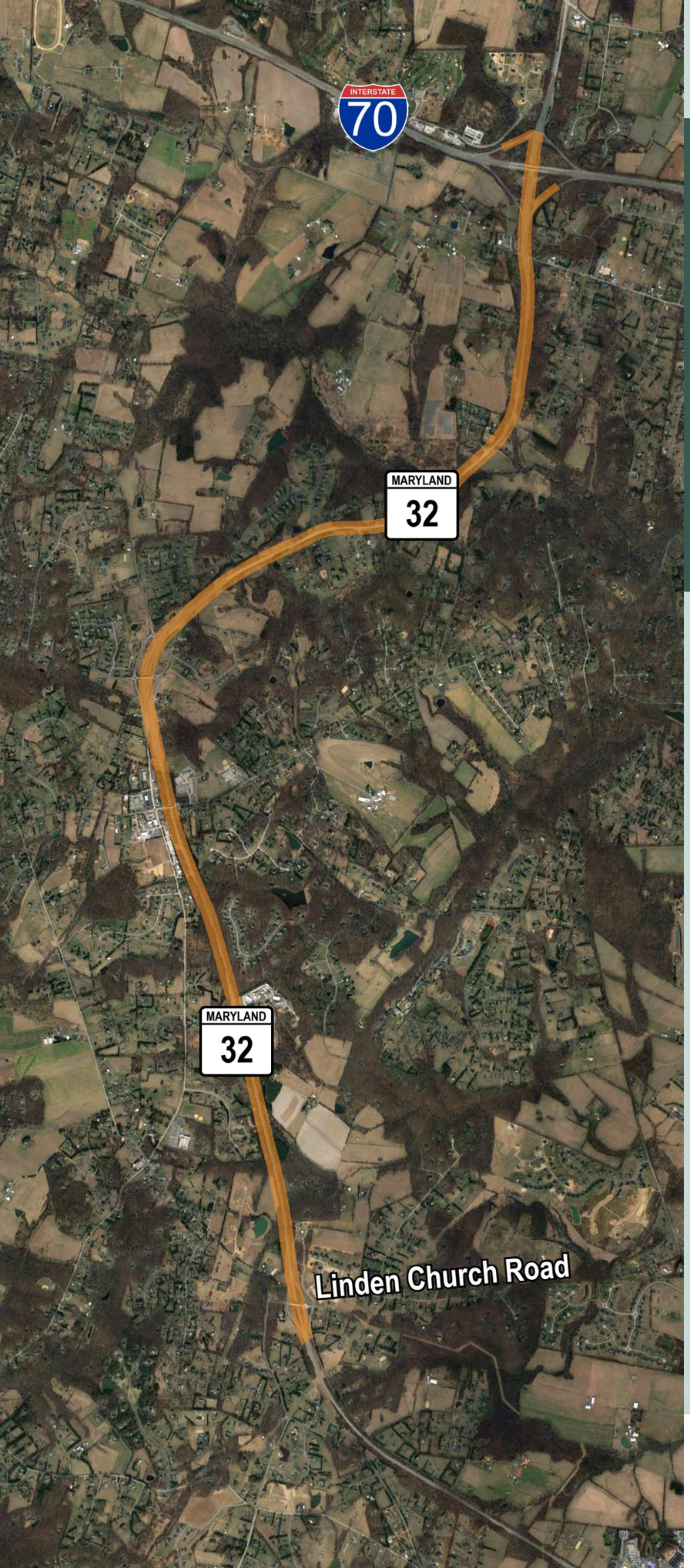

STATEMENT OF QUALIFICATIONS

MARYLAND
32

DESIGN-BUILD | MD 32

SOUTH OF LINDEN CHURCH ROAD TO I-70

HOWARD COUNTY

CONTRACT NO. HO7565370

F.A.P. NO. AC-NHPP-G-118-1(69)N

March 2, 2018

Maryland Department of Transportation

State Highway Administration

CORMAN KOKOSING | JMT

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A.

Design-Builder Capability

CORMAN KOKOSING | JMT

A. DESIGN-BUILDER'S CAPABILITY

i KEY STAFF

Scott Szympruch, PE | Design-Build Project Manager

Education
BS/1995/Civil Engineering

Years of Experience
21 Years (17 with Corman)

Professional Registration
Maryland Registered
Professional Engineer #25502

2013-2017 | FHWA/EFLHD | Design-Build Dualization of Route 1 at Ft. Belvoir, Lorton, VA-$82.1M–Design-Build Project Manager | Project Executive. This long-awaited 3.5-mile project dualized/widened Route 1 with a new 32-ft. wide median to relieve traffic near Ft. Belvoir military installation. Like Rt. 32, road was phased with SB road constructed first and traffic shifted to it while improving the existing road for use as the new NB road. ***Scott managed the project team and was the main point of communication; managed equipment, material, and labor procurement; objectives/goals; work plans; and budgets/resources; procured/coordinated subcontractors; monitored schedules; conducted progress meetings; minimized exposures/risks; mitigated issues; reviewed/approved deliverables, RFIs, and change orders; administered contracts; oversaw budget, safety, and quality compliance; ROW acquisition, and steered project to successful completion***. ***Relevance to MD 32****–Design-build, dualization of existing congested road, MOT, new bridges, community involvement, retaining walls, environmental permitting/compliance, geotechnical, drainage/SWM ponds, utility relocations.*

2006 | MDOT SHA | Design-Build MD 30 Hampstead Bypass, Hampstead, MD-$43.2M-Design-Build Project Manager. Constructed to return the town to its residents by safely having traffic bypass the town center and mitigate the gripping morning/evening rush hour traffic. 4.5 mile two-lane road with stream/wetland crossings and 4 bridges spanning them, traffic enters/exits via two new roundabouts; a third one is at the bypass/MD 482 intersection. ***Scott oversaw construction, worked with the designer, including design packages; managed the project team, equipment, material, and labor procurement; objectives/goals; work plans, budgets/resources; procured/coordinated subcontractors; monitored schedules; conducted progress meetings; minimized exposures/risks; mitigated issues; reviewed/approved deliverables, RFIs, and change orders; administered contracts; and oversaw budget, safety, and quality compliance. Relevance to MD 32****–Design-Build, MOT, new bridges over water, public relations, traffic lighting, environmental permitting/compliance, geotechnical, drainage/SWM ponds, utility relocations.*

2007-2011 | MDOT SHA | Design-Build Intercounty Connector Contract A, Montgomery County, MD-$483.4M-Construction Manager. Project eases congestion on Maryland's highways/local roads while improving mobility/safety. 7.2 miles controlled-access tri-lane divided highway with 18 steel girder/precast concrete girder bridges and four bridge widenings. Widened/constructed a new I-370 interchange to Shady Grove Metro Station to replace the partial interchange. Constructed I-370/Metro Access Rd. and Shady Grove Rd. interchanges in phases to accommodate two lanes of traffic in each direction while widening the road to the inside/outside, making three lanes in each direction. Scott authored the schedule and was a conceptual design development leader. Upon NTP, he participated in design development task force meetings and provided constructability reviews. He directed the design team in sequence of construction, access requirements and preferred construction techniques. Scott supervised field layout, construction, QC, and safety management. He monitored/adjusted resources and coordinated with field engineering for subcontractor scheduling and supplier logistics to maintain schedule/budget. ***Scott oversaw field design change requests and ensured coordination of our QC operations. He contributed to partnering/progress and public/community outreach meetings, worked with environmental teams on environmental stewardship, and coordinated inspections/ resolutions with our independent QC team. He worked with the DB coordinators/construction project engineers leading the road, drainage, environmental, utility, bridge and subcontracting areas. He was involved in the CPM schedule, oversaw the construction quality manager and coordinated with adjacent projects***. ***Relevance to MD 32*** *– Design-Build, major new road on new alignment, road overpass structures, interchanges, MOT, bridges over water, community involvement, environmental permitting/compliance, geotechnical, drainage/SWM ponds, utility relocations/coordination, landscaping/reforestation.*

William (Bill) E. Schaub, PE | Design Manager

Education
BSCE/1984/Civil Engineering

Years of Experience
36 Years (12 with JMT)

Professional Registration
1989/Maryland Registered Professional Engineer #17318

Bill has 36+ years of experience in the design/project management of highways/bridges from conceptual design, preliminary engineering, final design, and construction phase services. Has an excellent record ensuring designs are completed utilizing sound engineering judgment and requirements are met. ***Bill held administrative support responsibility, including schedule and resource allocation on MDOT SHA's MD 404 and US 113 Corridor Dualization Design-Build projects that included many similarities to MD 32****.*

2008-2011 | FHWA-EFLHD/VDOT | **Design-Build Fairfax County Parkway (Route 286) Extension, Springfield, VA-$112.5M-Design Manager***. Bill managed the design using over 75 engineers, ensured design requirements were met, and executed the QA/QC program* for this four-lane divided limited access highway including two interchanges, a shared- use path, MOT; signing; pavement markings; lighting, and ROW. A major ATC that was developed/designed revised the profile of Rt. 286/Fullerton Rd. and improved the design/reduced cost. The aggressive schedule was finished early while executing a significant owner-generated contract modification that increased scope by 25%. Bill received a *Star Partner* award for his exceptional dedication, teamwork, and professionalism in support of the project's goals. ***Relevance to MD 32****–Design-Build, new 4-lane divided limited access highway, interchanges, tie-in to interstate interchange, culvert extensions, partnering with owner/stakeholders, new bridges over water, culvert extensions, scour, drainage/ESC/SWM/SWPP, utility relocation/coordination, environmental permitting/compliance (VPDES equivalent to MDE's NPDES, Section 404, Water Protection Permit, Sub-aqueous Bed Permit, SWM/ESC), geotechnical, landscaping, extensive public relations campaign, retaining walls, traffic/ITS lighting, and provided construction support services and as-built plans.*

2010-2013 | MDOT SHA | Design-Build US 40 at MD 715 Interchange and Improvements, Harford County, MD-$17.7M -Design Manager. Alleviated local traffic congestion resulting from the BRAC initiative. ***Bill oversaw the design and ensured requirements were met, and implemented the Design QC Plan*** for widening MD 715 in both directions, upgrading the interchange that included widening the bridge on MD 715 over US 40, connecting ramps, and adjoining roadways for 2.40 miles. Traffic/lighting design included two new traffic signals, interconnect plans and lighting. Prepared MOT/detour plans and a TMP to minimize community/traveling public inconvenience. ***Relevance to MD 32****–Design-Build, widened divided roads including a segment of open median section with traffic barrier, interchange, utility relocation/coordination (BGE/Comcast/APG/HCDPW), geotechnical, public outreach, traffic/lighting, landscaping, permitting, stream relocation, drainage design, MDE/USACE approvals, SWM/ESC, landscaping/reforestation, permitting (SWM, ESC, SWPP, NOI/NPDES, Forest, Section 404 wetlands and waterways, and construction support services and as-built plans.*

2008-2011 | FHWA-EFLHD/DDOT | **Design-Build 9th St. Bridge Replacement, Washington, DC-$58.4M-Design Manager.** Designed a streamlined, 645-ft. long 4-span bridge, reconstructing/widening US 50 and the interchange at 9th St., including design of 3 new signalized intersections. ***Bill led ensuring design requirements were met, including geotechnical, roadway, structural, signals, MOT/TMP, SWM/ESC/drainage, lighting, and utility designs/relocations (DC Water/PEPCO/MCI/Washington Gas), and ROW acquisitions*** to facilitate phased removal/complete reconstruction of the roadway and bridge. Widened sidewalks, bicycle lanes, ADA compliant crosswalks, and aesthetic architectural elements, and attended Neighborhood Committee meetings. Project was completed on schedule. ***Relevance to MD 32****–Design-Build, new structure that minimized utility impacts to traveling public, extensive MOT plans and TMP to address heavy traffic along New York Ave. (US 50), designed a new/reconstructed drainage system with approvals and permits for SWM/ESC/SWPP from DDOE, public outreach, designed a new retaining wall which saved an existing SWM pond and ROW, coordinated with utilities, pavement marking, signing plans, geotechnical, landscaping, partnered with the owner and stakeholders, and construction support services and as-built plans.*

Kris Wilson, CHST | Construction Manager

Years of Experience
25 Years (25 with Corman)

Certification
Construction Health & Safety Technician #C2818

MDE Erosion & Sediment Control Certification | MDOT SHA E&SC Re-certification Yellow Card-Pending

Awards
2016 MTBMA Distinguished Supervisor Safety Award

2016 MTBMA Commitment to Safety Award

2007 | MDOT SHA | **Design-Build MD 30 Hampstead Bypass, Hampstead, MD-$43.2M-Construction Manager.** Constructed to return the town to its residents by safely having traffic bypass the town center and mitigate the gripping morning/evening rush hour traffic. 4.5 mile two-lane roadway with stream/wetland crossings and 4 bridges spanning them, traffic enters/exits via two new roundabouts; a third one is at the bypass/MD 482 intersection**.** ***Kris supervised field operations, including construction of two new roadway bridges per project requirements; evaluated safety exposures/risks; reviewed Toolbox Talks, Take Fives, Morning Huddles, and Site Inspections weekly; conducted weekly safety inspections with project manager/project engineer; submitted weekly Safety Inspection Reports; coordinated labor, equipment, and subcontractors, schedules; and oversaw quality control compliance.*** ***Relevance to MD 32****–Design-Build, MOT, new bridges over water, public relations, traffic lighting, environmental permitting/compliance, geotechnical, drainage/SWM ponds, utility relocations.*

2009-2010 | MDOT SHA | **Design-Build Intercounty Connector Contract B, Montgomery County, MD-$560.9M-Structure Construction Manager.** Project was the most environmentally-sensitive in the ICC corridor as it crossed through four waterways, wetlands, tributaries, parks, and neighborhoods. Constructed new 7.1 mile six-lane divided highway, automated toll way, which reroutes commuter traffic from clogged neighborhood streets onto six lanes of controlled-access highway, improves mobility/safety, and reduces traffic on major arteries connecting Washington, DC and Baltimore. There were new intersections; five were modified to accommodate new traffic patterns, phased construction of five arterial roadways with pedestrian access, 15 bridges (two had interchanges), 20 retaining walls, and a pedestrian/bicycle shared-use path. Ten cross culverts facilitate the landscape's natural drainage and coordinated with over 10 utility companies for utility relocations in high-congested areas**.** ***Kris supervised field operations, including construction of five mainline bridges per project requirements; coordinated the schedule, managed 10-12 crews; and oversaw environmental compliance.*** He attended bridge progress, schedule, and safety meetings; scheduled daily daytime activities to minimize noise around the community; evaluated safety exposures/risks; reviewed Toolbox Talks, Take Fives, Morning Huddles, and Site Inspections weekly; conducted weekly safety inspections with project manager/project engineer; submitted weekly Safety Inspection Reports; coordinated labor, equipment, and subcontractors; schedules, and oversaw quality control compliance. ***Relevance to MD 32****–Design-Build, major new road on new alignment, road overpass structures, interchanges, MOT, bridges over water, community involvement, environmental permitting/compliance, geotechnical, drainage/SWM ponds, utility relocations/coordination, landscaping/reforestation.*

2006-2007 | MDOT SHA | **Woodrow Wilson Bridge VA Approach Spans VAC, Alexandria, VA-$126.8M-Construction Manager.** Constructed project adjacent to heavily-traveled I-95/495 Capital Beltway, site was environmentally sensitive due to its proximity to the Potomac River and an urban residential community required constant communication with residents and close attention to noise, dust and traffic ordinances. Two-phase construction included segmental bridge, foundation construction of inner loop bridges, noise wall, utility relocations, and coordination with local parks. ***Kris supervised field operations, including the cast-in-place bridge work per project requirements; evaluated safety exposures and risks; reviewed Toolbox Talks, Take Fives, Morning Huddles, and Site Inspections weekly; conducted weekly safety inspections with project manager/project engineer; submitted weekly Safety Inspection Reports; coordinated labor, equipment, and subcontractors, schedules; and oversaw quality control compliance***. ***Relevance to MD 32*** *– MOT, bridge over water, community involvement, environmental compliance, utility relocations.*

Shawn E. Reynolds, PE | Highway Engineer

Shawn has 18+ years of experience in conceptual, preliminary, and final highway geometric design; and maintenance of traffic for transportation infrastructure projects. Experience includes roadway dualization to intersection improvements to complex interchange designs including highway design, traffic studies, maintenance of traffic, and alternative alignment studies.

