

April 3, 2018

**CONCRETE  
GENERAL, INC.**

# Putty Hill Ave

Request for Proposals (RFP) Contract No. BA1455180

**Construction Manager At-Risk (CMAR)**

**Bridge Replacement Steel Girder Bridge No. 0317400**

**On Putty Hill Avenue Over I-695 Baltimore County**

**M&D** MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION





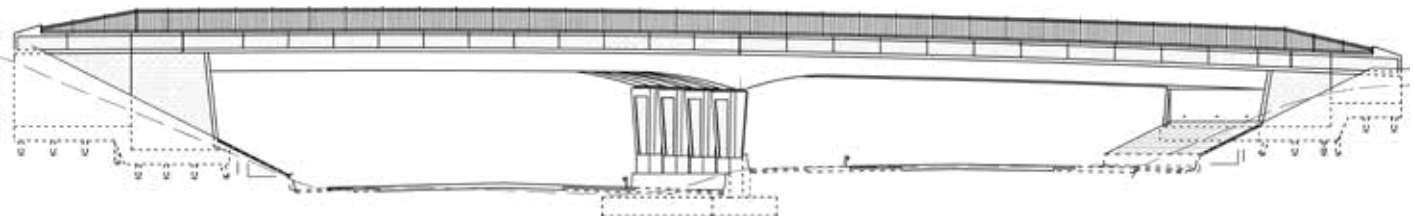
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## **B. Capability of the Proposer**



Request for Proposals (RFP) Contract No. BA1455180

**Construction Manager At-Risk (CMAR)**

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**On Putty Hill Avenue Over I-695 Baltimore County**



*Project Manager: Michael Higgins, PE*

**Firm: Concrete General, Inc. Years of Experience: 32 w/firm 2 Education: BS/1986/Civil Engineering Registration: Pennsylvania Professional Engineer #PE044299E;** Applying for Maryland PE Registration.

**Capabilities:** Mr. Higgins' experience as Project Manager and Design-Build Project Manager spans more than two decades in heavy construction, cost controls, schedule compliance and procurement for highways, bridges, airports and utilities in the states of Maryland, Virginia, North Carolina, West Virginia, Pennsylvania, Texas and Kentucky. Mike has a proven track record delivering complex, traffic-intensive projects to MDOT SHA, VDOT and others, on-time and on-budget. Mike has also been working in conjunction with MDOT SHA leadership in evaluating and reviewing current MDOT SHA policies, procedures and specifications for construction and helping develop new guidelines to address industry concerns. **Mr. Higgins is currently serving as the Design-Build Project Manager for the following:**

**MD 32 - MD 108 to North of Linden Church Road D/B, Howard Co., MD - MDOT SHA Contract No. HO1415170:**

This \$33M design-build project provides for the Phase 1 widening of MD 32 from MD 108 to North of Linden Church, for a distance of approximately 2 miles and includes improvements to the intersections for both MD 108 and Linden Church Road. Mike is serving as the Design Build Project Manager for this project and his responsibilities include ensuring proper allocation of resources for both CGI's labor and equipment along with outside contractor forces, oversight of project management, scheduling, financial and regulatory requirements to meet contractual expectations.

**I-270 Innovative Congestion Management Progressive D/B, Montgomery Co., MD - MDOT SHA Contract No. MO0695172:**

The purpose of this \$100M progressive design-build project is to reduce congestion and improve travel time along the I-270 corridor. The Design-Builder is providing implementable, practical, bold and innovative solutions to increase vehicle throughput, reduce delay and increase travel time reliability along I-270 with the contract budget. Mike is serving as the Design Build Project Manager and is responsible for the preconstruction, construction and project management of the overall contract with MDOT SHA.

**MD 210 Livingston Road/Kerby Hill Road Interchange D/B, Howard Co., MD - MDOT SHA**

**Contract No. PG7005170:** This \$83M design-build project consists of grade-separated interchange at the MD 210 intersection with Livingston Road/Kerby Hill Road to provide safety improvements and congestion relief for this area. The project includes realignment of Livingston and Kerby Hill Road, bridge structures, retaining walls, new pavement and existing pavement rehab, storm water management quality and quantity facilities, signing, lighting and extensive maintenance of traffic including detours along with major utility relocation and coordination.

*Relevant Experience: Construction Management, Utility Relocation and Coordination, Meeting Project Goals for Stakeholders and the General Public, Constructability Reviews, Design Coordination, Project Scheduling and Phasing.*





**Construction Manager: Larry Smith**

**Firm: Concrete General, Inc. Years of Experience: 33 w/firm 26**  
ACI Concrete Field Technician-Grade 1/ATSSA/CIC/ Crane/CIC Practical Examiner

**Capabilities:** Mr. Smith has experience in managing construction activities, coordination and scheduling for the construction of roads, bridges, retaining walls, concrete box culverts, temporary bridges, steel erection and bridge demolition including Design-Build. He has extensive experience with constructability reviews, design coordination, project scheduling and phasing especially working with MDOT SHA Office of Structures. His Design-Build experience includes MD 32 at Linden Church Road Design-Build, US 29 at MD 198 Design-Build, MD 124 Design-Build, MD 355 at Montrose Road/Randolph Road Design-Build. Duties included coordinating with the owner, overseeing construction activity, managing job personnel, scheduling subcontractors, ordering and scheduling delivery of materials for the job, working with the engineers reviewing shop drawings and solving the day-to-day issues and problems that occur, keeping the job moving forward with the least amount of impacts. Larry was Construction Manager on the award-winning Widening and Rehabilitation of Dual Steel Girder Bridges Nos. 2110603 & 2110604 on I-70 over Conococheague Creek, MDOT SHA, Washington Co., MD WA3255180 as well as Emergency 26<sup>th</sup> Str. Repair & North Charles Street Reconstruction from 25<sup>th</sup> St. to University Parkway, Baltimore City, Maryland, No. TR10301; MdQI Award of Excellence for Partnering Silver Award 2015, MdQI Award of Excellence for Modal Award over \$5M and Certificate of Appreciation by Mr. Earle S. Freedman, Director Office of Structures for MSHA.

**Replacement of Bridge F13-01 on Boyers Mill Road over Lake Linganore, Frederick Co. Project No. C27211, MDOT SHA Contract No. FR629ZM1** This \$12.3M phased bridge project consisted of a new two-span bridge over lake Linganore and approximately 820 feet of approach roadway reconstruction.

*Relevant Experience: Replaced structurally deficient bridge, minimized project delivery, minimized impact to environment, design coordination and constructability reviews, public planning and outreach, major earthwork, grading, drainage, maintenance of traffic, coordination with multiple stakeholders and utilities, environmental sensitivity and permitting.*

**Superstructure Replacement and Substructure Rehabilitation for Bridge No. 21089 on I-70 Eastbound over Ramp A Washington Co., MD, MDOT SHA Contract No. WA2155180** This \$4.2M phased bridge project consisted of removal and replacement of the existing deck and steel superstructure for Bridge No. 21089, completed in 3 stages to minimize impacts and delays to the traveling public. Mr. Smith provided detailed schedule of operations and managed critical delivery dates for materials such as structural steel, stay-in-place forms reinforcing of steel and roadway angles. Stage 1 and 2 was constructed in less than the allowed 229 calendar days' period to receive the full \$100,000 incentive.

*Relevant Experience: Replaced structurally deficient bridge, design coordination and constructability review for shoring and steel girder erection within a limited work space and major traffic conditions while minimizing interruption with traveling public. Phased bridge sequencing with Staged Utilities on Bridge & Approaches, split phased traffic control, limited work space, Elaborate Pier repairs/strengthening, difficult excavation in tight areas (11' wide lanes).*



*Cost Estimator: Mark Miller*

**Firm: Concrete General, Inc. Years of Experience: 24** w/firm 24  
 NUCA Competent Person, ARTBA Transportation Builder Institute's Management Training Programs

**Capabilities:** Mr. Miller brings more than 20 years of experience as a Cost Estimator for MDOT SHA projects, including experience with negotiating CAPs, to successfully preparing and negotiating OPCCs and CAPs for large projects. His estimating experience includes construction of roads, highways, bridges and utilities as well as all of CGI's Design-Build projects throughout Maryland. Mr. Miller is responsible for the overall business procurement for the company. His responsibilities include: project identification and selection; oversight of detailed engineering requirements; detailed quantity take-offs; developing cost estimating and final pricing, MBE and Subcontractor plans and project risk assessment and associated pricing to ensure the proper contract documents with pricing are submitted to the owner. Mark has an extensive history of successful transportation design-build experience, including MD 32 at Linden Church Road, US 50 HOV Lanes from I-495 to MD 197, US 29 at MD 198, MD 124, MD 355 at Montrose Road/Randolph road, Ramp 6 Widening from EB I-495 to SB MD 97, and the MD 210 at Livingston/Kerby project. He is responsible for the successful pursuit of more than 200 MDOT/SHA projects, including many on and along the I-695/IS 270/I-70 corridor. Proven experience in negotiating CAPs and as Chief Estimator.

**White Flint West Workaround, IFB#1048406, Donley, LCC for the Montgomery County:** This \$7.6M project was negotiated with the general contractor and owner to construct the site/roadwork portion of the 'White Flint West' project. This project provided for infrastructure and roadway improvements for a new parking structure adjacent to the Montgomery County Convention Center.

**26<sup>th</sup> Street Emergency Repair, City of Baltimore, MD:** This \$12M emergency repair project included developing OPCCs along with negotiating a final lump sum CAP contract to re-build the collapsed retaining wall and street at 26<sup>th</sup> Street for the City of Baltimore. This project included coordination with the engineer/designer to minimize impacts and shorten the construction period.

**I-270 Innovative Congestion Management Progressive D/B, Montgomery Co., MD - MDOT SHA Contract No. MO0695172:** \$100M progressive design-build project to reduce congestion and improve travel time along the I-270 corridor. The D-B is providing implementable, practical, bold and innovative solutions to increase vehicle throughput, reduce delay and increase travel time reliability along I-270 with the contract budget. Mark is serving as the Cost Estimator and is responsible for the pricing, developing quantities, developing OPCC estimates, identifying and mitigating project risks, providing cost models and assumptions along with reconciling with ICE for agreed-upon CAPs.

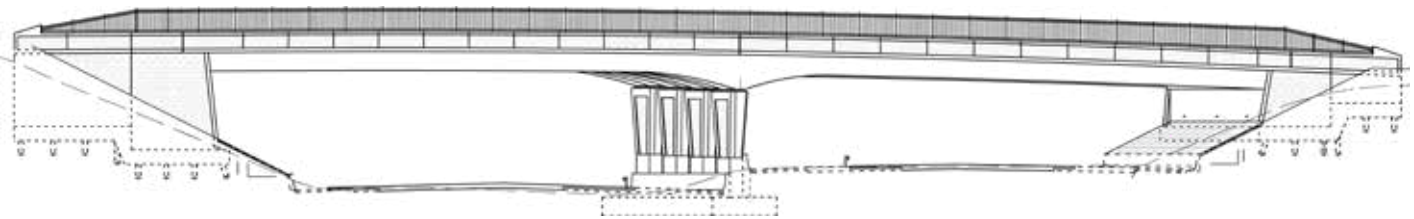
**US 15 Shared-Use Path Connection, Bid#16-3, City of Frederick, MD:** This \$1.8M BAFO was negotiated to fit within the limited budget of the City of Frederick. This project provided a pedestrian/biking path under an access ramp for the US 15. The work was performed with a weekend shut-down of the ramp for installation of a precast box tunnel eliminating the need for a temporary bridge on the access ramp which saved significant time and money.

*Relevant Experience: Identify Project Risks and Mitigation Measures; Develop Risk Management Plan; Perform Risk Assessments and Maintain Project Risk Register, Develop OPCCs for initial Designs; DBE and Subcontracting Plans; Quantities; Construction Cost Models; Partnering to Resolve Construction Issues; Risk Assessments to Minimize Impacts to Adjacent Projects; led Internal Review meetings to Reconcile Estimate; Negotiate CAPs; Develop/Provide All Bidding Documentation Required by Owner.*



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## B. Capability of the Proposer



Request for Proposals (RFP) Contract No. BA1455180

**Construction Manager At-Risk (CMAR)**

**Bridge Replacement Steel Girder Bridge No. 0317400**

**On Putty Hill Avenue Over I-695 Baltimore County**

**TEAM PAST PERFORMANCE:** *Replacement of Bridge No. 0311305 on I-695 Inner Loop over Benson Avenue, and Bridge No. 0311405 on I-695 Inner Loop Ramp 8 Bridge No. 03116 from US 1 over Leeds Avenue and US 1 from Knecht Avenue to Linden Avenue in Baltimore County, MD, MDOT SHA Contract No. BA3665170*

Maryland SHA District 4  
 320 W. Warren Road, Hunt Valley, MD 21030  
 Ph: 410-229-1421  
 Mr. Jesse Free  
 Asst. District Engineer-Construction  
[jfree@sha.state.md.us](mailto:jfree@sha.state.md.us)



**Project Delivery Method:** **Design-Bid-Build**

**Overall Construction Cost of Project:**  
**Initial Cost:** \$37,136,684 **Final Cost:** \$35,814,747

**Reason for Difference:** Many contract items underran the original contract quantities, including bearing piles, asphalt paving, grading and storm drain. The cost savings included CGI's proposed use of asphalt millings and existing riprap.

