March 2, 2018

ORIGINAL

Phase One – Request for Proposals

MD 32

South of Linden Church Road to I-70

FAP NO. AC-NHPP-G-118-1(69)N

CONTRACT NO. HO7565370
Howard County

Delivered to:
Office of Procurement and Contract Management
Fourth Floor, C-405
707 N. Calvert Street
Baltimore, Maryland 21202

Prepared for:

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Submitted by:

LANE

Dewberry

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A. DESIGN-BUILDER CAPABILITY

Durant Walters, P.E., DBIA

LANE

DESIGN-BUILD PROJECT MANAGER

Years' Experience: 29

Education: A.A.S. & B.S., Civil Engineering

Licenses and Certifications: Professional Engineer, MD #41726 | DBIA Professional | MDOT TTCMC | MDOT SHA E&S Control Certification Yellow Card (11-188) | OSHA 30 Hour

Mr. Walters, has served as Design-Build Project Manager and/or Construction Manager on several major highway projects similar to the MD 32 Phase 2 Project. He will be responsible for the design, construction, management and coordination of the Project. Mr. Walters will establish project objectives, policies, procedures and performance standards to meet the project goals of improving corridor safety and operations, minimizing inconvenience to the public, minimizing ROW and environmental impacts, coordinating utility relocations and achieving design and construction excellence. He will also staff key positions, and plan and organize to monitor and control the project design and construction.

RELEVANT EXPERIENCE

MD 4 from Forestville Road to MD 458 (Silver Hill Road) Community Safety and Enhancement | Design-Build | MDOT SHA | Prince George's County, MD **Design-Build Project Manager** responsible for the successful management of the design, construction, quality oversight, and project schedule on this $21M rehabilitation and safety improvements of 2.2 miles of a four lane divided roadway. The project has successfully completed design with the identical Dewberry design team proposed for the MD 32 Phase 2 Project, and is in the final months of construction. The Scope of Work includes the shifting of existing divided roadway onto partially reconstructed and rehabilitated full depth pavement, corridor and intersection lighting, environmental permit modification, stormwater management design and permitting, post award permitting of new SWM concept, 20K+/- CY of earthwork, 40K+/- TN of new pavement construction, 1K +/- TN of asphalt pavement repairs/rehabilitation, utility coordination and relocations, new storm drainage and lining/rehabilitation of existing storm drainage, four-phase MOT sequence, roadway and overhead signing, three new signalized intersections and roadway, clearing, landscaping, invasive species management and reforestation, and small drainage structures. Mr. Walters made sure safety and mobility was maintained for the public, applied practical design and construction techniques which minimized right-of-way and environmental impacts, ensured DBE program compliance, proactively coordinated with utilities to reduce relocations to only two PEPCO poles in the entire 2.2-mile corridor, and brought the design-build team (DBT) together as an integrated unit to achieve synergy. Additional responsibilities include managing budget, performing constructability reviews, fostering conflict resolution through partnering, conceiving and generating alternative concepts which resulted in $2M +/- in owner savings, participated in public outreach, and lead stakeholder/utility coordination. This project has received an "A" average for all E&S and MOT evaluations to date.

I-95 Express Toll Lanes MD 43 Interchange | Bid-Build | MdTA | Baltimore County, MD **Project Manager** responsible for project scheduling,overall management, quality oversight, and ensuring safety mobility was safely maintained for the public on this $142.5M project involving the reconfiguration of 1.6 miles of the existing eight lane divided highway into eight General Purpose (GP) Lanes and four Express Toll Lanes (Managed Roadway) separated by concrete traffic barriers. The project entailed approximately one million CY of earthwork, roadway and drainage construction, the construction of six new bridges, removal of three bridges over I-95, construction of 10 retaining walls - five in cut sections with four top-down, a noise wall, CIP extension of triple-cell box culverts. Realignment and rehabilitation of multiple Waters of the US including Whitemarsh Run with extensive stream diversions and pump arounds that provided water clarity of <50 NTUs to comply with USACE permit requirements. Utility work included the physical relocation of three MDOT SHA Traffic Cameras, 10" sanitary sewer and 48" sanity sewer interceptor under I-95 by micro-tunneling. Utility relocation coordination was managed for a 12" BG&E gas transmission line, where the contractor provided all excavation and complex SOE, Level 3 Fiber-Optic, and Verizon and Comcast communications. MD 43 was realigned and widened from four to six lanes for a distance of approximately 1.1 miles though the interchange. The interchange ramps were realigned without detours and one full signal and two half signals at the ramp connections to MD 43 were added. Mr. Walters provided budget management; implemented construction techniques to minimize environmental impacts; oversaw construction planning; ensured mobility and safety for the public, provided conflict resolution through partnering, value engineering development, review and integration, environmental stewardship and education to workforce, jobsite safety oversight and enforcement, participation in public outreach, DBE program compliance, and regular stakeholder and utility coordination.

