

WAGMAN

General Construction | Heavy Civil | Geotechnical

TECHNICAL PROPOSAL

DATE
April 3, 2018

CONTRACT NUMBER
BA1455180

SUBMITTED BY
Wagman Heavy Civil
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BRIDGE REPLACEMENT
STEEL GIRDER BRIDGE
NO. 0317400
ON PUTTY HILL AVENUE
OVER I-695
BALTIMORE COUNTY

Putty Hill Bridge Replacement

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BALTIMORE COUNTY

PROFESSIONAL EXPERIENCE

Anthony has 31 years of experience and 19 years with Wagman. As Vice President of Design-Build/Major Pursuits, Anthony manages the project from design development through construction ensuring continuity. Anthony has experience as project manager on many projects similar to the Putty Hill Bridge Replacement. Over the past 31 years Anthony has worked as a Project Manager, Design-Build Project Manager, Design-Build Coordinator, and Estimator, on many transportation projects including interstates, overpasses and steel structures for capacity and safety improvements.

Anthony W. Bednarik
PROJECT MANAGER

PROJECT AVAILABILITY
Preconstruction / 75%
Construction / 60%

REGISTRATIONS, CERTIFICATION AND EDUCATION

BS, Civil Engineering, Bucknell University

DBIA Certified Professional

ARTBA Project Management Academy, ASCE

PROJECT MANAGEMENT EXPERIENCE

MD 404 from US 50 to East of Holly Road Design-Build, MDOT SHA, Queen Anne's County, MD ($105M) – Design-Build Project Manager. Anthony was responsible for the development of innovative ATCs, design, constructability reviews, design reviews, CPM schedules and construction for the project. An accelerated project schedule increased mobility and safety throughout the corridor. Anthony managed right-of-way coordination, utility coordination and relocation, complex construction sequencing, extensive maintenance of traffic, bridge construction, box and pipe culvert construction, SWM facility construction, E&SC permit acquisition, permit modifications, MDE/PRD permitting, stakeholder communication, public outreach, partnering, and the aggressive design and construction schedule.

RELEVANT TO PUTTY HILL Project Management , bridges, stormwater management, maintenance of traffic, environmental compliance, utility relocations, stakeholder coordination, risk identification and mitigation, minimization of environmental impacts, ATC's, Stormwater BMP's and aggressive project schedule.

ICC Contract A Design-Build, MDOT SHA, Montgomery County, MD ($484M) – Wagman's Design-Build Project Manager. Anthony was responsible for design, constructability reviews, design reviews, geotechnical investigations and initial construction. He led design coordination, avoidance and minimization of environmental impacts, RTE relocation, project mobilization, agency permitting including MDE and public outreach meetings. He was instrumental in creating a collaborative environment to fully integrate the joint construction team of three contractors and co-location with the design team and MDOT SHA. Design and construction was accelerated to finish the project in 3-years. The design-build project included 18 bridges and 9 overpasses with specific aesthetic requirements, utility coordination and stakeholder involvement. The ICC intersected multiple cross roads requiring maintenance of traffic and property owner coordination.

RELEVANT TO PUTTY HILL Project management, bridges, stormwater management, maintenance of traffic, environmental compliance, stakeholder coordination, risk identification and mitigation, contract negotiations, estimate review with MDOT SHA, minimization of environmental impacts, and work on interstate.

ICC Contract B Design-Build, MDOT SHA, Montgomery & Prince George's Counties, MD ($570M) – Wagman's Design Build Project Manager. Anthony organized a fully-integrated construction joint venture and used his experience from Contract A to streamline processes on ICC B, and assisted with collaboration between the contractors MDOT SHA, designers, utility companies, environmental agencies and third party stakeholders. Anthony conducted constructability reviews. This 7-mile long design-build project included major structures, earthwork and utility relocation. It was designed and constructed in three years on a fast-track schedule. A complex TMP involving phased construction was developed to minimize inconvenience to the community and the travelling public including three overpasses and two interchanges.

RELEVANT TO PUTTY HILL Project management, bridges, stormwater management, maintenance of traffic, environmental compliance, stakeholder coordination, risk identification and mitigation, minimization of environmental impacts, utility coordination and minor arterial overpass structures.

Steven P. Wood
CONSTRUCTION MANAGER

PROJECT AVAILABILITY
Preconstruction / 50%
Construction / 100%

REGISTRATIONS, CERTIFICATION AND EDUCATION

NCCO Certified Crane Operator

OSHA 10-Hour and 30-Hour

OSHA Preventing Run-overs & Back-overs

Confined Space

Excavation Competent Person
MD SHA Green & Yellow Card

PROFESSIONAL EXPERIENCE

Steve has 38 years of experience in the industry, and 18 years with Wagman. Along with managing construction projects, he assists estimating and engineering with challenging work activities such as access, erection plans, demolition plans, maintenance of traffic concerns, complex utility relocations, and project sequencing. Steve manages all field personnel, equipment, subcontractors and suppliers on major construction projects in Maryland.

CONSTRUCTION MANAGEMENT EXPERIENCE

MD 4 over MD 223, Prince George County, MD: As Construction Manager, Steve was responsible for the replacement of 2 steel overpass bridges under phased construction. During demolition, the existing structures required temporary supports to be installed for stability. Steve planned and scheduled all major traffic switches to reconstruct the dual bridges. Steve successfully coordinated with MDOT SHA and third party stakeholders to minimize disruptions to the traveling public. This $22 million project was completed 6 months ahead of schedule.

RELEVANT TO PUTTY HILL Maintenance of traffic with complex phasing, minimization of impacts to traveling public, constructability reviews, beating construction schedule, temporary bridge supports, aesthetics, support of excavation, piers within median, coordination with third party stakeholders and utility owners.

Woodrow Wilson Bridge, Oxon Hill, MD: Steve was the construction manager of five contracts that totaled $270 million to reconstruct the Maryland approach & Interchnages. Steve managed construction efforts which included over 200 employees and multiple subcontractors and suppliers in Maryland. He coordinated with adjacent contractors and developers to maintain all project schedules. Steve constructed steel girder structures over Interstates; demolished existing structures over interstates and reconstructed several mainline bridges requiring temporary support.

RELEVANT TO PUTTY HILL Construction over Interstate, steel girders, coordination with adjacent contractors & property owners, third party coordination, meeting all project milestones, piers within median of interstate, E&S compliance, phased construction, partnering and utility relocation.

Intercounty Connector Contract B, Prince George's and Montgomery Counties, MD: As Structures Construction Manager, Steve managed all structure construction efforts to ensure that the work was performed in accordance with design, budget and schedule. He conducted constructability reviews, created work plans that incorporated design, safety, environmental compliance and production, and oversaw the field operations; maintaining budget and schedule. He was integral in the construction of a phased Single Point Urban Interchange with steel girders.

RELEVANT TO PUTTY HILL Steel bridges, overpasses, stormwater management, maintenance of traffic, environmental compliance, phased construction), Constructability reviews, risk mitigation during construction, and collaboration with designer and owner through partnering

PROFESSIONAL EXPERIENCE

Jon has 35 years of experience in the industry, and 19 years with Wagman. As Chief Estimator for Wagman, Jon is responsible for producing accurate cost estimates totaling in excess of two billion dollars per year. Jon is responsible for CMAR, Hard Bid, and Design-Build estimates. During his career with Wagman, Jon has successfully estimated and procured work in excess of $2.5 billion. Jon has spent his entire career in the Maryland market and has unparalleled relationships with the local material suppliers and subcontractors with familiarity of Maryland specifications. As Cost Estimator (CE), Jon will quantify and estimate direct costs utilizing his 30+ years of experience and Wagman's extensive cost history. Jon's will assess risk and apply sound assumptions during the estimating process. Jon has a comprehensive list of subcontractors and suppliers to provide the best cost to execute work.

Jon P. Fiem
COST ESTIMATOR

PROJECT AVAILABILITY
Preconstruction / 75%
Construction / 20%

REGISTRATIONS, CERTIFICATION AND EDUCATION

BS, Civil Engineering,
Penn State University

COST ESTIMATOR EXPERIENCE

I-270 Watkins Mill Interchange, Montgomery County, MD: Jon was Wagman's Chief Estimator for this contract. He led the take-off and estimating effort resulting in Wagman's successful low bid. The project includes a new interchange with a new overpass crossing a heavily travelled highway (I-270). Project includes earthmoving, caissons, noisewall, culverts and steel and concrete structures, milling and overlay, environmental compliance, bio-swales, SWM basins, E&S, maintenance of traffic and major utility relocation.

RELEVANT TO PUTTY HILL Bridges, stormwater management, maintenance of traffic, environmental compliance, environmental minimization and mitigation, risk identification and mitigation plan, subcontractor and supplier solicitation, quantity take-off, and steel structure over Interstate.

I-95/I-695 Interchange, Phase 1, KH1501, Baltimore, MD: Jon managed the estimating effort of this $220 million dollar project. Wagman was the managing partner of a three-way joint-venture. Jon developed bid instruction and estimating rules to allow all three partners to develop concise cost estimates. Jon created collaboration between three contractors that was achieved by open and honest communication during the cost estimate development. He managed the bid solicitation with subcontractors and suppliers. He developed a pre-bid schedule that was incorporated into the baseline CPM for the project. During construction, Jon developed a value engineering proposal saving the Owner close to $2 million and modified the maintenance of traffic plan to reduce construction phases.

RELEVANT TO PUTTY HILL Steel bridges, maintenance of traffic, utility relocation, stormwater management, Value Engineering, complex project phasing, risk identification, estimate reviews with partners, steel overpasses with utilities over interstate, bridge demolition, deep foundations quantity take-off and comparison with partners and alternate project sequencing/traffic.

Woodrow Wilson Bridge, Oxon Hill, MD: As Chief Estimator, Jon led the estimating effort on five separate contracts for the Maryland approach of the bridge. Wagman was successful on five hard bid contracts totaling $270 million, proving Jon's ability to provide cost savings to MDOT SHA. During construction, Jon was integral in a foundation redesign value engineering and negotiation creating a savings for MDOT SHA of over $1M.

RELEVANT TO PUTTY HILL Interstate construction, bridges, Intertate commuters, steel structures, E&S, extensive traffic control, coordination with adjacent developers and contractors, utility relocation, complex phasing, stormwater management, bio-swales, piers within interstate median, bridge demolition, risk identification and mitigation, quantity take-off, support of excavation, estimating assumptions and quantifying project elements and subcontractor and supplier solicitation.

PROJECT DESCRIPTION

This was a $210 million interchange reconstruction project north of Baltimore City, MD for one of the most heavily traveled interchanges in the United States. The I-95 & I-695 Interchange was designed to eliminate an outdated double braided interchange. Wagman was the managing partner of a construction joint-venture formed to build this project. Collaboration, coordination and open communication, facilitated by Wagman, between our joint-venture partners, MdTA and GEC, made this project a success by meeting project goals which included: schedule, safety and maintenance of traffic. While this was a large interchange project, it included two bridge overpass replacements similar to Putty Hill: Lillian Holt over I-695 & Kenwood Avenue over I-95.

LILLIAN HOLT & KENWOOD AVENUE OVERPASSES

Each overpass was completed in stages with a phased construction approach with complete replacement of substructure, superstructure, and deep foundations. The existing bridge was demolished and replaced with a new steel girder bridge; Existing Lillian Holt was a 4 span bridge replaced with a two span bridge with a flared pier in the median of I-695. Existing Kenwood Avenue was a two span bridge replaced with a two span bridge with a pier in the median of I-95. The new Lillian Holt was a curved non-haunched steel girder and the new Kenwood Avenue was a haunched steel girder. Communication with third party stakeholders was paramount to ensure traffic on the local roads (urban minor arterial) and the urban interstates below were able to pass through the work zone with minimal impact. Each overpass carried multiple utilities including communications and waterlines. Construction required deep foundation and extensive support of excavation to maintain traffic. Overpass bridges also included architectural finishes, coatings and fences to enhance structural aesthetics.

This project required major traffic control components to maintain traffic on I-95 and I-695 during construction. The work included 11 bridges – four curved steel flyovers, three mainline bridges, two ramp bridges and two overpass structures. This interchange project created unique challenges in stormwater management. Working closely with MDE we were able to adjust erosion and sedimentation sequencing to align with earthmoving operations. A major fiber optic communication line ran through the project, and we collaborated with the utility owner to locate and avoid relocation of this important utility. Wagman proposed to Value Engineer portions of the foundation system on the main flyover structures. We designed the foundations to a more conventional pile foundation that resulted in a $1 million savings to the Owner. Working with the Designer and Owner, Wagman proposed a very successful alternate traffic scheme to minimize impact to the traveling public during steel erection operations. A partnering environment fostered by Wagman, the Owner and the Designer allowed this type of collaboration with everybody working in the best interest of the project.