**Overall Schedule Performance:**  
**Initial Completion Date:** 8/31/2017 **Final Completion Date:** 1/3/2018

**Reason for difference:** The project was delayed at the start due to conflicts between the Maintenance of Traffic (MOT) and Erosion & Sediment Control (E&SC) sequences of work. One storm drainage line had to be jacked and bored under the roadway in the initial stage of work for the project. The MOT sequence of work allowed for this work to be done but the E&SC sequence of work did not which was a direct contradiction in the contract documents. CGI requested a change in sequence to allow for this work to be performed earlier. MDOT SHA concurred and approval by MDE had to be obtained. CGI requested the revision from MDE to the E&SC Sequence of Construction to allow for the jack and boring of the storm drainage line. MDE's review of the revision to the sequence delayed the start of the project which in turn extended the completion date. CGI reduced the overall impact to the completion date from this delay by being proactive with other work activities to reduce both cost and time impacts. The word 'Stop' is not in our vocabulary. We find a way to 'Go' in order to complete the work on time and on budget.

**Brief Project Description:**  
 CGI was the low bidder and was awarded the project to construct this bridge replacement (urban interstate above multiple urban roadways and CSXT) which included a new 124' single span bridge, new 627' four-span bridge and a new 174' double-span bridge. The project scope included the base widening for maintenance of traffic purposes of an approximately 41.5' wide section for an approximate length of 3,000' along I-695 with full depth pavement. Tasks included grading, constructing reinforced stabilized slope, paving, striping, relocating and replacing roadway signs and placing F-shaped concrete barriers. Construction included a 1,189-foot long MSE type retaining wall and a 353-foot long precast noise wall along Ramp 8, as well as converting the existing four-lane section of US 1 to a two-lane section with a median bio swale. The resurfacing of I-US 1 and I-95 ramp included asphalt wedge and level to correct the super elevation and F-shape concrete traffic barriers to reduce the slope impacts along the southbound side of US 1. The work also included reconstruction



of sidewalks, complete removal of the existing bridges and partial removal the existing noise wall. CGI's responsibilities also included the storm drain, storm water management facilities, landscaping, lighting in I-695 and under bridge lighting.

**Relevancy: Within I-695 Corridor, urban interstate above multiple urban roadways, replacement of structurally deficient bridge, environmental sensitivity, coordination with third parties, roadway approach work, maintenance of traffic phasing, utility relocations along the approach and across the bridge, facilitated a collaborative partnership with MDOT SHA and local stakeholders, limited work space, support of excavation for phased construction, aesthetic treatments for bridges, retaining walls and noise walls, minimized environmental impact, storm water management, maintain safe pedestrian access and minimized inconvenience and impacts to the traveling public, provided safe and efficient maintenance of traffic, minimized construction cost within current budget, minimized project delivery time, provided tie-ins to proposed vertical profile to phased construction and side streets, construction activities minimized, access to local residents maintained.**

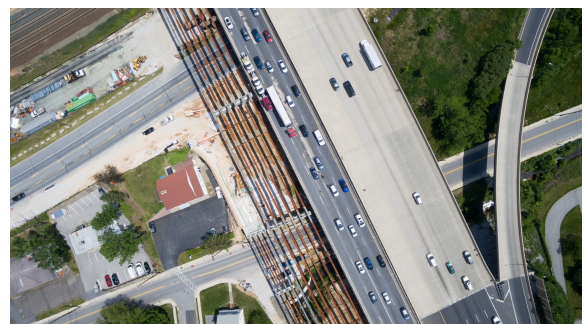
**Discussion of what work, including any successful methods, approaches and innovations, on the project is relevant to this contract and why:**

This project involved replacement of multiple structurally deficient bridges over traffic, similar to the Putty Hill project, though with a greater magnitude and larger access issues. One major concern was that the I-95 access ramps to I-695 are within the project limits and all traffic movements had to be maintained during construction. Also, pedestrian facilities on US 1, Benson Avenue and Leeds Avenue needed to be maintained during all phases of construction. Having to maintain sufficient lanes on I-695 to accommodate the heavy traffic volumes resulted in restricted workspace particularly during the second phase. Extensive shoring was required for the support of excavation/backfill at both the abutments and the piers to allow for the phased construction. CGI was responsible for the design of the shoring and engaged the services of a design subconsultant to help with this task. **Why Relevant?** Similar issues with both vehicular and pedestrian traffic along with support of excavation are to be expected on the Putty Hill project.

CGI successfully coordinated and worked around utility relocations with Verizon, Comcast, BG&E, AT&T, Level 3, and Baltimore County's ICBN. Proactive, comprehensive coordination and collaboration was achieved with CSXT and other stakeholders, including Baltimore County and MDE. **Why Relevant?** Similar issues and similar stakeholders are expected to be on the Putty Hill project.

During the erection of the fabricated structural steel members, CGI developed a staging plan that provided for the tractor trailers hauling the bridge girders to be temporarily staged behind MOT devices for an existing temporary shoulder closure. This allowed for the structural steel members to be set in a quicker time frame to minimize impacts to the traveling public. **Why Relevant?** Similar issues with access and tight working conditions are to be expected on the Putty Hill project.

The E&SC sequence conflicted with the MOT sequence of construction. CGI worked with MDOT SHA and MDE to revise the sequence of construction to allow for work concurrently so impacts to the project were minimized. **Why Relevant?** The CMAR process needs experienced folks working in conjunction with MDOT SHA and the Designer. CGI's Key Staff is experienced in performing constructability reviews and will provide this expertise during the preconstruction phase of Putty Hill.



**TEAM PAST PERFORMANCE:** *Superstructure Replacement and Substructure Rehabilitation for Bridge No. 21089 on I-70 Eastbound over Ramp A, Washington County, MD, MDOT SHA Contract No. WA2155180*

Maryland State Highway Administration District 6  
 1251 Vocke Road, LaVale, MD 21502  
 Ph: 301-729-8400  
 Mr. Stephen Bucy, ADE  
[sbucy@sha.state.md.us](mailto:sbucy@sha.state.md.us)

**Project Delivery Method:** **Design-Bid-Build**

**Overall Construction Cost of Project:**

**Initial Cost:** \$4,246,158 **Final Cost:** \$3,989,780

**Reason for Difference:** Many contract items underran the original contract quantities; including asphalt paving, pavement markings, topsoil and seeding.



**Overall Schedule Performance:**

**Initial Completion Date:** 6/15/2017 **Final Completion Date:** 6/15/2017

**Reason for difference:** n/a

**Brief Project Description:**

CGI was the low bidder and awarded the project, a \$4.2M phased interstate bridge reconstruction project. The existing bridge was below another existing interstate bridge and above an existing interstate ramp. The project consisted of removal and replacement of the existing deck and steel superstructure for Bridge No. 21089, rehabilitation repairs for the existing abutments and piers, including fiber wrap strengthening, support of excavation at the abutments for phased construction, paving and resurfacing on the approach roadways to the bridge, placement of w beam traffic barriers, signing and pavement markings. The project was phased for construction in 3 stages to minimize inconvenience and impacts to the traveling public.

**Relevancy:** Replaced structurally deficient bridge superstructure, environmental sensitivity, coordination with third parties, minimized project delivery time, roadway approach work, maintenance of traffic phasing including split traffic, bridge construction, facilitated a collaborative partnership with MDOT SHA and local stakeholders, limited work space, support of excavation for phased construction, minimized environmental impact, storm water management, minimized inconvenience and impacts to the traveling public, provided safe and efficient maintenance of traffic, minimized construction cost within current budget, provided tie-ins to phased construction, construction durations minimized.

**Discussion of what work, including any successful methods, approaches and innovations, on the project is relevant to this contract and why:**

The project was located at the merge of I-68 and I-70 which is a heavily-traveled truck corridor in the region. Frequent and detailed communication and coordination with MDOT MVA was required to provide information on the varying lane-width restrictions throughout the duration for the project. This was critical to schedule oversize/wide load trucks traveling through the area so that impacts to the traveling public and project workers were minimized. **Why Relevant?** Similar issues with minimizing impacts to the traveling public are to be expected on the Putty Hill project.



One of MDOT SHA's goals for the project was minimizing the time needed for performing the work. The contract allowed for time period of only 229 Calendar Days: from April 1, 2016, to November 15, 2016. Stage 2 construction required interstate traffic to be placed in a split configuration around the middle portion of the bridge so that construction could happen. This phase of construction was performed successfully by utilizing multiple shifts and extended working hours to minimize the time required for this phase. **Why Relevant?** Similar issues with maximizing available working times are to be expected on the Putty Hill project.

After notice of apparent low bidder, CGI immediately started submittals for long-lead items as allowed for by the Early Submission provision. CGI also performed preliminary construction activities without implementing traffic restrictions. **Why Relevant?** Similar issues with acquisition of long-lead items are to be expected on the Putty Hill project.

CGI expertly handled the difficult excavation and demolition of the existing bridge with minimal impacts to the interstate traffic running adjacent to the work and within a narrow 11' wide lane. **Why Relevant?** Similar issues are to be expected with limited workspace on the Putty Hill project.

CGI installed shoring in a limited amount of work space in the lanes for the substructure phased construction, designed to minimize interruption to the traveling public. **Why Relevant?** Similar shoring issues are to be expected on the Putty Hill project.

CGI ensured a continuous operation without interruptions. Larry Smith and the project team developed and implemented a detailed schedule of construction operations as well as managing critical delivery dates for materials such as structural steel, stay-in-place forms, reinforcing steel, bridge bearings and deck angles. The project was constructed in less than the allowable 229 calendar day period and received the full \$100,000 incentive (40CD x \$2,500/CD). **Why Relevant?** Similar issues with minimizing time impacts are to be expected on the Putty Hill project.

Heavy coordination was required with MDOT MVA for lane restrictions and wide loads; the bridge was reconstructed in three phases with limited work area due to I-68 and I-70 merging together. **Why Relevant?** Similar coordination with 3<sup>rd</sup> party stakeholders are to be expected on the Putty Hill project.

CGI requested and received approval to use alternate construction materials for more efficient and shorter construction times. The use of Sika 328 High performance grout in lieu of concrete for substructure patching repairs shortened the time required to reach design strengths. CGI requested and was granted permission to place structural steel loads on the carbon fiber strengthened pier caps within 7 days of the application of the carbon fiber as compared to the normal 14-day requirement. This minimized delays to the traveling public and saved construction time. **Why Relevant?** Similar issues to use alternate construction materials to save time, money, and minimize inconvenience and impacts to the traveling public are to be expected on the Putty Hill project.

**TEAM PAST PERFORMANCE:** *Replacement of Bridge F13-01 on Boyers Mill Road over Lake Linganore, Frederick County, Project No. C27211, MDOT SHA Contract No. FR629ZM1, Frederick County, MD. This multiple-AWARD-WINNING project was also named as Road & Bridges Magazine 3<sup>rd</sup> best bridge in the nation for 2017.*

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**Project Delivery Method:** **Design-Bid-Build**

**Overall Construction Cost of Project:**

**Initial Cost:** \$12,391,783 **Final Cost:** \$12,531,780

**Reason for Difference:** The owner increased the scope of work for the Utilities consisting of Telecommunications/Duct Bank and additional water/sewer main work.

**Brief Project Description:**

The project consisted of a new two-span bridge over Lake Linganore and approximately 820' of approach roadway reconstruction. The new bridge was constructed on a new alignment. The project included construction of new roadway embankments and anchored/cantilever bulkheads within the lake, drainage improvements, utility relocation, removal of the existing bridge, storm water management, erosion and sediment control, maintenance of traffic, roadway lighting, shoring and associated work. This superstructure consisted of prestressed concrete beam superstructure with a reinforced concrete deck, sidewalks, and parapets with a form liner finish. The project also included ornamental fencing, HMA approach roadways, sidewalks, curbs and gutters, F-shape barrier, pavement markings, driveway tie-ins, roadside ditches, inlets, pipes, manholes and outfalls for storm water collection and conveyance, stormwater management facility, onsite wetland mitigation, relocation of existing sanitary sewer force main and water main.

**Relevancy:** Replaced structurally deficient bridge, environmental sensitivity and permitting, coordination with third parties, design coordination, roadway approach work, maintenance of traffic alternating both directions, utility relocations along the approach and across the bridge, facilitated a collaborative partnership with FCG, MDOT SHA, and local stakeholders, limited work space, support of excavation for phased construction, aesthetic treatments, minimized environmental impact, stormwater management, maintain safe pedestrian and local resident access, minimized inconvenience and impacts to the traveling public, provided safe and efficient maintenance of traffic, minimized construction cost within current budget, minimized project delivery time, provided temporary tie-ins to side streets and driveways during phased construction, and construction activities minimized.

