STEEL, MISC .: K FRAME COPE REPAIR 0255 513E95030 15.00 EACH \$700.00 \$10,500.00 STRUCTURAL STEEL, MISC .: DOG BONE REPAIR 0256 514E00050 400.00 SF \$31.00 \$12,400.00 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL 0257 514E00056 400.00 SF \$8.00 \$3,200.00 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT 400.00 SF \$1,600.00 0258 514E00060 \$4.00 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT 0259 514E00066 400.00 SF \$4.00 \$1,600.00 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT 0260 514E27800 1.00 LS \$4,800.00 \$4,800.00 FIELD PAINTING, MISC .: SURFACE PREPARATION OF EXISTING STEEL, SOLVENT CLEAN, SYSTEM OZEU 0261 516E11211 146.00 FT \$498.14 \$72,728.44 STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN 0262 516E13900 102.00 SF \$10.44 \$1,064.88 2" PREFORMED EXPANSION JOINT FILLER 0263 518E12300 20.00 EACH \$1,800.00 \$36,000.00 SCUPPERS, INCLUDING SUPPORTS 0264 518E21200 145.00 CY \$84.05 \$12,187.25 POROUS BACKFILL WITH FILTER FABRIC 0265 518E62100 60.00 FT \$214.00 \$12,840.00 STRUCTURE DRAINAGE, MISC .: DOWNSPOUT REPLACEMENT 80.00 EACH \$220.00 0266 518E62200 \$17,600.00 STRUCTURE DRAINAGE, MISC.: TROUGH CONDUCTOR REPLACEMENT 10.00 EACH \$2,000.00 \$20,000.00 0267 518E62200 STRUCTURE DRAINAGE, MISC.: VERTICAL DOWNSPOUT SUPPORT REPAIR 4.00 EACH \$2,000.00 \$8,000.00 0268 518E62200 STRUCTURE DRAINAGE, MISC .: DRAINAGE TROUGH BRACING REPAIR 0269 518E62200 4.00 EACH \$4,500.00 \$18,000.00 STRUCTURE DRAINAGE, MISC .: DRAINAGE TROUGH FLASHING REPAIR 8.00 EACH \$700.00 \$5,600.00 0270 518E62200 STRUCTURE DRAINAGE, MISC .: DRAINAGE SYSTEM BOLT AND NUT REPLACEMENT 10.00 EACH \$2,000.00 \$20,000.00 0271 518E62200 STRUCTURE DRAINAGE, MISC .: DOWNSPOUT COLLAR REPAIR 0272 519E11101 13,588.00 SF \$90.16 \$1,225,094.08 PATCHING CONCRETE STRUCTURE, AS PER PLAN 0273 526E25001 467.00 SY \$97,603.00 \$209.00 REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN 0274 530E00400 4.00 EACH \$1,000.00 \$4,000.00 SPECIAL - STRUCTURE, MISC .: INSPECTION MANHOLE COVER (REMOVE, STORE AND REUSE) \$2,784,190.00 0275 530E00600 278,419.00 SF \$10.00 SPECIAL - STRUCTURE, MISC .: STAY-IN-PLACE DECK FORMS 10:50:54AM

Estimate: CUY90591

Line # Item Number

<u>Description</u>	<u>Quantity</u>	011113		LATENSION
Supplemental Description				
0276 530E00600 SPECIAL - STRUCTURE, MISC.: COMPOSITE FIBER WRAP SYSTEM	1,150.00	SF	\$100.00	\$115,000.00
0277 530E00800 SPECIAL - STRUCTURE, MISC.: MILL FINAL DECK SURFACE	32,321.00		\$5.00	\$161,605.00
0278 607E39901 VANDAL PROTECTION FENCE, 6' ST	8,311.00 RAIGHT CO.		\$61.98 ABRIC AS PER PLAN	\$515,115.78
0279 607E50901 GATE, TYPE CL, AS PER PLAN			\$1,593.89	\$12,751.12
0280 690E71000 SPECIAL - ASBESTOS ABATEMENT	1.00	LS	\$6,000.00	\$6,000.00
			Total for Group 1500	:\$25,275,398.42
Group 1501: CUY-480-1842 L: A	ALTERNA	TIVE	6 - ADDITIONAL COST TC) WIDEN
PROPOSED BRIDGE DECK				
0281 503E21100 UNCLASSIFIED EXCAVATION	7.00	CY	\$121.39	\$849.73
	,089,349.00	LB	\$1.00	\$1,089,349.00
EPOXY COATED REINFORCING STE				
0283 509E20001	22.00		\$2.54	\$55.88
REINFORCING STEEL, REPLACEMEN 0284 511E34446	4,079.00		\$661.81	\$2,699,522.99
CLASS QC2 CONCRETE WITH QC/Q/			001.01	φ2,099,522.99
0285 511E44110	2.00	CY	\$442.90	\$885.80
CLASS QC1 CONCRETE, ABUTMENT				
0286 512E10100	4.00			\$79.28
SEALING OF CONCRETE SURFACES				* 4 000 5 0
0287 516E11211	4.00			\$1,992.56
STRUCTURAL EXPANSION JOINT IN 0288 516E12200				¢22.000.00
STRUCTURAL STEEL EXPANSION JO	8.00 TANC	FI	\$4,000.00	\$32,000.00
0289 518E21200	3.00	CY	\$84.05	\$252.15
POROUS BACKFILL WITH FILTER FA	BRIC			
0290 518E63300 STRUCTURE DRAINAGE, MISC.: EXTEND DRAINAGE TROUGH	1.00	LS	\$60,000.00	\$60,000.00
0291 526E25001	2.00		\$209.00	\$418.00
REINFORCED CONCRETE APPROAC				* 10,000,00
0292 530E00400 SPECIAL - STRUCTURE, MISC.: SIGN SUPPORT			\$16,000.00	\$48,000.00
0293 530E00600 SPECIAL - STRUCTURE, MISC.: COMPOSITE FIBER WRAP SYSTEM	4,600.00	SF	\$100.00	\$460,000.00
0295 530E00800 SPECIAL - STRUCTURE, MISC.: MILL FINAL DECK SURFACE	924.00	SY	\$5.00	\$4,620.00

Group 1505: CUY-480-1842 M: ALTERNATIVE 6

0296 511E34450 1.397.00 CY CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)

<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>
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	\$121.39	\$849.73
	\$1.00	\$1,089,349.00
REIN	\$2.54 NFORCING STEEL, AS PER PLAN	\$55.88
	\$661.81	\$2,699,522.99
FO	\$442.90 OTING	\$885.80
NE	\$19.82)	\$79.28
ME	\$498.14 RIC STRIP SEAL, AS PER PLAN	\$1,992.56
	\$4,000.00	\$32,000.00
	\$84.05	\$252.15
	\$60,000.00	\$60,000.00
AS	\$209.00 PER PLAN	\$418.00
H	\$16,000.00	\$48,000.00
	\$100.00	\$460,000.00
	\$5.00	\$4,620.00

Total for Group 1501:\$4,398,025.39

\$463.33

\$647.272.01

Total for Group 1505:\$647,272.01

Estimate: CUY90591

Monday, February 10, 2014

Line # Item Number	<u>Quantity</u>	<u>Units</u>	Unit Price
Description			
Supplemental Description			

Richland Engineering Limited

Extension

Estimate: CUY90591 Line # Item Number

Description Supplemental Description

0177 514E00050	400.00	SF	\$31.00	\$12,400.00
SURFACE PREPARATION OF EXISTI	ING STRUCTL	JRAL ST	EEL	
0178 514E00056 FIELD PAINTING OF EXISTING STRU	400.00 JCTURAL STE		\$8.00 IME COAT	\$3,200.00
0179 514E00060 FIELD PAINTING STRUCTURAL STEI	400.00 FL INTERME		\$4.00 OAT	\$1,600.00
0180 514E00066	400.00	SF	\$4.00	\$1,600.00
FIELD PAINTING STRUCTURAL STEI 0181 514E27800	EL, FINISH CC 1.00		\$4,800.00	\$4,800.00
FIELD PAINTING, MISC.: SURFACE PREPARATION OF EXISTI	NG STEEL S	OI VENT	CLEAN SYSTEM OZEU	
0182 516E11211	161.00		\$498.14	\$80,200.54
STRUCTURAL EXPANSION JOINT IN 0183 516E13900	60.00		RIC STRIP SEAL, AS PER \$10.44	PLAN \$626.40
2" PREFORMED EXPANSION JOINT 0184 518E12300	20.00	EACH	\$1,800.00	\$36,000.00
SCUPPERS, INCLUDING SUPPORTS 0185 518E21200	75.00	CY	\$84.05	\$6,303.75
POROUS BACKFILL WITH FILTER FA				.
0186 518E62100 STRUCTURE DRAINAGE, MISC.: DOWNSPOUT REPLACEMENT	60.00	FT	\$214.00	\$12,840.00
0187 518E62200 STRUCTURE DRAINAGE, MISC.: TROUGH CONDUCTOR REPLACEME		EACH	\$220.00	\$17,600.00
0188 518E62200 STRUCTURE DRAINAGE, MISC.:	5.00	EACH	\$2,000.00	\$10,000.00
VERTICAL DOWNSPOUT SUPPORT	4.00	EACH	\$2,000.00	\$8,000.00
DRAINAGE TROUGH BRACING REPA 0190 518E62200 STRUCTURE DRAINAGE, MISC.:	4.00	EACH	\$4,500.00	\$18,000.00
DRAINAGE TROUGH FLASHING REF 0191 518E62200 STRUCTURE DRAINAGE, MISC.:	7.00		\$700.00	\$4,900.00
DRAINAGE SYSTEM BOLT AND NUT			* 2 222 22	\$ 22,222,222
0192 518E62200 STRUCTURE DRAINAGE, MISC.: DOWNSPOUT COLLAR REPAIR	10.00	EACH	\$2,000.00	\$20,000.00
0193 519E11101 PATCHING CONCRETE STRUCTURE	8,646.00 5. AS PER PLA		\$90.16	\$779,523.36
0194 526E25001	517.00		\$209.00	\$108,053.00
REINFORCED CONCRETE APPROAC				
0196 530E00400 SPECIAL - STRUCTURE, MISC.: INSPECTION MANHOLE COVER (RE			\$1,000.00	\$4,000.00
0197 530E00600	284,381.00		\$10.00	\$2,843,810.00
SPECIAL - STRUCTURE, MISC.: STAY-IN-PLACE DECK FORMS	204,001.00	0	\$10.00	ψ2,0+0,010.00
0198 530E00600 SPECIAL - STRUCTURE, MISC.: COMPOSITE FIBER WRAP SYSTEM	1,150.00	SF	\$100.00	\$115,000.00
0200 530E00800 SPECIAL - STRUCTURE, MISC.: MILL FINAL DECK SURFACE	32,321.00	SY	\$5.00	\$161,605.00
0201 607E39901 VANDAL PROTECTION FENCE, 6' ST	8,311.00		\$61.98	\$515,115.78

10:50:54	IAM
Monday	, February 10, 2014

Group 1510: CUY-480-1842 R: ALTERNATIVE 6
Group 1510: CUY-480-1842 R: ALTERNATIVE 6

Group 1510: CUY-480-1842 R: /	ALTERNA	ATIVE	6	
0153 202E11203 PORTIONS OF STRUCTURE REMOV	1.00 FD_OVER 20		\$9,000,000.00 SPAN AS PER PLAN	\$9,000,000.00
0154 202E22900 APPROACH SLAB REMOVED	311.00		\$26.24	\$8,160.64
0155 202E75000 FENCE REMOVED	8,311.00	FT	\$2.13	\$17,702.43
0156 202E98000 REMOVAL MISC.: <i>METAL SUBDECKING</i>	1.00	LS	\$60,000.00	\$60,000.00
0157 202E98000 REMOVAL MISC.: EXISTING DRAINAGE CLEANOUT	1.00	LS	\$20,500.00	\$20,500.00
0158 503E11101 COFFERDAMS AND EXCAVATION BF	1.00 RACING, AS		\$30,000.00 N	\$30,000.00
0159 503E21100 UNCLASSIFIED EXCAVATION	130.00		\$121.39	\$15,780.70
	2,807,716.00 EL, AS PER		\$1.00	\$2,807,716.00
0161 509E20001 REINFORCING STEEL, REPLACEMEN	825.00	LB	\$2.54 NEORCING STEEL AS PER PLAN	\$2,095.50
0162 510E10000 DOWEL HOLES WITH NONSHRINK, N	60.00	EACH	\$22.97	\$1,378.20
0163 511E34446 CLASS QC2 CONCRETE WITH QC/Q/	9,152.00	CY	\$661.81	\$6,056,885.12
0164 511E34450	1,341.00	CY	\$463.33	\$621,325.53
CLASS QC2 CONCRETE WITH QC/Q/ 0165 511E44110	168.00	CY	\$442.90	\$74,407.20
CLASS QC1 CONCRETE, ABUTMENT 0166 512E10100	11,900.00	SY	\$19.82	\$235,858.00
SEALING OF CONCRETE SURFACES				
0167 512E33000 TYPE 2 WATERPROOFING	5.00		\$32.04	\$160.20
			\$23.11	\$1,063.06
REMOVAL OF EXISTING COATINGS I 0169 513E20000	132,332.00			\$444,635.52
WELDED STUD SHEAR CONNECTOR 0170 513E90000 STRUCTURAL STEEL, MISC.: STRINGER BRACING	36,573.00	LB	\$20.00	\$731,460.00
0171 513E95000 STRUCTURAL STEEL, MISC.: INSPECTION CABLE	491.00	FT	\$8.00	\$3,928.00
0172 513E95000 STRUCTURAL STEEL, MISC.: INSPECTION HANDRAIL	75.00	FT	\$45.00	\$3,375.00
0173 513E95030 STRUCTURAL STEEL, MISC.: DRILLING STRUCTURAL STEEL (1" D	8.00		\$700.00	\$5,600.00
0174 513E95030 STRUCTURAL STEEL, MISC.: STRINGER TO FLOORBEAM REPAIR	24.00	,	\$1,200.00	\$28,800.00
0175 513E95030 STRUCTURAL STEEL, MISC.: <i>K FRAME COPE REPAIR</i>	5.00	EACH	\$2,300.00	\$11,500.00
0176 513E95030 STRUCTURAL STEEL, MISC.: DOG BONE REPAIR 10:50:54AM	50.00	EACH	\$700.00	\$35,000.00
Monday Echruary 10, 2014				Page 0 of 12

