Maryland Department of Transportation
State Highway Administration
Office of Highway Development

MD 32-MD 108 TO NORTH OF LINDEN CHURCH ROAD

DESIGN-BUILD

STEP 1: TECHNICAL PROPOSAL | CONTRACT NO. H01415170
AUGUST 24, 2016

CONCRETE GENERAL

MD 32 – MD 108 to North of Linden Church Road
Contract No. HO1415170

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STEP 1: TECHNICAL PROPOSAL | CONTRACT NO. H01415170

LEAD DESIGN FIRM EXPERIENCE/
QUALIFICATIONS AND PAST PERFORMANCE

CONCRETE GENERAL

Walter Miller, PE – Project Design Manager

Partner – Whitman, Requardt & Associates, LLP

Years of Experience: 29
Education: BS/1987/Civil Engineering

Registrations/Certifications: 1991/Maryland Registered Professional Engineer, License No. 19165

Professional Experience:

Mr. Miller has 29 years of experience designing and managing a wide range of multi-discipline transportation projects covering all aspects of transportation design including studies, preliminary and final design, development of contract documents, and construction support services. Project types have included new roadways, dualizations and widenings, new interchanges and interchange modifications, safety improvements, pedestrian and bicycle improvements, new structures, structure rehabilitation/replacements, MOT, traffic studies and improvements, pavement and geotechnical improvements and remediations, TMDL and drainage improvements, and multi-modal facilities. Mr. Miller is well-versed in SHA, AASHTO, MDMUTCD, and FHWA specifications, standards, policies, requirements and/or criteria. Recent relevant experience includes:

Design-Build MD 237 from MD 235 to Pegg Road ($37.8M), SHA, St. Mary's County, MD (12/07-10/11): As Project Design Manager, Mr. Miller managed all design efforts for the dualization (two to four lanes) and reconstruction of 2.9 miles of MD 237, including survey; roadway and bicycle/pedestrian improvements; H&H analysis and design for drainage, SWM, multi-phase E&SC, a rock ramp, maintenance of stream flow, and flood studies (FEMA CLOMAR); design of pipe culverts and a box culvert; noise wall and retaining wall design; complex multi-phase MOT using temporary crossovers; soil borings; pavement cores and FWD testing; geotechnical engineering and pavement design using an alternative pavement section resulting in cost savings to SHA; traffic signals, intersection lighting, signing and markings; landscape design; utility designating and test pitting; utility design for gas, water and sewer and coordination for electric and communications; permitting/approvals/compliance (SWM, E&SC, NOI/NPDES, forest, Section 404/wetlands and waterways, NEPA); public outreach; Partnering; design QC; and construction support services, including as-built plans.

Design-Build MD 210 at Kerby Hill/Livingston Roads Interchange Improvements ($82.6M), SHA, Prince George's County, MD (3/15-Present): As Project Design Manager, Mr. Miller is managing all design efforts for the reconstruction of an at-grade intersection to a grade separated interchange, including survey; roadway and bicycle/pedestrian improvements; H&H analysis and design for drainage, SWM, multi-phase E&SC, a stream relocation, maintenance of stream flow, and flood studies; design of box culvert extensions and pipe culverts, bridges, noise walls, and retaining walls; complex multi-phase MOT; soil borings; pavement cores; geotechnical engineering and pavement design; TMP; traffic signals, partial interchange and intersection lighting, and signing/markings; landscape design and on-site reforestation; utility designating/test pitting; utility design of gas, water and sewer; extensive utility coordination of electric and communications; environmental permitting/approvals/compliance (SWM, E&SC, NOI/NPDES, forest, Section 404/wetlands and waterways, NEPA); public outreach; Partnering; design QC; and construction support services. Project design is 85% complete.

Design-Build I-495 at Arena Drive from MD 202 to MD 214 ($29.5M), SHA, Prince George's County, MD (5/07-12/09): As Project Design Manager, Mr. Miller managed all design efforts for the median widening of 1.9 miles of the Capital Beltway for additional lanes in each direction, reconfiguration of ramps and modification of intersections at the MD 214 and MD 202 interchanges, and modification of intersections at the Arena Drive interchange ramp termini. Design efforts included survey; roadway and pedestrian improvements; H&H analysis and design for drainage, SWM and multi-phase E&SC; complex multi-phase MOT; geotechnical engineering and pavement design; traffic signals, partial interchange lighting, signing/markings and ITS; landscape design and on-site reforestation; utility test pitting; utility coordination; environmental permitting/approvals/compliance (SWM, E&SC, NOI/NPDES, forest, wetlands and waterways, NEPA); and public outreach; Partnering; design QC; and construction support services, including as-built plans.

MD 22 Corridor Capacity Improvements (BRAC) ($26M), SHA, Harford County, MD (7/08-Present): As Project Supervisor/Contract Manager, Mr. Miller supervised all design efforts for the capacity improvements along MD 22, a multi-lane divided highway and improvements to three intersections, including roadway and bicycle/pedestrian improvements; H&H analysis and design for drainage, SWM, and multi-phase E&SC; noise wall and retaining wall design; complex multi-phase MOT; geotechnical engineering; traffic signals, intersection lighting, and signing/markings; landscape design and on-site reforestation; utility designating/test pitting; utility coordination; ROW plats; environmental permitting/approvals (SWM, E&SC, forest, wetlands and waterways, NEPA); public outreach; design QC; and construction support services.

Gary Bush, PE – Highway Engineer

Vice President – Whitman, Requardt & Associates, LLP

Years of Experience: 38
Education: BS/1976/Civil Engineering

Registrations/Certifications: 1985/Maryland Registered Professional Engineer, License No. 14255

Professional Experience:

Mr. Bush has spent his entire 38-year career as a Highway Engineer at WRA on projects in Maryland, with a majority of projects being for SHA. Responsibilities have consisted of all phases of projects including planning, preliminary design, final design, preparation of Design-Bid-Build and Design-Build documents and construction related services. His experience includes typical section preparation, horizontal/vertical alignments, grading plans, superelevations, intersection and interchange layouts, maintenance of traffic, noise measurement, analysis and barrier design, signing, pavement markings, utility coordination, right-of-way, construction details, writing specifications, and developing detailed cost estimates. He has also participated in value engineering studies, performed constructability reviews, and participated in public meetings. Mr. Bush has been the Lead Highway Engineer for three Design-Build projects for SHA, including MD 237, MD 210, and Arena Drive. Recent relevant experience includes:

Design-Build MD 237 from MD 235 to Pegg Road ($37.8M), SHA, St. Mary's County, MD (12/07-10/11): As Lead Highway Engineer, Mr. Bush was responsible for highway design and MOT for the dualization (two to four lanes) and reconstruction of 2.9 miles of MD 237, including the construction of new pavement, rehabilitation of the existing pavement, and connection to an existing dualization. The project was constructed in four zones requiring four MOT packages utilizing temporary connections between construction zones to maintain traffic without detours. Mr. Bush oversaw the preparation of final roadway plans, assisted in utility coordination and utility relocations including coordinating test holes, and reviewed water, sewer, gas, and signing/markings designs. He coordinated surveys, prepared design schedules, and participated in Partnering meetings and the public outreach program. The project also included drainage, SWM, multi-phase E&SC, a box culvert, noise barriers, traffic signals, lighting, signing/markings, landscaping, utility coordination of overhead/underground electric and communications, permitting/approvals/compliance, and construction support services, including as-builts.

Design-Build MD 210 at Kerby Hill/Livingston Roads Interchange Improvements ($82.6M), SHA, Prince George's County, MD (3/15-Present): As Lead Highway Engineer, Mr. Bush is responsible for all highway design and MOT for the reconstruction of an at-grade intersection to a grade separated interchange including the widening of 1.9 miles of MD 210. He is responsible for the final highway design which includes the interchange ramp design, intersection designs, service roads and temporary roadways. In an effort to minimize disruptions to traffic during construction, the existing pavement is being rehabilitated to the greatest extent possible. Many design challenges were overcome in order to meet the design intent within the limited available right-of-way. The project also includes roadway and bicycle/pedestrian improvements, noise barriers, MOT, TMP, traffic signals, lighting, signing/markings, landscaping and on-site reforestation mitigation, utility design with coordination of overhead and underground electric and communications, permitting/approvals/compliance, public outreach, Partnering, and construction support services. The highway design is significantly complete.

Design-Build I-495 at Arena Drive from MD 202 to MD 214 ($29.5M), SHA, Prince George's County, MD (5/07-12/09): As Lead Highway Engineer, Mr. Bush was responsible for all highway design and MOT for the reconfiguration of interchange ramps and intersections at MD 202 and MD 214, intersection improvements at Arena Drive, and for the median widening of 1.9 miles of I-95/I-495 (the Capital Beltway). He was responsible for the final highway design for the widening of I-95/I-495 in the median for additional lanes; reconfiguration of ramps at MD 202 and MD 214 to improve interchange ramp capacity; and modifications of ramps termini at Arena Drive. Mr. Bush oversaw the roadway design, preparation of final plans, preparation of multi-phase MOT, assisted with utility coordination, developed design schedules, participated in Partnering and public outreach.

MD 22 Corridor Capacity Improvements (BRAC) ($26M), SHA Harford County, MD (7/08-Present): As Lead Highway Engineer, Mr. Bush is responsible for highway design and MOT for capacity improvements along the MD 22 corridor including improvements to three major intersections. Improvements to MD 22, a multi-lane divided roadway, included auxiliary lanes, acceleration/deceleration lanes, and intersection design with side street improvements. Mr. Bush was also responsible for the development of preliminary and final highway engineering, preparing multi-stage MOT plans, including coordination between three separate construction contracts. He has participated in Partnering and public outreach.

Jason Cosler, PE – Water Resources Engineer

Vice President – Whitman, Requardt & Associates, LLP

Years of Experience: 24
Education: BS/1992/Civil Engineering

Registrations/Certifications: 2002/Maryland
Registered Professional Engineer, License No. 28467

Professional Experience:

Mr. Cosler has 24 years of experience in water resources engineering for public infrastructure, transportation and development-related projects. His experience includes the investigation, analysis, and design of storm drains, culverts, SWM facilities, bridges and low-water crossings, E&SC measures and permitting, stream stability assessments and restoration design, scour analysis and countermeasure/revetment design. He is experienced in the application and interpretations of the 2000 Maryland Stormwater Design Manual including recent updates requiring environmental site design (ESD), as well as methodologies and programs including HDS-5, HY-8, HY-22, HEC-11, HEC-14, HEC-18, HEC-21, HEC-23 and TR-55. He has advanced training in HEC-RAS, GIS Hydro 2000, TR-20, ABSCOUR and is Yellow Card certified. He possesses training in stream assessment and restoration based upon Rosgen methodologies. Recent relevant experience includes:

Design-Build MD 237 from MD 235 to Pegg Road ($37.8M), SHA, St. Mary's County, MD (12/07-10/11): As Lead Water Resources Engineer, Mr. Cosler was responsible for all water resources designs for the dualization (two to four lanes) and reconstruction of 2.9 miles of MD 237. He oversaw the design, plan preparation, and MDE, USACE and SHA permits/approvals for open and closed storm drain systems; eight traditional SWM facilities; SWM as-built certification; and H&H analysis/design for phased E&SC with MOT, drainage culverts, a two-cell CIP box culvert, including maintenance of stream flow, constructed in phases at the Jarboesville Run crossing and the design/construction of a rock ramp for fish passage downstream of the box culvert. The project also included roadway and bicycle/pedestrian improvements, noise barriers, traffic signals, intersection lighting, signing/markings, landscaping, utility design/coordination of overhead and underground electric and communications, permitting/approvals/compliance, public outreach, Partnering, and construction support services.

Design-Build MD 210 at Kerby Hill/Livingston Roads Interchange Improvements ($82.6M), SHA, Prince George's County, MD (3/15-Present): As Lead Water Resources Engineer, Mr. Cosler is responsible for all water resources engineering for the reconstruction of an at-grade intersection to a grade separated interchange. He is currently overseeing all design and plan preparation, as well as MDE, USACE and SHA permits/approvals, for final drainage, SWM (traditional and ESD), H&H analysis for drainage culverts, a bridge over Carey Branch, phased E&SC, and stream relocation (stream stability analysis and maintenance of stream flow design). He has worked to minimize impacts to all environmental features and coordinated with electric, communication, gas and water/sewer utilities. The project also includes roadway and bicycle/pedestrian improvements, noise barrier design, MOT, traffic signals, intersection lighting, signing/markings, landscaping and on-site reforestation mitigation, utility design/coordination of overhead and underground electric and communications, permitting/approvals/compliance, public outreach, Partnering, and construction support services.

Design-Build I-495 at Arena Drive from MD 202 to MD 214 ($29.5M), SHA, Prince George's County, MD (5/07-12/09): As Lead Water Resources Engineer, Mr. Cosler was responsible for all water resources engineering for the median widening of 1.9 miles of the Capital Beltway for additional lanes in each direction, reconfiguration of ramps and modifying intersections at MD 214 and MD 202, and modifying intersections at the Arena Drive ramp termini. He oversaw the design and plan development of final drainage, SWM, and E&SC; coordinated SHA/MDE permit approvals; and provided SWM as-built certification. Mr. Cosler revised the concept SWM which eliminated the construction of a SWM facility in a wooded loop ramp, drainage design consisted of 1,700 LF of storm drain trunk line including a 48" conduit jacked and bored under I-495.