**Discussion of what work, including any successful methods, approaches and innovations, on the project is relevant to this contract and why:**

For this replacement of a structurally deficient bridge, the project required significant support of excavation due to the existing vertical profile being raised. The roadway tie-ins were constructed within a short distance



minimizing overall project costs and impacts but resulting in tight working conditions. Support of excavation, consisting of temporary wire walls, was required during Phase 2. **Why Relevant?** Similar support of excavation and phased construction issues are to be expected on the Putty Hill project.

A 16" diameter, fully-insulated watermain was installed under the new bridge along with an extensive duct bank system for telecommunications/electric/fiber optic. Work was performed within narrow utility corridor to minimize environmental impacts. **Why Relevant?** Similar utilities are expected on the Putty Hill bridge and approaches.

Maintenance of traffic was required throughout the project as detour routes for emergency providers and school buses were not feasible. Stage 2 and 3 construction duration was limited to 40 working days and required the use of temporary traffic signals to provide for one-way traffic through the work area. Two-way traffic was maintained during the other stages of the project except for the final tie-ins which were constructed with either temporary signalization or flagging operations. **Why Relevant?** Similar traffic issues are to be expected on the Putty Hill project.

CGI worked with multiple stakeholders for this project, including MDOT SHA, MDE, Frederick County, Homeowner Associations and residents of Lake Linganore. CGI team members participated in public meetings and provided updates on upcoming construction activities and information for use with in notifications to stakeholders. **Why Relevant?** Similar stakeholder and public engagement is expected on the Putty Hill project.

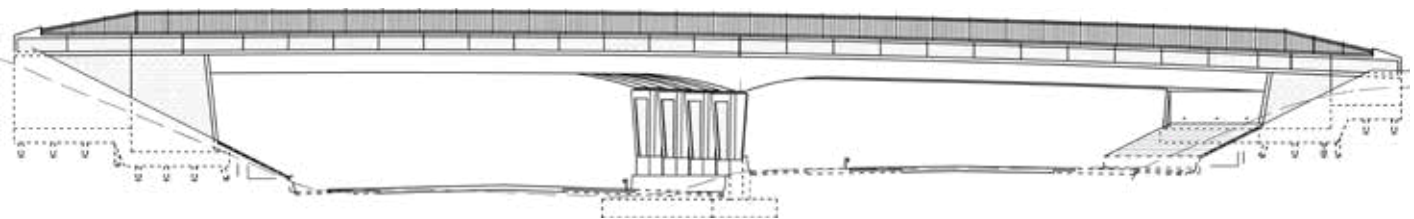
A differing site condition was encountered during the construction of the permanent bulkheads for the bridge abutments. The permanent bulkheads were originally designed to be located within the limits of Lake Linganore, an extremely, environmentally-sensitive area as the lake is a water source/reservoir for Frederick County. Rock was higher than anticipated and required re-design of the permanent bulkheads. CGI engaged the services of a 3<sup>rd</sup> party engineer/design firm to develop alternate bulkhead designs which were reviewed in collaboration with Frederick County DPW. The final re-design resulted in lowered costs than the original estimated bulkhead design and minimized impacts to the duration of the construction. **Why Relevant?** Experienced Key Staff performing constructability reviews with designers to save time and money similar to CMAR process being used on the Putty Hill project.

The structural members for the new bridge are the largest precast concrete beams used on a Maryland bridge. The limited work area did not allow for a normal structural member erection process. CGI worked with its 3<sup>rd</sup> party erection designer and crane subcontractor to develop a method utilizing skid beams to launch the beams and set into place. The erection method required one crane located on work barges on the lake being assisted by a second crane on the opposite shore from the launching side. Even delivery of the precast concrete beams required an extensive, collaborative plan with MDOT MVA, Frederick County and the local residents as the only access to the project was from narrow secondary roadways. **Why Relevant?** A detailed structural steel erection plan will have to be developed as limited work space is expected on the Putty Hill project.



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## **B. Capability of the Proposer**

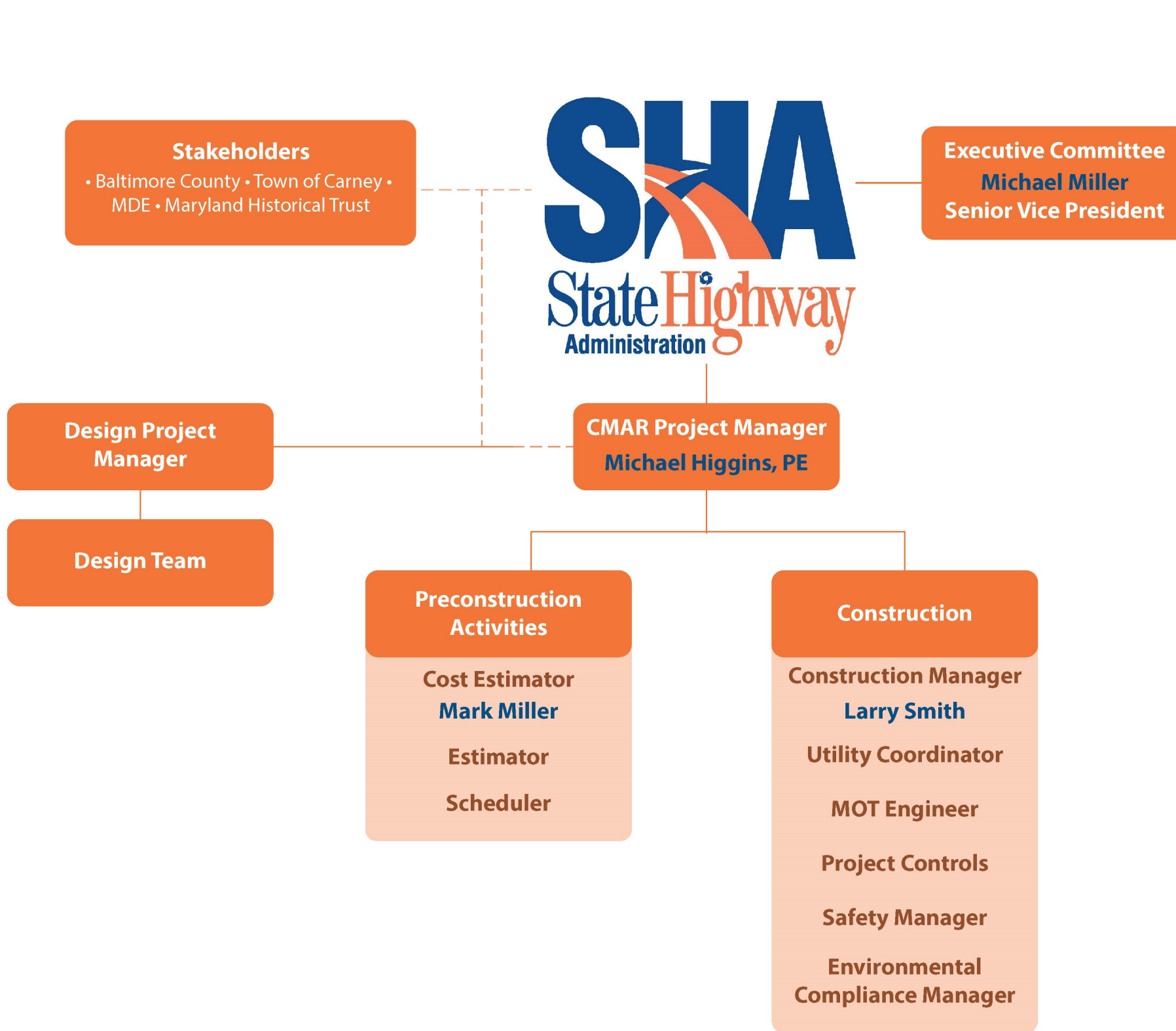


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**Construction Manager At-Risk (CMAR)**

**Bridge Replacement Steel Girder Bridge No. 0317400**

**On Putty Hill Avenue Over I-695 Baltimore County**



Number of Hours Per Week Key Staff will be Dedicated to this Project:	
Michael Higgins, PE	20 hours
Mark Miller	30 hours
Larry Smith	20 hours

**Concrete General, Inc.** integrates the participation of the team’s construction and design entities and facilitates the concept of joint involvement by providing construction expertise during preconstruction. This integration joint involvement starts with CGI **Senior Vice President Michael Miller** who will facilitate corporate management oversight to the entire management team.

CGI **Project Manager Michael Higgins** will have overall supervisory responsibility for compliance with all project requirements, as well as overall project management and contract administration. Mike will ensure the team is fully integrated to provide a cost effective, environmentally friendly and high-quality project to a successful completion on time and within budget. Mike will consistently report project progress to MDOT SHA, designer and the CGI Executive Committee. Mike has an exceptional history of providing innovative solutions to complex problems.

CGI **Construction Manager Larry Smith** will support Mike on the preconstruction and construction side. Larry will report to Mike and Mark Miller, the Cost Estimator, and will be responsible for providing his expertise during preconstruction, including the project controls, environmental compliance, scheduling, on-site safety, subcontractors, utilities and MOT Managers. Larry’s emphasis will be to assist in reviewing all project drawings during the preconstruction phase and provide feedback on constructability and environmental issues. During the construction phase, Larry will schedule and coordinate all construction activities in conformance with the approved plans and, furthermore, ensure the RFP coordination activities are on or ahead of schedule. During preconstruction, Larry will confirm that all design elements are reviewed for constructability and consistency with construction scheduling and sequencing. Larry will also regularly coordinate with the preconstruction team during construction on project drawing reviews and to resolve field issues.

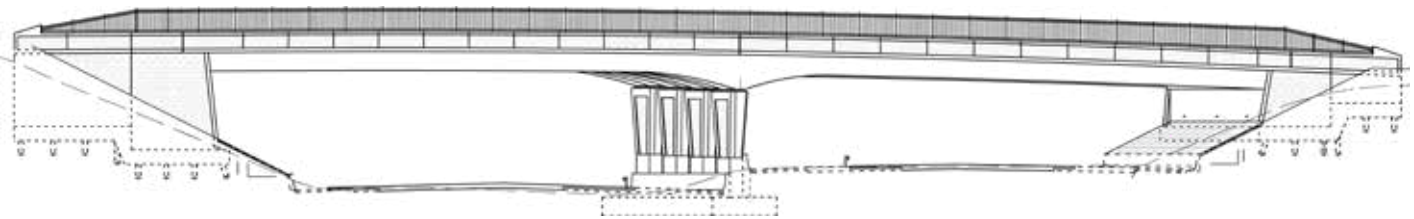
On the preconstruction and construction side, Mike will also be supported by **Cost Estimator Mark Miller**. Mark will report to Mike. Mark will be responsible for providing accurate pricing in conformance with the estimating model and cost estimates for all proposed construction alternatives. Mark is knowledgeable as to the availability of materials, labor and subcontractors in the region and state. Mark will assign resources, oversee design, coordinate schedules and develop corrective measures as needed as well as manage environmental compliance mitigation measures into the preconstruction review process. Mark will also work with the MDOT SHA to help determine, develop and document a contracting plan to meet the project goals on all construction phases including compliance with COMAR 21.05.10.05.





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GENERAL, INC.**

## **C. Project Approach**



Request for Proposals (RFP) Contract No. BA1455180

**Construction Manager At-Risk (CMAR)**

**Bridge Replacement Steel Girder Bridge No. 0317400**

**On Putty Hill Avenue Over I-695 Baltimore County**

## C. PROJECT APPROACH

### C.1. Preconstruction Approach

#### C.1.a. Collaboration

We understand the principles that the CMAR process is based on – collaboration, cooperation and trust between MDOT SHA, the Design Team and the Contractor. CGI's approach during preconstruction will mirror our approach in delivering successful design-build projects to MDOT SHA. We are not new to the Project type, Project area or the CMAR process itself and we understand what it takes to provide to MDOT SHA a successful roadway and bridge project. Our experience working with MDOT SHA on Bid-Build, Design-Build, Structure Repair, and Emergency Repair Projects gives us the insight to take a proactive approach to every step of the process, mitigating project issues and risks before they occur, to make sure we meet our commitments to MDOT SHA. Our plans to partner with MDOT SHA, the Design Team and Key Stakeholders will result in a project that balances the needs of all users with the environment it is affecting, will keep the project on schedule and will meet the project priorities and goals.

Concrete General, Inc.'s goal is to deliver a successful, *well-managed project*. We expect to include all of the CMAR Team along with Key Stakeholders in our normal work process, communications and meetings. We recognize the logistical factors involved in such a complicated endeavor, and we are experienced in creating and maintaining consistent communications through a variety of delivery methods thereby creating a collaborative environment.

Neither Design or Construction activities can occur independent of each other – and all issues are important to prepare for early on, in the Preconstruction Stage. There will be continual communication between MDOT SHA's representatives, the Design Team and CGI's Project Manager, Cost Estimator and the Construction Manager. Through weekly meetings with input from all discipline leads, a well-thought-out project plan and schedule will be developed that integrates the reasonable time-frame for all activities by the CMAR Team, to complete this project in the most efficient manner possible while meeting the requirements of the contract and the goals of the project. As needed telephone calls, email correspondence and video-conferencing will provide rapid responses to any items or issues that arise requiring immediate attention. Status of plans, outstanding issues and issue resolutions will be tracked and updated at the weekly meetings.

