



US 113 (PHASE 4) FROM NORTH OF MD 365 TO NORTH OF FIVE MILE BRANCH ROAD

DESIGN-BUILD

CONTRACT NO. WO6355170 JULY 7, 2016 TECHNICAL PROPOSAL

WORCESTER COUNTY | F.A.P NO. AC-NHPP-327-1(39)N



A JOINT VENTURE

evanwilliams & **CORMAN**
CONSTRUCTION

WITH LEAD DESIGN FIRM



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US 113 (PHASE 4) FROM NORTH OF MD 365
TO NORTH OF FIVE MILE BRANCH ROAD

DESIGN-BUILD

LEAD DESIGN FIRM
EXPERIENCE/
QUALIFICATIONS AND
PAST PERFORMANCE

LEAD DESIGN FIRM EXPERIENCE/
QUALIFICATIONS AND PAST PERFORMANCE

2.09.02 Lead Design Firm Experience | Qualifications and Past Performance

Project Design Manager: Walter Miller, PE

Firm: Whitman, Reardon & Associates, LLP

Education: BS – 1987 – Civil Engineering

Registration: MD-registered Professional Engineer,
License No. 19165

Years of Experience: 29

Design-Build MD 237 from MD 235 to Pegg Road | SHA | St. Mary's County, MD | \$37.8M | 12/07-10/11 | Project Design Manager. *Walt 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; design of pipe culverts and a pile-supported box culvert; retaining wall design, MOT for multiple phases of construction 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; intersections with J-turn movements; traffic signals, intersection lighting, and signing/markings; landscape design; utility designating and test pitting; utility design/coordination of overhead and underground 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-builts.*

Design-Build MD 210 at Kerby Hill/Livingston Roads Interchange Improvements | SHA | Prince George's County, MD | \$82.6M | 08/14-Present | Project Design Manager. *Walt is managing all design efforts for the reconstruction of an at-grade intersection to a grade separated interchange, including survey; roadway; 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, and retaining walls; MOT and property access via complex MOT for multiple phases of construction; soil borings; pavement cores; geotechnical engineering and pavement design; TMP; traffic signals, intersection lighting, and signing/markings; landscape design and on-site reforestation mitigation; utility designating and test pitting; utility design/coordination of overhead and underground 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. Project design is in for final approval.*

Design-Build US 113 (Phase 2B) from North of Goody Hill Road to South of Massey Branch & US 113 (Phase 3) from South of Massey Branch to North of Five Mile Branch Road | SHA | Worcester County, MD | \$44.3M | 6/08-Present | Project Supervisor/Contract Manager. *Walt supervised the development of conceptual plans and support documents and the conformance reviews of Design-Builder's documents for the dualization (two to four lanes) and reconstruction of two sections (6 miles) of US 113, just north of the US 113 Phase 4 project. Walt supervised completing the Access Management Plans incorporating J-turns and Maryland Ts; alignment studies and preliminary roadway design, including a MD-DE railroad crossing and access roads; traditional/ESD concept SWM design; preliminary open/closed drainage system design; preliminary design of box culverts, including H&H and structural/foundation design; permitting/approvals (concept SWM, forest (FIDS), Section 404/Wetlands and Waterways, NEPA) for concept design; utility coordination; concept landscape design; and Design-Builder's document conformance reviews.*

MD 22 Intersections Capacity Improvements (BRAC) | SHA | Harford County, MD | \$26M | 7/08-Present | Project Supervisor/Contract Manager. *Walt supervised capacity improvements to three intersections along MD 22, a multi-lane divided roadway, including roadway and bicycle/pedestrian improvements; H&H analysis and design for drainage, SWM, and multi-phase E&SC; retaining wall design, MOT and property access via complex MOT for multiple construction phases; geotechnical engineering; traffic signals, intersection lighting, and signing/markings; landscape design and onsite reforestation mitigation; utility designating and test pitting; utility coordination; ROW plats; permitting/approvals (SWM, E&SC, forest, wetlands/Waterways, NEPA); public outreach; design QC; and construction support services.*

2.09.02 Lead Design Firm Experience | Qualifications and Past Performance

Highway Engineer: Gary Bush, PE

Firm: Whitman, Reardon & Associates, LLP
Registration: MD-registered Professional Engineer,
License No. 14255

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

Design-Build MD 237 from MD 235 to Pegg Road | SHA | St. Mary's County, MD | \$37.8M | 12/07-10/11 | Lead Highway Engineer. Gary was responsible for *highway design and MOT for the dualization (two to four lanes) and reconstruction* of 2.9 miles of MD 237, including *development of an Access Management Plan with J-turns*, realigned portions of MD 237 *to improve horizontal curves*, raised MD 237 *profile over a major stream* for a box culvert crossing, *and realigned an unsafe intersection*. Constructed in four zones requiring four MOT packages utilizing temporary connections between construction zones. *Gary prepared final roadway plans, provided utility relocation 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 bicycle/pedestrian improvements, drainage, SWM, multi-phase E&SC, a box culvert, noise barriers, traffic signals, intersection lighting, signing/markings, landscaping, utility design/coordination of overhead and underground electric and communications, permitting/approvals/compliance, and construction support services, including as-builts.

Design-Build US 113 (Phase 2B) from North of Goody Hill Road to South of Massey Branch & US 113 (Phase 3) from South of Massey Branch to North of Five Mile Branch Road | SHA | Worcester County, MD | \$44.3M | 6/08-Present | Lead Highway Engineer and Task Manager. Gary was responsible for preliminary *highway design* (conceptual plans and supporting documents) and conformance reviews of Design-Builder's documents for the *dualization (two to four lanes) and reconstruction of two sections (6 miles) of US 113, just north of the US 113 Phase 4 project*. He was responsible for preliminary *highway design, including developing Access Management Plans incorporating J-turns and Maryland Ts; studies at a MD-DE railroad crossing resulting in realigning US 113 to improve the substandard crossing; preliminary railroad crossing design, including profiling the railroad top of rail; preliminary horizontal and vertical alignment design of US 113 and access roads; preliminary line of sight studies at J-turns; traffic delay estimates; obtaining environmental permits; performing initial utility coordination; and conceptual landscaping*. Gary was also responsible for performing conformance reviews of Design-Builder's documents. The project included traditional/ESD concept SWM, open/closed drainage systems, and pipe and box culvert crossings.

MD 22 Intersections Capacity Improvements (BRAC) | SHA | Harford County, MD | \$26M | 7/08-Present | Lead Highway Engineer. Gary is responsible for *highway design and MOT* for capacity improvements to three intersections along MD 22, *a multi-lane divided roadway*, including *highway geometric design for roadway improvements consisting of acceleration/deceleration lanes, auxiliary lanes, intersection design*, and bicycle lanes. Gary was also responsible for *developing MOT plans, including coordination between three separate construction contracts. He has participated in Partnering and public outreach*. The project also includes drainage, SWM, E&SC, traffic signals, intersection lighting, signing/markings, landscaping/on-site reforestation, utility coordination, ROW, permitting, and construction support services.

MD 5 at Brandywine Road and MD 373 Capacity Improvements | SHA | Prince George's County, MD | \$5M | 1/06-2/12 | Lead Highway Engineer and Task Manager for the preliminary and *final design and preparation of contract documents* for capacity improvements to an at-grade intersection, including mainline widening. *Gary managed all design, including highway geometric design for roadway improvements consisting of roadway widening, intersection design, and pedestrian/bicycle facilities; water resource design, including drainage, SWM and E&SC; multi-phase MOT; traffic signals; intersection lighting; signing/markings; environmental permitting; coordinated utility relocations; and determined limits of ROW.*
Design-Build MD 216 Relocated from US 29 to I-95 | SHA | Howard County, MD | \$21.1M | 1/02-5/05 | Lead Highway Engineer for the preliminary *highway design* of a 2-mile realignment of MD 216 to a *dual-divided highway*. Gary was responsible for preparing the conceptual plans and supporting documents for the Design-Build advertisement. He also reviewed the Design-Builder's plans for conformance with the RFP.

Water Resources Engineer: Jason Cosler, PE

Firm: Whitman, Requardt & Associates, LLP

Education: BS – 1992 – Civil Engineering

Registration: MD-registered Professional Engineer,
License No. 28467

Years of Experience: 24

Design-Build US 113 (Phase 2B) from North of Goody Hill Road to South of Massey Branch & US 113 (Phase 3) from South of Massey Branch to North of Five Mile Branch Road | SHA | Worcester County, MD | \$44.3M | 6/08-Present | Lead Water Resources Engineer. Jason was responsible for the concept SWM/drainage design (conceptual plans and supporting reports/documents) and conformance reviews of Design-Builder's documents for the dualization (two to four lanes) and reconstruction of two sections (6 miles) of US 113, just north of the US 113 Phase 4 project. He was responsible for water resources work for traditional/ESD concept SWM design, open/closed drainage system design and concept design/permitting for the extension and/or replacement of four structures conveying Waters of the U.S. and roadway cross culverts. Jason was also responsible for performing conformance reviews of Design-Builder's documents. The project also includes highway alignment studies and preliminary design incorporating J-turns and Maryland Ts, a MD-DE railroad crossing and access roads; permitting/approvals; utility coordination; and concept landscaping.

Design-Build MD 210 at Kerby Hill/Livingston Roads Interchange Improvements | SHA | Prince George's County, MD | \$82.6M | 08/14-Present | Lead Water Resources Engineer. Jason is responsible for all water resources work for the reconstruction of an at-grade intersection to a grade separated interchange. He is overseeing the design, plan preparation, and MDE, USACE and SHA permits/approvals for final drainage; ESD SWM; SWM as-built certification; and H&H analysis for drainage culverts, one bridge, phased E&SC with MOT, and a stream relocation, including maintenance of stream flow design. He minimized impacts to sensitive 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 onsite reforestation mitigation, utility design/coordination of overhead and underground electric and communications, permitting/approvals/compliance, public outreach, partnering, and construction support services.

Design-Build MD 237 from MD 235 to Pegg Road | SHA | St. Mary's County, MD | \$37.8M | 12/07-10/11 | Lead Water Resources Engineer. Jason was responsible for all water resources work 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, and a two-cell CIP box culvert, including maintenance of stream flow, constructed in phases at the Jarboesville Run crossing. The project also included roadway (including intersections with J-turns) 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.

MD 295 Third Lane Widening | SHA | Anne Arundel County, MD | \$9.5M | 02/05- 01/12 | Lead Water Resources Engineer. Jason was responsible for all water resources work for 1.98 miles of third lane widening on MD 295. He oversaw the design, plan preparation, and MDE and SHA permits/approvals for drainage, SWM and E&SC design. Prior to implementing new regulations requiring micro-scale environmental site design, Jason developed an alternate SWM design using grass-lined channels and vegetated buffers to meet water quality requirements, combined with forested dry basins to integrate quantity control requirements with the project's aesthetic guidelines. He also developed design computations and garnered environmental permits for culvert extensions which impacted Waters of the U.S.

MD 22 Intersections Capacity Improvements (BRAC) | SHA | Harford County, MD | \$26M | 07/08-Present | Lead Water Resources Engineer. Jason was responsible for water resources work for capacity improvements to three intersections along MD 22. He oversaw the design, plan preparation, and MDE, USACE and SHA permits/approvals for drainage; ESD and traditional SWM facilities; and phased E&SC with MOT.