MD 22 Corridor Capacity Improvements (BRAC) ($26M), SHA, Harford County, MD (7/08-Present): As Lead Water Resources Engineer, Mr. Cosler was responsible for water resources work for capacity improvements along MD 22 including improvements to three intersections. He oversaw water resources design and plan preparation including open and closed storm drainage systems, phased E&SC with MOT, ESD and traditional SWM facilities; and MDE, USACE and SHA permits/approvals. The project also included roadway and bicycle/pedestrian improvements, traffic signals, intersection lighting, signing/markings, landscaping/on-site reforestation, noise mitigation, utility coordination, ROW, permitting, public outreach, Partnering, and construction support services.

Design-Build MD 237 from MD 235 to Pegg Road, St. Mary's County, Maryland

Whitman, Requardt & Associates, LLP – Lead Design Firm

Owner: Maryland State Highway Administration

Owner Contract Number: SM7575171

Owner Point of Contact:
Mr. Jeffrey Folden
Maryland State Highway Administration
410.545.8814
jfolden1@sha.state.md.us

Project Delivery Method: Design-Build | Lump Sum Pricing

Overall Construction Cost:
100% of design services completed by WRA
Initial Contract Value: $35.9 million
Final Contract Value: $37.8 million
Reason for Difference: Owner added utility relocations and an intersection modification for a future county project

Overall Schedule Performance:
Notice to Proceed Date: 12/2007
Initial Completion Date: 11/2010
Final Completion Date: 10/2011
Reason for Difference: Owner added approved extra work (see above)

Rock ramp for fish passage at Jarboesville Run

Project Description and Specific Nature of Work: WRA was the Lead Design firm responsible for performing final engineering services, preparing final construction documents, and obtaining permits/approvals for the dualization and reconstruction of 2.9 miles of MD 237 from a two-lane roadway to a four-lane divided roadway. A majority of the existing MD 237 roadway horizontal and vertical alignment was substandard and thus required a complete reconstruction to meet current design standards.

The project included the rehabilitation and construction of new pavement resulting in the placement of 46,000 tons of asphalt. Earthwork for the dualization consisted of 107,000 CY of excavation and 87,000 CY of borrow. The majority of the borrow was found on-site, requiring a construction sequence of excavations of cuts prior to fill embankments. With MD 237 classified as minor arterial with no access control, 16 intersecting side streets and over 65 driveways were resurfaced/reconstructed. A complete new closed storm drain system was installed with over 13,500 LF of drainage pipe with eight new traditional SWM facilities. A multi-phase E&SC in conjunction with MOT was designed, approved and implemented. A 2,200 LF portion of MD 237 vertical alignment was raised 12 ft. to accommodate the replacement of undersized pipe culverts with a larger twin-cell reinforced box culvert supported on a pile foundation. A temporary geo-fabric wall was installed along the 12-ft. fill embankment to maintain MD 237 traffic on its existing pavement. A temporary drainage system was required to maintain positive drainage within the bifurcated construction zone. Three noise walls, totaling 1,700 LF, were designed/constructed adjacent to residential properties. Utility work included the design and installation of over 10,000 LF of 12" ductile iron water pipe, 6,000 LF of 6" and 8" gas line, and 350 LF of low pressure sanitary sewer line with grinder pumps. WRA also coordinated with utility companies to relocate aerial electric, telephone, and cable as a first order of business requiring

individual meetings with utility owners to synchronize their relocation with the roadway reconstruction. Advanced relocation of major electric and telephone aerial facilities was required to facilitate pile driving for the new box culvert. Traffic engineering services included five traffic signals, signal interconnect, signing/markings, and intersection lighting. Intersections were designed to be ADA-compliant and were field checked for compliancy during construction. MOT plans maintained traffic along roadways and access to driveways and entrances at all times, without detours. Temporary cross-overs from newly-constructed pavement to the existing pavement were installed as portions of the project were completed. New landscaping was installed along MD 237 roadside and medians, within SWM facilities, at Jarboesville Run box culvert and for on-site wetlands and forest mitigation. Geotechnical services included foundation design for the twin-cell box culvert and noise walls, evaluation/design of roadway embankments and cuts, and new and rehabilitated pavement design, including Falling Weight Deflectometer testing of the existing pavement.

The project was divided into four construction zones to accelerate critical path elements (e.g., utility relocation, box culvert, noise walls, etc.) and to manage stormwater runoff during construction. SWM facilities were initially constructed as sediment basins then converted to final SWM facilities as sections were completed. Each construction zone was designed and submitted for approval separately. This allowed construction to proceed in approved zones as subsequent zones were being designed and approved. As zones were completed, traffic was shifted on to the newly completed roadways.

Coordination with SHA's Independent Environmental Monitor (IEM) maintained the project within the permit conditions as authorized by MDE, USACE, DNR, and the approved permits/plans/specifications. A focus was on Jarboesville Run to replace the pipe culverts with a box culvert due to its importance as a natural resource. An automated water quality data logger was installed upstream and downstream to monitor water quality. Temporary stream diversions facilitated construction of the box culvert and a rock ramp for fish passage. A key issue of the project was to reduce impacts to environmental features. Through design and construction, the Design-Build team ultimately reduced the originally permitted wetlands and Waters of U.S. impacts by 13,517 SF. A portion of the project improvements was located alongside a historic church and cemetery with unmarked graves. During construction, several graves were discovered and were promptly marked for authorities for reinternment. A public outreach program included public meetings and distributing brochures to inform the public of progress and upcoming work. There were property owner meetings to discuss impacts and respond to questions. Additionally, the Design-Build team coordinated with St. Mary's County on an adjacent project which required a re-design to accommodate the County's future project.

Successful Methods, Approaches and Innovations: The project was divided into four zones which governed design and construction. Two lanes of traffic were continuously maintained throughout construction without detours. The pavement section used a bank run gravel base for the base course material, not commonly used by SHA but local to southern Maryland, resulting in a cost savings to SHA. The Design-Build team eliminated several SWM facilities in the conceptual design, saving SHA initial and future maintenance costs; monitored environmentally-sensitive Jarboesville Run during construction, especially during severe weather events and was ready to respond to emergencies; provided continual coordination with the IEM during construction and responded quickly when issues arose; provided a safe MOT route when transitioning between construction zones and access to adjacent property owners throughout construction; and reduced permitted wetlands and forest impacts for which the project earned impact reduction incentives. These successful approaches including minimizing impacts, minimizing user delay, coordinating closely with the public and stakeholders, and the innovative use of materials will be employed for the MD 32 project which has many similarities and similar goals as the MD 237 project.

Key Staff: Walter Miller, PE – Project Design Manager; Gary Bush, PE – Lead Highway Engineer; Jason Cosler, PE – Lead Water Resources Engineer

Awards/Commendations: Mid-Atlantic Construction's Best of 2010

Disputes Taken to Arbitration and/or Litigation: None

Design-Build MD 210 at Kerby Hill Road/Livingston Road Interchange
Prince George's County, Maryland

Whitman, Requardt & Associates, LLP – Lead Design Firm

Owner: Maryland State Highway Administration

Owner Contract Number: PG7005170

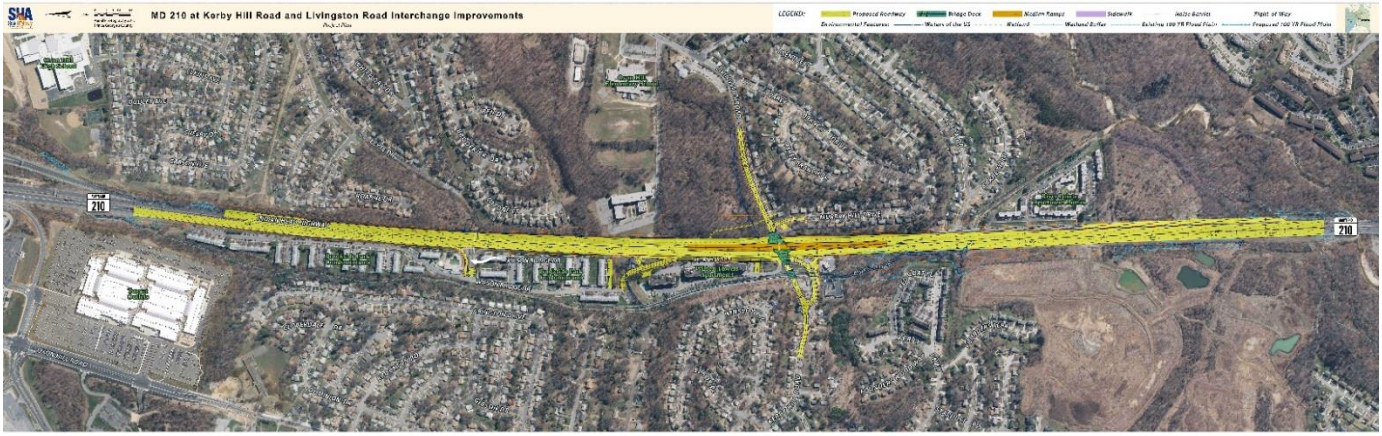
Owner Point of Contact:
Ms. Shannon Stypula
410.545.8833
sstypula@sha.state.md.us

Project Delivery Method: Design-Build | Lump Sum Pricing

Overall Construction Cost:
100% of design services completed by WRA
Initial Contract Value: $82.6 million
Final Contract Value: Ongoing
Reason for Difference: Ongoing

Overall Schedule Performance:
Notice to Proceed Date: 8/2015
Initial Completion Date: 11/2018
Final Completion Date: Ongoing
Reason for Difference: Ongoing

Project Description and Specific Nature of Work: WRA is the Lead Design firm and Concrete General, Inc. is the Lead Construction firm for the MD 210 at Kerby Hill/Livingston Road Design-Build project. WRA is currently performing final engineering services and preparation of final construction documents (design is 85% complete) including obtaining approvals for the reconstruction of the existing at grade intersection to a grade separated interchange of MD 210 with Kerby Hill Road/Livingston Road. SHA had identified MD 210 (Oxon Hill Road) from I-95/I-495 (Capital Beltway) to MD 228 (south of Kerby Hill Road/Livingston Road) as a highly congested corridor and proposed overpasses at each main signalized intersection. The interchange at Kerby Hill Road/Livingston Road is the first of several projects to relieve traffic congestion. The Kerby Hill Road/Livingston Road interchange incorporates median ramps in lieu of outer ramps.



The project includes the realignment of Kerby Hill Road and Livingston Road approaching the new interchange; two new bridges over MD 210; a new bridge over Carey Branch; retaining walls to support the median ramps; noise barriers along a majority of the project limits; construction of service roads to maintain access to residential and commercial properties; existing pavement rehabilitation and new pavement construction for roadway widening; new open and closed storm drain

systems; SWM quality and quantity control facilities; E&SC; Carey Branch stream relocation and stabilization; major culvert extensions; utility coordination for the relocation of electrical, communication, cable and fiber optic being design and relocated by utility owners; utility design and relocation of water, sanitary sewer and gas performed by the Design-Build team; extensive MOT including temporary roadway connections to maintain access to Livingston Road and Kerby Hill Road from/to MD 210; new signing, pavement markings, and interchange and intersection lighting; and a new traffic signal at the intersection of the MD 210 median ramps at the Kerby Hill Road/Livingston Road intersection.

The project includes 20,000 LF of concrete barrier, 80,000 CY of excavation, 14,000 LF of storm drains, 15,000 LF of underdrain, 2,200 LF of retaining walls, 14,000 LF of noise wall, 26,000 SF of bridge, 52,000 tons of asphalt, 14,000 LF of curb, 30,000 SF of sidewalk, 8,800 LF of gas main (including 7,300 LF of 12" high pressure gas main), 3,100 LF of water main, and 1,500 LF of sewer main. Surveys were performed to verify and supplement the information provided by SHA. On-site monitoring of subsurface exploration was performed. Geotechnical services included foundation design for box culvert extensions, retaining walls, bridges, and noise walls, evaluation/design of roadway embankments and cuts, and a reinforced soil slope. WRA coordinated a comprehensive utility test hole and subsurface investigation program. Highway design included coordination of the various structures and SWM facilities within a constrained right-of-way. WRA performed structural design of bridges, box culvert extensions, retaining walls, noise barriers and incidental structures. Traffic engineering included design of signing, markings, interchange and intersection lighting, signalization and ITS, a TMP, and the development of MOT including multiple stages and sub-stages. Hydrology/hydraulics was performed for the relocation of Carey Branch including stream assessment and relocation analysis. SWM design included a total of five (5) bio-swales, three (3) wet-swales, two (2) submerged gravel wetlands, and ten (10) micro-bioretention facilities to provide ESD volume of 48,573 CF. A multi-phase E&SC plan was developed in conjunction with MOT. Public outreach for the MD 210 project included preparation of multiple displays for a large formal public meeting, and attendance and presentations at several other smaller community association meetings. Other services that WRA has completed or is currently completing include landscape design, a tree preservation plan, water, sewer and gas utility relocation design, utility coordination, design quality control and subconsultant coordination.

Successful Methods, Approaches and Innovations: The project schedule was critical and was part of the selection criteria. The Design-Build team was successful partly due to a commitment to an aggressive schedule completion. A key component of the project was to coordinate and relocate existing utilities prior to and concurrent with the project roadway improvements. Monthly utility coordination meetings with utility owners, SHA and the Design-Build team were a priority to coordinate the proposed utility relocations with the roadway design. Conflicts between the proposed utility design and the roadway design were identified immediately and changes to the design implemented quickly to avoid future impacts. The Design-Build team worked with the utility relocation personnel to prioritize relocations, which benefitted the utility owner and the construction schedule. MOT design included the temporary use of a proposed service road for right-turning vehicles onto Kerby Hill Road for a more efficient sequence of construction. The plans were developed to allow the main signalized intersection to remain operational as long as possible to minimize the duration of detours for the turning movements affected during subsequent construction phases. The acquired ROW for the project was extremely limited and required the installation of retaining walls or barriers to maintain improvements within the rights-of-way. The project also included coordination for public transit with Prince George's County and WMATA. WRA developed a plan to accommodate bus routes during construction, including temporary bus stops, to ensure that all users retain access to transit on this heavily utilized transit corridor. These successful approaches including close schedule coordination, public and stakeholder involvement, extensive utility coordination, and an innovative design to fit project constraints will be employed for the MD 32 project which has many similarities and similar goals as the MD 210 project.