Our support of the Administration in involvement with stakeholders during the Preconstruction phase includes the following:

- Proactively identify stakeholders along with potential concerns
- Participate in any project stakeholder kick-off meeting and subsequent follow-up meetings
- Provide input to gain understanding of concerns and to establish relationships

Our experience tells us that it is imperative that stakeholders be: 1) proactively *educated* about the need for the project and the tasks that will be involved; 2) accurately *informed* about how the construction and completion of the project will impact their daily lives; and 3) given opportunities to *engage* in the process.

*All 3 of the Team's goals for stakeholders can be achieved through a variety of means:*

- Internet/website/social media notifications
- Hard copy flyers and info distributed throughout the project area
- Public meetings with in-person presentations and Q&A sessions
- Dissemination of the meeting notes and opportunities to comment

We will also support the Administration in meeting these additional goals for stakeholders.

We understand the impact that a construction project can have on a community and are committed to working with all stakeholders to minimize any impacts and deliver a successful project.

### **C.1.b. Design and Constructability Review**

CGI will use its knowledge from constructing more than 800 projects including many design-build projects and the challenges that have occurred on these projects to provide input from the contractor's perspective along with lessons-learned from our experiences to the CMAR Team. ***Our construction and design-build experience will help streamline the design process, reduce errors and omissions, improve constructability and quality, reduce the cost of construction to ensure it is within budget and optimize the project delivery schedule.***

CGI's approach to accomplishing these objectives on this project include:

- Identify key staff from MDOT SHA and the Design Team who will help lead the CMAR Team with CGI's key staff.
- Develop a strong CMAR Team comprised of SHA MDOT, Designer, Contractor representatives along with pertinent stakeholders such as permitting agencies and utility companies who are fully vested in the success of the project and bring discipline expertise to the CMAR Team.
- Utilize MDOT SHA/MdQI's Partnering Process with the entire CMAR Team and pertinent stakeholders to instill the values and attributes necessary for a successful project. These values and attributes include trust, teamwork, communication, motivation, empowerment and issue resolution.
- Engage the entire CMAR Team to develop best practices and a mutually-agreed upon set of processes and procedures to meet the project objectives.



- Implement weekly meetings with MDOT SHA and the Design Team to review design schedule and status of current designs for overall project design. These meetings will include all discipline leads from the Design Team in order to provide accurate, up-to-date information. These meetings will also provide a forum for coordination between different design areas to streamline the design process.
- Maintain open communication with all team members about projects risks and how they can be mitigated through risk sharing and/or design modifications.
- Communicate with CMAR Team members that their input is valued and they are encouraged to bring any possible issues or proposed solutions/improvements to the Team, as well as participate in “over-the-shoulder” meetings.

We will foster that same environment for all Project stakeholders – we are here to support each other in pursuit of the project goals.

### C.1.c. Risk Management

CGI’s Team will collaborate with the Project Team to develop a **risk management plan**, perform risk assessments, prepare a risk register and provide input on accelerated construction techniques and innovative cost savings. In addition to the key staff, our Environmental Compliance Manager, MOT Manager and Utility Coordinator, Project Controls and Safety Manager will assist the CMAR Team **to develop and evaluate innovative, alternative designs, systems and materials.**

*With facilities located close to the project site, CGI is the local contractor who - day after day - gives SHA the low bid and best quality with its experienced workforce.*

Through this method of contract delivery, construction quality and completeness of the design should improve and impact to the schedule and budget should be minimized. CGI will use its experience and work side by side with MDOT SHA and the Designer to analyze costs and review plans for constructability and environmental issues and share the information. Through review of the plans and constructability our team members will be able to provide CGI’s Cost Estimator, Mr. Mark Miller, with information needed to determine and report risk mitigation. Mr. Miller will also track the cost impacts of each design review. CGI will also share assumptions with the CMAR Team during the preconstruction phase of assumptions that a contractor would normally make if they were contracted to do the work in a bid-build procurement. The advantage MDOT SHA gains is the benefit of having the opportunity to incorporate a contractor’s perspective and input to planning and design decisions. Additionally, we will have the ability to “fast-track” early components of construction prior to full completion of design.

The same model is used to track and report innovative savings. CGI will work alongside MDOT SHA and the Designer to collaborate on innovative ideas to save money and time on this critical project. The innovative solutions with the most impact on the project will be to find alternative ways to construct portions of the project sooner, use of alternative materials, and review alternative phasing options to save time which leads to saving money. The CMAR collaborative

project delivery method allows for outstanding team innovations, saving the project time and money and adding value to the project.

CGI has proven experience with MDOT SHA of providing favorable cost solutions from its team through communication, coordination and collaboration. More than 80 percent of work performed each year by CGI is contracted with MDOT SHA. We have performed both Bid-Build and Design-Build projects with MDOT SHA along with performing emergency repair projects when the situation is warranted and MDOT SHA needs an experienced contractor onsite quickly who can deliver a quality solution in an expedient manner. CGI is the local contractor who - day after day - gives SHA the low bid and best quality with its experienced workforce. CGI is headquartered in Gaithersburg, MD, and has other facilities located close to this project.

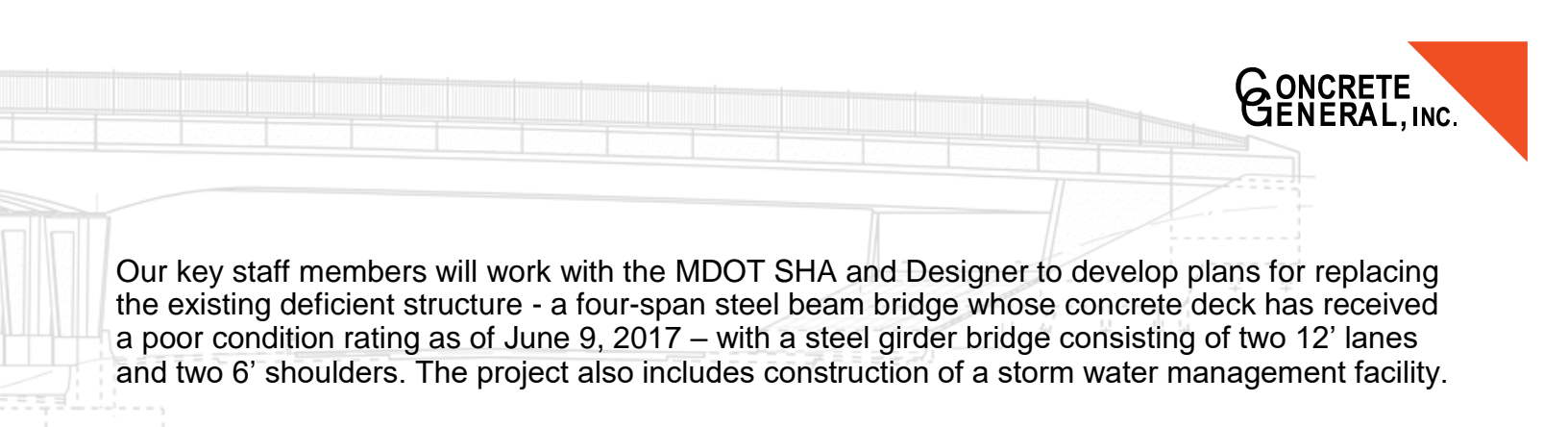
Mark Miller will provide cost estimates of the alternatives to be evaluated that shall include industry standard operating and maintenance costs when appropriate to evaluate life-cycle costs of the alternatives. CGI will develop the OPCC on the design prepared by the Designer at the completion of any agreed upon Milestone.

CGI key staff will evaluate the alternatives on the basis of costs, construction schedules, availability of labor, equipment, and materials, and construction feasibility in the form of constructability reports. They will prepare written procurement reviews for materials that could be procured by MDOT SHA or CGI ahead of any construction phase, prepare written reports at the end of any design milestone summarizing the value analysis activities accomplished and any recommendations developed within each phase.

If the OPCCs and/or prices received for the work contained in any work package cause the anticipated cost of the work to exceed the then current OPCC, any LLTP GMP, or any construction GMP, CGI will at no additional cost to the administration, unless caused by an increase in CGI's work requested by the administration, provide additional value analysis services in conjunction with any and all appropriate items in the OPCC, any LLTP GMP, or any construction GMP for the work.

CGI key staff will lead value analysis workshop(s) at agreed-upon Milestones to coordinate estimating tasks, bring multidiscipline cost/construction experts to evaluate alternative designs, systems and materials. This work includes the submittal and ongoing evaluation of the value analysis proposal. They will collaborate with the project team to develop an innovative tracking and performance report and coordinate with MDOT SHA and the designer throughout the preconstruction phase through a combination of on-site meetings, design meetings, conference calls and workshops.

This CGI Team, headed by Michael Higgins, Larry Smith and Mark Miller, will work together during the preconstruction and construction phases and will work collaboratively with both MDOT SHA and the Designer in a partnership that does all things possible to achieve the stated project goals in the project development and during the construction phase.



Our key staff members will work with the MDOT SHA and Designer to develop plans for replacing the existing deficient structure - a four-span steel beam bridge whose concrete deck has received a poor condition rating as of June 9, 2017 – with a steel girder bridge consisting of two 12' lanes and two 6' shoulders. The project also includes construction of a storm water management facility.

We will provide input during the design phase in order to provide a package that has minimal impacts to the physical environment and is aesthetically pleasing and context sensitive. We will provide our experience as a seasoned contractor to ensure that the designed project is constructible and can be built on time and on budget. We will work with the partnership to ensure that the designed work will minimize inconvenience and impacts to the travelling public and adjacent property owners and provide MDOT SHA with the best cost estimate.

Additional savings can be achieved by communication with the subcontractors and suppliers early on in the preconstruction phase. The CMAR process allows separable construction and early procurement for materials prior to completion of the design. Early on planning with subcontractors and suppliers would be beneficial because they would thoroughly understand the project, be better prepared, and overall give a competitive price and better schedule.

Some examples of potential savings include adjusting earthwork grades to minimize expensive waste excavation and borrow excavation. If the cut and fills can be balanced, then there is a cost reduction to the overall project.

CGI has performed work on many contracts within this area of the project. Historically, soils in the area have not provided a good subgrade. The CMAR Team will consider the need for subgrade soil stabilization for time savings, quality improvement and costs savings from a subsequent pavement section reduction. Besides addressing the risk for possible poor subgrade, soil stabilization should also minimize schedule delays due to weather or excessive undercut and refill.

The above potential risk areas and mitigation techniques are included in the table beginning on the following page, along with other relevant risks, impacts and mitigation strategy:



Risk or Innovation Description	Probable Cost Savings of Risk Mitigation	Probability of Occurrence	Cost Savings to Project (Probable Cost saving versus Probability of Occurrence)	Schedule Impacts to Project (Days)	Summary of Implementation or Mitigation/ Elimination plan
Encountering Wet or Unsuitable Materials Under Roadway	\$50,000.00	50%	\$25,000.00	30 Days	<ul style="list-style-type: none"> <li>- Perform geotechnical investigation during preconstruction to identify materials types and properties</li> <li>- Develop economical subgrade stabilization methods</li> </ul>
Excess Earthwork or Borrow Requirements	\$75,000.00	100%	\$75,000.00	60 days	<ul style="list-style-type: none"> <li>-Evaluate cut/fill quantities and locations</li> <li>-Adjust grades to minimize surplus cuts or borrow requirements</li> </ul>
Delays in Utility Relocation by Others	\$60,000.00	50%	\$30,000.00	180 Days	<ul style="list-style-type: none"> <li>- Conduct thorough utility investigation early in preconstruction</li> <li>- Begin working through design and permitting with utilities early in preconstruction</li> <li>- Have utility relocations performed or started prior to the start of construction</li> </ul>

Risk or Innovation Description	Probable Cost Savings of Risk Mitigation	Probability of Occurrence	Cost Savings to Project (Probable Cost saving versus Probability of Occurrence)	Schedule Impacts to Project (Days)	Summary of Implementation or Mitigation/ Elimination plan
Adverse Weather	\$50,000.00	20%	\$10,000.00	45 Days	<ul style="list-style-type: none"> <li>- Perform Approach work March-October</li> <li>- Asphalt paving April-September</li> <li>- Make Deck Pours March-October</li> </ul>
Delayed Permits	\$100,000.00	25%	\$25,000.00	90 Days	<ul style="list-style-type: none"> <li>- Begin Permitting process early in Preconstruction</li> <li>- Track Permitting progress in detailed Preconstruction Schedule</li> <li>- Utilize past experience to accelerate approvals</li> </ul>
Property Owner ROW Delays	\$50,000.00	50%	\$25,000.00	90 Days	<ul style="list-style-type: none"> <li>- Perform public outreach during preconstruction to meet with residents</li> <li>- Develop ROW matrix during preconstruction and track on weekly basis</li> <li>- Hold targeting ROW meetings to expedite purchase</li> </ul>