Education
BSCE/2000/Civil Engineering

Years of Experience
18 Years (17 with JMT)

Professional Registration
2006/Maryland Registered Professional Engineer #32600

2016-2017 | MDOT SHA | Design-Build MD 404 Dualization, Talbot, Queen Anne's and Caroline Counties, MD -$105M - Highway Engineer. ***Shawn led the JMT highway design and ensured requirements were met*** for adding two additional lanes along 5.4-mile western segment of the new four-lane divided highway. Project incorporated innovative ATCs resulting in an $11M savings. The design improved corridor traffic operations/safety by optimizing intersection controls to eliminating left turning movements; and used a practical design approach to include open section median with traffic barriers and acceleration/deceleration lanes. MD 404 minimized community/traveling public impacts by implementing a robust TMP focused on work zone safety for safe passage to roadway users and developed/implemented a Public Outreach Plan to communicate construction activities. This was the first large design-build project in Maryland that included a proactive IDQM firm and followed MDOT SHA's PRD approval process. ***Relevance to MD 32****–Design-Build; J Turns and Maryland T intersections; accel/decal lanes; new/rehab. pavement; scour assessment; MOT; bridge design over water; closed/open drainage systems; utility relocations/coordination; environmental permitting; geotech./pavement design; lighting; signing; marking; landscape arch.; and construction phase services.*

2015-2018 | SCDOT | Design-Build Port Access Road, North Charleston, SC - $220.7M– Highway Engineer. This new roadway/structure project provides direct access between the proposed marine container terminal on the former Naval Base and I-26, while maintaining services for local, commuter, and commercial traffic. ***Shawn led highway design and ensured requirements were met*** under an accelerated schedule that will provide two inbound and outbound lanes for port traffic and include a new fully directional interchange on I-26, a Connector Road, extension of Stromboli Avenue, and roadway improvements to surface streets. ***Relevance to MD 32*** *- Design-Build; roadway/structures; geotechnical; drainage/ECS/ SWM/SWPP; utility reloc./coord.; tie-ins to interstate; environ. permitting/compliance; traffic/lighting; and public relations.*

2008-2011 | FHWA-EFLHD/VDOT | Design-Build Fairfax County Parkway (Route 286) Extension, Springfield, VA- $112.5M–Highway Engineer. This highly urbanized project completed a vital link to I-95***. Shawn was part of the highway design team and ensured design requirements were met*** that designed a four-lane divided limited access highway, two interchanges and a shared-use path, retaining walls; MOT; signing; pavement markings; and lighting. A major innovative ATC that was developed/designed revised the profile of Rt. 286/Fullerton Rd. and improved the project design and reduced cost. The aggressive schedule was finished early while executing a significant owner-generated contract modification that increased scope by 25%. ***Relevance to MD 32*** *- Design-Build, new 4-lane divided limited access highway, interchanges, tie-ins to interstate interchange, culvert extensions, partnering with owner/stakeholders, new bridges over water, drainage/ECS/SWM/SWPP, utility relocation/coordination, environmental permitting/compliance, geotechnical, traffic/ITS lighting; and construction support services and as-built plans.*

2008-2011 | DDOT | Design-Build 11th St. Corridor–Bridges/Interchanges over Anacostia River, Washington, DC- $376M-Highway/MOT Engineer. ***Shawn led the design team and ensured design requirements were met.*** The innovative design techniques used to refine the planning document alignments/interchanges resulted in 70% of this project being constructed without major interruption to vehicular traffic and minimizing community/traveling public inconveniences. Our ATCs helped save the client $85M from the original engineer's estimate. ***Relevance to MD 32*** *– Design-Build-Stipulated-Sum, roadway/structures, geotechnical, drainage/ESC/SWM/SWPP, utility relocation/coordination, environmental permitting/compliance, traffic/ITS/lighting, public relations, and construction support services. The design was broken into discrete work packages to facilitate construction/ordering of long lead items to meet the fast track schedule.*

Scott A. Miller, PE | Water Resources Engineer

Scott has 20+ years of experience in water resources including hydrology and hydraulic investigations, analysis, design and permitting SWM/ESC design and permitting, H/H, and scour analysis.

Education
BSCE/1997/Civil Engineering
JMT Leadership Training

Years of Experience
20 Years (19 with JMT)

Professional Registration
2002/Maryland Registered Professional Engineer #28377
MD ESC Design Cert. #D10-013
SHA Yellow Card ESC #06-586
MDE RPC Card #RPC006227

2016-2017 | MDOT SHA | Design-Build MD 404 Dualization, Talbot, Queen Anne's, and Caroline Counties, MD -$105M –Water Resources Engineer. ***Scott led the Hydraulic team for the drainage/SWM/stream restoration design*** for two additional lanes along the 5.4-mile western segment of this four-lane divided highway. Met early/often with PRD prior to design submissions to expedite reviews and gain approval of phased ESC packages and SWM design. Coordinated with MDE on Tidal Wetlands and Waterways Division (NTWWD) and USACE to ensure SWM and ESC design, including MOSF, was per permit requirements. Over-the-shoulder reviews with the IDQM were performed before submitting ESC packages to PRD for approval. By providing smaller ESC design packages, the team fast-tracked approvals and shortened review times. Informed environmental team concerning avoidance and minimization efforts within each package. Performed scour analysis for Norwich Creek Bridge Crossing for SHA OOS review/approval. ***Relevance to MD 32*** *- Design-Build; J Turns and Maryland T intersections; accel/decel lanes; new/rehabilitated pavement; scour assessment; MOT; bridge design over water; closed/open drainage systems; utility relocations/coordination; environmental permitting; geotechnical/pavement design; lighting; signing; pavement marking; landscape architecture; and construction phase services.*

2005-2011 | MDTA | I-95 Express Toll Lanes and I-95/I-695 Interchange (Section 100), Baltimore County, MD -$216.8M - Water Resources Engineer. Scott was responsible for drainage, SWM, ESC, H/H, and stream restoration designs for the improvements along 11 lane-miles of I-95; 12 lane-miles of I-695; and complete realignment of the I-95/ I-695 interchange, Maryland's first highway transportation project to implement general purpose lanes and express toll lanes together in the same facility. This project involved culvert, open channel and storm sewer design, design of 18 SWM facilities to provide quality and quantity management, multi-phased ESC design, including 4,400 LF of Stemmer's Run and two of its tributaries. Obtained SWM and ESC approval from MDE for multi-phased design project. Obtained MDE NTWWD and USACE approval of ESC and MOST design per Permit Requirements. Secured authorization under the NPDES NOI. ***Relevance to MD 32*** *- Fast-track design on a heavily-traveled highway system, while coordinated with adjacent developers to minimize impacts to the traveling public, businesses, and communities within the corridor. Key services included environmental documentation, planning, preliminary and final design, and CM services.*

2005-2008 | MCDOT | Montrose Parkway West, Montgomery County, MD -$29.6M - Water Resources Engineer. Widening and reconstruction of an urban arterial from five lanes to a six-lane dualized roadway, and construction of a new dualized four-lane arterial on new alignment. Scott was responsible for the SWM, ESC, H/H, dam breach analysis and environmental permitting. Obtained ESC approval and small pond approval from MoCo DEPS. Innovative SWM, BMP designs, dam breach and MD Code 378 compliance were required to comply with the new requirements. Performed post-award services for shop drawing reviews, ESC and SWM including field inspections/meetings, permit modification and redesign during construction and SWM BMP As-built Inspections and Certifications; prepared SWM As-built plans, obtained approval of SWM As-built plans from MCDPS. ***Relevance to MD 32*** *- Project reduced the traffic volume on adjacent existing roads; provided congestion relief; increased capacity; improved safety; and reduced neighborhood cut-through traffic. Minimized/mitigated environmental impacts by raising the roadway grade; and created additional forested wetlands.*

ii FIRM PAST PERFORMANCE

PROJECT #1 DESIGN-BUILD INTERCOUNTY CONNECTOR CONTRACT A (ICC-A), MONTGOMERY COUNTY, MD | CONTRACT NO. AT3765960

CORMAN – LEAD DESIGN-BUILD CONTRACTOR IN A JOINT VENTURE (INTERCOUNTY CONSTRUCTORS JV)

OWNER/POINT OF CONTACT NAME AND TELEPHONE NUMBER	PROJECT DELIVERY METHOD	INITIAL CONTRACT VALUE	FINAL CONTRACT VALUE
MDOT SHA Rob Shreeve 410-545-8644 Rshreeve@sha.state.md.us	Design-Build	$463,885,499	$483,409,033*

**SPECIFIC REASONS FOR DIFFERENCE:* Change orders due to changes in scope, price adjustments, and incentive payments.

INITIAL COMPLETION DATE	FINAL COMPLETION DATE
8/1/10	2/22/11**

***SPECIFIC REASONS FOR DIFFERENCE:* Change orders due to changes in scope.

PROJECT DESCRIPTION: ICC-A eases congestion on Maryland's highways/local roads while improving mobility/safety.

Highway | Bridges: 7.2 miles controlled-access tri-lane divided highway with 18 steel girder/precast concrete girder bridges and four bridge widenings. Widened/constructed a new I-370 interchange to Shady Grove Metro Station to replace the partial interchange. Constructed I-370/Metro Access Road and Shady Grove Road interchanges in phases to accommodate the two lanes of traffic in each direction while widening road to the inside/outside, making three lanes in each direction. Constructed a new interchange at ICC-A and MD 97 (major access road into Washington, DC) while maintaining traffic.

New roadway construction to ease congestion and improve mobility/safety

Traffic Engineering | ITS: Installed lighting/signalization, overhead and cantilever signs, and Intelligent Transportation Systems (ITS).

Environmental: The environmental sensitivity of this project was unprecedented nationwide and in Maryland as it traverses through Rock Creek Regional Park, protected wetlands and watersheds, specimen forests, streams and cultural and socio-economic resources. Developed environmental strategies to reduce impacts, including water quality monitoring, thermal reductions to stormwater runoff, reforestation, air quality management, construction noise mitigation, spill prevention and storm water pollution countermeasures, rigorous review of design and construction for regulatory compliance and comprehensive employee training on environmental stewardship.

There was environmental design oversight for each stream crossing to mitigate/minimize impacts within the ROW. Designed/constructed high headwalls on major culverts to minimize stream impacts and median/ROW width reductions via innovative SWM and geometry improvements. With requirements and major incentives to avoid/minimize impacts to forest, wetlands, and waterways, over 35 acres of forest, over 1,000 LF of stream, five acres of parkland were saved, and a great deal of stream channel and wetlands were restored. Project finished with a 92% "A" rating for environmental compliance and averaged "A" Ratings for erosion & sediment control.

Water Resources Management: Stormwater management/drainage systems. The environmental sensitivity of this project was unprecedented at the time as it traverses through Rock Creek Regional Park, protected wetlands and watersheds, specimen forests, streams and cultural and socio-economic resources. The FEIS mandated unprecedented environmental designs and E&S controls as set forth in the Commitment Tracking Database. Environmental strategies were developed to reduce impacts, which were incorporated into written management plans, and included water quality monitoring, thermal reductions to stormwater runoff, spill prevention and storm water pollution countermeasures, rigorous review of design/construction for regulatory compliance and employee training on environmental stewardship.

With requirements and major incentives to avoid/minimize impacts to forest, wetlands, and waterways, over 35 acres of forest, over 1,000 LF of stream, five acres of parkland were saved, and a great deal of stream channel and wetlands were restored.

Grading: Contour grading was used throughout the project limits so that the resultant landforms were natural in appearance, blended with the surrounding landscape and built features, facilitated positive drainage, and minimized opportunities for erosion. Changes in slopes were rounded to appear smooth and natural. Ponds were also sculpted and heavily landscaped to blend in with the surrounding forested and landscaped areas.

Utilities: Major utility relocations were completed at 106 locations, including water, sewer, power/electrical, cable lines, and fiber optic (underground/overhead), and coordinated/relocated critical transmission lines for Columbia and Williams Gas. The project team worked outside normal timeframes, especially when doing tie-ins. The sewer work at two major stream crossings with impending stream closure deadlines necessitated working 24/7 with adverse ground conditions (water running in). Many relocations involved elaborate, complex and extensive piping design, coordination, and construction. Some complexities included working around stringent MOT time limits for lane closures and coordinating with many utility owners in highly-congested areas.

Stakeholders: Some bridge construction necessitated working and maintaining traffic on major thoroughfares and working over heavily-traveled roadways, over and around Rock Creek and in extremely sensitive neighborhoods with public outreach. We supported the client in media relations and outreach to approximately 10,000 residents surrounding the corridor. Over 100 community meetings and public outreach hearings were held and included sound barrier meetings, general construction updates, and special information outreach tailored to specific communities and individual residents. The community liaison's primary responsibilities were to involve/inform communities of design/construction and to lead the outreach and issue resolution efforts by coordinating with appropriate parties. Understanding the issues, individuals and communities were necessary to schedule community meetings to convey a schedule of activities, noise walls, landscaping, and aesthetics.

Other relevant components included 2.5 million CY earthwork, box culverts, 130,000 SF retaining and MSE walls, 630,000 SY HMA pavement which encompassed new access ramps to two major interchanges, MOT, and quality control. Impacted roadways, including local residential streets and major arterials, were restored, as well as adjacent streams and wetlands.

Awards: 2012 AGC of America Alliant Build America Award –Design-Build Highway & Transportation; ENR (NE Division) Best Project –Transportation

DISCUSSION OF WHAT WORK, INCLUDING ANY SUCCESSFUL METHODS, APPROACHES, AND INNOVATIONS ON THE PROJECT IS RELEVANT TO THIS CONTRACT AND WHY: One major environmental management success was developing a stormwater runoff treatment using citosan flocculant to let the clay soils remain suspended and solids in stormwater runoff indefinitely. MDE set an NTU discharge limit of a 50 NTU monthly average, and a 150 NTU daily maximum for this project. It would not have been possible to achieve these levels without this sort of water treatment. **WHY RELEVANT:** With SWM on this project, we can come up with innovative ideas like this that may contribute to a better product than originally planned.

Redesigned the MAR interchange from a three-level to a two-level eliminating retaining walls and saving the owner millions of dollars long term. **WHY RELEVANT:** With roadway and interchange construction on this project, we will look for ways to reduce cost by implementing innovative design and construction to maximize the components of the project for the fixed price.

