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

RICHLAND ENGINEERING LIMITED

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CUY-480-18.42 L/R
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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:

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

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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:

- 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.

Bridge Construction - 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 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.

Construction Duration – 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.

User Delays During Construction – 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.

Bridge Construction - 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.

Construction Duration – 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.

User Delays During Construction – 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.

Right of Way – 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 Bridges	$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.
- An IZEU paint system at the expansion joints should be removed and repainted at 20 year intervals.
- 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 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.

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.

$$ANEV = NPV\left(\frac{i \cdot (1+i)^n}{(1+i)^n - 1}\right)$$

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.

OPINION OF PROBABLE INITIAL CONSTRUCTION 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**

ALTERNATIVE COMPARISON								
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 ½” 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 ½ 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.

Alternative 7 – Two New Bridges

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
- 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)
- The Alternative 6 ($245 M) net present value is less than the Alternative 7 ($305 M) net present value
- Alternative 6 requires no additional right of way and Alternative 7 does require additional 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
- 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

interoffice communication

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

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
K:	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 (Density pc/mi/lane)**	**I-480 WB Downhill (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
2018	$50,000	$40,000	Initial Construction	$146,000,000	$0	$146,090,000
2019	$50,000	$40,000		$0	$0	$90,000
2020	$50,000	$40,000	Paint Existing Structures	$5,000,000	$0	$5,090,000
2021	$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
2024	$50,000	$40,000		$0	$0	$90,000
2025	$50,000	$40,000		$0	$0	$90,000
2026	$50,000	$40,000		$0	$0	$90,000
2027	$50,000	$40,000		$0	$0	$90,000
2028	$50,000	$40,000		$0	$0	$90,000
2029	$50,000	$40,000		$0	$0	$90,000
2030	$50,000	$40,000		$0	$0	$90,000
2031	$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
2034	$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
2037	$50,000	$40,000		$0	$0	$90,000
2038	$50,000	$40,000	Overlay & Repair	$15,000,000	$0	$15,090,000
2039	$50,000	$40,000		$0	$0	$90,000
2040	$50,000	$40,000	Paint Existing Structures	$5,000,000	$0	$5,090,000
2041	$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
2044	$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
2047	$50,000	$40,000		$0	$0	$90,000
2048	$50,000	$40,000		$0	$0	$90,000
2049	$50,000	$40,000		$0	$0	$90,000
2050	$50,000	$40,000		$0	$0	$90,000
2051	$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
2054	$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
2057	$50,000	$40,000		$0	$0	$90,000
2058	$50,000	$40,000	Overlay & Repair	$15,000,000	$0	$15,090,000
2059	$50,000	$40,000		$0	$0	$90,000
2060	$50,000	$40,000	Paint Existing Structures	$5,000,000	$0	$5,090,000
2061	$50,000	$40,000		$0	$0	$90,000
2062	$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
2065	$50,000	$40,000		$0	$0	$90,000
2066	$50,000	$40,000		$0	$0	$90,000
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
NPV at 1.9%	$1,604,728	$1,283,783		$170,508,175	($16,388,533)	**$157,008,153**
ANEV at 1.9%	$50,000	$40,000		$5,312,680	($510,633)	$4,892,047

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

ALTERNATIVE 3.a - Replace Decks, Widen Both Bridges

Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost
2018	$50,000	$40,000	Initial Construction	$123,000,000	$0	$123,090,000
2019	$50,000	$40,000		$0	$0	$90,000
2020	$50,000	$40,000	Paint Existing Structure	$5,000,000	$0	$5,090,000
2021	$50,000	$40,000		$0	$0	$90,000
2022	$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
2025	$50,000	$40,000		$0	$0	$90,000
2026	$50,000	$40,000		$0	$0	$90,000
2027	$50,000	$40,000		$0	$0	$90,000
2028	$50,000	$40,000		$0	$0	$90,000
2029	$50,000	$40,000		$0	$0	$90,000
2030	$50,000	$40,000		$0	$0	$90,000
2031	$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
2034	$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
2037	$50,000	$40,000		$0	$0	$90,000
2038	$50,000	$40,000	Overlay & Repair	$15,000,000	$0	$15,090,000
2039	$50,000	$40,000		$0	$0	$90,000
2040	$50,000	$40,000	Paint Existing Structure	$5,000,000	$0	$5,090,000
2041	$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
2044	$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
2047	$50,000	$40,000		$0	$0	$90,000
2048	$50,000	$40,000		$0	$0	$90,000
2049	$50,000	$40,000		$0	$0	$90,000
2050	$50,000	$40,000		$0	$0	$90,000
2051	$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
2054	$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
2057	$50,000	$40,000		$0	$0	$90,000
2058	$50,000	$40,000	Overlay & Repair	$15,000,000	$0	$15,090,000
2059	$50,000	$40,000		$0	$0	$90,000
2060	$50,000	$40,000	Paint Existing Structure	$5,000,000	$0	$5,090,000
2061	$50,000	$40,000		$0	$0	$90,000
2062	$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
2065	$50,000	$40,000		$0	$0	$90,000
2066	$50,000	$40,000		$0	$0	$90,000
2067	$50,000	$40,000		$0	($42,000,000)	($41,910,000)
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		$147,937,027	($16,388,533)	**$134,437,005**
ANEV at 1.9%	$50,000	$40,000		$4,609,410	($510,633)	$4,188,777

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

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

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
2019	$50,000	$40,000		$0	$0	$90,000
2020	$50,000	$40,000	Paint Existing Structure	$5,000,000	$0	$5,090,000
2021	$50,000	$40,000		$0	$0	$90,000
2022	$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
2025	$50,000	$40,000		$0	$0	$90,000
2026	$50,000	$40,000		$0	$0	$90,000
2027	$50,000	$40,000		$0	$0	$90,000
2028	$50,000	$40,000		$0	$0	$90,000
2029	$50,000	$40,000		$0	$0	$90,000
2030	$50,000	$40,000		$0	$0	$90,000
2031	$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
2034	$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
2037	$50,000	$40,000		$0	$0	$90,000
2038	$50,000	$40,000	Overlay & Repair	$15,000,000	$0	$15,090,000
2039	$50,000	$40,000		$0	$0	$90,000
2040	$50,000	$40,000	Paint Existing Structure	$5,000,000	$0	$5,090,000
2041	$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
2044	$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
2047	$50,000	$40,000		$0	$0	$90,000
2048	$50,000	$40,000		$0	$0	$90,000
2049	$50,000	$40,000		$0	$0	$90,000
2050	$50,000	$40,000		$0	$0	$90,000
2051	$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
2054	$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
2057	$50,000	$40,000		$0	$0	$90,000
2058	$50,000	$40,000	Overlay & Repair	$15,000,000	$0	$15,090,000
2059	$50,000	$40,000		$0	$0	$90,000
2060	$50,000	$40,000	Paint Existing Structure	$5,000,000	$0	$5,090,000
2061	$50,000	$40,000		$0	$0	$90,000
2062	$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
2065	$50,000	$40,000		$0	$0	$90,000
2066	$50,000	$40,000		$0	$0	$90,000
2067	$50,000	$40,000		$0	($42,000,000)	($41,910,000)
TOTAL	$2,500,000	$2,000,000		$200,000,000	($42,000,000)	$162,500,000
NPV at 1.9%	$1,604,728	$1,283,783		$179,340,364	($16,388,533)	**$165,840,342**
ANEV at 1.9%	$50,000	$40,000		$5,587,873	($510,633)	$5,167,240

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

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

Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost
2018	$55,000	$45,000	Initial Construction	$162,000,000	$0	$162,100,000
2019	$55,000	$45,000		$0	$0	$100,000
2020	$55,000	$45,000	Paint Existing Structure	$5,000,000	$0	$5,100,000
2021	$55,000	$45,000		$0	$0	$100,000
2022	$55,000	$45,000		$0	$0	$100,000
2023	$55,000	$45,000		$0	$0	$100,000
2024	$55,000	$45,000		$0	$0	$100,000
2025	$55,000	$45,000		$0	$0	$100,000
2026	$55,000	$45,000		$0	$0	$100,000
2027	$55,000	$45,000		$0	$0	$100,000
2028	$55,000	$45,000		$0	$0	$100,000
2029	$55,000	$45,000		$0	$0	$100,000
2030	$55,000	$45,000		$0	$0	$100,000
2031	$55,000	$45,000		$0	$0	$100,000
2032	$55,000	$45,000		$0	$0	$100,000
2033	$55,000	$45,000		$0	$0	$100,000
2034	$55,000	$45,000		$0	$0	$100,000
2035	$55,000	$45,000		$0	$0	$100,000
2036	$55,000	$45,000		$0	$0	$100,000
2037	$55,000	$45,000		$0	$0	$100,000
2038	$55,000	$45,000	Paint, Overlay & Repair	$18,000,000	$0	$18,100,000
2039	$55,000	$45,000		$0	$0	$100,000
2040	$55,000	$45,000	Paint Existing Structure	$5,000,000	$0	$5,100,000
2041	$55,000	$45,000		$0	$0	$100,000
2042	$55,000	$45,000		$0	$0	$100,000
2043	$55,000	$45,000		$0	$0	$100,000
2044	$55,000	$45,000		$0	$0	$100,000
2045	$55,000	$45,000		$0	$0	$100,000
2046	$55,000	$45,000		$0	$0	$100,000
2047	$55,000	$45,000		$0	$0	$100,000
2048	$55,000	$45,000		$0	$0	$100,000
2049	$55,000	$45,000		$0	$0	$100,000
2050	$55,000	$45,000		$0	$0	$100,000
2051	$55,000	$45,000		$0	$0	$100,000
2052	$55,000	$45,000		$0	$0	$100,000
2053	$55,000	$45,000		$0	$0	$100,000
2054	$55,000	$45,000		$0	$0	$100,000
2055	$55,000	$45,000		$0	$0	$100,000
2056	$55,000	$45,000		$0	$0	$100,000
2057	$55,000	$45,000		$0	$0	$100,000
2058	$55,000	$45,000	Paint, Overlay & Repair	$18,000,000	$0	$18,100,000
2059	$55,000	$45,000		$0	$0	$100,000
2060	$55,000	$45,000	Paint Existing Structure	$5,000,000	$0	$5,100,000
2061	$55,000	$45,000		$0	$0	$100,000
2062	$55,000	$45,000		$0	$0	$100,000
2063	$55,000	$45,000		$0	$0	$100,000
2064	$55,000	$45,000		$0	$0	$100,000
2065	$55,000	$45,000		$0	$0	$100,000
2066	$55,000	$45,000		$0	$0	$100,000
2067	$55,000	$45,000		$0	($51,000,000)	($50,900,000)
TOTAL	$2,750,000	$2,250,000		$213,000,000	($51,000,000)	$167,000,000
NPV at 1.9%	$1,765,201	$1,444,256		$189,617,056	($19,900,362)	**$172,926,151**
ANEV at 1.9%	$55,000	$45,000		$5,908,073	($620,054)	$5,388,019

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

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

Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost
2018	$50,000	$40,000	Initial Construction	$205,000,000	$0	$205,090,000
2019	$50,000	$40,000		$0	$0	$90,000
2020	$50,000	$40,000	Paint Existing Structure	$3,000,000	$0	$3,090,000
2021	$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
2024	$50,000	$40,000		$0	$0	$90,000
2025	$50,000	$40,000		$0	$0	$90,000
2026	$50,000	$40,000		$0	$0	$90,000
2027	$50,000	$40,000		$0	$0	$90,000
2028	$50,000	$40,000		$0	$0	$90,000
2029	$50,000	$40,000		$0	$0	$90,000
2030	$50,000	$40,000		$0	$0	$90,000
2031	$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
2034	$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
2037	$50,000	$40,000		$0	$0	$90,000
2038	$50,000	$40,000	Paint, Overlay & Repair	$17,000,000	$0	$17,090,000
2039	$50,000	$40,000		$0	$0	$90,000
2040	$50,000	$40,000	Paint Existing Structure	$3,000,000	$0	$3,090,000
2041	$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
2044	$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
2047	$50,000	$40,000		$0	$0	$90,000
2048	$50,000	$40,000		$0	$0	$90,000
2049	$50,000	$40,000		$0	$0	$90,000
2050	$50,000	$40,000		$0	$0	$90,000
2051	$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
2054	$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
2057	$50,000	$40,000		$0	$0	$90,000
2058	$50,000	$40,000	Paint, Overlay & Repair	$17,000,000	$0	$17,090,000
2059	$50,000	$40,000		$0	$0	$90,000
2060	$50,000	$40,000	Paint Existing Structure	$3,000,000	$0	$3,090,000
2061	$50,000	$40,000		$0	$0	$90,000
2062	$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
2065	$50,000	$40,000		$0	$0	$90,000
2066	$50,000	$40,000		$0	$0	$90,000
2067	$50,000	$40,000		$0	($91,000,000)	($90,910,000)
TOTAL	$2,500,000	$2,000,000		$248,000,000	($91,000,000)	$161,500,000
NPV at 1.9%	$1,604,728	$1,283,783		$226,601,795	($35,508,489)	**$193,981,818**
ANEV at 1.9%	$50,000	$40,000		$7,060,440	($1,106,371)	$6,044,070

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

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

Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual 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
2020	$40,000	$30,000	Paint Existing Structure	$3,000,000	$0	$3,070,000
2021	$40,000	$30,000		$0	$0	$70,000
2022	$40,000	$30,000		$0	$0	$70,000
2023	$40,000	$30,000		$0	$0	$70,000
2024	$40,000	$30,000		$0	$0	$70,000
2025	$40,000	$30,000		$0	$0	$70,000
2026	$40,000	$30,000		$0	$0	$70,000
2027	$40,000	$30,000		$0	$0	$70,000
2028	$40,000	$30,000		$0	$0	$70,000
2029	$40,000	$30,000		$0	$0	$70,000
2030	$40,000	$30,000		$0	$0	$70,000
2031	$40,000	$30,000		$0	$0	$70,000
2032	$40,000	$30,000		$0	$0	$70,000
2033	$40,000	$30,000		$0	$0	$70,000
2034	$40,000	$30,000		$0	$0	$70,000
2035	$40,000	$30,000		$0	$0	$70,000
2036	$40,000	$30,000		$0	$0	$70,000
2037	$40,000	$30,000		$0	$0	$70,000
2038	$40,000	$30,000	Overlay & Repair	$15,000,000	$0	$15,070,000
2039	$40,000	$30,000		$0	$0	$70,000
2040	$40,000	$30,000	Paint Existing Structure	$3,000,000	$0	$3,070,000
2041	$40,000	$30,000		$0	$0	$70,000
2042	$40,000	$30,000		$0	$0	$70,000
2043	$40,000	$30,000		$0	$0	$70,000
2044	$40,000	$30,000		$0	$0	$70,000
2045	$40,000	$30,000		$0	$0	$70,000
2046	$40,000	$30,000		$0	$0	$70,000
2047	$40,000	$30,000		$0	$0	$70,000
2048	$40,000	$30,000		$0	$0	$70,000
2049	$40,000	$30,000		$0	$0	$70,000
2050	$40,000	$30,000		$0	$0	$70,000
2051	$40,000	$30,000		$0	$0	$70,000
2052	$40,000	$30,000		$0	$0	$70,000
2053	$40,000	$30,000		$0	$0	$70,000
2054	$40,000	$30,000		$0	$0	$70,000
2055	$40,000	$30,000		$0	$0	$70,000
2056	$40,000	$30,000		$0	$0	$70,000
2057	$40,000	$30,000		$0	$0	$70,000
2058	$40,000	$30,000	Overlay & Repair	$15,000,000	$0	$15,070,000
2059	$40,000	$30,000		$0	$0	$70,000
2060	$40,000	$30,000	Paint Existing Structure	$3,000,000	$0	$3,070,000
2061	$40,000	$30,000		$0	$0	$70,000
2062	$40,000	$30,000		$0	$0	$70,000
2063	$40,000	$30,000		$0	$0	$70,000
2064	$40,000	$30,000		$0	$0	$70,000
2065	$40,000	$30,000		$0	$0	$70,000
2066	$40,000	$30,000		$0	$0	$70,000
2067	$40,000	$30,000		$0	($52,000,000)	($51,930,000)
TOTAL	$2,000,000	$1,500,000		$244,000,000	($52,000,000)	$195,500,000
NPV at 1.9%	$1,283,783	$962,837		$224,330,321	($20,290,565)	**$206,286,375**
ANEV at 1.9%	$40,000	$30,000		$6,989,666	($632,212)	$6,427,454