Quantity Units Unit Price

Estimate: CUY90591				Richland Engineering Limited	Estimate: CUY90591
Line # Item Number Description Supplemental Description	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	Extension	Line # Item Number Quanti Description Supplemental Description
0202 607E50901 GATE, TYPE CL, AS PER PLAN	10.00	EACH	\$1,593.89	\$15,938.90	0208 1. PRELIMINARY: 15% DESIGN CONTINGENCY
0203 690E71000 SPECIAL - ASBESTOS ABATEMENT	1.00	LS	\$6,000.00	\$6,000.00	
			Total	for Group 1510:\$25,004,447.83	
Group 1511: CUY-480-1842 R: PROPOSED BRIDGE DECK	ALTERNA	TIVE	6 - ADDITIC	ONAL COST TO WIDEN	
0219 503E21100 UNCLASSIFIED EXCAVATION	6.00	CY	\$121.39	\$728.34	
	1,089,221.00 EEL, AS PER I		\$1.00	\$1,089,221.00	
0221 509E20001 REINFORCING STEEL, REPLACEME	21.00 ENT OF EXIST		\$2.54 NFORCING STE	\$53.34 EEL, AS PER PLAN	
0222 511E34446 CLASS QC2 CONCRETE WITH QC/0	4,079.00 QA, BRIDGE D		\$661.81	\$2,699,522.99	
0223 511E44110 CLASS QC1 CONCRETE, ABUTMEN	1.00 T NOT INCLU		\$442.90 OTING	\$442.90	
0224 512E10100 SEALING OF CONCRETE SURFACE	2.00 S (EPOXY-UR		\$19.82 E)	\$39.64	
0225 516E11211 STRUCTURAL EXPANSION JOINT IN		ASTOM			
0226 516E12200 STRUCTURAL STEEL EXPANSION J			\$4,000.00	\$32,000.00	
0227 518E21200 POROUS BACKFILL WITH FILTER FA			\$84.05	\$84.05	
0228 518E63300 STRUCTURE DRAINAGE, MISC.: EXTEND DRAINAGE TROUGH	1.00	LS	\$60,000.00	\$60,000.00	
0229 526E25001 REINFORCED CONCRETE APPROA	2.00 CH SLABS (T=		\$209.00 S PER PLAN	\$418.00	
0230 530E00400 SPECIAL - STRUCTURE, MISC.: SIGN SUPPORT	3.00	EACH	\$16,000.00	\$48,000.00	
0231 530E00600 SPECIAL - STRUCTURE, MISC.: COMPOSITE FIBER WRAP SYSTEM	4,600.00	SF	\$100.00	\$460,000.00	
0232 530E00800 SPECIAL - STRUCTURE, MISC.: MILL FINAL DECK SURFACE	924.00	SY	\$5.00	\$4,620.00	
			Tota	Il for Group 1511:\$4,397,122.82	
Group 9000: INCIDENTALS					
0204 614E11000 MAINTAINING TRAFFIC	1.00		\$1,500,000.00	\$1,500,000.00	
0205 619E16020 FIELD OFFICE, TYPE C	32.00		\$2,028.70	\$64,918.40	
0206 623E10001 CONSTRUCTION LAYOUT STAKES,		J	\$50,000.00	\$50,000.00	
0207 624E10000 MOBILIZATION	1.00	LS	\$2,000,000.00	\$2,000,000.00	
			Tota	Il for Group 9000:\$3,614,918.40	

Group 9999: DESIGN CONTINGENCY

10:50:54AM Monday, February 10, 2014 1.00 LS

\$11,149,071.39

\$11,149,071.39

Total for Group 9999:\$11,149,071.39

Description Supplemental Description

Group 0700: LIGHTING

0051 625E10490 LIGHT POLE, CONVENTIONAL	73.00	EACH	\$1,833.22	\$133,825.06
0057 625E23400 NO. 10 AWG POLE AND BRACKET (8,030.00 CABLE	FT	\$1.10	\$8,833.00
0059 625E26250 LUMINAIRE, CONVENTIONAL	73.00	EACH	\$330.45	\$24,122.85
0065 625E75400 LIGHT POLE REMOVED	73.00	EACH	\$155.04	\$11,317.92
0069 625E75506 LUMINAIRE REMOVED	73.00	EACH	\$47.75	\$3,485.75

Group 1200: MAINTENANCE OF TRAFFIC

0070 614E20100 WORK ZONE LANE LINE, CLASS		MILE	\$637.08	\$2,548.32
0071 614E22001 WORK ZONE EDGE LINE, CLASS WHITE	8.00 I, AS PER PLAN	MILE	\$694.09	\$5,552.72
0072 622E41000 PORTABLE BARRIER, 32"	22,000.00	FT	\$8.98	 \$197,560.00

Group 1500: CUY-480-1842 L: ALTERNATIVE 6: LCCA OVERALY AT 20 YEAR **INTERVALS** 0001 202E98000 1.00 LS **REMOVAL MISC.:** EXISTING DRAINAGE CLEANOUT 0002 512E10100 6,177.00 SY SEALING OF CONCRETE SURFACES (EPOXY-URETHA 0003 512E74000 1,373.00 SY REMOVAL OF EXISTING COATINGS FROM CONCRETE 0004 513E95020 1.00 LS STRUCTURAL STEEL, MISC .: INSPECTION ACCESS REPAIRS 0005 516E11211 150.00 FT STRUCTURAL EXPANSION JOINT INCLUDING ELASTO 0006 518E63300 1.00 LS STRUCTURE DRAINAGE, MISC .: DRAINAGE REPAIRS 0007 519E11100 12,353.00 SF PATCHING CONCRETE STRUCTURE 0008 848E10200 33,256.00 SY SUPERPLASTICIZED DENSE CONCRETE OVERLAY US 0009 848E20000 33,256.00 SY SURFACE PREPARATION USING HYDRODEMOLITION 0010 848E30200 1,571.00 CY SUPERPLASTICIZED DENSE CONCRETE OVERLAY (V 0011 848E50000 666.00 SY HAND CHIPPING 0012 848E50100 1.00 LS TEST SLAB 0013 848E50200 393.00 CY FULL-DEPTH REPAIR

Estimate CUY90591

Estimated Cost:\$17,234,127.39 Contingency: 35.00% Estimated Total: \$23,266,071.98

CUY-480-18.42: ALTERNATIVE 6 LCCA OVERLAY AT 20 YEAR INTERVALS

Base Date: 01/01/18

Spec Year: 13

Unit System: E

Work Type: BRIDGE REHABILITATION

Highway Type: 446 ON 304

Urban/Rural Type: URBAN CLASS

Season: SPRING

County: CUYAHOGA

Midpoint of Latitude: 412435

Midpoint of Longitude: 0813745

District: 12

Federal/State Project Number:

Estimate Type: Preliminary Submission (Inflation 1-1-2020) Prepared by Richland Engineering Limited on 01/31/14

Total for Group 0700:\$181,584.58

Total for Group 1200:\$205,661.04

\$20,500.00	\$20,500.00
\$19.82 ANE)	\$122,428.14
\$23.11 E SURFACES	\$31,730.03
\$5,000.00	\$5,000.00
\$498.14 DMERIC STRIP SEAL, AS PER PLAN	\$74,721.00
\$100,000.00	\$100,000.00
\$90.16	\$1,113,746.48
\$28.84 SING HYDRODEMOLITION	\$959,103.04
\$37.08 I	\$1,233,132.48
\$99.92 (ARIABLE THICKNESS), MATERIAL ONLY	\$156,974.32
\$58.02	\$38,641.32
\$800.00	\$800.00
\$136.47	\$53,632.71

Estimate: CUY90591			Richla	and Engineering Limited	Estimate: CUY90591
Line # Item Number	Quantity	<u>Units</u>	Unit Price	Extension	Line # Item Number
Description Supplemental Description					Description Supplemental Descr
<u>Supplemental Description</u>					Supplemental Descr
			Total for Group 1500:	\$3,910,409.52	0031 202E98000 REMOVAL MISC.:
Group 1501: CLIV 480 18421.				AETED	EXISTING DRAINAG
Group 1501: CUY-480-1842 L: FIRST 20 YEAR INTERVAL			6. LCCA ADDITIONAL COST	AFIER	0032 512E10100 SEALING OF CONCF
0014 848E50320	33,256.00	SY	\$7.72	\$256,736.32	0033 512E74000
EXISTING CONCRETE OVERLAY RE	MOVED		·	· · · · · · · · · · · · · · · · · · ·	REMOVAL OF EXIST 0034 513E95020
0015 848E50340 REMOVAL OF DEBONDED OR DETE	3,326.00 RIORATED F		\$3.63 G VARIABLE THICKNESS CONCRETE C	\$12,073.38 WFRLAY	STRUCTURAL STEE
			Total for Group 150		INSPECTION ACCES 0035 516E11211
			·	. ,	STRUCTURAL EXPA
Group 1505: CUY-480-1842 M:	ALTERN	ATIVE	6: LCCA OVERALY AT 20 Y	EAR	0036 518E63300
INTERVALS					STRUCTURE DRAIN DRAINAGE REPAIRS
0016 202E98000	1.00	LS	\$23,500.00	\$23,500.00	0037 519E11100
REMOVAL MISC.: EXISTING DRAINAGE CLEANOUT					PATCHING CONCRE
0017 512E10100	7,000.00		\$19.82	\$138,740.00	0038 848E10200 SUPERPLASTICIZEE
SEALING OF CONCRETE SURFACES			•	¢25.050.40	0039 848E20000
0018 512E74000 REMOVAL OF EXISTING COATINGS	1,556.00 FROM CONC	ST RETE S	\$23.11 URFACES	\$35,959.16	SURFACE PREPARA
0019 513E95020	1.00		\$7,500.00	\$7,500.00	0040 848E30200 SUPERPLASTICIZED
STRUCTURAL STEEL, MISC.:					0041 848E50000
INSPECTION ACCESS REPAIRS 0020 516E11211	170.00	ET	\$498.14	\$84,683.80	HAND CHIPPING
STRUCTURAL EXPANSION JOINT IN				<i>ф</i> 04,003.00	0042 848E50100
0021 518E63300	1.00		\$115,000.00	\$115,000.00	TEST SLAB 0043 848E50200
STRUCTURE DRAINAGE, MISC.:					FULL-DEPTH REPAIL
DRAINAGE REPAIRS 0022 519E11100	14,000.00	SF	\$90.16	\$1,262,240.00	
PATCHING CONCRETE STRUCTURE	_				
	37,875.00			\$1,092,315.00	Group 1511: CUY-4
SUPERPLASTICIZED DENSE CONCF 0024 848E20000	37,875.00		\$37.08	\$1,404,405.00	FIRST 20 YEAR IN
SURFACE PREPARATION USING HY	DRODEMOL	ITION		· · ·	0044 848E50320 EXISTING CONCRET
	1,789.00		\$99.92 ABLE THICKNESS), MATERIAL ONLY	\$178,756.88	0045 848E50340
0026 848E50000	758.00		\$58.02	\$43,979.16	REMOVAL OF DEBO
HAND CHIPPING				· · · · · · · · · · · · · · · · · · ·	
0027 848E50100 TEST SLAB	1.00	LS	\$800.00	\$800.00	
0028 848E50200	448.00	CY	\$136.47	\$61,138.56	Group 9000: INCID
FULL-DEPTH REPAIR			T () () () () ()		0046 614E11000
			Total for Group 1505:	\$4,449,017.56	MAINTAINING TRAFI 0047 619E16020
Oracin 4500: CLIV 400 4040 M					FIELD OFFICE, TYPE
Group 1506: CUY-480-1842 M:	ALIERN	AIIVE	6: LCCA ADDITIONAL COST	IAFIER	0048 623E10001
FIRST 20 YEAR INTERVAL	27 075 00	CV/	Ф 7 70	¢202.205.00	CONSTRUCTION LA 0049 624E10000
0029 848E50320 EXISTING CONCRETE OVERLAY RE	37,875.00 MOVED	SY	\$7.72	\$292,395.00	MOBILIZATION
0030 848E50340	3,788.00		\$3.63	\$13,750.44	
REMOVAL OF DEBONDED OR DETE	RIORATED E	XISTING	VARIABLE THICKNESS CONCRETE C		
			Total for Group 1500	5:\$306,145.44	Group 9999: DESIC
Oroup 1510: CLIV 400 4040 D.					0050
Group 1510: CUY-480-1842 R:	ALIEKNA	11VE	0. LUCA UVERALY AT 20 YE	IAK	PRELIMINARY: 15%

