

**Final Report and Recommendations  
Special Experimental Project No. 14 (SEP-14)  
Michigan Department of Transportation  
Zilwaukee Bridge Bearing Replacement Project  
Construction Manager / General Contractor  
January 13, 2015**

Jon Numbers: 105176

Control Section: 73112

County: Bay

Location: I-75, Zilwaukee Bridge (B03- 73112) over the Saginaw River

Negotiated Contract Cost: \$35,974,257

Final Contract Cost: \$35,993,783

**Introduction**

In November, 2011, the Michigan Department of Transportation (MDOT) was authorized to use a Construction Manager/General Contractor (CMGC) procurement for a project which included hinge and pier bearing replacement, latex overlay repairs, lighting upgrades, crack sealing, and barrier repairs on the Zilwaukee Bridge.

The Zilwaukee bridge consists of twin single cell, post-tensioned precast segmental box girders erected by balanced cantilever method, with most segments being placed using a launching gantry. The segments are variable depth, and were match cast in a casting facility using the short line method, and steam cured. An epoxy bonding agent along with high tensile strength steel cables post-tensioned into anchor blisters were used to join the segments during construction. The northbound structure is 8,066 feet long, and the southbound structure is 8,090 feet long, with a maximum span length of 392 feet over the Saginaw River. 1592 segments make up both spans. An 821 foot long cast in place post-tensioned concrete ramp to southbound I-75 is attached to the southbound mainline structure.

**Project Schedule**

The project had the following key milestone dates.

**Milestone Dates**

SEP-14 Approval	Nov. 21, 2011
Post CMGC RFQ	Dec. 9, 2011
SOQ's Due	Feb. 6, 2012
Award of Pre-Construction Phase	March 23, 2012
Completed Price Negotiations	Dec. 2012
Award Construction Phase	Dec. 11, 2012
Start of Con. Work to Substantial Completion	April 15, 2013 to Dec. 2014
Substantial Completion	Nov. 7, 2014
Final Completion Date	Dec. 2014

### **CMGC Selection Process**

MDOT solicited potential CMGC teams through a Request for Qualifications (RFQ) on its website. MDOT also contacted the American Segmental Bridge Institute to increase awareness of the RFQ to companies outside of Michigan that work on precast segmental bridges. The final RFQ can be found at the following link: [http://www.michigan.gov/mdot/0,4616,7-151-9625\\_21539\\_53226-267101--,00.html](http://www.michigan.gov/mdot/0,4616,7-151-9625_21539_53226-267101--,00.html).

The CMGC was selected through a quality based selection process. Five teams submitted Statements of Qualifications (SOQ).

The project had multiple distinct phases for the CMGC. The first phase is the preconstruction phase. During this phase the CMGC was required to assist MDOT in developing the plans based on their experience with precast segmental bridges, construction staging/scheduling, maintenance of traffic schemes, review the constructability of the project, and to seek ways to add value to the project. During the preconstruction phase MDOT and the CMGC negotiated a price for the fabrication and delivery of the bearings which were long lead time items. Near the end of the preconstruction phase, MDOT, with the assistance of an Independent Cost Estimator (ICE), conducted negotiations to determine the final price for the construction work (excluding the cost of the bearings). The final price included items that were paid by an established unit price and the actual quantity constructed in the field, and items of work included in a Guaranteed Maximum Price (GMP). Also included outside of the GMP were adjustable and contingency items, of which unit prices were agreed upon, with the understanding that actual quantities could vary. The CMGC completed the construction phase of the project based on the plans and specifications developed in during the preconstruction phase.

### **Evaluation Measures**

In 2012, MDOT had utilized CMGC on a limited number of projects. MDOT committed to report on various measures in order to assess the effectiveness of this CMGC Project. The measures listed in the approved SEP-14 Work Plan and MDOT's observations from this project are listed below.

**Measure #1:** The number of SOQs received (was industry willing and able to successfully respond to this type of contract?).