Risk or Innovation Description	Probable Cost Savings of Risk Mitigation	Probability of Occurrence	Cost Savings to Project (Probable Cost saving versus Probability of Occurrence)	Schedule Impacts to Project (Days)	Summary of Implementation or Mitigation/ Elimination plan
Design Coordination with Stakeholders	\$150,000.00	25%	\$37,500.00	180 Days	Actively engage stakeholders at Kickoff Meetings and Progress Meetings; Encourage stakeholders to participate in over-the-shoulder reviews of the Preconstruction Design Development.
Maintenance of Traffic within Limited Work Area	\$120,000.00	75%	\$90,000.00	180 Days	- Adjust Bridge Phasing/Design to accommodate 2-way traffic during construction
Utility Relocation for Baltimore County's Water Main	\$200,000.00	15%	\$30,000.00	90 Days	- Engage utility companies in the design process - Utilize the same utility coordinator during design and construction
Utility Relocation for BGE Gas Line	\$150,000.00	90%	\$135,000.00	270 Days	- Involve BGE's contractor early in preconstruction through construction. Ensure resource availability from contractor and get schedule confirmation



Risk or Innovation Description	Probable Cost Savings of Risk Mitigation	Probability of Occurrence	Cost Savings to Project (Probable Cost saving versus Probability of Occurrence)	Schedule Impacts to Project (Days)	Summary of Implementation or Mitigation/ Elimination plan
Geotechnical Concerns – Foundation Bearing	\$300,000.00	25%	\$75,000.00	90 Days	- Work to ensure that the most cost effective and efficient solution is determined for the foundations
Storm Water Management and E&S Design Creep	\$100,000.00	40%	\$40,000.00	60 Days	- Our team will work closely together during constructability reviews to optimize designs to meet requirements and keep costs under control.
Temporary Support for Piers during Phased Demo	\$50,000.00	25%	\$12,500.00	30 Days	- Consider alternative designs
Sequencing of Deck Pours	\$50,000.00	90%	\$45,000.00	45 Days	- Increase size of deck pours utilizing multiple crews
Pier Falsework	\$150,000.00	75%	\$112,000.00	45 Days	- Design pier falsework to the same dimensions. Make adjustments to height in the footer. This will allow reuse of the pier forms.
Deflection of the Bridge Beams - Closure Pour	\$50,000.00	50%	\$25,000.00	14 Days	- Coordinate with design to allow bridge elements to deflect and avoid closure pour
Beam Splice Configuration	\$100,000.00	75%	\$75,000.00	30 Days	- Coordinate design with most efficient crane placement



### C.1.d. Proposed Technical Concepts

CGI has already begun researching **innovative ideas and technical concepts** that could increase the likelihood of success and help balance the project goals. These ideas and concepts are described below, including how they may further improve reaching project goals including **impacts on time, cost, and quality**.

#### 1. Architectural Finish

- Benefits
  - Locate construction joints to reduce cutting form liner. This reduces cost by requiring less form liner and reusing the form liner for multiple pours.
- Challenge
  - May increase the number of pours.
- Impact on Time/Cost/Quality
  - Savings of \$20,000 and reduction of construction time.

#### 2. Construct Support of Excavation for Abutment Phasing with Soldier Pile & Lagging

- Benefits
  - The same SOE can be utilized for both phases.
- Challenge
  - May have to be installed very close to moving traffic.
- Impact on Time/Cost/Quality
  - Savings of \$100,000 and reduction of construction time and cost of additional shoring for 2<sup>nd</sup> phase.

#### 3. Deck Pour Sequencing

- Benefits
  - Reduce the number of deck pours by making larger pours.
- Challenge
  - May increase the number of personnel required.
- Impact on Time/Cost/Quality
  - Savings of \$50,000 and reduction of construction time.

#### 4. Consistency with Substructure Falsework

- Benefits
  - Adjust pier heights to be similar heights, widths and lengths.
- Challenge
  - May increase quantity of concrete and reinforcing steel.
- Impact on Time/Cost/Quality

- Savings of \$200,000 and reduction of construction time by allowing the forms to be reused with minimal adjustments.

#### **5. Add Temporary Concrete Retaining Wall on Footer Behind Substructure**

- Benefits
  - Allows Support of Excavation to be matched right against the wall.
- Challenge
  - May increase construction time and material cost.
- Impact on Time/Cost/Quality
  - Savings of \$20,000 and reduction of construction time with SOE.

#### **6. Use of Alternate Traffic Pattern for Maintenance of Traffic**

- Benefits
  - Minimize duration of impacts to traveling public for both vehicular and pedestrian traffic.
- Challenge
  - May increase construction costs and material costs.
- Impact on Time/Cost/Quality
  - May increase costs.

#### **7. Use of Cold Weather Heaters to Allow for both Placement of Concrete and Fill**

- Benefits
  - Decrease construction durations.
- Challenge
  - May increase construction costs.
- Impact on Time/Cost/Quality
  - May increase construction costs.

#### **8. Use of Non-Explosive Materials for Demolition of Existing Concrete and Potential Rock Excavation**

- Benefits
  - Decrease impacts to traveling public and adjacent businesses and residents.
- Challenge
  - May increase construction costs.
- Impact on Time/Cost/Quality
  - May increase construction costs.

#### **9. Use Weathering Steel Girders In lieu of Steel Plate Girder/Painting**

- Benefits
  - Reduction of construction time.
- Challenge
  - May increase construction costs.

- Impact on Time/Cost/Quality
  - Savings in construction time.

## 10. Concrete Wall Pours for Copings

- Benefit
  - Use nominal lumber sizes – stock lumber. This reduces construction time of building the forms.
- Challenge
  - None.
- Impact on Time/Cost/Quality
  - Savings of \$50,000 and reduction of construction time.

## CGI Brings Proven Experience to Preconstruction and Construction Services

CGI has proven experience working on fast-paced projects and minimizing physical and environmental impacts. On the I-70 over Conococheague Creek Bridge No. 21106 Widening and Deck Replacement, Washington County, MD – CGI engaged the services of a 3<sup>rd</sup> party designer after award of this bid-build procurement project to develop and implement a revised construction sequence for the construction of the pier extensions within Conococheague Creek. Working collaboratively, CGI and our designer determined that constructing the pier extensions in a reverse order while using concrete block diversion structures to support the required temporary construction bridge/platform crossing Conococheague Creek, the physical impacts could be reduced while the time required within the creek could be reduced significantly.

*Mr. Freedman said his "... office has experienced many emergency situations and reacted accordingly; however, we have never had an equal or better participation, cooperation and complete commitment to a project as exhibited by all those involved. This was a perfect example of how issues such as this should be and can be handled."*

CGI and our designer worked with MDOT SHA's OOS and EPD to obtain approval of the revised sequence and approval of a Joint Permit Modification, while not delaying the construction schedule. This re-sequencing and innovative design approach resulted in significantly less temporary construction impacts since the temporary construction bridge/platform crossing needed for pier construction was in the waterway for a much shorter duration and their physical impacts were minimized. This minimized potential environmental impacts on the stream.

On this same I-70 over Conococheague Creek Bridge project, CGI encountered unforeseen site conditions of instream work. In the fall of 2012, the Office of Structures was faced with an emergency field problem that required the resources of numerous individuals within and outside MDOT SHA. It was during the widening of the existing dual bridges on I-70 over Conococheague Creek that two of the six existing pier footings were found to have extensive cracks with one of the footings appearing to have completely failed. Considering the critical nature of the situation, and



the fact that I-70 acts as a primary artery through Maryland carrying more than 50,000 vehicles per day, many of them being trucks, it was crucial to act in an expeditious manner to address the situation and ensure the safety of the traveling public.

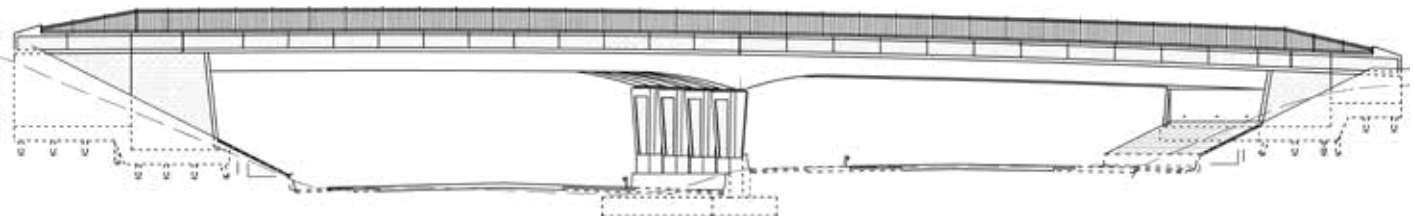
Immediately, meetings were held with representatives from the Office of Structures, District 6 Construction, a Bridge Design Consultant and CGI. It was through these initial meetings, and the positive can-do attitude that everyone brought to the table, that we were able to develop a proactive solution to the situation that not only involved reinforcing the existing piers on a temporary basis but also to develop and implement a long term permanent solution.

Throughout the winter CGI and MDOT SHA persevered to move the construction forward to underpin and reinforce the pier footings. Not only did CGI work long days, nights and weekends, they endured the rigors of working through the winter within the waters of Conococheague Creek. These waters would often rise as the result of rainfall upstream and require the work platforms and diversion to be removed from the creek until the water levels go down. CGI adapted to the difficult changes and was able to accomplish and still complete the project on time with 2 million dollars of emergency work added by MDOT SHA.

A Certificate of Appreciation was awarded to CGI for this I-70 over Conococheague Bridge Project in 2013 by Earle S. Freedman, Director Office of Structures for MDOT SHA. Mr. Freedman said his "... office has experienced many emergency situations and reacted accordingly; however, we have never had an equal or better participation, cooperation and complete commitment to a project as exhibited by all those involved. This was a perfect example of how issues such as this should be and can be handled."

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## C. Project Approach



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**Bridge Replacement Steel Girder Bridge No. 0317400**

**On Putty Hill Avenue Over I-695 Baltimore County**

## C. PROJECT APPROACH

### C.2. Construction Approach

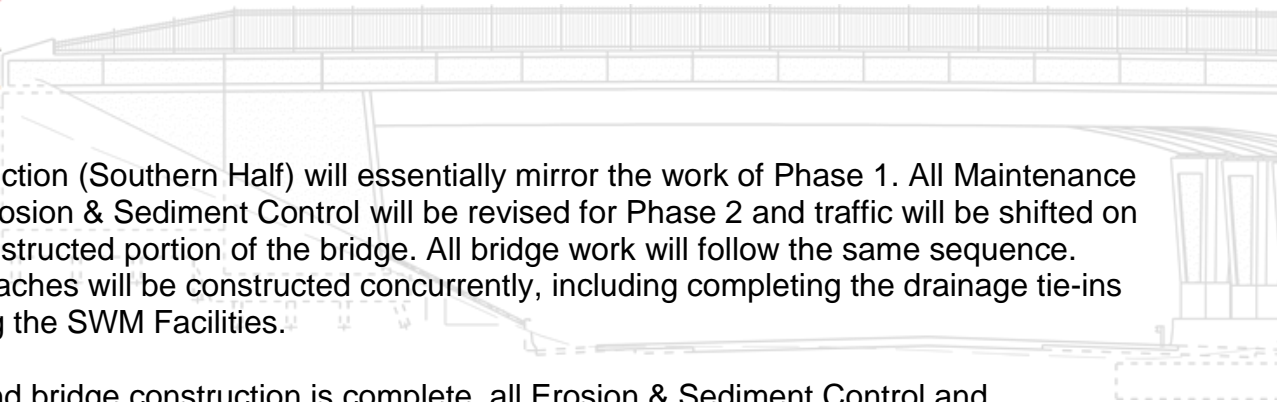
#### C.2.a. Construction Sequencing

CGI's construction sequencing includes a comprehensive overview of the construction activities required from notice to proceed through completion, including major milestones and critical schedule dates, such as the Administration's Summer 2019 target construction start date. These construction activities will include, but not be limited to, maintenance of traffic, utility relocation and staging, construction phasing, and will be based on the information provided in the independent work packages. Our schedule will be formatted to outline milestones and construction tasks for the entire project.

After reviewing the Concept Plans and scope of work, it is likely that this contract will require two main phases or stages of construction to maintain traffic and to complete the work within the time frame. Enhancements can be made to further improve the plan, but we feel that by focusing on the following elements we can determine the best approach for construction. These elements include: long-lead third party utility relocations, potential weather impact days during the different seasons, minimizing impacts to the local community and traveling public as well as limiting the locations of disturbance at any given time. Construction Work Packages may be broken out to allow for phased approvals. This will accelerate overall plan development and allow us to begin work earlier on different packages. As an example, Construction Work Packages could be separated as follows; Roadway/Drainage(Approaches), Bridge, E&S/SWM, and MOT. Developing the plans in this manner will preclude packages from holding each other up. For instance, bridge construction could begin following Bridge, E&S, and MOT plan approvals, prior to completion of the Roadway package.