I-95 & I-695 Interchange

OWNER/CLIENT AND CONTACT INFORMATION

Maryland Transportation Authority
2310 Broening Highway
Baltimore, MD 21224

David Labella, PE
(MdTA Retired)
410-494-9093
dlabella@wallacemontgomery.com

PROJECT DELIVERY METHOD

Design-Bid-Build

CONSTRUCTION COST

Initial Contract Value:
$208,440,000

Final Contract Value:
$216,788,000

Reason for Difference:
Incentive and Owner change orders

SCHEDULE PERFORMANCE

Initial Completion Date:
June 2010

Final Completion Date:
August 2010

Reason for Difference:
Contract completion extended due to extra work

Items of Work on this Project Similar to Putty Hill Bridge Replacement

Design-Build Alternate Foundations and Traffic	Environmental Compliance
Design Coordination with Designer and Owner on Traffic Maintenance & Value Engineering Proposals	Permit Acquisitions and Modifications, MDE, ACOE
Survey & 3D Modeling	Major Traffic Control on I-95/I-695 Corridor
Steel Structures	Utility Coordination, Relocation & Avoidance
Milling and Paving of minor arterial roads	Project Scheduling
Widening & Reconstruction of minor arterial roads.	Stakeholder Coordination & Communications
Demolition of Existing Structure over I-695 & I-95	Completed On-Time and within Budget
Drainage	Met all Project Milestones
Geotechnical – Deep Foundations	Partnering with Owner & Third Party stakeholders
ADT on I-95 170,000 + ADT on I-695 135,000 = 305,000 Total	

I-95 & I-695 Interchange

PROJECT AWARDS

2010 Excellence in Concrete Award - ACI, Maryland Chapter

2010 Silver Award for Public Communication – NPHQ

2011 National Achievement Award, Special Recognition for a Structure Project – NPHQ

2011 Award of Excellence, Partnering Silver Award – MdQI

2011 Award of Excellence, Structure New/Structure Rehabilitation Over $5 Million – MdQI

I-95/I-695 INTERCHANGE SUCCESSES RELEVANT TO PUTTY HILL BRIDGE REPLACEMENT

- ✔ Wagman maximized scope as low bidder by over $20 million. Wagman successfully proposed Value Engineering (VE) opportunities to save additional MdTA budget concerning foundations.
- ✔ Wagman improved the construction schedule through modification of the traffic phasing and reduced costs.
- ✔ Wagman met each of the specific milestones to maintain coordination with adjacent contractors, as well as final completion.
- ✔ Wagman maintained the highest E&S rating possible during construction.
- ✔ Wagman worked with MdTA and the Designer to minimize utility and ROW impacts. Adjacent property owners were treated as neighbors, and impacts to neighbors were minimized.
- ✔ Wagman worked over, along and on the I-95 & I-695 corridors maintaining traffic and minimizing impact to the traveling public. We re-designed the traffic phasing on both major interstate roads to further reduce impacts to the traveling public.
- ✔ Wagman developed a great working relationship with MdTA, GEC, the designers and local stakeholders and created a collaborative atmosphere that allowed innovation and VE opportunities for MdTA.
- ✔ Partnering and daily coordination meetings were utilized to encourage collaboration throughout this contract.

MD 4 Bridge Replacement over MD 223

OWNER/CLIENT AND CONTACT INFORMATION

MD State Highway Admin
Mr. Jason Pollock
Phone: 410-545-8318
jpollock@sha.state.md.us

CONTRACT/PROJECT NO.

PG6645180

DELIVERY METHOD

Design-Bid-Build

CONSTRUCTION COST

Initial Contract Value:
$18,464,375

Final Contract Value:
$20,592,748

Reason for Difference:
Owner issued change orders for additional asphalt and embankment

SCHEDULE PERFORMANCE

Initial Contract Date:
September 2015

Final Contract Date:
February 2015

Reason for Difference:
Completed 8 months early

PROJECT DESCRIPTION

This $18 million project, for the Maryland State Highway Administration, included the complete reconstruction of dual two-span bridges carrying Maryland Route 4 over Maryland Route 223 and modifications to the existing interchange. The project included significant excavation, drainage, base, and asphalt paving to construct new roadway approaches to the bridges. Four miles of patching, grinding, and asphalt overlay along Maryland Route 4 improved the heavily deteriorated driving surface. The project also included new street lighting, upgraded signalized interchanges, guardrail installation, stormwater management, BMP construction, signage, and landscaping.

The project was built in five phases which reduced impacts to the traveling public through the use of five overnight traffic switches. The night-time transitions between phases minimized disruption to a major DC East/West corridor. The coordination between the SHA public outreach team, the project inspection staff and the Wagman project team was essential to ensure the pattern changes were carried out quickly and safely. The project phasing resulted in limited work areas. In order to maximize the restricted work zones, a support of excavation system was engineered by Wagman engineer's to protect and maintain traffic. The shoring system enabled the construction team to build the substructure including piling, footers, abutment stems, wingwalls and pier columns and caps. The existing structure had to be temporarily supported during demolition and construction. Aesthetic treatment, coatings and structural steel painting were all required on this contract. Minor utility coordination and relocation was required at the interchange. For the duration of the project, Wagman was responsible for maintaining five miles of MD 4 roadway. This created numerous challenges because the road was deteriorated prior to the start of the project and the harsh winter caused further weakening of the riding surface. Constant pothole repair crews were dispatched to maintain the road surface through the winter months. As soon as the temperatures allowed, the road was milled, patched and resurfaced.

MD 4 SUCCESSES RELEVANT TO PUTTY HILL BRIDGE REPLACEMENT

MD 4 Bridge Replacement over MD 223

- Wagman completed this project 7 months ahead of schedule even though a significant change order was issued for additional grinding, asphalt paving and embankment.
- Maintenance of traffic was vital to the success of the project completion and Wagman worked within lane restriction times and multiple traffic phases. Traffic was maintained without major disruptions to the public commuter and local businesses. Overall impact was further reduced since the project was completed ahead of schedule.
- The project maintained an "A" rating for Erosion and Sedimentation Control during construction. An extensive network of bio-swales were constructed along the reconstructed highway to treat stormwater runoff for quantity and quality.
- This was a Bid-Build Project, but Wagman worked with the designer of record during the project execution and our in-house engineers developed demolition plans, erection plans, support of excavation plans, and temporary support of the existing bridge during phased construction. All design was completed by Wagman engineers and coordinated with the designer of record. Our in-house geotechnical engineers assisted with the foundation construction adjacent to existing bridge and highway facilities.
- This project had exemplary work performance for quality, production and safety. One of the largest successes of the project was finishing seven months ahead of schedule. This accomplishment relieved this heavily traveled corridor of anticipated traffic restrictions, which would have continued through an additional winter season.
- MD 4 was completed with no recordable or lost time incidents throughout its duration. This was a challenging project from a safety standpoint due to the limited work space and limited access, particularly during Stage 1.
- The supervisory personnel form MD 4 were recognized at the 2014 Maryland Transportation Builders & Materials Association (MTBMA) Safety Awards Banquet for their leadership in maintaining an accident-free worksite.
- The success of the project was due to the solid team who implemented the partnering process, had honest and open communication from the start of the project and promoted issue resolution to easily overcome challenges. Attention to safety was maintained from the first day to the last. The Team exemplified the SHA partnering process and the project was completed ahead of schedule and under budget.

Items of Work on this Project Similar to Putty Hill Bridge Replacement	
Steel Overpass Bridges	Environmental Compliance
Phased Demolition and Construction	Permit Acquisitions and Modifications
Survey & 3D Modeling	Major Traffic Control during construction
Steel Structures	Utility Coordination, Relocation & Avoidance
Milling and Paving of arterial roads	Project Scheduling
Widening & Reconstruction of minor arterial roads.	Stakeholder Coordination & Communications
Demolition of Existing Structure over traffic	Completed On-Time and within Budget
Drainage, bio-swales & BMP's	Met all Project Milestones
Geotechnical – Deep Foundations	Partnering with Owner & Third Party stakeholders
ADT on MD4 50,000 + ADT on MD 223 8,000 = 58,000 Total	

I-95/Route 54 Bridge Replacement (Ashland)

HANOVER COUNTY, VA

OWNER/CLIENT AND CONTACT INFORMATION

VDOT Richmond District
Phone: 804-524-6000

Project Manager:
Shane Mann, PE
Phone: 804-524-6433
Shane.Mann@VDOT.Virginia.gov

DELIVERY METHOD

Design-Bid-Build

CONSTRUCTION COST

Project Value Contract:
$8,412,000

Project Value Actual:
$8,041,000

SCHEDULE PERFORMANCE

Project Completion Contract:
December 2011

Project Completion Actual:
November 2011

Reason for Difference:
Completed 1 month early

This project included the removal, replacement and widening of the existing Route 54 bridges over I-95 in Ashland, Virginia. The existing bridge was a dual bridge carrying Route 54 east- and westbound, which was combined into one structure 220 feet long and 97 feet wide. Originally, the bridges were to be replaced using three traffic phases. Through coordination and cooperation with the Owner (VDOT), Wagman redesigned the MOT phasing to be reduced to two phases, reducing impacts to the traveling public, accelerating the schedule and reducing cost to VDOT. This required a complete redesign of the project traffic management plan, but Wagman worked closely with the designer of record and VDOT to expedite the change. Wagman was responsible for maintenance and protection of traffic on a busy corridor of I-95 north of Richmond. Route 54 is a significant arterial for Hanover County. The Route 54/I-95 Interchange is a convenient waypoint for travelers to stop, eat and rest. All work was accomplished without impact to local businesses and economy.

Wagman converted an antiquated four-span, two-structure interchange into a two-span, one-structure interchange eliminating piers on the outside shoulder and building a new pier in a narrow I-95 median. The new bridge and approaches were raised to provide additional clearance on I-95. New stormwater pipe and structures were provided to carry all stormwater to newly constructed stormwater management retention facilities and bioswales. Drainage was improved along Route 54 plus both shoulders and median of I-95. Wagman designed and constructed support of excavation to reconstruct the phased piers along I-95 and phased abutments on Route 54. Wagman drove the piles for the new foundations, which was extremely complex due to the close proximity of the existing bridge, existing foundations, I-95 traffic, and Route 54 traffic. Wagman coordinated with local stakeholders and cooperated with the local businesses to minimize impacts. Phased demolition of the existing structures over I-95 was accomplished with brief traffic stoppages. The demolition and the erection of new girders involved coordination with VDOT's Public Outreach group and Regional Traffic Operations Center to minimize impacts to the traveling public and to inform the commuters and truckers traveling along I-95.

I-95/Route 54 Bridge Replacement (Ashland)
HANOVER COUNTY, VA

Items of Work on this Project Similar to Putty Hill Bridge Replacement	
Reconstruction of overpass bridges in multiple construction phases	New stormwater management facilities
Working over high volume Interstate, I-95	Complex traffic switches on an interstate
Reconstruction of bridge approaches	Construction of bridge pier in narrow interstate median
Demolition of existing structure in phases while maintaining safety of the existing structure	Minor Arterial roadway grade was raised
Coordination with VDOT Public Outreach and Regional Traffic Operations Center	Widening of approach roadway including sidewalk for pedestrians and bicyclists
ADT on Rt 54 5,500 + ADT on I-95 102,000 = 107,500 Total	

RT 54 SUCCESSES RELEVANT TO PUTTY HILL BRIDGE REPLACEMENT

- Collaboration with VDOT and the Designer allowed **the team to redesign the traffic and construction phasing which shortened the schedule, reduced cost, and minimized impacts to the traveling public.**
- Demolition of an existing structure in phases and maintaining safety of the existing structure requires sound construction engineering and constructability reviews by field personnel to ensure safety of the workers and traveling public.
- Constructing deep foundations adjacent to an existing structure (and under the structure) requires expertise in geotechnical engineering. With Wagman's in-house geotechnical engineering capabilities, we developed a deep foundation construction plan and support of excavation to allow construction with minimal impact to the existing structure.
- Coordination with both local businesses and local governmental agencies such as Hanover County and Town of Ashland was critical to overall project success for all involved parties
- Demolition in phases required temporary support of existing structure.
- Collaboration and open and honest communication allowed the project to be completed a month early, reducing impacts to the travelling public.
- Support of excavation was required along the interstate and minor arterial road to maintain traffic.