**MDOT Response:** MDOT received five SOQs from highly qualified contractors. Two contractors were Michigan based contractors. MDOT views the response from both Michigan and national contractors to be very positive and demonstrates the contracting industry's willingness to pursue alternate contracting methods. Also, while a national contractor was the selected CMGC, 65% of the work was performed by Michigan based contractors and suppliers as subcontractors to the CMGC.

**Measure #2:** Measure the quality of the SOQs received by:

- a. Past experience on construction and rehabilitation of precast concrete segmental structures.
- b. Number of innovative ideas proposed by all responders to the RFQ.

- c. Number of statements including criteria that exceeded the qualifications in the RFQ.

MDOT Response: The RFQ was written as not to preclude contractors that did not have experience building post tensioned concrete segmental bridges, however, specific requirements regarding post tensioning, high capacity jacking operations, temporary steel support construction, etc., were included in the RFQ. In general, all contractors met most of the requirements of the RFQ; however, the teams consisting of national firms had considerable recent experience in the construction and rehabilitation of segmental bridges. The selected team had excellent experience in not only segmental bridge construction, but also had experience in retrofitting existing complex and segmental bridges.

**Measure #3:** Analysis of the overall selection process by evaluating issues encountered in executing the selection process and by comparing the final negotiated price (Guaranteed Maximum Price + Contingencies) to Engineer's Estimate and ICEs estimate.

MDOT Response: The selection process was successful, with no issues encountered. MDOT's process includes posting of the RFQ on the Innovative Contracting website, and separate notices were provided to the Michigan Infrastructure and Transportation Associates (Michigan's contractor association) the American Council of Engineering Companies-Michigan, the American Segmental Bridge Institute, and an announcement was placed on MDOT's bid letting website.

Price negotiations on CMGC projects are difficult. MDOT has very limited experience on projects of this scope. MDOT developed an Engineer's Estimate based with assistance from a consultant designer. MDOT also hired an ICE to develop a second independent estimate. The CMGC price was 8.06% over the Engineer's Estimate, and within 0.51% of the ICE's estimate, which were in an acceptable range.

**Measure #4:** Assess the effectiveness of the CMGC contracting process by 1) evaluating the CMGC's engagement during design phase, and achievement of constructible, high quality plans and specifications, and 2) the Administration of CMGC contract during construction phase, and the overall ability of CMGC to effectively perform contract work according to specifications, and within project timeframe.

MDOT Response: The CMGC provided very valuable input during the preconstruction phase, specifically on how the project would be built without damage to the post-tensioned tendons in the bridge. The end result was the development of a high quality set of plans and specifications. An example of this was the CMGCs proposal to use work platforms and jack procedures which reduced the construction costs by approximately \$2 million. The preliminary design called for complex steel shoring towers to support the jacking system needed to lift the superstructure at some locations. In working with the CMGC, an alternative method utilizing work platforms, and structure strengthening resulted in elimination of the shoring towers, and the risk associated with that type of

construction. The CMGC's experience on similar projects provided significant value to the project.

The CMGC was able to effectively build the project based on the plans and specifications developed during the preconstruction phase, and where able to work through any issues encountered during construction.

As noted above, the final construction cost was \$35,993,783, as compared to an original negotiated price of \$35,974,257. This \$19,256 (0.05%) difference is attributed to an increase in some adjustable quantities, such as deck and barrier patching, and including additional contingency items for sealing of grouted bearing pedestals.

### **Additional Project Observations**

The following items are additional comments and lessons learned on this project.