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

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

Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost
2018	$70,000	$50,000	Initial Construction	$255,000,000	$0	$255,120,000
2019	$70,000	$50,000		$0	$0	$120,000
2020	$70,000	$50,000	Paint Existing Structures	$5,000,000	$0	$5,120,000
2021	$70,000	$50,000		$0	$0	$120,000
2022	$70,000	$50,000		$0	$0	$120,000
2023	$70,000	$50,000		$0	$0	$120,000
2024	$70,000	$50,000		$0	$0	$120,000
2025	$70,000	$50,000		$0	$0	$120,000
2026	$70,000	$50,000		$0	$0	$120,000
2027	$70,000	$50,000		$0	$0	$120,000
2028	$70,000	$50,000		$0	$0	$120,000
2029	$70,000	$50,000		$0	$0	$120,000
2030	$70,000	$50,000		$0	$0	$120,000
2031	$70,000	$50,000		$0	$0	$120,000
2032	$70,000	$50,000		$0	$0	$120,000
2033	$70,000	$50,000		$0	$0	$120,000
2034	$70,000	$50,000		$0	$0	$120,000
2035	$70,000	$50,000		$0	$0	$120,000
2036	$70,000	$50,000		$0	$0	$120,000
2037	$70,000	$50,000		$0	$0	$120,000
2038	$70,000	$50,000	Paint, Overlay & Repair	$25,000,000	$0	$25,120,000
2039	$70,000	$50,000		$0	$0	$120,000
2040	$70,000	$50,000	Paint Existing Structures	$5,000,000	$0	$5,120,000
2041	$70,000	$50,000		$0	$0	$120,000
2042	$70,000	$50,000		$0	$0	$120,000
2043	$70,000	$50,000		$0	$0	$120,000
2044	$70,000	$50,000		$0	$0	$120,000
2045	$70,000	$50,000		$0	$0	$120,000
2046	$70,000	$50,000		$0	$0	$120,000
2047	$70,000	$50,000		$0	$0	$120,000
2048	$70,000	$50,000		$0	$0	$120,000
2049	$70,000	$50,000		$0	$0	$120,000
2050	$70,000	$50,000		$0	$0	$120,000
2051	$70,000	$50,000		$0	$0	$120,000
2052	$70,000	$50,000		$0	$0	$120,000
2053	$70,000	$50,000		$0	$0	$120,000
2054	$70,000	$50,000		$0	$0	$120,000
2055	$70,000	$50,000		$0	$0	$120,000
2056	$70,000	$50,000		$0	$0	$120,000
2057	$70,000	$50,000		$0	$0	$120,000
2058	$70,000	$50,000	Paint, Overlay & Repair	$25,000,000	$0	$25,120,000
2059	$70,000	$50,000		$0	$0	$120,000
2060	$70,000	$50,000	Paint Existing Structures	$5,000,000	$0	$5,120,000
2061	$70,000	$50,000		$0	$0	$120,000
2062	$70,000	$50,000		$0	$0	$120,000
2063	$70,000	$50,000		$0	$0	$120,000
2064	$70,000	$50,000		$0	$0	$120,000
2065	$70,000	$50,000		$0	$0	$120,000
2066	$70,000	$50,000		$0	$0	$120,000
2067	$70,000	$50,000		$0	($123,000,000)	($122,880,000)
TOTAL	$3,500,000	$2,500,000		$320,000,000	($123,000,000)	$203,000,000
NPV at 1.9%	$2,246,620	$1,604,728		$288,833,164	($47,994,991)	**$244,689,522**
ANEV at 1.9%	$70,000	$50,000		$8,999,440	($1,495,424)	$7,624,016

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

Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost
2018	$60,000	$40,000	Initial Construction	$255,000,000	$0	$255,100,000
2019	$60,000	$40,000		$0	$0	$100,000
2020	$60,000	$40,000	Paint Existing Structures	$5,000,000	$0	$5,100,000
2021	$60,000	$40,000		$0	$0	$100,000
2022	$60,000	$40,000		$0	$0	$100,000
2023	$60,000	$40,000		$0	$0	$100,000
2024	$60,000	$40,000		$0	$0	$100,000
2025	$60,000	$40,000		$0	$0	$100,000
2026	$60,000	$40,000		$0	$0	$100,000
2027	$60,000	$40,000		$0	$0	$100,000
2028	$60,000	$40,000		$0	$0	$100,000
2029	$60,000	$40,000		$0	$0	$100,000
2030	$60,000	$40,000		$0	$0	$100,000
2031	$60,000	$40,000		$0	$0	$100,000
2032	$60,000	$40,000		$0	$0	$100,000
2033	$60,000	$40,000		$0	$0	$100,000
2034	$60,000	$40,000		$0	$0	$100,000
2035	$60,000	$40,000		$0	$0	$100,000
2036	$60,000	$40,000		$0	$0	$100,000
2037	$60,000	$40,000		$0	$0	$100,000
2038	$60,000	$40,000	Overlay & Repair	$23,000,000	$0	$23,100,000
2039	$60,000	$40,000		$0	$0	$100,000
2040	$60,000	$40,000	Paint Existing Structures	$5,000,000	$0	$5,100,000
2041	$60,000	$40,000		$0	$0	$100,000
2042	$60,000	$40,000		$0	$0	$100,000
2043	$60,000	$40,000		$0	$0	$100,000
2044	$60,000	$40,000		$0	$0	$100,000
2045	$60,000	$40,000		$0	$0	$100,000
2046	$60,000	$40,000		$0	$0	$100,000
2047	$60,000	$40,000		$0	$0	$100,000
2048	$60,000	$40,000		$0	$0	$100,000
2049	$60,000	$40,000		$0	$0	$100,000
2050	$60,000	$40,000		$0	$0	$100,000
2051	$60,000	$40,000		$0	$0	$100,000
2052	$60,000	$40,000		$0	$0	$100,000
2053	$60,000	$40,000		$0	$0	$100,000
2054	$60,000	$40,000		$0	$0	$100,000
2055	$60,000	$40,000		$0	$0	$100,000
2056	$60,000	$40,000		$0	$0	$100,000
2057	$60,000	$40,000		$0	$0	$100,000
2058	$60,000	$40,000	Overlay & Repair	$23,000,000	$0	$23,100,000
2059	$60,000	$40,000		$0	$0	$100,000
2060	$60,000	$40,000	Paint Existing Structures	$5,000,000	$0	$5,100,000
2061	$60,000	$40,000		$0	$0	$100,000
2062	$60,000	$40,000		$0	$0	$100,000
2063	$60,000	$40,000		$0	$0	$100,000
2064	$60,000	$40,000		$0	$0	$100,000
2065	$60,000	$40,000		$0	$0	$100,000
2066	$60,000	$40,000		$0	$0	$100,000
2067	$60,000	$40,000		$0	($78,000,000)	($77,900,000)
TOTAL	$3,000,000	$2,000,000		$316,000,000	($78,000,000)	$243,000,000
NPV at 1.9%	$1,925,674	$1,283,783		$286,561,690	($30,435,848)	**$259,335,299**
ANEV at 1.9%	$60,000	$40,000		$8,928,666	($948,318)	$8,080,348

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

ALTERNATIVE 7 - Two New Steel Bridges

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
2019	$50,000	$40,000		$0	$0	$90,000
2020	$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
2023	$50,000	$40,000		$0	$0	$90,000
2024	$50,000	$40,000		$0	$0	$90,000
2025	$50,000	$40,000		$0	$0	$90,000
2026	$50,000	$40,000		$0	$0	$90,000
2027	$50,000	$40,000		$0	$0	$90,000
2028	$50,000	$40,000		$0	$0	$90,000
2029	$50,000	$40,000		$0	$0	$90,000
2030	$50,000	$40,000		$0	$0	$90,000
2031	$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
2034	$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
2037	$50,000	$40,000		$0	$0	$90,000
2038	$50,000	$40,000	Paint, Overlay & Repair	$22,000,000	$0	$22,090,000
2039	$50,000	$40,000		$0	$0	$90,000
2040	$50,000	$40,000		$0	$0	$90,000
2041	$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
2044	$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
2047	$50,000	$40,000		$0	$0	$90,000
2048	$50,000	$40,000		$0	$0	$90,000
2049	$50,000	$40,000		$0	$0	$90,000
2050	$50,000	$40,000		$0	$0	$90,000
2051	$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
2054	$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
2057	$50,000	$40,000		$0	$0	$90,000
2058	$50,000	$40,000	Paint, Overlay & Repair	$22,000,000	$0	$22,090,000
2059	$50,000	$40,000		$0	$0	$90,000
2060	$50,000	$40,000		$0	$0	$90,000
2061	$50,000	$40,000		$0	$0	$90,000
2062	$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
2065	$50,000	$40,000		$0	$0	$90,000
2066	$50,000	$40,000		$0	$0	$90,000
2067	$50,000	$40,000		$0	($163,000,000)	($162,910,000)
TOTAL	$2,500,000	$2,000,000		$391,000,000	($163,000,000)	$232,500,000
NPV at 1.9%	$1,604,728	$1,283,783		$365,516,154	($63,603,118)	**$304,801,547**
ANEV at 1.9%	$50,000	$40,000		$11,388,723	($1,981,741)	$9,496,982

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

ALTERNATIVE 7 - Two New Concrete Bridges

Year	Inspection	Routine Maintenance	Construction Project	Construction Project Cost	Residual Value	Cost
2018	$40,000	$30,000	Initial Construction	$347,000,000	$0	$347,070,000
2019	$40,000	$30,000		$0	$0	$70,000
2020	$40,000	$30,000		$0	$0	$70,000
2021	$40,000	$30,000		$0	$0	$70,000
2022	$40,000	$30,000		$0	$0	$70,000
2023	$40,000	$30,000		$0	$0	$70,000
2024	$40,000	$30,000		$0	$0	$70,000
2025	$40,000	$30,000		$0	$0	$70,000
2026	$40,000	$30,000		$0	$0	$70,000
2027	$40,000	$30,000		$0	$0	$70,000
2028	$40,000	$30,000		$0	$0	$70,000
2029	$40,000	$30,000		$0	$0	$70,000
2030	$40,000	$30,000		$0	$0	$70,000
2031	$40,000	$30,000		$0	$0	$70,000
2032	$40,000	$30,000		$0	$0	$70,000
2033	$40,000	$30,000		$0	$0	$70,000
2034	$40,000	$30,000		$0	$0	$70,000
2035	$40,000	$30,000		$0	$0	$70,000
2036	$40,000	$30,000		$0	$0	$70,000
2037	$40,000	$30,000		$0	$0	$70,000
2038	$40,000	$30,000	Overlay & Repair	$19,000,000	$0	$19,070,000
2039	$40,000	$30,000		$0	$0	$70,000
2040	$40,000	$30,000		$0	$0	$70,000
2041	$40,000	$30,000		$0	$0	$70,000
2042	$40,000	$30,000		$0	$0	$70,000
2043	$40,000	$30,000		$0	$0	$70,000
2044	$40,000	$30,000		$0	$0	$70,000
2045	$40,000	$30,000		$0	$0	$70,000
2046	$40,000	$30,000		$0	$0	$70,000
2047	$40,000	$30,000		$0	$0	$70,000
2048	$40,000	$30,000		$0	$0	$70,000
2049	$40,000	$30,000		$0	$0	$70,000
2050	$40,000	$30,000		$0	$0	$70,000
2051	$40,000	$30,000		$0	$0	$70,000
2052	$40,000	$30,000		$0	$0	$70,000
2053	$40,000	$30,000		$0	$0	$70,000
2054	$40,000	$30,000		$0	$0	$70,000
2055	$40,000	$30,000		$0	$0	$70,000
2056	$40,000	$30,000		$0	$0	$70,000
2057	$40,000	$30,000		$0	$0	$70,000
2058	$40,000	$30,000	Overlay & Repair	$19,000,000	$0	$19,070,000
2059	$40,000	$30,000		$0	$0	$70,000
2060	$40,000	$30,000		$0	$0	$70,000
2061	$40,000	$30,000		$0	$0	$70,000
2062	$40,000	$30,000		$0	$0	$70,000
2063	$40,000	$30,000		$0	$0	$70,000
2064	$40,000	$30,000		$0	$0	$70,000
2065	$40,000	$30,000		$0	$0	$70,000
2066	$40,000	$30,000		$0	$0	$70,000
2067	$40,000	$30,000		$0	($73,000,000)	($72,930,000)
TOTAL	$2,000,000	$1,500,000		$385,000,000	($73,000,000)	$315,500,000
NPV at 1.9%	$1,283,783	$962,837		$362,108,942	($28,484,832)	**$335,870,730**
ANEV at 1.9%	$40,000	$30,000		$11,282,561	($887,528)	$10,465,033

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

LCCA - Residual Value

Alternative	Original Cost	Factor	1 - Steel	3.a - Steel	3.b - Steel	3.c - Steel	5 - Steel	5 - Concrete	6 - Steel	6 - Concrete	7 - Steel	7 - Concrete
Reused existing substructure **(Alt 1)	$83,988,000	50%	$41,994,000	$41,994,000	$41,994,000	$41,994,000						
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**

* Use Alt 5b median structure x 1
** Use Alt 5b median structure x 2

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

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
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 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	$675.70	$2,702.80
0022	606E35000 BRIDGE TERMINAL ASSEMBLY, TYPE 1	5.00	EACH	$1,198.06	$5,990.30
0023	606E35100 BRIDGE TERMINAL ASSEMBLY, TYPE 2	3.00	EACH	$367.06	$1,101.18
0024	606E60022 IMPACT ATTENUATOR, TYPE 2 (UNIDIRECTIONAL)	3.00	EACH	$19,442.75	$58,328.25
0025	622E10160 CONCRETE BARRIER, SINGLE SLOPE, TYPE D	3,148.00	FT	$54.03	$170,086.44
0026	622E10100 CONCRETE BARRIER, SINGLE SLOPE, TYPE B1	1,859.00	FT	$95.06	$176,716.54

Total for Group 0100:$1,492,700.11

Group 0200: EROSION CONTROL

0209	601E20000 CRUSHED AGGREGATE SLOPE PROTECTION	99.00	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

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
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 PREVENTION PLAN	1.00	LS	$15,000.00	$15,000.00
0218	832E30000 EROSION CONTROL	200,000.00	EACH	$1.00	$200,000.00

Total for Group 0200:$311,402.56

Group 0300: DRAINAGE

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0027	602E20000 CONCRETE MASONRY	2.00	CY	$1,505.67	$3,011.34
0028	605E11110 6" SHALLOW PIPE UNDERDRAINS WITH FABRIC WRAP	52,253.00	FT	$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	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 GRATE	1,000.00	FT	$63.16	$63,160.00

Total for Group 0300:$1,315,515.76

Group 0400: PAVEMENT

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0045	254E01000 PAVEMENT PLANING, ASPHALT CONCRETE	118,942.00	SY	$1.24	$147,488.08

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0046	302E46000 ASPHALT CONCRETE BASE, PG64-22	27,712.00	CY	$87.97	$2,437,824.64
0047	304E20000 AGGREGATE BASE	15,271.00	CY	$44.36	$677,421.56
0049	407E10000 TACK COAT	3,607.00	GAL	$2.91	$10,496.37
0050	407E14000 TACK COAT FOR INTERMEDIATE COURSE	7,258.00	GAL	$2.68	$19,451.44
0051	408E10000 PRIME COAT	36,277.00	GAL	$2.98	$108,105.46
0052	411E10000 STABILIZED CRUSHED AGGREGATE	206.00	CY	$49.87	$10,273.22
0053	442E10050 ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE B (446)	8,735.00	CY	$147.73	$1,290,421.55
0054	442E10150 ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE B (446)	6,637.00	CY	$126.11	$836,992.07
0055	448E46061 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, UNDER GUARDRAIL, PG64-22, AS PER PLAN	64.00	CY	$235.26	$15,056.64
0057	609E26001 CURB, TYPE 6, AS PER PLAN	200.00	FT	$15.14	$3,028.00

Total for Group 0400:$5,556,559.03

Group 0700: LIGHTING

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0058	625E10490 LIGHT POLE, CONVENTIONAL	73.00	EACH	$1,833.22	$133,825.06
0059	625E10614 LIGHT POLE ANCHOR BOLTS ON STRUCTURE	292.00	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' DEEP	42.00	EACH	$1,028.77	$43,208.34
0062	625E15400 LIGHT TOWER FOUNDATION, 42" X 25' DEEP	2.00	EACH	$7,000.00	$14,000.00
0063	625E23200 NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	148,000.00	FT	$2.56	$378,880.00
0064	625E23400 NO. 10 AWG POLE AND BRACKET CABLE	13,910.00	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, AS PER PLAN	3.00	EACH	$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 REERECTION	42.00	EACH	$250.00	$10,500.00
0073	625E75350 LIGHT TOWER REMOVED	2.00	EACH	$1,340.40	$2,680.80