PROPOSED DESIGN-BUILD TEAM MEMBERS ON THIS PROJECT: Scott Szympruch, PE was the Construction Manager and Dimonic Fulton was the Traffic Control Manager.

PROJECT #2 DESIGN-BUILD DUALIZATION OF ROUTE 1 AT FORT BELVOIR, LORTON, VA | CONTRACT NO. DTFH71-13-C-00030

CORMAN–LEAD DESIGN-BUILD CONTRACTOR IN A JOINT VENTURE (CORMAN-WAGMAN, A JV)

OWNER/POINT OF CONTACT NAME AND TELEPHONE NUMBER	PROJECT DELIVERY METHOD	INITIAL CONTRACT VALUE	FINAL CONTRACT VALUE
Federal Highway Administration Eastern Federal Lands Highway Division Timothy M. Brown 703-339-5454 | 703-963-7481 Cell Timothy.Brown@dot.gov	Design-Build	$69,391,712.80	$82,103,468.29*

**SPECIFIC REASONS FOR DIFFERENCE:* Due to owner-directed changes and differing site conditions.

INITIAL COMPLETION DATE	FINAL COMPLETION DATE
2/19/16	9/30/17**

***SPECIFIC REASONS FOR DIFFERENCE:* Due to contract changes, winter shut down, and Verizon strike.

PROJECT DESCRIPTION: This long-awaited project widened Route 1 to relieve heavy traffic near the Fort Belvoir military installation. The 3.5 mile stretch between Mount Vernon Memorial Highway and Telegraph Road is home to some of the region's worst rush hour traffic. Approximately 80,000 vehicles pass through Fort Belvoir's gates every day.


Traffic using new Route 1 southbound lanes

Highways & Bridges: Constructed and/or widened Route 1 from four to six lanes with left and right turn lanes at intersecting roadways, reservation of a median to accommodate future express bus transit, route realignment, and intersection improvements. Constructed two bridges where a multi-span pre-stressed girder bridge replaces on over Accotink Creek.

Traffic Engineering/ITS: Installed street lighting, traffic signals, and ITS along corridor and at major intersections

Water Resources Management: The stormwater management system was designed using latest MS4 water quality requirements and includes bio-filtration and bio-retention methods, such as vegetated filter strips, vegetated swales, and conversion of multiple stormwater management ponds into permanent wetlands.

Utilities: Corman self-performed relocating the water and sewer lines in multiple locations, and coordinated over $6.2 Million of utility relocations, including existing OH Dominion electric, Verizon, Cox, and Comcast communication fiber and an underground Washington Gas 12-in. transmission main in phase with road widening / dualization.

Maintenance of Traffic: A Traffic Management Plan provided multiple lane stages, coordination with Owner, County and Fort authorities, and EMS personnel. Maintenance of traffic include daily lane closures along US Route 1 and shifting traffic to the newly-constructed southbound lanes as the northbound lanes were constructed. Additional detours and lane shifts were implemented to construct cross drainage, including the Mason Run triple cell culvert installation on southbound Route 1 and during right of way and demolition in the Accotink Village Center. The project team established and maintained a dedicated web site, held public "Pardon Our Dust" meetings, communicated lane closures and traffic switches with the local VDOT traffic operations center and the Ft. Belvoir authorities.

Stakeholders: Streamlined reviews by incorporating owners/stakeholders in the upfront design process, as well as identifying/addressing upcoming changed condition work early on. We worked with the owner regarding project element changes and finalized a completion date that was beneficial to the owner and Corman. There are many stakeholders, including EFLHD, VDOT, Fairfax County, Dept. of the Army, Ft. Belvoir, SHPO, National Historic Trust, environmental permitting agencies, local residents and community groups, and EMS responders. Community meetings explained the project scope and solicit input on the work within the Historic District. Bi-weekly progress meetings were held with most of the stakeholders attending during the entire project (including design and construction).

The project was constructed in coordination with VDOT, Fairfax County, and the US Army Garrison at Fort Belvoir, was highly visible to local authorities and was a major focus of local and federal elected officials, with an emphasis on maintenance of traffic, stakeholder communication, protecting the environment, and historical significance.

Other relevant components include major grading (including slope grading) and ROW acquisition. Retaining walls are at several locations to accommodate grade changes and reduce the extent of slope excavation.

DISCUSSION OF WHAT WORK, INCLUDING ANY SUCCESSFUL METHODS, APPROACHES, AND INNOVATIONS ON THE PROJECT IS RELEVANT TO THIS CONTRACT AND WHY: Poor soils and high groundwater in wetland areas required remediation to support road and stabilization of side slopes. Construction was adjacent to wetlands natural resource area. Roadway realigned to avoid the wetlands. **WHY RELEVANT:** We will also research and implement ways to minimize and avoid environmental impacts on this project.

Shortened the bridge over Accotink Creek from over 500 LF to approximately 300-ft. (a 40% reduction) while still maintaining desired HW elevations and maximum required flows **WHY RELEVANT:** We will use similar innovative hydraulic and structural design to minimize structure length and stream impacts on this project.

PROPOSED DESIGN-BUILD TEAM MEMBERS ON THIS PROJECT: Scott Szympruch, PE was the Design-Build Project Manager | Project Executive, Lou Robbins, PE, DBIA was the Design/Construction Integrator, and Steve Simpson, CSP, CHST was the Safety Manager, Mid-Atlantic Region.

PROJECT #3 DESIGN-BUILD MD 30 HAMPSTEAD BYPASS, HAMPSTEAD, MD | CONTRACT NO. CL4165370

CORMAN–LEAD DESIGN-BUILD CONTRACTOR

OWNER/POINT OF CONTACT NAME AND TELEPHONE NUMBER	PROJECT DELIVERY METHOD	INITIAL CONTRACT VALUE	FINAL CONTRACT VALUE
MDOT SHA Ross Clingan 410-545-0300 | 301-624-8204 rclingan@sha.state.md.us	Design-Build	$40,137,000.00	$43,294,527.13*

**SPECIFIC REASONS FOR DIFFERENCE:* Owner approved change orders including adding extra lanes on the roundabout on the north/south lanes and installing two temporary bridges to adhere to an aggressive schedule.

INITIAL COMPLETION DATE	FINAL COMPLETION DATE
12/1/08	8/7/09**

***SPECIFIC REASONS FOR DIFFERENCE:* Owner requested plan/construction changes to roundabouts after they were completed which was at end of construction season; this resulted in a winter shutdown by Owner and completion of changes at start of following season.

PROJECT DESCRIPTION: This was the first Design-Build project for MDOT SHA that included structure design, covered 4.5 miles of two-lane road and was constructed to return the town of Hampstead to its residents by safely having commuter/commercial traffic bypass the town center and mitigate the gripping congestion during morning/evening rush-hour.


New roadway and bridge construction

Highways & Bridges: Two-lane asphalt urban minor arterial roadway and four bridges spanning them. Traffic enters/exits via two new roundabouts at the north and south ends of the new road; a third roundabout is at the bypass and MD 482 intersection around midway along the new route, and a new turn lane off of existing MD 30. Designed/constructed four bridges:

- Single span, pre-stressed concrete girder bridge over Indian Run
- Single span, concrete girder bridge over a tributary to the east branch of the Patapsco River
- Single span, pre-stressed concrete girder bridge carrying Houcksville Road over the bypass
- Single span, steel girder bridge carrying the bypass over Shiloh Road

Traffic Engineering/ITS: There is traffic signals and highway lighting was installed at the three roundabouts.

Environmental: Since this endeavor involved impacts to forest, Waters of the US and wetlands, construction had be scheduled around in-stream restrictions for Use I, II and IV waterways. An arborist team member advised forest preservation needs and best practices. When possible, the limits of disturbance (LOD) was limited to avoid disturbing the tree cover. As a result, the team reduced wetland impacts by an additional 0.5 acres, forest impacts by three acres, and water impacts by 1,000-ft. from what was permitted, resulting in a 10% reduction in wetlands, 37% less stream impacts, and 18% of forest removal when compared to the permitted impacts.

All E&S incentives were earned with a final average E&S inspection score of 97.9%. Corman received the maximum incentives available; earned additional incentives for environmental design mitigation (preserving additional wetlands and minimizing clearing and grubbing).

Water Resources Management: Constructed 13 new stormwater management ponds: Three used traditional risers and outfall pipe and 10 incorporated weir walls. Weir walls require less maintenance, reduce seepage and erosion compared to risers and barrels, ensure long-term sustainability, and are more visually appealing than risers. The stormwater ponds provide water quality treatment and channel protection volume control. Each employs shut off valves. Should there be a hazardous spill, maintenance staff can turn off the valves and each facility will contain the entire two-year storm volume, plus an additional 10,000 gallons for hazardous containment material. Non-structural practices include diverting roadway runoff to other areas and away from the bog turtle habitat. Each is a cost-effective solution to protect the habitat. Grass channels were used for additional water quality benefits.

Stakeholders: Worked with adjacent residents to maintain access, reset fences and rebuild driveways. Temporary fencing protected students from the construction zone as a middle and high school was nearby. We were responsible for design of turf and landscaping plans ranging from wetland plantings to carefully-designed gateway plans which incorporated local and county input and coordination.

Awards: 2010 DBIA National Design-Build Excellence Award for a Transportation Project, 2010 DBIA Mid-Atlantic Region-Regional Design-Build Excellence Award for a Transportation Project, 2010 ARTBA "Globe" Environmental Award, 2009 MdQI Awards of Excellence for Environmental, Green Transportation, and Consultant Highway Design.

DISCUSSION OF WHAT WORK, INCLUDING ANY SUCCESSFUL METHODS, APPROACHES, AND INNOVATIONS ON THE PROJECT IS RELEVANT TO THIS CONTRACT AND WHY:

An approved ATC shifted a roadway alignment to avoid a costly detour road. This permanently shifted the centerline alignment of Houcksville Road 40-ft. of its current location at the station where it was proposed to bridge over the bypass. Conceptual plans constructed a detour road 150-ft. east of the proposed bridge structure to maintain traffic on the detour road while the bridge and approach roadway were constructed on the existing Houcksville Road alignment. The detour road required 1,040-ft. of temporary roadway to be constructed while the permanent roadway required 775-ft. of reconstruction.

The temporary detour road introduced 30 mph design speed curves on a straight section of Houcksville Road. The permanent relocation of Houcksville Road required 1,425-ft. of permanent roadway, thereby saving 390-ft. of roadway construction. By permanently shifting a roadway, it expedited construction and benefitted local residents by shifting the final road location away from their homes. It also allowed the profile over the bypass to be lowered improving the adjacent grading and driveway profiles over what was the conceptual plan, and it eliminated the substandard 30 mph detour road on a currently straight section of Houcksville Road. **WHY RELEVANT:** Since this project involves roadway construction, MOT, and stakeholders, we will also come up with ideas to limit impacts to the environment, schedule, and cost.

Constructed 13 new stormwater management ponds: Three used traditional risers and outfall pipe and 10 incorporated weir walls. Weir walls require less maintenance, reduce seepage and erosion compared to risers and barrels, ensure long-term sustainability, and are more visually appealing than risers. The stormwater ponds provide water quality treatment and channel protection volume control. Each employs shut off valves. Should there be a hazardous spill, maintenance staff can turn off the valves and each facility will contain the entire two-year storm volume, plus an additional 10,000 gallons for hazardous containment material. Non-structural practices include diverting roadway runoff to other areas and away from the bog turtle habitat. Each is a cost-effective solution to protect the habitat.
WHY RELEVANT: Since this project includes stormwater management facilities, we will also research ways to minimize environmental impacts.

PROPOSED DESIGN-BUILD TEAM MEMBERS ON THIS PROJECT: Scott Szympruch, PE was Design-Build Project Manager and Kris Wilson, CHST was a Construction Manager.

PROJECT #4 DESIGN-BUILD | MD 404 DUALIZATION: US 50 TO EAST OF HOLLY ROAD, CAROLINE, QUEEN ANNE'S AND TALBOT COUNTIES, MD | CONTRACT NO. AW8965170

JOHNSON, MIRMIRAN & THOMPSON, INC. – LEAD DESIGNER SEGMENT A

OWNER/POINT OF CONTACT NAME AND TELEPHONE NUMBER	PROJECT DELIVERY METHOD	INITIAL CONTRACT VALUE	FINAL CONTRACT VALUE
MDOT SHA Jeffrey Folden 410-545-8814 JFolden1@sha.state.md.us	Design-Build	$104,998,000	$104,998,000*

**SPECIFIC REASONS FOR DIFFERENCE:* N/A

INITIAL COMPLETION DATE	FINAL COMPLETION DATE
November 23, 2017 (Substantial) | May 25, 2018 (Final)	November 20, 2017 (Substantial)**

***SPECIFIC REASONS FOR DIFFERENCE:* N/A

PROJECT DESCRIPTION: MD 404 connects US 50 and the Denton Bypass in Talbot, Queen Anne's, and Caroline counties, serving commuters traveling to and from the Delmarva region. The roadway experiences high traffic volumes during the summer beach season. Today, 16,400 vehicles travel along MD 404 daily, with more than 20,150 vehicles each day during the summer. By 2035, it is expected to increase to 21,900 vehicles a day and up to 26,900 vehicles during the peak summer season months.

MD 404 J Turn

MD 404 Corridor Dualization became a priority and put on a fast-tracked schedule. Constructed two additional lanes along 9.1 miles of the existing MD 404 alignment to create a dual four-lane divided highway from US 50 to east of Holly Rd., constructed J Turns and Maryland T intersections to eliminate unprotected left turns from side streets, and new service roads to consolidate access points with residential/commercial properties to MD 404. The 404 Corridor Safety Constructors Team was awarded on a "best value selection." JMT was the lead designer for the western segment which included the western portions of MD 404 dualization from US 50 to West of MD 309 (approximately 5.4 miles), and the geotechnical engineering design for the entire project corridor.

Roadway, MOT and Phasing Design: Phasing included five mass grading packages based on MDE 20-acre grading unit limitations, one temporary roadway package to provide for temporary MOT cross overs to the new roadway, and two final roadway packages.

Structure Design: Designed a single, 115-ft. span bridge over Norwich Creek that had a Time-of-Year Restriction. Also designed nine culvert structures.

Hydraulic Design: Performed scour assessment and counter measure design for the Norwich Creek and H/H design for nine culverts.

Stormwater Management, Drainage and Erosion and Sediment Control Design: Designed 200 individual Environmental Site Design (ESD) including wet swales, grass swales and bio-swales.

Geotechnical Design: Provided geotechnical design for the entire project assessments of more than 600 borings; assistance with pavement design; assessment of high ground water table; and designs to address pile down drag and settlement.

Landscape Design: Managed and oversaw landscaping for the entire project.

During construction, JMT provided services including shop drawing review, preparation of red line and modification drawings, assisted with SWM as-built certifications, and addressed RFIs and construction questions.

MD 404 was acknowledged by Governor Larry Hogan at the November 2017 ribbon cutting; *"With the completion of the MD 404 upgrade, our administration is proud to deliver on the number one priority for Queen Anne's, Talbot, and Caroline counties"* –***completed design ahead of schedule.***

DISCUSSION OF WHAT WORK, INCLUDING ANY SUCCESSFUL METHODS, APPROACHES, AND INNOVATIONS ON THE PROJECT IS RELEVANT TO THIS CONTRACT AND WHY:

Reflected in the total bid price was incorporating innovative and cost-effective ATCs that were consistent with the project goals and resulted in an $11M savings. Areas JMT focused on were safety and mobility related to the roadway geometrics-layout design per AASHTO and MDOT SHA requirements.