Western Parkway Phase 4B | Design-Build | MDOT SHA | Charles County, MD **Design-Build Project Manager** responsible for overall management of the design and construction, quality oversight, project schedule, and design and construction coordination with future bid-build extensions of the project at each terminus, managing project budget, ensuring safety and mobility was maintained for the public, applied design and construction techniques to minimize and mitigate environmental impacts, including the creation of fish passage in the box culvert, retrofit of existing SWM ponds with new clay-core embankment and MD 378 certification on this $4M Charles County Government project. Project consisted of the design and construction of 1.1 miles of new four lane divided roadway though green-fields and the dualization of existing two lane roadway. The Scope of Work included: 600 LF of phased realignment of two WUS tributaries of the Mattawoman Creek to permit installation of 300 LF +/- of box culvert,30K CY +/- of earthwork, new pavement construction and rehabilitation of existing roadway pavement, concrete sidewalk and curb & gutter, storm drainage, SWM, E&S design, permitting and installation, wetland delineation and permitting of impacts, two phase maintenance of traffic with sub-phases for side street access, minimization of environmental and ROW impacts through use of segmental retaining walls, signage and landscaping. Worked with MD32 Phase 2 DBT member Straughan Environmental to conceive and implement a new SWM concept to provide groundwater recharge in locations of high-groundwater where conventional treatment would be ineffective.

Dewberry

Kenneth Davis, P.E., DBIA

Design Manager

Years' Experience: 20

Education: B.S. & M.S., Civil Engineering

Licenses and Certifications: Professional Engineer, MD #28350 | DBIA Professional

Mr. Davis has extensive experience in successfully completing complex transportation design-build projects in Maryland by empowering innovation, using good engineering judgment, and ensuring all project design requirements are met. All of his projects have utilized a phased approach for design and permitting for all design disciplines resulting in concurrent submission to support fast paced construction schedules. Committed to quality, he coordinates with the design-builder and leads the design team to identify practical design solutions to innovative, cost effective ATC's during the procurement stage and ultimately releasing them for construction benefiting MDOT SHA and all project stakeholders. He proactively communicates with the design-builder and subconsultants to embrace the integrated team environment while successfully partnering with MDOT SHA ensuring all project and DBE goals are met.

RELEVANT EXPERIENCE

ICC Contracts D/E | Design-Build | MDOT SHA | Prince George's County, MD **Design Manager** for this $107M project that included 1.25 miles of a new six-lane divided highway, four miles of new CD roads, a half diamond interchange, a Continuous Flow Intersection (CFI), 1.5 miles of four-lane divided highway dualization widening/reconstruction, one new bridge, four retaining walls, one sound wall and five signals. **Responsible for** the Project's technical oversight for all design and permitting package reviews including managing and allocating design resources to ensure meeting schedule deadlines. Mr. Davis led a team of over 70 engineers and support staff who developed and submitted over 130 "Approved" IFC phased design packages including roadway and drainage, pedestrian and bicycle, SWM (ESD to MEP), ESC, MDE coordination and approval for embankments (including roadway) that qualify as dams (MD 378), bridge and retaining walls (with stone form liner for aesthetics), major culvert extensions, MOT, roadway and overhead signing, marking, signals and interconnect, L/A, on-site reforestation, ITS, lighting, and pavement design and rehabilitation. Responsible for the geotechnical exploration program, the extensive utility coordination and relocation efforts including access roads, and the environmental compliance and permitting program (final permits, AMMR's and Quarterly reports). He managed the design coordination between the adjacent Contee Road and Virginia Manor Road projects to ensure compatibility with future improvements. Mr. Davis managed the design progress meetings, oversaw QA/QC, attended monthly partnering meetings, and presented at public involvement meetings. Responsible for all Phase V services (RFI's, shop drawings, as-builts). Met the 25% MBE goal for professional services.