INTERVALS

Page 3 of 5

roup 9999: DESIGN CONTINGENCY

0050 1.00 LS PRELIMINARY: 15% DESIGN CONTINGENCY

Description Supplemental Description

0031 202E98000 REMOVAL MISC.: EXISTING DRAINAGE CLEANOUT	1.00	LS	\$20,500.00	\$20,500.00
0032 512E10100 SEALING OF CONCRETE SURFACES (6,177.00		\$19.82	\$122,428.14
0033 512E74000	1,373.00	SY	\$23.11	\$31,730.03
REMOVAL OF EXISTING COATINGS FF				A- - - - - - - - - -
0034 513E95020 STRUCTURAL STEEL, MISC.: INSPECTION ACCESS REPAIRS	1.00	LS	\$7,500.00	\$7,500.00
0035 516E11211 STRUCTURAL EXPANSION JOINT INCL	167.00		\$498.14 FRIC STRIP SEAL AS PER PLAN	\$83,189.38
0036 518E63300	1.00		•	\$95,000.00
STRUCTURE DRAINAGE, MISC.: DRAINAGE REPAIRS	1.00	L3	\$95,000.00	\$95,000.00
0037 519E11100 PATCHING CONCRETE STRUCTURE	12,353.00	SF	\$90.16	\$1,113,746.48
	33,941.00	SY	\$28.84	\$978,858.44
SUPERPLASTICIZED DENSE CONCRE				+
	33,941.00	SY	\$37.08	\$1,258,532.28
0040 848E30200	1,596.00		\$99.92	\$159,472.32
SUPERPLASTICIZED DENSE CONCRE				ψ100,472.0Z
0041 848E50000	679.00		\$58.02	\$39,395.58
HAND CHIPPING				
0042 848E50100 TEST SLAB	1.00	LS	\$800.00	\$800.00
0043 848E50200 FULL-DEPTH REPAIR	401.00	CY	\$136.47	\$54,724.47
			Total for Group 1510:\$3,96	5,877.12
Group 1511: CLIV-480-1842 R: A			6: LCCA ADDITIONAL COST AF	FFR
FIRST 20 YEAR INTERVAL			0. ECCA ADDITIONAE COST AI	
0044 848E50320 EXISTING CONCRETE OVERLAY REMO	33,941.00	SY	\$7.72	\$262,024.52
0045 848E50340	3,395.00		\$3.63	\$12,323.85
REMOVAL OF DEBONDED OR DETERI	ORATEDE	XISTING	VARIABLE THICKNESS CONCRETE OVERLA	
			Total for Group 1511:\$27	4,348.37
			· · ·	,
Group 9000: INCIDENTALS				
0046 614E11000 MAINTAINING TRAFFIC	1.00	LS	\$500,000.00	\$500,000.00
	12.00		¢2 020 70	¢04 044 40
FIELD OFFICE, TYPE C	12.00	MNTH		\$24,344.40
0048 623E10001	1.00	LS	\$2,028.70 \$100,000.00	\$24,344.40 \$100,000.00
0048 623E10001 CONSTRUCTION LAYOUT STAKES, AS	1.00 PER PLAN	LS 1	\$100,000.00	\$100,000.00
0048 623E10001	1.00	LS 1	\$100,000.00 \$800,000.00	\$100,000.00 \$800,000.00
0048 623E10001 CONSTRUCTION LAYOUT STAKES, AS 0049 624E10000	1.00 PER PLAN	LS 1	\$100,000.00	\$100,000.00 \$800,000.00
0048 623E10001 CONSTRUCTION LAYOUT STAKES, AS 0049 624E10000	1.00 PER PLAN 1.00	LS 1	\$100,000.00 \$800,000.00	\$100,000.00 \$800,000.00

<u>s U</u>	nit	Price
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\$2,247,929.66

\$2,247,929.66

Richland Engineering Limited

Extension

Line # Item Number Description Supplemental Description

Total for Group 9999:\$2,247,929.66

Quantity Units Unit Price

Quantity Units Unit Price

Description Supplemental Description

Group 1500: CUY-480-1842 L: ALTERNATIVE 6: LCCA ZONE PAINT EXISTING STEEL AT 20 YEAR INTERVALS 0014 514E00050 25,892.00 SF SURFACE PREPARATION OF EXISTING STRUCTURAL 0015 514E00056 25,892.00 SF FIELD PAINTING OF EXISTING STRUCTURAL STEEL 0051 514E00060 25.892.00 SF FIELD PAINTING STRUCTURAL STEEL, INTERMEDIAT 0052 514E00066 25,892.00 SF FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

Group 1501: CUY-480-1842 L: ALTERNATIVE 6: LCCA PAINT EXISTING STEEL FASCIA GIRDERS AT 20 YEAR INTERVALS 0057 514E00050 4,250.00 SF SURFACE PREPARATION OF EXISTING STRUCTURAL 0058 514E00056 4,250.00 SF FIELD PAINTING OF EXISTING STRUCTURAL STEEL, 0059 514E00060 4,250.00 SF FIELD PAINTING STRUCTURAL STEEL, INTERMEDIAT 0060 514E00066 85,000.00 SF FIELD PAINTING STRUCTURAL STEEL, FINISH COAT 0061 514E27800 1.00 LS FIELD PAINTING, MISC .: SURFACE PREPARATION OF EXISTING STEEL, SOLVENT CLEAN, SYSTEM OZEU

Group 1505: CUY-480-1842 R: ALTERNATIVE 6: LCCA ZONE PAINT EXISTING **STEEL AT 20 YEAR INTERVALS**

0053 514E00050 25,892.00 SF SURFACE PREPARATION OF EXISTING STRUCTURAL 0054 514E00056 25.892.00 SF FIELD PAINTING OF EXISTING STRUCTURAL STEEL. 0055 514E00060 25.892.00 SF FIELD PAINTING STRUCTURAL STEEL, INTERMEDIAT 0056 514E00066 25,892.00 SF FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

Group 1506: CUY-480-1842 L: ALTERNATIVE 6: LCCA PAINT EXISTING STEEL FASCIA GIRDERS AT 20 YEAR INTERVALS 0062 514E00050 4,250.00 SF SURFACE PREPARATION OF EXISTING STRUCTURAL 0063 514E00056 4,250.00 SF FIELD PAINTING OF EXISTING STRUCTURAL STEEL, 0064 514E00060 4.250.00 SF FIELD PAINTING STRUCTURAL STEEL, INTERMEDIAT 0065 514E00066 85.000.00 SF FIELD PAINTING STRUCTURAL STEEL, FINISH COAT 0066 514E27800 1.00 LS FIELD PAINTING, MISC .:

10:54:13AM Monday, February 10, 2014

Estimate CUY90591

Estimated Cost:\$3,965,617.22 Contingency: 35.00% Estimated Total: \$5,353,583.25

CUY-480-18.42: ALTERNATIVE 6 LCCA ZONE PAINT EXISTING STEEL AT 20 YEAR INTERVALS

Base Date: 01/01/18

Spec Year: 13

Unit System: E

Work Type: BRIDGE REHABILITATION

Highway Type: 446 ON 304

Urban/Rural Type: URBAN CLASS

Season: SPRING

County: CUYAHOGA

Midpoint of Latitude: 412435

Midpoint of Longitude: 0813745

District: 12

Federal/State Project Number:

Estimate Type: Preliminary Submission (Inflation 1-1-2020) Prepared by Richland Engineering Limited on 01/31/14

\$15.50 L STEEL	\$401,326.00
\$4.00 , PRIME COAT	\$103,568.00
\$2.00 FE COAT	\$51,784.00
\$2.00	\$51,784.00

Total for Group 1500:\$608,462.00

\$15.50 _ STEEL	\$65,875.00
JIEEL	
\$4.00	\$17,000.00
PRIME COAT	
\$2.00	\$8,500.00
E COAT	
\$2.00	\$170,000.00
\$680,000.00	\$680,000.00

Total for Group 1501:\$941.375.00

\$15.50 L STEEL	\$401,326.00
\$4.00 PRIME COAT	\$103,568.00
\$2.00 E COAT	\$51,784.00
\$2.00	\$51,784.00

Total for Group 1505:\$608,462.00

\$15.50 L STEEL	\$65,875.00
\$4.00 PRIME COAT	\$17,000.00
\$2.00 E COAT	\$8,500.00
\$2.00	\$170,000.00
\$680,000.00	\$680,000.00

SURFACE PREPARATION OF EXISTING STEEL, SOLVENT CLEAN, SYSTEM OZEU

Estimate: CUY90591

Quantity Units Unit Price

Extension

Total for Group 1506:\$941,375.00

Group 9499: INCIDENTALS

0046 614E11000 MAINTAINING TRAFFIC	1.00	LS	\$200,000.00	\$200,000.00
0047 619E16020 FIELD OFFICE, TYPE C	24.00	MNTH	\$2,028.70	\$48,688.80
0049 624E10000 MOBILIZATION	1.00	LS	\$100,000.00	\$100,000.00

\$517,254.42

Total for Group 9499:\$348,688.80

Group 9999: DESIGN CONTINGENCY

0050 1 PRELIMINARY: 15% DESIGN CONTINGENCY 1.00 LS

\$517,254.42

Total for Group 9999:\$517,254.42

Description Supplemental Description

Group 1500: CUY-480-1842 M: ALTERNATIVE 6: LCCA ZONE PAINT NEW STEEL AT 20 YEAR INTERVALS

0014 514E00050 SURFACE PREPARATION OF	30,208.00 SF \$15.50 EXISTING STRUCTURAL STEEL	\$468,224.00
0015 514E00056 FIELD PAINTING OF EXISTING	30,208.00 SF \$4.00 G STRUCTURAL STEEL, PRIME COAT	\$120,832.00
0051 514E00060 FIELD PAINTING STRUCTURA	30,208.00 SF \$2.00 AL STEEL, INTERMEDIATE COAT	\$60,416.00
0052 514E00066 FIELD PAINTING STRUCTURA	30,208.00 SF \$2.00 AL STEEL, FINISH COAT	\$60,416.00

Group 9499: INCIDENTALS

0046 614E11000 MAINTAINING TRAFFIC	1.00	LS	\$200,000.00	\$200,000.00
0047 619E16020 FIELD OFFICE, TYPE C	24.00	MNTH	\$2,028.70	\$48,688.80
0049 624E10000 MOBILIZATION	1.00	LS	\$40,000.00	\$40,000.00

Group 9999: DESIGN CONTINGENCY

0050 1.00 LS PRELIMINARY: 15% DESIGN CONTINGENCY

Estimate CUY90591

Estimated Cost:\$1,148,363.32 Contingency: 35.00% Estimated Total: \$1,550,290.48

CUY-480-18.42: ALTERNATIVE 6 LCCA ZONE PAINT NEW STEEL AT 20 YEAR INTERVALS

Base Date: 01/01/18

Spec Year: 13

Unit System: E

Work Type: BRIDGE REHABILITATION

Highway Type: 446 ON 304

Urban/Rural Type: URBAN CLASS

Season: SPRING

County: CUYAHOGA

Midpoint of Latitude: 412435

Midpoint of Longitude: 0813745

District: 12

Federal/State Project Number:

Estimate Type: Preliminary Submission (Inflation 1-1-2020) Prepared by Richland Engineering Limited on 01/31/14