WHY RELEVANT: Several ATCs have potential to be part of MD 32, including auxiliary lanes and queuing assessments; providing adequate acceleration/deceleration lengths for safer merging movements at intersections; intersection geometry accommodating WB-67s; and access/service drives. Other ATCs corridor-wide included pavement enhancements to improve rideability and life-cycle costs; minimizing full depth reconstruction and wedge/leveling of the existing mainline road

to accelerate construction and improve safety by minimizing MOT; and clarifying SWM swale requirements to place traffic barrier protection effectively without compromising safety.

Similar to MD 32, implemented a robust TMP focused on work zone safety for safe passage to roadway users and partnered with MDOT SHA to develop/implement a Public Outreach Plan to communicate planned construction activities to roadway users and continuously maintain safe and effective access to adjacent properties and farms.

As required on MD 32, this project was a perfect example of utilizing an Independent Quality Management (IDQM) firm. MD 404 was Maryland's first large Design-Build project to use MDOT SHA's Plan Review Division (PRD) approval process. JMT's detailed design schedule allowed for ample time for design and reviews by required parties, audits, approvals, and took into account TOYRs. Task force meetings occurred regularly to resolve issues in real time and ensure design concepts were RFP compliant and permittable. These real-time meetings were critical to achieving all MDOT SHA's project goals without delaying the construction schedule.

PROPOSED DESIGN-BUILD TEAM MEMBERS ON THIS PROJECT: William Schaub, PE was JMT's Project Executive; Shawn Reynolds was JMT's Lead Highway Engineer; Scott Miller, PE was JMT's Lead Water Resources Engineer; James Smith was JMT's Design Manager; and Michael Leffler, PE was the Lead Geotechnical Engineer for the entire project.

PROJECT #5 DESIGN-BUILD FAIRFAX COUNTY (ROUTE 286) EXTENSION, SPRINGFIELD, VA | FHWA EFLHD NO. DTFH71-08-R-00007

JOHNSON, MIRMIRAN & THOMPSON, INC. – LEAD DESIGNER

OWNER/POINT OF CONTACT NAME AND TELEPHONE NUMBER	PROJECT DELIVERY METHOD	INITIAL CONTRACT VALUE	FINAL CONTRACT VALUE
Federal Highway Administration Eastern Federal Lands Highway Division Timothy M. Brown 703-963-7481 Cell Timothy.Brown@dot.gov	Design-Build	$73,756,000	$112,416,000*

**SPECIFIC REASONS FOR DIFFERENCE:* Received a significant owner generated contract modification increasing scope by 25%.

INITIAL COMPLETION DATE	FINAL COMPLETION DATE
July 2011	June 2011**

***SPECIFIC REASONS FOR DIFFERENCE:* Completed project, including owner-generated contract modification ahead of schedule.

PROJECT DESCRIPTION: This four-lane divided limited access highway project completed a vital link to I-95 and was highly publicized as critical to the success of the region's BRAC initiative as it provided highway improvements to address traffic impacts of the US Army relocating 8,500 jobs to the Fort Belvoir North Area.


Clearing and Grubbing

JMT was the lead designer for our Design-Build partner that was selected as the best value team for Fairfax County Parkway (FCP) Phases I & II Design-Build project by the FHWA-EFLHD, VDOT, and the US Army Garrison Fort Belvoir. During the bidding, JMT prepared ATCs that improved the design, minimized utility relocations, and reduced construction cost.

The most significant change was the *Fullerton Flip.* The original design depicted Fullerton Rd. crossing over FCP. JMT

revised the profiles to take FCP over Fullerton Rd. which reduced the amount of soil/rock excavation; minimized disturbance of contaminated material; and reduced the surplus material on the project.

Phases I/II were completed on an aggressive schedule, while receiving a significant owner-generated contract modification (Phase IV - $38.6M) increasing the scope by 25%. These phases totaled 2.4 miles of four-lane divided limited access highway and were completed concurrently within an accelerated timeframe ahead of schedule. The new four-lane divided limited access highway included two new interchanges. Completion of FCP included coordination with several adjacent NOVA projects and partnering with USACE BRAC Integration office, Ft. Belvoir DPW, ENRD and Fairfax County DPW.

Highways & Bridges: Design of a four-lane divided limited access highway; two interchanges; seven new bridges including over water; one bridge widening; box culverts; and a shared-use path along a portion of the road; and retaining/noise walls.

Traffic Engineering/ITS: Provided signing/pavement marking design, signal designs for six intersections, and roadway lighting design. Also included modeling and analysis of traffic operations for temporary/permanent conditions and evaluating detour routing for construction of the Fullerton Rd. interchange. Lighting design included full/partial interchange and crossroads.

Environmental: There were challenges, such as the presence of contaminated soil/groundwater and unexploded ordnance in the Fort Belvoir EPG that the alignment traversed. Other services included stream assessments/wetland delineations and JDs; preparing the comprehensive JPA; obtaining permits including VDEQ's Individual Water Protection Permit, the USACE's Individual Permit (Section 404) to cover unavoidable stream/wetland impacts, the subaqueous bed permit due to the new bridge waterway crossing; and developing the stream/wetland compensatory mitigation plan. All environmental impacts were successfully addressed.

Water Resources Management: Responsible for the H/H analysis and scour analysis report drainage/ESC/SWM/SWPP including a design waiver for SWM; environmental permitting/compliance VPDES equivalent to MDE's NPDES, Section 404, Water Protection Permit, Sub-aqueous Bed Permit, SWM/ESC. The project was in a detailed FEMA study area and involved several structures, as well as the upstream/downstream extension of a 1,000-ft. long box culvert over water that required a plunge pool design due to high velocity.

Utility Designating/Locating/Coordination: Performed surveying and utility designating and locating tasks. Specific surveys included establishing survey control, utility designations, records research and CADD design file compilation of the onsite existing utilities. Coordinated utility relocations resulting in relocations completed without any project delays.

The project was recognized by DBIA National and Mid-Atlantic; won the VTCA award for projects < $1M; and several ACEC regional chapters. Team Members received *Star Partner* award from NGA and USACE for exceptional dedication, teamwork, and professionalism in support of the project's goals.

Former VDOT/BRAC Coordinator/Project Reference, Tom Fahrney stated that he was *"…extremely pleased with the performance of the Contractor and JMT in meeting these challenges and overcoming obstacles that could have seriously impacted the budget and schedule for the Parkway project. They proved to be extremely responsive to our needs and concerns throughout the project."*

DISCUSSION OF WHAT WORK, INCLUDING ANY SUCCESSFUL METHODS, APPROACHES, AND INNOVATIONS ON THE PROJECT IS RELEVANT TO THIS CONTRACT AND WHY:

WHY RELEVANT: This project involved new, widened, reconstructed, and rehabilitated 4-lane divided limited-access highway, portions of which carried heavy traffic on an accelerated schedule in an urbanized corridor. Structural designs included bridges and culverts, including dual bridges over water. Met early with utility owners and aided in developing plans/estimates; and adjusted roadway design to minimize relocations. Accommodated utility relocations without any project delays. Provided training on conservation measures for rare, threatened, and endangered species.

A driving factor to project success was establishing a formal partnering agreement between stakeholders while maintaining a thorough public relations campaign.

PROPOSED DESIGN-BUILD TEAM MEMBERS ON THIS PROJECT: William Schaub, PE was the Design Manager; Shawn Reynolds, PE was the Highway Engineer; Paul Clement, PE CPESC was the Water Resource Engineer; Jon Connor, PLA, LEED AP® was the Landscape Architect; Sarah Gary, PE, PTOE was the Traffic Engineer, Michael Leffler, PE was the Geotechnical Engineer, and David Stickles, PLS, IRA was the Project Surveyor.

PROJECT #6 DESIGN-BUILD | US 113 (WORCESTER HIGHWAY) DUALIZATION (PHASE 2B), WORCESTER COUNTY, MD | CONTRACT NO. WO6345270

JOHNSON, MIRMIRAN & THOMPSON, INC. – LEAD DESIGNER

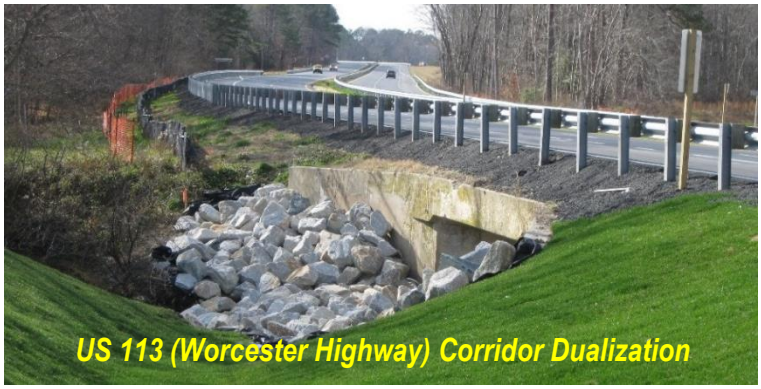
OWNER/POINT OF CONTACT NAME AND TELEPHONE NUMBER	PROJECT DELIVERY METHOD	INITIAL CONTRACT VALUE	FINAL CONTRACT VALUE
MDOT SHA David Phillips 410-545-8823 DPhillips@sha.state.md.us	Design-Build Fixed Price	$12,160,000	$12,160,000*

**SPECIFIC REASONS FOR DIFFERENCE:* N/A

INITIAL COMPLETION DATE	FINAL COMPLETION DATE
May 2012	May 2012

***SPECIFIC REASONS FOR DIFFERENCE:* N/A

PROJECT DESCRIPTION: Like MD 32, this procurement for US 113 Corridor Dualization (Phase 2B) was set at a Fixed Price. The Phase 2B was a segment of several projects that completed widening US 113 (Worcester Highway) to a four-lane divided highway for the entire 38-mile stretch from Pocomoke City, MD to the Delaware line. This is the primary north-south highway in Worcester County and intersects several key routes to resorts along the Delmarva peninsula.


US 113 (Worcester Highway) Corridor Dualization

Phase 2B started north of Goody Hill Road to South of Massey Branch, approximately 1.75 miles. Constructed US 113 as a dualized divided highway. Two additional lanes were constructed on the west side of the existing US 113 roadway, ultimately becoming the southbound roadway. Intersection improvements included left and right turn lanes with acceleration/deceleration lanes. The typical section consisted of two 24-ft. roadways with 10-ft. outside shoulders. Northbound and southbound was separated by a 34-ft. median with 4-ft. paved shoulders, a 26-ft. grass median and w-beam median traffic barrier. Access management roads were constructed to provide access to local businesses, farms, and residences. There was new full depth pavement, wedge and leveling and resurfacing of the existing pavement and shoulders, reforestation, landscaping, drainage systems, ESC, SWM facilities, intersection lighting, signing and pavement markings.

JMT's services included surveys, highway/structural design, geotechnical engineering, storm drain and SWM design, ESC design, reforestation/landscaping design, traffic analysis/design, environmental permit acquisition, and utility relocation coordination. Detailed H/H were performed for five drainage structures that were extended or rebuilt in the process of realigning the US 113 Corridor. A new 14 x 6-ft. single cell box culvert and an extension to an existing 14 x 6-ft. box culvert to carry Massey Branch and Good Hill Branch, respectively, under the roadway as well as new pipe culverts and pipe culvert extensions were designed.

Highways: Designed two additional lanes along existing US 113 alignment to create a 4-lane divided highway. Typical section consisted of two 24-ft. roadways with 10-ft. outside shoulders. Northbound and southbound traffic was separated by

a 34-ft. median with 4-ft. paved shoulders, a 26-ft. grass median and w-beam median traffic barrier. Highway design included a J-Turn and Maryland T intersections. Constructed access management roads to provide access to local businesses, farms, and residences.

Structural: Designed a new 14 x 6-ft. single cell box culvert and an extension to an existing 14 x 6-ft. box culvert to carry Massey Branch and Good Hill Branch, respectively, under the road, as well as new pipe culverts and pipe culvert extensions.

Geotechnical: Provided new full depth pavement and wedge and leveling and resurfacing of the existing pavement and shoulders. Geotechnical evaluations and analysis.

Water Resources Management | Environmental: Provided storm drain and SWM facilities design, ESC design, reforestation/landscaping design, requisite project permits from MDE/USACE/DNR (SWM, ESC, SWP, NOI/NDES, Forest, Section 404 (wetlands and waterways), and Time-of-Year Restrictions (TOYRs).

JMT successfully completed three additional segments of the US 113 Corridor Dualization under separate Design-Build contracts including:

- US 113 from North of Jarvis Road to the Delaware Line;
- US 113 (Phase 1) (Market Street) to north of MD 365 (Public Landing Road); and
- US 113 (Phase 2) Hayes Landing Road to north of Goody Hill Road.

DISCUSSION OF WHAT WORK, INCLUDING ANY SUCCESSFUL METHODS, APPROACHES, AND INNOVATIONS ON THE PROJECT IS RELEVANT TO THIS CONTRACT AND WHY:

WHY RELEVANT: MD 32 and US 113 are regional arterial highways that experienced population and traffic growth over decades resulting in an increase in congestion and traffic incidents.

Similar to MD 32 project goals, the US 113 dualization improved traffic operations and safety conditions throughout the corridor, while minimizing impacts to residents, businesses, and the traveling public. Typical section consisted of two 24-ft. roadways with 10-ft. outside shoulders. Northbound and southbound traffic was separated by a 34-ft. median which included 4-ft. paved shoulders, a 26-ft. grass median and w-beam median traffic barrier. Geometrics included a J-Turn, Maryland T intersections to minimize right angle collisions, intersections, and access points. Constructed access management roads to provide access to local businesses, farms, and residences during construction.

Minimized environmental impacts by using an innovative approach to remove undercut due to the abundance of wetland areas. Used a structural trenching box that was pulled along the grade for the contractor to work in the dry area behind the trench box.