2.09.02 Lead Design Firm Experience | Qualifications and Past Performance

Structural Engineer: James Guinther, PE

Firm: Whitman, Requardt & Associates, LLP
Registration: MD-registered Professional Engineer,
License No. 25833

Education: BS – 1996 – Civil Engineering;
MS – 1998 – Civil Engineering

Years of Experience: 19

Design-Build MD 237 from MD 235 to Pegg Road | SHA | St. Mary's County, MD | \$37.8M | 12/07-10/11 | Lead Structural Engineer. *Jim was responsible for all structural design and preparation of plans, conforming to all design requirements for the dualization (two to four lanes) and reconstruction of 2.9 miles of MD 237, including a two-cell CIP box culvert on piles phased to maintain traffic and stream flow, an MSE retaining wall, noise barriers, SWM wier walls and control structures, and culvert headwalls. He oversaw soil borings/testing, foundation analysis and design, shop drawing review, as-built plans, and coordinated with electric, communication and water utilities.* The project also included roadway (including intersections with J-turns) and bicycle/pedestrian improvements, drainage, SWM, multi-phase E&SC, MOT, traffic signals, roadway lighting, signing/markings, landscaping, utility design/coordination of overhead and underground electric and communications, permitting/approvals, and construction support services, including as-builts.

Design-Build MD 210 at Kerby Hill/Livingston Roads Interchange Improvements | SHA | Prince George's County, MD | \$82.6M | 08/14-Present | Lead Structural Engineer. *Jim is responsible for all structural design and preparation of plans, conforming to all design requirements, for the reconstruction of an at-grade intersection to a grade separated interchange, including a bridge over Carey Branch, two bridges over MD 210 (one single span and one two span), three retaining walls to minimize ROW and resource impacts, two CIP box culvert extensions, SWM riser structures and wier walls, and drainage pipe modifications/extensions. He is overseeing soil borings and testing, foundation analysis and design, shop drawing review, as-built plans, and utility coordination for electric, communication, gas and water/sewer.* The project also includes roadway and bicycle/pedestrian improvements, drainage, multi-phase E&SC, maintenance of stream flow, MOT, traffic signals, roadway 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, including as-builts. *Through approved ATCs, prioritized geotechnical and utility investigations, and coordination with utility relocation designs, schedules and stream work restrictions, the structural design packages were coordinated to meet the demanding project schedule.*

MD 22 Intersections Capacity Improvements (BRAC) | SHA | Harford County, MD | \$26M | 7/08-Present | Lead Structural Engineer. *Jim was responsible for all structural design and preparation of plans, conforming to all design requirements for capacity improvements to three intersections along MD 22, including CIP retaining walls, and SWM riser structures and wier walls. The CIP retaining walls were coordinated with drainage and utilities to minimize impacts to adjacent properties and avoid a forest conservation area. He oversaw soil borings and testing, foundation analysis/design, and shop drawing review.*

Design-Build MD 216 Relocated from US 29 to I-95 | SHA | Howard County, MD | \$21.1M | 1/02-5/05 | Structural Engineer. *Jim completed the final structural design and preparation of plans for a two-cell CIP box culvert extension and five noise walls. He prepared the preliminary layout and design for several pipe culvert headwalls for crossings throughout the corridor, completed soil borings, lab testing and foundation analysis and design, and worked with the Design-Build team (including Corman Construction, Inc. as the Lead Constructor) during construction to conformance reviews of their documents.*

Design-Build Fall Hill Avenue Widening and Mary Washington Boulevard Extension | VDOT | Fredericksburg, VA | \$30.8M | 04/14-Present | Structural Engineer. Jim was responsible for the substructure design quality control for a new 420-ft., 5-span, prestressed girder bridge with substructure units consisting of multi-column bents founded on pile foundations. Jim also provided coordination and design of a noise barrier, including the drilled shaft foundations.

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

Lead Design Firm: Whitman, Requardt & Associates, LLP

Owner: Maryland State Highway Administration

Owner Contract Number: SM7575171

Owner Point of Contact: Jeffrey Folden | 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)

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 with intersections with J-turn movements. Bicycle lanes and pedestrian sidewalks were installed along the entire project.

Resurfaced/reconstructed 16 intersecting side streets and over 65 driveways/entrances. There was a new closed storm drain system with over 13,500 LF of drainage pipe, eight new traditional SWM facilities, and multi-phase E&SC. 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 fill embankment to maintain MD 237 traffic for the box culvert construction. Three noise walls, totaling 1,700 LF, were designed/constructed adjacent to residential properties. Designed/installed 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. 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. Temporary cross-overs from newly-constructed pavement to the existing pavement were installed as portions of the project were completed. There was landscaping along MD 237 roadside and medians, within SWM facilities, and for 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.



Rock ramp for fish passage at Jarboesville Run

2.09.02 Lead Design Firm Experience | Qualifications and Past Performance

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 traps then converted to final SWM facilities as sections were completed. Each construction zone was designed and submitted for approval separately for construction to proceed in approved zones as subsequent zones were being designed and approved.

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 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. There was also coordination with an adjoining St. Mary’s County project.

Relevance to the US 113 (Phase 4) project:

<ul style="list-style-type: none"> • SHA Design-Build • Roadway - dualization from 2 to 4 lanes • Fast-track schedule • Multi-stage construction • Maintenance of traffic • New pavement and existing pavement rehab. • Drainage, SWM and E&SC • In-stream work restrictions • Pipe culvert extensions and/or replacements • Box culvert on pile foundation 	<ul style="list-style-type: none"> • Geotechnical engineering • Landscaping • Signing and pavement markings • Intersection lighting • Traffic signalization • Utility coordination/relocations • Environmental permit acquisition/compliance • SHA IEM oversight • Public outreach
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Successful methods, approaches and innovations: The project was divided into four zones which governed design and construction. 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. 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 a safe MOT route when transitioning between construction zones and access to adjacent property owners throughout construction, including coordinating the re-routing of US Mail services when existing mail boxes were inaccessible. Utilized a ROW total take property residential structure for the Design-Build Team’s field office resulting in cost savings to SHA. The project earned impact reduction incentives for the final design reduction of wetlands and forest impacts.

Key Staff on MD 237 project proposed for US 113 (Phase 4) project:

- Walter Miller, PE – Project Design Manager on MD 237; proposed Project Design Manager on US 113 (Phase 4).
- Gary Bush, PE – Lead Highway Engineer on MD 237; proposed Highway Engineer on US 113 (Phase 4).
- Jason Cosler, PE – Lead Water Resources Engineer on MD 237; proposed Water Resources Engineer on US 113 (Phase 4).
- James Guinther, PE – Structural Engineer on MD 237; proposed Structural Engineer on US 113 (Phase 4).

Awards/commendations:

- Mid-Atlantic Construction’s Best of 2010

Disputes taken to arbitration and/or litigation: None

MD 22 Intersection Capacity Improvements (BRAC), Harford County, Maryland

Lead Design Firm: Whitman, Requardt & Associates, LLP

Owner: Maryland State Highway Administration

Owner Contract Number: BCS 2005-13D: HA3485370, HA3485470, and HA3485570

Owner Point of Contact: Lindsay Bobian | 410.545.8765 | lbobian@sha.state.md.us

Project Delivery Method: Design-Bid-Build

Overall Construction Cost:

Initial Contract Value: \$26 million

Final Contract Value: Ongoing

Reason for Difference: Ongoing

Overall Schedule Performance: *Notice to Proceed Date:* 7/2008 (Design)

Initial Completion Date: 8/2017 (Construction)

Final Completion Date: Ongoing

Reason for Difference: Ongoing

Project Description and Specific Nature of Work:

Under an SHA open-end contract, WRA provided preliminary/final engineering and construction phase services for the improvement of three primary intersections along 1.9 miles of MD 22 to accommodate the anticipated traffic increase resulting from BRAC at APG.



MD 22 improvements begin at I-95 and extend east to APG, and include intersections with MD 462, Beards Hill Road, Middelton Road, and Old Post Road. The project was split into three construction contracts with additional through lanes on MD 22, additional auxiliary lanes on MD 22 and intersecting roadways, resurfacing roadways within the limit of work, median reconstruction, four SWM facilities, replacement of four traffic signals, and designated bicycle lanes. It enhances pedestrian and bicycle facilities by installing curb and sidewalk along both sides of MD 22 with over 1.5 miles of continuous sidewalk along MD 22. The project included 18,000 LF of temporary concrete barrier, 70,000 CY of excavation, 10,000 LF of storm drains, 20,000 LF of underdrain, 668 LF of retaining walls, 1,200 LF of noise wall, 56,000 TONS of asphalt, 32,000 LF of curb, 70,000 SF of sidewalk, and \$3.5 million in utility relocations.

Public involvement with adjacent property owners included public and individual meetings with residents and businesses. MOT plans were prepared to accommodate peak hour traffic; temporary traffic signal plans were prepared to maintain signalization for the initial construction phase required the removal of existing signal poles and equipment, and MOT plans included provisions for temporary pedestrian accessibility. Coordinated with public/private utility owners to minimize/mitigate impacts, including meetings with utility companies. During the NEPA process, noise impact studies were performed with noise mitigation as a requirement for approval.

WRA's design services included alignment and traffic studies, highway engineering, ADA compliant pedestrian facilities, bicycle facilities, property surveys, plat preparation, hydrologic and hydraulic design, SWM design, E&SC design, utility relocation coordination, geotechnical engineering, MOT, signing/markings, intersection lighting, traffic signalization, noise wall analysis and design, landscape architecture services, public involvement, value engineering, cost estimates, special provisions and stakeholder coordination. WRA acquired

2.09.02 Lead Design Firm Experience | Qualifications and Past Performance

MDE SWM/E&SC approvals, prepared roadside tree permits and wetland impact plates, and is currently partnering during construction with SHA and the contractor and performing construction related services.

The MD 22 at Beards Hill Road intersection is in a commercialized area with fast food restaurants, commercial banks, retail shopping centers, and individual retail establishments. Intersection improvements include third lane widening from I-95 to east of Middleton Road connecting with the MD 462 contract and additional auxiliary lanes. With commercial properties adjacent to Beards Hill Road, minimal ROW could be acquired; thus, enacting lane reassignments to reduce impacts. A temporary traffic signal was designed and installed to maintain traffic during construction.

The MD 22 at MD 462 intersection is in a residential area with properties abutting MD 22 and MD 462. Intersection improvements include third lane widening of MD 22 from east of Middleton Road connecting with the Beards Hill Road contract and additional auxiliary lanes at the intersection. MD 462 widening was aligned to reduce impacts to existing utility poles.

The MD 22 at Old Post Road intersection is just west of the APG entrance. Intersection improvements include third lane widening of MD 22 from US 40 to east of Old Post Road, and additional auxiliary lanes at the intersection. MD 22 will remain an open section with drainage ditches and cross culverts conveying drainage to a new SWM facility. A major underground electrical duct bank is being relocated. The MD 22 roadway alignment and adjacent noise wall were located to avoid relocating a deep sewer. Noise wall design required coordinating with BGE and a special post design for low overhead equipment due to close high voltage lines.

Relevance to the US 113 (Phase 4) project:

<ul style="list-style-type: none"> • Roadway - widening on divided highway • Multi-stage construction • Maintenance of traffic • Drainage, SWM and E&SC • Geotechnical engineering • Landscaping • Signing and pavement markings 	<ul style="list-style-type: none"> • Intersection lighting • Traffic signalization • Retaining walls • Utility coordination/relocations • Environmental permit acquisition • ROW acquisition • Public outreach
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Successful methods, approaches and innovations: Critical project scheduling due to separate construction contracts required a coordinated sequence of construction between each contract. Concurrent utility relocations by utility owners. Determined magnitude of potential impacts to adjacent developed properties and met with owners to inform them of potential impacts and discussed mitigation. Design incorporated retaining structures, relocated access points, and reconfigured internal circulation routes to minimize impacts. Maintained signalized intersection by installing a temporary traffic signal before permanent traffic signal could be installed. During construction, an embankment slope was failing requiring an immediate response by our geotechnical engineers to investigate and design an emergency slope repair.