Total for Group 1500:\$709,888.00

Total for Group 9499:\$288,688.80

\$149,786.52

\$149,786.52

Total for Group 9999:\$149,786.52

Description Supplemental Description

Group 0100: ROADWAY

0005 201E11000 CLEARING AND GRUBBING	1.00	LS	\$10,000.00	\$10,000.00
0006 202E20010 HEADWALL REMOVED	3.00	EACH	\$174.83	\$524.49
0007 202E23000 PAVEMENT REMOVED	18,103.00	SY	\$8.37	\$151,522.11
0008 202E23010 PAVEMENT REMOVED, ASPHALT	100.00	SY	\$30.00	\$3,000.00
0009 202E32000 CURB REMOVED	264.00	FT	\$5.04	\$1,330.56
0010 202E35100 PIPE REMOVED, 24" AND UNDER		FT	\$13.00	\$38,766.00
0011 202E35200 PIPE REMOVED, OVER 24"	650.00	FT	\$22.67	\$14,735.50
0012 202E38000 GUARDRAIL REMOVED	2,579.00		\$1.33	\$3,430.07
0013 202E58000 MANHOLE REMOVED	3.00	EACH	\$477.25	\$1,431.75
0014 202E58100 CATCH BASIN REMOVED	13.00	EACH	\$312.41	\$4,061.33
0015 202E70100 SPECIAL - PIPE CLEANOUT	790.00	FT	\$11.29	\$8,919.10
0016 203E10000 EXCAVATION	42,926.00	CY	\$6.89	\$295,760.14
0017 203E20000 EMBANKMENT	44,123.00	CY	\$4.85	\$213,996.55
0018 204E10000 SUBGRADE COMPACTION	66,474.00	SY	\$1.80	\$119,653.20
0019 204E45000 PROOF ROLLING	34.00	HOUR	\$178.98	\$6,085.32
0020 209E60200 LINEAR GRADING	58.00	STA	\$246.54	\$14,299.32
0021 606E13000 GUARDRAIL, TYPE 5	5,970.00	FT	\$13.07	\$78,027.90
0022 606E26100 ANCHOR ASSEMBLY, TYPE E	6.00	EACH	\$1,588.97	\$9,533.82
0023 606E26500 ANCHOR ASSEMBLY, TYPE T	5.00	EACH	\$675.17	\$3,375.85
0024 606E35000 BRIDGE TERMINAL ASSEMBLY, TYPE	7.00	EACH	\$1,198.06	\$8,386.42
0025 606E35100 BRIDGE TERMINAL ASSEMBLY, TYPE	6.00	EACH	\$344.19	\$2,065.14
0026 606E60022 IMPACT ATTENUATOR, TYPE 2 (UNID	1.00	EACH	\$19,442.75	\$19,442.75
0028 622E10160 CONCRETE BARRIER, SINGLE SLOPE	682.00		\$74.06	\$50,508.92

Group 0200: EROSION CONTROL

0209 601E20000	99.00	SY					
CRUSHED AGGREGATE SLOPE PROTECTION							
0211 659E00300	2,208.00	CY					
TOPSOIL							
0212 659E10000	19,889.00	SY					
SEEDING AND MULCHING							

10:57:19AM Monday, February 10, 2014

Estimate CUY90591

Estimated Cost: \$256,948,547.14 Contingency: 35.00% Estimated Total: \$346,880,538.64

CUY-480-18.42: ALTERNATIVE 7 Base Date: 01/01/18 Spec Year: 13 Unit System: E Work Type: BRIDGE REHABILITATION Highway Type: 446 ON 304 Urban/Rural Type: URBAN CLASS Season: SPRING County: CUYAHOGA Midpoint of Latitude: 412435 Midpoint of Longitude: 0813745 District: 12 Federal/State Project Number: Estimate Type: Preliminary Submission (Inflation 1-1-2020) Prepared by Richland Engineering Limited on 01/31/14

Total for Group 0100:\$1,058,856.24

\$33.70	\$3,336.30
\$22.75	\$50,232.00
\$0.56	\$11,137.84

Page 2 of 9

Estimate: CUY90591

Richland Engineering Limited

Line # Item Number Description Supplemental Description	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
0213 659E14000 REPAIR SEEDING AND MULCHING	995.00	SY	\$0.98	\$975.10
0214 659E20000 COMMERCIAL FERTILIZER	3.00	TON	\$500.00	\$1,500.00
0215 659E31000 LIME	4.11	ACRE	\$400.00	\$1,644.00
0216 659E35000 WATER	108.00	MGAL	\$2.78	\$300.24
0217 832E15000 STORM WATER POLLUTION PREVE		LS	\$15,000.00	\$15,000.00
0218 832E30000	200,000.00	EACH	\$1.00	\$200,000.00

Total for Group 0200:\$284,125.48

Group 0300: DRAINAGE

EROSION CONTROL

•				
0029 602E20000 CONCRETE MASONRY	6.00	CY	\$1,728.91	\$10,373.46
0030 605E11110 3 6" SHALLOW PIPE UNDERDRAINS WITH	30,474.00 H FABRIC '		\$10.55	\$321,500.70
0031 611E06100 15" CONDUIT, TYPE C	80.00	FT	\$49.15	\$3,932.00
0032 611E07400 18" CONDUIT, TYPE B	3,761.00	FT	\$49.73	\$187,034.53
0033 611E07600 18" CONDUIT, TYPE C	296.00	FT	\$58.85	\$17,419.60
0034 611E10400 24" CONDUIT, TYPE B	1,900.00	FT	\$104.29	\$198,151.00
0035 611E16200 36" CONDUIT, TYPE A	50.00	FT	\$149.11	\$7,455.50
0036 611E22600 54" CONDUIT, TYPE C	20.00	FT	\$174.52	\$3,490.40
0037 611E26400 72" CONDUIT, TYPE C	140.00	FT	\$500.00	\$70,000.00
0038 611E30400 96" CONDUIT, TYPE C	650.00	FT	\$600.00	\$390,000.00
0039 611E98180 CATCH BASIN, NO. 3A	4.00	EACH	\$1,856.17	\$7,424.68
0040 611E98300 CATCH BASIN, NO. 5	12.00	EACH	\$2,912.35	\$34,948.20
0041 611E98471 CATCH BASIN, NO. 2-2B, AS PER PLAN BRIDGE DOWNSPOUT COLLECTION	8.00			\$32,000.00
0042 611E99574 MANHOLE, NO. 3	10.00	EACH		\$26,752.20
0043 611E99654 MANHOLE ADJUSTED TO GRADE	2.00	EACH	\$560.77	\$1,121.54
			Total for Croup 0200,01 211	602.01

Total for Group 0300:\$1,311,603.81

Group 0400: PAVEMENT

0044 254E01000 PAVEMENT PLANING, ASPHAL ⁻	69,695.00 T CONCRETE	SY \$1.55	\$108,027.25
0045 302E46000 ASPHALT CONCRETE BASE, PO	20,034.00 G64-22	CY \$91.59	\$1,834,914.06
0046 304E20000 AGGREGATE BASE	11,068.00	CY \$45.72	\$506,028.96

Estimate: CUY90591

Line # Item Number	Quantity	<u>Unit</u>
Description		
Supplemental Description		

0048 407E10000	2,788.00	GAL	\$2.98	\$8,308.24
TACK COAT				
0049 407E14000	5.246.00	GAL	\$2.74	\$14,374.04
TACK COAT FOR INTERMEDIATE CO	-,	0, 12	v	φ1 i,01 ii0 i
			Aa 1 a	
0050 408E10000	26,226.00	GAL	\$3.10	\$81,300.60
PRIME COAT				
0051 411E10000	103.00	CY	\$54.69	\$5,633.07
STABILIZED CRUSHED AGGREGATE				. ,
	F 000 00	01/	ФЛЛТ 70	¢000 000 00
0053 442E10050	5,636.00	CY	\$147.73	\$832,606.28
ASPHALT CONCRETE SURFACE COL	JRSE, 12.5M	M, TYPE	EB (446)	
0054 442E10150	3.643.00	CY	\$128.05	\$466,486.15
ASPHALT CONCRETE INTERMEDIATI	E COURSE.	19MM. T	YPE B (446)	. ,
0055 448E46061	69.00		\$235.26	\$16,232.94
			+	\$10,232.94
ASPHALT CONCRETE INTERMEDIATI	E COURSE, T	TYPE 1,	UNDER GUARDRAIL, PG64-22, AS PER PLAN	
0057 609E26001	200.00	FT	\$15.14	\$3,028.00
CURB, TYPE 6, AS PER PLAN			•	
CORD, THE C, ACTERTEAN				

Group 0700: LIGHTING

	-				
	0058 625E10490 LIGHT POLE, CONVENTIONAL	81.00	EACH	\$1,833.22	\$148,490.82
	0059 625E10614 LIGHT POLE ANCHOR BOLTS ON STR		EACH	\$100.00	\$20,800.00
	0060 625E13404 LIGHT TOWER, BBBBBB110	2.00	EACH	\$13,635.44	\$27,270.88
1	0061 625E14000 LIGHT POLE FOUNDATION, 24" X 6' D	29.00 EEP	EACH	\$1,028.77	\$29,834.33
	0062 625E15400 LIGHT TOWER FOUNDATION, 42" X 28	2.00	EACH	\$7,000.00	\$14,000.00
	0063 625E23200 NO. 4 AWG 5000 VOLT DISTRIBUTION	89,660.00 I CABLE	FT	\$2.56	\$229,529.60
	0064 625E23400 NO. 10 AWG POLE AND BRACKET CA	9,780.00 BLE	FT	\$1.07	\$10,464.60
	0065 625E25400 CONDUIT, 2", 725.04	26,000.00	FT	\$11.63	\$302,380.00
	0066 625E26250 LUMINAIRE, CONVENTIONAL	81.00	EACH	\$330.45	\$26,766.45
	0067 625E26260 LUMINAIRE, HIGH MAST	12.00	EACH	\$727.78	\$8,733.36
	0068 625E29901 JUNCTION BOX, AS PER PLAN	52.00	EACH	\$1,487.36	\$77,342.72
	0069 625E30700 PULL BOX, 725.08, 18"	31.00	EACH	\$704.36	\$21,835.16
	0070 625E33001 STRUCTURE GROUNDING SYSTEM, /			\$50,000.00	\$100,000.00
	0071 625E34000 POWER SERVICE	4.00	EACH	\$2,609.20	\$10,436.80
	0072 625E75350 LIGHT TOWER REMOVED	2.00	EACH	\$1,340.40	\$2,680.80
	0073 625E75400 LIGHT POLE REMOVED	27.00	EACH	\$180.93	\$4,885.11
	0074 625E75403 LIGHT POLE REMOVED FOR STORAG			\$304.05	\$12,770.10
	0075 625E75504 LUMINAIRE REMOVED FOR STORAG	42.00	EACH	\$61.35	\$2,576.70
				T () ()	

Total for Group 0400:\$3,876,939.59

Total for Group 0700:\$1,050,797.43

0077 621E10010

0078 626E00100

0079 630E02100

0080 630E03100

0081 630E04100

0082 630E20701

0083 630E31101

0084 630E45500

0085 630E80200

0086 630E80224

0087 630E84510

0088 630E84900

0089 630E85400

0090 630E86002

0091 630E87401

0092 630E89706

0093 630E89800

0094 630E89802

0095 646E10000

EDGE LINE, 4" 0096 646E10100

LANE LINE, 4"

0097 646E10300

CHANNELIZING LINE, 8"

Group 0800: TRAFFIC CONTROL

GROUND MOUNTED SUPPORT, NO. 2 POST

GROUND MOUNTED SUPPORT, NO. 3 POST

GROUND MOUNTED SUPPORT, NO. 4 POST

SIGN, GROUND MOUNTED EXTRUSHEET

SIGN. OVERHEAD EXTRUSHEET

OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8

RIGID OVERHEAD SIGN SUPPORT FOUNDATION

Group 1200: MAINTENANCE OF TRAFFIC

REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL

REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL

REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL

REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL, AS PER PLAN

REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30

REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-9.10

REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65

RPM, LOW PROFILE, WHITE

BARRIER REFLECTOR

Line # Item Number	<u>Quantity</u>	<u>Units</u>	Unit Price	
Description				
Supplemental Description				

OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 7, AS PER PLAN

OVERHEAD SIGN SUPPORT, TYPE TC-9.10, DESIGN 1, AS PER PLAN

Richland Engineering Limited

		Uni
rna	ntity	Uni

Estimate: CUY90591			Richland Engineering Limited
Line # Item Number Description Supplemental Description	<u>Quantity</u> <u>Uni</u>	ts <u>Unit Price</u>	Extension
0104 614E20100 WORK ZONE LANE LINE, CLASS I	16.84 MIL , 642 PAINT	E \$809.72	\$13,635.68
0105 614E22001 WORK ZONE EDGE LINE, CLASS WHITE	20.04 MIL I, AS PER PLAN	E \$694.09	\$13,909.56
0107 614E23200 WORK ZONE CHANNELIZING LINI	29,848.00 FT E, CLASS I, 642 PAIN	\$0.48 T	\$14,327.04
0108 614E24000 WORK ZONE DOTTED LINE, CLAS	2,112.00 FT	\$0.58	\$1,224.96
0109 615E20000 PAVEMENT FOR MAINTAINING TH	12,983.00 SY RAFFIC, CLASS A	\$26.14	\$339,375.62
0110 622E41000 PORTABLE BARRIER, 32"	1,892.00 FT	\$14.01	\$26,506.92
0111 622E41010 PORTABLE BARRIER, 50"	1,791.00 FT	\$11.55	\$20,686.05
0112 622E41020 PORTABLE BARRIER, 32", BRIDG	4,155.00 FT E MOUNTED	\$17.62	\$73,211.10