Phase 1 will involve the Northern Half of Putty Hill Avenue. Following installation of erosion control measures, the house may need to be demolished to establish a staging area. Concurrently, we will establish Maintenance of Traffic signs/devices and markings and signals to shift traffic into a single alternating lane across the bridge using a temporary traffic signal. Lagging and demo protection shields under the bridge can begin installation while traffic is being shifted. Following the traffic switch, we will install temporary concrete barrier with protective shields. Barrier will also be set along I-695 in the median to create a safe access and working area around the piers.

Next, we will install the Temporary Support on existing Pier 2 Cap. Once this is approved, we will begin demo on the north side of the bridge deck. Simultaneously, we will begin installing shoring at the abutments. After the deck has been demolished we can remove the existing beams and begin demo on the pier and abutments. Following demolition, construction can begin on the bridge. We will begin installing the new abutments and pier, followed by beams, deck and parapet. Once the beams have been set, the relocation of water main and gas line can be completed. Separate from the bridge construction, we will have separate crews working on the approaches. These approach crews will complete work up to and within 50' of the bridge and make the final roadway tie-ins once the bridge is complete.



Phase 2 construction (Southern Half) will essentially mirror the work of Phase 1. All Maintenance of Traffic and Erosion & Sediment Control will be revised for Phase 2 and traffic will be shifted on to the newly constructed portion of the bridge. All bridge work will follow the same sequence. Roadway approaches will be constructed concurrently, including completing the drainage tie-ins and constructing the SWM Facilities.

Once all road and bridge construction is complete, all Erosion & Sediment Control and Maintenance of Traffic will be removed and the final configuration will be established.

**C.2.b. Construction Schedule**

Our schedule has been developed based on the conceptual plans. We have concerns about the volume of traffic observed during our field visits, and how well that can be mitigated with a one lane signal setup over the bridge. There may be other traffic options to consider such as a detour and accelerating bridge construction with a full shut down after comparing the pros and cons.

Regarding weather, we will have limitations during the winter with pouring concrete along with the final surface course for the asphalt pavement. To mitigate impacts to placing concrete in the winter months, piers and abutments can be heated. It will be more difficult to properly heat the bridge deck since it is over another roadway.

**Timeline for Replacement of Steel Girder Bridge  
Putty Hill Ave. over I-695**



**C.2.c. Stakeholder Coordination**

Coordination and communication between MDOT SHA, CGI, Designer, resource agencies, utility companies and other project stakeholders (Baltimore County, Town of Carney, MDE, MD Historical Trust) are critical to the overall success of the project. Partnering as promoted by MDOT SHA will be utilized as the framework for ongoing coordination and communication. The CGI team is committed to working as an integrated team with the MDOT SHA, Designer and project stakeholders to successfully deliver an award-winning transportation project. All key staff and key support staff of the CGI preconstruction and construction teams will actively participate with MDOT SHA and project stakeholders in an initial Partnering workshop and frequent Partnering meetings.



The CGI team's mission is to develop, initiate and promote partnering which offers opportunities to improve communication, provide structured issue resolution and timely follow-up. This Partnering is a process based on trust and open, honest communication in which all participants in the project recognize both common and individual objectives, and work to achieve those objectives through improved communication and cooperation. Partnering will create a multi-participant team in which all members are committed to a common purpose, goals, and work approach for which they hold themselves mutually accountable. Shared responsibility means fulfilling commitments to the team and ensuring the success of all members of the team. This approach will allow for the fact that team members share many common goals yet have differing authorities, interests and objectives that must be accommodated.

There are several Partnering values and attributes of the way the CGI Team conducts business. As a Partnering team member, our mission is to instill **trust, teamwork, communication, motivation, empowerment and issue resolution** into the project, and to identify and overcome any barriers that interfere with successful completion of the project. Working together, we will have clear objectives of what we want to accomplish by using the partnering process throughout the life of the project. Team members will play an important role in the partnering process. They will help with issue resolution and decision-making, offer encouragement, attend meetings, provide input for meeting agendas and work on completing assigned tasks on time.

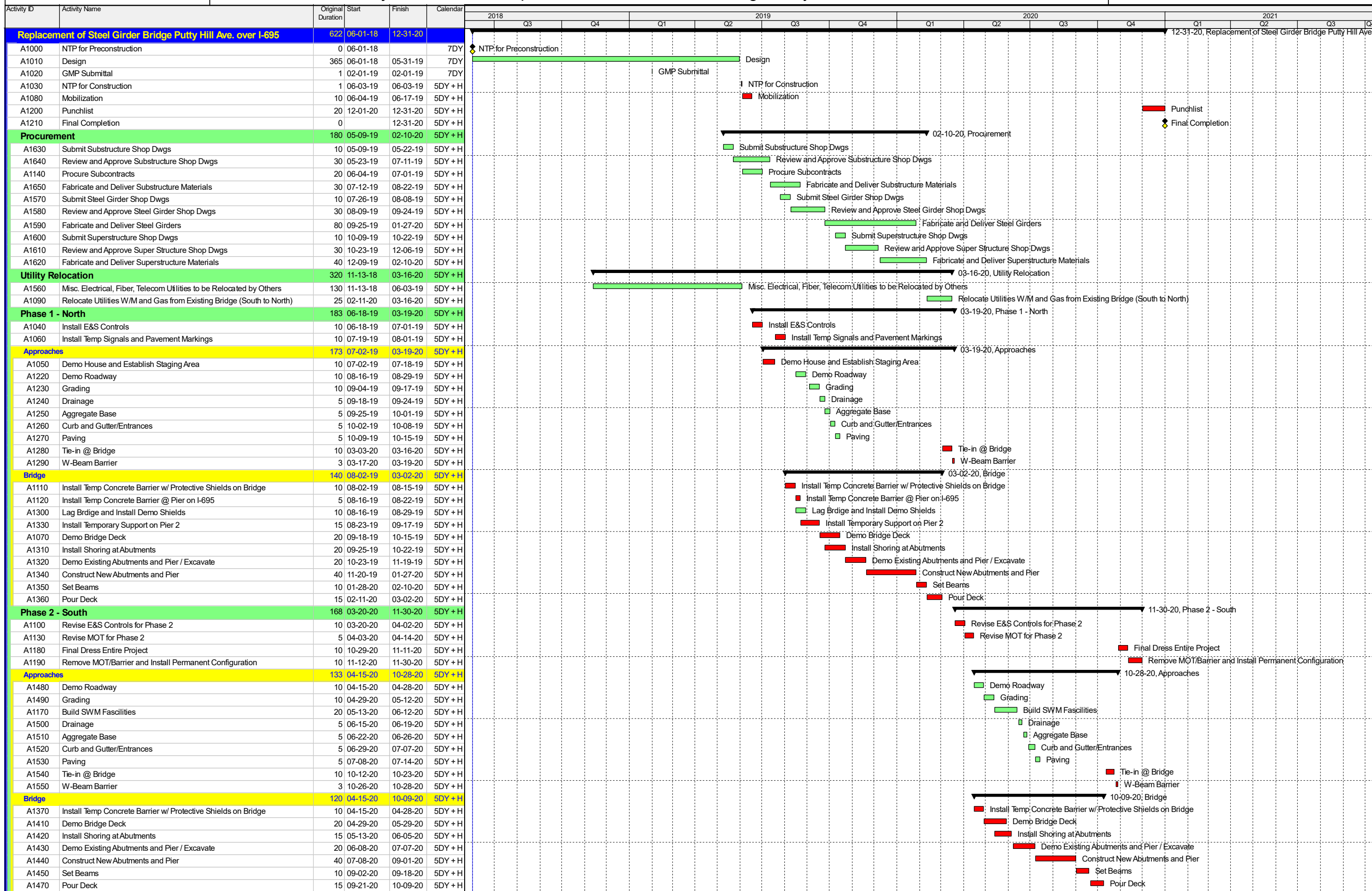
Our Construction Manager will provide timely schedule updates that will keep stakeholders informed about construction progress. Any and all unanticipated conditions encountered during the construction phase will immediately be incorporated into the schedule to indicate if they result in any time impacts.

Typical critical elements on any project are utilities, maintenance of traffic, environmental permitting, approvals and compliance. To ensure coordination between design and construction on these critical items, we have assigned key personnel to manage and coordinate these elements. Our Utilities Coordinator will work directly with utility owner representatives (BGE, Baltimore County, SHA Electric, Verizon, CATV), MDOT SHA, Designer and construction staff to ensure all utilities are identified, impacts minimized, and necessary relocations coordinated and effectively scheduled/sequenced.

Our Public Relations Coordinator will help to coordinate meetings with local stakeholders' groups, adjacent property owners and the public as well as participate with MDOT SHA, the designer, and other key staff in the stakeholders' outreach program. This will include meetings with environmental agencies, local stakeholders' groups, adjacent property owners and utility companies.

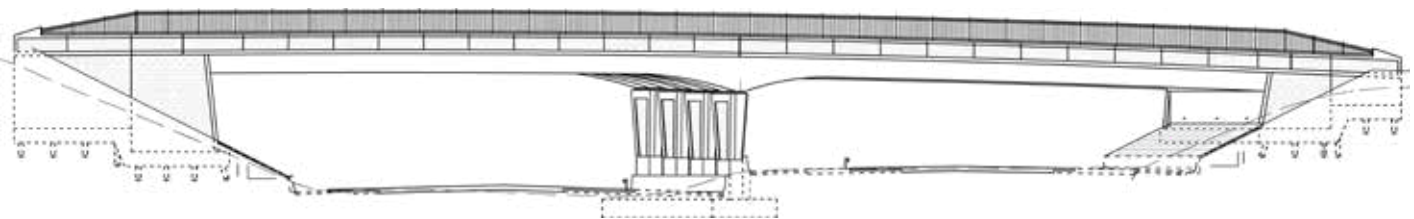
The success of any project relies on close collaboration, coordination and communication between all team members to ensure that the project moves forward efficiently. Our management team has a proven track record of successfully completing quality projects safely, on-time, and within budget. This starts with our construction and design team members working closely and interactively during the development of construction phase through involvement in design decisions and cost estimate input.

We will work with MDOT SHA, the Designer and the entire CMAR Team in developing design and construction solutions to deliver a successful project.



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## D. Approach to Cost Estimating



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## D. APPROACH TO COST ESTIMATING

### D.1. Estimating Environment

CGI's approach to providing an open and transparent estimating environment, one that will assure MDOT SHA is receiving a fair price for the project, starts with forming a partnership with MDOT SHA and the Designer to develop the CMAR Team. The goals for this partnership are to replace a structurally deficient bridge, minimize construction time and costs, minimize impacts to the environment, and minimize inconvenience and impacts to the traveling public. Our experience and expertise will help reduce errors in design, maximize the achievement of project goals, improve the overall constructability of the project and support the CMAR process.

*This partnership will include open communication with all team members about project risks and how they can be mitigated through risk sharing and/or design modifications. This partnership and open exchange of information will help the SHA decide which suggestions to use.*

CGI's Cost Estimator, Mark Miller, will manage the overall estimating program to include providing construction cost models, construction quantities and cost estimates, value analyses and cost savings reviews. The CMAR process outlined in the RFP document is similar to the current process that is being utilized on our I-270 Innovative Congestion Management (ICM) Progressive Design Build Project. Mr. Miller is serving in a similar role on that project. CGI intends to follow the CMAR process as outlined in the RFP document during both preconstruction and construction phases. We also plan to utilize the early procurement process for long lead-time materials, such as the structural steel members, to better manage project risks like the potential steel cost escalation.

CGI's approach to an open and transparent estimating environment begins with initial meetings with MDOT SHA representatives and the ICE preparer to agree to the rules of engagement during the CMAR process. We would anticipate this discussion to include the sharing of information for plans, design, quantities and cost estimates, the format for the presentation for activities and quantities of work, labor and equipment rates being utilized for the project, subcontractor and vendor quotes, etc. This approach is being successfully utilized during negotiations with MDOT SHA and their ICE representatives on the I-270 ICM Project.

Mr. Miller will work with CMAR Team members to provide accurate scoping and pricing in conformance with the estimating model and defined scope of work. CGI uses the B2W software estimating program to develop cost estimates for its projects. Our approach will be to use B2W to develop cost estimates for this CMAR Project.

During Preconstruction, Mr. Miller will oversee CGI staff providing the initial project construction schedule to ensure the cost estimates are reflected accurately in the construction schedules. We expect design changes to occur frequently during this phase and will incorporate updates from design changes on both cost and schedule using information provided by the CMAR Team. This process will allow the **greatest possible choices and application of cost saving measure throughout the duration of the Project.**



- An initial cost model will be agreed upon during preconstruction to establish an initial OPCC.
- Throughout preconstruction all costs will be tracked and estimates changed regularly, to reflect quantity changes, changes in material costs, etc.
- Adjustment of the current OPCC will be evaluated at regular, frequent intervals to allow the creation of an updated OPCC for the next Milestone.
- Adjustments will be consistently and continually made from early in the process throughout construction; allowing the greatest possible choice and application of cost saving measures throughout the duration of the Project.