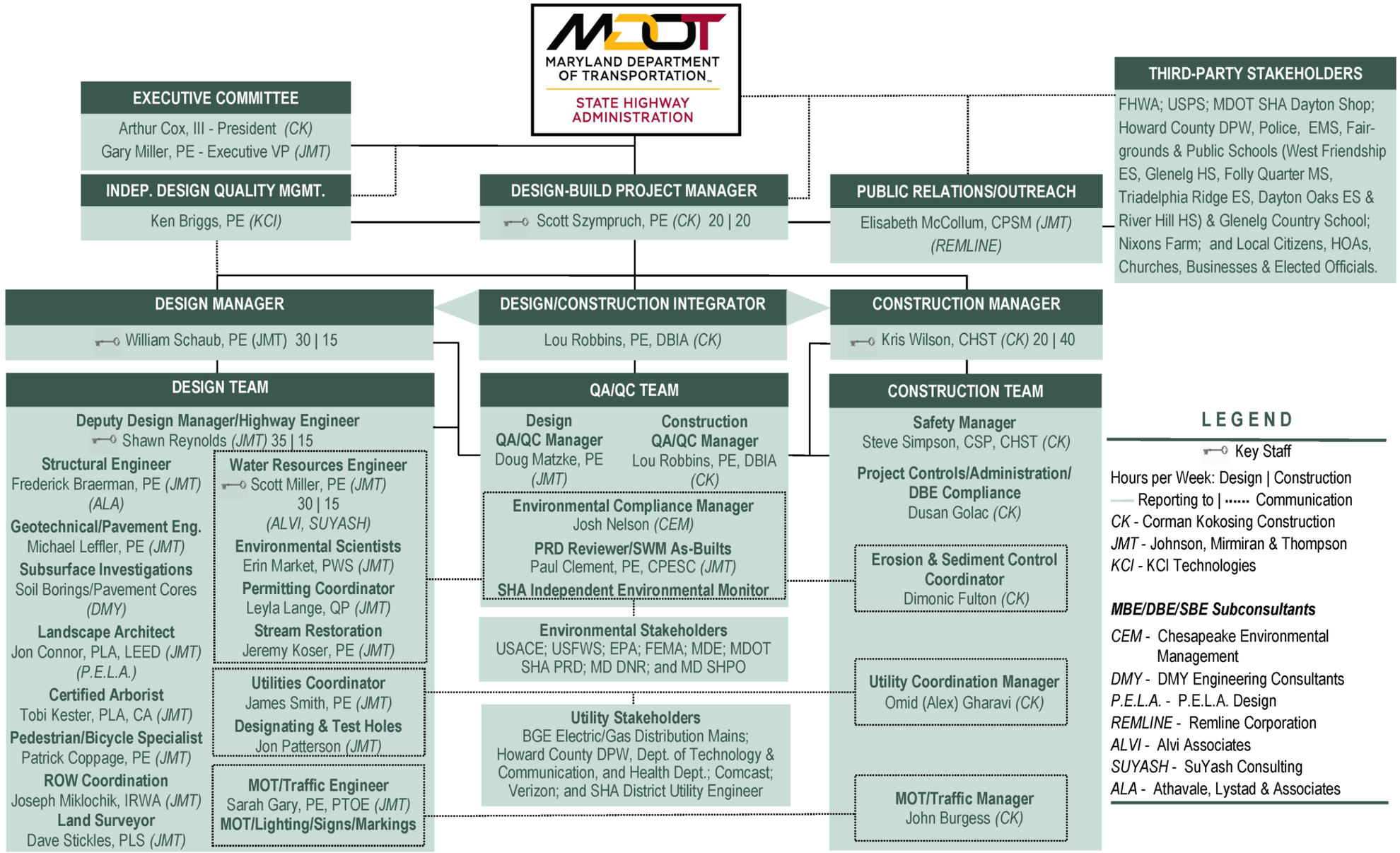
TOYRs were accounted for in both design deliverables and construction sequencing.

JMT adopted an innovative *segmental* approach to design that incorporated MOT plans that provided safe travel during construction resulting in no accidents during MOT and ESC/SWM plans that protected the environment and reduced the number of permitted wetlands anticipated to be impacted.

Project received a monetary incentive for saving 28% of the permitted wetlands; 0.95 acres. These Phase 2B improvements were compatible with the future planned multi-phase improvements in the corridor that supported completion of the entire 38-mile stretch of four-lane divided highway along this major route.

PROPOSED DESIGN-BUILD TEAM MEMBERS ON THIS PROJECT: William Schaub, PE was the Design Quality Manager; James Smith, PE was the Highway Engineer; Frederick Braerman, PE was the Structural Engineer; Paul Clement, PE, CPESC was the Water Resources Engineer, Jon Connor, PLA, LEED AP® was the Landscape Architect and Michael Leffler, PE was the Geotechnical Engineer.

iii ORGANIZATIONAL CHART



B.

Project Understanding and Design-Build Approach

B. PROJECT UNDERSTANDING AND DESIGN-BUILD APPROACH

Corman and JMT have thoroughly evaluated the RFP, conducted site visits, and collaborated to understand/address MDOT SHA's project goals and key issues.

i. OUR UNDERSTANDING OF THE PROJECT GOALS AND SCOPE

MD 32 Phase 2 is a fixed price ($85,250,000) contract where the Corman | JMT DB Team proposes technical solutions that will deliver best value improvements that meet/exceed MDOT SHA project goals/key issues. Scope includes design and construction of two additional lanes along the existing alignment to create a dual divided four-lane highway consisting of 12-ft. lanes, paved 10-ft. outside shoulders, paved 4-ft. inside shoulders and a 34-ft. open section median, including a traffic barrier, acceleration/deceleration lanes at intersections, J-Turns, Maryland T intersection(s), access roads, minimizing direct access and conflict points of MD 32, bridge replacements, small structures (box and pipe culverts) and stream relocation/restoration of the Middle Patuxent River and Terrapin Branch. Project length is approximately 6.6 miles.

BENEFIT: *Our design maximizes the throughput of both left turn lanes and significantly reduces northbound queuing at the I-70 westbound ramp intersection. These improvements will not impact future plans to improve this I-70 interchange and may in fact delay the need for future interchange improvements.*

It is anticipated that Triadelphia Road utility relocations will take place prior to Notice to Proceed (NTP) and utility relocations along the corridor will be concurrent with Corman | JMT DB Team activities. To minimize adverse impacts, we will proactively coordinate our activities with the utility companies' activities.

The Corman | JMT DB Team will partner with MDOT SHA and stakeholders to complete the design and construction expeditiously while conscientiously and continuously being mindful of the following project goals:

GOAL #1 — Provide a project that maximizes the project elements to improve corridor traffic operations and safety while being compatible with the future planned corridor improvements.

MD 32 is a four to six lane-controlled access facility from I-97 to MD 108 with a two-lane uncontrolled section between MD 108 and I-70. Presently, there is a project under construction (MD 32 Phase 1) to dualize a portion of the two-lane section from MD 108 to Linden Church Road. This leaves only this section from Linden Church Road to I-70 to complete MD 32 as a four-lane controlled access facility between I-97 and I-70.

OPERATIONS: Improve Corridor Traffic Operations: The present facility operates over capacity and experiences severe congestion during morning/evening rush hour. Traffic volumes in the AM peak hour southbound and the PM peak hour northbound exceed 1,600 vehicles per hour with significant diversion to local roads, such as Ten Oaks Road which runs parallel to MD 32.

We will ensure MD 32 northbound between MD 144 and I-70 operates smoothly by providing the optimal lane configurations and sufficient capacity. If not configured correctly, we run the risk of long queues from/to the I-70 westbound ramp intersection through the MD 144 intersection and the project goal will not be met. For suitable operations, the high traffic volume travelling from MD 32 northbound to I-70 westbound (nearly 50% of MD 32 northbound traffic in the PM peak hour) requires a double left turn lane onto the I-70 on ramp. We will provide good use of these two-left turn lanes through innovative striping so there is no congestion at the MD 144 intersection by having all the MD 32 through traffic in one lane. Similar to MD 214 westbound at I-95/I-495, the left lane on MD 32 north of MD 144 will be realigned with the leftmost turn lane at I-70 westbound with the rightmost left turn lane developing from the center lane.

SAFETY: Reduce Rear End Collisions at Northern Terminus Just South of I-70: Safety is a major factor along this section of MD 32 due to the high crash severity, including accidents in opposite directions. Over the years, there were short-term improvements to enhance roadway safety, including centerline rumble strips, double-wide centerlines, removing turns, and *Use Headlights at All Times* signs. Dualization will prevent most major types of crashes by adding a center median with barrier and restricting unsignalized left turns from local streets and driveways to MD 32. With a consistent design for the local access points, motorists will know where they can and cannot make a left turn. Protected J-turns will be provided for left and U-turns from MD 32 to the local streets, improving safety through reduced rear end collisions and crossing time for motorists. Currently, MD 32 is designated as a bicycle route from MD 108 northward. When the Phase 1 project is complete, bicycles will be restricted on MD 32 south of Burntwoods Road and be routed along the parallel Ten Oaks Road. From Burntwoods Road to MD 144, shoulders, signing, and pavement markings will be provided to alert motorists of bicyclists.

Our new design will emphasize eliminating the below described two major areas of high rear end collisions in the currently dualized section of MD 32 between MD 144 and I-70:

- Southbound during the AM peak hour, high volume traffic from the I-70 eastbound off ramp is merging just prior to the MD 144 signal. Motorists accelerate from this merge point through the MD 144 signal into the downstream lane drop just beyond the signal. This creates an erratic condition where the lane drop bottleneck queues through a green signal indication, leading to unexpected stopping and rear end collisions.

  DESIGN BENEFIT: The lane drop will be eliminated and the I-70 eastbound off ramp lane extended through the MD 144 signal. This adds capacity through the signal and allows traffic from the I-70 ramp to merge smoothly in a free flow condition.

- Northbound during the PM peak hour, high volumes are destined to I-70 westbound and queue outside the left turn bay. The left lane of MD 32 becomes a de-facto extension of the left turn bay leading to a large speed differential where the rightmost through lane is traveling at a much higher speed. Through motorists become trapped in the left lane and attempt to move right leading to rear end collisions and sideswipes.

  DESIGN BENEFIT: To eliminate this condition, we will provide improved signal throughput and increased left turn capacity and utilization.

By maximizing use of the existing facilities by restriping and single lane widening, we maintain compatibility with the future corridor improvements while minimizing our impact on existing traffic with the smallest possible budget and schedule.

FUTURE COMPATIBILITY: Future large scale planned elements include the Rosemary Lane Interchange and I-70 Interchange improvements and improvements for the SHA Dayton Maintenance shop ingress/egress. Our design will not preclude and will be compatible with these planned improvements. This includes ensuring that future frontage road access (or right-of-way) will be accommodated at the Rosemary Interchange for the interim condition, until the full grade separation is constructed. On the north end of the project, the proposed dualized roadway alignments will align with the future I-70 interchange improvements and grade separation at MD 144. Other considerations would include a thorough understanding and inclusion of any ultimate or SHA desire for a future upgrade to a controlled access freeway.

We propose three main construction phases to dualize MD 32: First is an advance package to make immediate safety and operational improvements at the section between MD 144 and I-70; second is to construct the new southbound lanes; and third is while two way traffic is temporary utilizing the southbound lanes reconstruct the northbound alignment.

Below are examples of how the Corman | JMT DB Team will maximize MD 32 project elements to improve corridor traffic operations and safety while remaining compatible with the future planned corridor improvements.

Maximize Improvements that can be Constructed for the Stipulated Sum to Provide for the Desired LOS in 2040:

For this project, solutions will focus on improvements that enhance the project goals while reducing costs, accelerating the schedule, protecting the environment, and minimizing community impacts. Other solution focused team goals include:

- The initial construction phase, improvements between MD 144 and I-70, will be progressed as a separate early construction design package, bringing early relief to the high accident area..
- Our initial Phasing Plan is similar to what we successfully used on Route 404 on the eastern shore and Route 1 near Ft. Belvoir. The new southbound lanes will be constructed off line with no existing traffic flow impacts with adequate width or pavement strength on the shoulders to maintain one lane in each direction. After rehabilitating the NB road, traffic will then be placed into its ultimate location. Connections and access will be maintained to required adjacent properties, including the Dayton Maintenance Shop and all communities.

BENEFIT: Immediately improves TRAFFIC flow and SAFETY where most needed.

GOAL #2

Provide a project that minimizes inconvenience to the community and traveling public.

The Corman | JMT DB Team knows the importance of minimizing inconvenience to the community/traveling public. To minimize inconvenience and adverse impacts to stakeholders, the Corman | JMT DB Team will maintain a consistent focus on key project elements including stakeholder communication, optimal design/construction packaging, and effective safety and construction operations.

STAKEHOLDER OUTREACH AND COMMUNICATION: Our approach begins through partnering with MDOT SHA, developing and implementing a project-wide Public Outreach Plan to announce planned construction activities to all stakeholders within the community and the traveling public. The Public Outreach Plan will establish specific protocol to maintain consistent lines of communication with all stakeholders throughout the duration of the project.

A ***Stakeholder Outreach Task Force*** will lead regularly scheduled stakeholder informational meetings. Meetings are anticipated before the start of construction and just prior to major project milestones such as major traffic shifts or the opening of bridge structures to traffic. The

informational meetings will include an open stakeholder feedback session to keep the project team informed of ongoing project impacts experienced by stakeholders within the surrounding community. The project team will provide responses to stakeholder feedback and consider project modifications to lessen impacts from construction.

Examples of our proposed focused meetings include:

- → Coordination Meeting with Representatives of Howard County Public Schools (Triadelphia Road Construction).
- → Coordination Meeting with Representatives of MDOT SHA's Dayton Shop.
- → Coordination Meeting with Representatives of Howard County Highway Maintenance.
- → Coordination Meetings with Emergency Personnel and First Responders.

In addition to direct coordination with stakeholders who provide feedback and coordination meetings, the Corman | JMT DB Team will collaborate with MDOT SHA and Howard County to communicate important notifications to the traveling public. We will continually monitor the Outreach Plan's success and implement any changes throughout the project. With the Corman | JMT DB Team working directly with the project team, effective implementation of the Public Outreach Plan will serve to minimize impacts to stakeholders and the surrounding community.

EFFICIENT DESIGN PACKAGING AND CONSTRUCTION PHASING: The Corman | JMT DB Team truly believes that achieving an expedited design and construction schedule is a highly effective method of minimizing traveling public and adjacent community impacts. All stakeholders benefit from a fast paced, well-planned project schedule.

Efficient Design Packaging. A project's critical path does not begin after ground breaking. We understands that efficient design packaging and front-end design scheduling gives construction teams a rolling start. The Corman | JMT DB Team will first coordinate with MDOT SHA's Plan Review Division (PRD) to determine allowable grading units for construction. The design team will breakout and expedite selected design packages to prioritize commencement of construction activities. Early design packages including clearing & grubbing, roadway alignment & profile, and advanced grading will be a key component in maintaining an aggressive project construction schedule.

An additional, separate advanced package will be developed for the I-70 on-ramps, MD 32 & MD 144 intersection improvements, and MD 32 in the general vicinity of MD 144 and I-70. The improvements at the MD 144 intersection and additional turn lanes constructed at I-70 will greatly improve safety and operations at this critical section of the project. The Corman | JMT DB Team is committed to implementing these safety and operational improvements as soon as they can be delivered to the traveling public. Once open to traffic, they will greatly minimize traveling public inconvenience.

Construction Phasing. Developing the advanced design packages allows the Corman | JMT DB Team to perform clearing & grubbing and advanced grading throughout the project corridor. Corman will maintain constant awareness of the PRD-mandated grading unit requirements for all individual grading packages.

The corridor's northern section from MD 144 to I-70 will be advanced as Phase 1 to provide an early operational benefit to the traveling public. The project will then be broken into two additional main construction phases. Phase 2 entails construction of southbound MD 32 travel lanes nearly in their entirety. Phase 3 includes widening and completing the northbound MD 32 travel lanes, which will be completed after traffic has shifted to southbound MD 32. Critical sub-phases will be utilized to complete proposed bridges/culverts and stream relocations/mitigations.

As an early action, the Corman | JMT DB Team will determine the temporary minimum typical section required for MD 32. The project team will then decide how to build key elements such as culverts, pipe crossings, stream crossing structures, and the Triadelphia Road overpass. During Phase 2 construction, multiple traffic shifts will be required on northbound MD 32 to maintain existing stream locations while building portions of the future northbound MD 32 structures. Crossovers will be utilized during sub-phases to install certain roadway features. Temporary and/or permanent widening above and beyond RFP requirements will also be taken into consideration. As an example, on Corman's recently-completed Design-Build Route 1 Dualization project new southbound lanes were built two feet wider than required for final design within Phase 1 to accommodate two-way traffic, while the existing northbound lanes were closed for reconstruction.