Group 1500: CUY-480-1842 L: ALTERNATIVE	57
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Group 1500: CUY-480-1842 L:	ALTERNA	TIVE 7	7	
0113 202E11203		LS		\$16,000,000.00
PORTIONS OF STRUCTURE REMOV			SPAN, AS PER PLAN	
0114 202E22900	268.00	SY	\$26.24	\$7,032.32
APPROACH SLAB REMOVED				
0115 503E11101	1.00		\$50,000.00	\$50,000.00
COFFERDAMS AND EXCAVATION B				
0116 503E21100	16,368.00	CY	\$54.16	\$886,490.88
UNCLASSIFIED EXCAVATION		01/	A 40 4 F	* 10,00 7 5 0
0117 503E31120	450.00	CY	\$42.15	\$18,967.50
SHALE EXCAVATION	1.00	10	* 22,222,22	# 22,222,22
0118 505E11100	1.00	LS	\$20,000.00	\$20,000.00
PILE DRIVING EQUIPMENT MOBILIZ		10	¢c 000 00	¢E 000 00
0119 506E11100 STATIC LOAD TEST	1.00	LS	\$5,000.00	\$5,000.00
0120 506E12200	16.00	EACH	\$2,500.00	\$40,000.00
SUBSEQUENT STATIC LOAD TEST	10.00	EACH	\$2,500.00	\$40,000.00
0121 507E00200	2,088.00	FT	\$39.22	\$81,891.36
STEEL PILES HP12X53, FURNISHED			ψ 0 9.22	ψ01,091.30
0122 507E00250	, 1,856.00	FT	\$8.20	\$15,219.20
STEEL PILES HP12X53, DRIVEN	1,000.00	• •	\$0.20	\$10, <u>210</u> .20
0123 507E00600	156,467.00	FT	\$9.49	\$1,484,871.83
14" CAST-IN-PLACE REINFORCED C			IVEN	÷ , - ,
0124 507E00650	164,871.00		\$44.09	\$7,269,162.39
14" CAST-IN-PLACE REINFORCED C			RNISHED	
0125 509E10001	5,687,799.00	LB	\$1.00	\$5,687,799.00
EPOXY COATED REINFORCING STE	EEL, AS PER F	PLAN		
0126 511E34446	12,839.00		\$661.81	\$8,496,978.59
CLASS QC2 CONCRETE WITH QC/C	A, BRIDGE D	ECK		
0127 511E34450	1,341.00		\$463.33	\$621,325.53
CLASS QC2 CONCRETE WITH QC/C			,	
0128 511E42010	16,510.00		\$815.00	\$13,455,650.00
CLASS QC1 CONCRETE, PIER ABO				
0129 511E44110	382.00		\$482.00	\$184,124.00
CLASS QC1 CONCRETE, ABUTMEN				
0130 511E46510	9,305.00	CY	\$408.00	\$3,796,440.00
CLASS QC1 CONCRETE, FOOTING				

\$9.05

\$9.58

\$11.09

\$16.84

\$18.80

2.00 EACH \$12,000.00

2.00 EACH \$12,000.00

5.00 EACH \$31,438.70

14.00 EACH \$2,531.64

13.00 EACH \$14.00

26.00 EACH \$13.87

31.00 EACH \$800.00

3.00 EACH \$986.77

2.00 EACH \$1,000.00

4.00 EACH \$1,532.32

8.74 MILE \$2,990.18

11.30 MILE \$2,102.59

\$1.56

5,000.00 FT

5.00 EACH \$100.84

330.00 EACH \$28.17

168.00 EACH \$6.31

108.00 FT

72.00 FT

120.00 FT

181.00 SF

2,970.00 SF

Extension

\$9,296.10

\$1,060.08

\$977.40

\$689.76

\$1,330.80

\$24,000.00

\$24,000.00

\$157,193.50

\$3,048.04

\$55,836.00

\$35,442.96

\$182.00

\$504.20

\$360.62

\$24,800.00

\$2,960.31

\$2,000.00

\$6,129.28

\$26,134.17

\$23,759.27

\$7,800.00

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Total for Group 0800:\$407,504.49

0100 614E12800	3,313.00	EACH	\$11.60	\$38,430.80
WORK ZONE RAISED PAVEMENT M	1ARKER			
0101 614E13300	280.00	EACH	\$5.71	\$1,598.80
BARRIER REFLECTOR, TYPE B				
0102 614E13360	137.00	EACH	\$11.20	\$1,534.40
OBJECT MARKER, TWO WAY				
0103 614E18002	1.00	LS	\$25,000.00	\$25,000.00
MAINTAINING TRAFFIC, MISC.:				
TEMPORARY LIGHTING				

Total for Group 1200:\$569,440.93

<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
		\$11.99	\$381,521.80
22,275,032.00		\$1.52	\$33,858,048.64
154,388.00	EACH	\$3.36	\$518,743.68
	FT	\$8.00	\$243,200.00
205.00	FT	\$45.00	\$9,225.00
		\$4.00 OAT	\$4,272,000.00
1,068,000.00	SF	\$4.00	\$4,272,000.00
174.00	FT	\$498.14 ERIC STRIP SEAL, AS PER PLAN	\$86,676.36
348.00		\$800.00	\$278,400.00
127.00	SF	\$10.21	\$1,296.67
20.00	EACH	\$1,800.00	\$36,000.00
150.00	CY	\$78.91	\$11,836.50
142.00	FT	\$9.77	\$1,387.34
149.00		\$12.85 LUDING SPECIALS	\$1,914.65
1,371.00		\$440.00	\$603,240.00
	EACH	\$3,343.17	\$106,981.44
32.00	EACH	\$2,509.25	\$80,296.00
		\$244.29 9 PER PLAN	\$141,688.20
			\$6,600.00
		\$10.00	\$1,676,040.00
		\$61.98 BRIC, AS PER PLAN	\$514,434.00
			\$15,938.90
	31,820.00 ES (EPOXY-UR 22,275,032.00 EVEL 5 154,388.00 ORS 30,400.00 205.00 1,068,000.00 EEL, INTERME 1,068,000.00 EEL, FINISH CO 174.00 INCLUDING EL 348.00 JOINT 127.00 T FILLER 20.00 IS 150.00 FABRIC 142.00 IS 150.00 FABRIC 142.00 CED PLASTIC PIPE 149.00 FD PLASTIC PIPE 149.00 FD PLASTIC PIPE 1,371.00 SPECIALS 32.00 ACH SLABS (T= 4.00 STRAIGHT, CO/	31,820.00 SY ES (EPOXY-URETHANE 22,275,032.00 LB EVEL 5 154,388.00 EACH ORS 30,400.00 FT 205.00 FT 1,068,000.00 SF EEL, INTERMEDIATE C 1,068,000.00 SF EEL, FINISH COAT 174.00 FT INCLUDING ELASTOME 348.00 FT JOINT 127.00 SF T FILLER 20.00 EACH IS 150.00 CY FABRIC 142.00 FT LASTIC PIPE 149.00 FT FED PLASTIC PIPE, INC 1,371.00 FT SPECIALS 32.00 EACH 32.00 EACH 32.00 EACH 167,604.00 SF 8,300.00 FT STRAIGHT, COATED FA	ES (EPOXY-URETHANE) 22,275,032.00 LB \$1.52 EVEL 5 154,388.00 EACH \$3.36 ORS 30,400.00 FT \$8.00 205.00 FT \$45.00 1,068,000.00 SF \$4.00 EEL, INTERMEDIATE COAT 1,068,000.00 SF \$4.00 EEL, FINISH COAT 174.00 FT \$498.14 INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN 348.00 FT \$800.00 JOINT 127.00 SF \$10.21 T FILLER 20.00 EACH \$1,800.00 IS 150.00 CY \$78.91 FABRIC 142.00 FT \$9.77 LASTIC PIPE 149.00 FT \$12.85 FED PLASTIC PIPE, INCLUDING SPECIALS 1,371.00 FT \$440.00 SPECIALS 32.00 EACH \$2,509.25 580.00 SY \$244.29 ACH SLABS (T=17"), AS PER PLAN 4.00 EACH \$1,650.00 167,604.00 SF \$10.00

Group 5250: CUY-480-1842 R: ALTERNATIVE 7

0219 202E11203	1.00 LS \$16,000,000.00	\$16,000,000.00
PORTIONS OF STRUCTURE REM	MOVED, OVER 20 FOOT SPAN, AS PER PLAN	
0220 202E22900	311.00 SY \$26.24	\$8,160.64
APPROACH SLAB REMOVED		

Estimate: CUY90591

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Estimate: CUY90591				Richland Engineering Limited
Line # Item Number	<u>Quantity</u>	<u>Units</u>	Unit Price	Extension
Description Supplemental Description				
Supplemental Description				
0221 202E98000	1.00	LS	\$20,500.00	\$20,500.00
REMOVAL MISC.:				
EXISTING DRAINAGE CLEANOUT 0222 503E11101	1.00	LS	\$50,000.00	\$50,000.00
COFFERDAMS AND EXCAVATION BR				\$00,000.00
0223 503E21100	16,368.00	CY	\$54.16	\$886,490.88
UNCLASSIFIED EXCAVATION 0224 503E31120	450.00	CY	\$42.15	\$18,967.50
SHALE EXCAVATION	400.00	01	ψ 1 2.10	\$10,007.00
0225 505E11100	1.00	LS	\$20,000.00	\$20,000.00
PILE DRIVING EQUIPMENT MOBILIZA 0226 506E11100	1.00	LS	\$5,000.00	\$5,000.00
STATIC LOAD TEST	1.00	20	\$5,000.00	\$3,000.00
0227 506E12200	16.00	EACH	\$2,500.00	\$40,000.00
SUBSEQUENT STATIC LOAD TEST 0228 507E00200	2,088.00	FT	\$39.22	\$81,891.36
STEEL PILES HP12X53, FURNISHED	2,000.00		409.2Z	ψ01,091.00
0229 507E00250	1,856.00	FT	\$8.20	\$15,219.20
STEEL PILES HP12X53, DRIVEN 0230 507E00600	156,467.00	CT	\$9.49	\$1,484,871.83
14" CAST-IN-PLACE REINFORCED CO				\$1,404,071.05
0231 507E00650	164,871.00	FT	\$44.09	\$7,269,162.39
14" CAST-IN-PLACE REINFORCED CO 0232 509E10001 5	DNCRETE PI ,687,799.00		RNISHED \$1.00	\$5,687,799.00
EPOXY COATED REINFORCING STEE			\$1.00	\$5,007,799.00
0233 511E34446	12,839.00	CY	\$661.81	\$8,496,978.59
CLASS QC2 CONCRETE WITH QC/QA 0234 511E34450	A, BRIDGE DI 1,341.00		¢162.22	\$621,325.53
0234 511E34450 CLASS QC2 CONCRETE WITH QC/QA			\$463.33 RAPET)	\$021,323.33
0235 511E42010	16,510.00	CY	\$815.00	\$13,455,650.00
CLASS QC1 CONCRETE, PIER ABOVI			¢492.00	¢104 104 00
0236 511E44110 CLASS QC1 CONCRETE, ABUTMENT	382.00 NOT INCLU		\$482.00 OTING	\$184,124.00
0237 511E46510	9,305.00		\$408.00	\$3,796,440.00
CLASS QC1 CONCRETE, FOOTING	24 000 00	0)/	¢11.00	\$204 504 00
0238 512E10100 SEALING OF CONCRETE SURFACES	31,820.00 (EPOXY-UR		\$11.99 ;)	\$381,521.80
	,275,032.00		\$1.52	\$33,858,048.64
STRUCTURAL STEEL MEMBERS, LEV			* 2.20	<i><u>¢</u></i><u><u></u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u>
0240 513E20000 WELDED STUD SHEAR CONNECTOR	154,388.00 S	EACH	\$3.36	\$518,743.68
0241 513E95000	30,400.00	FT	\$8.00	\$243,200.00
STRUCTURAL STEEL, MISC.:				
INSPECTION CABLE 0242 513E95000	205.00	FT	\$45.00	\$9,225.00
STRUCTURAL STEEL, MISC.:			•	¢0,0.00
INSPECTION HANDRAIL	000 000 00	0	¢4.00	¢4 272 000 00
0243 514E00060 1 FIELD PAINTING STRUCTURAL STEE	,068,000.00 L. INTERME		\$4.00 OAT	\$4,272,000.00
0244 514E00066 1	,068,000.00	SF	\$4.00	\$4,272,000.00
FIELD PAINTING STRUCTURAL STEE			¢400.44	¢00 070 00
0245 516E11211 STRUCTURAL EXPANSION JOINT INC	174.00 CLUDING EL		\$498.14 RIC STRIP SEAL, AS PER PLA	\$86,676.36 N
0246 516E12400 SPECIAL - MODULAR EXPANSION JC	348.00		\$800.00	\$278,400.00
0247 516E13900	127.00	SF	\$10.21	\$1,296.67
2" PREFORMED EXPANSION JOINT F	ILLER			·