Key Staff: Walter Miller, PE – Project Design Manager; Gary Bush, PE – Lead Highway Engineer; Jason Cosler, PE – Lead Water Resources Engineer

Disputes Taken to Arbitration and/or Litigation: None

Design-Build I-495 at Arena Drive from MD 202 to MD 214, Prince George's County, Maryland

Whitman, Requardt & Associates, LLP – Lead Design Firm

Owner: Maryland State Highway Administration

Owner Contract Number: PG6385172

Owner Point of Contact:
Mr. Eric Marabello
410.545.8770
emarabello@sha.state.md.us

Project Delivery Method: Design-Build | Lump Sum Pricing

Overall Construction Cost:
Initial Contract Value: $26.6 million
Final Contract Value: $29.5 million
Reason for Difference: Owner added MD 214 interchange ramp modifications

Overall Schedule Performance:
Notice to Proceed Date: 5/2007
Initial Completion Date: 8/2009
Final Completion Date: 12/2009
Reason for Difference: Owner added approved extra work (see above)

Project Description and Specific Nature of Work: WRA was the Lead Design firm for this Design-Build project and was responsible for performing final engineering design services, preparing final construction documents, and obtaining permits/approvals for improvements to I-495 at Arena Drive. The project included 1.9 miles of median widening on the Capital Beltway for additional lanes in each direction, reconfiguring ramps and modifying intersections at the MD 214 and MD 202 interchanges, and modifying intersections at the Arena Drive interchange ramp termini. The proposed improvements accommodated three through-lanes and two collector-distributor lanes in each direction which allowed the Arena Drive interchange with I-495 to remain open on full-time basis. Additional improvements included resurfacing of existing pavement on I-495, MD 214 and MD 202. Existing pavement along I-495 was reconstructed at selected locations. Intersection improvements included the reconstruction of pedestrian facilities to conform to ADA requirements and the installation of traffic and pedestrian signals at Arena Drive, and the installation of traffic signals at MD 214 and MD 202. Traffic engineering improvements included the installation of four new traffic signals, extensive overhead signing, pavement markings, partial interchange and intersection lighting, and signal interconnect. Additional improvements included a new median closed storm drain system, construction of a new SWM facility, installation of E&SC measures, construction of a new bifurcated concrete median barrier, new roadside and SWM landscaping, and on-site reforestation. WRA services included field surveys, roadway design, evaluating design exceptions, drainage design, SWM design, E&SC, environmental permitting, geotechnical engineering including evaluation of existing pavement and design pavement rehabilitation, detail bridge structural modifications, signing, lighting, pavement marking, traffic signalization, MOT, utility coordination, public outreach and coordination with stakeholders.

The project design and construction schedule were integrated by preparing an initial clearing and median drainage package to allow construction to be initiated while a subsequent roadway package was being designed and approved. The initial package only required the approval of temporary E&SC measures since roadway pavement was not being impacted and thus SWM approval was not required. This accelerated the approval process to initiate construction. The subsequent roadway package encompassed all the elements to obtain SHA/MDE approval of the roadway improvements and construction.

The heavy traffic volumes on MD 202, MD 214, and I-495 with an ADT of 190,000 vehicles per day required extensive multi-phase MOT staging. MOT plans were prepared to maintain all lanes of traffic on I-495 and throughout the interchanges during peak hours. The MOT design also maintained the special event traffic patterns operated during Washington Redskins home games including shoulder use for exiting traffic at Arena Drive. Several outer ramps were closed temporarily during the weekend for tie-in construction with I-495. Individual ramp detours were implemented with the requirement that concurrent ramp detours were not permitted. WRA coordinated with SHA, OOTS, CHART and Prince George's County during design and construction, and prior to enacting lane reductions, I-495 traffic pattern changes, and interchange ramp configuration changes. As a cost saving measure, WRA proposed the re-use of two cantilever sign structures, two overhead sign structures and two overhead dynamic message sign structures. Utility impacts were limited to several utility poles in conflict with the MD 214 widening to accommodate the reconfiguration of ramp geometrics. Construction was phased for the widening to allow utility companies to reset new poles. WRA was responsible for coordinating with PEPCO to obtain power feeds to traffic control devices (roadway lighting, VMS, and traffic signalization).The conceptual SWM was re-evaluated and it was determined that by revising the conceptual design, a SWM facility, located within a wooded loop ramp, could be eliminated. This revision was submitted and approved by SHA and MDE resulting in significant cost savings both in construction and future maintenance while avoiding impacts to the existing forest stand. Installation of a new 48" RCP under the inner loop of I-495 was required to provide an outlet for the new closed storm drain system in the median. The pipe was installed by jacking and boring under I-495 to minimize disruption to traffic. Also, WRA acquired MDE, SWM/E&SC approval, updated/modified the forest impact permit, updated the wetland impact plates and permits, prepared revisions to plans under construction, participated in Partnering with SHA, and performed construction related services. All design schedules were met on this project.

The project quantities included 24,000 SY of pavement grinding, 80,000 tons of HMA, 7,550 LF of concrete median barrier, 12,000 LF of traffic barrier W beam, 11,000 LF of underdrain, 375 LF of RCCP including jacking 125 LF, 3200 LF of PE pipe.

Successful Methods, Approaches and Innovations: A primary objective of the project was to ensure the safety of the traveling public and construction workers with the least amount of disruption to the traveling public on an extremely congested highway. This was achieved with a multi-phase MOT plan that maintained existing traffic in minimum 11' lanes with all lanes opened during peak hour. A majority of I-495 work requiring lanes closures was performed during nighttime including temporary traffic barrier placement, pavement grinding/resurfacing and lane shifts. Existing outside shoulders were evaluated for traffic bearing capabilities, which allowed the shifting of traffic on the shoulder for the median widening construction. Existing pavement was utilized to its fullest extent to minimize full depth reconstruction. The conceptual SWM was reviewed and a modification was presented which resulted in the elimination of a SWM facility within a forested loop ramp. A new closed median drainage system was installed and outlet to a new pipe under I-495 which was installed by jacking and boring under I-495. An initial median drainage construction package expedited construction. Corrugated polyethylene pipes were installed where approved by SHA, resulting in a significant cost saving for SHA.

Key Staff: Walter Miller, PE – Project Design Manager; Gary Bush, PE – Lead Highway Engineer; Jason Cosler, PE – Lead Water Resources Engineer

Disputes Taken to Arbitration and/or Litigation: None

Maryland Department of Transportation
State Highway Administration
Office of Highway Development

MD 32-MD 108 TO NORTH OF LINDEN CHURCH ROAD

DESIGN-BUILD

STEP 1: TECHNICAL PROPOSAL | CONTRACT NO. H01415170

CONCRETE GENERAL

LEAD CONSTRUCTION FIRM EXPERIENCE/
QUALIFICATIONS AND PAST PERFORMANCE

Raymond "Butch" Lundgren – Design-Build Project Manager

General Manager– Concrete General, Inc.

Years of Experience: 52
Education: BS/1968/Civil Engineering

Registrations/Certifications: None

Professional Experience:

Mr. Lundgren has extensive experience as Project Manager and Design-Build Project Manager for the construction of airports, roads, highways, bridges, water mains and sewer mains in Maryland, Kentucky, Massachusetts, and Pennsylvania. With over 50 years of experience in the construction industry managing pre-construction, roadway/highway construction, bridge and utility construction, cost controls, schedule compliance, procurement, and corporate resources, Mr. Lundgren has a proven track record of delivering highly-complex, traffic-intensive projects to SHA on time and within budget. He has served a similar role as Design-Build Project Manager in delivering the following projects in Maryland:

Design-Build MD 32 at Linden Church Road Interchange (HO3915170) ($10.4M), SHA, Howard County, MD (1/11-11/13): As Design-Build Project Manager, Mr. Lundgren managed all design and construction efforts for the construction of a full diamond interchange at MD 32 and Linden Church Road which replaced two existing at-grade intersections. The project included the construction of a new bridge over MD 32, 0.83 miles of MD 32 widening and pavement rehabilitation, and construction of four new ramps and realignment of Linden Church Road. Mr. Lundgren performed major review, analysis, and coordinated contractor operations, schedule and issues on this highly environmentally-sensitive project. He was involved in the development of the schedule for construction activities of the roadway, bridge, drainage systems, SWM facilities, E&SC, landscaping, signing, pavement marking, lighting and utility relocation. This project is similar to the current MD 32 project regarding the volume of existing traffic, traffic management requirements, significant grading, SWM, and construction alongside an active roadway being scheduled to minimize delays or conflicts due to construction and MOT.

Design-Build MD 124 from South of Airpark Road to Rosewood Manor Lane (MO6325171) ($30.8M), SHA, Montgomery County, MD (10/07-10/10): Design-Build Project Manager responsible for the design and construction of the 1.6 miles of the dualization of MD 124 from a four-lane to a six-lane divided highway along with added storage capacity for turning lanes. Mr. Lundgren performed major review, coordinated the design with construction, developed the work scheduling of improvements to adjacent side streets and tie-in connections, drainage, MOT, geotechnical program, SWM quality facilities all within limited ROW. Mr. Lundgren was successful in implementing a quality construction plan that minimized sediment or untreated stormwater leaving the project and impacting the receiving Class III waterway.

Emergency Reconstruction of 26th Street between North Charles and Saint Paul Streets (No. TR14022) ($12M), City of Baltimore, MD (4/14-4/15): As Project Manager, Mr. Lundgren oversaw the entire project which consisted of emergency reconstruction of approximately 450 feet of 26th and North Charles Streets including 13,000 SF retaining wall after a major wall and roadway collapse along CSXT railroad tracks. Mr. Lundgren coordinated with the City of Baltimore, the Project Designer Whitman, Requardt & Associates LLP (WRA), CSXT Railroad, local utility companies and the residents of 26th Street to minimize disruption and complete repairs in an expedited manner. The City of Baltimore selected CGI to perform the emergency wall and road repairs due to its ability to mobilize quickly and bring sufficient resources along with its strong relationships with local subcontractors and material suppliers and WRA. Mr. Lundgren's experience working with the City and the local communities, as well as working and coordinating with the local business owners and other stakeholders, ensured strong communications throughout the project.

Design-Build MD 210 at Kerby Hill/Livingston Roads Interchange Improvements (PG7005170) ($82.6M), SHA, Prince George's County, MD (3/15 -Present): As Design-Build Project Manager, Mr. Lundgren is responsible for the overall project including design coordination/oversight and serving as the primary point-of-contact for SHA for the construction of a new grade-separated interchange. WRA is performing the engineering design services for the project. The project includes new and/or reconstruction of over two miles of primary and/or arterial roadway, underground and overhead utility relocation, three bridge structures, seven retaining walls, six noise wall barriers and three culvert extensions. All work is being performed within limited ROW, requiring innovative techniques for the proposed improvements and construction to be performed within available ROW. Multi-phase MOT coordinated with E&SC is required to construct the project. Extensive utility coordination is required during design and construction to facilitate construction of the project improvements.

Shannon Brown – Construction Manager

Construction Superintendent – Concrete General, Inc.

Years of Experience: 29
Education: High School

Registrations/Certifications: 2011/Adult CPR & First Aid Training; 2006/OSHA 30-Hour Course; 2011/MDOT Traffic Manager Course; 2009/Erosion & Sediment Control Certification; 1999/OSHA 10-Hour Course; 2014/ Adult CPR and First Aid Training

Professional Experience:

Mr. Brown has over 29 years of experience in the construction industry managing and supervising large and complex highway construction projects, including the Design-Build MD 32 at Linden Church Road Interchange project, for which he was the Construction Manager. He has overseen numerous large highway projects involving bridge construction, major earthwork and paving construction. His responsibilities on these projects include managing construction activities, developing and implementing schedules along with the coordination of all phases of construction. His past supervisory experience includes projects that are similar in complexity and scope to this project. Recent relevant experience includes:

Design-Build MD 32 at Linden Church Road Interchange (HO3915170) ($10.4M), SHA, Howard County, MD (1/11-11/13): As Construction Manager, Mr. Brown was responsible for managing all construction activities including the scheduling and coordination of all CGI and subcontractor resources for the construction of a full diamond interchange at MD 32 at Linden Church Road. Additional construction activities included widening and pavement rehabilitation of 0.83 miles of the existing MD 32, a new roundabout, realignment of Linden Church Road, and improvements to existing Ten Oaks Road, installing new drainage systems, construction of new SWM facilities, E&SC, landscaping, signing, pavement marking and utility relocation and construction. Mr. Brown was also responsible for supervising and coordinating all trades with multiple crews.

Reisterstown Road Improvements from Northern Parkway to City Line (No. TR05309) ($8.5M), City of Baltimore, MD (9/14-2/16): As Project Superintendent/Construction Manager, Mr. Brown was responsible for managing all construction activities including scheduling and coordination for all CGI and subcontractor resources. The project included the construction of 1.9 miles of roadway improvements on Reisterstown Road from Northern Parkway west to the city line. The project included milling, resurfacing, base repair, concrete bus pads, pedestrian ramps, sidewalk, new signalization, conduit, new signing, pavement markings and landscaping within the limits of the project. Other improvements included widening of Reisterstown Road and Patterson Avenue. This area is subjected to heavy daily volumes of traffic so all work on the project was constructed under traffic, primarily utilizing lane closures.