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION

Project Principal
Greg Andricos, PE, President/COO

Project Manager
ANTHONY BEDNARIK
Preconstruction / 75%
Construction / 60%

LEGEND
- Design
- Design Development/ Preconstruction
- Construction
- Public Outreach
- KEY PERSONNEL
- * Value Added Resume Included in Appendix

Design Project Manager

Design Lead

Cost Estimator
JON FEIM
Preconstruction / 75%
Construction / 20%

Construction Manager
STEVE WOOD
Preconstruction / 50%
Construction / 100%

Project Safety Manager
Pete Kaplan, CHST
Preconstruction / 25%
Construction / 100%

Environmental Compliance Manager
Eric Mock
Preconstruction / 25%
Construction / 100%

Public Outreach
Lisa Wagman Glezer
Preconstruction / 50%
Construction / 50%

Structures

Structures Design Coordinator
Alex Brown*
Preconstruction / 50%
Construction / 20%

Structures Superintendent
Andew Michenzi*
Preconstruction / 25%
Construction / 100%

E&S Maintenance Crews

Roadway, MOT, Drainage, H&H and Signals

Roadway/MOT Design Coordinator
Rob Shunk, PE*
Preconstruction / 50%
Construction / 20%

Roadway Superintendent
Mark Christ*
Preconstruction / 25%
Construction / 100%

Geotechnical/Foundations

Geotechnical/Foundations Design Coordinator
Ed Laczynski, PE*
Preconstruction / 50%
Construction / 20%

Geotechnical Superintendent
J. Shawn Painter*
Preconstruction / 25%
Construction / 100%

Utility Design

Utility Coordinator
Jason Hershey, DBIA, CPE*
Preconstruction / 50%
Construction / 50%

Third Party Stakeholders

- Baltimore County
- Town of Carney
- Environmental Agencies including Maryland Department of the Environment and the Maryland Historical Trust
- Parkville Middle School and Center for Technology
- Parkville Nazarene Daycare
- Long and Foster Realtors
- St. Ursula's Catholic Church
- Maryland National Guard
- Town of Parkville
- Parktowne Neighborhood
- Ridge Grove Neighborhood
- Putty Hill Neighborhood
- Nottingham
- Baltimore County Fire Stations 8 and 10
- Baltimore County Police Precinct 8

Utilities
- SHA Electric
- BGE Electric
- BGE Gas
- Verizon
- Baltimore County Water
- Telephone (OH - Unknown)
- CATV (OH - Unknown)
- Fiber Optic (U/G - Unknown)

Media representatives for Project updates and traffic impacts/lane closures

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TECHNICAL PROPOSAL

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BALTIMORE COUNTY

C PROJECT APPROACH

A. COLLABORATION

Preconstruction Approach

Critical to the Construction Management at Risk (CMAR) process is collaboration and coordination between the Designer, Contractor, and Owner. Collaboration for Wagman begins as soon as we decide to pursue a project. Once the decision is made to pursue a project, Wagman organizes all team members in a kick-off meeting, in person, to discuss the project, commit to partnering process, develop strategies to succeed, and assign work activities to the team members. With Wagman employees, natural collaboration continues with the team since they work in the same office. To increase collaboration with the designer and MDOT SHA, Wagman team members will be available for scheduled meetings, impromptu meetings, telephone calls, and virtual meetings or over the shoulder reviews reinforcing collaboration.

Wagman creates a collaborative environment by encouraging team members to work together, freely communicate and express ideas. Wagman will establish working groups to review design concepts and brainstorm other solutions. Each team member is empowered to create and provide input that relies on their extensive experience in the construction industry. On the I-95/I-695 Interchange project, Wagman was the managing partner of a Construction Joint Venture that required creating a collaborative team with the three construction firms. In addition, Wagman created a partnering atmosphere with the Owner and Designer, allowing the project team to develop collaborative ideas such as Value Engineering proposals and modified traffic phasing. On the Intercounty Connector (ICC) project, Wagman co-located with the Designer and Owner, creating a collaborative effort to create the best solution for the project. The Woodrow Wilson Bridge was a major construction project divided into multiple contracts that required a collaborative team to complete our projects. The project also required a collaborative effort to work with the Owner, designers, adjacent contractor, adjacent developers and all other third party stakeholders. These projects demonstrate Wagman's ability to successfully create cohesive teams with open communication to maximize benefits and encourage collaboration for Putty Hill Bridge Replacement.

For CMAR projects we establish smaller working groups to progress the project goals. For example, we would pair our geotechnical lead with the designers geotechnical group and the owner's representative. This smaller group will concentrate on the geotechnical design, exploration and construction. If geotechnical issues affect other elements, the Wagman geotechnical lead will take the issue to the Project Manager and the Cost Estimator. Working together they will develop risk mitigation strategies and revised cost estimates.

These working groups ensure that Design Development and Estimating are proceeding according to schedule. Each working group will report weekly to the entire design development group at the weekly coordination meeting. Challenges can be assessed and additional resource requirements can be discussed during these meetings.

We will establish a weekly estimating coordination meeting to discuss the estimating effort. To foster trust and collaboration, Wagman will include the Independent Cost Estimator (ICE) and MDOT SHA representative in our weekly estimating meetings. In addition, the ICE and MDOT SHA will be involved in our quantity take-off and cost estimate set-up, creating a transparent environment for project costs. Involvement from the beginning of the cost estimate will allow the Owner a level of cost certainty for the project.

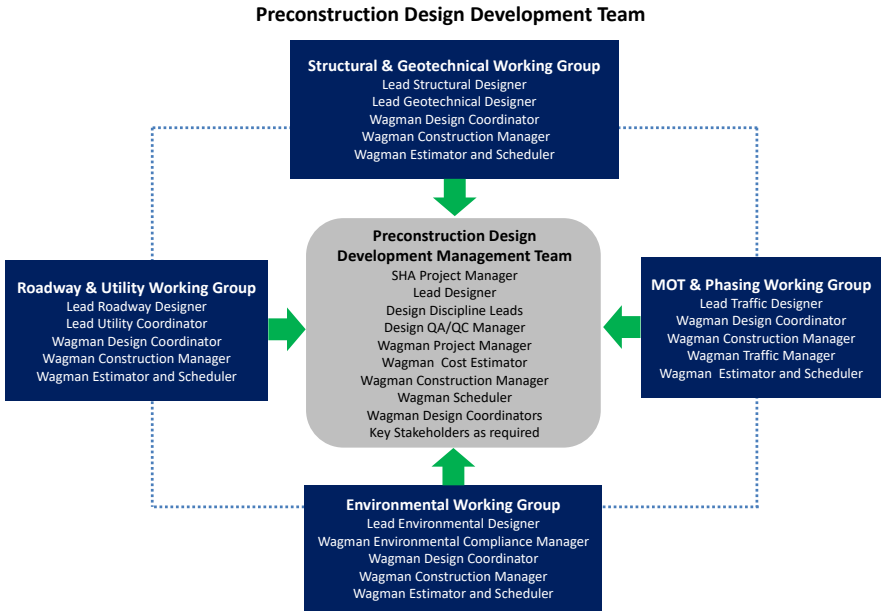
Third party stakeholder coordination and collaboration will help the team achieve the project goals of minimizing cost, reducing delivery time, replacing of the structurally deficient bridge, minimizing the impact to the environment and minimizing impacts to the travelling public. To accomplish these goals on this Project, Wagman will support MdDOT SHA with involvement of third-party stakeholders during design and prior to construction. Wagman has extensive experience supporting MDOT SHA in third party coordination including utilities, neighbors and the travelling public. Utility conflicts can create undue risk to a construction project and Wagman has collaborated and coordinated with utility stakeholders to minimize relocations, impacts, and cost. Wagman will contact the utility owners during design development and include the utility companies in our working groups and planning process throughout the preconstruction phase. Maintenance of Traffic along major corridors such as I-695 requires extensive collaboration and coordination. Wagman has

Preconstruction Approach

proven our expertise implementing traffic control on major Interstates such as I-95, I-495, I-695, I-895, I-295, I-270, and I-370. For example on I-95 in Baltimore, Wagman successfully reconstructed mainline I-95 through downtown Baltimore in over 40 unique work phases. **Successful partnering was recognized by the multiple partnering awards Wagman received from MdQI in Maryland for the ICC, I-95/I-695 Interchange and WWB.** We will use proven strategies and lessons learned on past projects to ensure a safe flow of traffic.

B. DESIGN AND CONSTRUCTABILITY REVIEW

Wagman's objective in the preconstruction phase of this CMAR project will be to streamline the practical design process with open communication, reduce errors and omissions, improve constructability and quality, and reduce the cost of construction ensuring delivery within budget and on schedule. The Wagman Team will be proactive in forming a Preconstruction Design Development Management Team (PDDMT) consisting of appropriate personnel from the Project Team Organizational Chart. The PDDMT will perform three major functions: participation in design development working group meetings, conduct monthly progress meetings and establish weekly cost estimating meetings to evaluate the cost estimate. working groups comprised of technical subject matter experts will be established and include representatives from both the Designer, Wagman, and MDOT SHA. Wagman representation will consist of both key personnel and value-added personnel as outlined on the Organizational Chart. Based on Wagman's evaluation of the major elements of the Project, at least four working groups will be established including: structural and geotechnical, roadway and utilities (including geometry), MOT and phasing, and environmental. Each design development working group will be assigned elements of the project to solve issue and progress final design. The working groups will include SHA representatives, Designer representatives, and Wagman personnel specializing in estimating, engineering, scheduling and construction to continually evaluate constructability and provide feedback for design advancement. The working group approach will allow for systematic and efficient conceptualization and evaluation across all preconstruction divisions including cost and schedule analysis, early risk identification, phasing analysis and development of project innovations. Weekly working group meeting will encourage over-the-shoulder reviews and collaboration between the team to meet the project goals.



The working groups will collaborate weekly and report during the monthly progress meetings to the PDDMT to present findings and coordinate between the different working groups ensuring design compatibility between disciplines. The working groups will utilize a design development tracking log, an innovative technical concept tracking log, a risk matrix, and a constructability evaluation matrix to categorize, track and report the challenges throughout the design process. The main role of the PDDMT is to provide construction guidance during design to improve constructability, safety, minimize environmental impacts, improve the schedule and reduce costs. This will be accomplished through timely and efficient working group meetings, over-the-shoulder reviews, progress meetings, partnering meetings and open communication.

During Preconstruction Design Development we will work with the Designer to create constructability hold points, so ensuring the design does not progress without the proper reviews and cost estimates. Each design element will be

Preconstruction Approach

reviewed by our PDDMT. When all design elements are compiled into a design submission, our PDDMT will complete additional constructability reviews to ensure that the scope of work is clear, the sequence of construction is complete, and that there are zero conflicts during construction among the design elements. Working with MDOT SHA and the Designer, we will create a formal constructability evaluation matrix. The form will be tailored to highlight the goals of the Putty Hill Bridge Replacement Project, including elements such as cost, schedule, and risk impacts; sequence of construction; access; lay-down; equipment requirements; material selection; environmental impacts; and MOT impacts. Once a constructability review is completed, we will provide a Comment Resolution Form to the Designer and SHA with our comments. The Designer and SHA will address our comments on the Comment Resolution Form, the PDDMT will collectively establish a final resolution prior to proceeding beyond the established hold point, reducing errors and omissions and costly redesign.

STREAMLINE THE DESIGN PROCESS – To assist with streamlining the design process, immediately upon selection the Wagman Team will work with the Designer and MDOT SHA to develop a mutually agreeable design schedule. Design Coordinators are available to meet as required to meet the Preconstruction Design Development schedule. The development of the design schedule will occur in conjunction with the development of the preliminary project schedule, phasing and work breakdown structure, and will be the main tool utilized to identify critical design tasks, advance the design effort and track progress. The design schedule will be monitored during the progress meetings and the Designer's progress will be tracked accordingly. As part of the Progress meeting discussions, a six-week look ahead for design and preconstruction activities will occur and the PDDMT will ensure that the appropriate resources are scheduled to complete the upcoming tasks.

The process of utilizing the monthly progress meetings to steer the design effort also allows for more efficient evaluation and integration of innovative ideas and risk management solutions proposed by the working groups. While the advancement of innovative ideas and risk management solutions is a key component of the CMAR process, it is imperative that the continual evaluation of innovative ideas does not deter from the advancement of the overall design. During the monthly progress meetings, the PDDMT will review the progress information provided by the working groups inclusive of any innovative technical concepts. The PDDMT will rely on the analysis performed by the cost estimator and lead scheduler to determine which of these innovative technical concepts warrant further detailed analysis prior to allocating resources to ensure all project resources are effectively and economically applied.

Wagman believes in the partnering process and will request that all team members participate in the formal partnering process. Partnering promotes collaboration, coordination open communication and trust. We will promote resolution of issues at the lowest possible level, but an issue resolution ladder will be established to ensure issue are resolved quickly and to the benefit of the project goals.

REDUCE ERRORS AND OMISSIONS AND IMPROVE CONSTRUCTIBILITY AND QUALITY - The Wagman Team's involvement in the Preconstruction Design Development Phase will greatly reduce the potential for design errors and omissions and redesign through constructability reviews. Our approach will involve working with the Designer to incorporate Wagman constructability reviews within the Design QC plan. Our internal quality review process will be implemented in addition to Owner required Design QA/QC and will define the quality review process for all design elements of the project. This process will identify the planned schedule of submission for MDOT SHA review and approval. Additionally, early coordination, working group meetings and constructability reviews will facilitate practical design, reduce errors and omissions, reduce risks, and allow solutions to be vetted by the PDDMT, working groups, and the Designers. A typical internal quality review process that includes Wagman constructability reviews will require the design documents to go through a four-step quality review prior to submission to MDOT SHA.