MD 4 from Forestville Road to MD 458 (Silver Hill Road) Community Safety and Enhancement | Design-Build | MDOT SHA | Prince George's County, MD **Design Manager** for the $21M, 2.2 mile roadway reconstruction project including intersection upgrades with signalization, ADA and lighting improvements, narrowing of vehicular travel lanes and shoulders, installation of 2.2 miles each of bike lanes, sidewalk and a shared-use path. **Responsible for** quality oversight, the project's technical and commercial oversight for all design package reviews including managing and allocating design and permitting resources to ensure schedule deadlines are met. Mr. Davis led a team of over 20 engineers who developed and submitted 30 phased design packages for review and approval including roadway and drainage, pedestrian and bicycle, SWM (ESD to MEP), ESC, MOT, signing, marking, L/A, reforestation, lighting, and pavement rehabilitation. He oversaw the development and implementation of several approved ATC's that significantly reduced the project footprint resulting in a reduction of environmental impacts. Additionally he oversaw the extensive utility coordination and mitigation efforts which resulted in the elimination of ALL RFP projected utility impacts and relocations with the exception of two Pepco poles. Responsible for the geotechnical exploration, pavement rehabilitation, and environmental permitting compliance program (AMMRs, Quarterly reports and obtaining final permits). Mr. Davis exceeded the MBE goal of 26% with the final percentage at 34%. He prepared for and participated in the public involvement meetings.

ICC Contract C | Design-Build | MDOT SHA | Montgomery & Prince George's Counties, MD **Deputy Design Manager** and Roadway Lead for the $525M project that included 3.8 miles of the new six-lane divided highway, 20 new bridges, two new three level interchanges, a half diamond interchange, five miles of CD roads, and three miles of four-lane divided highway widening/reconstruction. **Responsible for** quality oversight, design management for Area M (US 29 to I-95) including roadway, drainage, pedestrian and bicycle, SWM, ESC, floodplain studies, stream relocation, bridges over roadways and streams, retaining walls, noise walls, and box culverts, bridge aesthetics (stone form liner), roadway and overhead signing, marking, MOT, ITS, lighting, traffic analyses, environmental permitting, AMMRs, noise analyses, L/A, on-site reforestation, invasive species management, and utility relocations. Responsible for all Phase V services (RFI's, shop drawings, as-builts). He implemented several ATC's that reduced the project footprint, impacts, and cost.

Dulles Corridor Metrorail Project, Phase 2 Package A | Design-Build | MWAA | Fairfax and Loudoun County, VA **Deputy Civil Design Manager** for the $1.2B project that included an 11 mile extension of the rail alignment running within the median of the Dulles International Airport Access Highway (DIAAH), through Dulles International Airport and within the median of the Dulles Greenway. **Responsible for** quality oversight, design management and oversight for improvements to the Dulles Greenway, the Dulles Toll Road (DTR), Loudoun Station Drive, Route 606, Moran Road, and Lockridge Road and 12 new bridges, the development of 168 design packages including roadway and drainage, pedestrian and bicycle, SWM (Quality and Quantity), ESC, bridge and retaining walls, major culvert extensions, MOT, signing, marking, signals, ITS, lighting, pavement design and rehabilitation, and utility relocations. He coordinated extensively with the utility coordination and environmental compliance managers. Responsible for meeting the 10% MBE goal.

Andrew Kitchen

LANE
CONSTRUCTION MANAGER

Years' Experience: 30

Education: High School Diploma

Licenses and Certifications: MDOT SHA E&S Control Certification White Card (RPC000179) | Confined Space Rescue | First Aid & CPR | Competent Person | Tunnel Rescue | HAZcom | OSHA 30, OSHA 40 & OSHA Cranes and Derricks

Mr. Kitchen is a seasoned construction professional with 30 years of experience in heavy highway construction. He has been involved in several major projects, including but not limited to the dualization of MD 650 and dualization of MD 450 along with the construction of several tunnels and bridges. His project focus is always safety first and care for the road users and construction crews, followed closely by environmental sensitivity and schedule. Mr. Kitchen's extensive experience allows him to spot issues before they become problems, and deliver a safe and timely project. He is committed to partnering with MDOT SHA on this important project.