Father Hurley Boulevard Extended (MCDOT #500516) ($10.5M), Montgomery County, MD (1/09-12/10): As Project Superintendent/Construction Manager, Mr. Brown was responsible for managing all construction activities including scheduling and coordination for all CGI and subcontractor resources. The project was located in Germantown between Wisteria Drive and MD 118. The project consisted of the construction of approximately 6,650 feet of new roadway including a roadway bridge over CSXT railroad along with roadway improvements on both MD 118 and Father Hurley Boulevard. Project improvements included pavement widening, construction of new sidewalk, curb and gutter, traffic barrier W beam, street lighting, signalized intersection, two retaining walls, new storm drainage systems and SWM facilities, E&SC measures, landscaping and MOT during construction. This project had significant grading and substantial SWM facilities that were installed alongside existing traffic.

I-270 SB - Auxiliary Lane Extension between I-70 and MD 85, (FR4955187) ($2.4M), Frederick County, MD (1/08-12/09): As Project Superintendent/Construction Manager, Mr. Brown was responsible for managing all construction activities including scheduling and coordination for all CGI and subcontractor resources. The project was for the construction of an auxiliary lane on I-270 to eliminate a mainline merge on I-270 with I-70 and MD 85 traffic. The project length was just under one mile and consisted of base widening of I-270 SB into the median and restriping to provide an outside auxiliary lane, providing SWM facilities and modifying existing signage and lighting relocation. The work was performed under heavy traffic volume and required existing traffic patterns to be maintained during construction. The SWM facility included a substantially large pond and was constructed to offset impacts from impervious area increases.

Design-Build MD 32 at Linden Church Road Interchange, Howard County, Maryland

Concrete General, Inc. – Construction Firm

Owner: Maryland State Highway Administration

Owner Contract Number: HO3915170

Owner Point of Contact:
Mr. Brian Pickens
301.674.4531
bpickens@sha.state.md.us

Project Delivery Method: Design-Build | Lump Sum Pricing

Overall Construction Cost:
Initial Contract Value: $10.6 million
Final Contract Value: $10.7 million
Reason for Difference: Owner approved bridge re-design and bridge construction costs associated with bridge re-design

Overall Schedule Performance:
Initial Completion Date: 11/2013
Final Completion Date: 11/2013
Reason for Difference: N/A

Project Description and Specific Nature of Work: The purpose of the MD 32 at Linden Church Road was to enhance the safety and operations along this section of MD 32 and integrate with the ultimate MD 32 corridor improvements. The proposed MD 32 from MD 108 to North of Linden Church Road project is the subsequent project along the MD 32 corridor and encompasses the improvements CGI constructed under the MD 32 at Linden Church Road project. CGI's knowledge of local traffic patterns, soil conditions and utilities garnered during the construction of this interchange project will facilitate early identification of potential issues on the MD 32 Phase 1 project. This knowledge will allow for a shorter construction period, as many potential issues/delays will already be addressed during the design process.

As the Design-Builder, Concrete General, Inc. was responsible for all design and construction, including roadway, interchange ramps, bridge, drainage, E&SC, SWM, MOT, lighting, signing, pavement markings, signalization, environmental permits and compliance, utility coordination and relocation, and public outreach. The project included the design and construction of a full diamond interchange at MD 32 and Linden Church Road, which replaced two existing intersections to improve safety and alleviate traffic; construction of a roundabout at the proposed intersection of Linden Church and the northbound ramp termini on the east side of the interchange; a new bridge over MD 32 to provide improved access to the local roadway network; realignment of Linden Church Road west of MD 32 to form a new T-intersection with Ten Oaks Road; and a 700-foot section of Ten Oaks Road. Additional improvements included 0.83 miles of pavement widening and rehabilitation of the existing MD 32, realignment of the local road and driveways, installing new closed drainage systems, new SWM facilities, E&SC, perennial and intermittent stream channel work within the Middle Patuxent watershed, landscaping, signing, pavement marking, and utility relocation. Major quantities of work for the project include 118,000 CY of excavation/borrow, 14,000 tons of asphalt, 2000 LF of storm drainage pipe and 8,000 LF of underdrain.

Successful Methods, Approaches and Innovations: CGI worked successfully with SHA and MDE in coordinating with environmental agencies, inspecting E&SC, SWM, and wetlands, and proactively monitoring the maintenance of these devices during the construction phase. During design, CGI, implemented several quality control procedures. The first of

these was quality control review by senior personnel for each submission. Each discipline of the design was reviewed by experts in their appropriate fields. In-house design procedures and checklists were used to verify that designs met SHA, MDE, MUTCD and AASHTO standards. The second quality control procedure was constructability review by CGI. CGI provided input on the design in order to minimize potential field problems. The third procedure used was bi-weekly team meetings to keep communication lines open between design and construction personnel. CGI reviewed the project progress in accordance with the CPM schedule, set action items for each team member to accomplish and discussed methods to keep the project on schedule for unforeseen circumstances. Minutes of each meeting were prepared and distributed with the action items of each team member listed. Holding bi-weekly team meetings as well as having monthly partnering/progress meetings helped streamline the design/review process and identified, addressed and resolved any construction issues that arose.

A major objective of the project was the implementation of an effective E&SC plan including the installation of initial and interim E&SC measures that were required during the construction phasing. Another major objective was the inspection and maintenance of the E&SC that were in place. The E&SC measures along with the significant SWM facilities were installed within a limited ROW similar to the current MD 32. CGI met and exceeded the E&SC requirements throughout the construction and maintenance period. This experience of design and construction of the SWM facilities within a limited right of way will enable us to work with SHA in minimizing the private property required for environmental resource management.

Partnering meetings were held and were a key element in providing clear communications among all project stakeholders. Every participant benefitted from the Partnering process so that unified relationships with all parties were built, which helped to resolve project issues in a cooperative and expedient manner. One of the keys to this successful project was the integration of contractor and designer during the design process and construction. The team identified challenging issues during design and developed the most efficient approach to mitigate the issues. CGI's continuous involvement in the preparation of contract plans minimized issues that typically arise during construction.

Accommodating traffic without causing delays or compromising the safety of motorists was an important community issue. Through the use of the public outreach program and on-going communication with Howard County public officials, impacts were minimized to the traveling public during construction along with providing greater awareness of the construction schedule. Uninterrupted utility services was another priority for the community, as several neighborhoods were located along the project limits that would have been impacted from service interruptions. Overhead and underground utilities included gas, electric, communications, phone, and cable in addition to a major gas transmission facility that required protection during the construction. Since we are familiar with the local communities, county officials, and utilities along this section of the MD 32 corridor, having already interacted with these same stakeholders, we will be able to more quickly re-establish these lines of communications to help address these stakeholders' concerns.

Key Staff: Butch Lundgren – Design-Build Project Manager; Shannon Brown – Construction Manager

Disputes Taken to Arbitration and/or Litigation: None

Design-Build MD 124 from South of Airpark Road to Rosewood Manor Lane, Montgomery County, Maryland

Concrete General, Inc. – Construction Firm

Owner: Maryland State Highway Administration

Owner Contract Number: MO6325171

Owner Point of Contact:
Victor Grafton
301.513.7385
vgrafton@sha.state.md.us

Project Delivery Method: Design-Build | Lump Sum Pricing

Overall Construction Cost:
Initial Contract Value: $29.5M
Final Contract Value: $30.9M
Reason for Difference: Owner added left turn lane, relocated additional sewer, water, gas facilities, and asphalt cement price adjustments

Overall Schedule Performance:
Initial Completion Date: 6/2010
Final Completion Date: 10/2010
Reason for Difference: Owner approved delays from a delayed NTP, extended review and re-submittal time for MDE approvals, additional ROW acquisition, and impacts from record snow fall events

Project Description and Specific Nature of Work: As the Design-Builder, Concrete General Inc. was responsible for all design and construction, including roadways, intersections, drainage, SWM, E&SC, retaining walls, noise barrier, sidewalks, traffic signalization, lighting, signing, pavement markings, landscaping, environmental permitting and compliance, utility coordination and select relocations, and public outreach.

The project consisted of the design and construction for the widening of MD 124 for 1.6 miles from a four-lane to a six-lane highway. MD 124, an arterial highway, is located in Montgomery County with the project beginning south of Airpark Drive and continuing to the Rosewood Manor Lane intersection. In addition to the widening and reconstruction of MD 124, improvements included resurfacing of side streets and tie-ins, a new closed drainage system, SWM quality and quantity facilities, landscaping, noise abatement screen walls, retaining walls, on-street bicycle facilities, new sidewalks, reconfiguration of existing traffic signals, two new traffic signals including one at the Hadley Farms Drive South/Barcellona Drive intersection, signing, marking, intersection and pedestrian lighting. Major quantities of work for the project include: 95,000 CY of excavation, 77,000 tons of asphalt, 15,000 LF of storm drainage pipe, 35,000 LF of underdrain pipe, and 33,000 SF of noise wall.

Successful Methods, Approaches and Innovations: CGI developed a strong Partnering relationship with all of the Design-Build team members that resulted in both constructability and traffic issues being resolved during the design process and minimizing impacts during construction. During the design process, the conceptual roadway profile was studied in detail at the intersections and it was determined that the proposed profile required a complex MOT plan, resulting in major impacts to traffic during construction. The profile was adjusted accordingly, which resulted in a more simplified traffic control plan and thus minimized impacts to the traveling public during construction. This provided SHA with a project reflecting the practice of good judgement and sound decisions.

Along the corridor, there was a variety of businesses with direct access to MD 124 requiring access to be maintained during construction. Instead of maintaining the existing entrance with phased construction, a plan was developed to construct temporary entrances so the existing entrances could be reconstructed entirely without maintaining traffic. This method resulted in positive feedback from the business community. Soil stabilization of the in-situ material was performed, which eliminated the undercutting of the existing material. This saved both cost and time from not having to perform additional excavation and disposal of the unsuitable material plus the additional backfill. During construction, several unknown utilities were discovered. SHA and the utility owners were immediately notified to determine an appropriate plan. Working with the design team, SHA and the utility owners, made a decision to relocate the utility. A relocation design was prepared and the utility was relocated in as expedient manner as possible, limiting impacts to the project. The utilities were relocated outside the roadway pavement structure to eliminate future impacts to the roadway during any maintenance of the utility. This project emphasizes our experience in identifying and resolving potential issues and impacts. The revisions to the roadway profile grades, installation of temporary entrances, and use of soil-stabilization all worked to minimize construction time and delays to the public during construction.

CGI was successful in partnering with SHA and MDE to develop and implement an effective environmental management program for the project. This included the design of E&SC measures and permanent SWM facilities. We proactively installed, monitored and maintained all E&SC measures and permanent SWM facilities throughout the project. This experience will help in designing an overall environmental resource management program that requires minimal property acquisition.

Key Staff: Butch Lundgren – Design-Build Project Manager

Disputes Taken to Arbitration and/or Litigation: None

Reconstruction of 26th Street between North Charles and Saint Paul Streets, Baltimore City, Maryland

Concrete General, Inc. – Construction Firm

Owner: City of Baltimore

Owner Contract Number: TR14022

Owner Point of Contact:
Scott Weaver
410.396.6935
scott.weaver@baltimorecity.gov

Project Delivery Method: Other (Emergency Services)

Overall Construction Cost:
Initial Contract Value: $12M
Final Contract Value: $12M
Reason for Difference: N/A

Overall Schedule Performance:
Notice to Proceed Date: 4/2014
Initial Completion Date: 5/2015
Final Completion Date: 5/2015
Reason for Difference: N/A

Project Description and Specific Nature of Work: As the constructor, CGI was responsible for all construction including roadway, retaining walls both temporary and permanent, sidewalks, street lighting, signing, pavement markings, utility coordination, E&SC, and public outreach. **CGI also coordinated and partnered with the Project Designer, WRA.**

This project consisted of the emergency reconstruction of a retaining wall, roadway and associated infrastructure located along 26th Street between North Charles and Saint Paul Streets in Baltimore City. On April 30, 2014, a century-old, 35' tall stone masonry retaining wall, located between CSXT railroad tracks and East 26th Street, collapsed onto the tracks, carrying streetlights, sidewalks, curbs and portions of the adjacent roadway. When the wall collapsed, it immediately halted rail traffic heading toward the Port of Baltimore and forced the evacuation of 19 residences in the neighborhood. The wall failure also damaged infrastructure within the roadway including water mains, sanitary sewers, and gas lines.

CGI was immediately contacted by Baltimore City to execute the emergency temporary and permanent repairs necessary to return the residents to their homes, rebuild the retaining wall and restore the street. WRA was contracted by Baltimore City to perform the design services necessary for the emergency construction to stabilize the existing retaining wall, design a temporary retaining structure during construction and the permanent retaining wall with necessary roadway repairs.

After the railroad tracks were cleared of the fallen debris, CGI installed temporary measures to stabilize the slope which consisted of a temporary rock buttress using on-site granite blocks until a more permanent measure could be installed. Based on WRA's design, CGI installed a temporary soldier pile and lagging wall with tie-backs to stabilize 26th Street and the area in front of the homes of the displaced residents. During this period, permanent and temporary infrastructure repairs to the sanitary sewer main, BGE's gas main and the water main were performed. This area was stabilized in 31 days following the collapse, allowing evacuated residents to return to their homes, marking the end of the emergency phase of the project and beginning the transition to the long-term construction phase for permanent restoration of the retaining wall and roadway.

The new retaining wall began with the installation of a permanent lagging and tieback anchor consisting of post grouting of the anchor to replace the temporary soldier pile and lagging wall. The next step was to excavate all material between the face of the pilings and the railroad tracks as installation of the tie-backs progressed. After the subgrade elevation of the retaining wall was reached, verification tests were performed on the subgrade to ensure support of the new retaining wall in accordance with guidelines set by CSXT. After the subgrade was approved, construction began on the new 40' high 315-foot long cast-in-place retaining wall.