By using efficient design packaging and construction phasing, the Corman | JMT DB Team will reduce the overall project schedule, which will inherently mitigate and minimize inconveniences to the community and traveling public.

EFFECTIVE SAFETY PRACTICES, CONSTRUCTION OPERATIONS, AND ENVIRONMENTAL PRACTICES: The project team will plan for, create, and maintain a safe, clean, well-operated, compliant work zone. We will be a proactive steward of the community and environment and is committed to implementing effective/efficient safety, construction and environmental practices.

Effective Safety Practices: The Corman | JMT DB Team will:

- → Hold scheduled safety briefing meetings and safety-related training sessions.
- → Maintain a safe, drug-free and alcohol-free work zone.
- → Require project specific safety & environmental training for all workers on the project.
- → Coordinate directly with Emergency Personnel to confirm operational needs are met during construction phasing.
- → Maintain existing shoulder to the extent possible throughout construction
- → Provide an onsite tow truck during rush hour with local wreckers on call at other times.
- → Install/maintain the RFP-required emergency turnaround locations as early in the construction schedule as is feasible.
- → Consider strategically maintaining uncontrolled access points along MD 32 for emergency personnel
- → Utilize Automated Speed Enforcement, to be installed as part of the Maryland SafeZones program. ASE systems enforcement will be used to modify driver behavior and increase driver awareness within work zones.

Effective Construction Operations: The Corman | JMT DB Team will:

- → Use Information Technology Services to issue advance notification of major traffic pattern or alignment changes
- → Utilize CHART existing and future system-wide VMS signage.
- → Develop an Advanced Congestion Warning System informing drivers of real-time traffic conditions to allow corridor users to modify routes and lessen overall delay impacts.
- → Deliver construction materials and equipment on defined routes at off peak hours to avoid rush hour impacts.
- → Provide full-time onsite Traffic Manager with the resources to address any traffic issues immediately.
- → Avoid traffic impacts by avoiding equipment and/or hauling vehicle crossings and provide design packages with temporary bump outs or designed slip ramps between operating roadways and work zones
- → Implement traffic control per our Transportation Management Plan (TMP) which will be prepared per MSHA Guidelines to include Traffic Control Plans (TCP), Transportation Operations (TO), and Public Information and Outreach (PI&O) & evaluate mobility thresholds per MDOT SHA's Work Zone Lane Closure Analysis Guidelines.
- → Perform traffic analysis for temporary traffic control to identify delays/queues.

The Corman | JMT DB Team's commitment to stakeholder outreach and coordination, efficient design, efficient construction phasing, safety, well-planned operations, and environmental stewardship will be the key to minimizing inconvenience to the community and the traveling public throughout the duration of the project.

GOAL #3

Provide a project that minimizes overall impacts (utilities, environmental resources, etc.) and provides proactive coordination.

The MD 32 project extends through sensitive areas, including private/public utilities, environmental features, and residential/commercial/institutional properties that abut or are near the roadway corridor. We will therefore employ practical design principles and environmental stewardship measures to minimize the project footprint and any impacts on sensitive resources throughout the MD 32 corridor.

MINIMIZING UTILITY IMPACTS: Existing utilities traverse the project between Linden Church Road and I-70. Companies that own and maintain utilities include BGE (electric & gas), Columbia Gas, Verizon, Comcast, and Howard County fiber-optic network. It is anticipated that the proposed dualization of MD 32 will result in many impacts to buried and aerial utility lines. Relocating utilities within the Triadelphia Road overpass are planned to be relocated prior to NTP.

The Corman | JMT DB Team will establish a *Utility Task Force* and partner with MDOT SHA and involved utility companies regarding anticipated utilities impacted and relocations needed. This task force will be led by an onsite utility coordination manager who will coordinate regular utility meetings to review schedules and critical-path utility items.

Existing overhead utilities impacts will result from physical roadway dualization and grading footprint; underground utility impacts are anticipated to occur from roadway box, drainage structures, SWM facilities, and grading tie-in areas. All project design elements will be developed and reviewed carefully to minimize utility facility impacts throughout the MD 32 corridor. Our design team will consider design refinements where feasible to avoid specific utility relocations. We will be proactive in identifying potential impacts early on which will provide more opportunity to alter design elements to avoid relocations. To minimize utility impacts and expedite scheduling, the Corman | JMT DB Team will employ the following:

- → Establish initial construction phasing to accommodate any necessary relocations.
- → Review utility relocation drawings to identify potential conflicts with design or construction phasing and look for opportunities to reduce cost and/or minimize the project schedule. Confirm no conflicts with proposed design.
- → Perform advance utility activities, i.e., stake out, clearing, grubbing & grading to accommodate relocation schedules.
- → Perform actual critical path work for utility companies, such as trenching and duct bank installations.

- → Include utility impacts in our permit applications if outside the footprint of roadway construction.
- → Avoid possible impacts to shallow-depth underground utilities that may not otherwise require relocation.
- → Where applicable, recommend placing split sleeves as casings around existing utilities under the new roadway in lieu of expensive full utility relocations. To expedite, we will self-perform this work as allowed by the utilities.

Our design will account for any utility system relocation already planned during the Phase 1 project that extend into the current Phase 2 project. This ensures that unanticipated utility impacts due to Phase 2 design components do not occur.

MINIMIZING ENVIRONMENTAL RESOURCES IMPACTS: This section of MD 32 extends through sensitive environmental areas including Middle Patuxent River, Terrapin Branch, Clydes Branch and tributary crossings. Per MDE, waterways within the project limits are designated Class IV-P for *Recreational Trout Water & Public Water Supply.* Wetlands and open drainage conveyance tributaries also run parallel and near the road in some sections of the project. As noted on the concept plans, environmental feature impacts from the proposed dualization are anticipated to be significant. To minimize impacts, we will establish an *Environmental Task Force* represented by involved agencies in environmental permitting, including MDOT SHA-EPD and LAD, MDE, USACE, US EPA, USFWS and MD DNR. Our designated Environmental Compliance Manager (ECM) will lead the coordination, identify preliminary impacts, and obtain feedback early on. Ensuring design refinements and modifications can be investigated and employed prior to detailed designs. Building a collaborative partnership with the environmental permitting agencies early will aid in understanding regulatory conditions/controls and maximizes our ability to minimize impacts.In addition our design engineers will employ practical design principles and stewardship measures to minimize environmental resource impacts, including:

- → Minimizing length/width of outside auxiliary lanes at roadside access points and median turn-around areas.
- → Minimizing limits of full-depth and new pavement areas, thereby minimizing required footprint of BMP facilities.
- → Adding/extending w-beam to shift grading hinge point in toward roadway.
- → Incorporating embankment/cut slopes of greater than 2:1 using reinforced earth slopes or structured retaining walls.
- → Re-shaping SWM ponds in critical areas.
- → Minimizing lengths of new and/or existing culvert extensions & increase headwall heights at culvert outfalls.
- → Incorporating bottomless/depressed culverts and/or small bridges in lieu of box culverts at waterway crossings.
- → Establish strict maintenance of stream flow plans & details to limit the footprint and duration of in-stream work.

The Corman | JMT DB Team will also monitor environmental compliance during construction to minimize impacts. Construction access and materials storage areas will be established to avoid direct impacts to environmental features. In-stream time-of-year working restrictions will be adhered to based on stream classification. Class IV-P waterway designation dictates that no in-stream construction activities occur between March 1 and May 3. Installation, inspection, and maintenance of erosion & sediment control measures will be done by MDE and MDOT SHA trained and certified staff. The construction process will utilize Best Management Practice guidelines to minimize construction impacts.

Effective Environmental Practices: We will:

- → Address/rectify any dust control issues.
- → Address/rectify any construction noise control issues.
- → Address/rectify any lighting trespass control issues.
- → Limit work around streams until necessary and have resources onsite to perform work quickly within defined TOYRs.
- → Have onsite emergency spill and containment equipment.
- → Install sediment ponds/traps prior to grading.
- → Open up areas for grading only when necessary and utilize temporary stabilization methods to minimize exposed areas.
- → Install/maintain E&S controls throughout the project.
- → Provide environmental training for all workers onsite.

MINIMIZING PROPERTY IMPACTS: Based on the concept plans, many property impacts are anticipated to occur throughout the project corridor. Although right-of-way was previously acquired / established in anticipation of the full dualization of MD 32, some additional properties will be directly impacted by the proposed improvements. Preliminary information provided indicates that 24 new parcels will be impacted, with a total of 40 acres of acquisition and at least one total property take. Some properties will be impacted only by grading/slope easements with no fee simple acquisition. Most anticipated property impacts are to residential properties immediately adjacent to the roadway corridor.

COMMUNITY	Right-of-Way Impact		Access Impact	
	Fee Simple	Easement	Temporary	Permanent
Gaithers Chance	✓			
Rutherford	✓			
Fox Valley Estates	✓			✓
Kings Grant	✓	✓		✓
Twin Pines		✓		✓
Fox Chase Estates	✓	✓	✓	✓
Friendship Manor	✓			

The Corman | JMT DB Team will partner with MDOT SHA and affected communities/properties at the project's onset. Anticipated impacts from design elements will be communicated early in the design. Communication protocols will be

structured which establishes the type/frequency with impacted property owners/communities. Interaction includes general community/HOA meetings, one-one-one property owner meetings, and site/field meetings. An experienced team member will be the primary liaison for community/property communication and interfacing with MDOT SHA.

As discussed above, potential design refinements will be explored and considered to minimize property impacts, especially in areas of property takings. Based on preliminary information, there are a fair number of private well / septic systems along the project corridor. The Corman | JMT DB Team will ensure that the exact locations / limits of these facilities are known in the field to avoid adverse impacts from the design.

Significant changes are proposed to access provisions in some areas along the MD 32 Phase 2 corridor including eliminating single-point driveways, community road direct access restrictions, and rerouting community access points via new frontage/access drives. We will work to minimize any negative impacts during design and construction Confirmation of previously-identified access alterations and/or possible new alterations will be communicated to the affected property owners/communities throughout the design process.

No impacts are anticipated to historic properties within the project limits based on the current conceptual design. We will continuously monitor design activities and if proposed impacts become necessary on final design progression, we will notify MDOT SHA immediately and initiate design avoidance investigations.

ii. OUR UNDERSTANDING OF THE MOST RELEVANT AND CRITICAL RISKS FACING THE SELECTED PROPOSER AND MDOT SHA IN ACHIEVING THE PROJECT GOALS.

We will employ the Construction Management Association of America (CMAA) endorsed approach to risk management through a *Risk Register,* which includes a list of identified risks, potential impacts, and mitigation for each. A robust risk management process considers risks throughout the project's life and delivery processes. Our Team's risk management process has already sprang into action and will evolve throughout design/construction, positioning us to respond quickly as issues unfold. The Corman | JMT DB Team will employ a five-step risk management approach including the following stages:

1. **Identify** – name risks facing the project, determine cause/effect, and categorize risks.
2. **Assess** – assign probability of occurrence, severity of impact, and determine response.
3. **Analyze** – quantify risk severity, determine risk exposure, establish risk tolerance level, and determine risk contingency (applicable during preliminary design and pricing).
4. **Manage** – define response plans and actions, establish ownership of risk, and manage response (after NTP).
5. **Monitor / Review** – monitor/review/update risks, monitor response plans, update risk exposure, analyze trends, and produce reports (after NTP, during design, during construction).

To focus and track the following risks and any others that may be identified during design/construction, the Design-Build Project Manager will take personal responsibility to identify and track the risks. Initial major risks include:

RISK #1 POOR MAINTENANCE OF TRAFFIC

Why Critical: An improperly executed Maintenance of Traffic Plan can lead to driver frustration, gridlock, car crashes, and eroding public confidence in MDOT SHA.

Impact to Achieving Project Goals:

- → Add additional political or media scrutiny.
- → Necessitate costly or time-consuming changes to proposed construction phasing.
- → Result in additional delays to roadway corridor users.
- → Result in longer impacts to adjacent properties/communities.
- → Result in additional safety issues during construction.

Mitigation Strategies:

- → Deliver materials/equipment off-peak hours to avoid rush hour impacts; keep construction traffic on defined routes.
- → Avoid traffic impacts by not having construction equipment and/or hauling vehicles cross the road.
- → Provide temporary bumpouts/emergency pull over areas & maintain shoulders to the extent possible.
- → Provide an onsite tow truck during rush hour with local wreckers on call at other times.
- → Use Information Technology Services, such as travel times on PVMS & Advanced Congestion Warning Systems.
- → Provide full-time onsite Traffic Manager with the resources to address traffic issues immediately.

MDOT SHA or Others Role in Addressing Risk: Minimal – Review/comment on proposed TMP/MOT designs and lead

or participate in community/media dialogues.

RISK #2 UTILITY IMPACT ON SCHEDULE

Why Critical: Public/private utility facilities exist within the project corridor. While none individually pose a significant risk, the number of relocations and utility owners involved, location of existing facilities with regard to preferred MOT phasing, and the time, sequencing, and right-of-way necessary as a whole cause a major risk to the project's schedule and budget.

Impact to Achieving Project Goals:

- → Necessitate changes to proposed construction phasing.
- → Cause delays to construction or would require redesign or out of sequence work to maintain schedule.
- → Result in additional delays to roadway corridor users.
- → Result in longer duration impacts to adjacent properties/communities.

Mitigation Strategies:

- → Implement a *Utility Task Force* to include MDOT SHA, Corman | JMT DB Team, and utilities.
- → Perform advance activities, such as clearing & grubbing and rough grading.
- → Perform some critical path utility items in areas where work overlaps.
- → Include utility impact areas in our permitting package.
- → Incorporate special protection measures to avoid additional utility impacts.
- → Perform select utility installations (trenching, sleeves, duct banks or conduit).

MDOT SHA or Others Role in Addressing Risk: Lead the utility relocation process pre-bid and be an active member of the *Utility Task Force* once the project is awarded.

RISK #3 NEGATIVE STAKEHOLDER PERCEPTION

Why Critical: While the project currently has solid public/elected official support, it can quickly turn negative if outreach is not handled proactively.

Impact to Achieving Project Goals: MDOT SHA's public reputation is the key stakeholder outreach risk. With traffic a perennial issue to local and regional stakeholders, communicating how the project may affect traffic and steps we are taking to mitigate them is essential. Additionally, constituencies directly affected by construction need to be involved and constantly informed. If outreach is not managed right, the following can tarnish MDOT SHA's reputation:

- → Excessive traffic congestion.
- → Negative publicity.
- → Increased complaints to MDOT SHA and Howard County.
- → Tainted working relationship with local transportation staff.
- → Potential legal challenge.

Mitigation Strategies: Establish a *Stakeholder Outreach Task Force* that meets often, holds regular informational meetings with key milestone informational meetings prior to starting work and just before major milestones, such as traffic pattern changes.

MDOT SHA or Others Role in Addressing Risk: Participate in the Stakeholder Outreach Task Force, review/comment on proposed TMP/MOT designs, and lead or participate in community or media dialogues.