Key Staff on 22 BRAC project proposed for US 113 (Phase 4) project:

- Walter Miller, PE – Project Supervisor/Contract Manager on MD 22; proposed Project Design Manager for US 113 (Phase 4)
- Gary Bush, PE – Lead Highway Engineer on MD 22; proposed Highway Engineer for US 113 (Phase 4)
- Jason Cosler, PE – Lead Water Resources Engineer for MD 22; proposed Water Resources Engineer for US 113 (Phase 4)
- James Guinther, PE – Lead Structural Engineer on MD 22; proposed Structural Engineer for US 113 (Phase 4)

Disputes taken to arbitration and/or litigation: None

Design-Build Fall Hill Avenue Widening and Mary Washington Boulevard Extension, Fredericksburg, Virginia

Lead Design Firm: Whitman, Requardt & Associates, LLP

Owner: Virginia Dept. of Transportation

Owner Contract Number: C00088699DB59

Owner Point of Contact: Michael Coffey, PE | 540.899.4214 | michael.t.coffey@vdot.virginia.gov

Project Delivery Method: Design-Build | Lump Sum Pricing

Overall Construction Cost:

Initial Contract Value: \$30.8 million *Final Contract Value:* Ongoing

Reason for Difference: N/A

Overall Schedule Performance: *Notice to Proceed Date:* 4/2014

Initial Completion Date: 1/2017 *Final Completion Date:* Ongoing

Reason for Difference: N/A

Project Description and Specific Nature of Work:

WRA was the lead design firm responsible for performing final engineering services, final construction documents, and obtaining permits/approvals for major improvements to the Fall Hill Avenue corridor and extending Mary Washington Boulevard. Existing Fall Hill Avenue is a two-lane roadway with no bike facilities and limited pedestrian facilities. Along the alignment Snowden Park, Rappahannock Canal Park, and several historic resources that were impacted by construction requiring strict adherence to all commitments in the environmental documents. ***Corman Construction, Inc. is the Design-Builder performing all construction services.***



Fall Hill Avenue I-95 Overpass – Phase 1 bridge construction

WRA's design services included highway, hydrologic and hydraulic, SWM, E&SC, geotechnical engineering, pavement evaluation and design, noise analysis and noise wall/foundation design, MOT, signing/markings, intersection lighting, traffic signalization, bridge/foundation design, park design, utility relocation/coordination, public involvement, permitting and stakeholder coordination.

Improvements provide for a four-lane divided curb and gutter urban typical section with a 10-ft. shared-use path and a 5-ft. sidewalk for a length of 1.5 miles on Fall Hill Ave. Mary Washington Blvd. is extended on new location for 0.3 miles, including pedestrian facilities and the Rappahannock Canal trail network for bicyclists and pedestrians. Mary Washington Blvd. intersects with Fall Hill Ave. with a roundabout. The remaining 0.4 portion of Mary Washington Blvd. is widened to a four-lane divided section with sidewalks and the intersection with US 1 is improved for 0.2 miles to provide additional turn lanes at Mary Washington Blvd.

WRA provided structural design services including a 5- span prestressed concrete bridge over I-95 with four lanes, a 14-foot shared use path and a 6-foot sidewalk, and three retaining walls consisting of a 480-foot long

2.09.02 Lead Design Firm Experience | Qualifications and Past Performance

MSE wall averaging 10 foot tall and two soil nail walls totaling 793 feet with heights over 20 feet.

WRA also completed the design and analysis of a Rappahannock Canal tributary, which required a 10-ft. by 8-ft. box culvert to ensure a 100-year storm event will not impact private property and a new storm drainage system for the length of Fall Hill Ave. WRA’s design eliminated one SWM facility on the frontage of a commercial property resulting in a significant ROW cost savings for the owner.

The project is located in diverse and changing geology requiring exceptional geotechnical engineering with the western portion over relatively-shallow residual soils of the Piedmont Province, while the eastern portion is more typical of the Coastal Plain Province with over-consolidated Potomac clays.

Two major Traffic Management Plan (TMP) elements were the phased bridge construction and the three-phase Fall Hill Ave. reconstruction. The TMP evaluated I-95 traffic impacts for the placement of concrete barriers and beams and the removal of the existing bridge, limiting lanes closures during night times with carefully coordination with the regional traffic operations center and emergency responders.

The project included three traffic signals and three pedestrian crossings using Rectangular Rapid Flash Beacons. Special attention was given to high pedestrian movements and bicyclist along the corridor to provide opportunities to access the pedestrian facilities and multi-use trails.

A key element of this project was communicating the project goals and how the project would affect the public. There are significant access management controls restricting movements to and from developments, which was a major discussion item at the “*Pardon Our Dust*” public meeting. In addition, the public expressed concerns with the traffic operations at the proposed roundabout. Addressing these concerns quickly with the owner’s team resulted in the project moving forward with minimal additional effort.

Relevance to the US 113 (Phase 4) project:

<ul style="list-style-type: none"> • Design-Build with same contractor (Corman Construction, Inc.) • Roadway - construction of four lane divided highway • Multi-phase construction • Maintenance of traffic • New pavement and existing pavement rehab. • Drainage, SWM and E&SC • In-stream work restrictions 	<ul style="list-style-type: none"> • Bridge and box culvert • Geotechnical engineering • Signing and pavement markings • Intersection lighting • Traffic signalization • Utility coordination/relocations • Environmental permit acquisition/compliance • Public outreach
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Successful methods, approaches and innovations: Coordination with phased construction of Fall Hill Avenue roadway reconstruction with the phased construction of the bridge over I-95. Bridge phasing included the installation of a temporary geo-fabric wall to maintain traffic during the bridge abutment construction. Eliminated a SWM facility which resulted in saving the owner from acquiring expensive commercial property, construction of the facility and future maintenance costs. Project included an historical resource, fragile Civil War trenches that were mandated to be avoided with no impacts, resulting in the installation of a soil nail retaining wall.

Key Staff on Fall Hill project proposed for US 113 (Phase 4) project:

- Walter Miller, PE – Executive Committee on Fall Hill; proposed Project Design Manager for US 113 (Phase 4).
- Jason Cosler, PE – H&H Engineer on Fall Hill; proposed Water Resources Engineer for US 113 (Phase 4).
- James Guinther, PE – Structural Engineer on Fall Hill; proposed Structural Engineer for US 113 (Phase 4).

Disputes taken to arbitration and/or litigation: None



US 113 (PHASE 4) FROM NORTH OF MD 365 TO NORTH OF FIVE MILE BRANCH ROAD

DESIGN-BUILD

LEAD CONSTRUCTION FIRM EXPERIENCE/ QUALIFICATIONS AND PAST PERFORMANCE

LEAD CONSTRUCTION FIRM EXPERIENCE/ QUALIFICATIONS AND PAST PERFORMANCE



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2.09.03 Lead Construction Firm Experience/Qualifications and Past Performance

Design-Build Project Manager: Mark Osenbaugh, DBIA

Firm: E. V. Williams, Inc.

Education: A.A.S. CET

Registration: MDE #RPC006344

Years of Experience: 24

Design-Build Route 13/US 158, Gates and Hertford Counties, NC | NCDOT | \$56M | 11/10-8/15 | Design-Build Project Manager. Widened 7.1 miles of Route 13/US 158 from two lanes to a four-lane divided highway with “Bulb-out” J-turn style intersections, including single-span dual bridges over environmentally-sensitive Buckhorn Creek, a new bridge over Chowan River with *time-of-year restrictions*, structure rehabilitation, *drainage, culvert extensions, ROW, new service roads, SWM, E&SC, geotechnical analysis/testing, signing/markings, intersection lighting, utility coordination/relocations including Verizon, and ground improvements.* Mark managed the project including the design team, integrated design and construction, provided constructability reviews on the roadway design and ground improvements, and obtained permits. He was responsible for project requirements/compliance, quality management, and contract administration. Mark managed the ATC process and redesigned the interchange by flipping the configuration which saved time and cost and relocated the new roadway which reduced unsuitable soil excavation and eliminated a gas main relocation. He developed the CPM schedule and oversaw development of a phased Traffic Management Plan where no roadways would be completely closed or traffic flow impeded throughout construction. Mark led the Design-Build team in partnering and progress meetings, attended community outreach meetings, worked with environmental teams on environmental stewardship, coordinated independent QC inspections/resolutions, and kept the project on track and on budget.

Birdneck Road Improvements, Virginia Beach, VA | VDOT | \$32M | 11/09-1/11 | Project Manager. Phased widening of 2.9 miles of two-lane roadway to four lanes of divided roadway, including new wet utilities with existing utilities, median construction, new asphalt pavement, ground improvements, earthwork, aggregate placement, MOT, drainage, SWM, landscaping, signalization, signing/markings, E&SC, and lighting constructed within an environmentally-sensitive swamp area. Design-Build elements included two noise walls where Mark worked with the designer, performed constructability reviews, and inspected construction. Working with the owner, he oversaw the entire project and was responsible for project requirements/compliance, quality management, contract administration, and CPM schedule. Mark revised the MOT plan from five to three phases and reduced the project duration by five months. He minimized traffic impacts by scrutinizing the MOT plan. Mark worked with the owner to use cement and/or lime stabilization to improve the subgrade and minimize utility relocations. As a result, the project duration was reduced and savings were realized by the owner.

Battlefield Boulevard and I-64, City of Chesapeake, VA | VDOT | \$102M | 2/06-7/09 | Project Manager. Reconstructed four travel lanes to eight travel lanes, including CSX Railroad bridge widenings, bridge construction, drainage, SWM, service road, median, E&SC, earthwork, aggregate placement, signing/markings, intersection lighting, signalization on Battlefield Blvd., retaining walls to limit ROW acquisition and impacts to wetlands, extended box culverts, replaced concrete pavement, wet utilities, and MOT. Design-Build elements included seven MSE walls and one noise wall. Mark worked with the designer, performed constructability reviews, and inspected construction. Mark oversaw the entire project, was responsible for project requirements/compliance, and contract administration. Innovations included incorporating demolished concrete into the cement-treated aggregate for the roadway section which was performed within the ROW without the material leaving the site. Using the Battlefield Blvd. ramps, bridge reconstruction started six months ahead of schedule. Working with the owner, Mark help develop a revised sequence of construction allowing the CD lanes to be constructed and traffic to be shifted off the mainline, minimizing the construction schedule by three months and producing a savings for the owner. Mark managed railroad coordination to construct the bridge around active rail service, subcontractor scheduling/management, and integrated owner-provided QA/QC. Mark completed and delivered this complex high-profile project over three months ahead of schedule.

2.09.03 Lead Construction Firm Experience/Qualifications and Past Performance

Construction Manager: David LePage

Firm: E. V. Williams, Inc.

Education: A.A.S. CET

Registration: MDE Responsible Personnel Cert.; SHA
Part 46 Training Cert.