Estimate: CUY90591				Richland Engineering Limited
<u>Line # Item Number</u> <u>Description</u> <u>Supplemental Description</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
0248 518E12300 SCUPPERS, INCLUDING SUPPORT	20.00 S	EACH	\$1,800.00	\$36,000.00
0249 518E21200 POROUS BACKFILL WITH FILTER F	150.00 ABRIC	CY	\$78.91	\$11,836.50
0250 518E40000 6" PERFORATED CORRUGATED PI	142.00 ASTIC PIPE	FT	\$9.77	\$1,387.34
0251 518E40010 6" NON-PERFORATED CORRUGAT		FT IPE, INC	\$12.85 LUDING SPECIALS	\$1,914.65
0252 518E51100 8" PIPE DOWNSPOUT, INCLUDING	1,371.00 SPECIALS	FT	\$440.00	\$603,240.00
0253 523E20000 DYNAMIC LOAD TESTING	32.00	EACH	\$3,343.17	\$106,981.44
0254 523E20500 RESTRIKE	32.00	EACH	\$2,509.25	\$80,296.00
0255 526E30001 REINFORCED CONCRETE APPRO/	580.00 ACH SLABS (T=	-	\$244.29 S PER PLAN	\$141,688.20
0256 530E00400 SPECIAL - STRUCTURE, MISC.: INSPECTION MANHOLE COVER	4.00	EACH	\$1,650.00	\$6,600.00
0257 530E00600 SPECIAL - STRUCTURE, MISC.: STAY-IN-PLACE DECK FORMS	167,604.00	SF	\$10.00	\$1,676,040.00
0258 607E39901 VANDAL PROTECTION FENCE, 6' S	8,300.00 TRAIGHT, CO		\$61.98 ABRIC, AS PER PLAN	\$514,434.00
0259 607E50901			\$1,593.89	\$15,938.90

VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN 259 607E50901 10.00 EACH \$1,593.89 \$15,938 GATE, TYPE CL, AS PER PLAN Total for Group 5250:\$105,260,050.10

Group 9000: INCIDENTALS

	20	\$2,000,000.00	\$2,000,000.00
62.00	MNTH	\$2,028.70	\$125,779.40
		\$250,000.00	\$250,000.00
1.00	LS	\$2,000,000.00	\$2,000,000.00
	62.00 1.00 ER PLAN	1.00 LS 62.00 MNTH 1.00 LS ER PLAN 1.00 LS	62.00 MNTH \$2,028.70 1.00 LS \$250,000.00 ER PLAN

Total for Group 9000:\$4,375,779.40

Group 9999: DESIGN CONTINGENCY

0208 PRELIMINARY: 15% DESIGN CONTINGENC	1.00 Y	LS	\$33,515,027.89	\$33,515,027.89
			Total for Group 9999:\$33,5	15,027.89

Description Supplemental Description

Group 0700: LIGHTING

0052 625E10490 LIGHT POLE, CONVENTIONAL	52.00	EACH	\$1,833.22	\$95,327.44
0053 625E23400 NO. 10 AWG POLE AND BRACKET C/	5,720.00 ABLE	FT	\$1.15	\$6,578.00
0054 625E26250 LUMINAIRE, CONVENTIONAL	52.00	EACH	\$330.45	\$17,183.40
0055 625E75400 LIGHT POLE REMOVED	52.00	EACH	\$163.43	\$8,498.36
0056 625E75506 LUMINAIRE REMOVED	52.00	EACH	\$47.75	\$2,483.00

Group 1200: MAINTENANCE OF TRAFFIC

0057 614E20100 30.00 MII	
WORK ZONE LANE LINE, CLASS I, 642 PAINT	
0058 614E22001 30.00 MII	L
WORK ZONE EDGE LINE, CLASS I, AS PER PLAN	
WHITE	
0059 615E20000 6,000.00 SY	,
PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	
0060 622E41000 43,000.00 FT	
PORTABLE BARRIER, 32"	
0061 622E41010 19,000.00 FT	
PORTABLE BARRIER, 50"	

Group 1500: CUY-480-1842 L: ALTERNATIVE 7: LCCA OVERALY AT 20 YEAR **INTERVALS**

	ALS				
REM	202E98000 OVAL MISC.:	1.00	LS	\$24,000.00	\$24,000.00
EXIS	TING DRAINAGE CLEANOUT				
0002	512E10100	7,171.00	SY	\$19.82	\$142,129.22
SEAL	ING OF CONCRETE SURFACES	(EPOXY-UR	ETHANE		
	512E74000	1,594.00		\$23.11	\$36,837.34
REM	OVAL OF EXISTING COATINGS F	ROM CONC	RETE SI	JRFACES	
0004	513E95020	1.00	LS	\$8,000.00	\$8,000.00
STRI	JCTURAL STEEL, MISC.:				
INSP	ECTION ACCESS REPAIRS				
0005	516E11211	174.00	FT	\$498.14	\$86,676.36
STRI	JCTURAL EXPANSION JOINT INC	LUDING EL	ASTOME	RIC STRIP SEAL, AS PER PLAN	
0006	518E63300	1.00	LS	\$120,000.00	\$120,000.00
STRI	JCTURE DRAINAGE, MISC.:				
DRA	INAGE REPAIRS				
0007	519E11100	14,342.00	SF	\$90.16	\$1,293,074.72
PATO	CHING CONCRETE STRUCTURE				
8000	848E10200	38,800.00	SY	\$28.84	\$1,118,992.00
SUPE	ERPLASTICIZED DENSE CONCRE	TE OVERL	AY USIN	G HYDRODEMOLITION	
0009	848E20000	38,800.00	SY	\$37.08	\$1,438,704.00
SUR	FACE PREPARATION USING HYD	RODEMOLI	TION		
0010	848E30200	1,833.00	CY	\$99.92	\$183,153.36
SUPE	ERPLASTICIZED DENSE CONCRE	TE OVERLA	AY (VAR	IABLE THICKNESS), MATERIAL ONLY	
	848E50000	776.00		\$58.02	\$45,023.52
HAN	D CHIPPING				

Estimate CUY90591

Estimated Cost:\$13,735,240.35 Contingency: 35.00% Estimated Total: \$18,542,574.47

CUY-480-18.42: ALTERNATIVE 7 LCCA OVERLAY AT 20 YEAR INTERVALS

- Base Date: 01/01/18
- Spec Year: 13
- Unit System: E
- Work Type: BRIDGE REHABILITATION
 - Highway Type: 446 ON 304
- Urban/Rural Type: URBAN CLASS
 - Season: SPRING
- County: CUYAHOGA
- Midpoint of Latitude: 412435
- Midpoint of Longitude: 0813745
- District: 12
- Federal/State Project Number:
- Estimate Type: Preliminary Submission (Inflation 1-1-2020) Prepared by Richland Engineering Limited on 01/31/14

Total for Group 0700:\$130,070.20

Ξ	\$809.72	\$24,291.60
Ξ	\$694.09	\$20,822.70
	\$30.90	\$185,400.00
	\$7.96	\$342,280.00
	\$11.55	\$219,450.00

Total for Group 1200:\$792,244.30

Estimate:	CUY90591
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Estimate: CUY90591		
Line #	Item Number	

Estimate: CUY90591			Richland E	ingineering Limited
Line # Item Number	<u>Quantity</u>	<u>Units</u>	Unit Price	Extension
<u>Description</u> <u>Supplemental Description</u>				
0012 848E50100	1.00	LS	\$800.00	\$800.00
TEST SLAB			·	
0013 848E50200 FULL-DEPTH REPAIR	458.00	CY	\$136.47	\$62,503.26
			Total for Group 1500:\$4,5	559,893.78
Group 1501: CLIV-480-18421.			7: LCCA ADDITIONAL COST AF	TER
FIRST 20 YEAR INTERVAL			1. LOCA ADDITIONAL COST AI	
0014 848E50320	38,800.00	SY	\$7.72	\$299,536.00
EXISTING CONCRETE OVERLAY RE		<u> </u>	* 2.22	¢44.004.40
0015 848E50340 REMOVAL OF DEBONDED OR DETE	3,880.00 RIORATED E		\$3.63 VARIABLE THICKNESS CONCRETE OVER	\$14,084.40 LAY
	-		Total for Group 1501:\$3	
•	ALTERNA	ATIVE	7: LCCA OVERALY AT 20 YEAF	R
INTERVALS				
0031 202E98000 REMOVAL MISC.:	1.00	LS	\$24,000.00	\$24,000.00
EXISTING DRAINAGE CLEANOUT				
0032 512E10100	7,171.00			\$142,129.22
SEALING OF CONCRETE SURFACES 0033 512E74000	1,594.00		=) \$23.11	\$36,837.34
REMOVAL OF EXISTING COATINGS	FROM CONC	RETE S	URFACES	
0034 513E95020	1.00	LS	\$8,000.00	\$8,000.00
STRUCTURAL STEEL, MISC.: INSPECTION ACCESS REPAIRS				
0035 516E11211	174.00		\$498.14	\$86,676.36
STRUCTURAL EXPANSION JOINT IN				¢120,000,00
0036 518E63300 STRUCTURE DRAINAGE, MISC.:	1.00	LO	\$120,000.00	\$120,000.00
DRAINAGE REPAIRS				
	14,342.00	SF	\$90.16	\$1,293,074.72
PATCHING CONCRETE STRUCTURE 0038 848E10200	38,800.00	SY	\$28.84	\$1,118,992.00
SUPERPLASTICIZED DENSE CONCR				φ1,110,332.00
0039 848E20000	38,800.00		\$37.08	\$1,438,704.00
SURFACE PREPARATION USING HY 0040 848E30200	DRODEMOLI 1,833.00		\$99.92	¢102 152 26
			199.92 ABLE THICKNESS), MATERIAL ONLY	\$183,153.36
0041 848E50000	776.00		\$58.02	\$45,023.52
HAND CHIPPING	4.00	10	00.009	¢000.00
0042 848E50100 TEST SLAB	1.00	LS	\$800.00	\$800.00
0043 848E50200	458.00	CY	\$136.47	\$62,503.26
FULL-DEPTH REPAIR			T / 1/ 0 / * / -	

Total for Group 1505:\$4,559,893.78

Group 1506: CUY-480-1842 R: ALTERNATIVE 7: LCCA ADDITIONAL COST AFTER FIRST 20 YEAR INTERVAL

0044 848E50320	38,800.00	SY	\$7.72	\$299,536.00	
EXISTING CONCRETE OVER	LAY REMOVED				
0045 848E50340	3,880.00	SY	\$3.63	\$14,084.40	
REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY					

Description Supplemental Description

Group 9000: INCIDENTALS

0046 614E11000 MAINTAINING TRAFFIC	1.00	LS	\$750,000.00	\$750,000.00
0047 619E16020 FIELD OFFICE, TYPE C	12.00	MNTH	\$2,028.70	\$24,344.40
0048 623E10001 CONSTRUCTION LAYOUT STAKES, AS	1.00 S PER PLAN		\$100,000.00	\$100,000.00
0049 624E10000 MOBILIZATION	1.00	LS	\$400,000.00	\$400,000.00

Group 9999: DESIGN CONTINGENCY

0051 1.00)	LS
PRELIMINARY: 15% DESIGN CONTINGENCY		

Quantity Units Unit Price

Total for Group 1506:\$313,620.40

Total for Group 9000:\$1,274,344.40

\$1,791,553.09

\$1,791,553.09

Total for Group 9999:\$1,791,553.09

Description Supplemental Description

Group 1500: CUY-480-1842 L: ALTERNATIVE 7: LCCA ZONE PAINT NEW STEEL AT 20 YEAR INTERVALS 0014 514E00050 30,208.00 SF SURFACE PREPARATION OF EXISTING STRUCTURAL 0015 514E00056 30,208.00 SF FIELD PAINTING OF EXISTING STRUCTURAL STEEL, 0051 514E00060 30,208.00 SF FIELD PAINTING STRUCTURAL STEEL, INTERMEDIAT 0052 514E00066 30,208.00 SF FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

Group 1505: CUY-480-1842 R: ALTERNATIVE 7: LCCA ZONE PAINT NEW STEEL AT 20 YEAR INTERVALS

0053	514E00050		30,208.00	SF
SUR	FACE PREP	ARATION OF EXIST	ING STRUCT	URA
0054	514E00056		30,208.00	SF
FIEL	D PAINTING	OF EXISTING STRU	JCTURAL ST	EEL,
	514E00060		30,208.00	
FIEL	D PAINTING	STRUCTURAL STE	EL, INTERME	DIAT
0056	514E00066		30,208.00	SF
FIEL	D PAINTING	STRUCTURAL STE	EL, FINISH C	DAT