Step 1 – Design Document Preparation – The Designer of Record will assign discipline specific designers to prepare documents for the project and participate in Contractor led working groups. The documents will be prepared in accordance with the contract requirements, MDOT SHA design standards, specifications, and special provisions.

Step 2 – Constructability Review – The Designer of Record will coordinate with the Design Discipline Leads and the

Preconstruction Approach

Contractor's Project Manager, Construction Manager, and Cost Estimator in the working group setting to conduct constructability reviews of the design. MDOT SHA, the Designer, and Construction personnel will attend the working group meetings and will review the documents for the following:

- Constructability, material compatibility, accuracy and clarity of plan details, and typical sections.
- Adherence to contract requirements, MDOT SHA standards, specifications, and special provisions.
- Review the sequence of construction to verify logic and practicality.
- Review the MOT, SWM and E&S plans for conformance with the sequence of construction.
- Review for utility conflicts, including BG&E, Baltimore County, and Verizon over-the-shoulder reviews (bi-weekly meetings).
- Review for easement and/or Right-of Way conflicts.
- Review for coordination between design disciplines.
- Review for budget compliance.

Step 3 – Quality Control Review – The Designer of Record will assign qualified, discipline specific, design QC Managers to perform a detailed QC review of the documents utilizing project specific checklists for each discipline that will also be reviewed by the Contractor. The QC review will include:

- Checking engineering computations and corresponding design assumptions.
- Checking math, geometry, drafting, spelling, and technical accuracy.
- Reviewing form, content, and organization.
- Evaluating the suitability and compatibility of materials.
- Reviewing for coordination with other design disciplines.
- Reviewing the sequence of construction.
- Verifying conformance to contract documents, MDOT SHA standards, specifications, and special provisions.

Step 4 – Designer of Record Review – Upon satisfactory completion of the internal design quality review process including the resolution of any review comments and corrections, the Designer of Record will review the documents and will verify that the constructability and QC reviews have been completed and that all comments have been incorporated or addressed.

In conjunction with this four-step QC Plan, Wagman will implement a comment resolution process between discipline specific designers and reviewers that will occur during each step in the quality review process. Review comments will be recorded in red on the documents and will be summarized in electronic format using a Comment Tracking Log in Microsoft Word or Excel along with responses to the comments. Using this process on the Putty Hill Bridge Replacement project will reduce errors and omissions, redesign, cost and schedule impacts.

Once the design is finalized, Wagman will create our construction work plans. We create work plans for each major work activity. Wagman work plans include: safety requirements, QC hold points, plans, specifications, special provisions, material requirements, budget, production, schedule, maintenance of traffic, work area access, shop drawings, technical data sheets and unique issues associated with the work activity. This work plan is completed before the work starts. This promotes a high quality product that complies with the project specifications and provisions.

REDUCE COST OF CONSTRUCTION TO ENSURE IT IS WITHIN BUDGET - The Preconstruction phase is the most advantageous time to capitalize on project cost, mitigate risks, and improve construction methods and sequence. Wagman's expertise building major bridges in the region, such as Woodrow Wilson Bridge, I-95/I-695 Interchange, and the Intercounty Connector (ICC), provides the Project with resources to meet the project goals. Our PDDMT team includes experienced cost estimators as well as over 100 years of documented cost trend reporting to utilize as a resource to evaluate design options. Our cost estimation approach will focus on transparent cost estimating in order to best eval-

Preconstruction Approach

uate each aspect of the design development to ensure its cost effectiveness. Our Team will utilize HCSS cost estimating software, one of the most respected and transparent software tools available. HCSS is extremely detailed and each cost activity including labor, equipment, production, trucking, permanent material, construction material, and subcontractors. Each project work element is efficiently quantified using systems such as Blue Beam, Carlson, and AGTEK.

Our Cost Estimator (CE), Jon Fiem will generate a preliminary preconstruction estimate utilizing MDOT SHA typical bid items that will include reasonable assumptions and evaluate project risks. The preconstruction cost model that is developed can be a tool for MDOT SHA and the Independent Cost Estimator (ICE) to evaluate the design progress. Upon selection, Wagman will develop a preliminary schedule of values and cost estimate based on information provided within the RFP. This will be the baseline cost estimate to analyze potential innovations or design changes. Once we establish the preliminary estimate, we will create an "Innovative Technical Concept" Register to track potential savings to cost, schedule, reduced environmental impact or impacts to third party stakeholders. Each Innovative Technical Concept will be quantified and estimated to determine the real impact to the project. As alternates or options are introduced, we will populate our register, evaluate, and provide recommendations to the Project Team. As an example, we will work with the Designer and MDOT SHA to optimize construction phasing to minimize construction time and utility relocations. This technique was incorporated on the Route 54 Project in Ashland, VA where we reduced the number of construction phases which reduced cost and accelerated the project schedule.

Our Construction Manager (CM) Steve Wood will review the design documents for constructability then review the estimate to ensure productions are attainable, assumptions are reasonable, and risks are properly identified. One risk from our years of experience is geotechnical construction. Wagman's unique capabilities to self-perform multiple deep foundation solutions such as driven pile, drilled shafts, micro-pile, and auger cast piling will reduce cost and mitigate risk inherent with deep foundations. Our in-house geotechnical engineers can assist with the evaluation of the design and geotechnical data and tailor the design to the most cost effective solution. Wagman geotechnical engineers have extensive experience with Maryland geology, and our geotechnical work crews have worked in this area on multiple projects.

OPTIMIZE THE PROJECT DELIVERY SCHEDULE - Wagman has extensive experience in private CMAR projects and transportation Design-Build projects and has been successful in accelerating both design and construction aspects. Wagman will work with MDOT SHA and the Designer to develop a fully integrated Project schedule inclusive of the design schedule, other preconstruction tasks, and conceptual construction activities. Wagman's Project Manager, Cost Estimator and Construction Manager will work together to create the preliminary project schedule. The development of the design schedule will occur in conjunction with the development of the preliminary project schedule, phasing and work breakdown structure, and will be the main tool utilized to identify critical design tasks, advance the design effort and track progress.

The design is on the Critical Path, and through Preconstruction Design Development our coordinators will ensure the designers maintain the project schedule. Wagman's preconstruction effort will attempt to reduce the critical path design activities, thereby allowing construction to start earlier. During preconstruction, Wagman will work closely with the designer to obtain required environmental clearances and permits, property owner right of entry, Right of Way acquisition and other required permits. In addition, the construction schedule will be optimized and shortened through proper project segmenting and sequencing. Our working group approach to Preconstruction Design Development is key, as we will be able to constantly evaluate the project schedule when determining the final sequencing and phasing to ensure the completion of the Project ahead of schedule.

On MD 404, Wagman managed a design build team that designed and constructed nine miles of roadway with one major structure in 18 months. The Preconstruction Design Development was accelerated and fast-track construction was required to meet the project substantial completion date. On the I-95/I-695 Interchange, we accelerated construction and increased safety to the travelling public by revising the construction sequence and MOT phasing along I-95/I-695 reducing the number of major traffic switches.

C. RISK MANAGEMENT APPROACH

Preconstruction Approach

Wagman has successfully completed over $224M of private CMAR contracts in the last 20 years. We are very familiar with this alternative delivery and understand how the CMAR process helps manage risk, mitigate risk and encourage innovation. Working as a team Wagman, MDOT SHA, and the Designer can call upon all of our experiences and resources to create the most cost effective and efficient solution. Wagman believes the most important tool in risk mitigation is early identification of issues. Our Project Manager, Anthony Bednarik and our Cost Estimator Jon Fiem have extensive experience in preconstruction project risk identification, and our Construction Manager Steve Wood has the field experience to identify risk during constructability reviews and to manage and mitigate risk during construction.

The main advantage of Wagman's engagement in the Project's risk management is our ability to participate in the Preconstruction Design Development and review in terms of construction risk early during the design process. This early identification of risk will allow for mitigation, avoidance or elimination of the risk during design development, minor design changes, design optimization and constructability options. This method avoids the more costly risk control measures implemented post design, allowing the PDDMT to better project control costs and schedule impacts. Wagman will utilize a risk register which is a living document used to identify and track risk and mitigation methods as the Preconstruction Design Development progresses and during the construction phase. After identification of the risk item, key elements are assessed that may impact schedule, cost, environment, safety, quality, third party stakeholders, utility owners, designer, contractor, subcontractor and owner. Risks will be evaluated for severity of impacts to cost, schedule and quality and will be ranked accordingly. Mitigation measures will focus on the highest ranked risks first. The application of design changes and optimization will allow for a reduced contingency item in the Opinion of Probable Construction Cost (OPCC) and the Guaranteed Maximum Price (GMP), thereby reducing Project cost. As stated in the RFP, we are actively identifying and evaluating potential project risks and tracking on the risk register.

As we start the CMAR process and engage the Owner and the Designer, we share risks identified by Wagman and incorporate risk that has been identified by MDOT SHA, the Designer or other third party stakeholders. We will analyze all risks on the risk register during working groups and progress meetings. If required, we will host separate meetings just for discussion of significant risk items. By identifying and assigning risk to the party best capable of managing that risk, we will reduce cost and improve the project schedule. For example, ROW acquisition was identified as a risk on an Alternative Technical Concept on the Intercounty Connector – Contract A. During Best and Final Offer discussion, the ICC project team, including MDOT SHA, determined ROW acquisition risk was best managed and assumed by MDOT SHA. Because MDOT SHA assumed the ROW risk, the design builder (which Wagman was an equity partner) was able to reduce the final project price substantially.

B. RISK MATRIX & MOST RELEVANT RISK

The Wagman Team assembled for this project have managed and mitigated risks on many past projects. Our team has created a risk register based on review of the concept plans, RFP and site conditions. The risk register will continue to be populated and revised during design development and cost estimates. With our extensive experience in the mid-Atlantic and in particular Maryland, MDOT SHA and other Maryland Agencies, we believe we are qualified to assist MD SHA to identify and mitigate risk.

In the risk register below we have identified the most relevant risk to the Putty Hill Bridge Replacement Project, the potential impact each risk has on the Project and some of our mitigation strategies to eliminate or mitigate the risk.

PUTTY HILL BRIDGE REPLACEMENT - RISK REGISTER

Risk Description:	Approximate Cost:	Probability of Impact:	Factored Cost:	Approximate Time Impact	Summary of Mitigation/Elimination or Implementation Plan:
Impacts to Traffic	$150,000.00	37%	$55,500.00	4 Months	Employ MOT practices utilized on Section 100 and Woodrow Wilson Bridge projects as they were high ADT projects of a similar nature; Partner with traffic consultant to collaborate on MOT for both the design and construction phases; Engage SHA for over the shoulder reviews of the MOT design phase to ensure the planned phasing of the Project meets the needs of the traveling public and satisfes project goals; Ensure we use innovation to build the new structure as efficiently as possible to minimize impacts; Employ the services of our public relations team, to ensure the public is properly informed of MOT related activities.
Foundation Design and Construction	$600,000.00	30%	$180,000.00	3 Months	Extensive investigation with the designer, collaborative evaluation of data, coordination of design solution to reduce cost and installation time. Wagman inhouse geotechnical engineering constructibility reviews.
Weather Impacts	$50,000.00	23%	$11,500.00	1-4 Months	Proper planning and scheduling so that sensitive activities do not occur during periods of historically poor weather; utilizing advanced construction techniquest to work during inclement weather if work cannot be scheduled otherwise
Utility Relocations	$250,000.00	75%	$187,500.00	4 Months	Conduct thorough utility investigations early in the preconstruction phase; Engage utility companies early to engage them in the design process; Implementation of our phasing approach discussed in Construction Sequencing to minimize project wide impacts; Utilize the same utility coordinator during design and construction; Employ proper utility protection and monitoring practices agreed to by MDOT-SHA and the utility companies; Have other project controls such as the project schedule in place in a timely manner and adequately communicated to the utility companies; Perform ongoing coordination and partnering with the utility companies.
Sourcing Materials	$115,000.00	50%	$57,500.00	2 Months	Tracking and continually updating a list of critical purchase items; Scheduling design work according to critical work in the project;
Sourcing Labor and Equipment	$75,000.00	15%	$11,250.00	2 Months	Drawing from Wagman's regional resources; Using Strategic Relationships with local Subcontractors to properly staff thei scopes of work; Communicating the plan and schedule well in advance of the project start to ensure resource availability.
Stormwater Management Concept and Final Approval	$82,350.00	28%	$23,058.00	2 Months	Project specifc environmental compliance plan & training; Proper sequencing and scheduling to minimize impacts of plan development and approval in the Project schedule; Perform early constructability and compliance reviews of the E&S sequence to ensure adequacy; Review sequence of construction prior to submission to PRD/MDE.
		0%	$ -		
Total of All Potential Risk:	**$1,322,350.00**				
Most Probable Total of Potential Risk:			**$526,308.00**		

1-D PROPOSED TECHNICAL CONCEPTS

Preconstruction Approach

Innovation is a core value for Wagman and we take pride in our 115 years of innovation. Wagman has successfully developed innovative ideas that have been accepted by various owners such as MDOT SHA and MdTA to reduce cost, improve the project schedule, mitigate environmental impacts, and improve safety to the travelling public and work force. Below is a brief list of some our successful innovative solutions.