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
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

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 POST	108.00	FT	$9.05	$977.40
0080	630E03100 GROUND MOUNTED SUPPORT, NO. 3 POST	72.00	FT	$9.58	$689.76
0081	630E04100 GROUND MOUNTED SUPPORT, NO. 4 POST	120.00	FT	$11.09	$1,330.80
0082	630E20701 OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 7, AS PER PLAN	6.00	EACH	$12,000.00	$72,000.00
0083	630E31101 OVERHEAD SIGN SUPPORT, TYPE TC-9.10, DESIGN 1, AS PER PLAN	2.00	EACH	$12,000.00	$24,000.00
0084	630E45500 OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8	10.00	EACH	$31,125.84	$311,258.40
0085	630E80200 SIGN, GROUND MOUNTED EXTRUSHEET	181.00	SF	$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 FOUNDATION	28.00	EACH	$2,882.39	$80,706.92
0088	630E84900 REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	13.00	EACH	$14.00	$182.00
0089	630E85400 REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL	7.00	EACH	$100.84	$705.88
0090	630E86002 REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	26.00	EACH	$13.87	$360.62
0091	630E87401 REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL, AS PER PLAN	32.00	EACH	$800.00	$25,600.00
0092	630E89706 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30	3.00	EACH	$986.77	$2,960.31
0093	630E89800 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-9.10	2.00	EACH	$1,200.00	$2,400.00
0094	630E89802 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65	5.00	EACH	$1,532.32	$7,661.60
0095	646E10000 EDGE LINE, 4"	19.03	MILE	$1,993.18	$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

Total for Group 0800:$733,320.09

Group 1200: MAINTENANCE OF TRAFFIC

0100	614E12800 WORK ZONE RAISED PAVEMENT MARKER	4,310.00	EACH	$5.06	$21,808.60

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
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, 642 PAINT	28.06	MILE	$809.72	$22,720.74
0105	614E22001 WORK ZONE EDGE LINE, CLASS I, AS PER PLAN *WHITE*	40.55	MILE	$694.09	$28,145.35
0107	614E23200 WORK ZONE CHANNELIZING LINE, CLASS I, 642 PAINT	70,508.00	FT	$0.41	$28,908.28
0108	614E24000 WORK ZONE DOTTED LINE, CLASS I	5,630.00	FT	$0.39	$2,195.70
0109	615E20000 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	25,965.00	SY	$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 MOUNTED	8,310.00	FT	$16.85	$140,023.50

Total for Group 1200:$1,066,133.48

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

0233	202E11203 PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	1.00	LS	$9,000,000.00	$9,000,000.00
0234	202E22900 APPROACH SLAB REMOVED	268.00	SY	$26.24	$7,032.32
0235	202E75000 FENCE REMOVED	8,311.00	FT	$2.13	$17,702.43
0236	202E98000 REMOVAL MISC.: *METAL SUBDECKING*	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 COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	1.00	LS	$55,000.00	$55,000.00
0239	503E21100 UNCLASSIFIED EXCAVATION	189.00	CY	$121.39	$22,942.71
0240	509E10001 EPOXY COATED REINFORCING STEEL, AS PER PLAN	2,768,814.00	LB	$1.00	$2,768,814.00
0241	509E20001 REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	750.00	LB	$2.54	$1,905.00
0242	510E10000 DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	60.00	EACH	$22.97	$1,378.20
0243	511E34446 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	8,990.00	CY	$661.81	$5,949,671.90
0244	511E34450 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	1,341.00	CY	$463.33	$621,325.53
0245	511E44110 CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	117.00	CY	$442.90	$51,819.30

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0246	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	12,600.00	SY	$19.82	$249,732.00
0247	512E33000	TYPE 2 WATERPROOFING	10.00	SY	$32.04	$320.40
0248	512E74000	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	96.00	SY	$23.11	$2,218.56
0249	513E20000	WELDED STUD SHEAR CONNECTORS	132,332.00	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	FT	$45.00	$1,125.00
0253	513E95030	STRUCTURAL STEEL, MISC.: *DRILLING STRUCTURAL STEEL (1" DIAMETER HOLE)*	19.00	EACH	$700.00	$13,300.00
0254	513E95030	STRUCTURAL STEEL, MISC.: *K FRAME COPE REPAIR*	31.00	EACH	$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 STRUCTURAL STEEL	400.00	SF	$31.00	$12,400.00
0257	514E00056	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	400.00	SF	$8.00	$3,200.00
0258	514E00060	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	400.00	SF	$4.00	$1,600.00
0259	514E00066	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	400.00	SF	$4.00	$1,600.00
0260	514E27800	FIELD PAINTING, MISC.: *SURFACE PREPARATION OF EXISTING STEEL, SOLVENT CLEAN, SYSTEM OZEU*	1.00	LS	$4,800.00	$4,800.00
0261	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	146.00	FT	$498.14	$72,728.44
0262	516E13900	2" PREFORMED EXPANSION JOINT FILLER	102.00	SF	$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 FABRIC	145.00	CY	$84.05	$12,187.25
0265	518E62100	STRUCTURE DRAINAGE, MISC.: *DOWNSPOUT REPLACEMENT*	60.00	FT	$214.00	$12,840.00
0266	518E62200	STRUCTURE DRAINAGE, MISC.: *TROUGH CONDUCTOR REPLACEMENT*	80.00	EACH	$220.00	$17,600.00
0267	518E62200	STRUCTURE DRAINAGE, MISC.: *VERTICAL DOWNSPOUT SUPPORT REPAIR*	10.00	EACH	$2,000.00	$20,000.00
0268	518E62200	STRUCTURE DRAINAGE, MISC.: *DRAINAGE TROUGH BRACING REPAIR*	4.00	EACH	$2,000.00	$8,000.00

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0269	518E62200	STRUCTURE DRAINAGE, MISC.: *DRAINAGE TROUGH FLASHING REPAIR*	4.00	EACH	$4,500.00	$18,000.00
0270	518E62200	STRUCTURE DRAINAGE, MISC.: *DRAINAGE SYSTEM BOLT AND NUT REPLACEMENT*	8.00	EACH	$700.00	$5,600.00
0271	518E62200	STRUCTURE DRAINAGE, MISC.: *DOWNSPOUT COLLAR REPAIR*	10.00	EACH	$2,000.00	$20,000.00
0272	519E11101	PATCHING CONCRETE STRUCTURE, AS PER PLAN	13,588.00	SF	$90.16	$1,225,094.08
0273	526E25001	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN	467.00	SY	$209.00	$97,603.00
0274	530E00400	SPECIAL - STRUCTURE, MISC.: *INSPECTION MANHOLE COVER (REMOVE, STORE AND REUSE)*	4.00	EACH	$1,000.00	$4,000.00
0275	530E00600	SPECIAL - STRUCTURE, MISC.: *STAY-IN-PLACE DECK FORMS*	278,419.00	SF	$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	SY	$5.00	$161,605.00
0278	607E39901	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN	8,311.00	FT	$61.98	$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

Total for Group 1500:$25,275,398.42

Group 1501: CUY-480-1842 L: ALTERNATIVE 6 - ADDITIONAL COST TO WIDEN PROPOSED BRIDGE DECK

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0281	503E21100	UNCLASSIFIED EXCAVATION	7.00	CY	$121.39	$849.73
0282	509E10001	EPOXY COATED REINFORCING STEEL, AS PER PLAN	1,089,349.00	LB	$1.00	$1,089,349.00
0283	509E20001	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	22.00	LB	$2.54	$55.88
0284	511E34446	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	4,079.00	CY	$661.81	$2,699,522.99
0285	511E44110	CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	2.00	CY	$442.90	$885.80
0286	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	4.00	SY	$19.82	$79.28
0287	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	4.00	FT	$498.14	$1,992.56
0288	516E12200	STRUCTURAL STEEL EXPANSION JOINT	8.00	FT	$4,000.00	$32,000.00
0289	518E21200	POROUS BACKFILL WITH FILTER FABRIC	3.00	CY	$84.05	$252.15
0290	518E63300	STRUCTURE DRAINAGE, MISC.: *EXTEND DRAINAGE TROUGH*	1.00	LS	$60,000.00	$60,000.00

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0291	526E25001 REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN	2.00	SY	$209.00	$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

0298	503E11101 COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	1.00	LS	$50,000.00	$50,000.00
0299	503E21100 UNCLASSIFIED EXCAVATION	15,992.00	CY	$54.16	$866,126.72
0300	503E31120 SHALE EXCAVATION	440.00	CY	$42.15	$18,546.00
0301	505E11100 PILE DRIVING EQUIPMENT MOBILIZATION	1.00	LS	$20,000.00	$20,000.00
0302	506E11100 STATIC LOAD TEST	1.00	LS	$5,000.00	$5,000.00
0303	506E12200 SUBSEQUENT STATIC LOAD TEST	16.00	EACH	$2,500.00	$40,000.00
0304	507E00200 STEEL PILES HP12X53, FURNISHED	2,040.00	FT	$39.22	$80,008.80
0305	507E00250 STEEL PILES HP12X53, DRIVEN	1,814.00	FT	$8.20	$14,874.80
0306	507E00600 14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	152,870.00	FT	$9.49	$1,450,736.30
0307	507E00650 14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	161,081.00	FT	$44.09	$7,102,061.29
0308	509E10001 EPOXY COATED REINFORCING STEEL, AS PER PLAN	5,557,045.00	LB	$1.00	$5,557,045.00
0309	511E34446 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	12,544.00	CY	$661.81	$8,301,744.64
0310	511E34450 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	2,738.00	CY	$463.33	$1,268,597.54
0311	511E42010 CLASS QC1 CONCRETE, PIER ABOVE FOOTINGS	16,130.00	CY	$815.00	$13,145,950.00
0312	511E44110 CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	373.00	CY	$482.00	$179,786.00
0313	511E46510 CLASS QC1 CONCRETE, FOOTING	9,091.00	CY	$408.00	$3,709,128.00
0314	512E10100 SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	31,209.00	SY	$11.99	$374,195.91
0315	513E10300 STRUCTURAL STEEL MEMBERS, LEVEL 5	22,275,032.00	LB	$1.52	$33,858,048.64
0316	513E20000 WELDED STUD SHEAR CONNECTORS	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

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0318	513E95000 STRUCTURAL STEEL, MISC.: *INSPECTION HANDRAIL*	200.00	FT	$45.00	$9,000.00
0319	514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	1,068,000.00	SF	$4.00	$4,272,000.00
0320	514E00066 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	1,068,000.00	SF	$4.00	$4,272,000.00
0321	516E11211 STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	170.00	FT	$498.14	$84,683.80
0322	516E12400 SPECIAL - MODULAR EXPANSION JOINT	340.00	FT	$800.00	$272,000.00
0323	516E13900 2" PREFORMED EXPANSION JOINT FILLER	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 FABRIC	147.00	CY	$78.91	$11,599.77
0326	518E40000 6" PERFORATED CORRUGATED PLASTIC PIPE	139.00	FT	$9.77	$1,358.03
0327	518E40010 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	128.00	FT	$12.85	$1,644.80
0328	518E51100 8" PIPE DOWNSPOUT, INCLUDING SPECIALS	1,371.00	FT	$440.00	$603,240.00
0329	523E20000 DYNAMIC LOAD TESTING	32.00	EACH	$3,343.17	$106,981.44
0330	523E20500 RESTRIKE	32.00	EACH	$2,509.25	$80,296.00
0331	526E30001 REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN	567.00	SY	$244.29	$138,512.43
0332	530E00400 SPECIAL - STRUCTURE, MISC.: *INSPECTION MANHOLE COVER*	4.00	EACH	$1,650.00	$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' STRAIGHT, COATED FABRIC, AS PER PLAN	8,300.00	FT	$61.98	$514,434.00
0335	607E50901 GATE, TYPE CL, AS PER PLAN	10.00	EACH	$1,593.89	$15,938.90

Total for Group 1505:$88,868,858.53

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

0153	202E11203 PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	1.00	LS	$9,000,000.00	$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 BRACING, AS PER PLAN	1.00	LS	$30,000.00	$30,000.00

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

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
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 REPAIR*	5.00	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 REPLACEMENT*	7.00	EACH	$700.00	$4,900.00
0192	518E62200	STRUCTURE DRAINAGE, MISC.: *DOWNSPOUT COLLAR REPAIR*	10.00	EACH	$2,000.00	$20,000.00
0193	519E11101	PATCHING CONCRETE STRUCTURE, AS PER PLAN	8,646.00	SF	$90.16	$779,523.36
0194	526E25001	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN	517.00	SY	$209.00	$108,053.00
0196	530E00400	SPECIAL - STRUCTURE, MISC.: *INSPECTION MANHOLE COVER (REMOVE, STORE AND RE-USE)*	4.00	EACH	$1,000.00	$4,000.00
0197	530E00600	SPECIAL - STRUCTURE, MISC.: *STAY-IN-PLACE DECK FORMS*	284,381.00	SF	$10.00	$2,843,810.00
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' STRAIGHT, COATED FABRIC, AS PER PLAN	8,311.00	FT	$61.98	$515,115.78
0202	607E50901	GATE, TYPE CL, AS PER PLAN	10.00	EACH	$1,593.89	$15,938.90
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: ALTERNATIVE 6 - ADDITIONAL COST TO WIDEN PROPOSED BRIDGE DECK

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0219	503E21100	UNCLASSIFIED EXCAVATION	6.00	CY	$121.39	$728.34
0220	509E10001	EPOXY COATED REINFORCING STEEL, AS PER PLAN	1,089,221.00	LB	$1.00	$1,089,221.00

Line #	Item Number	Quantity	Units	Unit Price	Extension
	Description				
	Supplemental Description				
0221	509E20001	21.00	LB	$2.54	$53.34
	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN				
0222	511E34446	4,079.00	CY	$661.81	$2,699,522.99
	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK				
0223	511E44110	1.00	CY	$442.90	$442.90
	CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING				
0224	512E10100	2.00	SY	$19.82	$39.64
	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)				
0225	516E11211	4.00	FT	$498.14	$1,992.56
	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN				
0226	516E12200	8.00	FT	$4,000.00	$32,000.00
	STRUCTURAL STEEL EXPANSION JOINT				
0227	518E21200	1.00	CY	$84.05	$84.05
	POROUS BACKFILL WITH FILTER FABRIC				
0228	518E63300	1.00	LS	$60,000.00	$60,000.00
	STRUCTURE DRAINAGE, MISC.:				
	EXTEND DRAINAGE TROUGH				
0229	526E25001	2.00	SY	$209.00	$418.00
	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN				
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	1.00	LS	$2,000,000.00	$2,000,000.00
	MAINTAINING TRAFFIC				
0205	619E16020	62.00	MNTH	$2,028.70	$125,779.40
	FIELD OFFICE, TYPE C				
0206	623E10001	1.00	LS	$250,000.00	$250,000.00
	CONSTRUCTION LAYOUT STAKES, AS PER PLAN				
0207	624E10000	1.00	LS	$2,000,000.00	$2,000,000.00
	MOBILIZATION				

Total for Group 9000:$4,375,779.40

Group 9999: DESIGN CONTINGENCY

0208		1.00	LS	$24,641,144.37	$24,641,144.37
	PRELIMINARY: 15% DESIGN CONTINGENCY				

Total for Group 9999:$24,641,144.37

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

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
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
				Total for Group 0100:	$56,908.15
Group 0200: EROSION CONTROL					
0217	832E15000 STORM WATER POLLUTION PREVENTION PLAN	1.00	LS	$5,000.00	$5,000.00
0218	832E30000 EROSION CONTROL	50,000.00	EACH	$1.00	$50,000.00
				Total for Group 0200:	$55,000.00
Group 0300: DRAINAGE					
0027	602E20000 CONCRETE MASONRY	2.00	CY	$1,505.67	$3,011.34
0028	605E11110 6" SHALLOW PIPE UNDERDRAINS WITH FABRIC WRAP	300.00	FT	$10.55	$3,165.00
0031	611E07600 18" CONDUIT, TYPE C	80.00	FT	$67.54	$5,403.20
0032	611E10400 24" CONDUIT, TYPE B	3,549.00	FT	$104.29	$370,125.21
0033	611E10600 24" CONDUIT, TYPE C	226.00	FT	$65.99	$14,913.74
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
0041	611E98471 CATCH BASIN, NO. 2-2B, AS PER PLAN *BRIDGE DOWNSPOUT COLLECTION*	12.00	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
				Total for Group 0300:	$545,982.63
Group 0400: PAVEMENT					
0047	304E20000 AGGREGATE BASE	85.00	CY	$72.24	$6,140.40
				Total for Group 0400:	$6,140.40
Group 0700: LIGHTING					