The roadway work consisted of reconstruction of approximately 450 feet of 26th Street and Charles Street, including 10,000 SF of sidewalk, 1,000 LF of curb/gutter. Approximately 14 months from the initial collapse of the retaining wall and adjacent street closure, the reconstructed 26th Street was reopened to the residents.

In order to meet the project commitments, CGI and WRA worked together to identify potentially long lead-time items such as temporary/permanent retaining wall materials, H-piles, tie-back anchors, light poles, anchor bolts, and granite curbs so the design associated with these items could be finalized quickly and material procured, thus allowing construction to start rapidly. Due to the urgency associated with this critical project, weekly meetings were held with the City of Baltimore to discuss design and construction progress and identify and resolve any potential issues.

Due to the limited work space, difficult access, the project's complex and sensitive nature, and coordinating with CSXT and the affected utilities, the project team worked in a partnering environment to complete a significant amount of work in a timely manner. Quality was ensured through weekly progress meetings, constructability reviews, communication, continuity and commitment by all team members.

Under Mr. Lundgren's supervision, the emergency repairs were completed within the time commitments made by the City to the displaced residents due to CGI's ability to mobilize quickly and bring sufficient resources including subcontractors and material suppliers to the project. This was possible because of CGI's strong working relationship with the City and WRA. With CGI and WRA having the ability to work, coordinate and communicate directly with the other stakeholders, such as CSXT and the affected utilities, it helped to ensure the schedule commitments were achieved. The strong working relationship between CGI and WRA will enable the successful delivery of the MD 32 project including substantial completion as soon as possible, minimizing impacts to adjacent property owners, and with minimal delay during construction.

Successful Methods, Approaches and Innovations: A traditional project to design, approve and construct a 315-foot long retaining wall including the removal of an existing stone wall would normally take two to three years. This project was substantially completed in nine months, despite being adjacent to a residential street to the north and CSXT railroad line to the south with major city streets to the east and west. Design and construction time was reduced via collaboration between parties communicating and understanding that work had to continue, regardless of any obstacles encountered. To stabilize the failed slope temporarily, a soldier pile wall with anchors was selected as this design allowed for construction to occur without interfering with the railroad. The readily available material for a tie-back retaining wall (i.e., soldier pile, tie-backs) became the basis for the designing this particular type of retaining wall.

Key Staff: Butch Lundgren – Design-Build Project Manager

Awards/Commendations: The number of awards and commendations for this project highlights CGI's excellence in construction and the design excellence that WRA brings to our team. This excellence will be required in order to achieve the MD 32 project goals. These awards include: MdQI Major Project of the Year (2015), County Engineers of Maryland Project of the Year (2015), Baltimore and Washington Metropolitan ACE Chapters (2015), ACI Maryland Chapter (2015), and American Council of Engineering Companies Award (2015).

Disputes Taken to Arbitration and/or Litigation: None

Maryland Department of Transportation
State Highway Administration
Office of Highway Development

PROJECT UNDERSTANDING AND DESIGN-BUILD APPROACH

MD 32-MD 108 TO NORTH OF LINDEN CHURCH ROAD

D E S I G N - B U I L D

STEP 1: TECHNICAL PROPOSAL | CONTRACT NO. H01415170

CONCRETE GENERAL

UNDERSTANDING OF THE PROJECT GOALS

Our understanding of the Project Goals identified in the RFP are listed below:

Project Goal #1 – Schedule: The CGI/WRA team understands SHA's desire to fully open four lanes of MD 32 to traffic and substantially complete construction and provide a usable facility to the public as soon as possible. We also understand SHA's desire to minimize or eliminate the closure of the ramp from Linden Church Road to MD 32 SB. The CGI/WRA team will establish as part of our bid the Total Contract Time and the Ramp Closure Time. SHA has established an Incentive-Disincentive provision in the contract for completion of the project prior to the Total Contract Time to achieve this goal. To accomplish this goal, the CGI/WRA team will consider the following primary activities in its schedule: design development, including over-the-shoulder reviews by construction personnel and the Independent Design Quality Management (IDQM) team; design reviews and approvals by the IDQM team, and SHA as applicable; permitting and approvals in a manner to support sequenced construction; right-of-way acquisition phasing as it relates to construction of sediment basins and SWM facilities; utility relocations; lane closure restrictions; and time of year restrictions.

Project Goal #2 – Mobility: The CGI/WRA team understands SHA's desire to minimize delay to the travelling public during construction, specifically any detours. A detour may be required to tie in the ramp from Linden Church Road to MD 32 SB. SHA desires to minimize or eliminate the need for this detour. To achieve this goal, the CGI/WRA team will leverage our design and construction expertise to explore innovative solutions to eliminate the need for full closure of the ramp during construction. We will also develop and implement a Transportation Management Plan (TMP) with strategies to help minimize delay to the travelling public and to maintain a safe work zone. The TMP will include a temporary traffic control plan, transportation operations and public information/outreach strategies. Constructing the new dualized roadway while maintaining the adjacent existing 2-lane, 2-way roadway for the maximum period of time while minimizing and strategically placing construction entrances will maximize throughput along MD 32 during construction. In support of SHA's outreach efforts and to aid in minimizing disruptions to the traveling public, we will employ media, internet, and hotlines as needed to inform stakeholders and the traveling public of upcoming construction activities and traffic pattern changes.

Project Goal #3 – Right-of-way and Environmental Resources: The CGI/WRA team understands SHA's desire to minimize impacts to private property and environmental resources. The MD 32 project passes through an area of diverse environmental, community, and cultural resources. Minimization of impacts to and the protection of these resources is of paramount importance to SHA. SHA has established an incentive in the contract for the reduction of impacts to environmental resources. The philosophy of the CGI/WRA team during design and construction will be to incorporate design refinements and stewardship measures to avoid and minimize impacts to wetlands, waterways, forests, cultural resources, and right-of-way to the greatest extent practical. We will continuously monitor/track impacts as the project progresses.

Project Goal #4 – Design Excellence: The CGI/WRA team understands that SHA desires a project that reflects the practice of good judgment through execution, as well as sound decision making within the project constraints. SHA also desires a professional, collaborative, and integrated team that is well-trained in Design-Build to successfully deliver this project. SHA also desires the CGI/WRA team to provide a project with quality design through integrated and well-documented quality management. It is solely the responsible of the Design-Build team to provide the design and construction of this project in conformance with the contract requirements. To fulfill these responsibility, CGI has assembled a highly-qualified and experienced team including a Lead Design firm (WRA) to provide design services and complete design quality control and an IDQM firm (Gannett Fleming, Inc.) to perform independent verification that the design completed by WRA complies with the contract requirements. SHA expects the CGI/WRA team to consider during design and construction for how the improvements for this project will be implemented and be compatible with the future construction of the Phase 2 widening project. SHA also expects the CGI/WRA team to exhibit good judgment and sound decision making in design and construction to ensure the Project Goals are achieved. The CGI/WRA team understands the approach of practical design to focus on the core purpose and need of a project. During the ATC process, we will look to eliminate nonessential project design elements and optimize others resulting in lower cost, quicker project delivery, and improved value while following current design guidance and requirements.

UNDERSTANDING OF THE PROJECT SCOPE

The project generally consists of the design and construction of MD 32 from a two-lane undivided highway to a four-lane divided highway from MD 108 to north of Linden Church Road within Howard County. The length of the work is approximately 3.0 miles. The proposed roadway will typically be a four-lane divided highway with 12-foot lanes, 4-foot paved inside shoulders, and 10-foot paved outside shoulders with a 34-foot median with traffic barrier protection. The MD 32 SB ramps at Linden Church Road will be reconstructed with full acceleration and deceleration lanes per AASHTO guidelines. The new

roadway pavement may be asphalt or concrete and the existing roadway pavement will be rehabilitated. The design for this project shall accommodate the future widening of MD 32 at the northern limit. The future MD 32 Phase 2 project will improve MD 32 from a two lane undivided highway to a four lane divided highway from north of Linden Church Road to I-70.

The scope of construction improvements is anticipated to include, but is not limited to: earthwork, new pavement construction, existing pavement rehabilitation, drainage, SWM, E&SC, reforestation, landscaping, signing and marking, intersection/interchange lighting, ITS, and construction of small structures such as culverts, walls and incidental structures.

The engineering services are anticipated to include, but are not limited to: field surveys; roadway design; structural design for small structures such as culverts, walls, and other incidental structures; hydraulic analysis, design, and agency approval for structures; traffic studies and engineering (signing, markings, lighting and ITS); traffic control design including the preparation of a TMP; roadside and SWM landscape design; reforestation design; utility coordination; utility test pits; pavement and geotechnical engineering; supplemental subsurface exploration; SWM design, approvals, and as-built certification; E&SC design; environmental permit acquisition/approvals and supporting permit activities; obtaining all required permit modifications; engineering studies and reports required to meet the contract or permit requirements; and as-builts.

Others services are anticipated to include, but are not limited to: Partnering and general coordination with SHA and project stakeholders; production of required deliverables; development and implementation of a Design Quality Control Plan and a public outreach plan; IDQM; community relations; maintenance of project site; implementation of any required mitigation or remediation for additional environmental impacts; and other items required to successfully complete the project.

SIGNIFICANT ISSUES AND RISKS FACING THE DESIGN-BUILDER AND SHA

The table below describes the significant issues and risks facing the CGI/WRA team, SHA, and/or project stakeholders and provides mitigation techniques and responsibilities:

ISSUE/RISK	RESPONSIBLE PARTIES	IMPACT	MITIGATION TECHNIQUES AND RESPONSIBILITIES
Project Scheduling/ Sequencing of Work	CGI/WRA	Schedule and Cost	**CGI/WRA:** Prepare a project schedule that accounts for all design, permitting/approval, and construction activities, specifically items on the critical path; ensure that the sequence of construction is synced with design approvals, permitting, work restriction periods, ROW clearances, etc. necessary to initiate timely and uninterrupted construction activities; continuously monitor and update the schedule and adjust project sequencing and resource allocations as needed.
Permits and Approvals	Shared – CGI/WRA, SHA, and permitting agencies	Schedule	**CGI/WRA:** Organize a permit task force and partner with SHA, SHA-PRD and regulatory/resource agencies; include permitting in the project schedule to prioritize efforts of our team, SHA, SHA-PRD and regulatory/resource agencies; submit timely quality designs and permits meeting applicable procedures/requirements; enforce quality control; complete timely and quality IDQM reviews; minimize impacts.
			SHA et. al.: Conduct timely reviews/approvals/decisions.
Concurrent Third Party Utility Relocations	Shared – CGI/WRA, SHA, and utility owners	Schedule	**CGI/WRA:** Organize a utility task force and partner with utility owners and SHA to coordinate utility relocation needs; evaluate impacts early and minimize relocation needs; prepare advance clearing package(s) to initiate relocations.
			SHA: Conduct timely follow-up on utility issues; issue permits.
			Utility Owners: Conduct timely design and relocation of impacted facilities.
Ramp Detour Duration	Shared – CGI/WRA and SHA	Cost, Mobility, and Public Perception	**CGI/WRA:** Minimize or eliminate detour for the ramp from Linden Church Road to MD 32 SB; support SHA with community outreach to address concerns; advance previous outreach efforts by SHA during RFP phase.

			SHA: Conduct timely design reviews/input; lead community outreach efforts.
ROW Clearance	Shared – CGI/WRA and SHA	Starting and/or Sequencing of Construction	**CGI/WRA:** Determine if adequate ROW has or will be acquired; notify SHA immediately if inadequate ROW has been acquired; phase construction to coincide with ROW clearance and adjust if clearance is delayed.
			SHA: Conduct timely updates to ROW plats; timely ROW clearance.
Maintenance of Traffic/Site Safety	CGI/WRA	Mobility and Safety of Public and Workers	**CGI/WRA:** Develop a comprehensive TMP; provide safe work zones for traveling public and workers; utilize public outreach, VMS, and static signs to notify motorists of upcoming changes in traffic patterns; coordinate with SHA, stakeholders, and community; conduct on-site safety orientation for personnel; ensure workers are trained, use personal protective equipment, and follow safety practices; hold safety briefings and perform routine safety audits.
Unforeseen Field Conditions	Shared – CGI/WRA, SHA, and permitting agencies	Schedule and Cost	**CGI/WRA:** Review existing data and identify potential construction issues; prepare plan of action should unforeseen issue(s) occur; prepare necessary documents to continue construction.
			SHA et. al.: Conduct timely reviews and approvals; accelerate approvals for design documents and revisions to environmental permits, if necessary.
Public Outreach	Shared – CGI/WRA and SHA	Public Perception	**CGI/WRA:** Prepare a public outreach plan that includes all project stakeholders; hold public meetings and attend neighborhood meetings to fully inform the public of the project status, MOT issues, and other key topics; provide routine project updates.
			SHA: Lead outreach effort; coordinate with CGI/WRA to schedule public meetings and other meetings with stakeholders; review project update information.

UNIQUE RISKS CRITICAL TO MEETING/EXCEEDING THE PROJECT SCHEDULE GOAL

RISK #1: PROJECT SCHEDULING/SEQUENCING OF WORK

A primary goal of the MD 32 project is to fully open four lanes to traffic and substantially complete construction and provide a usable facility to the public as soon as possible. To promote the achievement of this goal, SHA is requiring the Design-Build team to determine the Total Contract Time and include this derived time as part of the Design-Builder's price proposal. Furthermore, SHA has established an Incentive-Disincentive provision in the contract to expedite construction which provides an incentive based on each calendar day that the actual completion date precedes the Total Contract Time as established by the Design-Builder, while also providing a disincentive based on each calendar day that the actual completion date exceeds the Total Contract Time. Therefore, the CGI/WRA team has identified project scheduling/sequencing of work as a unique risk since a well-conceived and coordinated project schedule based on a sequence of construction that is synced (and successfully executed) with the progression of design, obtaining required permits/approvals, and other project constraints (e.g., work restriction periods, ROW clearances, etc.) is critical to completing the project within the established Total Contract Time, thus meeting and/or exceeding the Project Schedule Goal.