1. Long lead time items: The bearings specified were very large, and required significant lead time to fabricate and deliver to the project site. Procurement of the bearings was required prior to construction GMP negotiations, so MDOT negotiated the bearing procurement (GMP1), then the overall construction contract (GMP2) separately. In an attempt to save time, the same job number was used for both contracts, which proved difficult from an administrative perspective. On future projects with advanced material procurements, it is recommended that a separate job number be established for the material contract.
2. Identification of Scope Change Items: Items in the GMP can increase or decrease without a change to the price of the GMP. However, during construction there can be issues that occur, or changes to the project's scope, that increase the cost of the project. Discussions on this topic should be held during the preconstruction phase so all parties understand what is and what is not eligible for an increase or decrease to the contract price. This discussion may lead to items being included or excluded from the GMP, and included as adjustable or contingency items.
3. Documentation of CMGC Preconstruction Suggestions: Most the CMGC's suggestions were provided and documented at project meetings. MDOT developed an extensive action items list to document the investigation and resolution of all potential cost, procedure, or schedule efficiencies. This was tracked both during the design and construction phases. MDOT recommends requiring the CMGC to provide written reports to document their suggestions during the pre-construction phase.
4. Project Schedule: CMGC can increase the time required to design a process due to the evaluation of suggestions from the CMGC. Other items including price negotiations can add time to the schedule and owners should consider this when establishing the initial schedule.

4. Cost Considerations: CMGC procurements are not used on traditional, non-complex projects. Owners should not only consider average unit prices while developing the Engineer's Estimate, but other complex items, where traditional means and methods would not apply. Also, value added commitments from the CMGC can improve the project, but they can also add costs, as they have the benefit of suggesting custom solutions to a potential issue due to their involvement during the design phase. This typically cannot be done in a low-bid situation where the contractor has only a few days to understand the plans enough to place a bid. The owner should understand this can be a part of the CMGC process and give this consideration when developing the estimates.
5. The CMGC was being paid based on the estimated quantities for the project. When the CMGC proposed jacking the superstructure from work platforms mounted on the piers rather than towers to the ground the pay item quantities for the project changed. It then became difficult to know how much to pay the contractor since the quantities for the temporary supports no longer applied. A large contract modification to re-organize all the pay items on the project was processed in the second year of the project. This contract modification did not add any costs, rather, it changed the payment process to a specific location of work (per bearing replaced), as opposed to quantities of work.

#### **Project Information**

The plans and specifications developed followed MDOT's traditional procedures except for the addition of a CMGC Provision for Clarifications and Limitations of the Contract Price. This contract provision is included in Exhibit A. A notice to bidders, clarifying work covered by GMP1 and GMP2 was also included. This contract provision is included in Exhibit B.

## EXHIBIT A

### MICHIGAN DEPARTMENT OF TRANSPORTATION

#### SPECIAL PROVISION FOR CLARIFICATIONS AND LIMITATIONS TO THE CONTRACT PRICE FOR SECOND SEASON OF CONSTRUCTION

BFS:MJC

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**a. Description.** The method of payment on Construction Manager/General Contractor (CMGC) projects will be as described in this special provision. This method of payment shall apply to the second season (2014 work) of bearing replacement construction for the Zilwaukee bridge bearing replacement project.

The Measurement and Payment section for this project will consist of lump sum items for each work location as described below, "Adjustable Work", and "Contingency Work".

1. The contract items "**Pier \_\_\_ Bearing Replacement, EJ \_\_\_ NN Bearing Replacement, Abutment \_\_\_ Bearing Replacement and Ramp H Expansion Joint Bearing Replacement**" consists of those work items required to complete the work at each location which are to be constructed in accordance with the contract and compensated as a lump sum for each location completed given an agreed upon risk assessment by the Department and CMGC. The pay items used for this work are identified in Exhibit A.

2. The contract item "**Adjustable Work**" consists of individual work items with estimated quantities and contractual unit prices which are to be constructed in accordance with the contract, or adjusted contract, and compensated based on actual quantity placed, built, or constructed given an agreed upon risk assessment by the Department and CMGC. These work items are identified below and in Exhibit B.

A. Payment for Conc, Grade D will be based on the actual cubic yards of concrete required.

B. Payment for Bridge Barrier Railing, Type 4, Modified will be based on the actual lineal feet of railing replacement required.

C. Payment for Hand Chipping Other Than Deck will be based on the actual cubic feet of hand chipping required for pier diaphragm modifications, and barrier repairs.

D. Payment for Patch Forming will be based on the actual square footage of forming required for barrier repairs.

E. Payment for Conc, Bridge Deck, Ovly will be based on the actual cubic yards of concrete required to repair the latex overlay.