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0058	625E10490	LIGHT POLE, CONVENTIONAL	31.00	EACH	$1,833.22	$56,829.82
0059	625E10614	LIGHT POLE ANCHOR BOLTS ON STRUCTURE	124.00	EACH	$100.00	$12,400.00
0063	625E23200	NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	39,000.00	FT	$2.56	$99,840.00
0064	625E23400	NO. 10 AWG POLE AND BRACKET CABLE	3,410.00	FT	$1.23	$4,194.30
0065	625E25400	CONDUIT, 2", 725.04	12,500.00	FT	$11.63	$145,375.00
0066	625E26250	LUMINAIRE, CONVENTIONAL	31.00	EACH	$330.45	$10,243.95
0068	625E29901	JUNCTION BOX, AS PER PLAN	31.00	EACH	$1,487.36	$46,108.16
0069	625E30700	PULL BOX, 725.08, 18"	11.00	EACH	$720.87	$7,929.57
0070	625E33001	STRUCTURE GROUNDING SYSTEM, AS PER PLAN	1.00	EACH	$50,000.00	$50,000.00
0071	625E34000	POWER SERVICE	2.00	EACH	$2,609.20	$5,218.40

Total for Group 0700:$438,139.20

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

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0298	503E11101	COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	1.00	LS	$50,000.00	$50,000.00
0299	503E21100	UNCLASSIFIED EXCAVATION	15,992.00	CY	$54.16	$866,126.72
0300	503E31120	SHALE EXCAVATION	440.00	CY	$42.15	$18,546.00
0301	505E11100	PILE DRIVING EQUIPMENT MOBILIZATION	1.00	LS	$20,000.00	$20,000.00
0302	506E11100	STATIC LOAD TEST	1.00	LS	$5,000.00	$5,000.00
0303	506E12200	SUBSEQUENT STATIC LOAD TEST	16.00	EACH	$2,500.00	$40,000.00
0304	507E00200	STEEL PILES HP12X53, FURNISHED	2,040.00	FT	$39.22	$80,008.80
0305	507E00250	STEEL PILES HP12X53, DRIVEN	1,814.00	FT	$8.20	$14,874.80
0306	507E00600	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	152,870.00	FT	$9.49	$1,450,736.30
0307	507E00650	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	161,081.00	FT	$44.09	$7,102,061.29
0308	509E10001	EPOXY COATED REINFORCING STEEL, AS PER PLAN	5,557,045.00	LB	$1.00	$5,557,045.00
0309	511E34446	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	12,544.00	CY	$661.81	$8,301,744.64
0310	511E34450	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	1,341.00	CY	$463.33	$621,325.53
0311	511E42010	CLASS QC1 CONCRETE, PIER ABOVE FOOTINGS	16,130.00	CY	$815.00	$13,145,950.00
0312	511E44110	CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	373.00	CY	$482.00	$179,786.00
0313	511E46510	CLASS QC1 CONCRETE, FOOTING	9,091.00	CY	$408.00	$3,709,128.00

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0314	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	31,209.00	SY	$11.99	$374,195.91
0315	513E10300	STRUCTURAL STEEL MEMBERS, LEVEL 5	22,275,032.00	LB	$1.52	$33,858,048.64
0316	513E20000	WELDED STUD SHEAR CONNECTORS	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
0319	514E00060	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	1,068,000.00	SF	$4.00	$4,272,000.00
0320	514E00066	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	1,068,000.00	SF	$4.00	$4,272,000.00
0321	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	170.00	FT	$498.14	$84,683.80
0322	516E12400	SPECIAL - MODULAR EXPANSION JOINT	340.00	FT	$800.00	$272,000.00
0323	516E13900	2" PREFORMED EXPANSION JOINT FILLER	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 FABRIC	147.00	CY	$78.91	$11,599.77
0326	518E40000	6" PERFORATED CORRUGATED PLASTIC PIPE	139.00	FT	$9.77	$1,358.03
0327	518E40010	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	128.00	FT	$12.85	$1,644.80
0328	518E51100	8" PIPE DOWNSPOUT, INCLUDING SPECIALS	1,371.00	FT	$440.00	$603,240.00
0329	523E20000	DYNAMIC LOAD TESTING	32.00	EACH	$3,343.17	$106,981.44
0330	523E20500	RESTRIKE	32.00	EACH	$2,509.25	$80,296.00
0331	526E30001	REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN	567.00	SY	$244.29	$138,512.43
0332	530E00400	SPECIAL - STRUCTURE, MISC.: *INSPECTION MANHOLE COVER*	4.00	EACH	$1,650.00	$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' STRAIGHT, COATED FABRIC, AS PER PLAN	8,300.00	FT	$61.98	$514,434.00
0335	607E50901	GATE, TYPE CL, AS PER PLAN	10.00	EACH	$1,593.89	$15,938.90

Total for Group 1505:$88,221,586.52

Group 9000: INCIDENTALS

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0204	614E11000	MAINTAINING TRAFFIC	1.00	LS	$500,000.00	$500,000.00
0205	619E16020	FIELD OFFICE, TYPE C	30.00	MNTH	$2,028.70	$60,861.00

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0206	623E10001 CONSTRUCTION LAYOUT STAKES, AS PER PLAN	1.00	LS	$200,000.00	$200,000.00
0207	624E10000 MOBILIZATION	1.00	LS	$2,000,000.00	$2,000,000.00

Total for Group 9000:$2,760,861.00

Group 9999: DESIGN CONTINGENCY

0208	PRELIMINARY: 15% DESIGN CONTINGENCY	1.00	LS	$13,812,692.69	$13,812,692.69

Total for Group 9999:$13,812,692.69

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

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 0100: ROADWAY					
0005	201E11000 CLEARING AND GRUBBING	1.00	LS	$5,000.00	$5,000.00
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	CY	$4.58	$264,160.66
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 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	$675.70	$2,702.80
0022	606E35000 BRIDGE TERMINAL ASSEMBLY, TYPE 1	5.00	EACH	$1,198.06	$5,990.30
0023	606E35100 BRIDGE TERMINAL ASSEMBLY, TYPE 2	3.00	EACH	$367.06	$1,101.18
0024	606E60022 IMPACT ATTENUATOR, TYPE 2 (UNIDIRECTIONAL)	3.00	EACH	$19,442.75	$58,328.25
0025	622E10160 CONCRETE BARRIER, SINGLE SLOPE, TYPE D	3,148.00	FT	$54.03	$170,086.44
0026	622E10100 CONCRETE BARRIER, SINGLE SLOPE, TYPE B1	1,859.00	FT	$95.06	$176,716.54

Total for Group 0100:$1,460,624.93

Group 0200: EROSION CONTROL

0209	601E20000 CRUSHED AGGREGATE SLOPE PROTECTION	99.00	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

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0216	659E35000	WATER	169.00	MGAL	$2.60	$439.40
0217	832E15000	STORM WATER POLLUTION PREVENTION PLAN	1.00	LS	$10,000.00	$10,000.00
0218	832E30000	EROSION CONTROL	150,000.00	EACH	$1.00	$150,000.00

Total for Group 0200:$256,402.56

Group 0300: DRAINAGE

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0027	602E20000	CONCRETE MASONRY	2.00	CY	$1,505.67	$3,011.34
0028	605E11110	6" SHALLOW PIPE UNDERDRAINS WITH FABRIC WRAP	51,549.00	FT	$10.55	$543,841.95
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 GRATE	1,000.00	FT	$63.16	$63,160.00

Total for Group 0300:$768,754.27

Group 0400: PAVEMENT

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0045	254E01000	PAVEMENT PLANING, ASPHALT CONCRETE	118,942.00	SY	$1.24	$147,488.08
0046	302E46000	ASPHALT CONCRETE BASE, PG64-22	27,712.00	CY	$87.97	$2,437,824.64
0047	304E20000	AGGREGATE BASE	15,271.00	CY	$44.36	$677,421.56
0049	407E10000	TACK COAT	3,607.00	GAL	$2.91	$10,496.37
0050	407E14000	TACK COAT FOR INTERMEDIATE COURSE	14,516.00	GAL	$2.56	$37,160.96
0051	408E10000	PRIME COAT	36,277.00	GAL	$2.98	$108,105.46
0052	411E10000	STABILIZED CRUSHED AGGREGATE	206.00	CY	$49.87	$10,273.22
0053	442E10050	ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE B (446)	8,735.00	CY	$147.73	$1,290,421.55
0054	442E10150	ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE B (446)	6,637.00	CY	$126.11	$836,992.07

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0055	448E46061	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, UNDER GUARDRAIL, PG64-22, AS PER PLAN	64.00	CY	$235.26	$15,056.64
0057	609E26001	CURB, TYPE 6, AS PER PLAN	200.00	FT	$15.14	$3,028.00

Total for Group 0400:$5,574,268.55

Group 0700: LIGHTING

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0058	625E10490	LIGHT POLE, CONVENTIONAL	42.00	EACH	$1,833.22	$76,995.24
0059	625E10614	LIGHT POLE ANCHOR BOLTS ON STRUCTURE	168.00	EACH	$100.00	$16,800.00
0060	625E13404	LIGHT TOWER, BBBBBB110	2.00	EACH	$13,635.44	$27,270.88
0061	625E14000	LIGHT POLE FOUNDATION, 24" X 6' DEEP	42.00	EACH	$1,028.77	$43,208.34
0062	625E15400	LIGHT TOWER FOUNDATION, 42" X 25' DEEP	2.00	EACH	$7,000.00	$14,000.00
0063	625E23200	NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	120,000.00	FT	$2.56	$307,200.00
0064	625E23400	NO. 10 AWG POLE AND BRACKET CABLE	10,500.00	FT	$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, AS PER PLAN	2.00	EACH	$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 REERECTION	42.00	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

Total for Group 0700:$1,130,453.88

Group 0800: TRAFFIC CONTROL

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
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 POST	108.00	FT	$9.05	$977.40
0080	630E03100	GROUND MOUNTED SUPPORT, NO. 3 POST	72.00	FT	$9.58	$689.76

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0081	630E04100 GROUND MOUNTED SUPPORT, NO. 4 POST	120.00	FT	$11.09	$1,330.80
0082	630E20701 OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 7, AS PER PLAN	6.00	EACH	$12,000.00	$72,000.00
0083	630E31101 OVERHEAD SIGN SUPPORT, TYPE TC-9.10, DESIGN 1, AS PER PLAN	2.00	EACH	$12,000.00	$24,000.00
0084	630E45500 OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8	10.00	EACH	$31,125.84	$311,258.40
0085	630E80200 SIGN, GROUND MOUNTED EXTRUSHEET	181.00	SF	$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 FOUNDATION	28.00	EACH	$2,882.39	$80,706.92
0088	630E84900 REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	13.00	EACH	$14.00	$182.00
0089	630E85400 REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL	7.00	EACH	$100.84	$705.88
0090	630E86002 REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	26.00	EACH	$13.87	$360.62
0091	630E87401 REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL, AS PER PLAN	32.00	EACH	$800.00	$25,600.00
0092	630E89706 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30	3.00	EACH	$986.77	$2,960.31
0093	630E89800 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-9.10	2.00	EACH	$1,200.00	$2,400.00
0094	630E89802 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65	5.00	EACH	$1,532.32	$7,661.60
0095	646E10000 EDGE LINE, 4"	19.03	MILE	$1,993.18	$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

Total for Group 0800:$733,320.09

Group 1200: MAINTENANCE OF TRAFFIC

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0100	614E12800 WORK ZONE RAISED PAVEMENT MARKER	4,310.00	EACH	$5.06	$21,808.60
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, 642 PAINT	28.06	MILE	$809.72	$22,720.74
0105	614E22001 WORK ZONE EDGE LINE, CLASS I, AS PER PLAN *WHITE*	40.55	MILE	$694.09	$28,145.35
0107	614E23200 WORK ZONE CHANNELIZING LINE, CLASS I, 642 PAINT	70,508.00	FT	$0.41	$28,908.28
0108	614E24000 WORK ZONE DOTTED LINE, CLASS I	5,630.00	FT	$0.39	$2,195.70

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0109	615E20000 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	25,965.00	SY	$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 MOUNTED	8,310.00	FT	$16.85	$140,023.50

Total for Group 1200:$1,066,133.48

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

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0233	202E11203 PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	1.00	LS	$9,000,000.00	$9,000,000.00
0234	202E22900 APPROACH SLAB REMOVED	268.00	SY	$26.24	$7,032.32
0235	202E75000 FENCE REMOVED	8,311.00	FT	$2.13	$17,702.43
0236	202E98000 REMOVAL MISC.: *METAL SUBDECKING*	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 COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	1.00	LS	$55,000.00	$55,000.00
0239	503E21100 UNCLASSIFIED EXCAVATION	189.00	CY	$121.39	$22,942.71
0240	509E10001 EPOXY COATED REINFORCING STEEL, AS PER PLAN	2,768,814.00	LB	$1.00	$2,768,814.00
0241	509E20001 REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	750.00	LB	$2.54	$1,905.00
0242	510E10000 DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	60.00	EACH	$22.97	$1,378.20
0243	511E34446 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	8,990.00	CY	$661.81	$5,949,671.90
0244	511E34450 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	1,341.00	CY	$463.33	$621,325.53
0245	511E44110 CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	117.00	CY	$442.90	$51,819.30
0246	512E10100 SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	12,600.00	SY	$19.82	$249,732.00
0247	512E33000 TYPE 2 WATERPROOFING	10.00	SY	$32.04	$320.40
0248	512E74000 REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	96.00	SY	$23.11	$2,218.56
0249	513E20000 WELDED STUD SHEAR CONNECTORS	132,332.00	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	FT	$45.00	$1,125.00

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

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
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	SY	$5.00	$161,605.00
0278	607E39901	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN	8,311.00	FT	$61.98	$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

Total for Group 1500:$25,275,398.42

Group 1501: CUY-480-1842 L: ALTERNATIVE 6 - ADDITIONAL COST TO WIDEN PROPOSED BRIDGE DECK

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0281	503E21100	UNCLASSIFIED EXCAVATION	7.00	CY	$121.39	$849.73
0282	509E10001	EPOXY COATED REINFORCING STEEL, AS PER PLAN	1,089,349.00	LB	$1.00	$1,089,349.00
0283	509E20001	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	22.00	LB	$2.54	$55.88
0284	511E34446	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	4,079.00	CY	$661.81	$2,699,522.99
0285	511E44110	CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	2.00	CY	$442.90	$885.80
0286	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	4.00	SY	$19.82	$79.28
0287	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	4.00	FT	$498.14	$1,992.56
0288	516E12200	STRUCTURAL STEEL EXPANSION JOINT	8.00	FT	$4,000.00	$32,000.00
0289	518E21200	POROUS BACKFILL WITH FILTER FABRIC	3.00	CY	$84.05	$252.15
0290	518E63300	STRUCTURE DRAINAGE, MISC.: *EXTEND DRAINAGE TROUGH*	1.00	LS	$60,000.00	$60,000.00
0291	526E25001	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN	2.00	SY	$209.00	$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

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0296	511E34450	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	1,397.00	CY	$463.33	$647,272.01

Total for Group 1505:$647,272.01

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
Group 1510: CUY-480-1842 R: ALTERNATIVE 6						
0153	202E11203	PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	1.00	LS	$9,000,000.00	$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 BRACING, AS PER PLAN	1.00	LS	$30,000.00	$30,000.00
0159	503E21100	UNCLASSIFIED EXCAVATION	130.00	CY	$121.39	$15,780.70
0160	509E10001	EPOXY COATED REINFORCING STEEL, AS PER PLAN	2,807,716.00	LB	$1.00	$2,807,716.00
0161	509E20001	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	825.00	LB	$2.54	$2,095.50
0162	510E10000	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	60.00	EACH	$22.97	$1,378.20
0163	511E34446	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	9,152.00	CY	$661.81	$6,056,885.12
0164	511E34450	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	1,341.00	CY	$463.33	$621,325.53
0165	511E44110	CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	168.00	CY	$442.90	$74,407.20
0166	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	11,900.00	SY	$19.82	$235,858.00
0167	512E33000	TYPE 2 WATERPROOFING	5.00	SY	$32.04	$160.20
0168	512E74000	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	46.00	SY	$23.11	$1,063.06
0169	513E20000	WELDED STUD SHEAR CONNECTORS	132,332.00	EACH	$3.36	$444,635.52
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" DIAMETER HOLE)*	8.00	EACH	$700.00	$5,600.00
0174	513E95030	STRUCTURAL STEEL, MISC.: *STRINGER TO FLOORBEAM REPAIR*	24.00	EACH	$1,200.00	$28,800.00
0175	513E95030	STRUCTURAL STEEL, MISC.: *K FRAME COPE REPAIR*	5.00	EACH	$2,300.00	$11,500.00
0176	513E95030	STRUCTURAL STEEL, MISC.: *DOG BONE REPAIR*	50.00	EACH	$700.00	$35,000.00