Why it is Critical: In order to meet the Project Schedule Goal, the project schedule/sequence of work will need to be well-conceived, comprehensive, and well-coordinated providing a detailed plan for how the project will be designed, permitted/approved, and constructed in the most efficient manner. All design, permitting/approval, construction, and other project activities (utility relocations, ROW clearance, etc.), specifically those activities on the critical path or requiring third party actions, will need to be identified and incorporated into the schedule/sequence of work. Management and monitoring of the schedule and work progress will be imperative to meeting and/or exceeding the Project Schedule Goal.

Potential Impact on Schedule: Issues with planning, scheduling, managing, and/or sequencing work activities will have a cascading negative effect in meeting and/or exceeding the Project Schedule Goal.

Mitigation Strategies to Meet/Exceed Project Schedule Goal: Led by our **Design-Build Project Manager, Butch Lundgren**, and our **Project Scheduler, Stephen Beckley**, and in collaboration with our **Construction Manager, Shannon Brown**, our **Project Design Manager, Walter Miller, PE**, our **Environmental Compliance Manager (ECM), James Ashby**, our **Design/Construction Coordinator, Michael Higgins**, and our **IDQM Manager, Steve Hawtof**, the CGI/WRA team will develop a project schedule and sequence of work that includes all design, permitting/approvals, construction, work restriction periods, weather allowances, and other project activities (utility relocations, ROW clearance, etc.), specifically including activities on the critical path or requiring third party actions. Our schedule and sequence of work will provide a detailed plan for how the project will be designed, permitted/approved, and constructed in the most efficient manner starting from NTP to final clean-up. The CGI/WRA management team will proactively monitor and adjust the schedule and sequence of work activities, and allocate project resources, to gain efficiency where possible and recover from unforeseen issues when needed. Impacts to the schedule may include, but are not limited to: delays in obtaining permits/approvals, unforeseen site conditions, weather delays, unavailable ROW, or delays from third party utility relocations. Any impacts will be immediately communicated to SHA and project stakeholders for assistance with their resolution.

Project Sequencing of Work: Upon notification of selection, the CGI/WRA team will immediately initiate advanced coordination efforts with SHA and project stakeholders, supplemental data collection activities, and project design activities. These early efforts will include, but are not limited to: attend and facilitate the utility conference and weekly utility coordination meetings between the CGI/WRA team, SHA, and utility owners; identify critical path permitting items and attend a pre-permitting meeting; develop and submit our design quality control plan and design certifications; develop and submit the public outreach plan; develop and submit the TMP; perform the tree survey and prepare and submit the tree minimization and avoidance report; develop and submit the geotechnical planning report; perform supplemental field survey, utility test pitting, and soil borings and testing.

Understanding the importance of SHA's Project Schedule Goal, the CGI/WRA team will develop an approach to get shovels in the ground as soon as possible. To this end, we will design and submit for review and approval phased construction work packages. These phased construction work packages will be prepared for each of the anticipated construction phases discussed below. To expedite review and approval of separate design elements of the project, we will develop design submittal packages for the following: 1) clearing/grubbing/rough grading and initial E&SC implementation; 2) small structures including cross-culverts; 3) final roadway, drainage, SWM, E&SC, and MOT; 4) traffic signing, marking, intersection/interchange lighting and ITS; and 5) landscaping for roadside, SWM facilities, and reforestation.

In support of our design efforts, we will complete all necessary data collection and we will develop and submit for review and approval all necessary geotechnical and pavement submittals, required permits and permit modifications, project documentation, studies, reports, source of supply/material clearances, shop drawings, etc. These efforts will be coordinated with all other work activities to ensure approvals are synced with the overall project sequencing. To facilitate interdisciplinary coordination of the design submittal packages and design support efforts for each construction phase, the CGI/WRA team, including our subconsultants and subcontractors, will actively communicate and coordinate internally and externally through phone calls, email, and frequent meetings, including video conferences. All design and construction activities will be coordinated to ensure the seamless integration of all design components and the coordinated progression of construction. Staff from construction, quality control, and quality assurance will be engaged throughout the design process and will provide over-the-shoulder reviews to avoid unnecessary delays during compliance reviews/approvals and during construction. Meetings will include weekly team meetings, weekly task force/discipline specific meetings, monthly Partnering meetings, design quality control/quality assurance meetings, constructability review meetings, and other meetings to address specific issues.

The CGI/WRA team recognizes that the design development and construction of the project's drainage, SWM and E&SC elements will be critical to the project's success. The project will greatly benefit from a well-developed, conceptual scheme for drainage and SWM that minimizes impacts to utility relocations and environmental resources. Previous work completed by SHA for these disciplines will be utilized to the greatest extent to expedite approvals. To further expedite getting shovels in the ground, we intend to receive approval and commence clearing/grubbing, rough grading, cross-culverts and initial E&SC implementation while the roadway, drainage, SWM, final E&SC, traffic elements, and landscaping are being designed, approved, and permitted. Based on proposed phasing of work as described below, we anticipate final drainage, SWM and E&SC design will be prepared to accommodate and treat runoff during and after construction for each construction phase. Temporary systems will be implemented as necessary to facilitate permit approval. In the event ROW is not cleared by the time we intend to commence construction in an area, a sediment basin may be constructed at a proposed SWM facility

locations to remain inside the existing ROW to initiate construction. Once ROW is cleared, the basin will be enlarged and converted to the final SWM facility.

We understand the utilities presence in the project area include overhead and underground utilities including, but not limited to: water, sewer, gas pipelines; electric, communications, fiber optic, utility conduit; wells and septic tanks; poles and house service connections. Our **Utility Coordinator, Stephen Beckley** will focus his full attention toward coordinating utilities and resolving conflicts throughout design and construction. We understand our responsibility to coordinate with the utility owners on the design, scheduling, and relocation of their facilities, and to help resolve conflicts throughout design and construction. We also understand that available utility information is not always accurate or complete and schedules may change due to unforeseen reasons resulting in unexpected conflict; however, the CGI/WRA team is prepared to address these challenges through active and ongoing engagement and partnering with SHA and utility owners. We will leverage the combined experience of our design and construction staff to develop creative and innovative solutions to avoid or address conflicts and accelerate construction activities when possible.

Anticipated Construction Phasing: As a first construction activity, the CGI/WRA team proposes to implement the MOT and E&SC necessary to perform initial clearing/grubbing for the MD 32 SB dualized lanes, and if required, to accommodate third party utility relocations. The limits of the initial clearing/grubbing will only be as needed to facilitate early approved construction activities and will stay within SHA ROW. Clearing/grubbing limits may have to be altered if the proposed ROW has not been cleared when construction is to begin in an area.

It is anticipated that the progression of our work will generally progress from south to north along MD 32 with the initial work of rough grading of the MD 32 SB dualized lanes from the MD 108 tie-in to south of the Linden Church Road tie-in (Sta. 122+00 to Sta. 211+00), the construction of the cross-culverts at Sta. 125+50, Sta. 151+00, Sta. 156+50, and Sta. 243+00, and the extension of an existing culvert at Sta. 144+00. The installation of cross-culverts will be dependent on the time of year when in-stream work is prohibited from March 1 to June 15. In-stream work will be suspended during this period or be executed after the stream closure period has ended. After the cross-culverts have been installed, the rough grading has been completed, and permits\approvals have been received for final design, final grading, roadway, drainage, SWM, E&SC, signing, and landscaping will be completed. Upon completion of this work, a temporary tie-in from existing MD 32 SB to new dualized MD 32 SB will be constructed, including a temporary connection for the on-ramp from Linden Church Road to MD 32 SB, allowing MD 32 SB to be opened to traffic from south of Linden Church Road. At this point, the dualization of MD 32 will be completed from Sta. 211+00 to Sta. 246+00. For the ramp tie-ins between Linden Church Road and MD 32 SB, the CGI/WRA team will investigate alternatives to maintain ramp movements at all times. Once traffic is fully operational in its final configuration, final work elements will be completed such as final roadside and SWM landscaping and punch list items. Construction of the surface paving course, permanent pavement markings, and removal of MOT and E&SC will signify the completion of the project.

SHA and/or Other Agency Role: The CGI/WRA team will partner with SHA, SHA-PRD, regulatory/resource agencies, and other project stakeholders for the timely review and approval of drawings and permitting. We anticipate SHA providing timely ROW acquisition. We will partner with utility owners and anticipate that they will complete their relocation designs and construction in a timely manner.

RISK #2: OBTAINING PERMITS/APPROVALS NECESSARY TO PERFORM CONSTRUCTION

The CGI/WRA team understands obtaining permits/approvals, including modifications and reevaluations, from SHA, federal, state and local agencies is paramount to meeting and/or exceeding the Project Schedule Goal for the project. We further understand the numerous entities *(SHA (ICD, OHD, HHD, OOS, OED, OMT, OOTS, D-7 Construction, D-7 Traffic, D-7 Utilities, D-7 ROW and D-7 Maintenance), SHA-PRD, MDE, USACE, USFWS, DNR, FEMA, and FHWA)* will play a key role in overseeing and/or reviewing our designs and/or issuing the required permits/approvals necessary to perform construction. Lastly, we understand on this project that our **IDQM firm, Gannett Fleming, Inc. (GF)**, will play an integral role in performing an independent review of all design packages to certify that the design is in compliance with the Contract requirements and the design quality control plan, and SHA will review the IDQM design review documentation and may provide additional review comments, as necessary.

Anticipated environmental permits/approvals for the MD 32 project include the following:

- E&SC Permit for earth disturbance, staging and stockpiling areas, disposal sites, and borrow pits from SHA-PRD
- SWM approval from SHA-PRD, including MDE Dam Safety Division and Plan Review Division approvals for small ponds and embankments, if necessary
- Section 404 Individual Permit, Water Quality Certification and Non-tidal Wetlands & Waterways Permit from USACE (in consultation with USFWS) and MDE[1]

- Reforestation Law approval from DNR[2]
- NOI/NPDES Permit[3]
- Letter of Map Revision (LOMR) from FEMA[4]
- FEIS (natural, social and cultural environments) approval from FHWA[5]

[1] *SHA has obtained the permit based on the concept design. The CGI/WRA team is responsible for reducing impacts to WW2 as described in the JPA and obtaining a modification based on the final design. Mitigation of permanent wetland impacts will be debited against the existing Nixon Farm mitigation site.*

[2] *19.3 acres of on-site reforestation is required. The CGI/WRA team is responsible for obtaining a modification based on the final design.*

[3] *SHA will complete the initial NOI. The CGI/WRA team is responsible for updating the NPDES permit throughout construction.*

[4] *SHA will obtain a Conditional Letter of Map Revision (CLOMR) based on the Concept Design. The CGI/WRA team is responsible for obtaining the LOMR based on the final design.*

[5] *The CGI/WRA team is responsible for completing environmental studies and obtaining a reevaluation if needed based on the final design.*

No federally listed rare, threatened, or endangered (RTE) species are anticipated to be directly impacted by the project and no historic or archeological resources are anticipated within the project's limit of disturbance.

Anticipated design approvals necessary to perform construction of the MD 32 project include the following: 1) design quality control plan and design certifications; 2) roadway, MOT, drainage, E&SC, SWM, and H&H studies, including required calculations and reports; 3) structures (culverts, walls, and incidental structures), including required calculations; 4) geotechnical studies, design, and reports, including planning report; 5) pavement evaluation, design and reports (rehabilitation of existing pavement and new pavement); 6) TMP, signing, markings, lighting, and ITS, including temporary elements; 7) Tree avoidance and minimization report; 8) Landscape for roadside, SWM and on-site reforestation; 9) public outreach plan; 10) other studies, reports, and documents (e.g., design exceptions, etc.) as needed for construction.

Why it is Critical: Since permits and approvals are required to initiate and perform construction of the project, the CGI/WRA team recognizes that any issue(s) that may result in the delay in obtaining a permit or approval will have a direct impact on the project schedule and our ability to meet/exceed the Project Schedule Goal.

Potential Impact on Schedule: Permits and approvals are a necessity to constructing the project. Any delay in obtaining the necessary permits and approvals will directly impact our ability to initiate construction of the project.

Mitigation Strategies to Meet/Exceed Project Schedule Goal: The CGI/WRA team has extensive experience in preparing design and permit/approval packages necessary to obtain the required permits and approvals for SHA roadway projects. We also have a comprehensive knowledge of all policies, procedures, and criteria, and of federal, state, and local permitting/approval regulations, requirements, and procedures necessary to efficiently prepare accurate and completed design and permit/approval packages for SHA and agency review and approval. The following are strategies the CGI/WRA team will employ to mitigate the above outlined permit/approval risk:

- Perform a comprehensive review of the Project RFP and all related specifications, guidelines, regulations, etc. to gain a full understanding of the project requirements and necessary permits/approvals required for construction of the project.
- Build a professional and collaborative partnership with SHA, SHA-PRD, regulatory/resource agencies, and other project stakeholders by providing clear, consistent, and regular communication through formal and informal partnering.
- Hold weekly internal design coordination meetings at WRA's office with key design and construction staff to review designs, discuss construction means and methods, evaluate constructability, and look for innovative ways to reduce ROW and environmental impacts and the overall project schedule. Our **Design-Build Project Manager, Butch Lundgren**, and our **Design/Construction Coordinator, Michael Higgins**, will lead the meetings to facilitate design and construction collaboration, over-the-shoulder reviews, and quick resolution of identified issues. Our **Construction Manager, Shannon Brown**, will be an integral part of the design process and will collaborate daily with our **Project Design Manager, Walter Miller, PE**. Our **IDQM staff** will attend meetings and perform over-the-shoulders reviews.
- Use highly qualified, experienced design and construction staff to produce high-quality plans, reports, permit applications, supporting documentation, etc. based on sound design and construction practices and principles.
- Create and routinely monitor/update a permit/approval tracking log. The log will show the permits and approvals required, entities involved, conditions and requirements for each resource, key milestone submittal and approval dates,

and other compliance activities. Key dates will be incorporated into the project CPM schedule to ascertain critical path or near critical path activities get special attention and staffing.