Years of Experience: 39

Design-Build Route 13/US 158 | NCDOT | Gates and Hertford Counties, NC | \$56M | 11/11-8/15 | Sr. Construction Manager. Working with DBPM Mark Osenbaugh on the widening of 7.1 miles of US 13/US 158 from two lanes to a four-lane divided highway with “Bulb-out” J-turn style intersections, including single-span dual bridges over environmentally-sensitive Buckhorn Creek, a new bridge over Chowan River with time-of-year restrictions, structure rehabilitation, drainage, culvert extensions, ROW, new service roads, SWM, E&SC, geotechnical analysis/testing, signing/markings, intersection lighting, utility coordination/relocations including Verizon, and ground improvements. Dave managed the onsite construction team, coordinated with the design team during design and construction to perform constructability reviews, issue/review RFIs and shop drawings, and prepare as-builts and plan revisions. He oversaw MOT to minimize traveling public and community impacts, ensured safety and compliance with approved plans/contract, oversaw subcontractor scheduling/management, was instrumental in developing/implementing the CPM schedule, was responsible for E&SC, including protecting wetlands, earthwork, aggregate placement, participated in partnering, and worked with project stakeholders daily.

Birdneck Road Improvements | VDOT | Virginia Beach, VA | \$32M | 2/09-1/11 | Construction Manager. Working with PM Mark Osenbaugh on this phased widening of 2.9 miles of two-lane roadway to four lanes of divided roadway, including new wet utilities with existing utilities, median construction, new asphalt pavement, ground improvements, earthwork, aggregate placement, MOT, drainage, SWM, landscaping, signalization, signing/markings, E&SC, and lighting constructed within an environmentally-sensitive swamp area. Design-Build elements included two noise walls where Dave assisted in working with the designer, performed constructability reviews, and inspected construction. Dave managed the onsite construction team, MOT including minimizing motorist and community impacts, safety, and utilities, and ensured work was in compliance with approved plans/contract. He interfaced with the owner and oversaw contractor QC, subcontractor scheduling/management, was instrumental in developing/implementing the project CPM schedule, and project close-out.

Battlefield Boulevard and I-64 | VDOT | City of Chesapeake, VA | \$102M | 2/06-6/09 | Construction Manager. Working with Project Manager Mark Osenbaugh to reconstruct four travel lanes to eight travel lanes, including CSX Railroad bridge widenings, bridge construction, drainage, SWM, service road, median, E&SC, earthwork, aggregate placement, signing/markings, intersection lighting, signalization on Battlefield Blvd., retaining walls to limit ROW acquisition and impacts to wetlands, extended box culverts, replaced concrete pavement, wet utilities, and MOT. Design-Build elements included seven MSE walls and one noise wall where Dave assisted in working with the designer, performed constructability reviews, and inspected construction. He oversaw subcontractor scheduling/management and MOT, and coordinated with the railroad to construct the bridge around active rail service. Dave was instrumental in developing/implementing the project CPM schedule. Working with the owner, Dave helped to modify the sequence of construction to reduce the construction schedule by three months and produce a savings to the owner. Using the Battlefield Blvd. ramps, bridge reconstruction started six months ahead of schedule. Innovations also included using demolished concrete in the roadway cement-treated aggregate which was all performed within the ROW.

Fort Eustis Boulevard Widening | VDOT | Newport News, VA | \$16.9M | 9/09-5/12 | Construction Manager. Dave oversaw construction, safety, MOT, utilities, and subcontractor scheduling/management, and ensured work was in compliance with approved plans/contract on this dualization of an existing two lane highway, including a grass median, earthwork, aggregate placement, drainage, SWM ponds, a retaining wall to limit impacts to wetlands, signalization, sign/markings, landscaping, roadway reconstruction adjacent to environmentally-sensitive areas, and ground improvements.

Design-Build US 13/US 158, Gates and Hertford Counties, North Carolina

Construction Firm: E. V. Williams, Inc.

Owner: North Carolina Dept. of Transportation

Owner Contract Number: R-1507A

Owner Point of Contact: Scott Emory | 252.332.4514 | semory@ncdot.gov

Project Delivery Method: Design-Build | Lump Sum Pricing

Overall Construction Cost:

Initial Contract Value: \$54.5 million *Final Contract Value:* \$56 million

Reason for Difference: NCDOT increased project length by 0.7 miles.

Overall Schedule Performance: *Notice to Proceed Date:* 6/2011

Initial Completion Date: 12/2014 *Final Completion Date:* 8/2015

Reason for Difference: NCDOT increased project length by 0.7 miles.

Project Description and Specific Nature of Work:

As the Design-Builder, E. V. Williams (EVW) was responsible for all design and construction, permits/approvals/compliance, development of the Transportation Management Plan, roadway, drainage and MOT plans, quality control, public relations and outreach, site survey, utility verification, utility design/relocations, E&SC, SWM, lighting, signing, pavement markings, traffic signalization, ROW acquisition, and site worker, public, and motorist safety.

The project widened US 13/US 158 from US 158/NC 45 near Winton to the US 158 Bypass in Tarheel, including 7.1 miles of four-lane divided highway, Bulb out J-turn intersections, construction of new bridges, utility relocations, and MOT while reconfiguring high volume intersections. EVW dualized a roadway and reconfigured interchanges to reduce traffic congestion and increase safety, educated users on the new traffic patterns and MOT while improvements were made in the main travel lanes of arterials within an environmentally-sensitive area. A major challenge was temporary lane and traffic configurations while constructing grade separations and maintaining drainage. Other major items included safe egress and ingress of construction equipment while performing 218,000 CY of undercut, 1,131,000 CY of borrow fill, 22,000 LF of storm drain pipe, 187,000 TONS aggregate base, asphalt pavement, and 25,000 LF of water line.

To improve traffic movement and to save money, the EVW team reconfigured the NC 45 over US 158 interchange by flipping the configuration so that the mainline overpassed NC 45. The EVW team also improved the sight distance and increased the design speed of US 13/US 158 by adjusting the vertical and horizontal curves and omitting additional ROW. In addition, the EVW team identified issues with locating the new roadway west of the existing road due to a parallel 12" gas main and unsuitable organic material extending well under the existing roadway and slope. On the east side, where NCDOT already owned ROW, the EVW team found that undercutting and replacement with good embankment was already accomplished, and no utility impacts would result.



Roadway dualization

2.09.03 Lead Construction Firm Experience | Qualifications and Past Performance

Relevance to the US 113 (Phase 4) project:

<ul style="list-style-type: none"> • Design-Build • Roadway – four-lane divided highway, including Bulb outs/J-turns • Fast-track schedule • Multi-stage construction • Maintenance of traffic • New pavement and existing pavement rehabilitation • Drainage, SWM and E&SC • Environmentally-sensitive location • In-stream and river restrictions • New bridges • Culvert replacement 	<ul style="list-style-type: none"> • Earthwork/geotechnical • Transportation Management Plan • Signing and pavement markings • Roadway lighting • Traffic signalization • Construction engineering and inspection • Survey • Alternative technical concept • Utility design/relocations • Environmental permit acquisition/compliance • Right-of-way acquisition • Public relations/outreach
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Successful methods, approaches, and innovations: The EVW team proposed an ATC that reconfigured the NC 45 over US 158 interchange. This modification flipped the configuration so that the mainline overpassed NC 45. This change improved traffic movement and exceeded the RFP requirements.

The EVW team added value by improving the sight distance and increasing the design speed via adjusting the vertical and horizontal curves and omitting additional ROW.

During the RFP phase, the EVW team identified issues with locating the new roadway west of the existing road as per the RFP. Field exploration showed that on the west side unsuitable organic material extended well under the existing roadway and slope. On the east side, the EVW team found that undercutting and replacement with good embankment was already accomplished. We also determined that NCDOT owned ROW on the east side of the roadway. Adding further complication to the west side expansion was a 12” gas main that ran parallel and within the NCDOT ROW. This prompted the EVW team to propose an ATC which resulted in an owner cost savings in undercutting and ROW and an additional \$3 million in saving by not having to relocate the 12” gas main. It also reduced the construction schedule by six months.

Because of the EVW team’s cost effective handling of the project and excellent working relationship, NCDOT added 0.7 miles to the project limits under this contract to improve service for the traveling public.

Key Staff on US 13/US 158 project proposed on US 113 (Phase 4) project:

- Mark Osenbaugh – Design-Build Project Manager for US 13/US 158; proposed Design-Build Project Manager for US 113 (Phase 4).
- David LePage – Construction Manager for US 13/US 158; proposed Construction Manager for US 113 (Phase 4).

Awards/commendations received:

- Perfect Record Award “Zero, Lost Time Incidents,” National Safety Council

Disputes taken to arbitration and/or litigation: None

Design-Build MD 216 Relocated from US 29 to I-95, Howard County, Maryland

Construction Firm: Corman Construction, Inc.

Owner: Maryland State Highway Administration

Owner Contract Number: HO3065171

Owner Point of Contact: Lisa Choplin | 202.682.0110 | lchoplin@dbia.org (*no longer with SHA*)

Project Delivery Method: Design-Build | Lump Sum

Overall Construction Cost:

Initial Contract Value: \$20.4 million *Final Contract Value:* \$21.1 million

Reason for Difference: SHA changed the speed limit for design, which changed the design and construction.

Overall Schedule Performance: *Notice to Proceed Date:* 10/2002

Initial Completion Date: 11/2004 *Final Completion Date:* 5/2005

Reason for Difference: SHA changed the speed limit for design, which changed the design and construction.

Project Description and Specific Nature of Work:

As the Design-Builder, Corman was responsible for all design and construction, including highways and structures, stream improvements, MOT, environmental permits/approvals/compliance, public outreach, utility coordination/relocations, and SWM facilities.

The project included the design and construction of a two-mile realignment of MD 216 to a dual-divided highway with two signalized intersections and a new off-ramp from I-95 South to MD 216 West and roadway reconstruction. A cross county commuter route was realigned/widened with traffic pedestrian controls and included traffic phasing within the neighborhood to maintain access for homeowners and businesses. There was earthwork in excess of 200,000 CY, a box culvert extension, five new noise walls, landscaping, 11 new SWM ponds, utility coordination, and installation and/or relocation of electric, water, sewer, gas, petroleum, fiber optic, and cabling. Hammond Branch, an environmentally-sensitive resource, was improved/restored. All stream work was performed outside of in-stream restriction periods. Corman and SHA instituted an environmental stewardship program to mitigate impacts.

The project also included the design and construction of clearing and grubbing, E&SC, including obtaining MDE permits, excavation, embankment, borrow, undercutting, backfill, storm drainage, including culvert structures, ditches, spring control and underdrains, SWM, including obtaining MDE approval, roadway construction and overlay of existing pavement, signing/markings, signing/sign foundation removal, traffic signalization, intersection lighting, MOT phasing, turf establishment, tree protection, tree removal/pruning, stabilization of existing failing outfalls, tree removal and reforestation permits. An arborist



**US 113 (Phase 4) from North of MD 365 to North of Five Mile Branch Road Design-Build
Contract No. WO6355170**

2.09.03 Lead Construction Firm Experience | Qualifications and Past Performance

walked the project with the project management team to develop a plan for tree care and permit acquisition to start construction. This project earned impact reduction incentives and maintained “A” ratings in MOT, environmental and contractor performance.

Relevance to the US 113 (Phase 4) project:

<ul style="list-style-type: none"> • SHA Design-Build • Roadway - realignment as a dual-divided highway, including intersection construction • Fast-track schedule • Multi-stage construction • Maintenance of traffic • New pavement and existing pavement rehab. • Drainage, SWM and E&SC • In-stream work restrictions • Box culvert extension and cross culverts 	<ul style="list-style-type: none"> • Earthwork/geotechnical • Landscaping and reforestation • Signing and pavement marking • Intersection lighting • Traffic signalization • Utility coordination, installation, and/or relocations (electric, water, sewer, gas, petroleum, fiber optic, and cabling) • Environmental permit acquisition/compliance • Public outreach
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Successful methods, approaches, and innovations: The project was partitioned into three phases which dictated design and construction flow. Innovative techniques included constructing a bifurcated roadway to reduce earthwork, resulting in minimizing wetland and buffer impacts while reducing construction truck traffic. There was less dust and mud tracking by not hauling on local roads. Clean water diversion ditches allowed larger drainage areas to bypass the construction zone, which cut months off the schedule and yielded an environmental benefit by reducing impacts to wetlands and buffers. It also reduced heavy equipment traffic through adjacent neighborhoods and minimized noise, safety risks, wear on infrastructure and inconvenience to local communities and motorists. Cost control methods included using HDPE pipe in lieu of concrete pipe and design of oversized headwalls to minimize impacts to Waters of the U.S.