F. Payment for Bridge Deck Surface Construction will be based on the actual square yards of bridge deck rehabilitated.

G. Payment for Latex Conc, Surface Rem will be based on the actual square yard amount of existing latex concrete overlay surface to be removed as determined by the Engineer.

H. Payment for Patching Conc, C-L will be based on the actual cubic yard amount of concrete used for patching on the bridge.

I. Payment for Adhesive Anchoring of Horizontal Bar, 1/2 inch Bridge Barrier will be based on the actual number of horizontal adhesive anchored bars installed.

J. Payment for Adhesive Anchoring of Vertical Bar, 3/4 inch Bridge Barrier will be based on the actual number of vertical adhesive anchored bars installed.

K. Payment for Guide Bars, Rem and Replace will be based on the actual number of guide bars replaced due to damage, or loss of bolts.

L. Payment for Stainless Steel Sliding Surfaces, Rem and Replace will be based on the number of stainless steel sliding surface plates needing replacement due to gouging, or damage from the existing pot bearing elastomer confinement ring.

M. Payment for Glare Screen, Conc will be based on the actual lineal feet of glare screen replacement required.

N. Payment for Conduit, Fiberglass, 2 inch, Structure will be based on the actual lineal feet of conduit required.

O. Payment for Conduit, Rem will be based on the actual lineal feet of conduit removal required.

P. Payment for Conduit, Schedule 80, PVC will be based on the actual lineal feet of conduit required.

Q. Payment for Cable, Equipment Grounding Wire, 600V, 1/C#4 will be based on the actual lineal feet of cable required.

R. Payment for Cable, Equipment Grounding Wire, 600V, 1/C#6 will be based on the actual lineal feet of cable required.

S. Payment for Cable, Sec, 600V, 3, 1/C#4 will be based on the actual lineal feet of cable required.

T. Payment for Cable, Sec, 600V, 2, 1/C#6 will be based on the actual lineal feet of cable required.

U. Payment for Cable, Sec, 600V, 3, 1/C#6 will be based on the actual lineal feet of cable required.

V. Payment for Cable, Sec, 600V, 3, 1/C#10 will be based on the actual lineal feet of cable required.

3. The contract item "Contingency Work" is only to be used as a means to pay for unanticipated events that may occur during the project. "Contingency Work" dollar amount will be based on the work items identified as potential changes based on CM/GC means and methods analysis. The CMGC must not begin any work in which they expect payment from the "Contingency Work" item until receiving written approval to proceed and the method for payment as determined by the Engineer. These items are listed within Exhibit C. The contract item "Contingency Work" can be used for any of the following events:

- A. Extra work caused by high or low water levels in the Saginaw River.
- B. Delays caused by unidentified or unknown utility conflicts.
- C. Delays caused by I-75 roadwork.
- D. Additional work required to strengthen or retrofit structural areas adversely impacted by coring, chipping, or other removal items.
- E. Additional earthwork or other measures necessary to stabilize temporary shoring towers on solid substrate, or to ensure limited settlement.
- F. Handling and disposal of contaminated hazardous materials.
- G. Adjustments in jacking procedures, number of jacks, number of manifolds, shim plates, etc., to safely jack the superstructure.
- H. Removal and replacement of the existing expansion bearing guide bars, guide bar bolts, and stainless steel sliding surface
- I. Pavement removal or replacement required for the placement of temporary supports.
- J. Resetting or adjustment of the modular expansion joint assemblies to accommodate height differences from existing to proposed bearings.
- K. Disposal of Non Haz Contaminated materials.