- Create and routinely monitor/update a design approval tracking log. The log will show each design submittal, entities involved, key milestone submittal and approval dates, and other related activities. Key dates will be incorporated into the project CPM schedule to ascertain critical path or near critical path activities get special attention and staffing.
- Attend a pre-permitting meeting with SHA, SHA-PRD, and regulatory/resource agencies to gain a more complete understanding of permit conditions/requirements, NEPA commitments, permitting timelines, submittal requirements, and expectations or concerns of each stakeholder. At this meeting, our **Environmental Compliance Manager (ECM), James Ashby**, and our **Water Resources Engineer, Jason Cosler, PE**, will outline our approach to SWM, E&SC, environmental compliance (design/construction), and resource impact minimization. To avoid surprises, we will solicit feedback for any deviations from the concept SWM report or other permit conditions discovered.
- Ensure compliance with permit conditions and requirements during design and construction. Mr. Ashby will track each permit (and modification) throughout its timeline for seamless reviews/approvals and monitor impacts and compliance.
- Focus staff resources and actively monitor critical path design and permit/approval activities so submittals are made timely and SHA, SHA-PRD, regulatory/resource agencies, and our IDQM are afforded the time to review them. Special attention will be paid to culvert crossings, high groundwater, poor soil conditions, challenging SWM and E&SC constraints, special permit conditions, etc. that may require more design and review timeframes or require greater coordination with SHA or other stakeholders. Any ambiguities in the interpretation of the contract requirements will be immediately brought to SHA's attention for resolution. All critical items will be focused on by design and construction staff and independently tracked.
- Utilize our **IDQM SHA-PRD Compliance Reviewer, Richard Sobbott, PE**, to perform over-the-shoulder reviews and formal compliance reviews of SWM and E&SC submissions prior to submitting to SHA and SHA-PRD.
- Our **IDQM firm, directed by Steve Hawtof, PE** will provide an independent review and certify that the design complies with the contract requirements. Our IDQM team will be integral part of your design quality management plan by providing the plan's quality assurance.
- Add additional staff to accelerate progress when issues are encountered that result in permit/approval delays.

SHA and Other Agencies Role: The CGI/WRA will partner with SHA, SHA-PRD, regulatory/resource agencies, and project stakeholders from notice of selection to project completion. We anticipate that SHA, SHA-PRD, regulatory/resource agencies, and project stakeholders will communicate any special project/permit conditions, requirements and commitments, submittal requirements, review timelines, and other expectations or concerns. We anticipate a collaborative and professional partnership through active project partnering. Lastly, we anticipate that SHA, SHA-PRD, regulatory/resource agencies, and project stakeholders will dedicate resources to provide timely feedback, reviews, and approvals.

RISK #3: CONCURRENT THIRD PARTY UTILITY RELOCATIONS

The CGI/WRA team understands there are several public and private utilities within the project limits (Howard County DPW, BGE Electric, Level 3 Communications, Zayo Group, Lightower Fiber Networks, Comcast, and Verizon) that may be impacted by the project. We understand that it is our responsibility to coordinate directly with these utility owners during design and construction for the maintenance and/or relocation of their overhead and underground facilities, with the understanding that the design and relocation of their facilities will be performed by them. We also understand there are several utilities within the project limits (Williams Gas, Columbia Gas, and BGE Gas) that most likely will not be impacted by the project. We will develop the project design to avoid impacting utilities to the greatest extent possible and will adhere to utility company requirements when construction activities are adjacent to these utilities.

Why it is Critical: Recognizing utility impacts early and providing utility owners sufficient time to design and relocate their facilities are critical to meeting or exceeding the Project Schedule Goal. Not recognizing impacts early may compress utility relocation design and construction times, potentially resulting in schedule and cost impacts to the project. Coordinating utility relocation designs with the proposed design is vital to diminishing the chance of relocating utilities twice. Coordinating utility relocation construction activities with our construction activities will be critical to maintaining the overall project schedule.

Potential Impact on Schedule: Utility owner design and construction delays can greatly affect the project schedule by delaying the start of project construction activities or impacting project construction activities already underway. Potential anticipated impacts may include: 1) delays in advance clearing for utilities, 2) scheduling of the utility owners' construction divisions for performing the relocation, 3) utility owner priorities vs. contractor priorities (e.g., utility crews pulled from our

work to assist in weather-related emergencies), 4) utility time-of-year restrictions for cut-overs from existing to relocated facilities, and 5) coordination of relocation of facilities on common poles.

Mitigation Strategies to Meet/Exceed Project Schedule Goal: The CGI/WRA team has extensive experience coordinating with utility owners during design and construction, and can navigate utility owner procedures and resolve issues quickly. This experience will be critical toward meeting/exceeding the Project Schedule Goal. The following are mitigation strategies we will employ:

- Within two weeks of project award, we will begin to develop strategies to minimize/eliminate utility relocations. Our **Utility Coordinator, Stephen Beckley**, will engage all utility owners early and will work with owners and SHA District 7 Utilities staff to present recommendations/solutions. We will set schedule milestones for utility relocation decisions.
- We will complete advanced clearing/grubbing where utilities will be relocated.
- Our **Highway Engineer, Gary Bush**, and our design and construction staff have extensive experience with Howard County DPW, BGE Electric, BGE Gas, Level 3 Communications, Comcast, and Verizon. They know firsthand how they operate, and will supply them with information in the format and detail they require.
- Our team will partner with utility owners to provide our design information and answer questions related to their work.
- Our baseline schedule will include tasks for coordination and utility relocation design and construction showing each potential utility relocation as a separate task in the work breakdown structure.
- During design, we will partner with reviewing agencies and utility owners by setting up monthly utility coordination meetings. This will make the CGI/WRA team aware of utility owners' schedules, potential issues that could result in project delays and the need for additional information/clarification to complete their designs and stay on track.

SHA and/or Other Agency Role: The CGI/WRA team will partner with SHA and utility owners to achieve all utility relocations in the most efficient manner resulting in the least cost and impact possible. We anticipate SHA playing a role in timely processing and approval of clearing and grubbing drawings, prior rights documentation, and utility permits. We also anticipate that utility owners will dedicate resources to complete their relocation design and construction in a timely manner.

DESIGN-BUILDER'S APPROACH TO MEETING PROJECT GOAL/KEY ISSUES RELATED TO DESIGN EXCELLENCE

Design-Build Team Experience and Relationships: CGI is a leading Maryland contractor providing Design-Build services on transportation projects to SHA. CGI's vast experience in the Design-Build method of project delivery for SHA includes MD 32 at Linden Church Road Interchange, MD 210 at Livingston/Kerby Hill Road Interchange, MD 124 from South of Airpark Road to Rosewood Manor Lane, US 29 at MD 198 Interchange, MD 355 at Montrose/Randolph Roads, and Widening of Ramp 6. With several of these projects involving major highway design and construction along high volume roadways involving interchanges, especially our work on the MD 32 at Linden Church Road Interchange project, CGI has a deep understanding of the challenges associated with completing Design-Build projects for SHA similar to the MD 32 project.

One key to success on Design-Build projects is choosing the right design partner, one that has similar extensive Design-Build experience and, just as importantly, is one that shares CGI's values for delivering high quality projects, on-time and within budget, while bringing innovation and ingenuity to the collaborative design and construction process afforded by Design-Build contracting. To this end, CGI has partnered once again with WRA. Not only are CGI and WRA completing the MD 210 Design-Build project but WRA also brings to the team extensive SHA experience across all design disciplines and has an extensive work history providing Design-Build services to SHA, both in support of SHA during the RFP development phase and as a Design-Build design partner. WRA's SHA Design-Build experience, in addition to the MD 210 Design-Build project, includes MD 237 from MD 235 to Peggs Road, I-495 at Arena Drive, MD 355 at Montrose/Randolph Roads (RFP - SHA-GEC Manager), MD 216 Relocated from US 29 to I-95 (RFP and final contract documents for structures), US 113 Phase 2B (RFP), and US 113 Phase 3 (RFP).

CGI's and WRA's contractor-designer relationship, however, extends beyond our working relationship on the MD 210 Design-Build project and our collective SHA and Design-Build experience. CGI routinely engages WRA's expertise during the bidding and construction of traditional bid-build projects, while WRA leverages CGI's construction expertise to improve the constructability and cost-effectiveness of WRA designs. This cohesive and collaborative relationship was recently on display with the design and construction of the Emergency 26th Street Repair and North Charles Street Reconstruction project in Baltimore City. When the City was in need of a designer and contractor to complete this emergency, high-profile project, they came to CGI and WRA to get the job done! With the City's consent and support, CGI and WRA worked collaboratively to develop and obtain approval of innovative and cost-effective solutions that could be completed safely and

expeditiously using means and methods readily available to CGI and their subcontractors. All extremely accelerated design and construction schedules were met, requiring 24-hour, seven days a week services at times.

To fulfill our team's responsibility to provide Design Plans, Project Specifications and Working Drawings enabling the development of a finished product in accordance with the Contract Documents, CGI has partnered with **GF, our IDQM firm**, to provide independent design reviews of all design packages developed by WRA and other design subconsultants to certify they meet the requirements of the contract documents. GF brings a wealth of SHA, Design-Build, and design quality assurance experience. They have worked with nearly every SHA office and district over the past 30 years providing design and project management for small and large transportation projects, including the MdQI award-winning MD 32 at Burntwoods Road interchange and widening project. GF also brings a wealth of local and national Design-Build experience on roadway and other major civil projects. As an ISO 9001:2008 certified firm, GF follows strict quality processes established through a quality management plan tailored to each project that provides guidance, verification, and document controls for each design review. Under GF's supervision, **DCI** will provide independent design reviews to confirm that SWM and E&SC design packages meet the requirements of SHA-PRD and the contract documents. DCI has extensive experience providing similar services on SHA projects and is currently performing certified MDE reviews on our MD 210 Design-Build project.

Collaborative Design-Build Approach and Integrated Organization Structure: A key element in CGI's successful Design-Build approach is the integration of Partnering within the daily workflow of design and construction. Through our team's collective experience of working on Design-Build projects, we understand the importance of fostering continuous collaboration, coordination, and communication between all team members throughout the design and construction phases to ensure sound and timely decisions are made throughout the project timeline. This communication, coordination, and collaboration begins upon receipt of the RFP to the end of construction. This continual interaction fosters a deep understanding of each other's approach toward design and construction such that decisions on project elements and issues are mutually developed while ensuring the project design meets all contract requirements and environmental commitments, and best fits construction means, methods, practices, and products. In addition to the internal integration of our team members, communication and collaboration between the CGI/WRA team and SHA, SHA-PRD, regulatory/resource agencies, utility companies, and other project stakeholders will be critical to the overall success of this project. Partnering as promoted by SHA will be utilized as the framework for ongoing coordination and communication with SHA and project stakeholders. All key staff and key support staff of the CGI/WRA design and construction team, including our IDQM staff, will actively participate with SHA and project stakeholders in an initial Partnering workshop and monthly Partnering meetings.

For all Design-Build projects, CGI integrates the participation of the team's construction and design entities and facilitates the concept of joint involvement by providing "Construction Input during Design" and "Design Input during Construction." This integration starts with our **Design-Build Project Manager, Butch Lundgren**. Mr. Lundgren will have full responsibility for compliance with all project requirements, quality, overall project management, and contract administration. Mr. Lundgren will ensure the team is fully integrated and that the project meets and/or exceeds the Total Contract Time and stays within budget while meeting all contract requirements. Mr. Lundgren will be supported by our management team consisting of our **Construction Manager, Shannon Brown**, our **Project Design Manager, Walter Miller, PE**, and our **IDQM Manager, Steve Hawtof, PE**. To ensure full integration of our design and construction staff and leverage the collaboration afforded through the Design-Build process, CGI has assigned **Michael Higgins as our Design/Construction Coordinator**. Mr. Higgins will report directly to Mr. Lundgren and his sole responsibility will be to ensure collaboration between design and construction staff starts early during the bidding and design phases and is sustained throughout the construction phase. He will actively work with Mr. Brown and Mr. Miller to ensure all design submittals are reviewed for constructability, conformance with project requirements, and consistency with construction scheduling, sequencing, means/methods, and other project commitments. He will also coordinate with Mr. Hawtof to ensure contract requirements are being met as design is being progressed and prior to approval of design packages and the initiation of construction activities.