Wagman Innovative/Alternate Technical Concepts Approved by SHA/MdTA

Project	Description	Benefit to Project
MD-404	Developed alternative pavement section including Soil Cement to reduce risk of potential undercut and accelerate construction (ATC)	$2,768,100.00
WWB MB4	Redesigned Bridge Foundation fill material and approach at Bridge 29 (VECP)	$2,200,000.00
ICC-A	Redesigned a WMATA metro access interchange that eliminated structures and reduced retaining walls. (ATC)	$15,000,000.00
I-95/I-695 Interchange - Phase 1, KH1501	Redesigned Pier Foundations (VECP)	$2,100,000.00
I-95/I695 Interchange - Phase 1, KH1501	Modified MOT for Major traffic switches (ATC)	Safety improvement, time reduction, and minimized impacts to motorists.
Salisbury Bypass	Lengthened Wicomico River Bridge to relocate an abutment outside of flood plain (ATC)	Reduction in Environmental Impacts

During the review of the RFP and RFP documents, we have started our Innovative Technical Concept Register. On the following pages is the Technical Concept Register detailing a list of potential innovative technical concepts that could be pursued or discounted during design development.

Phased Construction on Lillian Holt Bridge similar to Putty Hill Bridge Replacement

INNOVATIVE TECHNICAL CONCEPTS REGISTER

	Project Goals						Additional Partnership Goals		
Potential Innovation:	Replace a structurally deficient bridge	Minimize project construction costs within the current budget.	Minimize project delivery time / Improve project schedule	Minimize impacts to the physical environment.	Minimize inconvenience and impacts to the traveling public.	Facilitate a collaborative partnership with all members of the project team and stakeholders.	Mitigate risk	Streamline the Design process	Improve the decision-making process with better information
Early Construction Packages - Release construction packages earlier with separate GMP's reducing preconstruciton time and creating a potential preconstruction credit to SHA toward construction.	Yes	Cost san be reduced depending on how soon work can start	Work on the project starts sooner which will get the project done faster		Incentivizes work to begin sooner reducing impacts	Collaborate to get packages complete for construction sooner		Preconstruction time reduced in design phase	
Full Closure of Putty Hill Avenue, while Utilizing Accelerated Bridge Construction - We propose to do an in depth survey of the community and the travelling public to determine if they would prefer a more rapidly constructed bridge with a full shut down instead of a longer construction duration with one lane of open traffic.	Yes	Construction cost reduced because traffic does not have to be maintained on bridge, saving temporary MOT, barrier, shielding etc. Reduces long term maintenance costs.	Bridge can be built in one phase instead of two, reducing delivery time; utilities can be relocated with less difficulty and therefore more efficiently	The footprint of the project may be reduced because greater portions of the closed road can be used for staging instead of undisturbed property within the project	The reduction in time to build the bridge will directly reduce the amount of time traffic needs to be in a single lane	Team to create messaging for the community, get feedback, analyze information together to find the true preference of those who are most impacted	Removing through traffic from the project will reduce risk to traveling public and our employees	The time needed to coordinate phasing of traffic, utilities, and construction will be reduced	Through our in depth community outreach program we can gain the best information possible to convene a decision on full closure
Substructure Shoring - Use steel shoring towers instead of proposed concrete reinforcing in concept plans	Yes	Shoring towers are less expensive to erect than the concrete shown in the concept plan	Showing tower erection is more efficient than forming and placing concrete	No containment needed for washout so reduced environmental risk	Less work to setup so less potential impact to 695 traffic; faster to erect so work can begin sooner on the bridge			Design of this temporary support will be performed by the Contractor so there is no interferrence with MDOT-SHA's design team	Wagman has experience with temporary steel shoring techniques; this expertise can be utilized
Accelerated Bridge Construction - Build bridge offline in median at Section 100 then use self propelled modular transporters to move it into place. Could also build offline at the project site and then move them into place.	Yes	Reduced cost to build offline	Work can be done concurrently with other activities that would otherwise be predecessors	Reduced truck deliveries will reduce air quality impacts	The reduction in time to build the bridge will directly reduce the amount of time traffic needs to be in a single lane		Reduces exposure to traffic incidents; reduces safety exposure for workers; reduces exposure for travelling public to construction debris		Wagman has experience with Accelerated Bridge Construction techniques; this expertise can be utilized
Accelerated Bridge Construction - Utilize Inverset beams, precast deck with SS girders cast to the bridge deck then overlay with Latex Modified Concrete.	Yes		More efficient construction technique reducing time of construction	Less concrete placed on site reduces risk of washout water from a blow out; Reduced truck deliveries will reduce air quality impacts	The reduction in time to build the bridge will directly reduce the amount of time traffic needs to be in a single lane		Reduces exposure to traffic incidents; reduces safety exposure for workers; reduces exposure for travelling public to construction debris; Reduced truck deliveries to the site mitigates risk to the traveling public	Streamline the procurment and erection process	Wagman has experience with Accelerated Bridge Construction techniques and Latex Modified Concrete; this expertise can be utilized

	Project Goals						Additional Partnership Goals		
Potential Innovation:	Replace a structurally deficient bridge	Minimize project construction costs within the current budget.	Minimize project delivery time / Improve project schedule	Minimize impacts to the physical environment.	Minimize inconvenience and impacts to the traveling public.	Facilitate a collaborative partnership with all members of the project team and stakeholders.	Mitigate risk	Streamline the Design process	Improve the decision-making process with better information
Utility Relocation Performance - Perform maximum utility relocation scope with the forces of our team (subs). Only use the utility companies for tie-ins	Yes	Subcontractor pricing would determine cost benefit	If we take on this scope of work we can direct the aerial relocation along with the bridge construction reducing the time at the end of the first phase of construction for utility relocation which reduces one way traffic time		If we take on this scope of work we can coordinate the aerial relocation along with the bridge construction reducing the time at the end of the first phase of construction for utility relocation which reduces one way traffic time		Since the CMAR team will direct the work and have contractual relationships with the contractors performing the relocations, we can plan and control their work and ensure that they perform on time and without delay		Since the CMAR team is in control of the majority of the relocation scope, we will have better information than we would if the utilities were doing the work themselves
695 ETL Pre-Work - Since 695 ETL will be coming through this area, we can do to early work for the ETL job so that the follow on work just has to tie in to the project.	Yes	This will reduce the cost of construction for the ETL work since it will be done already	This will reduce the project time for the section of the etl project		This will minimize future impacts for the ETL project	Collaborate with MDOT-SHA divisions to deliver this scope of work at an overall reduced cost to the state			
Deep Foundations – Wagman has completed one of the first micro-pile foundations for VDOT on Rt 7. Wagman also utilized auger cast piles for a VDOT bridge at Jones Falls Connector	Yes	We can self perform the work, reducing cost to SHA (no subcontractor markup)	We can mobilize our resources when needed to perform the work,				Can self-perform most geotechnical improvements and have expertise to implement them	Wagman regularly designs geotechnical solutions for our clients in house	Wagman has extensive construction experience for this scope with our geotechnical division
Integral Abutment - Reduce abutment size, construction effort, and maintenance.	Yes	Reduces abutment size so further reduces cost to construct and future maintenance costs	Integral abutment will be more efficient to build	Reduced truck deliveries will reduce air quality impacts	Accelerates construction which benefits traveling public		Reduced truck deliveries to the site mitigates risk to the traveling public		
Accelerated Bridge Construction - Precast, Post-Tensioned Piers constructed offline or offsite then erected on site.	Yes	Reduces cost because the majority of the work can be performed in conditions that are more conducive to efficiency	Work can be done concurrently with other activities that would otherwise be predecessors; more efficient construction techniqe reducing time of construction	Less concrete placed on site reduces risk of washout water from a blow out; Reduced truck deliveries will reduce air quality impacts	Accelerates construction which benefits traveling public		Reduces exposure to traffic incidents; reduces safety exposure for workers; reduces exposure for travelling public to construction debris; Reduced truck deliveries to the site mitigates risk to the traveling public		
Waterline Bore - To get the waterline off of the bridge, perform a bore under 695	Yes		Removing the waterline from the bridge takes it off of the critical path of the bridge superstructure				Reduces schedule risk for bridge superstructure construction	The bridge design will be simplified	

CONSTRUCTION SEQUENCE

Construction Approach

The Putty Hill Avenue Bridge Replacement project requires a well-defined and thoughtfully executed plan. Generally, the two greatest challenges of the project are coordination of utilities and minimizing impacts to the travelling public. Through our planning process, we can further define and mitigate these risks. Wagman will use innovative construction techniques as proposed in section 1.D Proposed Technical Concepts to accelerate the construction of the bridge, reducing traffic impacts. Based on our understanding of the project, the best way to execute utility relocations is to perform in the manner in chart below.

Utility Sequence

Pre-Construction	Concurrent With Phase 1 Construction	After Phase 1 and Before Phase 2
Relocate SHA Underground Utility and Fiber Optic Line	Relocate Gas Line to New Location	Relocate Verizon To New Aerial Location
Verizon Temp Relocate Line on Existing Bridge	Relocate 24” Watermain	Relocate Telephone
		Relocate CATV

Further, the sequence of construction for the overall project interweaves the utility relocation activities into the phases with other scopes of work within the phase. Wagman will phase utilities so that work can be performed safety and efficiently for the project team and utility contractors. If selected, Wagman will perform surveys to verify the accuracy of as-built information in the field for utilities and existing structures mitigating the costly risk associated with a differing site condition during construction.

Construction Phase 1

After review of the project, we developed a three-phase approach to construction. The first phase of the project will begin with placement of erosion and sediment controls and the initial configuration of traffic control devices to reduce traffic on the bridge to alternating one-way signalized. The next step is to verify, designate, and protect all utilities within the phase. Once this is complete, selective underground utility relocation (SHA’s Utility, Underground Fiber, and BGE Gas) and temporary relocation of Verizon’s infrastructure on the bridge will begin. As the temporary relocation occurs, temporary barrier wall and demo shielding can be placed; and temporary support under the existing Pier 2 will be erected. Any modifications to drainage that need to be made to properly convey water will be made. Once these activities are complete, phase line shoring will be installed and demolition of the existing bridge will begin. Next follows construction of any ground improvements for the bridge foundation and footings followed by abutment, backwall, wingwall, and pier construction. As construction of bridge substructure continues, the waterline relocation can begin along with phase construction of bridge approaches; maintaining traffic and property access. Following the completion of the bridge substructure, girder and structural steel erection along with bridge water main installation will occur followed by deck and parapet placement. Upon completion of the bridge superstructure, the waterline will be connected and put into service, and aerial utilities will be relocated from the south side of the bridge to the north side of the bridge. Concurrent with aerial utility relocation, we will complete grading around this phase of construction and prepare for Phase 2.

CONSTRUCTION PHASE 1	Independent Work Packages:												
Activity	E&S	MOT	Structure		Aerial Utility Relocations				Underground Utility Relocation				Civil and Drainage
			Foundation/ Substructure	Super-structure	VZ TEMP	Phone	CATV	BGE	SHA	Fiber	BGE Gas	Balt H20	
Acquisition of Anchor Bolts, Bearings, Structural Steel, and Girders				●									
Acquisition of Waterline Materials												●	
Install Erosion and Sediment Controls	●												
Place Maintenance of Traffic Devices and Signals		●											
Designate and Protect Existing Utilities to Remain													●
Relocate SHA Underground Utility and Fiber Optic Line									●	●			
Verizon Temp Relocate Line on Existing Bridge					●								
Install Temporary Barrier Wall and Protection Shielding for Phase 1		●											
Relocate Gas Line to New Location												●	
Install Phase Line Shoring			●										
Place Temporary Supports Under Existing Structure			●										
Demo Phase 1 Bridge Section			●										
Construct Waterline Approaches												●	
Construct Drainage and New Bridge Approaches													●
Construct Bridge Foundation and Footings			●										
Construct Phase 1 Abutments, Backwalls, and Wing Walls			●										
Construct Phase 1 Piers			●										
Construct Phase 1 Superstructure				●									
Construct Phase 1 Parapet				●									
Complete Grading Around New Structure													●
Install Phase 1 Bridge Fencing				●									
Relocate Watermain to New Phase 1 Bridge											●		
Relocate Aerial Utilities						●	●	●					

Construction Approach

Construction Phase 2

The second phase of construction will begin when Aerial Utility Relocation from Phase 1 is complete. The phase will begin with placement of erosion and sediment controls and the reconfiguration of traffic control devices and temporary barrier wall to place traffic on the newly constructed portion of the bridge, alternating one-way signalized. The next step is to re-verify, designate, and protect all utilities within the phase. Temporary demo shielding can be placed; and temporary support under the existing Pier 2 will be removed. Any modifications to drainage that need to be made to properly convey water will be made. Once these activities are complete, demolition of the existing bridge will begin. Next follows construction of any ground improvements for the bridge foundation and footings followed by abutment, backwall, wingwall, and pier construction. While this occurs bridge approach construction will start maintaining traffic and access to properties. Following the completion of the bridge substructure, girder and structural steel erection along with water main installation will occur followed by deck and parapet placement will follow. Upon completion of the bridge superstructure, the approach span piers will be demolished. Any remaining grading around the structures will be completed as well as ornamental fencing.