RELEVANT EXPERIENCE

MD 32 (Phase 1) From MD 108 to Linden Church Road| Design-Build | MDOT SHA | Howard County, MD **Deputy Design-Build Manager** during design for this $32.5M project and heavily involved in the original approach to environmental concerns and construction challenges. During design, Mr. Kitchen worked iteratively with the design team using design workshops and over-the-shoulder reviews to develop major elements of the project, including the dualization of three miles of existing MD 32, box culvert extensions and replacements, drainage pipe crossings and extensions, SWM bioswales, maintenance of stream flow, stream diversions, earthwork, utility relocation coordination, permit evaluation and submissions, reinforced earth slopes, and roadway construction. Major challenges of this project centered around staged construction and schedule, which was heavily influenced by MOT, stream diversions, and permit restrictions. Several temporary stream diversions were required for the installation of the proposed box culverts on the project. **Responsible for** assisting the DBT in designing these diversions while taking into consideration the staged construction elements. Temporary Support of Excavation (SOE) was required to install the culverts in Stage 1, this SOE was needed to support the SB Roadway while traffic was running on the NB side. This integration and collaboration with the DBT allowed for successful design of SOE and stream diversion in the median pinch point on the dualized roadway. Mr. Kitchen's construction knowledge was used extensively to sequence and schedule the project's CPM activities, coordinate design development and update stakeholders of the projects' progress. The project is currently under construction.

I-695 Inner Loop over Benson Ave, Leeds Ave, Amtrak, and US Route 1 | Bid-Build | MDOT SHA | Arbutus, MD **Project Manager** for this $37M project which consisted of the construction of three bridges comprised of a single span, double span, and a four-span bridge. Two of the bridges crossed the Waters of the US (WUS). Two large SWM Ponds were constructed along with approximately 3000 LF of bioswales. Roadwork consisted of realignment of Ramp eight from US 1 to I-695, vertically realigned one mile of I-695 by raising the road five feet, and performed extensive roadwork and widenings on Route 1 between Knecht Ave. and Linden Ave. Two retaining walls and a noise wall were constructed in tight constraints to the LOD of the project. **Responsible for** managing construction activities and the scheduling of work items including roadway construction, construction of the roadway embankment, drainage, subdrains, signing and marking, overhead and cantilever signs, and landscaping. The phased MOT, heightened environmental compliance due to WUS, and support of excavation were major challenges on this project and were successfully managed by Mr. Kitchen. The project was completed on schedule, per specifications, and safely for the public.

I-95 NB from Montgomery Rd. Overpass to I-895 Interchange | Bid-Build | MDOT SHA | Howard County, MD **Project Manager** for this $12M project and **responsible for** managing construction activities, schedule, and coordination of highway construction ensuring completion per project requirements of over 7000 LF of noise wall, maintenance of stream flow, bioswales, 12,000 LF caissons, existing storm drain pipe lining, and new storm drain installation. Site access and MOT were key challenges for this project due to high volume I-95 traffic, a narrow right of way, and environmental features incorporated into the project. Mr. Kitchen actively aided MDOT SHA's public outreach, and coordination with MDOT MDTA and BGE to facilitate the successful completion of critical aspects of this project.

MD355 at Cedar Lane Phases 1,2, and 3 | Bid-Build | MDOT SHA | Montgomery County, MD **Project Manager** for this $16.1M project which consisted of widening NB and SB MD 355, and EB and WB Cedar Lane. **Responsible for** managing all construction activities and scheduling of all the projects' components. As part of the widening, a new box culvert and an open U-Channel was installed across MD 355 and Cedar Lane. Stream restoration was installed per plan along the NIH property and a Fish Ladder was installed on the upstream side of the culvert to allow for aquatic movement through the system. A large SWM pond on the NE corner helped control the flooding that was inherent in the area. Hundreds of NIH employees and students at Stone Ridge School required a very detailed pedestrian movement and MOT plan and a public outreach program. Dealing with pedestrian and vehicular movements required the project to be divided into six stages of MOT, however with innovative and forward thinking by Mr. Kitchen, the project was reduced to four stages which included a pedestrian bridge over Waters of the US. Major signalization improvements were required at three intersections to allow for safe movement of vehicle, pedestrian, and bicycle traffic. This project was completed in early 2017 and included the extensive planting on NIH grounds, SWM Pond, and stream restoration plantings. The project was completed on schedule and is open to traffic.