RISK #4 DELAYS IN OBTAINING PERMITS OR CHANGES AFTER ISSUANCE

Why Critical: Delays in obtaining permits/changes to permits after issuance (either due to changing regulatory requirements or changes in design/actual field conditions) will wreak havoc on the schedule, budget and conceivably:

Impact to Achieving Project Goals:

- → Causes major delays and rework which increase traveling public impacts as we performs rework (design or construction) and shifts phasing and sequencing to catch up and complete the project on time.
- → Impacts MDOT SHA's or Corman | JMT DB Team's reputation causing more scrutiny and delay on applications.

Mitigation Strategies:

- → Establish an *Environmental Task Force* represented by involved agencies in environmental permitting, including MDOT SHA-EPD and LAD, MDE, USACE, US EPA, USFWS and MD DNR. Our ECM will lead the coordination, identify preliminary impacts, and obtain feedback early on.. Building a collaborative partnership with the environmental permitting agencies at the project's onset will help us understand regulatory conditions/controls and maximize our ability to minimize impacts.
- → Review concept level design and determine anticipated design changes and their permitting ramifications immediately

after award to allow enough time to obtain permit modifications.

→ Assume at least one permit modification for each major permit will be needed and build it into the project schedule to

MDOT SHA or Others Role in Addressing Risk: Monitor changes to environmental requirements and team with the Corman | JMT DB Team to minimize any changes.

RISK #5 POOR ENVIRONMENTAL COMPLIANCE/STEWARDSHIP DURING CONSTRUCTION

Why Critical: Can cause:

→ Delays during construction due to rework or re-sequencing.

→ Shutdowns by regulatory agencies.

→ Impacts MDOT SHA's or Corman | JMT DB Team's reputation causing more scrutiny and delay on applications.

Impact to Achieving Project Goals: Shutdowns or redesign will increase project schedule, impact the community, and tarnish MDOT SHA and Corman | JMT DB Team's reputation.

Mitigation Strategies:

→ Have our Environmental Compliance Manager regularly visit and evaluate compliance.

→ Have a full-time E&SC crew monitor/address any issues. Review before/after storms for compliance or damage.

→ Educate employees on environmental regulations/permits, and MDOT SHA's protocol for requesting approval for changes that may result in permit modifications.

→ Promptly address any deficiencies identified by us or pointed out by MDOT SHA Quality Assurance Team.

→ Maintain on site emergency spill and containment equipment.

MDOT SHA or Others Role in Addressing Risk: Minimal – Review/comment on proposed environmental designs and participate in regular site inspections with our Environmental Compliance Manager**.**

RISK #6 ROW CLEARANCE DELAYS

Why Critical: If a ROW certification showing property rights needed for the project have been acquired is not issued by MDOT SHA, construction cannot begin on time. Delays in obtaining the ROW will have schedule and cost impacts.

Impact to Achieving Project Goals: If ROW is not cleared on time, it can impact the construction schedule and delay project completion. Delays in receiving ROW clearances may affect the corridor's traffic operations during construction, cause inconveniences to the community and traveling public and affect minimizing the project's overall impacts.

Mitigation Strategies: There are several that may be employed so ROW clearance does not impact the schedule:

→ Having appraisers complete before values prior to issuance of ROW Plats, and then complete the appraisals with after values and the amount due to the property owners once ROW plats are completed.

→ Analyze the schedule to see if construction sequences can be reorganized to accommodate ROW clearance slippage without affecting traffic operations or construction duration and costs.

The Corman | JMT DB Team has experience acquiring ROW on MDOT SHA projects and includes on our team former members of ORE, Former Director, Joe Miklochik, IRWA and Manager of the Property Review Division, Lisa Sigwart who oversaw QC for ORE. They, as well as other JMT Real Estate Group members, can be mobilized to assist, including performing the actual acquisition work and/or providing QA/QC as needed to aid in clearing the needed ROW.

MDOT SHA or Others Role in Addressing Risk: Monitor ROW acquisitions and have clearance of all ROW as anticipated in the RFP. If a slippage is unavoidable, participate with the Corman | JMT DB Team to prioritize acquisitions and implement measures to minimize the impacts.

RISK #7 GEOTECHNICAL ISSUES

Why Critical: Not having a thorough understanding of the geotechnical issues along the corridor can have a significant impact on the design and schedule, which can have project cost/schedule implications. Soils along the corridor should consist of piedmont residual soils resulting from weathering of the underlying schist bedrock. The soils at bridge and culvert crossing can consist of soft compressible recent alluvium. Also, in areas where the residual soils are severely weathered, the soils can be soft and compressible. Risks associated with these residual soils are (1) potentially low pavement support values (CBR), (2) difficulty in obtaining required compaction due to mica content and high liquid limits, (3) poor infiltration properties for SWM and (4) variability of depth to competent decomposed rock/bedrock. In areas, such as stream crossings and wetlands and severely-weathered residual soils, soft soil conditions can be present, and the risks can consist of stability and settlement of culverts, embankments, and bridge approaches.

Impact to Achieving Project Goals: If not recognized early, these geotechnical issues can have cost or schedule implications that can delay the project and cause additional inconvenience to the community/traveling public.

Mitigation Strategies: Since it is important to understand and evaluate the risks in order to design and implement engineering solutions to mitigate/manage the risks for successful design, construction, and long-term performance of the project, we propose the following:

- → Review the existing geologic, geotechnical and roadway design and construction documents, as well as the roadway maintenance history. The area engineer and MDOT SHA OMT engineers developing the conceptual plans will be interviewed to determine their knowledge of problems they have seen with performance of the existing roadway and structures, groundwater conditions and past lessons learned from construction projects along the corridor.
- → Based on this review, develop and perform a comprehensive subsurface investigation program to augment the existing subsurface data which focuses on soil and groundwater conditions within cut slopes, embankment foundations and roadway subgrades. This program will include strategically-located SPT test borings and an appropriate level of soils laboratory tests to determine settlement and strength characteristics recent alluvium and of the piedmont residual soils. It will also include foundation and roadway and SWM test borings for evaluation of roadway subgrades, suitability of soils for use as embankment fill and support of approach embankments.
- → Assign senior geological and geotechnical engineering staff with experience in performing analyses and the development of design recommendations as well as construction inspection in the expected geotechnical conditions. This will allow for the incorporation of recommendations into the design documents and highlight conditions that should be expected during construction that could affect the quality of the project. Provide for regular on-site visits to identify unforeseen soil and groundwater conditions make any appropriate and timely design modifications.

MDOT SHA or Others Role in Addressing Risk: Timely review of the geotechnical planning report submitted to MDOT SHA OMT's Engineering Geology division for review/comment.

iii. APPROACH TO DESIGN-BUILD FROM DESIGN INITIATION THROUGH CONSTRUCTION COMPLETION, INCLUDING DESIGN AND CONSTRUCTION DEVELOPMENT, COORDINATION AND DECISION MAKING, DESIGN QUALITY MANAGEMENT, AND CHANGE MANAGEMENT.

OUR APPROACH: With a track record of successfully delivering over $2 billion in design-build roadway and bridge projects, Corman comes to MDOT SHA with the hands-on experience and top-notch personnel needed to execute the design and construction, as well as manage the risks of the MD 32 Phase 2 dualization Design-Build Project. During our 15-year design-build history, Corman has exceeded owners' expectations in the on-time, on-budget delivery of high-quality projects, while meeting some of the most strenuous maintenance of traffic and environmental commitments. These projects include some of MDOT SHA's signature design-build roadway improvements with extensive environmental sensitivity, including Intercounty Connector Contracts A and B, and the MD 30 Hampstead Bypass which was the first Maryland project to include the design builder performing structural design. We are currently close to completing MDOT SHA's design-build project that is rehabilitating 11 bridges on Route 13/US 50 in Salisbury where traffic control and seasonal traffic restrictions were critical to keep the beach traffic moving.

Through the years, Corman has built a solid reputation of strategically aligning with the design-build partners most suited to meet the needs and requirements of the project at hand. For this project, we selected JMT as our lead design firm with the added depth of MDOT MBE/DBE sub-consultants:

- → **P.E.L.A. Design, Inc.** is a planning, environmental design and landscape architecture firm who will assist with landscape architecture design services.
- → **DMY Engineering Consultants, LLC** specializes in geotechnical site investigations, geotechnical drilling and instrumentation, laboratory testing, construction materials testing/inspection, and design and analysis of geotechnical features. They will provide geotechnical drilling, engineering and laboratory testing.
- → **Remline Corporation** is a marketing services and communications firm in public outreach, education, and promotional marketing. Remline will assist with public relations and outreach.
- → **Alvi Associates, Inc.** is a civil/structural engineering firm who will provide BMP As-Builts, roadway and utility designs.
- → **SUYASH Consulting, LLC** is a civil engineering firm who will provide hydrology/hydraulics and BMP As-Builts.
- → **Athavale, Lystad & Associates, Inc.** is a civil and engineering consulting firm who will provide structural design for culverts and retaining walls.

Together, these firms make up the Corman | JMT DB Team. We will deliver success with seasoned professionals and resources, providing the highest level of quality to complete the project within our promised budget and schedule.

The Corman | JMT DB Team has a history of providing Design-Build services in Maryland since 1998, including:

- → District 5 TMDL Stormwater Facility Enhancements
- → Bel Air Streetscape - MD 924 (Main Street) from MD 22 to Maulsby Avenue

→ MD 7D Elkton - Utilities and Streetscape

Corman also collaborated with JMT on Maryland's first CMAR project: MD 24 – Sections A & G.

DESIGN AND CONSTRUCTION DEVELOPMENT: The Corman | JMT DB Team knows that the critical path on design-build projects does not begin after groundbreaking but starts before NTP with the preparatory work necessary to begin the project at NTP. The critical path then flows through early project administration requirements, such as Scope Validation, Design QC Plan approval, Independent Design QA Plan approval, Project CPM Schedule approval and other efforts (meetings, surveys etc.). It then proceeds through geotechnical and utility activities, identification of long-lead items, design submittal packages, permits, procurement, construction, substantial completion to final completion.

Certain elements will be advanced in various design packages. These early design packages will focus on those required to address scope validation, identify scope issues and to obtain early/advance construction approval. Our early work will verify design information critical to project success including supplemental field surveys, utility test pits, geotechnical investigations, and other pertinent design information. The data will be used to complete final design of the Project and to integrate such design components into its construction means and methods. These early investigation packages include geotechnical planning report/investigations, supplemental field surveys, utility designations/test hole plan/coordination with utility companies. Early design packages will be proposed for ESC/clearing and grubbing/grading. Concurrently our team will focus design on areas of the project that will advance safety and improve operations while working with the MDOT SHA, PRD and IDQM to expedite approvals so construction can begin as soon as possible. Below is a table of general design/construction packages that will be developed to productively advance the project activities.

DESIGN PACKAGES	DESCRIPTIONS
Roadway Alignment/Profile	Establish Line, Grade and Limits of Disturbance
Early/Advanced Safety & Operational Improvements	MD 32 between MD 144 & I-70 on Ramps, and MD 32/144 Intersection Improvements
Early MOT/TMP	Segmented MOT Plans and TMP
Clearing & Grubbing	For Utility Relocations and Grading Unit Packages
Advanced Grading	Rough Grading Packages per COMAR 26.17.01.11
Structures	Foundation & Substructure, Superstructure Submittals
Final Grading/Road Segments	Fine Grading, Paving, Drainage, SWM, ESC, MOT
Stream Relocations	Alignment Profile Details, Report, ESC, and MOSF
Finish Packages	Traffic Engineering Plans for Markings, Signing, Guardrail, Landscaping, Signing, etc.

To provide the greatest schedule flexibility and efficiency for design and construction, grading packages will be developed by geographical segments. The work within each package will be further divided into grading units that comply with the maximum disturbed acreage per unit and the overall allowable cumulative earth disturbance size requirements as established by the approval authority (MDOT SHA Plan Review Division) per COMAR 26.17.01.11. Within each Segment, the activities will be broken down into 5 major categories as follows:

- → Traffic Control and TMP.
- → Erosion Control.
- → Roadway.
- → Structures.
- → SWM Facilities.

Design packages will take into account E&S and proper access and MOT to/from the field office, laydown areas, material delivery, equipment and worker access points. Will design access points with adequate sight distances, equipment and truck acceleration/deceleration shoulders. Flagmen, signing and other safety precautions will be provided as necessary.

COORDINATION AND DECISION MAKING: Design-Build unites the contractor and designer more than just contractually. It integrates innovative design and construction techniques that benefit schedule and cost, which leads to client satisfaction. Design/Construction Integrator (D/CI) Lou Robbins, PE, DBIA, will ensure that interface between Corman's management/field crews and the designers occurs timely with the concerns of each openly discussed. Having a dedicated D/CI work on the project during the early design stages eliminates subsequent delays or rework, streamlines reviews, and eliminates potential construction field issues, thereby guaranteeing a superior project on time and on budget. Through our DBPM, D/CI, CM and DM, we will create a firm relationship that sets the foundation to interact and partner with MDOT SHA and third-party stakeholders. Additional ways in which our team will be fully integrated include:

- → Inter-disciplinary design reviews prior to milestones to ensure design disciplines are coordinated.
- → Our constructability reviews of design, especially for MOT, utilities, drainage, ROW and bridge foundation plans.
- → Avoiding Environmental Resources take precedence to ensure limited to no subsequent schedule delays or surprises.

- Weekly Design Review meetings in JMT's office chaired by the D/CI and attended by DBPM, CM, DM, design discipline leads, Environmental/Permit lead, Utility Coordinator, MOT Manager, IDQM, etc. Tracking forms will be maintained to track issue resolution and measure progress on:
  - Survey, geotechnical investigations, or other data collection activities
  - Design packages
  - Development of value engineering or other innovative solutions
  - Incorporation of comments from MDOT SHA, IDQM, Corman JMT or other stakeholders
  - ROW acquisition progress
  - Utility relocation progress
  - Permits-schedule and compliance with required commitments
  - Third-party reviews and other issues

Below are column headers used on our MDOT SHA Salisbury Bridge Rehabilitation project. Lou and the design team maintained the tracking list and regularly (weekly) reviewed it internally and with MDOT SHA's project manager. Items were color coded to identify those that were on schedule or orange or red for those that were running behind.

US 13 Salisbury Bypass Bridges - Design Build
WI2145180
Design Submission Tracking
Update: 10/4/2016

	1st Submission				2nd Submission				3rd Submission				Release for Construction	
	Planned Submission	Actual Submission	Comments Due	Comments Actual	Planned Submission	Actual Submission	Comments Due	Comments Actual	Planned Submission	Actual Submission	Comments Due	Comments Actual	Planned	Actual
Design Quality Control Plan	5/4/2016 D002	2-May	23-May	18-May									30-May	18-May
Roadway A (includes Redline No. 2 - field mod. For temporary barrier) Crossovers, Crossover Drainage MOT for Crossover Construction MOT for Bridge Construction, all Phases Temporary Signing & Lighting, all Phases	5/23/2016 D008	23-May	13-Jun	Draft - 13 Jun Final - 14 Jun	6/28/2016 D020	29-Jun	20-Jul	7-Jul [OOTS] 18-Jul (WVA) 22-Jul	7/27/2016 D027	27-Jul	10-Aug	COTS/SHA - 3 Aug	8/10/2016 D031	10-Aug

- Weekly schedule meetings to review the previous week's work (design and construction) and develop the three-week look ahead, and monthly scheduling meetings to review CPM progress during design and construction – Here specific areas of the design may be accelerated as advance work packages to speed up construction – Examples may be a safety and operation improvements, bridge foundation package or development of a separate clearing / grubbing / rough grading package where ROW, utilities or permits are not critical issues.
- Bi-weekly or monthly design progress meetings with MDOT SHA's project manager – This quick status meeting in MDOT SHA's office was extremely valuable and provided a proactive approach on our current Rt. 13/US 50 Bridge Rehabilitation project in Salisbury that allowed Corman to understand MDOT SHA's needs, wants and desires and stay on track. Meeting minutes list action items and a *Ball in Court* listing of who's responsible to get back to the team information, direction, and/or resolution of third-party issues.
- Monthly partnering meetings during design and construction with stakeholders to identify and resolve issue. Agenda items include:
  - Old and New Business.
  - Safety.
  - Design and Construction Progress Reporting.
  - Schedule Update.
  - Community Outreach.
  - Status of Utility and ROW Activities.
  - Environmental Compliance and Permitting Discussion.
  - Review and Update of Action Items.