Group 9499: INCIDENTALS

0046 614E11000 MAINTAINING TRAFFIC	1.00	LS	\$200,000.00	\$200,000.00
0047 619E16020 FIELD OFFICE, TYPE C	24.00	MNTH	\$2,028.70	\$48,688.80
0049 624E10000 MOBILIZATION	1.00	LS	\$100,000.00	\$100,000.00

Group 9999: DESIGN CONTINGENCY

0050 1.00 LS PRELIMINARY: 15% DESIGN CONTINGENCY

Estimate CUY90591

Estimated Cost:\$2,033,734.52 Contingency: 35.00% Estimated Total: \$2,745,541.60

CUY-480-18.42: ALTERNATIVE 7 LCCA ZONE PAINT NEW STEEL AT 20 YEAR INTERVALS

Base Date: 01/01/18

Spec Year: 13

Unit System: E

Work Type: BRIDGE REHABILITATION

Highway Type: 446 ON 304

Urban/Rural Type: URBAN CLASS

Season: SPRING

County: CUYAHOGA

Midpoint of Latitude: 412435

Midpoint of Longitude: 0813745

District: 12

Federal/State Project Number:

Estimate Type: Preliminary Submission (Inflation 1-1-2020) Prepared by Richland Engineering Limited on 01/31/14

\$15.50 _ STEEL	\$468,224.00
\$4.00 PRIME COAT	\$120,832.00
\$2.00 E COAT	\$60,416.00
\$2.00	\$60,416.00

Total for Group 1500:\$709,888.00

\$15.50 _ STEEL	\$468,224.00
\$4.00 PRIME COAT	\$120,832.00
\$2.00 E COAT	\$60,416.00
\$2.00	\$60,416.00

Total for Group 1505:\$709,888.00

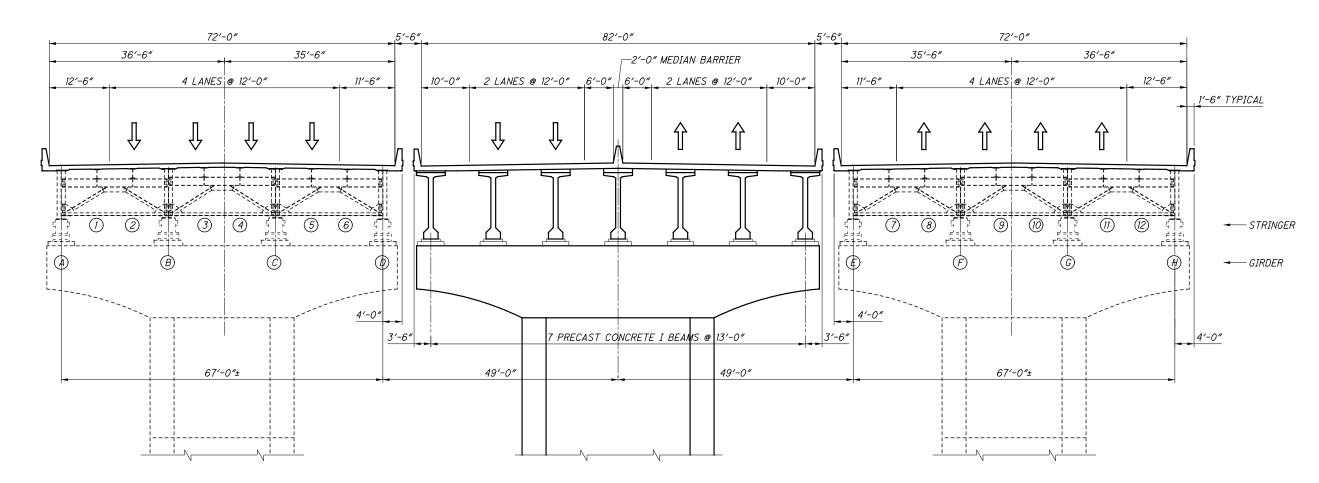
Total for Group 9499:\$348,688.80

\$265,269.72

\$265,269.72

Total for Group 9999:\$265,269.72

<u>WESTBOUND</u>



TRANSVERSE SECTION <u>UNIT 2 TO 5</u>

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<u>EASTBOUND</u>

ALTERNATIVE 6, FINAL CONDITION

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6 UNIT

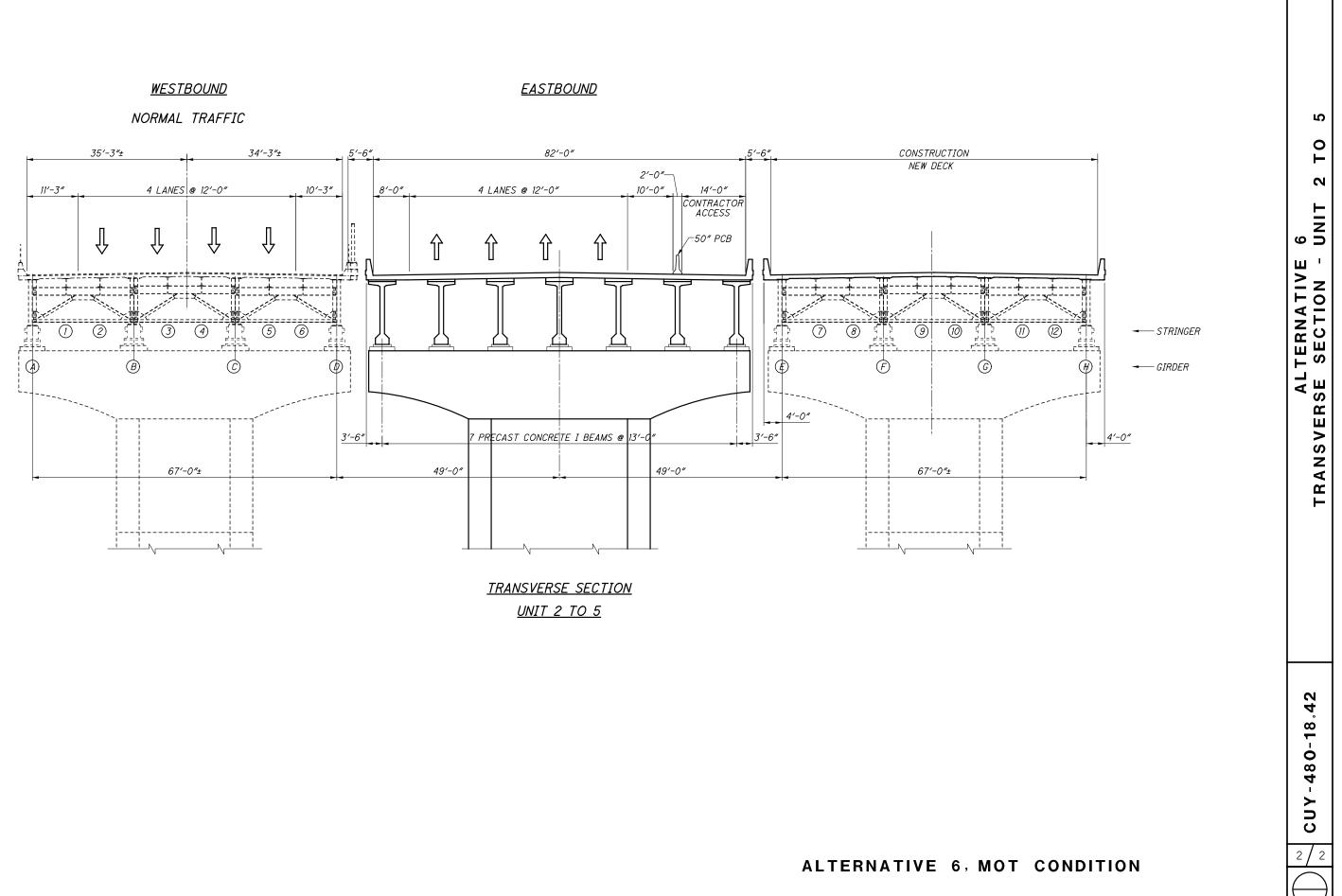
ALTERNATIVE TRANSVERSE SECTION -

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CUY-480-18

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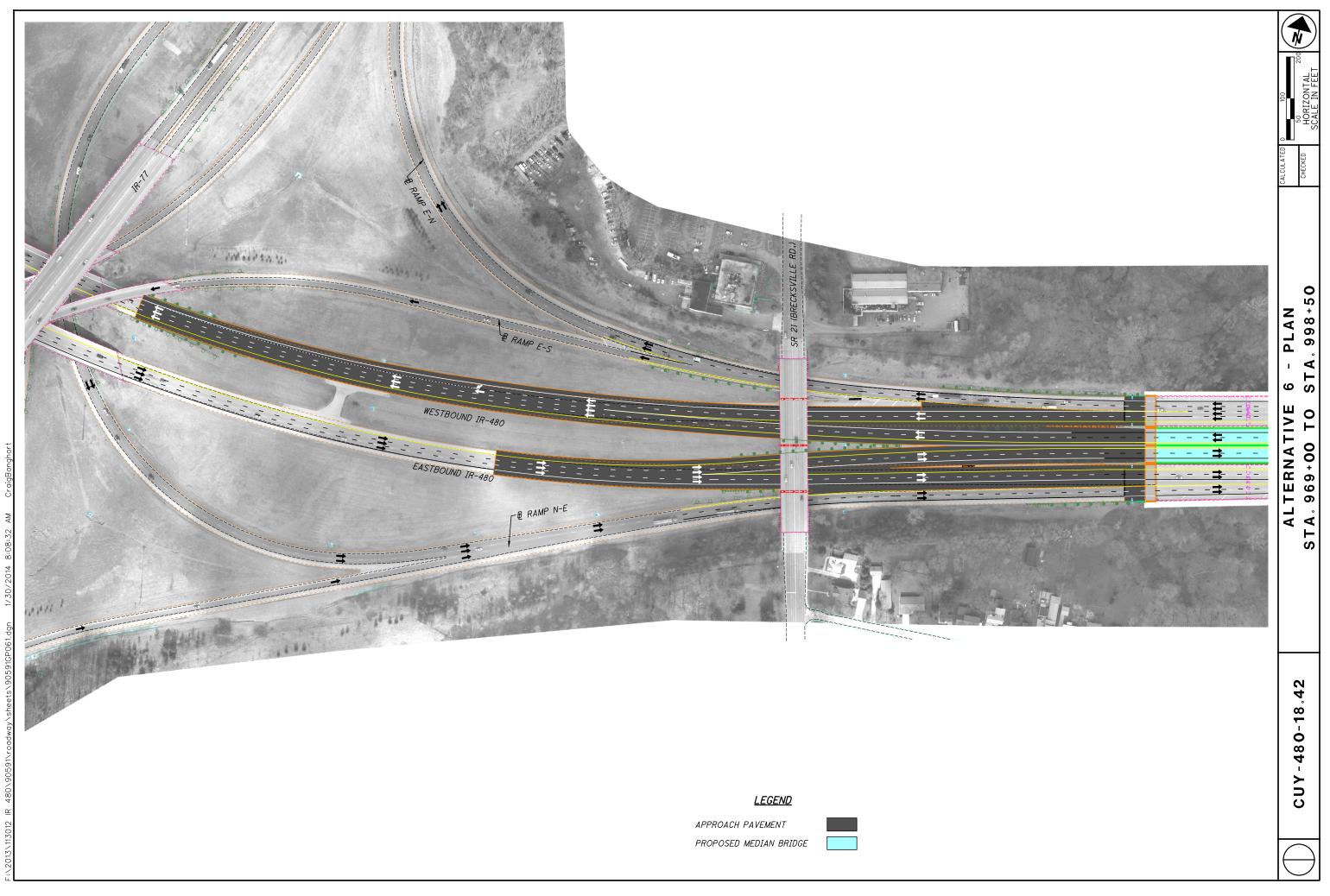