Key Staff on MD 216 project proposed on US 113 (Phase 4) project:

- Walter Miller, PE, Project Structural Manager for the conceptual design phase, final design of all structures, and RFP conformance reviews on MD 216; proposed Project Design Manager for US 113 (Phase 4).
- James Guinther, PE, Structural Engineer for the conceptual design phase, final design of all structures, and RFP conformance reviews on MD 216; proposed Structural Engineer for US 113 (Phase 4)
- Gary Bush, PE, Lead Highway Engineer for the conceptual design phase and RFP conformance reviews on MD 216; proposed Highway Engineer for US 113 (Phase 4).
- Jason Cosler, PE, Lead Water Resources Engineer for the conceptual design phase and RFP conformance reviews on MD 216; proposed Water Resources Engineer for US 113 (Phase 4).

Awards/commendations received:

- 2006 PCI Bridge Design Award-Best Custom Transportation Design
- 2006 MdQI Award of Excellence Awards in Partnering, Major Roadway Project, and Context-Sensitive Solutions

Disputes taken to arbitration and/or litigation: None

Design-Build I-70 (Phase 2D), Frederick, Maryland

Construction Firm: Corman Construction, Inc.

Owner: Maryland State Highway Administration

Owner Contract Number: FR4275172

Owner Point of Contact: Ross Clingan | 410.545.0300 | rclingan@sha.state.md.us

Project Delivery Method: Design-Build | Stipulated Sum

Overall Construction Cost:

Initial Contract Value: \$35.4 million *Final Contract Value:* \$37.5 million

Reason for Difference: SHA designed the bridge, but the foundations had to be redesigned due to unforeseen site conditions which added time and cost to the project.

Overall Schedule Performance: Notice to Proceed Date: 9/2010

Initial Completion Date: 7/2013 *Final Completion Date:* 8/2014

Reason for Difference: SHA approved time extensions due to the bridge foundation redesign.

Project Description and Specific Nature of Work:

As the Design-Builder, Corman was responsible for all design and construction, including highways, ramps, railroad crossings, bridge, MOT, traffic, lighting, signalization, signing, structural concrete, environmental permits/approvals/compliance, public outreach, utility coordination/ relocations, and a SWM facility.

The project included the design, reconstruction, and widening of a two-mile section of dual-divided I-70, beginning east of MD 144FA and ending west of East South Street/Reich's Ford Road. Phased construction of the roadway, ramps, and bridge, including cross culverts, utility relocations (sanitary sewer, CCTV, and gas), MSE and decorative retaining walls, a new traffic signal at the intersection of westbound I-70 ramps and Monocacy Blvd., a new traffic signal at the Monocacy Blvd./South Street intersection, curb and gutter, five cantilever and two overhead signs, median flatwork, lighting, and local road and ramp reconstruction.

The project included the removal/construction of two new CSX/MARC commuter railroad crossings and construction of an access road along the tracks. Since Corman drove foundation H-piles adjacent to the railroad ROW, the railroad was surveyed and monitored for movement before and after each activity. Third-party coordination included two MTA railroad track crossings involving automatic crossing protection systems with crossing arms and signals, an



New MTA track crossing at Monocacy Blvd.



Widening of a dual-divided highway

**US 113 (Phase 4) from North of MD 365 to North of Five Mile Branch Road Design-Build
Contract No. WO6355170**

2.09.03 Lead Construction Firm Experience | Qualifications and Past Performance

MTA flagger, utility relocations, and MOT with the local community and commuters. Corman obtained MDE permits and reviews with MDE and an Independent Environmental Monitor (IEM).

Completed the new full depth paving section of Monocacy Blvd. (290 LF total length). Two-phase bridge construction included raising the elevation by four (4) feet. It consisted of structural steel, concrete deck, H-pile foundations, and arch piers. Environmental features included bridge abutment plantings and trees to create naturalistic groupings along the roadway. Retrofitted/expanded a SWM facility with new inflow devices and drainage structures, 5,000 LF of concrete storm drain, including transverse crossings of I-70, retrofitted 2,000 LF of grass swales with 30 mil PVC lining, and installed over three miles of new grass-lined swales for water quality control of roadway drainage.

Two traffic lanes in each direction were maintained during construction. With crews of 40 to 50 workers during its peak, we first widened the outer lanes and then worked the median. The project eliminated merging traffic with a new dedicated through lane and auxiliary lane in each direction and improved safety, congestion, and traffic flow between MD 144 and the MD 85/East Street interchanges. The project maintained “A” ratings in environmental, MOT, contractor performance, and SHA QA E&SC inspections. The project received an overall environmental compliance score of 94%.

Relevance to the US 113 (Phase 4) project:

<ul style="list-style-type: none"> • SHA Design-Build • Roadway - reconstructed/widened a dual-divided highway, including an access road • Railroad crossing construction/coordination • Fast-track schedule • Multi-phase construction • Maintenance of traffic • New pavement and existing pavement rehabilitation • Drainage, SWM and E&SC • Bridge on pile foundation • Cross culverts 	<ul style="list-style-type: none"> • Earthwork/geotechnical • Landscaping • Signing and pavement markings • Roadway lighting • Traffic signalization • Utility coordination, installation, and/or relocations (sanitary sewer, CCTV, and gas) • Right-of-way • Environmental permit acquisition/compliance • SHA IEM oversight • Public outreach
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Successful methods, approaches, and innovations: Corman installed rebar on the east and west sides of the track and monitored horizontal and vertical movements during drilling and pile driving.

Geotechnical exploration was requested for the piers and the SHA preliminary bridge design was modified from driven piles to drilled foundations, including 24” rock sockets by the Design-Build team. Corman used an independent certified MDE Reviewer to oversee submissions prior to being sent to MDE to expedite permitting and an Environmental Compliance Manager for compliance.

Awards/commendations received:

- 2013 Maryland Chapter American Concrete Institute Concrete Award – Honorable Mention

Disputes taken to arbitration and/or litigation: None



US 113 (PHASE 4) FROM NORTH OF MD 365
TO NORTH OF FIVE MILE BRANCH ROAD

DESIGN-BUILD

PROJECT UNDERSTANDING AND
DESIGN-BUILD APPROACH

PROJECT UNDERSTANDING AND DESIGN-BUILD APPROACH

UNDERSTANDING OF THE PROJECT GOALS

The E.V. Williams/Corman Construction Joint Venture team (EVW/Corman team) understand the project's goals and is well positioned to meet/exceed them.

PROJECT GOAL #1: SCHEDULE

The EVW/Corman team understands that minimizing the outage of the MD-DE Railroad line to allow for a new expanded crossing of US 113 to be constructed at approximate Sta. 1231 while opening the new crossing to rail traffic prior to November 1, 2017 are of paramount concerns to the MD-DE Railroad and SHA. In addition, we understand that SHA desires to minimize the total days of project construction to minimize disruption to traffic and reduce the overall project cost, while more quickly achieving increased motorist safety.

Minimizing the MD-DE Railroad Outage: The EVW/Corman team understands the design and construction challenges associated with a highly skewed railroad crossing and will work with the MD-DE Railroad and SHA to ensure clear and continuous communication and coordination. To construct this crossing while maintaining traffic along US 113, we understand that US 113 will need to be closed and detoured around the crossing or a temporary crossing will need to be installed to maintain traffic, expediting the installation. We recently completed a similar rail crossing and worked with the railroad and VDOT to devise a plan that reduced the railroad outage from five days to three days while maintaining the continuous flow of traffic.

Minimizing Total Days of the Project Schedule: The EVW/Corman team will develop a CPM construction schedule that is structured logically to progress work to meet the completion dates and drive the project forward. We will use non-workday calendars anticipating typical temperature constrained items, inclement weather, temporary lane/shoulder closure restrictions, planting seasons, and holidays. Additional emphasis will be placed on long-lead time items and submittal review periods. We will quickly address unforeseen issues and employ mitigation and recovery strategies to minimize schedule and/or budget impacts. In addition, we will create a final schedule that minimizes impacts to the environment, utilities, MD-DE Railroad, road users, and the community while mitigating exposure to items that may cause delays such as permits/approvals, concurrent utility relocations, time-of-year construction restrictions, and right-of-way clearance schedule.

PROJECT GOAL #2: SAFETY

Safety is one of the cornerstones of the EVW/Corman team where we implement strict procedures and practices to protect both workers and the public. During design, we will hold MOT Task Force meetings to discuss and coordinate MOT with construction scheduling/sequencing, including drainage and E&SC. As design progresses, we will work with SHA and project stakeholders to evaluate ways to design and sequence work to improve safety during and after construction while minimizing impacts on road users and the community. Safety elements that will be evaluated and incorporated during design will include: adequate intersection sight distance at the J-turns, horizontal sight distance at narrow medians, sight distance at the MD-DE railroad crossing, and consideration of turning radii and auxiliary lanes for non-typical vehicles, such as farm equipment/trucks, school buses, and emergency vehicles. During construction, we will continue our MOT Task Force meetings to coordinate daily work zone activities, evaluate additional minimization strategies, and address MOT changes that may be required due to sequencing revisions or unanticipated road user behavior. Our Traffic Management Plan (TMP) will outline traffic safety strategies, including a public outreach program that will inform the public about upcoming changes to traffic patterns and an Incident Management Plan to address incidents that may occur within the work zone. We will invite local and state first responder officials to provide input as well as provide them contact information in the event an incident occurs.

PROJECT GOAL #3: MOBILITY

Although access management and intersection control measures will be implemented to improve safety along US 113, they can delay road users by increasing travel times. These delays are caused by road users not being able to obtain direct access to/from US 113 and by restricting movements at US 113 intersections by using

2.09.04 Project Understanding & Design-Build Approach

access roads and J-turns at certain locations. To improve mobility while reducing delays, we will evaluate the proposed access roads and J-turn locations to ensure they are maximizing efficiency and safety. During construction, we will evaluate MOT controls at all intersections to determine their effectiveness and evaluate means to minimize the use of detours and temporary lane/shoulder closures that can cause delays. In addition to the time of day traffic variability, seasonal variability will be taken into account when implementing MOT measures. Strategies to accommodate agricultural/farm equipment and bicyclists during and after construction will be evaluated as part of our TMP and incorporated into MOT plans which will provide safe and efficient passage through or around construction zones during construction.

PROJECT GOAL #4: ENVIRONMENT

Reducing impacts to environmental resources, including no impacts to FIDs, begins with design and construction staff knowing the resources along the corridor and the avoidance and minimization techniques required. As a steward of the environment and a partner with SHA, environmental agencies and the community, the EVW/Corman team will make reducing impacts and protecting the environment a top priority. During design, the EVW/Corman team will review each environmental feature to see where we can minimize impacts by reducing the limits of disturbance. A main focus will be on potential impacts to FIDs and other sensitive resources (Bald Cypress stands) identified in the permit conditions. As part of our design QC, we will review plans to confirm all feasible design measures and construction means and methods are utilized. During construction, environmental features will be protected using orange construction fence and flagging before any personnel or equipment sets foot in environmentally sensitive areas. We will install, inspect, and maintain controls, follow SHA's toolkit on adjusting E&SC during construction, and conduct pre- and post-storm inspections. To monitor compliance, our Environmental Compliance Manager will maintain an environmental commitment and impacts tracking sheet throughout design and construction. A compliance report will be produced each quarter and submitted to SHA.