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0177	514E00050	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	400.00	SF	$31.00	$12,400.00
0178	514E00056	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	400.00	SF	$8.00	$3,200.00
0179	514E00060	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	400.00	SF	$4.00	$1,600.00
0180	514E00066	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	400.00	SF	$4.00	$1,600.00
0181	514E27800	FIELD PAINTING, MISC.: *SURFACE PREPARATION OF EXISTING STEEL, SOLVENT CLEAN, SYSTEM OZEU*	1.00	LS	$4,800.00	$4,800.00
0182	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	161.00	FT	$498.14	$80,200.54
0183	516E13900	2" PREFORMED EXPANSION JOINT FILLER	60.00	SF	$10.44	$626.40
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 REPAIR*	5.00	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 REPLACEMENT*	7.00	EACH	$700.00	$4,900.00
0192	518E62200	STRUCTURE DRAINAGE, MISC.: *DOWNSPOUT COLLAR REPAIR*	10.00	EACH	$2,000.00	$20,000.00
0193	519E11101	PATCHING CONCRETE STRUCTURE, AS PER PLAN	8,646.00	SF	$90.16	$779,523.36
0194	526E25001	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN	517.00	SY	$209.00	$108,053.00
0196	530E00400	SPECIAL - STRUCTURE, MISC.: *INSPECTION MANHOLE COVER (REMOVE, STORE AND RE-USE)*	4.00	EACH	$1,000.00	$4,000.00
0197	530E00600	SPECIAL - STRUCTURE, MISC.: *STAY-IN-PLACE DECK FORMS*	284,381.00	SF	$10.00	$2,843,810.00
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' STRAIGHT, COATED FABRIC, AS PER PLAN	8,311.00	FT	$61.98	$515,115.78

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0202	607E50901 GATE, TYPE CL, AS PER PLAN	10.00	EACH	$1,593.89	$15,938.90
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: ALTERNATIVE 6 - ADDITIONAL COST TO WIDEN PROPOSED BRIDGE DECK

0219	503E21100 UNCLASSIFIED EXCAVATION	6.00	CY	$121.39	$728.34
0220	509E10001 EPOXY COATED REINFORCING STEEL, AS PER PLAN	1,089,221.00	LB	$1.00	$1,089,221.00
0221	509E20001 REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	21.00	LB	$2.54	$53.34
0222	511E34446 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	4,079.00	CY	$661.81	$2,699,522.99
0223	511E44110 CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	1.00	CY	$442.90	$442.90
0224	512E10100 SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	2.00	SY	$19.82	$39.64
0225	516E11211 STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	4.00	FT	$498.14	$1,992.56
0226	516E12200 STRUCTURAL STEEL EXPANSION JOINT	8.00	FT	$4,000.00	$32,000.00
0227	518E21200 POROUS BACKFILL WITH FILTER FABRIC	1.00	CY	$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 APPROACH SLABS (T=15"), AS PER PLAN	2.00	SY	$209.00	$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

Total for Group 1511:$4,397,122.82

Group 9000: INCIDENTALS

0204	614E11000 MAINTAINING TRAFFIC	1.00	LS	$1,500,000.00	$1,500,000.00
0205	619E16020 FIELD OFFICE, TYPE C	32.00	MNTH	$2,028.70	$64,918.40
0206	623E10001 CONSTRUCTION LAYOUT STAKES, AS PER PLAN	1.00	LS	$50,000.00	$50,000.00
0207	624E10000 MOBILIZATION	1.00	LS	$2,000,000.00	$2,000,000.00

Total for Group 9000:$3,614,918.40

Group 9999: DESIGN CONTINGENCY

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0208	PRELIMINARY: 15% DESIGN CONTINGENCY	1.00	LS	$11,149,071.39	$11,149,071.39

Total for Group 9999:$11,149,071.39

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

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
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 CABLE	8,030.00	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
		Total for Group 0700:				$181,584.58
Group 1200: MAINTENANCE OF TRAFFIC						
0070	614E20100	WORK ZONE LANE LINE, CLASS I, 642 PAINT	4.00	MILE	$637.08	$2,548.32
0071	614E22001	WORK ZONE EDGE LINE, CLASS I, AS PER PLAN *WHITE*	8.00	MILE	$694.09	$5,552.72
0072	622E41000	PORTABLE BARRIER, 32"	22,000.00	FT	$8.98	$197,560.00
		Total for Group 1200:				$205,661.04
Group 1500: CUY-480-1842 L: ALTERNATIVE 6: LCCA OVERALY AT 20 YEAR INTERVALS						
0001	202E98000	REMOVAL MISC.: *EXISTING DRAINAGE CLEANOUT*	1.00	LS	$20,500.00	$20,500.00
0002	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	6,177.00	SY	$19.82	$122,428.14
0003	512E74000	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	1,373.00	SY	$23.11	$31,730.03
0004	513E95020	STRUCTURAL STEEL, MISC.: *INSPECTION ACCESS REPAIRS*	1.00	LS	$5,000.00	$5,000.00
0005	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	150.00	FT	$498.14	$74,721.00
0006	518E63300	STRUCTURE DRAINAGE, MISC.: *DRAINAGE REPAIRS*	1.00	LS	$100,000.00	$100,000.00
0007	519E11100	PATCHING CONCRETE STRUCTURE	12,353.00	SF	$90.16	$1,113,746.48
0008	848E10200	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION	33,256.00	SY	$28.84	$959,103.04
0009	848E20000	SURFACE PREPARATION USING HYDRODEMOLITION	33,256.00	SY	$37.08	$1,233,132.48
0010	848E30200	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	1,571.00	CY	$99.92	$156,974.32
0011	848E50000	HAND CHIPPING	666.00	SY	$58.02	$38,641.32
0012	848E50100	TEST SLAB	1.00	LS	$800.00	$800.00
0013	848E50200	FULL-DEPTH REPAIR	393.00	CY	$136.47	$53,632.71

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension

Total for Group 1500:$3,910,409.52

Group 1501: CUY-480-1842 L: ALTERNATIVE 6: LCCA ADDITIONAL COST AFTER FIRST 20 YEAR INTERVAL

0014	848E50320	EXISTING CONCRETE OVERLAY REMOVED	33,256.00	SY	$7.72	$256,736.32
0015	848E50340	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	3,326.00	SY	$3.63	$12,073.38

Total for Group 1501:$268,809.70

Group 1505: CUY-480-1842 M: ALTERNATIVE 6: LCCA OVERALY AT 20 YEAR INTERVALS

0016	202E98000	REMOVAL MISC.: *EXISTING DRAINAGE CLEANOUT*	1.00	LS	$23,500.00	$23,500.00
0017	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	7,000.00	SY	$19.82	$138,740.00
0018	512E74000	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	1,556.00	SY	$23.11	$35,959.16
0019	513E95020	STRUCTURAL STEEL, MISC.: *INSPECTION ACCESS REPAIRS*	1.00	LS	$7,500.00	$7,500.00
0020	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	170.00	FT	$498.14	$84,683.80
0021	518E63300	STRUCTURE DRAINAGE, MISC.: *DRAINAGE REPAIRS*	1.00	LS	$115,000.00	$115,000.00
0022	519E11100	PATCHING CONCRETE STRUCTURE	14,000.00	SF	$90.16	$1,262,240.00
0023	848E10200	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION	37,875.00	SY	$28.84	$1,092,315.00
0024	848E20000	SURFACE PREPARATION USING HYDRODEMOLITION	37,875.00	SY	$37.08	$1,404,405.00
0025	848E30200	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	1,789.00	CY	$99.92	$178,756.88
0026	848E50000	HAND CHIPPING	758.00	SY	$58.02	$43,979.16
0027	848E50100	TEST SLAB	1.00	LS	$800.00	$800.00
0028	848E50200	FULL-DEPTH REPAIR	448.00	CY	$136.47	$61,138.56

Total for Group 1505:$4,449,017.56

Group 1506: CUY-480-1842 M: ALTERNATIVE 6: LCCA ADDITIONAL COST AFTER FIRST 20 YEAR INTERVAL

0029	848E50320	EXISTING CONCRETE OVERLAY REMOVED	37,875.00	SY	$7.72	$292,395.00
0030	848E50340	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	3,788.00	SY	$3.63	$13,750.44

Total for Group 1506:$306,145.44

Group 1510: CUY-480-1842 R: ALTERNATIVE 6: LCCA OVERALY AT 20 YEAR INTERVALS

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0031	202E98000	REMOVAL MISC.: *EXISTING DRAINAGE CLEANOUT*	1.00	LS	$20,500.00	$20,500.00
0032	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	6,177.00	SY	$19.82	$122,428.14
0033	512E74000	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	1,373.00	SY	$23.11	$31,730.03
0034	513E95020	STRUCTURAL STEEL, MISC.: *INSPECTION ACCESS REPAIRS*	1.00	LS	$7,500.00	$7,500.00
0035	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	167.00	FT	$498.14	$83,189.38
0036	518E63300	STRUCTURE DRAINAGE, MISC.: *DRAINAGE REPAIRS*	1.00	LS	$95,000.00	$95,000.00
0037	519E11100	PATCHING CONCRETE STRUCTURE	12,353.00	SF	$90.16	$1,113,746.48
0038	848E10200	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION	33,941.00	SY	$28.84	$978,858.44
0039	848E20000	SURFACE PREPARATION USING HYDRODEMOLITION	33,941.00	SY	$37.08	$1,258,532.28
0040	848E30200	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	1,596.00	CY	$99.92	$159,472.32
0041	848E50000	HAND CHIPPING	679.00	SY	$58.02	$39,395.58
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:$3,965,877.12

Group 1511: CUY-480-1842 R: ALTERNATIVE 6: LCCA ADDITIONAL COST AFTER FIRST 20 YEAR INTERVAL

0044	848E50320	EXISTING CONCRETE OVERLAY REMOVED	33,941.00	SY	$7.72	$262,024.52
0045	848E50340	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	3,395.00	SY	$3.63	$12,323.85

Total for Group 1511:$274,348.37

Group 9000: INCIDENTALS

0046	614E11000	MAINTAINING TRAFFIC	1.00	LS	$500,000.00	$500,000.00
0047	619E16020	FIELD OFFICE, TYPE C	12.00	MNTH	$2,028.70	$24,344.40
0048	623E10001	CONSTRUCTION LAYOUT STAKES, AS PER PLAN	1.00	LS	$100,000.00	$100,000.00
0049	624E10000	MOBILIZATION	1.00	LS	$800,000.00	$800,000.00

Total for Group 9000:$1,424,344.40

Group 9999: DESIGN CONTINGENCY

0050		PRELIMINARY: 15% DESIGN CONTINGENCY	1.00	LS	$2,247,929.66	$2,247,929.66

Line #	Item Number Description *Supplemental Description*	Quantity	Units	Unit Price	Extension

Total for Group 9999:$2,247,929.66

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

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 1500: CUY-480-1842 L: ALTERNATIVE 6: LCCA ZONE PAINT EXISTING STEEL AT 20 YEAR INTERVALS					
0014	514E00050 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	25,892.00	SF	$15.50	$401,326.00
0015	514E00056 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	25,892.00	SF	$4.00	$103,568.00
0051	514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	25,892.00	SF	$2.00	$51,784.00
0052	514E00066 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	25,892.00	SF	$2.00	$51,784.00
	Total for Group 1500:				$608,462.00
Group 1501: CUY-480-1842 L: ALTERNATIVE 6: LCCA PAINT EXISTING STEEL FASCIA GIRDERS AT 20 YEAR INTERVALS					
0057	514E00050 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	4,250.00	SF	$15.50	$65,875.00
0058	514E00056 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	4,250.00	SF	$4.00	$17,000.00
0059	514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	4,250.00	SF	$2.00	$8,500.00
0060	514E00066 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	85,000.00	SF	$2.00	$170,000.00
0061	514E27800 FIELD PAINTING, MISC.: *SURFACE PREPARATION OF EXISTING STEEL, SOLVENT CLEAN, SYSTEM OZEU*	1.00	LS	$680,000.00	$680,000.00
	Total for Group 1501:				$941,375.00
Group 1505: CUY-480-1842 R: ALTERNATIVE 6: LCCA ZONE PAINT EXISTING STEEL AT 20 YEAR INTERVALS					
0053	514E00050 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	25,892.00	SF	$15.50	$401,326.00
0054	514E00056 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	25,892.00	SF	$4.00	$103,568.00
0055	514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	25,892.00	SF	$2.00	$51,784.00
0056	514E00066 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	25,892.00	SF	$2.00	$51,784.00
	Total for Group 1505:				$608,462.00
Group 1506: CUY-480-1842 L: ALTERNATIVE 6: LCCA PAINT EXISTING STEEL FASCIA GIRDERS AT 20 YEAR INTERVALS					
0062	514E00050 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	4,250.00	SF	$15.50	$65,875.00
0063	514E00056 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	4,250.00	SF	$4.00	$17,000.00
0064	514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	4,250.00	SF	$2.00	$8,500.00
0065	514E00066 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	85,000.00	SF	$2.00	$170,000.00
0066	514E27800 FIELD PAINTING, MISC.: *SURFACE PREPARATION OF EXISTING STEEL, SOLVENT CLEAN, SYSTEM OZEU*	1.00	LS	$680,000.00	$680,000.00

Line #	Item Number	Quantity	Units	Unit Price	Extension
	Description				
	Supplemental Description				

Total for Group 1506:$941,375.00

Group 9499: INCIDENTALS

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

Total for Group 9499:$348,688.80

Group 9999: DESIGN CONTINGENCY

0050		1.00	LS	$517,254.42	$517,254.42
	PRELIMINARY: 15% DESIGN CONTINGENCY				

Total for Group 9999:$517,254.42

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

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 1500: CUY-480-1842 M: ALTERNATIVE 6: LCCA ZONE PAINT NEW STEEL AT 20 YEAR INTERVALS					
0014	514E00050 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	30,208.00	SF	$15.50	$468,224.00
0015	514E00056 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	30,208.00	SF	$4.00	$120,832.00
0051	514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	30,208.00	SF	$2.00	$60,416.00
0052	514E00066 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	30,208.00	SF	$2.00	$60,416.00
				Total for Group 1500:	$709,888.00
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
				Total for Group 9499:	$288,688.80
Group 9999: DESIGN CONTINGENCY					
0050	PRELIMINARY: 15% DESIGN CONTINGENCY	1.00	LS	$149,786.52	$149,786.52
				Total for Group 9999:	$149,786.52

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

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District: 12

Federal/State Project Number:

Estimate Type: Preliminary Submission (Inflation 1-1-2020)

Prepared by Richland Engineering Limited on 01/31/14

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
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	2,982.00	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	FT	$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 1	7.00	EACH	$1,198.06	$8,386.42
0025	606E35100 BRIDGE TERMINAL ASSEMBLY, TYPE 2	6.00	EACH	$344.19	$2,065.14
0026	606E60022 IMPACT ATTENUATOR, TYPE 2 (UNIDIRECTIONAL)	1.00	EACH	$19,442.75	$19,442.75
0028	622E10160 CONCRETE BARRIER, SINGLE SLOPE, TYPE D	682.00	FT	$74.06	$50,508.92

Total for Group 0100:$1,058,856.24

Group 0200: EROSION CONTROL

0209	601E20000 CRUSHED AGGREGATE SLOPE PROTECTION	99.00	SY	$33.70	$3,336.30
0211	659E00300 TOPSOIL	2,208.00	CY	$22.75	$50,232.00
0212	659E10000 SEEDING AND MULCHING	19,889.00	SY	$0.56	$11,137.84

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
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 PREVENTION PLAN	1.00	LS	$15,000.00	$15,000.00
0218	832E30000 EROSION CONTROL	200,000.00	EACH	$1.00	$200,000.00

Total for Group 0200:$284,125.48

Group 0300: DRAINAGE

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0029	602E20000 CONCRETE MASONRY	6.00	CY	$1,728.91	$10,373.46
0030	605E11110 6" SHALLOW PIPE UNDERDRAINS WITH FABRIC WRAP	30,474.00	FT	$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	EACH	$4,000.00	$32,000.00
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

Total for Group 0300:$1,311,603.81

Group 0400: PAVEMENT

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0044	254E01000 PAVEMENT PLANING, ASPHALT CONCRETE	69,695.00	SY	$1.55	$108,027.25
0045	302E46000 ASPHALT CONCRETE BASE, PG64-22	20,034.00	CY	$91.59	$1,834,914.06
0046	304E20000 AGGREGATE BASE	11,068.00	CY	$45.72	$506,028.96