The CMGC process deletes or modifies sections of the 2012 Standard Specifications for Construction as described below:



- 102.02 E: Delete 102.02 E
- 102.02 F: Delete 102.02 F
- 102.05: Delete 102.05 and replace with:  
*"The format of the Contractors proposal will be determined by the Department and the Contractor during the negotiation of the GMP."*
- 102.07: Delete 102.07 and replace with:  
*"The Contractor's proposal must be delivered to the location determined by the Department during the GMP negotiations."*
- 102.09: Delete 102.09
- 102.11: Delete 102.11 and replace with:  
*"If the Department and the Contractor do not agree on a price for the GMP and Contingency items the Department will reject the Contractors proposal. The Department may choose to let the project through traditional or other non-traditional means if a price is not agreed upon."*
- 102.13: Delete the first sentence in 102.13 and replace with:  
*"To determine if the Contractor's GMP is reasonable, the Department will compare the Contractor's proposed cost with average unit prices or unit prices based on similar work or the Engineers judgment if average unit prices do not apply."*
- 102.17: Delete 102.17
- 103.02 B.2: Delete 103.02 B.2.
- 108.01: Delete the first sentence of the second paragraph in 108.01 and replace it with the following:  
*"Contract work amounting to not less than 35 percent of the original total contract price must be performed by the CMGC's own organization."*
- 109.03: Add the following sentence to 109.03:  
*"If there is a conflict between 109.03 and this special provision, this special provision will apply."*

**b. Materials.** Provide materials in accordance with the contract and the 2012 Standard Specification for Construction.

**c. Construction.** Construction methods must be in accordance with the contract and the 2012 Standard Specification for Construction.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following contract item (pay item):

**Contract Item (Pay Item)**

**Pay Unit**

Pier 1N Bearing Replacement .....	LSUM
Pier 2N Bearing Replacement .....	LSUM
Pier 3N Bearing Replacement .....	LSUM
Pier 4N Bearing Replacement .....	LSUM
Pier 5N Bearing Replacement .....	LSUM
Pier 6N Bearing Replacement .....	LSUM
Pier 7N Bearing Replacement .....	LSUM
Pier 8N Bearing Replacement .....	LSUM
Pier 9N Bearing Replacement .....	LSUM
Pier 10N Bearing Replacement.....	LSUM
Pier 11N Bearing Replacement.....	LSUM
Pier 12N Bearing Replacement.....	LSUM
Pier 13N Bearing Replacement.....	LSUM
Pier 14N Bearing Replacement.....	LSUM
Pier 15N Bearing Replacement.....	LSUM
Pier 16N Bearing Replacement.....	LSUM
Pier 17N Bearing Replacement.....	LSUM
Pier 18N Bearing Replacement.....	LSUM
Pier 19N Bearing Replacement.....	LSUM
Pier 20N Bearing Replacement.....	LSUM
Pier 21N Bearing Replacement.....	LSUM
Pier 22N Bearing Replacement.....	LSUM
Pier 23N Bearing Replacement.....	LSUM
Pier 24N Bearing Replacement.....	LSUM
EJ4NN Bearing Replacement.....	LSUM
EJ7NN Bearing Replacement.....	LSUM
EJ9NN Bearing Replacement.....	LSUM
EJ11NN Bearing Replacement.....	LSUM
EJ14NN Bearing Replacement.....	LSUM
EJ17NN Bearing Replacement.....	LSUM
EJ19NN Bearing Replacement.....	LSUM
EJ22NN Bearing Replacement.....	LSUM
Abutment AN Bearing Replacement .....	LSUM
Abutment BN Bearing Replacement .....	LSUM
Pier H3 Bearing Replacement .....	LSUM
Pier H4 Bearing Replacement .....	LSUM
EJ H-Ramp Bearing Replacement .....	LSUM
Abutment C H-Ramp Bearing Replacement.....	LSUM
Adjustable Work .....	Dollar
Contingency Work .....	Dollar

The contract items “**Pier \_\_ Bearing Replacement, EJ\_\_NN Bearing Replacement, Abutment \_\_ Bearing Replacement, and Ramp H Expansion Joint Bearing Replacement**” have been developed through negotiations between the Department and CMGC and the work items are incorporated into Exhibit A. This includes all work required to strengthen the existing superstructure and substructure, jacking, removal and replacement of bearings, lowering the structure on to the permanent bearings, and any corrective action. Progress payments for work items identified above will be made as work at these locations are completed and accepted by the Engineer. Payment will be in

lump sum form, as agreed upon by the Engineer and the CMGC. Full payment will be made for the work constructed in compliance with the contract, as described herein, regardless of the final quantity of any individual pay items. Partial payment for LSUM items will be made upon completion of all removal activities, with the balance being paid upon final acceptance at each bearing replacement location.