PROJECT GOAL #5: MAINTENANCE

SHA facilities need routine maintenance (mowing, trash removal), intermittent maintenance (pavement resurfacing and restriping, structure repairs), and unexpected maintenance after an incident (w-beam replacement). The EVW/Corman team will implement the following measures to reduce future maintenance needs and increase the ease of future maintenance when needed: 1) place final roadway surfaces just prior to acceptance for maintenance; 2) specify SHA-approved materials, qualified producers/products, and pre-approved production facilities; 3) install manholes, valves, meters, etc. where they can be easily accessed; 4) minimize operating equipment over existing utilities; 5) minimize roadside barriers; 6) select landscape plantings that endure roadside conditions; 7) minimize turf grass and sod placement on steep slopes or inaccessible areas (narrow medians) where mowing is not feasible; 8) provide a protected pull off to access SWM facilities and major drainage structures; and 9) eliminate headwalls at waterway crossings.

UNDERSTANDING OF THE PROJECT SCOPE

The project involves the design and construction of US 113 to a four-lane divided highway from north of MD 365 to north of Five Mile Branch, the southern end of the US 113 Phase 3 project. The project will complete the safety improvements for this portion of US 113 and is the final phase of the US 113 corridor improvements. The project includes: 1) four-lane divided highway with 12-ft. lanes; 2) J-turn intersections and a modified Maryland T intersection to maintain access to adjacent properties and eliminate through movements and unprotected left turns from side streets; 3) minimum 4-ft. inside shoulders where there are no left turn lanes or J-turns; 4) minimum 10-ft. outside shoulders where there are no right turn/deceleration lanes or acceleration lanes; 5) minimum 34-ft. wide median, except at the median south of US 113 Business; 6) partial acceleration/deceleration lanes at intersections; and 7) access roads to minimize access and conflict points.

The project scope includes the design and construction of earthwork, new pavement (asphalt or concrete), pavement rehabilitation, MD-DE Railroad crossing construction/coordination, H&H, drainage, SWM, E&SC,

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traffic engineering, temporary and permanent traffic signalization, signing/markings, intersection lighting, signalization, MOT, TMP, a bridge over Prunell Branch, culvert extensions and/or replacements, retaining walls, miscellaneous structures, Maryland Broadband utility design/relocations and third-party (Choptank Electric, Delmarva Power, Verizon) utility relocations/coordination, landscaping (roadside and SWM) and reforestation, geotechnical and pavement design, surveys, subsurface exploration, utility test pits, environmental investigations/documentations, agency permitting/approvals/modifications (SWM, E&SC, forest, wetlands, waterways), community relations, as-builts, Partnering, and other services needed to complete the project.

SIGNIFICANT ISSUES FACING DESIGN-BUILDER AND SHA

The table below describes the significant issues/risks facing the EVW/Corman team and/or SHA and provides mitigation techniques and responsibilities:

ISSUE / RISK - RESPONSIBILITY	MITIGATION TECHNIQUES AND RESPONSIBILITIES
<p><u>Schedule - MD-DE Railroad At-Grade Crossing</u> Shared – EVW/Corman, SHA, and MD–DE RR</p>	<p><u>EVW/Corman team:</u> Organize a Railroad Task Force and partner with MD-DE Railroad and SHA to meet the railroad embargo timeframe; meet early and frequently to understand requirements and resolve issues; obtain roadway and track alignment approval early; submit as an advance railroad design package. <u>SHA et. al.:</u> provide decisions on criteria; timely reviews/approvals.</p>
<p><u>Schedule - Concurrent Utility Relocations</u> Shared – EVW/Corman, SHA, and utility owners</p>	<p><u>EVW/Corman team:</u> Organize a Utility Task Force and partner with utility owners and SHA to coordinate utility relocation needs; evaluate impacts early and minimize relocation; commence Maryland Broadband relocation design early; prepare advance clearing package(s) to initiate relocations to avoid FIDs restrictions; coordinate service disruptions during off-peak periods. <u>SHA:</u> Timely follow-up on utility issues; timely review/approval of TCD feeds. <u>Utility Owners:</u> Timely design and relocation of impacted facilities; timely review/approval of EVW/Corman’s utility design.</p>
<p><u>Schedule - Delays in Receiving Permits and Approvals</u> Shared – EVW/Corman, SHA, and permitting agencies.</p>	<p><u>EVW/Corman team:</u> Organize a Permit Task Force and partner with SHA and environmental agencies; include permitting in the project schedule to prioritizing efforts of our team as well as SHA and environmental agencies; submit timely quality designs and permit applications meeting latest applicable procedures and requirements; enforce quality control; minimize impacts to maximum extent. <u>SHA et. al.:</u> Timely reviews/approvals.</p>
<p><u>Environmental Compliance and Stewardship</u> EVW/Corman</p>	<p><u>EVW/Corman team:</u> Maintain environmental commitments and impacts tracking sheet during design/construction for compliance; consider construction means and methods and time-of-year restrictions during design; stake LOD and install OC fence to protect resources; ensure controls are installed, inspected, and maintained; adhere to time-of-year restrictions (forest and stream work); conduct pre- and post-storm inspections; follow SHA’s toolkit on adjusting E&SC controls.</p>
<p><u>Schedule - ROW Clearance Delays</u> Shared – EVW/Corman and SHA</p>	<p><u>EVW/Corman team:</u> Coordinate with SHA on ROW acquisition schedule; phase construction to coincide with ROW clearance and adjust if clearance is delayed. <u>SHA:</u> Timely ROW clearance; assist with ROW needs if encountered.</p>
<p><u>Maintenance of Traffic</u> EVW/Corman</p>	<p><u>EVW/Corman team:</u> Develop a comprehensive TMP; provide safe work zones for public and construction workers; utilize public outreach, VMS, and static signs to notify motorists of upcoming changes in traffic patterns; coordinate with SHA,</p>

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	community, and first responders for access to adjacent properties and through work zones; conduct on-site safety orientation for personnel.
<u>Cost</u> EVW/Corman	<u>EVW/Corman team:</u> Develop ATCs; bring innovative concepts from other similar projects; reduce schedule; continuously monitor project cost.
ISSUE / RISK - RESPONSIBILITY	MITIGATION TECHNIQUES AND RESPONSIBILITIES
<u>Access and Intersection Control/Delay Issues</u> Shared – EVW/Corman and SHA	<u>EVW/Corman team:</u> Coordinate with SHA on access/intersection control measures; explore concept design improvements by minimizing access points and placing intersection controls to minimize conflicts while improving safety; support SHA with community outreach to address concerns; advance previous outreach efforts by SHA during RFP phase. <u>SHA:</u> Timely design reviews/input; lead community outreach efforts.
<u>Safety</u> EVW/Corman	<u>EVW/Corman team:</u> Ensure workers are trained, use personal protective equipment, and follow safety practices; hold safety briefings and perform routine safety audits; provide safe work zones for traveling public.

UNIQUE RISKS CRITICAL TO MEETING/EXCEEDING THE PROJECT SCHEDULE GOAL

The EVW/Corman team has reviewed the RFP and project site and has identified the following three unique risks for the US 113 Phase 4 project that are critical to meeting/exceeding the project schedule goal.

Risk #1: MD-DE Railroad At-Grade Crossing

To complete the MD-DE Railroad at-grade crossing on or before November 7, 2017, the EVW/Corman team is required to provide access to two existing lanes and the two new lanes of traffic early enough for MD-DE Railroad to complete their work, including installing crossing panels, rails and signals; ready to accept rail as well as road traffic. This will strategically position the Railroad to end their embargo on rail traffic. Any tie-in adjustments will occur concurrent with MD-DE Railroad installation of the new crossing.

Why is it Critical? An at-grade railroad crossing involves horizontal and vertical alignments, cross-slopes, and sight distance. Each has specific design criteria that must be met, such as superelevation for the roadway and profile limitations for rails. Since railroads have more stringent criteria than roadways, they typically control the crossing design. After reviewing the RFP, the concept design as it currently stands is a concern. The concept design has US 113 in a horizontal curve through the railroad crossing with a superelevation rate of 4.7%. With this rate, there is approximately 0.5-ft. difference in elevations between edges of pavement of each lane. Even though the proposed railroad is crossing at a skewed angle, meeting railroad criteria will be a challenge. In addition, based on the concept cross sections, the railroad profile will need to be raised to meet the increased elevation of southbound outside lanes. In our experience, raising the tracks requires 50-ft. of additional track being replaced for each 6” change in elevation. The total length of track adjustment depends on the change to the railroad profile. It appears that the current design needs to be revised to meet roadway and railroad design criteria and will need to be completed timely to provide sufficient time for our construction activities and those of the MD-DE Railroad. The final track elevation in this area will need to be determined early on.

The new railroad crossing will need to meet new safety standards. These typically include overhead signals and, as such, require new and larger foundations in the median and on the outside. All existing and proposed utility relocations and drainage elements will need to be cross checked with the railroad foundations.

Potential Impact on Schedule: The design concerns above are critical to the project schedule. An all new layout may severely impact the start of construction and project completion. Any delay will impact safety enhancements for motorists and the lifting of the railroad embargo, and will result in a disincentive being levied on the EVW/Corman team. Utility or drainage rework due to lack of coordination will impact the project’s schedule and cost. MD-DE Railroad work delays will impact serving their customers.

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Mitigation Strategies to Meet/Exceed Project Schedule Goal: The EVW/Corman team has extensive design and construction experience related to railroad crossings, including recent experience on US 113 and other Design-Build projects. This experience will be critical toward meeting/exceeding the project schedule goal. The following are mitigation strategies we will employ:

- ✓ Within two weeks of Notice of Award, our Design-Build Project Manager, Mark Osenbaugh, will hold a Pre-Design meeting with SHA and the MD-DE Railroad. Mark and his staff will review design requirements, what is needed to install the railroad crossing, and SHA and the MD-DE Railroad expectations/concerns. The crossing issues associated with the concept design will be discussed in detail.
- ✓ We will work to obtain a final decision on the final track and roadway alignments within two months. The cross slope issue could have substantial schedule, cost, wetland and permitting impacts. If a cross slope of 4.7% must be maintained through this curve to meet current roadway design requirements, we may consider a new roadway alignment. WRA had to completely realign the roadway for a similar railroad crossing as part of their work on US 113 Phase 3 and is already researching options. They will survey the tracks and construct a model of the current design, as well as review options to resolve it.
- ✓ We will evaluate the option of constructing a bypass to allow the railroad to construct their new crossing similar to what EVW/Corman is doing on Military Hwy. in Norfolk, VA, as well as investigate a detour option. We will work to schedule this work when it will have the least impact on traffic.
- ✓ Fourteen days before submission of crossing designs, including MOT and construction sequencing, a Pre-Design Submission meeting will be held with SHA and the MD-DE Railroad to review submittal plans.
- ✓ We will hold Coordination meetings at least monthly until approval is received and during construction to ensure effective coordination. Phasing will be one of the first orders of business to resolve.
- ✓ We will review partial and final roadway drawings against the railroad drawings for potential conflicts.
- ✓ We will build lead times for railroad drawings and approvals, as well as lead times to acquire materials, into the project schedule to satisfy railroad requirements prior to crossing construction.
- ✓ We will review all existing and proposed overhead and underground utilities and drainage elements against railroad requirements during design. We understand how critical it is to remain within tolerances in the area of the new and existing railroad tracks. We will constantly monitor work for compliance.