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0048	407E10000 TACK COAT	2,788.00	GAL	$2.98	$8,308.24
0049	407E14000 TACK COAT FOR INTERMEDIATE COURSE	5,246.00	GAL	$2.74	$14,374.04
0050	408E10000 PRIME COAT	26,226.00	GAL	$3.10	$81,300.60
0051	411E10000 STABILIZED CRUSHED AGGREGATE	103.00	CY	$54.69	$5,633.07
0053	442E10050 ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE B (446)	5,636.00	CY	$147.73	$832,606.28
0054	442E10150 ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE B (446)	3,643.00	CY	$128.05	$466,486.15
0055	448E46061 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, UNDER GUARDRAIL, PG64-22, AS PER PLAN	69.00	CY	$235.26	$16,232.94
0057	609E26001 CURB, TYPE 6, AS PER PLAN	200.00	FT	$15.14	$3,028.00

Total for Group 0400:$3,876,939.59

Group 0700: LIGHTING

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0058	625E10490 LIGHT POLE, CONVENTIONAL	81.00	EACH	$1,833.22	$148,490.82
0059	625E10614 LIGHT POLE ANCHOR BOLTS ON STRUCTURE	208.00	EACH	$100.00	$20,800.00
0060	625E13404 LIGHT TOWER, BBBBBB110	2.00	EACH	$13,635.44	$27,270.88
0061	625E14000 LIGHT POLE FOUNDATION, 24" X 6' DEEP	29.00	EACH	$1,028.77	$29,834.33
0062	625E15400 LIGHT TOWER FOUNDATION, 42" X 25' DEEP	2.00	EACH	$7,000.00	$14,000.00
0063	625E23200 NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	89,660.00	FT	$2.56	$229,529.60
0064	625E23400 NO. 10 AWG POLE AND BRACKET CABLE	9,780.00	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, AS PER PLAN	2.00	EACH	$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 STORAGE, AS PER PLAN	42.00	EACH	$304.05	$12,770.10
0075	625E75504 LUMINAIRE REMOVED FOR STORAGE	42.00	EACH	$61.35	$2,576.70

Total for Group 0700:$1,050,797.43

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 0800: TRAFFIC CONTROL						
0077	621E10010	RPM, LOW PROFILE, WHITE	330.00	EACH	$28.17	$9,296.10
0078	626E00100	BARRIER REFLECTOR	168.00	EACH	$6.31	$1,060.08
0079	630E02100	GROUND MOUNTED SUPPORT, NO. 2 POST	108.00	FT	$9.05	$977.40
0080	630E03100	GROUND MOUNTED SUPPORT, NO. 3 POST	72.00	FT	$9.58	$689.76
0081	630E04100	GROUND MOUNTED SUPPORT, NO. 4 POST	120.00	FT	$11.09	$1,330.80
0082	630E20701	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 7, AS PER PLAN	2.00	EACH	$12,000.00	$24,000.00
0083	630E31101	OVERHEAD SIGN SUPPORT, TYPE TC-9.10, DESIGN 1, AS PER PLAN	2.00	EACH	$12,000.00	$24,000.00
0084	630E45500	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8	5.00	EACH	$31,438.70	$157,193.50
0085	630E80200	SIGN, GROUND MOUNTED EXTRUSHEET	181.00	SF	$16.84	$3,048.04
0086	630E80224	SIGN, OVERHEAD EXTRUSHEET	2,970.00	SF	$18.80	$55,836.00
0087	630E84510	RIGID OVERHEAD SIGN SUPPORT FOUNDATION	14.00	EACH	$2,531.64	$35,442.96
0088	630E84900	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	13.00	EACH	$14.00	$182.00
0089	630E85400	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL	5.00	EACH	$100.84	$504.20
0090	630E86002	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	26.00	EACH	$13.87	$360.62
0091	630E87401	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL, AS PER PLAN	31.00	EACH	$800.00	$24,800.00
0092	630E89706	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30	3.00	EACH	$986.77	$2,960.31
0093	630E89800	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-9.10	2.00	EACH	$1,000.00	$2,000.00
0094	630E89802	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65	4.00	EACH	$1,532.32	$6,129.28
0095	646E10000	EDGE LINE, 4"	8.74	MILE	$2,990.18	$26,134.17
0096	646E10100	LANE LINE, 4"	11.30	MILE	$2,102.59	$23,759.27
0097	646E10300	CHANNELIZING LINE, 8"	5,000.00	FT	$1.56	$7,800.00

Total for Group 0800:$407,504.49

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 1200: MAINTENANCE OF TRAFFIC						
0100	614E12800	WORK ZONE RAISED PAVEMENT MARKER	3,313.00	EACH	$11.60	$38,430.80
0101	614E13300	BARRIER REFLECTOR, TYPE B	280.00	EACH	$5.71	$1,598.80
0102	614E13360	OBJECT MARKER, TWO WAY	137.00	EACH	$11.20	$1,534.40
0103	614E18002	MAINTAINING TRAFFIC, MISC.: *TEMPORARY LIGHTING*	1.00	LS	$25,000.00	$25,000.00

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0104	614E20100	WORK ZONE LANE LINE, CLASS I, 642 PAINT	16.84	MILE	$809.72	$13,635.68
0105	614E22001	WORK ZONE EDGE LINE, CLASS I, AS PER PLAN *WHITE*	20.04	MILE	$694.09	$13,909.56
0107	614E23200	WORK ZONE CHANNELIZING LINE, CLASS I, 642 PAINT	29,848.00	FT	$0.48	$14,327.04
0108	614E24000	WORK ZONE DOTTED LINE, CLASS I	2,112.00	FT	$0.58	$1,224.96
0109	615E20000	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	12,983.00	SY	$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", BRIDGE MOUNTED	4,155.00	FT	$17.62	$73,211.10

Total for Group 1200:$569,440.93

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 1500: CUY-480-1842 L: ALTERNATIVE 7						
0113	202E11203	PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	1.00	LS	$16,000,000.00	$16,000,000.00
0114	202E22900	APPROACH SLAB REMOVED	268.00	SY	$26.24	$7,032.32
0115	503E11101	COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	1.00	LS	$50,000.00	$50,000.00
0116	503E21100	UNCLASSIFIED EXCAVATION	16,368.00	CY	$54.16	$886,490.88
0117	503E31120	SHALE EXCAVATION	450.00	CY	$42.15	$18,967.50
0118	505E11100	PILE DRIVING EQUIPMENT MOBILIZATION	1.00	LS	$20,000.00	$20,000.00
0119	506E11100	STATIC LOAD TEST	1.00	LS	$5,000.00	$5,000.00
0120	506E12200	SUBSEQUENT STATIC LOAD TEST	16.00	EACH	$2,500.00	$40,000.00
0121	507E00200	STEEL PILES HP12X53, FURNISHED	2,088.00	FT	$39.22	$81,891.36
0122	507E00250	STEEL PILES HP12X53, DRIVEN	1,856.00	FT	$8.20	$15,219.20
0123	507E00600	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	156,467.00	FT	$9.49	$1,484,871.83
0124	507E00650	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	164,871.00	FT	$44.09	$7,269,162.39
0125	509E10001	EPOXY COATED REINFORCING STEEL, AS PER PLAN	5,687,799.00	LB	$1.00	$5,687,799.00
0126	511E34446	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	12,839.00	CY	$661.81	$8,496,978.59
0127	511E34450	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	1,341.00	CY	$463.33	$621,325.53
0128	511E42010	CLASS QC1 CONCRETE, PIER ABOVE FOOTINGS	16,510.00	CY	$815.00	$13,455,650.00
0129	511E44110	CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	382.00	CY	$482.00	$184,124.00
0130	511E46510	CLASS QC1 CONCRETE, FOOTING	9,305.00	CY	$408.00	$3,796,440.00

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0131	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	31,820.00	SY	$11.99	$381,521.80
0132	513E10300	STRUCTURAL STEEL MEMBERS, LEVEL 5	22,275,032.00	LB	$1.52	$33,858,048.64
0133	513E20000	WELDED STUD SHEAR CONNECTORS	154,388.00	EACH	$3.36	$518,743.68
0134	513E95000	STRUCTURAL STEEL, MISC.: *INSPECTION CABLE*	30,400.00	FT	$8.00	$243,200.00
0135	513E95000	STRUCTURAL STEEL, MISC.: *INSPECTION HANDRAIL*	205.00	FT	$45.00	$9,225.00
0136	514E00060	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	1,068,000.00	SF	$4.00	$4,272,000.00
0137	514E00066	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	1,068,000.00	SF	$4.00	$4,272,000.00
0138	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	174.00	FT	$498.14	$86,676.36
0139	516E12400	SPECIAL - MODULAR EXPANSION JOINT	348.00	FT	$800.00	$278,400.00
0140	516E13900	2" PREFORMED EXPANSION JOINT FILLER	127.00	SF	$10.21	$1,296.67
0141	518E12300	SCUPPERS, INCLUDING SUPPORTS	20.00	EACH	$1,800.00	$36,000.00
0142	518E21200	POROUS BACKFILL WITH FILTER FABRIC	150.00	CY	$78.91	$11,836.50
0143	518E40000	6" PERFORATED CORRUGATED PLASTIC PIPE	142.00	FT	$9.77	$1,387.34
0144	518E40010	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	149.00	FT	$12.85	$1,914.65
0145	518E51100	8" PIPE DOWNSPOUT, INCLUDING SPECIALS	1,371.00	FT	$440.00	$603,240.00
0146	523E20000	DYNAMIC LOAD TESTING	32.00	EACH	$3,343.17	$106,981.44
0147	523E20500	RESTRIKE	32.00	EACH	$2,509.25	$80,296.00
0148	526E30001	REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN	580.00	SY	$244.29	$141,688.20
0149	530E00400	SPECIAL - STRUCTURE, MISC.: *INSPECTION MANHOLE COVER*	4.00	EACH	$1,650.00	$6,600.00
0150	530E00600	SPECIAL - STRUCTURE, MISC.: *STAY-IN-PLACE DECK FORMS*	167,604.00	SF	$10.00	$1,676,040.00
0151	607E39901	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN	8,300.00	FT	$61.98	$514,434.00
0152	607E50901	GATE, TYPE CL, AS PER PLAN	10.00	EACH	$1,593.89	$15,938.90

Total for Group 1500:$105,238,421.78

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

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0219	202E11203	PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	1.00	LS	$16,000,000.00	$16,000,000.00
0220	202E22900	APPROACH SLAB REMOVED	311.00	SY	$26.24	$8,160.64

Line #	Item Number	Description / Supplemental Description	Quantity	Units	Unit Price	Extension
0221	202E98000	REMOVAL MISC.: *EXISTING DRAINAGE CLEANOUT*	1.00	LS	$20,500.00	$20,500.00
0222	503E11101	COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	1.00	LS	$50,000.00	$50,000.00
0223	503E21100	UNCLASSIFIED EXCAVATION	16,368.00	CY	$54.16	$886,490.88
0224	503E31120	SHALE EXCAVATION	450.00	CY	$42.15	$18,967.50
0225	505E11100	PILE DRIVING EQUIPMENT MOBILIZATION	1.00	LS	$20,000.00	$20,000.00
0226	506E11100	STATIC LOAD TEST	1.00	LS	$5,000.00	$5,000.00
0227	506E12200	SUBSEQUENT STATIC LOAD TEST	16.00	EACH	$2,500.00	$40,000.00
0228	507E00200	STEEL PILES HP12X53, FURNISHED	2,088.00	FT	$39.22	$81,891.36
0229	507E00250	STEEL PILES HP12X53, DRIVEN	1,856.00	FT	$8.20	$15,219.20
0230	507E00600	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	156,467.00	FT	$9.49	$1,484,871.83
0231	507E00650	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	164,871.00	FT	$44.09	$7,269,162.39
0232	509E10001	EPOXY COATED REINFORCING STEEL, AS PER PLAN	5,687,799.00	LB	$1.00	$5,687,799.00
0233	511E34446	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	12,839.00	CY	$661.81	$8,496,978.59
0234	511E34450	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	1,341.00	CY	$463.33	$621,325.53
0235	511E42010	CLASS QC1 CONCRETE, PIER ABOVE FOOTINGS	16,510.00	CY	$815.00	$13,455,650.00
0236	511E44110	CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	382.00	CY	$482.00	$184,124.00
0237	511E46510	CLASS QC1 CONCRETE, FOOTING	9,305.00	CY	$408.00	$3,796,440.00
0238	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	31,820.00	SY	$11.99	$381,521.80
0239	513E10300	STRUCTURAL STEEL MEMBERS, LEVEL 5	22,275,032.00	LB	$1.52	$33,858,048.64
0240	513E20000	WELDED STUD SHEAR CONNECTORS	154,388.00	EACH	$3.36	$518,743.68
0241	513E95000	STRUCTURAL STEEL, MISC.: *INSPECTION CABLE*	30,400.00	FT	$8.00	$243,200.00
0242	513E95000	STRUCTURAL STEEL, MISC.: *INSPECTION HANDRAIL*	205.00	FT	$45.00	$9,225.00
0243	514E00060	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	1,068,000.00	SF	$4.00	$4,272,000.00
0244	514E00066	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	1,068,000.00	SF	$4.00	$4,272,000.00
0245	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	174.00	FT	$498.14	$86,676.36
0246	516E12400	SPECIAL - MODULAR EXPANSION JOINT	348.00	FT	$800.00	$278,400.00
0247	516E13900	2" PREFORMED EXPANSION JOINT FILLER	127.00	SF	$10.21	$1,296.67

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0248	518E12300 SCUPPERS, INCLUDING SUPPORTS	20.00	EACH	$1,800.00	$36,000.00
0249	518E21200 POROUS BACKFILL WITH FILTER FABRIC	150.00	CY	$78.91	$11,836.50
0250	518E40000 6" PERFORATED CORRUGATED PLASTIC PIPE	142.00	FT	$9.77	$1,387.34
0251	518E40010 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	149.00	FT	$12.85	$1,914.65
0252	518E51100 8" PIPE DOWNSPOUT, INCLUDING SPECIALS	1,371.00	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 APPROACH SLABS (T=17"), AS PER PLAN	580.00	SY	$244.29	$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' STRAIGHT, COATED FABRIC, AS PER PLAN	8,300.00	FT	$61.98	$514,434.00
0259	607E50901 GATE, TYPE CL, AS PER PLAN	10.00	EACH	$1,593.89	$15,938.90

Total for Group 5250:$105,260,050.10

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, AS PER PLAN	1.00	LS	$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	LS	$33,515,027.89	$33,515,027.89

Total for Group 9999:$33,515,027.89

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

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
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 CABLE	5,720.00	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
		Total for Group 0700:				$130,070.20
Group 1200: MAINTENANCE OF TRAFFIC						
0057	614E20100	WORK ZONE LANE LINE, CLASS I, 642 PAINT	30.00	MILE	$809.72	$24,291.60
0058	614E22001	WORK ZONE EDGE LINE, CLASS I, AS PER PLAN *WHITE*	30.00	MILE	$694.09	$20,822.70
0059	615E20000	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	6,000.00	SY	$30.90	$185,400.00
0060	622E41000	PORTABLE BARRIER, 32"	43,000.00	FT	$7.96	$342,280.00
0061	622E41010	PORTABLE BARRIER, 50"	19,000.00	FT	$11.55	$219,450.00
		Total for Group 1200:				$792,244.30
Group 1500: CUY-480-1842 L: ALTERNATIVE 7: LCCA OVERALY AT 20 YEAR INTERVALS						
0001	202E98000	REMOVAL MISC.: *EXISTING DRAINAGE CLEANOUT*	1.00	LS	$24,000.00	$24,000.00
0002	512E10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	7,171.00	SY	$19.82	$142,129.22
0003	512E74000	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	1,594.00	SY	$23.11	$36,837.34
0004	513E95020	STRUCTURAL STEEL, MISC.: *INSPECTION ACCESS REPAIRS*	1.00	LS	$8,000.00	$8,000.00
0005	516E11211	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	174.00	FT	$498.14	$86,676.36
0006	518E63300	STRUCTURE DRAINAGE, MISC.: *DRAINAGE REPAIRS*	1.00	LS	$120,000.00	$120,000.00
0007	519E11100	PATCHING CONCRETE STRUCTURE	14,342.00	SF	$90.16	$1,293,074.72
0008	848E10200	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION	38,800.00	SY	$28.84	$1,118,992.00
0009	848E20000	SURFACE PREPARATION USING HYDRODEMOLITION	38,800.00	SY	$37.08	$1,438,704.00
0010	848E30200	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	1,833.00	CY	$99.92	$183,153.36
0011	848E50000	HAND CHIPPING	776.00	SY	$58.02	$45,023.52