Dewberry

Michael Rectanus, P.E.

HIGHWAY ENGINEER

Years' Experience: 18

Education: B.S., Civil Engineering

Licenses and Certifications: Professional Engineer, MD #31191

Mr. Rectanus has extensive experience in serving as the Lead Highway Engineer on complex transportation design-build and design-bid-build projects in Maryland and the Mid-Atlantic. He is responsible for ensuring that the roadway design is completed using good engineering judgement and all project design requirements are met. He is thoroughly familiar with relevant design codes such as AASHTO, MUTCD, MDOT SHA's Standards and Specifications, other applicable codes, and federal and state laws. He is knowledgeable with the use of applications such as MicroStation, Open Roads for 3D design, and InRoads. He proactively communicates with the design-builder and subconsultants to embrace the integrated team environment while successfully partnering with MDOT SHA to ensure all project goals are met resulting in a high quality project.

RELEVANT EXPERIENCE

For all of the below design-build projects, Mr. Rectanus coordinated with the Environmental Permitting Compliance Lead to ensure permitting impacts were minimized or avoided completely. He regularly provided input to support final permits, development of quality environmental reports, and final AMARs.

ICC Contracts D/E | Design-Build | MDOT SHA | Prince George's County, MD **Lead Highway Engineer** for the $107M project that includes 1.25 miles of the new six-lane divided highway, four miles of new CD roads, a half diamond interchange, a Continuous Flow Intersection (CFI), 1.5 miles of four-lane divided highway dualization widening/reconstruction, one new bridge, four retaining walls, one sound wall, and five signals. Project also included the design of numerous pedestrian and bicycle upgrades including one hiker/biker trail. **Responsible for** quality control, all highway geometric design (horizontal and vertical alignments), quality control, meeting RFP requirements, typical sections and pavement details, superelevation, intersection details, construction plans and cross sections, bicycle and pedestrian facility (ADA compliance) design, utility and SWM access roads, storm drain design and details. Mr. Rectanus coordinated with structures (bridge, retaining wall, noise wall and culverts), SWM, utilities, lighting, signing and marking, signals, ITS and adjacent Contee Road and Virginia Manor East projects. During construction, he was responsible for answering field generated roadway related RFI's, reviewing storm drain related shop drawings and producing as-builts. He attended weekly design coordination and progress meetings with the contractor.

MD 4 from Forestville Road to MD 458 (Silver Hill Road) Community Safety and Enhancement | Design-Build | MDOT SHA | Prince George's County, MD **Lead Highway Engineer** for the $21M, 2.2 mile roadway reconstruction project including intersection upgrades with signalization, ADA and lighting improvements, narrowing of vehicular travel lanes and shoulders, installation of 2.2 miles each of bike lanes, sidewalk and a shared-use path. **Responsible for** quality control, meeting RFP requirements, the highway and drainage design packages including highway geometric design (horizontal and vertical alignments), typical sections and pavement details, superelevation, intersection details, construction plans and cross sections. Mr. Rectanus coordinated with all other disciplines including SWM (ESD to MEP), ESC, MOT, signing, marking, L/A, reforestation, lighting, and pavement rehabilitation. He participated in the utility relocation mitigation efforts, which resulted in the elimination of ALL RFP projected utility impacts and relocations except for two Pepco poles. Mr. Rectanus coordinated the geotechnical exploration, pavement rehabilitation, as well as the environmental compliance and final permitting programs. He performed QC reviews on all highway packages as well as interdisciplinary reviews on other design discipline packages to verify all project design requirements were met. He coordinated and responded to all design QA comments in order to release packages and led design resolution meetings.