The contract item **Adjustable Work** was developed through negotiations between the Department and CMGC and the individual work items that make up this contract item are incorporated into Exhibit B. Progress payments for work items identified within the **Adjustable Work** contract item will be made in accordance with subsection 109.04 of the 2012 Standard Specifications for Construction. Progress Payments and Final Payment will be based upon the actual quantities placed, built, or constructed of the individual work items that make up the **Adjustable Work** contract item that are in compliance with the contract.

The contract item **Contingency Work** was developed through negotiations between the Department and CMGC based on events that may occur, but are unlikely to occur or cannot be accurately quantified at the time the Guaranteed Maximum Price is submitted. This may include alternate means and methods the contractor developed after the pre-construction services phase of the project. Payment for **Contingency Work** will be made as determined by the Engineer at the time a written authorization to proceed is issued by the Engineer.

#### **EXHIBIT A – Guaranteed Maximum Price Items**

Item number	Item Description	Unit
1500001	Mobilization, Max. ____	LS
1040001	Contractor Staking	LS
7060090	Reinforcement, Steel	Lb
7060092	Reinforcement, Steel, Epoxy Coated	Lb
7060140	Water Repellant Treatment, Penetrating	Syd
7070050	Structural Steel, Mixed, Erect	Lb
7070051	Structural Steel, Mixed, Furn and Fab	Lb
7080015	Post Tensioning	LS
7120028	Adhesive Anchoring of Horizontal Bar, 3/4 inch	Ea
7120032	Adhesive Anchoring of Vertical Bar, 1/2 inch	Ea
7120033	Adhesive Anchoring of Vertical Bar, 5/8 inch	Ea
7120035	Adhesive Anchoring of Vertical Bar, 7/8 inch	Ea
7120038	Adhesive Anchoring of Vertical Bar, 1 inch	Ea
7120070	Structures, Rehabilitation, Rem Portions	LS
7137050	Penetrating Healer/Sealer, Bridge Deck	Syd
7137050	_ Abutment Bearing, Modify	Ea
7137050	_ Coring Concrete, 2 inch Diameter	Ft

7137050	_ Coring Concrete, 2-1/2 inch Diameter	Ft
7137050	_ Coring Concrete, 2-3/8 inch Diameter	Ft
7137050	_ Coring Concrete, 3 inch Diameter	Ft
7137050	_ Coring Concrete, 3 inch Diameter, Modified	Ft
7137050	_ Coring Concrete, 3-1/4 inch Diameter	Ft
7137050	_ Coring Concrete, 4-1/2 inch Diameter	Ft
7137050	_ Conc, Grade S2 (Superstructure)	Cyd
7137050	_ Conc, Grade S2 (Substructure)	Cyd
7137050	_ Abutment Bearing, Install	Ea
7137050	_ Abutment Bearing, Rem	Ea
7137050	_ Adhesive Anchoring of Horizontal Bar, 5/8 inch	Ea
7137050	_ Adhesive Anchoring of Horizontal Bar, 1 inch	Ea
7137050	_ Expansion Joint Bearing, Install	Ea
7137050	_ Expansion Joint Bearing, Rem	Ea
7137050	_ Jacking at NB and SB Expansion Joints	LS
7137050	_ Jacking at NB Piers 1-5 & 20-24 and SB Piers 1-5 & 21-25	LS
7137050	_ Jacking at NB Piers 6-9 & 17-19 and SB Piers 6-9 & 17-20	LS
7137050	_ Jacking at NB Piers 10-16 and SB Piers 10-16	LS
7137050	_ Jacking at NB, SB, and Ramp H Abutments	LS
7137050	_ Jacking at Ramp H Expansion Joints	LS
7137050	_ Jacking at Ramp H Piers H1-H4	LS
7137050	_ Mainline Pier Bearing, Install	Ea
7137050	_ Mainline Pier Bearing, Rem	Ea
7137050	_ Ramp H Pier Bearing, Install	Ea
7137050	_ Ramp H Pier Bearing, Modify	Ea
7137050	_ Ramp H Pier Bearing, Rem	Ea
7137050	_ Slope Paving, Rem	Syd
7137050	_ Temporary Support at NB and SB Expansion Joints	LS
7137050	_ Temporary Support at NB Piers 1-5 & 20-24 and SB Piers 1-5 & 21-25	LS
7137050	_ Temporary Support at NB Piers 10-16 and SB Piers 10-16	LS
7137050	_ Temporary Support at NB Piers 6-9 & 17-19 and SB Piers 6-9 & 17-20	LS
7137050	_ Temporary Support at NB, SB, and Ramp H Abutments	LS
7137050	_ Temporary Support at Ramp H Expansion Joints	LS
7137050	_ Temporary Support at Ramp H Piers H1-H4	LS
7137050	_ Nondestructive Testing	LS
7137050	_ Nondestructive Testing, Expansion Joints	LS
7137050	_ Maintenance of Traffic	LS
7137050	_ Railroad Inspection and Flagging – H&E	Ea
8090002	Field Office, 2	Mo
8090010	Field Office, Utility Fees	Dlr
8110231	Pavt Mrkg, Waterborne, 4 inch, White	Ft