Starting in the bidding phase, our construction and design staff will hold joint design/construction workgroup meetings on a weekly basis to discuss and carefully evaluate all work activities on the project. Initial field investigations will be completed together in order to assess issues such as construction access, maintenance of traffic, environmental constraints, and utility impacts. In the design phase, CGI will be heavily involved in design and constructability decisions in preparation of design submittals. Key construction inputs during design will include the following: 1) constructability reviews – review of scheduling, sequencing, means/methods, materials, etc.; 2) construction scheduling and development of WBS activities for the CPM; 3) assisting with the development of cost-effective designs; 4) assessing utility impacts and relocation or avoidance measures; 5) assessing environmental impacts to identify/develop avoidance and minimization strategies; 6) over-the-shoulder reviews;

and 7) cooperative efforts for shop drawing preparation. To ensure compliance with contract requirements and facilitate seamless and timely design package reviews, our independent design quality staff will be engaged and consulted throughout the development of our design. Meetings will include weekly team coordination meetings, weekly task force/discipline specific meetings, monthly Partnering meetings, design quality control and assurance meetings, constructability review meetings, and other project coordination meetings to address specific issues.

During construction, bi-weekly meetings between construction and design staff will continue. WRA's designers will be consulted to assist CGI throughout construction. Key design inputs during construction will include the following: 1) design field support; 2) review of preliminary CPM schedules for construction; 3) assistance with permit compliance; 4) assistance with MOT and approved traffic control plans; 5) supporting resolutions for changed field conditions; and 7) assisting with public involvement and community interaction.

Design Quality Control and Assurance and Conformance with Contract Requirements: The CGI/WRA team understands that it is our solely responsible to provide the design and construction of the MD 32 project in conformance with the contract requirements through an integrated and well-documented quality management plan. Quality and contract conformance in construction begins with quality and contract conformance in the design phase. On all Design-Build projects, the CGI/WRA team employs a quality management plan that fosters an environment where the goal for quality and contract compliance throughout all phases of the project are expected, planned for, and implemented. This is achieved through our management philosophy that promotes active partnering between design, construction and quality control/quality assurance staff; assignment of sufficient qualified personnel (design, construction, quality control, and independent quality assurance staff); effective and constant communications between design, construction, and quality control/quality assurance personnel; document production and controls following strict control standards; accurate and timely reporting of progress to closely monitor design and construction processes; management and tracking of design changes during construction; completion of quality control reviews by independent staff; and completion of independent quality assurance reviews.

Quality Control: Quality control is not a single step process but requires adequate controls, reviews, and checking applied at each stage of a project's development. Our design quality control plan (DQCP) for the MD 32 project will outline our overall organization plan and reporting responsibilities for design quality control and detailed plan elements to meet the CPM requirements of the project. The DQCP will be focused on quality control measures, coordination activities, and document controls to be applied during project execution by all team members, including subcontractors and subconsultants, which are oriented towards assuring that the design and construction is technically appropriate, accurate, complete, and conforms to the contract requirements. Primary responsibility for implementation of our DQCP rests with our **Design-Build Project Manager, Butch Lundgren**, and our **Project Design Manager, Walter Miller, PE**. Our **Construction Manager, Shannon Brown** will also take an active role during the design phase to ensure over-the-shoulder reviews are being performed and construction inputs are being incorporated into the design. Mr. Lundgren will be responsible for ensuring the DQCP is implemented and that quality control functions are independent of project production functions. He will perform periodic reviews to evaluate how the DQCP is meeting our quality goals. The DQCP will be distributed to all project team members, including subcontractors and subconsultants. Mr. Miller and Mr. Brown will ensure the day-to-day planning, execution, coordination, and review of all work is being successfully completed. It is their responsibility to ensure that quality control procedures are followed and all work conforms to the contract requirements. Mr. Miller and Mr. Brown will be assisted by an independent quality control team (QCT) led by our **Design QC Manager, Brian Riffel, PE**, and our **Construction QC Manager, Josh Miller**. Our QCT, who will not be intimately involved with the project on a daily basis, will carry out the quality control procedures outlined in our DQCP. Our QCT will assist the design and construction team with reviewing the project along its various stages to its conclusion. This includes during the development of the work schedule where it is important that quality reviews of the concepts and approaches to the project construction are performed. Our team's quality control procedures are not ends in themselves, but are constructed to serve as effective tools in monitoring and controlling the accuracy, quality, and completeness of the work, and that the design meets the project requirements.

Quality Assurance: In addition to our quality control responsibilities outlined above, our team will also be responsible for independent quality assurance of all design plans, project specifications and working drawings enabling the development of a finished product in accordance with the contract documents. Our **IDQM firm, GF**, along with **DCI**, will provide independent design reviews of all design packages, including SWM and E&SC packages, developed by WRA to certify they were developed in accordance with the DQCP and meet the requirements of the contract documents. GF will also be responsible for the review and approval (with SHA concurrence) of the DQCP. Our quality assurance approach will adhere to the same rigorous review and document control procedures as outlined above for quality control. Primary responsibility for

implementation of our control assurance program rests with our **Design-Build Project Manager, Butch Lundgren**, and our **IDQM Manager, Steve Hawtof.** It is their responsibility to ensure that quality assurance is being performed and all work conforms to the contract requirements. Mr. Hawtof will also ensure all design submissions are documented and the reviews performed by the IDQM are posted on ProjectWise. SHA will review this documentation to further ensure the design review process and submissions are in compliance with the DQCP and contract requirements. SHA-OOS will also perform a concurrent review of any bridge and box culvert structures if required for the project. In the event of an ambiguity in the interpretation of the contract requirements between WRA and GF/DCI, Mr. Lundgren will immediate raise the issue with SHA's Project Design Manager for resolution.

Coordination with MD 32 Phase 2 Improvements: The CGI/WRA team understands that coordination and cooperation with SHA and other stakeholders will be required to ensure compatibility between this MD 32 Phase 1 project and the future MD 32 Phase 2 project currently under development by SHA. As the current schedule for the MD 32 Phase 2 project is set for an advertisement in February 2018 and an NTP in October 2018, coordination between the final design of the Phase 1 project and the preliminary design of the Phase 2 will be required to ensure a seamless transition between the two projects and any reworking at the northern terminus of the Phase 1 project is minimized. Special attention will be paid to Phase 1 design elements such as SWM, drainage, permanent signing, roadway cross-over, etc., as well as utility relocation needs and required environmental impacts, to ensure they accommodate the Phase 2 project to the fullest extent possible. Depending on the timing and sequencing of construction for each project, coordination may be required during construction to ensure traffic is properly and effectively maintained, E&SC between the two projects is well-coordinated, and other activities such as utility relocations are coordinated. As we more fully develop our construction sequencing and scheduling for the Phase 1 project, we will make needed adjustments to our design approach and/or construction sequencing and scheduling to best accommodate the design, sequencing, and scheduling of the Phase 2 project. As part of our integrated Partnering approach on the Phase 1 project and through the formal Partnering process with SHA and other stakeholders, we will meet regularly with SHA and other stakeholders to collaborate and coordinate our design and construction activities as needed with those of the Phase 2 project. We will leverage this collaborative forum to work through coordination issues as they arise to provide SHA with the most-efficient and cost-effective projects.

Achieving the Project Goals: As outlined in detail above, the CGI/WRA team, composed of highly qualified and experienced staff, fully understands the Project Goals established by SHA, the scope of work required for the project, the significant risks facing us and SHA for the project, and the required design, construction, quality control/assurance, and project management actions and activities necessary to successfully achieve the Project Goals – schedule, mobility, ROW and environmental resources, and design excellence. The CGI/WRA team has shown through years of working with SHA, collectively and individually, our ability to achieve a high level of success on all our projects through the use of sound judgment, sound decision-making, and active partnering in design and construction. We understand that in order to be successful in achieving the Project Goals, we must also meet and/or exceed all contract requirements, amicably resolve ambiguities in project requirements with SHA, design and construct the project within the various project constraints; and partner with SHA, SHA-PRD, regulatory/resource agencies, utility owners, and all other project stakeholders. Success does not happen by chance but through thorough planning and execution based on good judgment and sound decision-making on all activities and at all levels. Key items to be employed by the CGI/WRA team toward achieving the Project Goals will include: 1) a comprehensive knowledge of all policies, procedures, and criteria, and of federal, state, and local permitting/approval regulations, requirements, and procedures required for the project; 2) application of a practical design approach that focuses on the core purpose and need of a project. During the ATC process, we will look to eliminate nonessential project design elements and optimize others resulting in lower cost, quicker project delivery, and improved value while following current design guidance and requirements; 3) development of innovative approaches and alternatives to minimize impacts to the environment, community, utilities, and traveling public; 4) practice environmental stewardship in design and construction through the use of design refinement techniques and alternative construction techniques; 5) adhere to a strict quality control and quality assurance program during design ensuring the project is of the highest quality and meets all contract requirements; and 6) partner internally and with SHA and all project stakeholders to communication, collaborate, and coordinate to complete the project ahead of schedule, within budget, safely, and to the complete satisfaction of SHA and all project stakeholders.

MD 32 - MD 108 to North of Linden Church Road

Project No. HO1415170 | Technical Proposal | Organizational Chart

SHA Team

Innovative Contracting Division
Highway Design Division
Highway Hydraulics Division
District 7 Construction
District 7 Traffic
District 7 Utilities
District 7 Right-of-Way
District 7 Maintenance
Office of Traffic & Safety
Office of Structures
Office of Environmental Design
Office of Materials and Technology
Plan Review Division (PRD)

Executive Committee

Michael Miller (CGI)
Joseph Makar, PE (WRA)

Third-Party Stakeholders

FHWA
Howard County
State and Local Political Leaders
Utility Owners
Schools & Childcare Centers
Religious Entities
Homeowners' Associations
Businesses / Residents
Community / Public
Emergency Services
State & Local Police

Independent Design Quality Management Team

Manager - Steve Hawtof, PE (GF)
Highway - Brian Post, PE (GF)
Structures - Anthony Fusco, PE (GF)
Water Resources - Jason Alwine, PE (GF)
Traffic - Timothy Connor, PE, PTOE (GF)
Utilities - Dennis Funk, PE (GF)
Landscape Architecture - Brian Shifflett, RLA (GF)
Environmental - Ken Guttman, PE (GF)
PRD Compliance - Richard Sobbott, PE (DCI)

Design-Build Project Manager

Raymond "Butch" Lundgren (CGI) - 40% / 40%

Project Design Manager

Walter Miller, PE (WRA) - 40% / 20%

Design / Construction Coordinator

Michael Higgins (CGI)

Construction Manager

Shannon Brown (CGI) - 20% / 100%

Public Relations / Outreach Coordinator

Thomas Hannan, PE, PTOE (WRA)

Design Team

Structures
James Guinther, PE (WRA)
Candi Anderson, PE (MCI)

Geotechnical / Pavement
Monica Paylor, PE (WRA)
Jeffrey Basford, PE (WRA)

Landscape Architecture
Diane Szekely, RLA (SI)
Michael Campbell, RLA (WRA)

Roadway Lighting
Jeffrey Cheng, PE (WRA)
Neil Leary (WRA)

Survey
Thomas Yoakum, PLS (MCI)
Gregory King, PLS (WRA)

Subsurface Investigation
Siva Balu, PE (E2CR)
Soil Borings & Pavement Cores
Dave Edwards (EUM)
Utility Designating & Test Pitting

Highway
Gary Bush, PE (WRA) - 40% / 20%
Mark Roberts, PE (WRA)

Traffic Engineering
Jeremy Mocny, PE, PTOE (WRA)
Neil Leary (WRA)

Hydrology / Hydraulics / SWM / E&SC
Jason Cosler, PE (WRA) - 40% / 20%
Debra Rasmussen, PE (WRA)
Mark Schneck, PE, CFM (RJM)

Environmental Resources / Permitting
Timothy Hess (WRA)
Permitting Coordinator
Laura Callens (WRA)
Wetlands & Waters
Michael McQuade (WRA)
Forest / Trees

Quality Control Management Team

Design QC Manager
Brian Riffel, PE (WRA)

Construction QC Manager
Josh Miller (CGI)

Utility Coordination

Stephen Beckley (CGI)
Utilities Coordinator
Paul Weiner, PE (WRA)

Utility Companies

BGE Electric
BGE Gas Distibution
Columbia Gas Transmission, LLC
Level 3 Communications
Howard County DPW
SHA District Utility Engineer
Comcast Cable
Zayo Group
Lightower Fiber Networks
Verizon of Maryland
Williams Gas

Environmental Compliance Manager

James Ashby (WRA)

Resource Agencies

Maryland Dept. of the Environment (MDE)
U.S. Army Corps of Engineers (USACE)
U.S. Fish & Wildlife Service (USFWS)
Dept. of Natural Resources (DNR)
Federal Emergency Management Agency (FEMA)
Maryland State Preservation Officer (MD SHPO)
State Highway Administration - Plan Review Division (SHA - PRD)

Construction Team

Project Controls / DBE Compliance
Mark Miller (CGI)

Project Scheduling
Stephen Beckley (CGI)

Safety Director
Brian Colson (CGI)

General Superintendent
Chris Kirsch (CGI)

Structures Manager
Larry Smith (CGI)

MOT / Traffic Manager
Joe O'Brien (CGI)

Surveys-Construction
Frank Collins (CGI)

Highway / E&SC / SWM Manager
Armando Cruz (CGI)

SWM As-Built Inspection / Certification
Chris Cusick, PE (WRA)

LEGEND

CGI	Concrete General, Inc.	RJM	RJM Engineering, Inc. (MBE)
WRA	Whitman, Requardt & Associates, LLP	SI	Streetscapes, Inc. (MBE)
GF	Gannett Fleming, Inc.	🔑	Key Staff
DCI	Daniel Consultants, Inc. (MBE)	XX% / XX%	Approximate Time Commitment (Design / Construction)
E2CR	E2CR, Inc. (MBE)	———	Direct Report
EUM	Edwards Utility Mapping Corporation (MBE)	- - -	Coordination and Communication
MCI	Mercado Consultants, Inc. (MBE)		

Whitman, Requardt & Associates, LLP
Engineers · Architects · Environmental Planners Est. 1915

CONCRETE GENERAL