ICC Contract C | Design-Build | MDOT SHA | Montgomery & Prince George's Counties, MD **Lead Highway Engineer, Area M** for the $525M project that included 3.8 miles of a new six-lane divided highway, 20 new bridges, two new three level interchanges, a half diamond interchange, five miles of CD roads, and three miles of four-lane divided highway widening/reconstruction. **Responsible for** highway geometric design (horizontal and vertical alignments), ensuring RFP requirements were met, typical sections and pavement details, superelevation, intersection details, construction plans and cross sections, bicycle and pedestrian facility design, storm drain design and details. He coordinated with structures (bridges over roadways and streams, retaining wall, noise wall and culverts), SWM, utilities, lighting, signing and marking, signals and ITS. He performed QC reviews on all highway packages as well as interdisciplinary reviews on other design discipline packages. He coordinated and responded to all Design QA comments in order to release packages for construction. During construction, he was responsible for answering field generated roadway related RFI's, reviewing storm drain related shop drawings and producing roadway and drainage as-builts.

Dulles Corridor Metrorail Project, Phase 2 | Design-Build | MWAA | Fairfax and Loudoun County, VA **Lead Highway Engineer** for the five mile East Segment of the roadway improvements associated with the construction of the Dulles Metrorail extension (Silver Line) to Dulles Airport. This $1.2B Project included an 11-mile extension of the rail alignment running within the median of the Dulles International Airport Access Highway (DIAAH), through Dulles International Airport and within the median of the Dulles Greenway. **Responsible for** the highway geometric design (horizontal and vertical alignments), typical sections and pavement details, superelevation, intersection details, construction plans and cross sections (including 3D surface output for use in machine controlled construction), drainage design, MOT, signing and markings, and coordination with pedestrian bridges, noise walls, SWM, ESC, L/A, and lighting designs for improvements to the DIAAH, the Dulles Toll Road (DTR), Reston Parkway and Sunrise Valley Drive. The design was coordinated with future expansion of the DIAAH entering the airport and minimized stream impacts along WB DTR. He performed QC reviews on all highway packages as well as interdisciplinary reviews on other design discipline packages to confirm all project design requirements were met.

Rahul Kesarkar, P.E., PMP, LEED® AP

WATER RESOURCES ENGINEER

Years' Experience: 19

Education: M.S., Civil Engineering

Licenses and Certifications: Professional Engineer MD #25193 | MDOT SHA E&S Control Certification Yellow Card | Stream Restoration Certification Rosgen Level I, II, III & IV | LEED AP | Project Management Professional

Mr. Kesarkar is a Maryland Registered Professional Engineer with 19 years of experience in Water Resources Engineering and design for both public and private clients. His extensive experience includes using good engineering judgement to manage the water resources design for design-build projects, working and coordinating with contractors, drainage design, hydrology/ hydraulics (H/H) investigations, design and analysis, storm drain, outfall protection, stormwater management design (SWM) including environmental site design (ESD), stream restoration, floodplain studies, CLOMR/LOMR, Chesapeake Bay Total Daily Maximum Load (TMDL), erosion and sediment control (ESC) design, SWM landscaping, avoidance and minimization of environmental impacts, Joint Permit Application, traffic control design, GIS, cost estimating and permitting. Experienced in coordination with MDE, PRD, MDE Dam Safety Division, MD DNR, USACOE. He is also an active MDOT SHA Plan Review Division reviewer performing reviews of MDOT SHA projects for Stormwater Management, Erosion and sediment control and MD 378 Embankment.

RELEVANT EXPERIENCE

ICC Contracts D/E | Design-Build | MDOT SHA | Prince George's County, MD | **Lead Water Resources Engineer** for the $107M design-build project extending MD 200 over to U.S. 1 and completing I-95 CD roads (NB and SB) to MD 198. The project also includes 1.5 miles of four-lane divided highway dualization widening/ reconstruction, one new bridge, four retaining walls, one sound wall, five signals, SWM BMPs and utility relocations. Responsible for all the Water Resources engineering activities. Designed SWM using ESD to MEP MDE Criteria. SWM BMPs included bioswales, grass swales, bioretention, ponds, MD 378 Embankments for ponds and roadways, storm drainage (open and closed), culvert design, HEC-RAS modelling, outfall protection and stabilization, stream and channel stabilization, and landscaping. **Responsible for** ensuring all design criteria was met through the use of innovative ideas and good engineering judgment, coordination with roadway, SWM, floodplain studies, ESC, environmental services, noise analysis, and landscaping. Performed QA/QC of all SWM, H/H, storm drain and ESC designs; coordination with ICC, permitting agencies including MDE, MDE Dam safety, subconsultants and contractor, obtained environmental permits in a timely manner to keep the project on schedule. During construction, responsible for answering field generated H/H related RFIs and was responsible for the development of the SWM as-built documents.