8110233	Pavt Mrkg, Waterborne, 6 inch, White	Ft
8110234	Pavt Mrkg, Waterborne, 6 inch, Yellow	Ft
8110237	Pavt Mrkg, Waterborne, 12 inch, White	Ft
8110251	Pavt Mrkg, Waterborne, 2nd Application, 4 inch, White	Ft
8110253	Pavt Mrkg, Waterborne, 2nd Application, 6 inch, White	Ft
8110254	Pavt Mrkg, Waterborne, 2nd Application, 6 inch, Yellow	Ft
8110257	Pavt Mrkg, Waterborne, 2nd Application, 12 inch, White	Ft
8120170	Minor Traf Devices	LS
8130020	Slope Paving, Conc	Syd
8160102	Slope Restoration, Type C	Syd
8190004	Conduit, Directional Bore, 3 inch	Ft
8190246	Hh, Heavy Duty Cover	Ea
8190286	Light Std Shaft, 31 foot to 40 foot	Ea
8190305	Light Std Shaft, Rem	Ea
8190360	Luminaire, Rem	Ea
8197001	Overhead, #4 Alum Triplex with #4 ACSR	Ft
8197001	Overhead, Rem	Ft
8197050	Splice Box	Ea
8197050	Splice Box, Rem	Ea
8197050	S2 Luminaire, Bridge Median	Ea
8197050	S1 Luminaire, Bridge Shoulder	Ea

### **EXHIBIT B – Adjustable Work Items**

Item number	Item Description	Unit
7060010	Conc, Grade D	Ea
7110030	Bridge Barrier Railing, Type 4, Modified	Ft
7120007	Hand Chipping, Other Than Deck	Cft
7120017	Patch, Forming	Sft
7120023	Conc, Bridge Deck Ovly	Cyd
7120023	Bridge Deck Surface Construction	Syd
7120072	Latex Conc Surface, Rem	Syd
7120112	Patching Conc, C-L	Cyd
7137050	_Adhesive Anchoring of Horizontal Bar, 1/2 inch Bridge Barrier	Ea
7137050	_Adhesive Anchoring of Vertical Bar, 3/4 inch Bridge Barrier	Ea
7137050	_Guide Bars, Rem and Replace	Ea
7137050	_Stainless Steel Sliding Surfaces, Rem and Replace	Ea
8040015	Glare Screen, Conc	Ft
8190097	Conduit, Fiberglass, 2 inch, Structure	Ft
8190140	Conduit, Rem	Ft