SHA and/or Other Agency Role: Depending on findings of our cross slope analysis, we will be partnering with SHA and the MD-DE Railroad for options, consultation, and approval. We will rely on SHA and the MD-DE Railroad for timely phasing plan approval as the final determination will impact final design of the crossing. We anticipate that SHA and the MD-DE Railroad will dedicate resources to provide timely feedback, reviews, and approvals to maintain schedule commitments.

Risk #2: Obtaining Environmental Permits and Adhering to Permit Conditions/Requirements

The EVW/Corman team understands the challenges in obtaining environmental permits, including modifications, and/or approvals from SHA, federal, state and local environmental agencies (DNR, MDE, USACE, Worcester SCD), and FHWA, as well as maintaining permit compliance throughout construction. Anticipated environmental resources on the project include:

- 🍃 Non-tidal wetlands (and buffers) and waterways, including in stream work restrictions from March 1 through June 15 and impacts to the 100-year floodplain. Waterways affected by the project include: Purnell Branch/Cypress Swamp (must account for future sea level rise), Campground Branch, Pocomoke River Tributaries, Poorhouse Branch, Five Mile Branch, and Five Mile Branch Tributary.
- 🍃 Forest stands, including Bald Cypress located in the Bald Cyprus Swamp and FID restrictions of no forest clearing in breeding season of May through August.
- 🍃 Chesapeake Bay Critical Area Commission boundary (just west of the project on Business US 113).
- 🍃 Cultural resources as governed by a MOA between SHA and FHWA and MD SHPO. No archeological resources are anticipated.

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The following are anticipated permits/approvals:

- ✓ Section 404 Individual Permit, Water Quality Certification and Non-tidal Wetlands & Waterways Permit from USACE and MDE*
- ✓ Reforestation Law approval from DNR*
- ✓ E&SC Permit from SHA-PRD, including on-site staging, stockpiling areas, disposal sites and borrow pits
- ✓ Stormwater management approval from SHA-PRD
- ✓ NOI/NPDES Permit from SHA-HHD/PRD*
- ✓ NEPA (natural, social and cultural environments) approval*
- ✓ E&SC from Worcester SCD for off-site staging, stockpiling areas, disposal sites and borrow pits

* SHA will obtain the permit, but the EVW/Corman team is responsible for any final design modifications.

Why is it Critical? As permits and approvals are required to initiate construction and non-compliance with permit conditions may result in delays or work stoppages, the EVW/Corman team knows that any issues will have a direct impact on the project schedule and our ability to meet/exceed the project schedule goal. From a critical path standpoint, receiving the SHA-PRD SWM and E&SC permits as early as possible will be essential.

Potential Impact on Schedule: Permits and approvals are essential to constructing the project. Each day that passes without permits and approvals is a day that construction cannot proceed. Non-compliance with permit conditions or approved plans will result in a work stoppage, again resulting in delays.

Mitigation Strategies to Meet/Exceed Project Schedule Goal: The EVW/Corman team has experience in obtaining permits and approvals for SHA roadway projects and knows that receiving permits and approvals is critical to meeting/exceeding the project schedule goal. The following are mitigation strategies we will employ:

- ✓ We will create a Permit Tracking Log showing the permits and approvals required, entities involved, conditions and requirements for each resource, key milestone submittal and approval dates as they are developed, and other compliance activities as they unfold. Key dates will be incorporated into the project CPM schedule to ascertain critical path or near critical path activities get special attention and resources.
- ✓ We will request a Pre-Permitting meeting with SHA and environmental agencies to gain an understanding of permit conditions/requirements, NEPA commitments, permitting timelines, submittal requirements, and expectations or concerns of each stakeholder. At this meeting, we will outline our approach to SWM, E&SC, environmental compliance (design/construction), and resource impact minimization.
- ✓ We will partner and communicate with SHA and environmental agencies from Notice of Award to project closeout. We will partner and work closely with the Independent Environmental Monitor (IEM) who will inspect E&SC daily at Five Mile Branch and its tributary, Poorhouse Branch, and Purnell Branch.
- ✓ **Our Environmental Compliance Manager, James Ashby**, will ensure compliance with permit conditions and requirements head on during design and construction. He will track each permit (and modification) throughout its timeline for seamless reviews/approvals and monitor impacts and compliance. Our construction staff will take part in over-the-shoulder reviews during design to incorporate constructability considerations into the design to avoid issues during construction.
- ✓ Culvert crossings, high groundwater, poor soil conditions, challenging SWM and E&SC constraints, and special permit conditions, etc. can demand considerable design and review timeframes and ongoing discussions to resolve issues. These and other critical items will be focused on by design and construction staff and independently tracked to progress them timely and mitigate delays.
- ✓ To expedite E&SC plan approvals, we will submit the concept SWM report and E&SC plans for clearing and grubbing. We will break the project into discrete packages for quicker design and review timeframes.
- ✓ To expedite SWM approval, we will solicit SHA-HHD approval for any deviations from the concept SWM report prior to submitting to SHA-PRD. We will obtain numbers for each BMP early.
- ✓ **Our PRD Reviewer, Richard Sobott, PE**, will review all submissions and confirm compliance prior to

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submission. *Our QC Manager, Steven Griffith*, will enforce strict environmental compliance in the field.

- ✓ We will support SHA in conducting cultural resource activities and provide access to conduct investigations as needed. Should any archeological resources be encountered, we will immediately halt operations and support SHA in conducting archeological activities.
- ✓ We will implement a plan to manage and dispose controlled hazardous materials and contaminated soil and groundwater that may be encountered during construction.
- ✓ In the event of design or permitting delays, additional staff will be added to accelerate the process. In the case of non-compliance during construction, added resources will be allocated to bring the project back into compliance. A post-mortem of the event will evaluate causes and steps to avoid a repeat occurrence.
- ✓ We will use clear water diversions to the maximum extent feasible; stage construction to limit clearing, grubbing and land disturbance to minimize the area and duration of soil exposure; bench cut and fill slopes; evaluate hydrology of wetlands resulting from impacts to avoid altering wetland sustainability; and widen/elongate stabilized construction entrances and increase maintenance.
- ✓ We will use stone check dams, compost socks, linings, strip sod or other erosion inhibitors in influent ditches to sediment traps; ensure effective drawdown/dewatering of sediment traps/basins prior to forecasted rain events to provide needed storage volumes; minimize potential for re-suspension of particulates; stake LOD and install OC fence to protect resources; ensure controls are installed, inspected, and maintained; employ aggressive temporary seeding/mulching and “Finish as You Go” practices to complete areas and establish permanent vegetation; utilize slope protection to reduce erosion of finished work; provide on-site concrete wash-out pits; and use wash racks and street cleaning equipment.

SHA and/or Other Agency Role: The EVW/Corman team will partner with SHA and environmental agencies from start up to close out. We anticipate that SHA and environmental agencies will articulate permitting and compliance expectations and will partner throughout. We anticipate that SHA and environmental agencies will dedicate resources to provide timely feedback, reviews, and approvals to maintain schedule commitments.

Risk #3: Utilities

The EVW/Corman team understands there are several public and private utilities within the project limits that will be impacted by the project. We understand that it is our responsibility to coordinate, design, and relocate Maryland Broadband Cooperative’s (MDBC) underground fiber optic cable facilities. We further understand that it is our responsibility to coordinate during design and construction with Verizon, Delmarva Power, and Choptank Electric for the concurrent relocation of their overhead and underground facilities, with the design and relocation of these facilities being performed by the respective utility owner. In addition to these utilities, we understand we are responsible for the design and construction of utility service connections to existing and proposed SHA traffic control devices and for the coordination of the new railroad crossing signalization.

Why is it Critical? Recognizing utility impacts early and relocating utilities timely are two of the most critical aspects of this project and will determine if we are able to meet or exceed the project schedule goal. Not realizing them 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 diminish the chance of relocating utilities twice. Coordinating utility relocation schedules is critical to maintaining the overall project schedule, as well as minimizing cost for the project and the utility owners.

Potential Impact on Schedule: Utility design, reviews and approvals by each entity will be required before construction of certain project elements may commence. Utility owner design and construction/relocation delays can greatly affect the project schedule by delaying the start of project construction activities or impacting activities already underway. In addition, design reviews/approvals by MDBC, SHA and/or PRD can also cause schedule impacts. Ultimately, it is imperative that utility owners, SHA, and PRD complete their applicable design, relocations, and reviews in a timely manner. Potential anticipated impacts may include: 1) delays in advance clearing for utilities, including FIDs restrictions, 2) utility owner priorities vs. contractor priorities

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(utility crews pulled from our work to assist in weather-related emergencies), 3) utility time-of-year for cut-overs from existing to relocated facilities, and 4) coordination of relocation of facilities on common poles.

Mitigation Strategies to Meet/Exceed Project Schedule Goal: The EVW/Corman team has extensive experience completing utility design and 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. We will engage all utility owners early. We will work with owners and present recommendations/solutions. We will set schedule milestones for utility relocation decisions.
- ✓ We will initiate design of MDBC's facility and submit for approval as early as possible.
- ✓ We will "pre-clear" forested areas where utilities will be relocated to eliminate impacts to FIDs.
- ✓ Our Utility Coordinator will place high emphasis on coordinating with SHA District 1 utility staff for preparation, submittal, and review of utility relocations to comply with SHA policies/procedures.
- ✓ Our staff have extensive experience with Verizon, Delmarva Power, and Choptank Electric. They know firsthand how they work, and will supply them with information in the format and detail they require.
- ✓ We will allow sufficient design and review times for utility owners in the project schedule. Our team will partner with them to provide our design information, answer questions, and facilitate their reviews.
- ✓ Our baseline schedule will include tasks for coordination and utility design/review as well as 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 regular bi-weekly Utility Task Force meetings. This will make the EVW/Corman team aware of utility company/reviewer schedules, potential issues that could result in project delays and the need for additional information/clarification to complete their designs/reviews and stay on track.

SHA and/or Other Agency Role: The EVW/Corman 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 and PRD playing a role in timely processing and approval of clearing drawings, as well as SHA's timely reviews of service connections to existing/proposed traffic control devices and timely ROW acquisition. We also anticipate that utility owners will dedicate resources to provide timely feedback, reviews, and approvals, and will complete their relocation design and construction to maintain the project schedule commitments.

DESIGN-BUILD CONTRACTING APPROACH

The EVW/Corman team has been providing Design-Build services in Maryland and to Coastal Atlantic government agencies since 1998, including these signature projects:

- ✓ MD 216 Relocated – SHA roadway dualization project similar to the US 113 project
- ✓ I-70 (Phase 2D) – SHA project with railroad crossing design, construction and coordination
- ✓ Route 13/158 – NCDOT project for the dualization of a road and bridges similar to the US 113 project
- ✓ I-64/Route 15 (Zion Crossroads) Interchange – VDOT's first diverging diamond interchange
- ✓ Military Highway – VDOT's first continuous flow intersection including extensive railroad involvement

A key to a successful Design-Build project is assembling the right team members who share *our mission for delivering quality projects utilizing innovative solutions that minimizes and manages risk, reduces the project's schedule and cost, eliminates rework by design and construction staff, avoids unnecessary impacts to road users, the public and the environment, and partners with SHA and project stakeholders.* To this end, we have partnered with WRA who brings SHA experience across all design disciplines and has an impressive Design-Build work history. Recent SHA Design-Build projects include:

- ✓ US 113 Phase 2B and Phase 3 – Prepared concept design for RFP and is performing conformance reviews
- ✓ I-495 at Arena Drive – Completed final design services
- ✓ MD 237 from MD 235 to Pegg Road – Completed final design services for dualization of SHA roadway

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- ✓ MD 210 at Kerby Hill/Livingston Roads Interchange – Completed final design services
- ✓ MD 216 Relocated – Prepared concept design for RFP and final contract documents for structures

EVW and Corman has partnered with WRA on numerous projects in MD and VA, including numerous Design-Build projects. Because we already understand each other's strengths and abilities, we will use our seasoned professionals/resources to successfully deliver this project. The EVW/Corman team will be led by *our Design-Build Project Manager (DBPM), Mark Osenbaugh*, functioning as *an integrated entity that fosters innovative design and construction techniques* that reduce the project's schedule and cost. He will establish project controls and hold frequent task meetings to reduce delays/rework, streamline reviews, and eliminate potential construction field issues. Beginning at the proposal and bid phases and carrying forward, our DBPM's daily involvement ensures comprehensive interaction between design and construction staff.