As part of the overall estimate development, our approach includes a mutually-agreed upon scope of work to accomplish the phase of the contract. The scope of work would be developed from the most current plans and specifications. Both parties will agree that the scope of work is clear and unambiguous. CGI will prepare items of work and quantities based on our takeoff and then share with MDOT SHA. Then, CGI will provide a price based on the estimating model and the most recent OPCC for the agreed-upon scope of work. Additional factors to be considered will include DBE participation opportunities in accordance with MDOT SHA set DBE goals. CGI will then submit a price to the Administration.

If the price is not acceptable we will enter into a process of risk identification that identifies price differences between our cost estimate and MDOT SHA Independent Cost Estimate. Following the resolution of the risk issues, the work will be re-priced to reach an agreed upon price.

"Best Value" Cost Estimates and Time Impacts: In CGI's GMP and Design-Build projects, we have provided experienced preconstruction value engineering services guaranteeing "Best Value." For this CMAR project, our entire team will work to provide a constructible, practical design that exceeds the criteria while providing the greatest value to the stakeholders. Management and control of the cost of the project will continue during the finalization of the design by continuing the involvement of construction and design personnel side by side.

CGI will continue to control the construction cost of the project through a multiple input format for the procurement of all the required materials, services and subcontractors for the project. This process involves both estimating and project field staff independently scoping and acquiring prices for the materials, services and subcontractors necessary. Upon compilation of this information, the two groups sit down, review and analyze the information and propose a best value subcontractor/vendor candidate recommendation for award.

Michael Higgins, Mark Miller and Larry Smith will attend the project scoping/partnering workshop, project team meetings, milestone meetings, long lead-time procurement (LLTP) GMP and Construction GMP reconciliation meetings with the rest of the CMAR Team as necessary.

Risk mitigation will be a CMAR Team effort. Various risks will need to be evaluated and potential costs determined by the cost estimators. Through the use of effective partnering the significance of each risk can be evaluated to determine if it can be mitigated and/or eliminated through design.

This will be tracked and documented by Mr. Miller using a mutually agreed-upon record keeping system. Risks will be managed with input from all members of the CMAR Team. Collaboration within the CMAR Team to develop a risk management plan, perform risk assessments, prepare a risk register, provide input on accelerated construction techniques and innovative cost savings is a critical component for project success.

Through review of the plans and constructability our team members will be able to provide Mr. Mark Miller with information needed to determine and report risk mitigation. Mr. Miller will also track the cost impacts of each design review. CGI will also share its assumptions that the contractor would normally make if they were contracted to do the work at the preconstruction phase. In addition, arrangements can be made regarding risk sharing and profit sharing if there are overruns or underruns in the GMP. The advantage MDOT SHA gains are the benefit of having the opportunity to incorporate a contractor's perspective and input to planning and design decisions.

Value-added proposals and concepts will initially be evaluated by Mr. Miller with input from the designated members of the CMAR Team, i.e. pertinent discipline MDOT SHA and Design leads to make sure that the GMP will not be exceeded. Then, CMAR Team leaders will look at these proposals to check for any constructability, environmental issues, time impacts or other issues to determine whether or not to proceed with any value-added proposals or concepts.

The same model for tracking risk will be used to track and report innovative savings. CGI will work alongside MDOT SHA and Designer to collaborate on innovative ideas to save money and time on this critical project. The Innovative solutions with the most impact on the project will be to find alternative ways to construct portions of the project, using alternative materials, and reviewing alternative phasing options to save time which leads to saving money.

Mr. Miller will provide cost estimates of the alternatives to be evaluated that shall include industry standard operating and maintenance costs when appropriate to evaluate life-cycle costs of the alternatives. CGI will develop the OPCC on the design prepared by the Designer at the completion of any agreed upon Milestone. Cost estimates using B2W construction estimating software will be utilized for all estimates.

This method of contract delivery, construction quality and completeness of design should ensure impacts to the schedule and budget will be minimized. CGI will use its experience in working side-by-side with MDOT SHA and the Designer to analyze costs and review plans for constructability and risks in a collaborative approach.

The CMAR collaborative project delivery method will lead to outstanding team innovations, saving the project money and time and adding value to the project.

**CONCRETE  
GENERAL, INC.**

## **D. Approach to Cost Estimating**

**D.2. Sample  
Estimate**



Request for Proposals (RFP) Contract No. BA1455180

**Construction Manager At-Risk (CMAR)**

**Bridge Replacement Steel Girder Bridge No. 0317400**

**On Putty Hill Avenue Over I-695 Baltimore County**






































## Cost Detail

<b>Project Name:</b> Putty Hill Avenue Over I-695	<b>Customer:</b> MDOT-State Highway Administration
<b>Job Number:</b> BA1455180 <b>Bid Number:</b> 919	<b>Billing Address:</b> 7450 Traffic Drive
<b>Bid As:</b> General Contractor	Hanover, MD 21076
<b>Estimator:</b> Mark Miller	<b>Phone:</b> 4435725235
<b>Project Address:</b> Baltimore Co., MD	<b>Contact:</b>
<b>Completion Date:</b>	


































## Pay Items

Description	Quantity	UM	Unit Direct Cost	Total Direct Cost
<b>D 1001 - 130850 - MOBILIZATION</b>	<b>1.00</b>	<b>LS</b>	<b>\$73,813.08</b>	<b>\$73,813.08</b>
10-9000 Mobilization	1.00	LS	\$7,456.08	\$7,456.08
Paving - Sub (Pleasants Paving)	1.00	LS	\$1,800.00	\$1,800.00
Signs - Permanent (Bruce & Merrilees Electric Company)	1.00	LS	\$5,656.08	\$5,656.08
Striping - Sub (Midlantic Marking, Inc.)	1.00	LS	\$0.00	\$0.00
Concrete - Sub (Priority Construction Corp.)	1.00	LS	\$0.00	\$0.00
12-8000 Portable Toilets	18.00	MO	\$212.00	\$3,816.00
Sani John	18.00	MO	\$212.00	\$3,816.00
15-9000 Non-Reimbursable Costs	9.00	MO	\$1,030.00	\$9,270.00
Non-Reimbursable Costs	9.00	MO	\$500.00	\$4,500.00
Cell Phones & Ipads	9.00	MO	\$530.00	\$4,770.00
16-1300 Training	9.00	MO	\$2,279.00	\$20,511.00
On The Job Training Per Month	9.00	MO	\$2,279.00	\$20,511.00
11-5000 Supt-Bridge	0.00	DY	\$0.00	\$0.00
Superintendent (1.00 DY/DY, 0.00 DY)	0.00	DY	\$0.00	\$0.00
Superintendent	0.00	DY	\$0.00	\$0.00
Pickup	0.00	HR	\$23.04	\$0.00
80-1000 Signs Sub Support	1.00	LS	\$0.00	\$0.00
Signs - Permanent	1.00	LS	\$0.00	\$0.00
Laborers (1.00 DY/DY, 0.00 DY)	0.00	DY	\$0.00	\$0.00
Laborer [2]	0.00	HR	\$0.00	\$0.00
40-1400 Sub Support	1.00	LS	\$32,760.00	\$32,760.00
Laborers (1.00 DY/DY, 0.00 DY)	0.00	DY	\$0.00	\$0.00
Laborer [2]	0.00	HR	\$0.00	\$0.00
Sweeper - Sub	273.00	HR	\$120.00	\$32,760.00
<b>D 1002 - 130850 - Small Tools/ Safety Equipment</b>	<b>1.00</b>	<b>LS</b>	<b>\$12,647.33</b>	<b>\$12,647.33</b>
16-1000 Small Tools/ Safety Equipment	1.00	LS	\$12,647.33	\$12,647.33
<b>F 4001 - 431105 - SUBSTRUCTURE CONCRETE FOR BRIDGE S1</b>	<b>154.00</b>	<b>CY</b>	<b>\$2,752.16</b>	<b>\$423,832.92</b>
MWM - 10/17/2017 1:14 PM: Rebar is an estimate 160lbs/cy				



Description	Quantity	UM	Unit Direct Cost	Total Direct Cost
<b>(Item 4001 - 431105 - SUBSTRUCTURE CONCRETE FOR BRIDGE S1</b>				
Time - L&E F&P				
Abut A				
Backwall - 4				
Bearing Pad - 1				
Cheekwalls - 1				
Total Abut A = 6 days				
Abut B				
Stem - 10 days				
Backwall - 6 days				
Bearing Pad - 1				
Cheekwalls - 3				
Total Abut B = 20 days				
 41-2100 Backfill Substructure Stone	2,355.00	CY	\$87.47	\$205,991.08
 Geotextile Class SD Type 2	2,000.00	SY	\$1.06	\$2,120.00
 Backfill Substructure Crew (150.00 CY/DY, 15.70 DY)	2,355.00	CY	\$28.31	\$66,660.04
 Genset	125.60	HR	\$3.07	\$385.59
 Loader - Rubber Tire	125.60	HR	\$40.61	\$5,100.62
 Pickup	125.60	HR	\$23.04	\$2,893.82
 Backhoe/Exc Operator	125.60	HR	\$39.60	\$4,973.76
 Backhoe - Track Cat235	125.60	HR	\$244.51	\$30,710.46
 Foreman	15.70	DY	\$594.00	\$9,325.80
 Laborer [2]	125.60	HR	\$33.03	\$8,296.23
 Loader Operator	125.60	HR	\$39.60	\$4,973.76
 Dump Truck - Tri Axle w/Driver [2]	125.60	HR	\$0.00	\$0.00
 Aggregate - ASTM #57 (3/4 Clean)	4,122.00	TON	\$29.20	\$120,362.40
 Aggregate - MD State GAB	550.00	TON	\$29.20	\$16,060.00
 Pipe SCH 40 PERF. PVC 6"	124.00	LF	\$6.36	\$788.64
 43-1400 Form&Strip Sub Backwall	2,405.00	SF	\$40.20	\$96,691.88
 Structure Crew - Large (100.00 SF/DY, 24.05 DY)	2,405.00	SF	\$35.03	\$84,242.88
 Crane - 45-50 Tn	192.40	HR	\$0.00	\$0.00
 Crane Operator	192.40	HR	\$66.00	\$12,698.40
 Flatbed	192.40	HR	\$40.44	\$7,780.66
 Genset	192.40	HR	\$3.07	\$590.67
 Pickup	192.40	HR	\$23.04	\$4,432.90
 Foreman	24.05	DY	\$594.00	\$14,285.70
 Ironworker Reinf	192.40	HR	\$59.40	\$11,428.56
 Laborer [2]	192.40	HR	\$33.03	\$12,708.56
 Carpenter [2]	192.40	HR	\$52.80	\$20,317.44
 Neoprene Sponge Material	0.00	SF	\$10.60	\$0.00
 Pipe SCH 40 PVC 8"	20.00	LF	\$21.20	\$424.00
 Concrete Forms - Substructure	2,405.00	SF	\$5.00	\$12,025.00
 43-5140 Pour Substructure Backwall & Misc	47.00	CY	\$247.57	\$11,635.82
 Structure Crew - Large (40.00 CY/DY, 1.18 DY)	47.00	CY	\$87.57	\$4,115.82
 Crane - 45-50 Tn	9.40	HR	\$0.00	\$0.00
 Crane Operator	9.40	HR	\$66.00	\$620.40
 Flatbed	9.40	HR	\$40.44	\$380.14
 Genset	9.40	HR	\$3.07	\$28.86