CONSTRUCTION PHASE 2	Independent Work Packages:				
Activity	E&S	MOT	Structure		Civil and Drainage
			Foundation/ Substructure	Super-structure	
Install Erosion and Sediment Controls	●				
Reconfigure Maintenance of Traffic Devices and Signals		●			
Reconfigure Temporary Barrier Wall and Protection Sheilding for Phase 2		●			
Designate and Protect Existing Utilities to Remain					●
Reconfigure Phase Line Shoring			●		
Remove Temporary Bridge Supports			●		
Demo Phase 2 Bridge Section			●		
Construct Drainage and New Bridge Approaches					●
Construct Bridge Foundation and Footings			●		
Construct Phase 2 Abutments, Backwalls, and Wing Walls			●		
Construct Phase 2 Piers			●		
Construct Phase 2 Superstructure				●	
Construct Phase 2 Parapet				●	
Complete Grading Around New Structure					●
Install Phase 2 Bridge Fencing				●	
Complete Remaining Substructure Demolition			●		

Construction Approach

Construction Phase 3

The final phase of the project will begin with the removal of temporary traffic control, opening the bridge to full traffic. Final paving and line striping will be completed after the bridge is open under daily flagging operations. All erosion and sediment controls will be removed.

CONSTRUCTION PHASE 3	Independent Work Packages:		
Activity	E&S	MOT	Civil and Drainage
Remove Temporary Signals, Restore 2 Lane Traffic		●	
Perform Final Paving and Line Striping Under Daily Lane Closures			●

CONSTRUCTION SCHEDULE

Wagman believes that a thorough Critical Path Method schedule is essential to the success of all projects. We have the expertise and systems to develop a detailed initial schedule and then provide sound alternatives with comprehensive analysis. We will work collaboratively with MDOT SHA, Project Stakeholders, and Utility Representatives to develop our schedule. Our Construction Schedule will be fully integrated with the design schedule. Wagman uses Primavera P6 Version 8.4 as its scheduling software. Refer to activity chart for a snapshot of our conceptual construction schedule for the project.

Wagman views the CPM schedule as a tool for planning and coordination. We will work in a collaborative environment with MDOT SHA, various project Stakeholders, and Utility Representatives to develop and refine the schedule for the project. This way, we can effectively communicate project needs and impacts to all involved. We believe it is important to create a comprehensive schedule including design and construction as a first priority in the preconstruction phase so that design of critical elements can be prioritized for an early start to the work. The complicated utility relocation sequence can be communicated to the utility companies well in advance of construction so that we can ensure that they perform their work within the time allotted in the schedule. Traffic impacts can be communicated to the community well in advance of construction so that people can prepare and adjust their travel routines. Sourcing and acquisition of the following long lead items can be planned properly: wire for power lines, fiber for communication lines, pipe and valves for the water main, reinforcing

	2019									2020											2021										
Activity	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Construction NTP			X																													
Construction Phase 1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																		
Acquisition of Anchor Bolts, Bearings, Structural Steel, and Girders	X	X	X	X	X	X																											
Acquisition of Waterline Materials	X	X	X	X	X	X																											
Install Erosion and Sediment Controls			X																														
Place Maintenance of Traffic Devices and Signals			X																														
Designate and Protect Existing Utilities to Remain			X																														
Relocate SHA Underground Utility and Fiber Optic Line			X	X																													
Verizon Temp Relocate Line on Existing Bridge	X	X	X																														
Install Temporary Barrier Wall and Protection Shielding for Phase 1				X																													
Relocate Gas Line to New Location	X	X	X																														
Install Phase Line Shoring				X																													
Place Temporary Supports Under Existing Structure				X																													
Demo Phase 1 Bridge Section					X	X	X																										
Construct Waterline Approaches						X																											
Construct Drainage and New Bridge Approaches					X	X	X																										
Construct Bridge Foundation and Footings						X	X																										
Construct Phase 1 Abutments, Backwalls, and Wing Walls							X	X	X																								
Construct Phase 1 Piers								X	X																								
Construct Phase 1 Superstructure										X	X	X																					
Construct Phase 1 Parapet												X																					
Complete Grading Around New Structure												X																					
Install Phase 1 Bridge Fencing													X																				
Relocate Watermain to New Phase 1 Bridge													X																				
Relocate Aerial Utilities													X	X	X																		
Construction Phase 2																X	X	X	X	X	X	X	X	X	X	X	X						
Install Erosion and Sediment Controls																X																	
Reconfigure Maintenance of Traffic Devices and Signals																X																	
Reconfigure Temporary Barrier Wall and Protection Sheilding for Phase 2																X																	
Designate and Protect Existing Utilities to Remain																	X																
Reconfigure Phase Line Shoring																	X																
Remove Temporary Bridge Supports																	X																
Demo Phase 2 Bridge Section																		X	X	X													
Construct Drainage and New Bridge Approaches																		X	X	X													
Construct Bridge Foundation and Footings																			X	X													
Construct Phase 2 Abutments, Backwalls, and Wing Walls																				X	X	X											
Construct Phase 2 Piers																					X	X											
Construct Phase 2 Superstructure																							X	X	X								
Construct Phase 2 Parapet																									X								
Complete Grading Around New Structure																									X								
Install Phase 2 Bridge Fencing																										X							
Complete Remaining Substructure Demolition																										X	X						
Construction Phase 3																												X	X	X			
Remove Temporary Signals, Restore 2 Lane Traffic																												X					
Perform Final Paving and Line Striping Under Daily Lane Closures																												X	X				
Punch List																														X			
Project Completion																														X			

steel, form liners for aesthetic concrete finishes, bridge bearings, anchor bolts, bridge girders and structural steel, and ornamental bridge fence. Wagman will coordinate delivery of these items so they arrive on site on time. The purchases can be coordinated in advance of the work for the project if it provides savings or value-added risk reductions.

Construction Approach

Putty Hill Bridge Replacement has many potential schedule constraints that could impact the project. We have identified the following:

- Impacts to traffic;
- Weather impacts to concrete placement, earthwork, and paving;
- Utility relocations;
- Stormwater Management Concept and Plan Approval, sourcing materials;
- And sourcing labor and equipment

Impacts to Traffic can be mitigated through accelerating work, working off peak hours, and through other innovations noted in our Proposed Technical Concepts. We have reviewed the work area and we are confident that the demolition and construction of the piers in the median of 695 can be done behind barrier without shifting traffic. Activities including girder erection, substructure demolition for approach span piers, and deck pours will require lane closures on 695; therefore, the work will be performed during night shifts. Weather impacts on sensitive construction activities are a typical challenge on a construction project of this nature in the region. We will schedule the project to avoid these impacts as much as possible and if necessary, use mitigation techniques such as cold weather concrete plans to work through off season weather. Utility relocations are a critical aspect of the project. As noted earlier in this section and in our Construction Sequencing Section, our plan to mitigate utility constraints starts with active engagement early in the project and continued collaboration through communication of the project schedule. Stormwater Management Concept and Plan Approval is critical to the success of the project. Wagman is prepared to work alongside MDOT SHA, Environmental Agencies, Designers, and Plan Reviewers to create collaborative solutions to expedite approvals. Sourcing and acquisition of long lead time and critical materials will be done throughout the project to avoid impacts to construction. The list of materials that are critical will be continually updated to ensure that all potential hold points for material acquisition are accounted for. Labor and Equipment in our market are in high demand. Wagman can draw from our resources in the region to accomplish the goals of the project. We currently employ 450 trade personnel and own over 200 pieces of equipment. These resources will be mobilized as needed to perform work on the project.

STAKEHOLDER COORDINATION

The Putty Hill Avenue Bridge is an important secondary road for travelers and members of the community in Baltimore County. The new bridge will provide a safer way to travel for those who use it every day. Our public outreach team's objective is to provide information to the community and project stakeholders so that they can be part of the design and construction process. Stakeholders include:

- Baltimore County
- Town of Carney
- Environmental Agencies including Maryland Department of the Environment and the Maryland Historical Trust
- Parkville Middle School and Center for Technology
- Parkville Nazarene Daycare
- Long and Foster Realtors
- St. Ursula's Catholic Church
- Maryland National Guard
- Town of Parkville
- Parktowne Neighborhood
- Ridge Grove Neighborhood
- Putty Hill Neighborhood
- Nottingham
- Baltimore County Fire Stations 8 and 10
- Baltimore County Police Precinct 8
- Utilities
- SHA Electric
- BGE Electric
- BGE Gas
- Verizon
- Baltimore County Water
- Telephone (OH - Unknown)
- CATV (OH - Unknown)
- Fiber Optic (U/G - Unknown)
- Media representatives for Project updates and traffic impacts/lane closures

Construction Approach

The objective for public outreach for this project is to establish and maintain open lines of communication with the project stakeholders listed above. Through the design and construction phases of the project, the public outreach team will work alongside MDOT SHA to support an open dialogue with the community regarding input and concerns relating to the project, information about aspects of the project that impact the community, and aid with community involvement. Our public outreach team will further support MDOT SHA's communications by:

- Providing a Public Relations Coordinator;
- Engaging the local community in the design and construction process;
- Responding promptly and courteously to public comments and questions;
- Being an active participant in planning and conducting public forums;
- Providing notice to the community and stakeholders about the project;
- Documenting contact made with the community and project stakeholders; and
- Meeting as necessary individually with project stakeholders.

The public outreach team will develop and keep a complete list of those people, groups, and community organizations who feel project impacts. The team will also document contact made to these people. Our documentation system will house contact information as well as any correspondence with these stakeholders, and be used for the duration of the project. Our team will meet with these individuals early in the pre-construction/design phase to engage them in the project and hear their thoughts and concerns. A good faith effort will be made to include these suggestions in the plan for design and construction. All correspondence of this nature will be available to MDOT SHA and be saved within our document management system.

The public outreach team will submit public contact record to MDOT SHA on a monthly basis. Upon receipt of comments or questions about the project, the public outreach team will respond promptly via a personal visit or phone call. Documentation of these conversations will be maintained regularly within our document management system.

MDOT SHA will lead the public outreach program with support from our team. We intent to provide materials, personnel to answer questions, up to date project information, and support staff as needed. If MDOT SHA needs support from our Project Manager, Anthony Bednarik will speak on behalf of the project for technical and safety issues with certain audiences.

One of Wagman's core values is community; therefore, stakeholder satisfaction is a priority for our team on this project. Our Public outreach team's approach to achieving stakeholder satisfaction will be through open communication about the status of the project and any upcoming impacts. Our pre-construction and field teams will work to reduce impacts as much as reasonably possible.

Our Public Outreach Team will utilize multiple avenues of communication to keep stakeholders and most importantly, the traveling public aware of progress and potential impacts. Our Team will collaborate with MDOT SHA on the communication strategy as well as the message. We plan to use the following methods to spread information:

- Stakeholder meetings
- Press releases to local media
- MDOT SHA's Informational website for the project
- Social media – Facebook, Twitter
- E-mail updates
- Project information mailers
- Local 'bulletin board' notices
- Variable Message Signs
- Project Hotline
- Telephone Trees
- Fixed signage

Wagman's approach to a project includes a course of inclusion through the Partnering process between MDOT SHA and our team through pre-construction and construction phases of the project. Through the partnering process, we include MDOT SHA and project stakeholders in the project and maintain quality lines of communication. Open communication with all involved is critical to rapidly resolving issues and advancing the project in an efficient manner.

WAGMAN

General Construction | Heavy Civil | Geotechnical

TECHNICAL PROPOSAL

BRIDGE REPLACEMENT
STEEL GIRDER BRIDGE
NO. 0317400
ON PUTTY HILL AVENUE
OVER I-695
BALTIMORE COUNTY

D APPROACH TO COST ESTIMATING

SECTION D-1 ESTIMATING ENVIRONMENT

Integrity is a Wagman Core Value; therefore, we will establish an open line of communication during the estimating process. We believe open and honest communication, and collaboration is the best way to achieve the project goals. The estimating process can be complicated, but to ensure transparency we will explain and define our estimating process. The sequence below is an outline of Wagman's estimating procedure to achieve a transparent estimating environment:

Estimating Environment

Wagman has cost history that dates back to the 1970's.