8190157	Conduit, Schedule 80 PVC, 2 inch	Ft
8190234	Cable, Equipment Grounding Wire, 600V, 1/C#4	Ft
8190236	Cable, Equipment Grounding Wire, 600V, 1/C#6	Ft
8190405	Cable, Sec, 600V, 3, 1/C#4	Ft
8190406	Cable, Sec, 600V, 2, 1/C#6	Ft
8190407	Cable, Sec, 600V, 3, 1/C#6	Ft
8197001	Cable, Sec, 600V, 3, 1/C#10	Ft

### **EXHIBIT C – Contingency Work Items**

Item number	Item Description	Unit
1040020	Staking Plan Errors and Extras, One Person	Hr
1040021	Staking Plan Errors and Extras, Two Person	Hr
1040022	Staking Plan Errors and Extras, Three Person	Hr
2040050	Pavt, Rem	Syd
2050031	Non Haz Contaminated Material Handling and Disposal, LM	Cyd
2060003	Backfill, Structure, LM	Cyd
2060010	Excavation, Fdn	Cyd
5010061	HMA Approach	Ton
7137050	Modular Expansion Joint, Adj	Ea

## **EXHIBIT B**

### **MICHIGAN DEPARTMENT OF TRANSPORTATION**

#### **NOTICE TO BIDDERS PART 2 OF GUARANTEED MAXIMUM PRICE PROPOSAL**

BFS:MJC

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01-31-13

The scope of work for this portion of the contract is authorization and payment for the base construction contract, which includes removal and installation of all bearings as identified in the contract documents, bridge deck and barrier repairs, application of bridge deck healer sealer, and electrical work. All temporary supports, jacking, structure retrofits to control jacking stresses, and other work required to remove and replace the bearings is included in this portion of the contract. For pay items included in this portion, please see the special provision for Clarifications and Limitations to the Contract Price.

This portion of the contract will be hereby referred to as GMP2. GMP1 was defined as the procurement contractor for the bearing materials, and has been previously negotiated.

GMP2 includes the Construction Manager's fee for removal and installation of all bearings, jacking, shoring, bridge deck and barrier repairs, deck healer sealer application, and electrical work. The parties agree to establish a contingency including allowances within GMP2. The Construction Manager's fee for the work covered by GMP2, including adjustable items, contingency and allowances is hereby established as a maximum limiting amount of \$32,409,895.60.

Together with the bearing procurement as part of the GMP1, the total project cost (GMP1 + GMP2) is hereby established as a maximum limiting amount of \$35,974,257.60.

The Construction Manager may propose alternate jacking, temporary shoring, or other superstructure supporting, or bearing replacement schemes from those shown on the contract documents. Any alternate procedures must be properly analyzed by the Construction Manager's engineer, and submitted to MDOT for further evaluation. The Construction Manager must ensure that a professional, licensed engineer, competent in structural engineering, designs and seals the working drawings and design calculations for alternate methods. The Contractor is responsible for the correctness of the working drawings and design calculations. Should approval be granted to modify jacking or shoring from those shown in the contract documents, the costs for these items will be adjusted,

based on the Adjustable Pay Items shown in the special provision for Clarifications and Limitations to the Contract Price.

The Construction Manager agrees to install one pier bearing and one expansion joint bearing under the close supervision of MDOT and technical expert staff prior to transitioning into a production mode for the work. This will be done to ensure feasibility of the Construction Manager's means and methods to safely jack and support the existing structure without causing damage, or impacting serviceability. The Construction Manager shall mobilize sufficient technical resources to ensure all procedures, means, and methods, and all stresses on the structure are in accordance with the contract documents.

Should damage to the structure result from the Construction Manager's means and methods, and alternate means and methods cannot be agreed upon, MDOT reserves the right to terminate the contract in accordance with subsection 108.12 of the MDOT Standard Specifications for Construction.

The Construction Manager shall take into account the Seasonal Limitations, and Seasonal Suspension definitions per subsection 101.03 of the MDOT Standard Specifications for Construction, and schedule accordingly to meet the completion dates as stated the Progress Clause. Additional crews, equipment and material, or cold weather protection of work, and/or heating and housing may be required to complete the project on schedule.