Description	Quantity	UM	Unit Direct Cost	Total Direct Cost
<b>(Item 4001 - 431105 - SUBSTRUCTURE CONCRETE FOR BRIDGE S1</b>				
Pickup	9.40	HR	\$23.04	\$216.58
Foreman	1.18	DY	\$594.00	\$697.95
Ironworker Reinf	9.40	HR	\$59.40	\$558.36
Laborer [2]	9.40	HR	\$33.03	\$620.90
Carpenter [2]	9.40	HR	\$52.80	\$992.64
Concrete SHA Mix No. 3 3500 PSI	0.00	CY	\$150.00	\$0.00
Concrete SHA Mix No.6 4500 PSI	47.00	CY	\$160.00	\$7,520.00
43-1300 Form&Strip Sub PlainFinish -Abut B Stem	1,293.00	SF	\$40.77	\$52,710.49
Structure Crew - Large (100.00 SF/DY, 12.93 DY)	1,293.00	SF	\$35.03	\$45,291.49
Crane - 45-50 Tn	103.44	HR	\$0.00	\$0.00
Crane Operator	103.44	HR	\$66.00	\$6,827.04
Flatbed	103.44	HR	\$40.44	\$4,183.11
Genset	103.44	HR	\$3.07	\$317.56
Pickup	103.44	HR	\$23.04	\$2,383.26
Foreman	12.93	DY	\$594.00	\$7,680.42
Ironworker Reinf	103.44	HR	\$59.40	\$6,144.34
Laborer [2]	103.44	HR	\$33.03	\$6,832.50
Carpenter [2]	103.44	HR	\$52.80	\$10,923.26
Neoprene Sponge Material	50.00	SF	\$10.60	\$530.00
Pipe SCH 40 PVC 8"	20.00	LF	\$21.20	\$424.00
Concrete Forms - Substructure	1,293.00	SF	\$5.00	\$6,465.00
43-5130 Pour Substructure -Abut B Stem	107.00	CY	\$237.57	\$25,420.05
Structure Crew - Large (40.00 CY/DY, 2.68 DY)	107.00	CY	\$87.57	\$9,370.05
Crane - 45-50 Tn	21.40	HR	\$0.00	\$0.00
Crane Operator	21.40	HR	\$66.00	\$1,412.40
Flatbed	21.40	HR	\$40.44	\$865.42
Genset	21.40	HR	\$3.07	\$65.70
Pickup	21.40	HR	\$23.04	\$493.06
Foreman	2.68	DY	\$594.00	\$1,588.95
Ironworker Reinf	21.40	HR	\$59.40	\$1,271.16
Laborer [2]	21.40	HR	\$33.03	\$1,413.53
Carpenter [2]	21.40	HR	\$52.80	\$2,259.84
Concrete SHA Mix No. 3 3500 PSI	107.00	CY	\$150.00	\$16,050.00
Concrete SHA Mix No.6 4500 PSI	0.00	CY	\$160.00	\$0.00
43-9100 Resteel - Substructure	24,640.00	LB	\$1.05	\$25,908.96
Rebar Tie- Sub (Per Pound)	24,640.00	LB	\$0.31	\$7,626.08
Rebar-Black By The Pound	24,640.00	LB	\$0.74	\$18,282.88
Rebar Escalation (Quarterly)	0.00	TON	\$63.60	\$0.00
46-3100 Waterproof/Dampproof (L&E&M)	2,008.00	SF	\$2.73	\$5,474.64
Melroll	2,008.00	SF	\$1.06	\$2,128.48
Structure Crew - Small (1,500.00 SF/DY, 1.34 DY)	2,008.00	SF	\$1.67	\$3,346.16
Flatbed	10.71	HR	\$40.44	\$433.09
Genset	10.71	HR	\$3.07	\$32.88
Pickup	10.71	HR	\$23.04	\$246.74
Foreman	1.34	DY	\$594.00	\$795.17
Laborer [2]	10.71	HR	\$33.03	\$707.38
Carpenter [2]	10.71	HR	\$52.80	\$1,130.91

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
<b>(Item 4001 - 431105 - SUBSTRUCTURE CONCRETE FOR BRIDGE S1</b>					
<b>D</b>	<b>4002 - 431105 - SUBSTRUCTURE CONCRETE FOR BRIDGE S1 Pier</b>	<b>266.00</b>	<b>CY</b>	<b>\$1,190.62</b>	<b>\$316,705.92</b>
<b>D</b>	43-1500 Form&Strip Sub (FL) - Pier	3,554.00	SF	\$58.74	\$208,760.31
	Structure Crew - Large (100.00 SF/DY, 35.54 DY)	3,554.00	SF	\$35.03	\$124,490.31
	Crane - 45-50 Tn	284.32	HR	\$0.00	\$0.00
	Crane Operator	284.32	HR	\$66.00	\$18,765.12
	Flatbed	284.32	HR	\$40.44	\$11,497.90
	Genset	284.32	HR	\$3.07	\$872.86
	Pickup	284.32	HR	\$23.04	\$6,550.73
	Foreman	35.54	DY	\$594.00	\$21,110.76
	Ironworker Reinf	284.32	HR	\$59.40	\$16,888.61
	Laborer [2]	284.32	HR	\$33.03	\$18,780.13
	Carpenter [2]	284.32	HR	\$52.80	\$30,024.19
	Form Liner (Urethane)	1,900.00	SF	\$35.00	\$66,500.00
	Concrete Forms - Substructure	3,554.00	SF	\$5.00	\$17,770.00
	Neoprene Sponge Material	0.00	SF	\$10.60	\$0.00
<b>D</b>	43-5140 Pour Substructure Pier	266.00	CY	\$237.57	\$63,193.77
	Structure Crew - Large (40.00 CY/DY, 6.65 DY)	266.00	CY	\$87.57	\$23,293.77
	Crane - 45-50 Tn	53.20	HR	\$0.00	\$0.00
	Crane Operator	53.20	HR	\$66.00	\$3,511.20
	Flatbed	53.20	HR	\$40.44	\$2,151.41
	Genset	53.20	HR	\$3.07	\$163.32
	Pickup	53.20	HR	\$23.04	\$1,225.73
	Foreman	6.65	DY	\$594.00	\$3,950.10
	Ironworker Reinf	53.20	HR	\$59.40	\$3,160.08
	Laborer [2]	53.20	HR	\$33.03	\$3,514.01
	Carpenter [2]	53.20	HR	\$52.80	\$5,617.92
	Concrete SHA Mix No. 3 3500 PSI	266.00	CY	\$150.00	\$39,900.00
<b>D</b>	43-9100 Resteel - Substructure	42,560.00	LB	\$1.05	\$44,751.84
<b>S</b>	Rebar Tie- Sub (Per Pound)	42,560.00	LB	\$0.31	\$13,172.32
	Rebar-Black By The Pound	42,560.00	LB	\$0.74	\$31,579.52
	Rebar Escalation (Quarterly)	0.00	TON	\$63.60	\$0.00
<b>D</b>	<b>4003 - 120500 - MAINTENANCE OF TRAFFIC</b>	<b>1.00</b>	<b>LS</b>	<b>\$301,834.13</b>	<b>\$301,834.13</b>
<b>P</b>	18-9000 - MOT Materials Misc	1.00	LS	\$1,000.00	\$1,000.00
<b>D</b>	18-5710 - Cones	330.00	EACH	\$21.20	\$6,996.00
	Cones (Priceless Industries, Inc.)	330.00	EACH	\$21.20	\$6,996.00
<b>D</b>	18-1000 - Traffic Crew	1.00	LS	\$293,838.13	\$293,838.13
<b>D</b>	TM & 3Flagger W/Flatbed	138.00	UDAY	\$2,129.26	\$293,838.13
	MOT-TM & 3Flagger W/Flatbed (1.00 UDAY/DY, 138.00 DY)	138.00	UDAY	\$2,129.26	\$293,838.13
	Flagger [2]	1,104.00	HR	\$35.27	\$77,873.05
	Flatbed	1,104.00	HR	\$40.44	\$44,645.76
	Pickup	1,104.00	HR	\$23.04	\$25,436.16
	Traffic Manager	138.00	DY	\$740.32	\$102,164.76
	Truck Driver	1,104.00	HR	\$39.60	\$43,718.40

## Direct Cost Totals

	Amount	Percent of Direct Cost
Labor:	\$500,563.69	44.34%
Equipment Owned:	\$154,084.96	13.65%
Equipment Rented:	\$0.00	0.00%
Materials Owned:	\$0.00	0.00%
Materials Purchased:	\$357,646.92	31.68%
Subcontracted:	\$61,014.48	5.41%
Trucking Owned:	\$0.00	0.00%
Trucking Hired:	\$37,376.00	3.31%
Miscellaneous:	\$4,500.00	0.40%
Plug:	\$13,647.33	1.21%
<b>Direct Cost:</b>	<b>\$1,128,833.38</b>	

## Pay Item Summary

	Amount	Percent of Takeoff Price
<b>Total Direct Cost:</b>	\$1,128,833.38	150.10%
<b>Total DC Adds/Cuts:</b>	\$0.00	0.00%
<b>Total Indirect Cost:</b>	\$0.00	0.00%
<b>Total Bond:</b>	\$0.00	0.00%
<b>Total Overall Cost:</b>	\$1,128,833.38	150.10%
<b>Total Overhead:</b>	\$0.00	0.00%
<b>Total Profit:</b>	(\$376,796.78)	-50.10%
<b>Total Margin:</b>	(\$376,796.78)	-50.10%
<b>Total Takeoff Price:</b>	<b>\$752,036.60</b>	



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## D. Approach to Cost Estimating



Request for Proposals (RFP) Contract No. BA1455180

**Construction Manager At-Risk (CMAR)**

**Bridge Replacement Steel Girder Bridge No. 0317400**

**On Putty Hill Avenue Over I-695 Baltimore County**

## D. APPROACH TO COST ESTIMATING

### D.3. Contracting Plan

Time is Money – CGI repeatedly demonstrates our ability to deliver projects not only on time, but often before the scheduled completion date. We accomplish this by partnering with all stakeholders to identify critical paths with input from key subcontractors, and by self-performing many major components of the work, allowing better control of project scheduling and overall progress. CGI will self-perform at least 50% of the work on this project; consisting of, but not limited to, any combination of the following: maintenance of traffic, stakeout, excavation and grading, storm drainage and structures, culvert extension, environmental protection, patching, temporary and permanent stabilization, subgrade preparation, bridges, retaining walls, noise walls and miscellaneous structures that will be required on this project.

CGI has knowledgeable, experienced personnel and the needed equipment to perform these activities – we have done so on a significant number of MDOT SHA contracts. Recent completed examples include the following contracts: I-695 over MD 26 Bridge Replacement Bridge No. 0313900, MD 32 @ Linden Church Rd Interchange Design Build, I-70 over Conococheague Creek, MD 145 @ MD 146 Intersection Improvements in Baltimore, MD 124-S. of Airpark Rd to Rosewood Manor Lane Design Build, I-695 Inner Loop Bridge Replacement at US 1.

The activities that may be subcontracted include Erosion & Sediment Control Devices, Clearing & Grubbing, Concrete Curbs and Sidewalks, Landscaping, Utility relocations, Pavement Markings, Traffic Barrier W Beam, Hot Mix Asphalt Paving, Electrical and Permanent Signs.

CGI will solicit subcontractors during the OPCC and GMP process using its in-house data-based resources and the solicitation notices required by COMAR 21.05.10.05. During the OPCC we will primarily be notifying subcontractors of upcoming opportunities for early work and for possible input during preconstruction if it is felt that their expertise will be beneficial to providing the best design and finished product possible. At a minimum, CGI will seek at least 3 quotes for the different scopes of work to assure competitive quotes are received. In addition, we are known for awarding the work to a subcontractor if they give us a low price at bid time. If a qualified subcontractor helps us be low, then they get the work. This reputation has assured us that competitive quotes are received. CGI also has a reputation for paying their bills on time without delays, which benefits us with a large selection of subcontractors to pull from.

The team understands the importance of meeting the contract Minority Business Enterprise (MBE) participation goals and will work to achieve all MBE goals for subcontracting and work force development. We have a successful history of meeting and exceeding project goals. We recognize that the true purpose of the MBE program is not merely to meet goals, but ultimately to increase and cultivate business opportunities for the MBE contracting community. Mr. Miller will also work with the MDOT SHA to help determine, develop and document a contracting plan to meet MBE contract goals on all construction phases including compliance with COMAR 21.05.10.05.

Specific process and programs that we have effectively utilized on other projects which will be applied on this Project to ensure appropriate MBE involvement include:

1. Advertising to solicit MBE participation and raise awareness
2. Establish MBE Business plan room
3. Pre-identify MBE bid packages
4. Provide for economically feasible MBE bid packages
5. Payment Alternatives

CGI will utilize the services and resources of public and private entities in order to solicit interested MBE firms, including:

1. Maryland Minority Business Enterprises Program
2. MDOT MBE Directory
3. Montgomery County Government MFD Program
4. Existing Company source lists

Also, Concrete General, Inc. maintains a website - [www.concretegeneral.com](http://www.concretegeneral.com) - where prospective subcontractors can log on and determine what projects CGI is bidding on. Currently 240 firms have applied for passwords, of which 100 firms are MBEs.

CGI will search the Maryland DOT MBE listing for firms that can perform applicable to this project. We will send faxes to all appropriate firms with mail follow-up for faxes that do not go through. The bid request faxed to the MBE firms asks them to fax the form back to us indicating whether or not they are interested in bidding on the project, and gives them the company phone number as well as directing them to [www.concretegeneral.com](http://www.concretegeneral.com). For those firms who cannot download the appropriate information, we prepare copies and mail it to them. If any firm needs assistance we either provide guidance over the phone or meet with them in person.

Mr. Miller is responsible for seeking out MBEs, assisting them in the bidding process and selecting them for inclusion in our bid. After the award of the bid, Mr. Miller prepares a subcontractor and supplier list by work item for use by the Construction Manager in order to assure that the work contained in the Affirmative Action Plan is performed by the listed MBE firm.

The company EEO officer is Elizabeth Jimenez, who has been performing in that capacity for several years. Ms. Jimenez is responsible for monitoring the progress of the Affirmative Action Plan and ensuring compliance with the plan. Ms. Jimenez monitors the monthly billings by the MBE firms and seeks out new firms if a MBE does not perform or if changes in the work cause a reduction in a MBE subcontract. Ms. Jimenez will develop and implement policies to enable minority business and women to be considered fairly and equally in respect to consultation, personal services or supply services that CGI is in need of. CGI consistently finishes projects with higher MBE participation than is listed on the Affirmative Action Plan.

CGI has been involved with many minority outreach events with associations in the local area to seek services of minority firms to solidify relationships with and work along with them on contracting opportunities. CGI will achieve or exceed the MBE goal on this project.