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
0012	848E50100 TEST SLAB	1.00	LS	$800.00	$800.00
0013	848E50200 FULL-DEPTH REPAIR	458.00	CY	$136.47	$62,503.26

Total for Group 1500:$4,559,893.78

Group 1501: CUY-480-1842 L: ALTERNATIVE 7: LCCA ADDITIONAL COST AFTER FIRST 20 YEAR INTERVAL

0014	848E50320 EXISTING CONCRETE OVERLAY REMOVED	38,800.00	SY	$7.72	$299,536.00
0015	848E50340 REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	3,880.00	SY	$3.63	$14,084.40

Total for Group 1501:$313,620.40

Group 1505: CUY-480-1842 R: ALTERNATIVE 7: LCCA OVERALY AT 20 YEAR INTERVALS

0031	202E98000 REMOVAL MISC.: *EXISTING DRAINAGE CLEANOUT*	1.00	LS	$24,000.00	$24,000.00
0032	512E10100 SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	7,171.00	SY	$19.82	$142,129.22
0033	512E74000 REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	1,594.00	SY	$23.11	$36,837.34
0034	513E95020 STRUCTURAL STEEL, MISC.: *INSPECTION ACCESS REPAIRS*	1.00	LS	$8,000.00	$8,000.00
0035	516E11211 STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	174.00	FT	$498.14	$86,676.36
0036	518E63300 STRUCTURE DRAINAGE, MISC.: *DRAINAGE REPAIRS*	1.00	LS	$120,000.00	$120,000.00
0037	519E11100 PATCHING CONCRETE STRUCTURE	14,342.00	SF	$90.16	$1,293,074.72
0038	848E10200 SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION	38,800.00	SY	$28.84	$1,118,992.00
0039	848E20000 SURFACE PREPARATION USING HYDRODEMOLITION	38,800.00	SY	$37.08	$1,438,704.00
0040	848E30200 SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	1,833.00	CY	$99.92	$183,153.36
0041	848E50000 HAND CHIPPING	776.00	SY	$58.02	$45,023.52
0042	848E50100 TEST SLAB	1.00	LS	$800.00	$800.00
0043	848E50200 FULL-DEPTH REPAIR	458.00	CY	$136.47	$62,503.26

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

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension

Total for Group 1506:$313,620.40

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 PER PLAN	1.00	LS	$100,000.00	$100,000.00
0049	624E10000 MOBILIZATION	1.00	LS	$400,000.00	$400,000.00

Total for Group 9000:$1,274,344.40

Group 9999: DESIGN CONTINGENCY

0051	PRELIMINARY: 15% DESIGN CONTINGENCY	1.00	LS	$1,791,553.09	$1,791,553.09

Total for Group 9999:$1,791,553.09

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

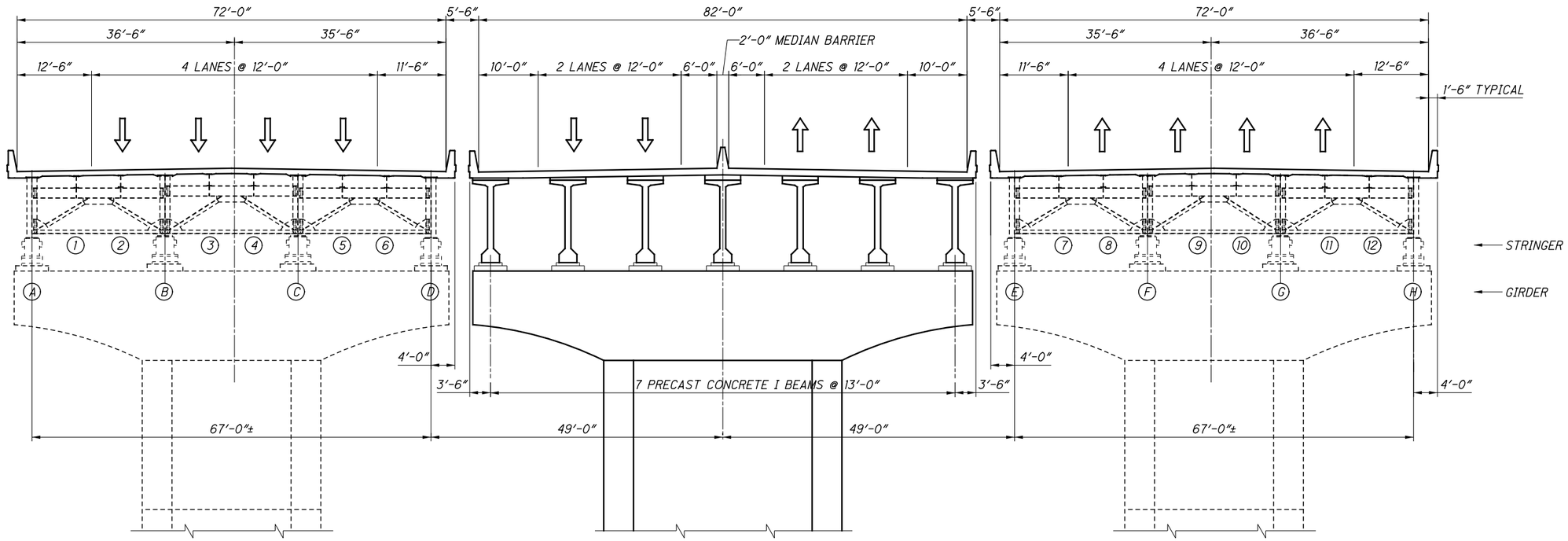
District: 12

Federal/State Project Number:

Estimate Type: Preliminary Submission (Inflation 1-1-2020)

Prepared by Richland Engineering Limited on 01/31/14

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 1500: CUY-480-1842 L: ALTERNATIVE 7: LCCA ZONE PAINT NEW STEEL AT 20 YEAR INTERVALS					
0014	514E00050 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	30,208.00	SF	$15.50	$468,224.00
0015	514E00056 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	30,208.00	SF	$4.00	$120,832.00
0051	514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	30,208.00	SF	$2.00	$60,416.00
0052	514E00066 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	30,208.00	SF	$2.00	$60,416.00
	Total for Group 1500:				$709,888.00
Group 1505: CUY-480-1842 R: ALTERNATIVE 7: LCCA ZONE PAINT NEW STEEL AT 20 YEAR INTERVALS					
0053	514E00050 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	30,208.00	SF	$15.50	$468,224.00
0054	514E00056 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	30,208.00	SF	$4.00	$120,832.00
0055	514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	30,208.00	SF	$2.00	$60,416.00
0056	514E00066 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	30,208.00	SF	$2.00	$60,416.00
	Total for Group 1505:				$709,888.00
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
	Total for Group 9499:				$348,688.80
Group 9999: DESIGN CONTINGENCY					
0050	PRELIMINARY: 15% DESIGN CONTINGENCY	1.00	LS	$265,269.72	$265,269.72
	Total for Group 9999:				$265,269.72



TRANSVERSE SECTION

UNIT 2 TO 5

ALTERNATIVE 6, FINAL CONDITION

ALTERNATIVE 6
TRANSVERSE SECTION - UNIT 2 TO 5

CUY-480-18.42

1 / 2

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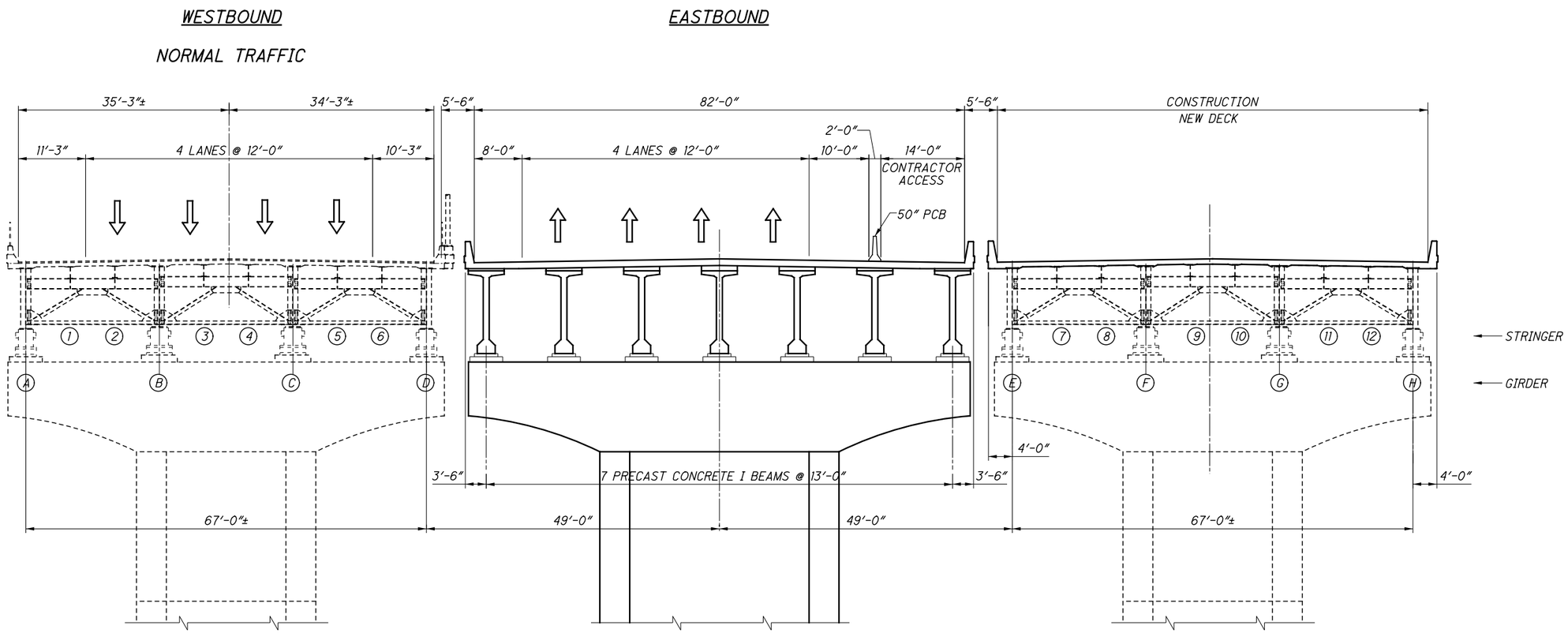

TRANSVERSE SECTION
UNIT 2 TO 5

ALTERNATIVE 6, MOT CONDITION

ALTERNATIVE 6
TRANSVERSE SECTION - UNIT 2 TO 5

CUY-480-18.42

2 / 2

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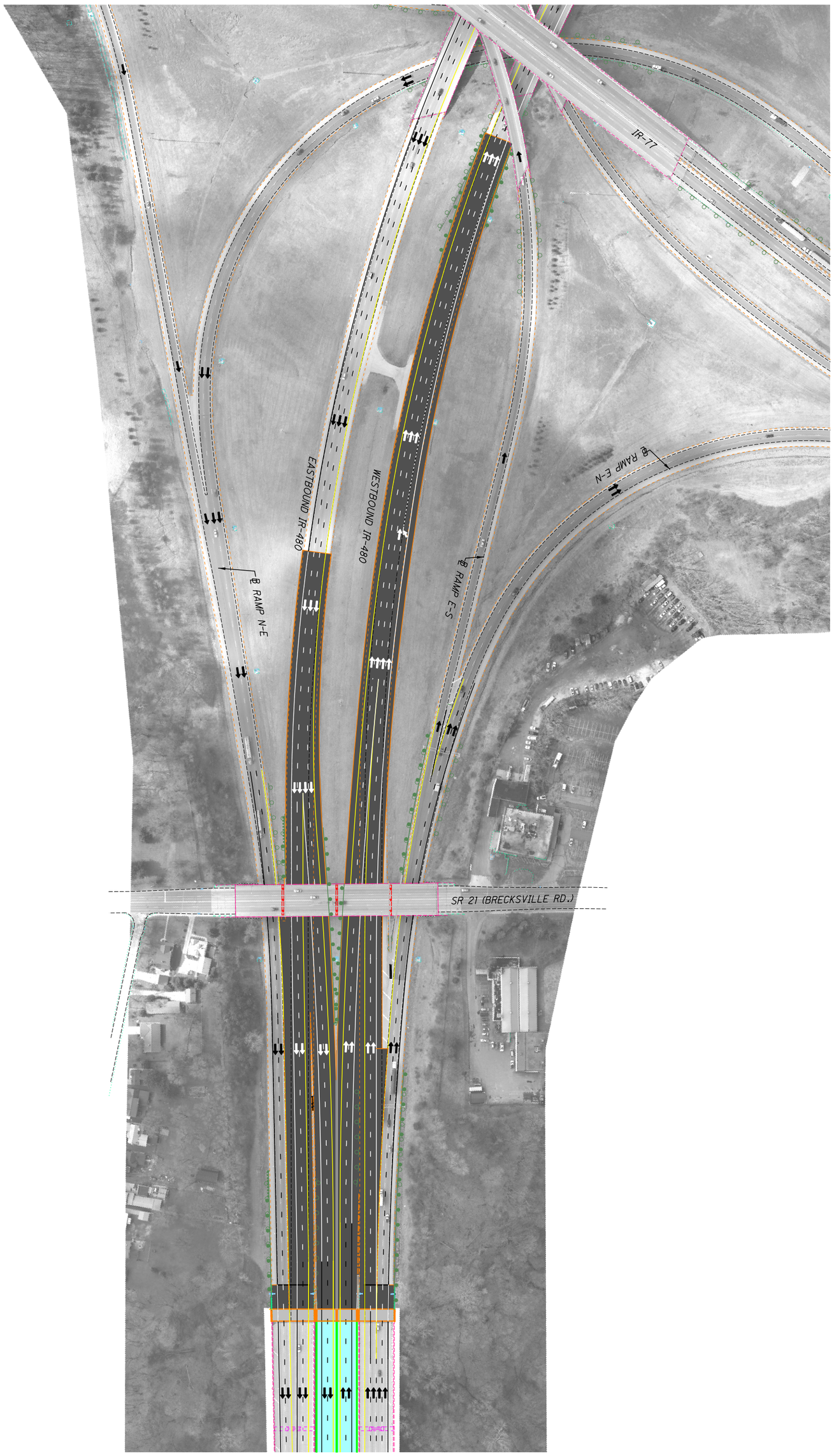

LEGEND

APPROACH PAVEMENT

PROPOSED MEDIAN BRIDGE

CUY-480-18.42

ALTERNATIVE 6 - PLAN
STA. 969+00 TO STA. 998+50

CALCULATED

CHECKED

0 50 100 200
HORIZONTAL SCALE IN FEET

N

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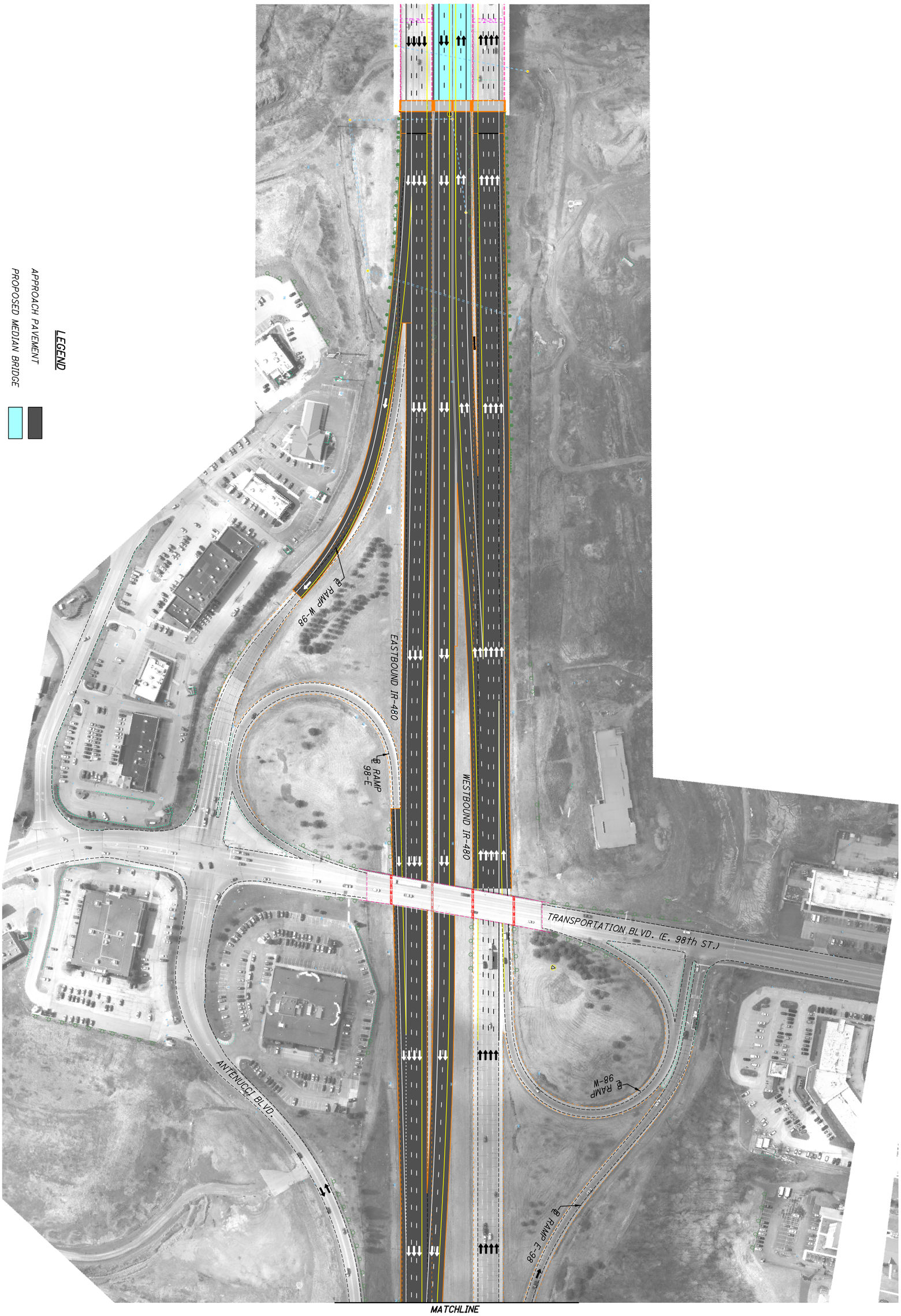