1. Estimating Model Set-up

When we are selected, we will invite MDOT SHA and the Independent Cost Estimator (ICE) to work in partnership when we set up the preliminary estimating model using our estimating software, HCSS. The estimate will be set-up with appropriate wages, taxes, insurance, equipment rates, material plug pricing, and subcontractor plug pricing. Wagman will present our wage rates for craft and management including taxes, benefits & workers compensation insurance. Equipment rates will be established with market rates including rental, equipment repair, and fuel, oil & grease (FOG) consumption. Permanent and construction material plug prices will be created based on the latest information from our cost history. As a team, the initial estimate set-up will be reviewed and agreed upon to ensure an accurate estimating model is developed and agreed upon. This set-up can be completed immediately after notice of award.

2. Quantify Scope, Bid Items & Work Activities

Upon establishment of the estimating model, Wagman will complie a complete quantity take-off on the plans provided with the RFP. The design is not final; however, we will make reasonable assumptions to quantify the scope of work. This will allow Wagman, MDOT SHA, the Designer, and the ICE to assist with decisions during design and estimate development. In addition, preliminary bid items can be generated to be included in the cost estimating model. After design plans have been created and constructability issues vetted, Wagman will start the quantity take-off process. We will quantify every major element of work on the design documents, and then we will take-off the quantities for the work activities that make up each bid item. After we complete our take-off and prior to cost estimating, we will provide MDOT SHA, the Designer, and the ICE copies of our take-off work sheets so, that the scope of work can be verified. Below is an example of the concrete pier take-off:

Pier	Length (FT)	Width (FT)	Avg. Ht (FT)	No.	Form Area	UM	Concrete Volume	UM	Rebar lbs/CY	Reinforcing steel	UM
Stem	7	3	5	4	400	SF	15.56	CY	200	3,111.11	lbs
Pier Column	9.6	3.5	20	4	2,096.00	SF	99.56	CY	200	19,911.11	lbs
				Totals:	**2,496.00**	**SF**	**115.11**	**CY**		**23,022.22**	**lbs**

3. Development of the Direct Cost Estimate and Construction Packages

Estimating Environment

After the quantities are verified, we will enter the appropriate information, bid item and quantity, into our estimating software, HCSS. Within each bid item, we will create work activities required to complete the bid item and we will apply labor, equipment, permanent materials, construction material, and sub-contractor costs to the work activities. For example, the bid item Substructure Concrete would have the work activities: Forming, Placing Rebar, Placing Concrete, Stripping Forms, Curing and so on. We will create a typical work crew for the work activity and apply a production factor based on our extensive cost history. In an effort to come to an agreed upon OPCC's and the GMP, Wagman proposes to group the bid items into Construction Packages. Bid items that are similar such as stone base and asphalt paving; or individual bridge elements such as deep foundations, footings, sub-structure and superstructure concrete will be packaged so that MDOT SHA and the ICE can evaluate production and cost. We propose these construction packages to ensure a complete scope and a full understanding of our cost estimate by MDOT SHA and the ICE. This process can be conducted throughout the pre-construction phase of the project.

Below is an initial list of the Construction Packages

Grouping bid items into Construction Packages will allow us to submit elements of the project as it is designed accelerating the process. As a collaborative team, Wagman, MDOT SHA, and the ICE, will go through each construction package eventually coming to an agreement on the cost of the OPCC and GMP. By breaking the estimate down into construction packages, we will be able to focus on the work activities that need further discussion, ensuring that we can come to an agreement on cost and the project can be built on time and under budget.

Once the estimate is established, this will give the team another tool to make smart decisions. For example, we could price multiple deep foundation solutions such as driven pile, drilled shafts, auger-cast pile, or micro-pile to evaluate cost and schedule. We will conduct other "what if" scenarios to determine the solution that meets the most project goals. An example of a "what if" scenario would be cast-in-place concrete deck versus an accelerated bridge technique such as precast bridge units similar to Inverset with the concrete deck pre-cast onto the beams prior to erection. As a team we could then evaluate cost and schedule of the two options to decide on the most beneficial technique.

CONSTRUCTION PACKAGES	
Roadway	Guardrail & Fence
MDOT SHA Field Office	Landscaping, Seeding & SWM Conversion
Clearing & Grubbing & Roadway Demolition	Structure
Maintenance & Protection of Traffic	Excavation & Backfill
Excavation & Disposal	Support of excavation
Erosion & Sedimentation	Deep Foundations
Subbase & Paving	Footing concrete
Drainage	Substructure Concrete & Rebar
Concrete Flatwork & Curb	Girder Erection
Pavement Markings & Signs	Bridge Demolition
Signals, Lighting, & ITS	Superstructure Concrete & Rebar
Permits	Incidentals (Architectural, Stain, Bridge Fence, etc)

4. Development of Indirect Cost Estimate

Estimating Environment

Once direct cost and schedule are finalized, Wagman will develop indirect costs. Below is a chart of anticipated indirect costs associated with the project and how their cost will be estimated.

Project Management, administration, lay down yard, and the Contractors' field office are estimated by schedule and project organizational chart. Small tools and project incidentals are estimated by direct man-hours generated by the direct cost estimate. The remaining items such as vacation, premium time, mobilization, and demobilization are calculated by factors associated with direct labor cost generated by the cost estimate. Bonds and insurance are calculated based on

INDIRECT COSTS

Item	Schedule Driven	Direct Labor Cost Factor	Man-Hour Factor	Contract Value Factor
Bonds				●
Insurance				●
Project Management and Vehicles	●			
Engineering	●			
Administrative Support	●			
Contractors Field Office and Yard	●			
Holiday / Show-Up / Sick/ Vacation Time		●		
Premium / Overtime		●		
Safety	●		●	
Small Tools			●	
Welding and Piling Supplies			●	
Training and Hiring			●	
Portable Toilets, Ice, and Water			●	
Cell Phones and Computers			●	
Labor Stay Away and Per Diem			●	
Project Setup and Dismantle of Equipment and Material		●		
Site Equipment Repair and Damage		●		
Project Cleanup		●		

the anticipated contract value. These costs are verified by over 40 years of indirect cost history.

After the direct cost estimate is complete we evaluate the project and apply the appropriate factor.

Some of the indirect costs generated by the Wagman cost estimate will be applied to mobilization including Bond, Insurance, and Mobilization. Other indirect costs must be distributed across the bid items to ensure that all costs are recouped. Our estimating software HCSS allows us to spread indirect costs by four criteria: 1) Indirect cost is spread into each Bid Item by the percentage of direct labor cost in each Bid Item; 2.) Indirect cost is spread by a straight percentage of the cost of each Bid Item; 3.) Indirect is spread by percentage of the total cost minus subcontract in each Bid Item; and 4.) Indirect cost is spread into each Bid Item by the chief estimator. To ensure an open and transparent estimate, Wagman, MDOT SHA, and the ICE will agree on the most appropriate method to spread indirect costs to the construction packages during the development of the estimate model.

Estimating Environment

5. Material and Subcontractor Proposals

When the design has advanced, we will generate material and subcontractor packages to solicit actual pricing for material and subcontractors; with a focus on soliciting DBE vendors. Proposals will be compared and evaluated to determine the material supplier or the subcontractor that best support the team's approach to meet the project goals. This comparison is completed within HCSS (our estimating software) and then the most advantageous vendor will be chosen. The actual material and subcontractor costs will be automatically inserted into the cost model and then applied to the construction packages.

6. GMP Development

After the Cost of Construction is agreed upon through the estimate model and OPCC process, we will apply the CMAR management fee percentage from our price proposal to determine the GMP. Through the open and transparent estimate process, Wagman and MDOT SHA will be able to agree upon the CMP proposal easily. If required, a risk sharing pool will be developed by Wagman and MDOT SHA together to cover unforeseen items.

SECTION D-2 SAMPLE ESTIMATE

Page 6 and 7 is the sample estimate. The pages are a sample of the HCSS printout for an element of Substructure Concrete (Form & Pour Concrete Pier) and Maintenance of Traffic, LS (MOT). Due to page constraints we provided a small sample of the estimate.

Sample Estimate

REVIEW SAMPLE ESTIMATE FIRST
Sample estimate costs are not accurate per RFP

INDIRECT COST AND MARKUP SPREAD

Indirect costs and other mark-up will be applied to the estimate in accordance with methods described in Section D-1, 4. Development of Indirect Cost Estimate. See sample Estimate Summary Report excerpt below that shows the following by bid item: direct cost, indirect cost, markup, total cost, and how indirect costs and markup can be spread to bid items.

ESTIMATE SUMMARY - COSTS & BID PRICES

Bid#	Client# / Bid Description	Quantity	Unit	Manhours	Direct Total	Indirect Charge	Total Cost	Total Cost Unit Price	Markup	------Balanced Bid------ Total	Unit Price
2000		116.00	CY	1,143	99,703	105,839	205,542	1,771.91	25,060	230,602	1,987.95
SUBSTRUCTURE				9.86	859.51	912.40			12.2 %		
3000		1.00	LS	848	56,766	54,951	111,717	111,717.24	13,011	124,728	124,728.36
MOT				848.00	56,765.96	54,951.28			11.6 %		

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Anthony B. (DB) **Cost Report** Page 1

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip-ment	Sub-Contract	Total

Bid Item

BID ITEM = 2020
Description = PIER CONCRETE Unit = CY Takeoff Quan: 116.000 Engr Quan: 0.000

Work Activity | Take-Off Quantity | Work Calendar

32121 FORM PIER SHAFT Quan: 2,496.00 SF Hrs/Shft: 8.00 Cal: 40 WC: MD0654

Workers Comp Code

```
Champagne: similar to Lillian Holt
Pier 1: 4 shafts  variable height stem; standard ht for flair
Historical Cost:
Job #1000 Sec 100, Lillian Holt 2.5 SF/MH
-
-
-
```

Labor Crew, Equipment, and Materials

Cost Breakdown: LAB | P-MATL | CMATL | EQUIP | SUB | TOTAL

FPC	form & strip pier col/cap		166.40 CH	Prod:	2.5000 UM	Lab Pcs:	6.00	Eqp Pcs:	4.00
3FSPS	Steel Forms -|1@106%	1.00	2,496.00 SF	2.100		5,556			5,556
3FW	Wood Forms@106%	1.00	249.00 SF	1.000		264			264
8CH60	Crane, Hydraulic RT 50	1.00	166.40 HR	112.797			18,769		18,769
8TFB	(8)Truck, Flatbed 26,0	1.00	166.40 HR	15.355			2,555		2,555
8TPU	(8)Truck, Pickup	1.00	166.40 HR	8.601			1,431		1,431
8ZML	Manlifts 60'	1.00	166.40 HR	30.596			5,091		5,091
C004	CARPENTER	3.00	499.20 MH	27.500	21,756				21,756
C094	GROUP LEADER, CARPE	1.00	166.40 MH	32.500	8,236				8,236
L007	LABORER	1.00	166.40 MH	18.500	4,582				4,582
O005	CRANE OPERATOR	1.00	166.40 MH	32.300	8,569				8,569
$76,810.51		0.4000 MH/SF	998.40 MH	[11.053]	43,144		5,820	27,847	76,811
20.8000	Shifts	120.0000 Un/Shift	2.5000 Unit/MH *		17.29		2.33	11.16	30.77

34121 POUR PIER SHAFT Quan: 116.00 CY Hrs/Shft: 8.00 Cal: 40 WC: MD0654

```
4 piers -> pour 2 at a time
Pours = 116 cy / 2 each = 58 cy per pour
Historical:
Job #1000 Sec 100 Lillian Holt 0.80 CY/MH
-
-
-
-
```

Notes Describing Work with Take-Offs and Productions

Selected Production

PPC	pour pier col/cap		20.71 CH	Prod:	0.8000 UM	Lab Pcs:	7.00	Eqp Pcs:	4.50
2CM3	Mix 3 Concrete@106%	1.08	125.28 CY	100.000	13,280				13,280
8AC01	Air Compressors 1-249	0.50	10.36 HR	57.982			601		601
8CH60	Crane, Hydraulic RT 50	1.00	20.71 HR	112.797			2,336		2,336
8TFB	(8)Truck, Flatbed 26,0	1.00	20.71 HR	15.355			318		318
8TPU	(8)Truck, Pickup	1.00	20.71 HR	8.601			178		178
8ZML	Manlifts 60'	1.00	20.71 HR	30.596			634		634
C004	CARPENTER	1.00	20.71 MH	27.500	903				903
F057	CEMENT FINISHER	1.00	20.71 MH	27.500	903				903
L007	LABORER	3.00	62.14 MH	18.500	1,711				1,711
L097	GROUP LEADER, LABO	1.00	20.71 MH	30.000	964				964
O005	CRANE OPERATOR	1.00	20.71 MH	32.300	1,067				1,067
$22,892.78		1.2498 MH/CY	144.98 MH	[30.852]	5,547	13,280		4,066	22,893
2.5888	Shifts	44.8093 Un/Shift	0.8001 Unit/MH *		47.82	114.48		35.06	197.35