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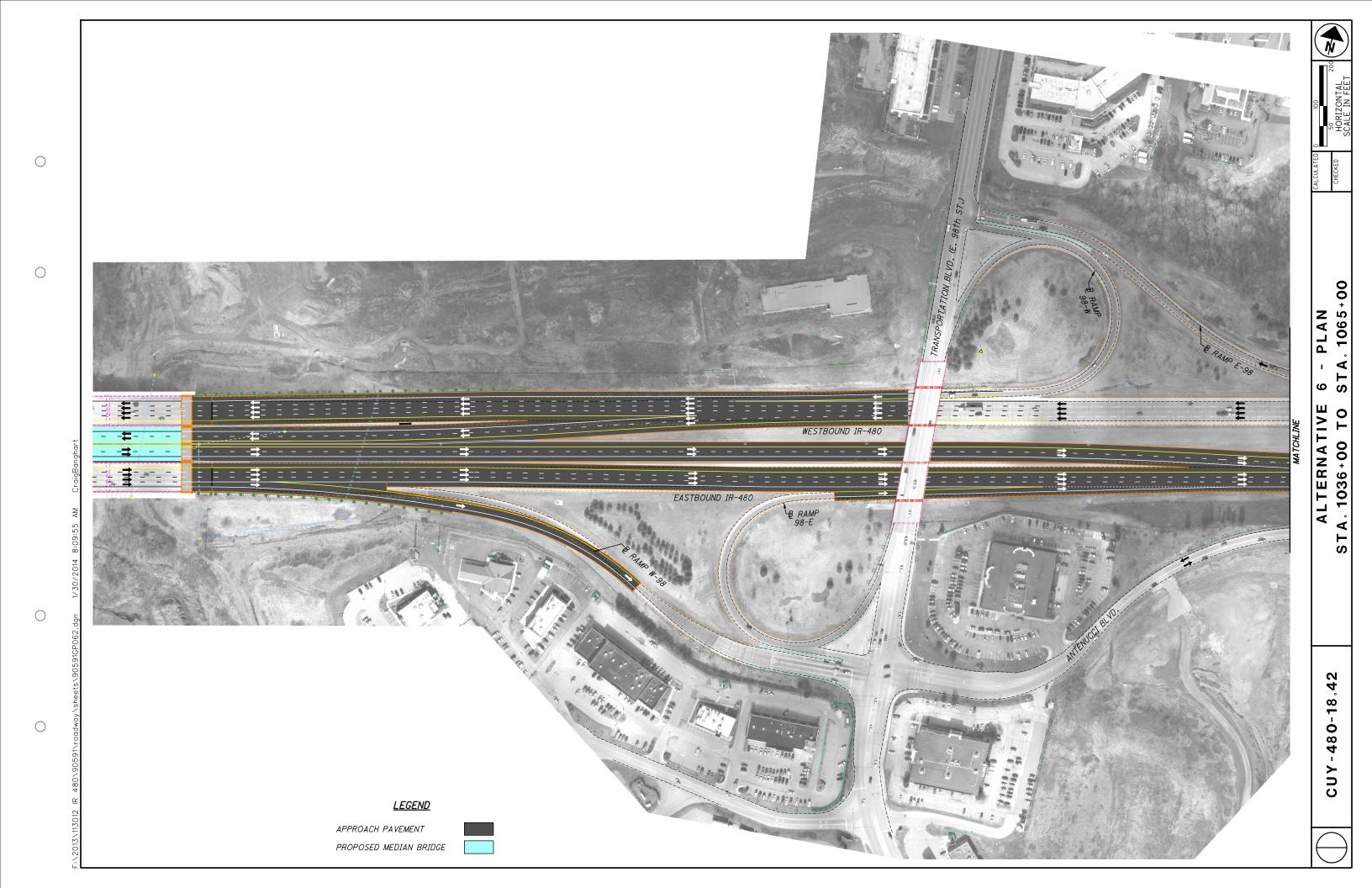
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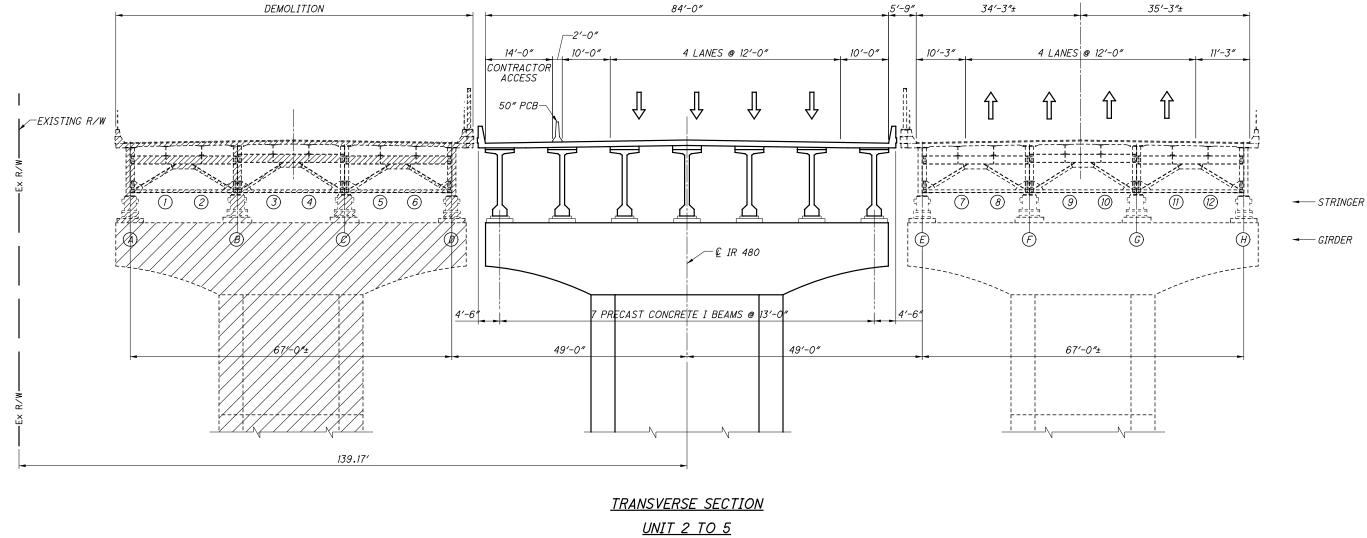
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<u>EASTBOUND</u>

NORMAL TRAFFIC

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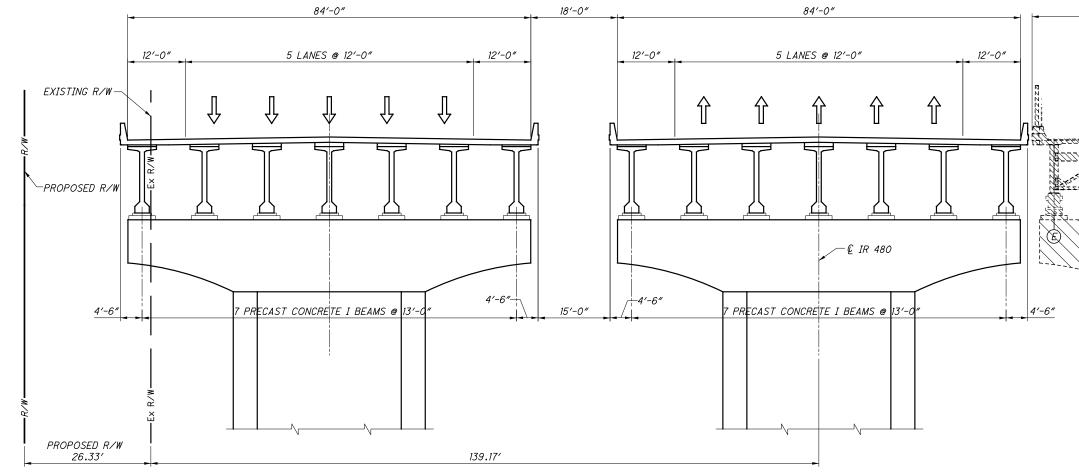
7 UNIT

ALTERNATIVE TRANSVERSE SECTION -

ALTERNATIVE 7, MOT CONDITION

<u>WESTBOUND</u>

<u>EASTBOUND</u>



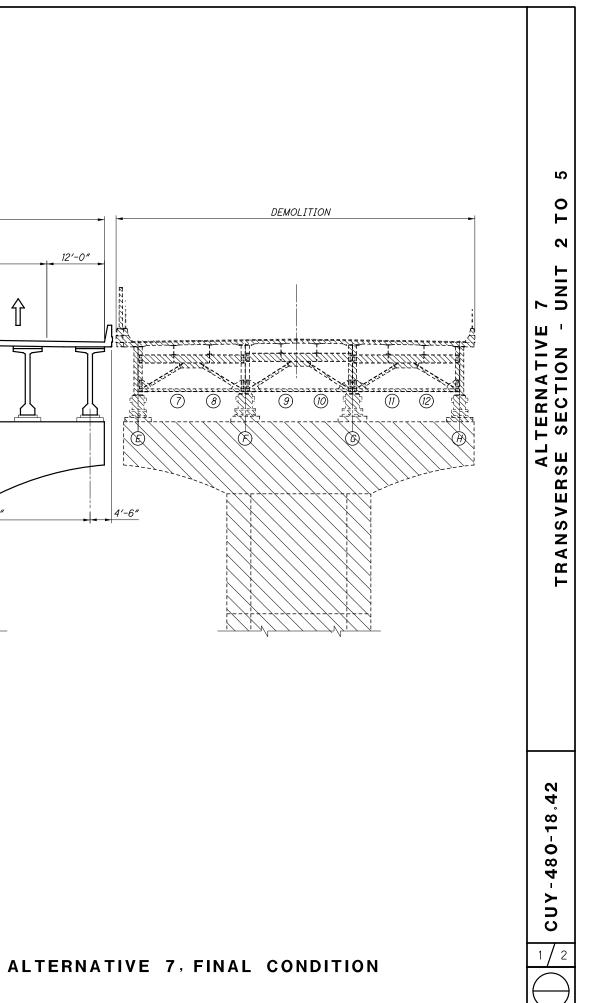
TRANSVERSE SECTION <u>UNIT 2 TO 5</u>

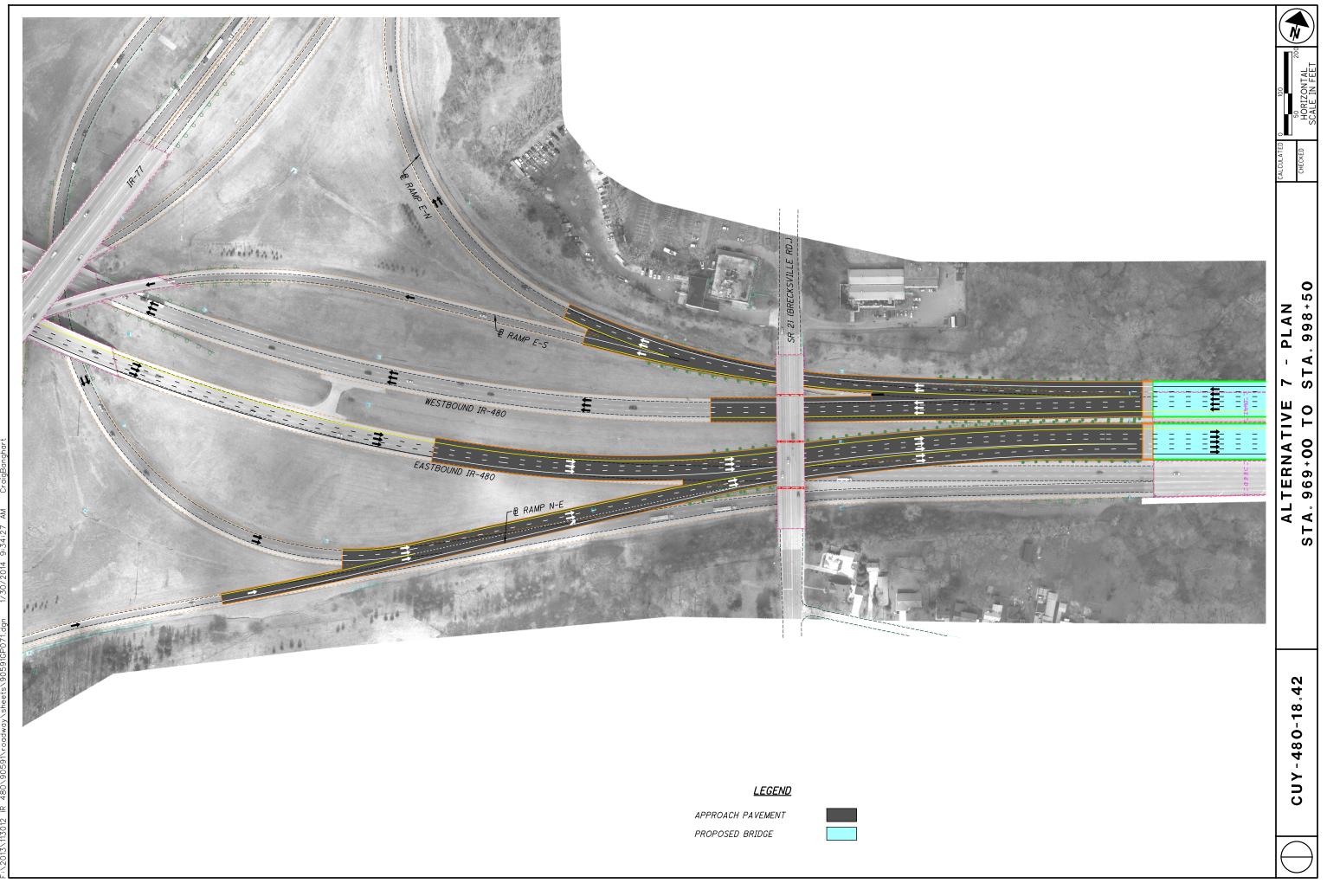
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