	CUY-480-18.42	ALTERNATIVE 6 - PLAN STA. 1036+00 TO STA. 1065+00	CALCULATED CHECKED	0 100 50 200 HORIZONTAL SCALE IN FEET

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LEGEND

APPROACH PAVEMENT

PROPOSED MEDIAN BRIDGE

CUY-480-18.42

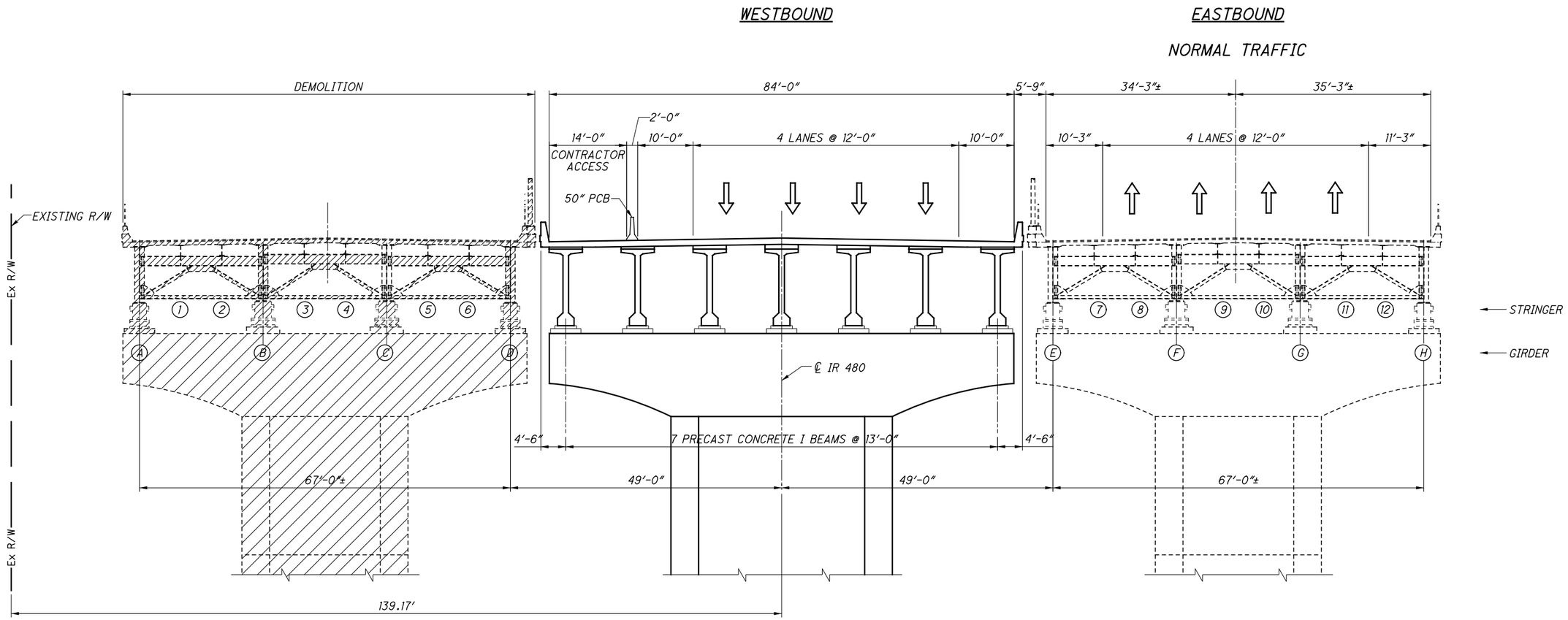
ALTERNATIVE 6 - PLAN
STA. 1036+00 TO STA. 1065+00

CALCULATED

CHECKED

0 100
50 200
HORIZONTAL SCALE IN FEET

N



TRANSVERSE SECTION

UNIT 2 TO 5

ALTERNATIVE 7, MOT CONDITION

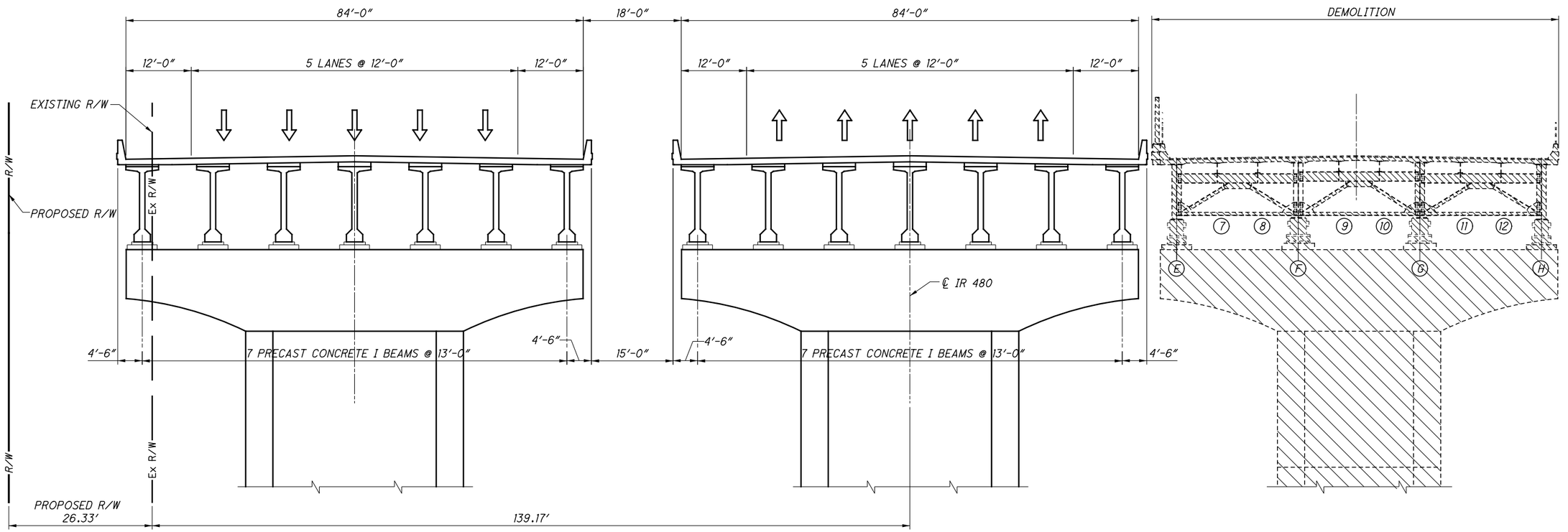
ALTERNATIVE 7
TRANSVERSE SECTION - UNIT 2 TO 5

CUY-480-18.42

2 / 2

WESTBOUND

EASTBOUND



TRANSVERSE SECTION

UNIT 2 TO 5

ALTERNATIVE 7, FINAL CONDITION

ALTERNATIVE 7
TRANSVERSE SECTION - UNIT 2 TO 5

CUY-480-18.42

1 / 2

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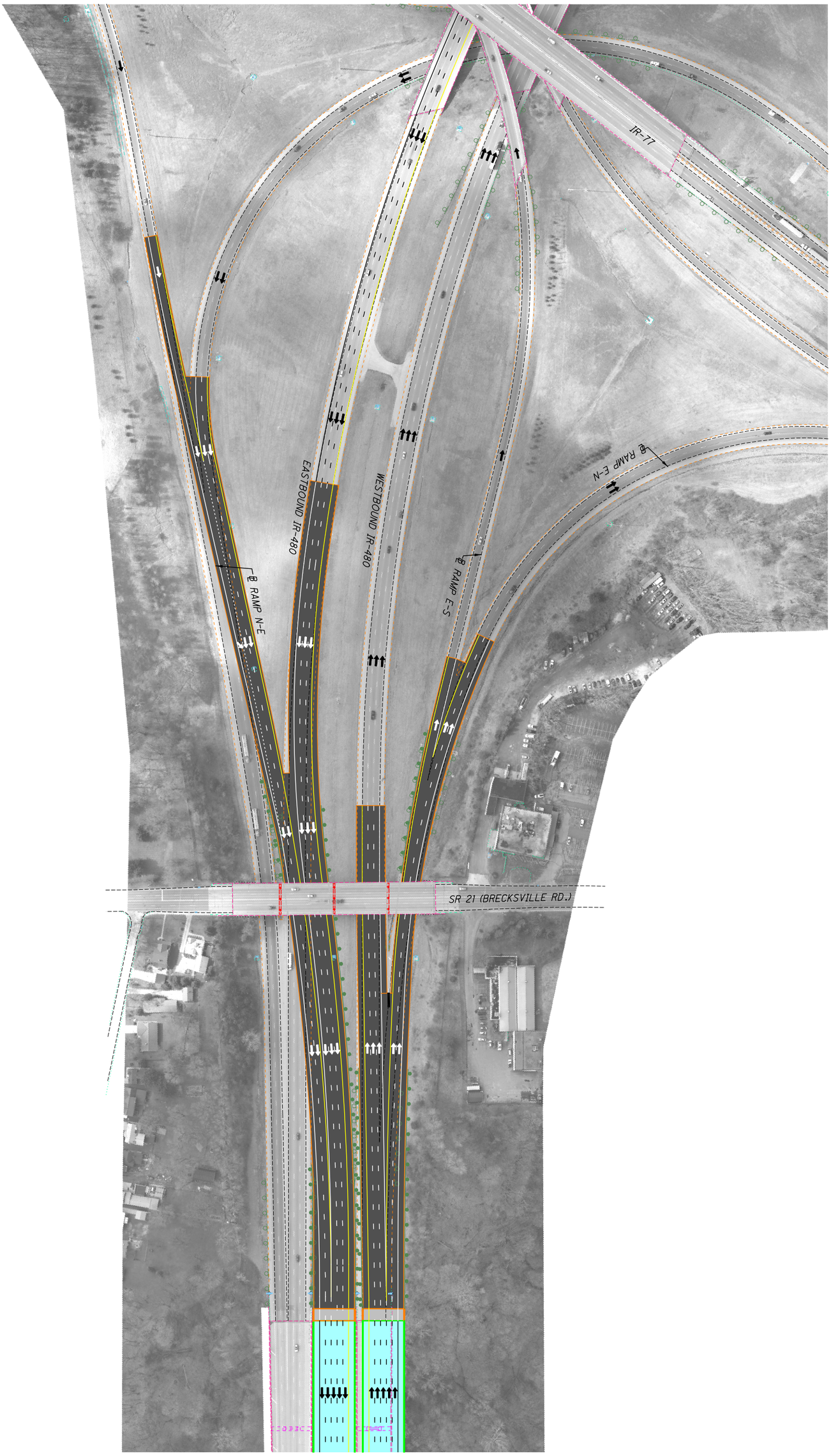

LEGEND

APPROACH PAVEMENT

PROPOSED BRIDGE

CUY-480-18.42

ALTERNATIVE 7 - PLAN
STA. 969+00 TO STA. 998+50

CALCULATED

CHECKED

0 50 100 200
HORIZONTAL SCALE IN FEET

N

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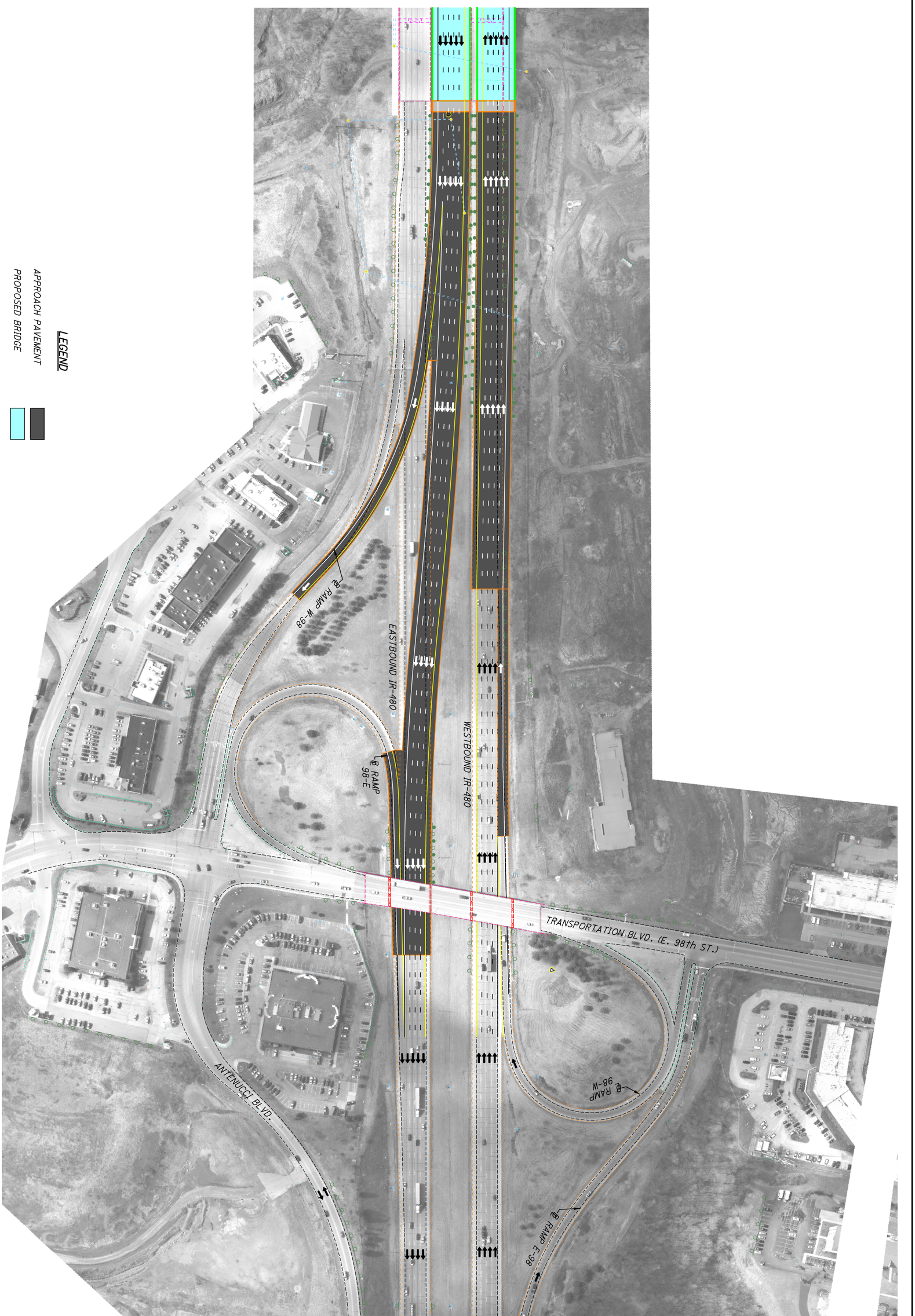

	CUY-480-18.42	ALTERNATIVE 7 - PLAN STA. 1036+00 TO STA. 1065+00	CALCULATED CHECKED	0 100 50 200 HORIZONTAL SCALE IN FEET