=====> **Item Totals:**	**2020**	**PIER CONCRETE**							
$99,703.29	9.8567 MH/CY	1,143.38 MH	[268.69]	48,690	13,280	5,820	31,913		**99,703**
859.511	116 CY			419.74	114.48	50.17	275.11		859.51

Production Options

Total and Unit Cost

Wagman — Page 1
BM1806 — CMAR - Putty Hill Ave / I-695 BA1455180 — 03/23/2018 — 12:00
Anthony B. (DB) — **Cost Report**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip-ment	Sub-Contract	Total
BID ITEM = 3000											
Description = MOT	← Bid Item Description			Unit = LS	Takeoff Quan:	1.000	Engr Quan:	1.000 ← Bid Item Quantity			
47000	**TRAFFIC SWITCH PER PHASE**		**Quan: 3.00 EA**		**Hrs/Shft: 8.00**	**Cal: 40**	**WC: MD0601**				
											**Unreviewed
[[Attached Files: Putty Hill MOT Take-off.xlsx]] ← Attached Excel Spreadsheet											
Three major phases											
-											
MOT	MOT Crew		9.00 CH		**Prod: 24.0000 MU**	Lab Pcs: 8.00			Eqp Pcs: 4.00		
8TFBMOT	(8)Truck, Maintenance	2.00	18.00 HR		14.039				253		253
8TPU	(8)Truck, Pickup	2.00	18.00 HR		8.601				155		155
L007	LABORER	6.00	54.00 MH		18.500	1,481					1,481
L097	GROUP LEADER, LABO	2.00	18.00 MH		30.000	835					835
$2,723.28	24.0000 MH/EA		72.00 MH		[513]	2,316			408		2,723
1.1250 Shifts	2.6667 Un/Shift		0.0417 Unit/MH			771.93			135.83		907.76
47001	**FLAGGING** ← Work Activity		**Quan: 10.00 SHF**		**Hrs/Shft: 8.00**	**Cal: 40**	**WC: MD0601**				
Tie in, side roads, paving, pavment markings, milling, material deliveries ← Notes											
-											
MISL	Misc Labor Crew		100.00 CH		**Prod: 0.1000 UH**	Lab Pcs: 2.00			Eqp Pcs: 1.00		
8TPU	(8)Truck, Pickup	1.00	100.00 HR		8.601				860		860
L508	FLAGGER	2.00	200.00 MH		18.500	5,486					5,486
$6,346.19	20.0000 MH/SHFT		200.00 MH		[370]	5,486			860		6,346
12.5000 Shifts	0.8000 Un/Shift		0.0500 Unit/MH			548.61			86.01		634.62
47002	**LANE CLOSURES**		**Quan: 36.00 EA**		**Hrs/Shft: 8.00**	**Cal: 40**	**WC: MD0601**				
Temporary concrete Barrier, Material Deliveries,, Erection, demolition ← Take-Off Quantity											
-											
MISL	Misc Labor Crew		144.00 CH		**Prod: 16.0000 MU**	Lab Pcs: 4.00			Eqp Pcs: 3.00		
8TFBMOT	(8)Truck, Maintenance	1.00	144.00 HR		14.039				2,022		2,022
8TPU	(8)Truck, Pickup	1.00	144.00 HR		8.601				1,239		1,239
8ZAB	(8)Arrow Boards	1.00	144.00 HR		0.503				72		72
L007	LABORER	2.00	288.00 MH		18.500	7,900					7,900
L097	GROUP LEADER, LABO	1.00	144.00 MH		30.000	6,676					6,676
T564	FLATBED TRUCK DRIVE	1.00	144.00 MH		21.000	4,171					4,171
$22,079.45	16.0000 MH/EA		576.00 MH		[352]	18,747			3,333		22,079
18.0000 Shifts	2.0000 Un/Shift		0.0625 Unit/MH			520.75			92.57		613.32
											← Production; ← Production Options
47400	**SIGNS, BARRICADES & DRUMS**		**Quan: 1.00 LS**		**Hrs/Shft: 8.00**	**Cal: 40**	**WC: MD0601**				
Subcontractor includes all Long Term MOT signs & signal. short term signs & material											
3MOTC	Cones@106%	1.00	200.00 EA		16.000			3,392			3,392
3MOTD	Drums@106%	1.00	200.00 EA		55.000			11,660			11,660
3MOTF	Flags@106%	1.00	50.00 EA		5.000			265			265
3MOTW	Windmasters@106%	1.00	20.00 EA		250.000			5,300			5,300
4MOT	MAINT & PROT OF TRA	1.00	1.00 LS		5,000.000					5,000	5,000
$25,617.00					[ ]			20,617		5,000	25,617
← Subcontractor								20,617.00		5,000.00	25,617.00
=====> **Item Totals: 3000 - MOT**											
$56,765.92	848.0000 MH/LS		848.00 MH		[17911]	26,549		20,617	4,600	5,000	**56,766**
56,765.920	1 LS					26,548.75		20,617.00	4,600.17	5,000.00	56,765.92
$56,765.92	***** Report Totals *****		848.00 MH			26,549		20,617	4,600	5,000	**56,766**

>>> indicates Non Additive Activity

D-3 CONTRACTING PLAN

Contracting Plan

When Wagman works as a prime contractor on heavy civil projects in the region we always perform greater than 50 percent of the work in house with our own workforce. Historically we are known for our aptitude in building bridge structures. We employ professionals who give us the ability to perform work in the majority of the heavy civil trades that other general contractors sub contracts. We also have capabilities that set us apart from the competition in the geographical area, most notably, we offer comprehensive geotechnical construction services including pile driving, micro-pile installation, auger-cast pile, and drilled shafts. We can manage and mitigate risk by selectively choosing the scopes of work that we perform in house to be sure that the most critical fall within our control. Reference figure D-3 Contracting Plan for a full list of capabilities applicable to this project.

D-3 CONTRACTING PLAN			Team Past Performance		
Scope of Work:	Self Performance Potential:	Subcontract Potential:	Section 100	MD-4	Rt 54
Permit Acquisition		Sub / DBE	SP	SP	SP
Utility Coordination	SP	Sub	SP	SP	SP
Utility Designation		Sub / DBE	SP	SP	SP
Erosion & Sediment Control	SP	Sub / DBE	DBE	DBE	DBE
Sewer and Water Utility Relocation		Sub / DBE	SP	na	DBE
Bridge Demolition	SP		SP	SP	SP
Geotechnical Construction: Driven Pile, Drilled Shafts, Micro-Piles, and Auger-Cast Pile	SP		SP	SP	SP
Support of Excavation: Design and Construction	SP		SP	SP	SP
Temporary Bridge Shoring	SP		SP	SP	SP
Asphalt Milling & Paving		Sub / DBE	Sub	Sub	Sub
Maintenance of Traffic	SP	Sub / DBE	DBE	DBE	DBE
Concrete for Foundations, Substructure, & Superstructure	SP		SP	SP	SP
Drainage Pipe & Structures	SP		SP	SP	SP
Concrete Flatwork	SP	Sub / DBE	DBE	DBE	DBE
Excavation, Embankment, and Topsoil	SP				
Landscaping		Sub / DBE	DBE	DBE	DBE
Aggregate Base Placement & Fine Grading	SP		SP	SP	SP
Structure Excavation & Backfill	SP		SP	SP	SP
Stormwater Management Facility and Best Management Practice Construction	SP		SP	SP	SP
Striping and Pavement Markings		Sub / DBE	DBE	DBE	DBE
Guardrail & Fence		Sub / DBE	Sub	DBE	Sub
Paint & Stain		Sub / DBE	DBE	DBE	DBE
Trucking		Sub / DBE	DBE	DBE	DBE
Reinforcing Steel - Furnish & Install		Sub / DBE	DBE	DBE	DBE
Structural Steel - Furnish & Install		Sub / DBE	DBE	SP	SP

Contracting Plan

Subcontractors will be selected on the project in a manner that promotes fairness and quality to MDOT SHA. Wagman desires to gain pricing from as many qualified subcontractors as possible to ensure that the pricing for the work is competitive. We have identified potential scopes of work for subcontractors in figure D-3 Contracting Plan that we will use to pursue pricing. From that list and as plans are developed, we will issue and disperse bid packages for pricing of those scopes of work. Based on our experience in Baltimore and more specifically, the I-95 Deck Rehabilitation project, we have a list of known subcontractors who we have built relationships with over the years. We will use this knowledge to acquire at a minimum three quotes from qualified subcontractors for each scope we may choose to be performed by a subcontractor. Our estimating software system, HCSS Heavy Bid, provides the capability to develop scopes of work and accurately compare them for subcontractor and major purchase order selection. Subcontractors will be selected based on the best value they provide. Other factors that will be evaluated when subcontractors are chosen include:

- Disadvantaged or Minority Business Status;
- Quality of Work Performed; Current Backlog;
- Qualifications and Certification to Perform A Given Scope of Work;
- History of Performance for Wagman and MDOT SHA;
- Environmental Stewardship;
- Adherence to Schedules;
- and Safety Performance.

Wagman strives to achieve Disadvantaged Business Participation exceeding the established goal on all of our projects. We intend to work with MDOT SHA to establish a fair goal for Putty Hill Avenue Bridge. We will perform Good Faith Efforts in assisting MDOT SHA in the establishment of the goal and then we will continue to perform Good Faith Efforts to enhance Disadvantaged Business Enterprise participation as Subcontractors and Suppliers on the project. As a starting point, figure D3 Contracting Plan outlines potential scopes of work that can be performed by Disadvantaged Business Enterprises in the area. We will perform outreach to Disadvantaged Business Enterprises to engage them in the project in the following ways: posting information on social media; advertising in local publications that target Disadvantaged and Minority Businesses; attending and conducting our own Disadvantaged and Minority Business outreach events; and utilizing our experience and relationships with Disadvantaged and Minority Businesses to get them involved in the project. Disadvantaged and Minority Business Enterprise pricing will be reviewed in line with other subcontractors and suppliers who provide similar services. We will work with the DBE's to be sure that they fully understand the scope of work and have the capability to perform the work in a safe, quality oriented, and efficient manner. Disadvantaged and Minority Businesses will be given priority in the subcontractor and supplier selection process if those qualifications are met and their price is competitive (but not necessarily low). Below is a successful process that we use on all Wagman projects to meet or exceed the project DBE Goals.

1. Wagman shall send the solicitation notice to the Governor's Office of Minority Affairs.
2. Wagman will work with the State to advertise the procurement on eMaryland marketplace.
3. Wagman will post the solicitation on our Website, in newspapers and in DBE publications.
4. Wagman will identify potential subcontractors and vendors through our in-house data base of prequalified subcontractors, from other databases (State DOT, MD DBE, Plan Holders List).
5. Wagman will send solicitations via facsimile or e-mail at least 15 days prior to bid date.
6. Wagman will provide plans, specification and schedule via hard copy or FTP site.
7. Wagman will establish pre-bid meetings and minority outreach meetings.

Contracting Plan

Wagman understands that compliance with the procurement requirements of the Code of Maryland Regulations (COMAR) is an important aspect of the Preconstruction Services for the project. COMAR section 21.05.10.05 states the requirements for the procurement of subcontracts on Construction Manager at Risk projects. We understand that should we be selected to perform work in the Construction phase of the project that we assume the risk of cost, schedule, and performance of subcontractors on the project. We also understand that we must provide notice to the Governor's Office of Small, Minority & Women Business Affairs as well as properly advertise the project 14 days in advance of the due date of trade proposals. We will provide MDOT SHA with information as needed so that MDOT SHA can publish notice of the project for trade proposals on its website and eMaryland Marketplace. As discussed previously in this proposal, we will select subcontractors in an environment of fairness to both MDOT SHA and to the subcontractors to ensure that MDOT SHA receives the benefit of the lowest cost combined with the highest potential Disadvantaged and Minority Business participation.

Wagman is very successful in meeting or exceeding the DBE goals as shown by our actual results on projects for Maryland

Project	County	$ Contract Value	MBE/DBE Req'd	MBE/DBE Actual
MD-4	PG County	20,592,000	14%	14.96%
ICC – A	Montgomery	464,000,000	20.00%	22.20%
ICC – B	Montgomery and PG County	560,000,000	20.00%	23.30%
I-95/I-695 Interchange	Baltimore	217,000,000	16.00%	16.30%
WWB I-95/I-295/I-495	PG County	106,000,000	18.00%	18.20%
WWB MD 210 Interchange	PG County	62,000,000	17.00%	18.00%