Immediately after notice of apparent successful proposer, weekly design meetings will begin at WRA's office with key design and construction personnel to promote innovation and constructability that minimizes field changes during construction. Chaired by the DBPM and *our dedicated Design/Construction Coordinator, Lou Robbins, PE, DBIA*, and attended by our design and construction managers, these meetings will move to the field once initial designs are completed and approved, and construction has commenced. *Our Construction Manager, Dave LePage*, who lives just north of the project, will be an integral part of the design process, attending design meetings to integrate design and construction portions into a well-coordinated project. The involvement of construction staff during design will minimize surprises or changes requested by the construction team once the design is "Ready for Construction." During construction, WRA's key staff will regularly visit the project site, respond to RFIs, design clarifications and field changes, and will be immediately available to address any issues that may arise. One of the many Design-Build benefits is the proactive collaboration between contractor and designer that quickly gets issues on the table and resolved. Fully-integrated strategies include:

Design Phase:

- ✓ EVW/Corman will regularly visiting WRA's office to confirm designs are compatible with construction means and methods and phasing, while reducing construction and future maintenance costs.
- ✓ The EVW/Corman team will conduct internal weekly meetings with key construction and design staff. Tracking sheets will monitor design, permits, utilities, ROW, and environmental and design reviews.
- ✓ EVW/Corman will perform constructability reviews of design, especially for E&SC and MOT.
- ✓ Inter-disciplinary design reviews before milestones to coordinate design disciplines and construction staff.

Construction Phase:

- ✓ Daily "morning huddles" with crews to set safety, production, and quality goals.
- ✓ Weekly field staff meetings with team members to review three-week look ahead schedules and address design and permitting requirements, such as construction sequencing.
- ✓ Weekly owner progress meetings to review and discuss submittals and progress payments.
- ✓ Monthly scheduling meetings to review CPM progress.
- ✓ Monthly partnering meetings with SHA and stakeholders to resolve any issues.

Our Design-Build philosophy also includes *Partnering* as its cornerstone, which includes: 1) open and honest communication; 2) maintaining decisions at the lowest possible level; 3) using a decision tree; 4) putting project success ahead of your own; 5) frequent/regular meetings; and 6) looking at issues from everyone's point of view. Design-Build thrives in this atmosphere of cooperation and timely issue resolution.

OUR PROJECT TEAM

The most important ingredient to a successful Design-Build project is the people assigned to the project. On our Organizational Chart on the following page, we have identified our proposed Key Staff, key support staff, and "Chain of Command." As requested, the planned approximate percent time commitment is shown on the chart. We have also indicated the functional responsibilities of many positions and their interrelationship to each other and third parties.

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ROLES AND RESPONSIBILITIES

Mark Osenbaugh will be the Design-Build Project Manager (DBPM) and primary point of contact with SHA. He will be responsible for compliance with contractual and technical project requirements, as well as project quality management and contract administration. Mark will ensure the team is integrated and that the project finishes on or ahead of schedule and within budget. He will regularly report project progress/conformance to SHA and our Executive Committee.

Walter Miller, PE will be the Project Design Manager (PDM) and will report to the DBPM. He will be responsible for executing the design and professional services, and will oversee design, including the Design Quality Program (DQP). Discipline Leads including Highway (Key Staff member Gary Bush, PE), MOT/Traffic, Water Resources (Key Staff member Jason Cosler, PE), Structures (Key Staff member James Guinther, PE), Railroad, Utilities and Geotechnical/Pavement Engineering, Environmental and Landscape Architect Support, Utilities Coordinator, Land Surveyor, etc. will report to the PDM. He will have the design leaders coordinate with each other and construction staff and obtain permits. Walt will assign resources, oversee/coordinate design subconsultants, coordinate design schedules, develop/implement any corrective measures, and integrate environmental compliance measures into the design. During construction, he will manage plan modifications and shop drawings, and review construction activities with the Construction Manager.

David LePage will be the Construction Manager (CM) reporting to the DBPM. He will manage the onsite construction team, including the Construction QC Manager and Project Controls, Safety, MOT/Traffic, and Utility Managers. Assigned onsite full-time during construction, David's focus will be to ensure that construction is performed safely and to ensure work is in conformance with approved plans/contract documents. He will regularly coordinate with the design team during construction to issue/review RFIs and shop drawings on time, and prepare as-builts and plan revisions. During field operations, David will oversee MOT to minimize impacts to the traveling public and local community, and address field staff safety concerns.

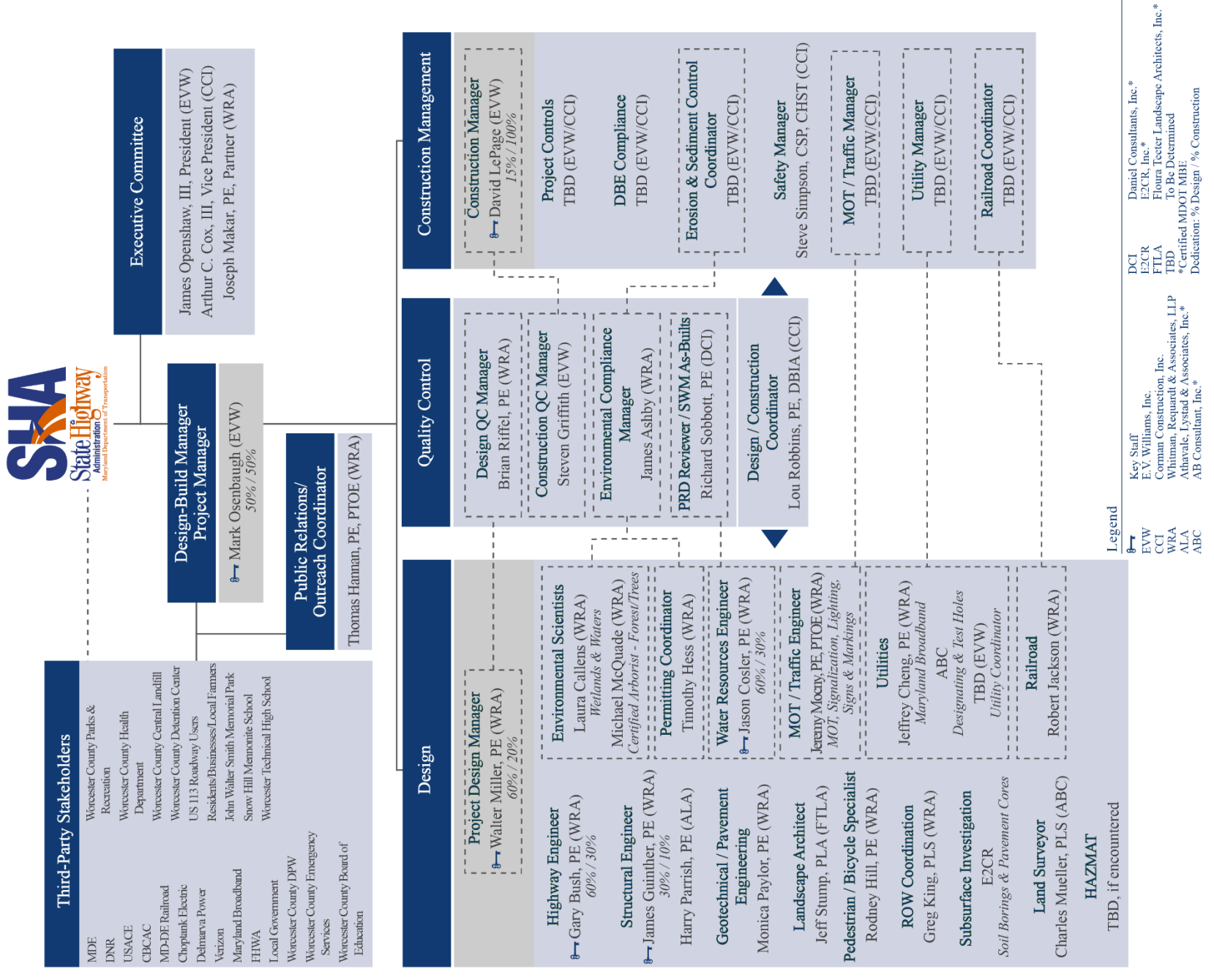
Discipline Leads, including Highway (Key Staff member Gary Bush, PE), MOT/Traffic, Water Resources (Key Staff member Jason Cosler, PE), Structures (Key Staff member James Guinther, PE), Railroad, Utilities and Geotechnical/Pavement Engineering, Environmental and Landscape Architect Support, Utilities Coordinator, Land Surveyor, etc. will report to the PDM and manage their own disciplines, as well as coordinate with each other and their counterparts in the construction group. They will ensure that services provided within their disciplines are performed properly and meet applicable standards, as well as current agency and permit requirements. Duties include assigning resources to meet schedule requirements for design/construction, coordinating with the design/construction staff during project phases, visiting the site, responding to RFIs, and reviewing shop drawings. Should issues arise, they will be available onsite within 24 hours to analyze the situation and provide advice and/or remediation.

Brian Riffel, PE will be the Design QC Manager. He will coordinate with the PDM and report to the DBPM. He will ensure that design QC procedures are in conformance with the approved Design Quality Plan. Brian will verify that checks and reviews have been made prior to submissions, including review comment checking, contract conformance reviews, interdisciplinary and constructability reviews by EVW/Corman's construction staff. He will attend and participate in the design/construction coordination meetings and keep the DBPM and PDM informed of review progress.

Steven Griffith will be the Construction QC Manager. He will coordinate with the CM, manage/coordinate construction QC activities for compliance and bring any non-compliance issues to management's attention. He will coordinate with our Environmental Compliance Manager (ECM), SHA's Independent Environmental Monitor (IEM), MDE and SHA field staff. Steven will attend three-week look-ahead meetings and keep abreast of the project schedule for scheduling inspections and anticipating QC "Hold Points."

James Ashby will be the Environmental Compliance Manager. He will report to the DBPM and ensure environmental commitments are met. He will interface with SHA, the SHA's Quality Assurance Division or Regional Environmental Coordinator, the IEM, and our CM and PDM to enforce environmental requirements and resolve non-compliance issues. James will conduct project meetings to discuss concerns, inspect prior to and after major storm events, and make recommendations for field changes to better protect the environment (E&SC, forest and wetland/Waters protection) and EVW/Corman's responses to areas needing maintenance.

Lou Robbins, PE, DBIA will be the Design/Construction Coordinator. He will report to the DBPM and coordinate the efforts of the design team with the needs of the construction team. He will chair regular weekly design progress meetings to ensure that the desired means and methods are being included, and coordinate with the CM to ensure that constructability reviews are being performed as the design progresses. Lou will also review the design for compliance with current SHA and AASHTO requirements.



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