Since Corman has a solid partnering history with JMT, we already know each other's strengths and abilities and will tap into our seasoned professionals/resources to successfully deliver this project. The Corman | JMT DB Team is led by ***Design-Build Project Manager (DBPM), Scott Szympruch, PE*** functioning as ***an integrated entity that fosters innovative design and construction techniques*** that reduce schedule and cost. Scott 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, Scott's daily involvement ensures interaction between design and construction staff.

The Corman | JMT DB Team will establish Task Force Groups to create a comprehensive communication and coordination structure to ensure that all project Stakeholders are actively involved throughout the design development and construction process. Task force groups will include:

- ***Stakeholder Outreach Task Force*****:** Regularly scheduled informational meetings with key milestone informational meetings before starting work and just prior to major milestones, such as traffic pattern changes, including closing the eastbound lane on Triadelphia Road Overpass, MD 32 traffic shifts for stream crossing phasing, and opening southbound MD 32. Task force meetings will involve an open stakeholder feedback session to keep the project team

informed of ongoing impacts felt by individuals or community stakeholders.

- → ***Utility Task Force*:** We will partner with MDOT SHA and involved utility companies regarding anticipated utilities impacted and relocations needed and completed. This task force will be led by an onsite utility coordination manager who will coordinate regular meetings to review schedules and critical path utility items. Impacts to overhead utilities will result from physical roadway dualization and grading footprint.
- → ***Environmental Task Force*:** Represented by agencies involved in environmental permitting, including MDOT SHA-EPD and LAD, MDE, USACE, US EPA, USFWS and MD DNR. Our Environmental Compliance Manager will lead coordination, identify preliminary impacts, and obtain feedback early on. This will ensure that design refinements and modifications can be investigated and employed prior to detailed design activities. Building a collaborative partnership with the environmental permitting agencies early provides us an understanding of the regulatory conditions/controls and maximizes our ability to understand and implement avoidance and minimization measures to environmental impacts during design and construction.

RISK MANAGEMENT: The Corman | JMT DB Team will employ the Construction Management Association of America (CMAA) endorsed approach to risk management through a *Risk Register,* which includes a list of identified risks, potential impacts, and mitigation for each. A robust risk management process considers risks throughout the project's life and delivery processes. Our Team's risk management process has already sprang into action and will evolve throughout design and construction, positioning us to respond quickly and effectively as issues unfold. The Corman | JMT DB Team will employ a five-step risk management approach to the project including the following:

1. **Identify** – names risks facing the project, determines cause and effect, and categorizes risks.
2. **Assess** – assigns probability of occurrence, severity of impact, and determines response.
3. **Analyze** – quantifies risk severity, determines risk exposure, establishes risk tolerance level, and determines risk contingency (applicable during preliminary design and pricing).
4. **Manage** – defines response plans and actions, establishes ownership of risk, and manages response (after NTP).
5. **Monitor/Review –** monitors/reviews/updates risks, monitors response plans, updates risk exposure, analyzes trends, and produces reports (after NTP, during design, and during construction).

Our design-build philosophy also includes ***Partnering*** as its cornerstone, which entails: 1) open and honest communication; 2) maintaining decisions at the lowest possible level; 3) using a decision tree; 4) putting project success ahead of our 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.

The Corman | JMT DB Team's approach to design and construction integration, coordination and decision making is partnering between the team members ensuring collaboration between construction and design staff every day, early on and throughout the project.

The significance of nurturing a continuous culture of the three C's: ***Coordination, Communication, and Collaboration*** throughout design and construction paves the way for informed, sound, and well-timed decisions during all stages of the project. This integration provides a deep understanding between each team member's approach to design and construction elements. As a result, decisions on approaches to resolve issues and elements are collectively developed to meet design and construction contract requirements, environmental commitments and project goals while providing the best fit products and construction means, methods and practices. Partnering will be utilized to communicate, coordinate, and collaborate between Corman, JMT and MDOT SHA's Plan Review Division (PRD), regulatory and resource agencies, utility companies, and other stakeholders for project success. Corman | JMT DB Team key staff and key support staff will participate in the partnering meetings and workshops.

By integrating the Corman | JMT DB Team's design and construction personnel's involvement early, joint participation of Team members in decision making is provided for during design and construction. Design and construction staff will participate in workgroup meetings to discuss and evaluate work activities. During design, Corman will participate in design and constructability decisions in preparing the design submittals. This is in addition to the workgroup meeting utilizing; over the shoulder reviews, constructability reviews for sequencing, means and methods, materials, products and assessing the cost effectiveness of the design; schedule reviews of submittal deliveries and special project sequencing requirements, assessing utility relocation and environmental impacts and developing minimization and avoidance strategies; and a cooperative approach in preparing shop drawings and reviews. Corman's key staff and key subcontractors/suppliers will also provide formal reviews of submittal packages and provide written review comments and recommendation for inclusion in the design. In addition, as discussed below, our design quality management team will be involved throughout design. During construction, design and construction personnel participation continues with design staff attending progress meetings, regularly visiting the project site, answering questions and Requests for Information (RFI), and participating in the joint decision resolution of field issues as they arise, public involvement and community interactions, developing materials for MDOT SHA to post to the project website, and any other required consulting assistance necessary to provide a project that meets the goals, contract requirements and stakeholder expectations.

DESIGN QUALITY MANAGEMENT: JMT has over 46 years of local experience and has the expertise and resources to complete a quality design while meeting the schedule for this project. Doug Matzke, PE will lead design quality for our

design team using tried and true methods developed on our past design-build projects. JMT was a design team member on the MD 404 project that used an Independent Design Quality Management (IDQM) firm and knows the coordination, scheduling, and approach involved to provide a quality product expected by the IDQM firm and MDOT SHA. From this experience, JMT will have the IDQM firm involved from the onset of the project, which starts at plan development and review process to include enough time in our schedule to review, resolve, and address comments from the design submittals. Once the project begins, coordinating, communicating and including the IDQM firm in meetings and adhering to the schedule is important. This will allow the IDQM firm to ensure staff is available when the submittals arrive to quickly start their review. While using an IDQM is still relatively new and changes the way MDOT SHA has typically been involved in design-build projects, keeping MDOT SHA involved remains critical to achieving project goals.

Our design quality management approach focuses on producing plans that meet the project goals, resolves the key issues, and are compliant with the contract, constructible, permittable, and available for construction per the project schedule. To this end, our approach to design quality management includes:

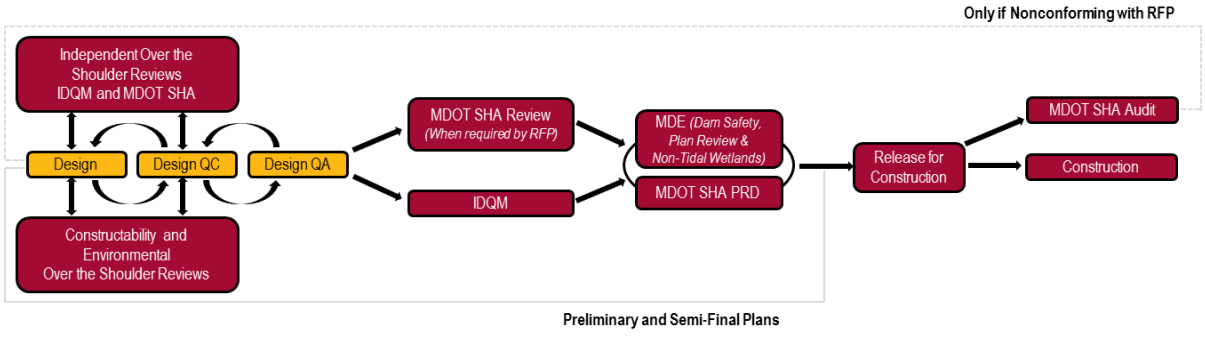
- **A design schedule** that provides ample time for design, reviews by required parties, audits, and approvals. By setting an aggressive but achievable design schedule, we can assign resources to meet the milestone.
- **Frequent communication** between the design staff, construction staff, IDQM firm, MDOT SHA and PRD.
- **IDQM, MDOT SHA, and PRD staff at task force meetings** to resolve issues in real time and ensure design concepts are RFP compliant and permittable.
- **Over-the-shoulder reviews** by our design QC staff, IDQM staff, MDOT SHA, PRD staff, and contractor staff ensures design solutions resolve key issues, achieves project goals, are RFP compliant and constructible early on, reducing the time required or for formal reviews.
- **Constructability and Environmental Reviews** integrated within the design and design quality process, to identify and correct any constructability and environmental/permitting issues early.

We will incorporate lessons learned on the MD 404 project, including our IDQM firm, from the project's onset, however, as with any project, we anticipate a learning curve here will incorporate lessons learned from our initial submittals into all submittals thereafter. MDOT SHA is a primary client of JMT's and as such we have a vested interest in maintaining our high standard of quality on all the products produced on this project for MDOT SHA.

Design Quality Management Plan (DQMP) Central Elements: To ensure that every design package released for construction meets these goals, our Design Quality Management Plan (DQMP) will include these central elements:

- Design Quality Control
- Design Quality Assurance
- Constructability Review
- Environmental Review
- Independent Design Quality Management
- Design Quality Management Plan Certifications
- MDOT SHA Review
- PRD Review
- MDE Review
- MDOT SHA Review
- Materials/Working Drawings
- Document Control

The following workflow and key element descriptions validate how our DQMP has been optimized to improve efficiency.



- **Design Quality Control:** Integrated into daily work performed by our design staff, we have experienced and licensed design personnel, not directly involved with the design perform a thorough review of design, calculations, plans and specifications including concepts, element coordination, and detailed checks. Submissions to MDOT SHA/PRD will be peer reviewed by staff familiar with MDOT SHA/PRD requirements before IDQM review.
- **Constructability Review:** An integral part of the design quality process are over-the-shoulder constructability reviews performed by key construction staff.
- **Environmental Review:** Specialized environmental in-house staff will use over-the-shoulder reviews for compliance with permit conditions and commitments, as well as to identify and obtain any additional permits.

- **Design Quality Assurance**: Focused on verifying all aspects of the DQMP have been followed. If any DQMP procedure or design product is deficient, DQMP improvements will be implemented to prevent repeat occurrences.
- **Independent Design Quality Managemen**t: We understand that our IDQM firm will function in the role of MDOT SHA to ensure conformance with the RFP requirements. We will involve our IDQM firm in the design from beginning to end, through over-the-shoulder reviews and a dedicated review process.
- **MDOT SHA Review:** For elements defined in the RFP requiring MDOT SHA review, we will provide the required notification and defined MDOT SHA review period into our workflow.
- **PRD Review:** We will provide plans for PRD review that can be approved with minimal comments by engaging PRD at the start of the project; encouraging over-the-shoulder reviews by PRD; peer reviews of designs requiring PRD reviews; and the IDQM providing independent reviews of all design before submitting to PRD. We will provide the required notification and defined MDOT SHA review period into our workflow.
- **MDE Review:** MDE Review, Dam Safety, Non-Tidal, or Joint Permits may be required for elements of the design and our Team is prepared to obtain such approvals from MDE.
- **Design Quality Management Certifications:** The following certifications will be present before any packages are released for construction:
  - **Designer -** Sign, seal and certify that calculations, plans, specifications, and technical documents were prepared in accordance with the DQCP.
  - **Designer** - Sign and seal calculations, plans, specifications, and technical documents by the Professional Engineer, Landscape Architect, or Licensed Forester as applicable.
  - **IDQM** - Sign, seal and certify that submittals comply with the contract.
- **Materials/Working Drawings:** The Lead Design Firm and IDQM will be required to review, accept, and stamp shop/working drawings before MDOT SHA final review. Seven days will be provided for MDOT SHA review.
- **MDOT SHA Audits:** MDOT SHA may provide further design submittal review after certification by the IDQM and commencement of construction. As per the RFP, we will provide notification and defined MDOT SHA review period for their audit. We will immediately address any concerns, including halting construction, if necessary.

CHANGE MANAGEMENT: The Corman | JMT DB Team's approach to change management is to expedite planning efforts to identify project risks and mitigate/minimize unexpected changes to the scope of work. We will coordinate with MDOT SHA and stakeholders to prevent schedule delays associated with changes outside of the defined scope. Proactive coordination with utilities and other stakeholders may provide the opportunity to incorporate betterments without extending the schedule and thereby improving the quality of the final project.

Potential Changes to Scope of Work: This may be needed to address needs, such as differing field conditions, delays to utility relocation, ROW acquisition or requests by stakeholders through the partnering process. Proposed scope changes will be assessed by the DBPM to determine whether they are directives from MDOT SHA or suggestions that warrant further evaluation. He will also determine design builder's opinion as to cost responsibility and discuss with the MDOT SHA Project Manager. If appropriate, the DBPM will initiate a change order, fully coordinated with the design and construction managers, so that permit, utility, and stakeholder considerations are understood. Should scope changes take place, authorizations will be secured from MDOT SHA and any other agencies prior to incorporating any change with respect to design or construction. The Corman | JMT DB Team will review potential changes with MDOT SHA to collaboratively align to the best solution. Changes will be reviewed for constructability by the construction team and go through the same rigorous quality review as the original design. The lead engineer and team that developed the original design would also design any changes to that design.

Design Firm Involvement in Changes: When changes to the Issued for Construction (IFC) plans are required, Corman will prepare/submit a Request for Information (RFI) to JMT. JMT reviews the RFI and prepares a response. JMT analyzes impacts to the RFC design. If the RFI or change is approved and requires plan revisions, JMT will update and annotate the RFC plans to clearly depict the revision, including revision number in colored ink, and certifies the change meets RFP requirements. If the design manager determines that any aspects of RFI or change is not per the RFP, it will be rejected, and additional details obtained. RFC plan changes undergo a quality review by the DBPM and design manager to ensure they satisfy the design criteria and then proceed through Quality Management Process. The proposed RFC plan changes is then submitted to MDOT SHA for approval prior to implementing in the field.

As-Builts Record Drawings: An onsite field project engineer will maintain a detailed red-lined plan showing all changes to the original RFC documents incorporated into construction due to field conditions, scope changes, or other valid reasons. These documents will be reviewed monthly to confirm they are current and changes are not missed and/or not properly documented. We have been implementing this process on our other projects utilizing a web-based data management system of either Pro-Core or Plan Grid and will do the same on this project. Approved RFIs or field changes are automatically updated and captured in the As-Builts. Surveyed final grades and plan coordinates are also incorporated near the end of the project or when available. This streamlined procedure allows JMT to provide more accurate As-Built Record Drawings in a shorter period with greater accuracy.

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