ICC Contract C | Design-Build | MDOT SHA | Montgomery & Prince George's Counties, MD **Lead Water Resources Engineer** for Area E (east of Old Gunpowder Road to east of I-95). ICC section C, comprised of 3.7 miles from just west of US 29 (Columbia Pike) to just east of I-95 including 1.9 miles of collector-distributor (CD) lanes on I-95 to MD 212. **Responsible for** ensuring all design criteria was met through the use of innovative ideas and good engineering judgment, design and QA/QC of roadway drainage, H/H analysis, roadway culverts, HEC-RAS modelling, SWM, MD 378 embankments, stream assessments and restoration, outfall protection and stabilization, floodplain studies, ESC, environmental services, noise analysis, and landscaping. Coordinated with other disciplines (roadway, structures, traffic, noise analysis, landscaping), ICC, permitting agencies, subconsultants and contractor; obtained environmental permits in a timely manner to keep the Project on schedule. During construction, responsible for answering field generated H/H related RFIs.

MD 4 from Forestville Road to MD 458 (Silver Hill Road) Community Safety and Enhancement | Design-Build | MDOT SHA | Prince George's County, MD **Lead Water Resources Engineer** for the $21M, 2.2 mile roadway reconstruction project located between the Capital Beltway and Washington DC. The project includes roadway, drainage, and stormwater management. **Responsible for** ensuring all design criteria was met through the use of innovative ideas and good engineering judgment, the implementation of several approved ATC's related to stormwater management and drainage that significantly reduced the project footprint resulting in a reduction of environmental, right-of-way and utility impacts. Provided oversight and QA/QC of the drainage design (open and close), rehabilitation of existing storm drain pipes, outfall protection and stabilization designs, and ESC design. Coordinated and oversaw the design of new SWM concept and obtained SWM and ESC permits on time keeping project construction on schedule.

Dulles Corridor Metrorail Project, Phase 2 Package A | Design-Build | MWAA | Fairfax & Loudoun Counties, VA **Water Resources Engineer** for the $1.2 billion, 11 mile Metrorail extension from Reston to Washington Dulles International Airport and into Loudoun County. Performed QA/QC and provided oversight of station drainage, H/H of culverts, outfall protection and stabilization, stormwater management and ESC design for three of the five new at-grade stations and 5.5 miles of roadway reconstruction. **Responsible for** ensuring all design criteria was met through the use of innovative ideas and good engineering judgment. Provided oversight and QA/QC of shop drawing reviews and field design changes as part of engineering services during construction.

Water Resources Engineering Services, Statewide | Design-Bid-Build | MDOT SHA **Water Resources Project Manager/ Contract Manager responsible for** analysis and design of H/H studies, SWM, drainage, outfall protection and stabilizations, ESC designs, SWM BMP inspections, TMDL credits, drainage investigations and rehabilitation of small structures. Reviewer for SHA HHD and SHA PRD; and access and utility permits for private development within SHA ROW statewide. Prepared Joint Permits and General Waterway Construction Permits for work in wetlands, Waters of US and 100-year floodplain. Managed budgets, staff, subconsultants and trained junior engineers. Managed over 600 SWM BMP inspections in Maryland. Managed Water Quality Mitigation for TMDL goal tasks in Charles, Prince George's, Anne Arundel and Washington County to treat 50 ac of legacy pavement, and streamline MDE permitting process used by SHA for other corridors in the state.

Maryland Route 4 Community Safety & Enhancement Project Design-Build

Firms completing the work: Lane with Dewberry

Location: Prince George's County, Maryland

Initial Contract value: $21M

Final Contract Value: $21M

Initial Completion Date: 8/2017

Final Completion Date: Anticipated Spring 2018 but open to the beneficial use of traffic

Difference: Project delayed by WSSC plan review.

Owner: MDOT SHA

Contact name: Jared Paper-Evers, P.E.

Phone number: (410) 545-8400

Maryland Route 4 is a $21M community safety and enhancement design-build project that spans Forestville Road to MD 458 (2.2 miles), inside I-495. MD 4, an Urban Freeway Expressway (55 MPH), links Washington DC; residential and commercial centers inside the Capital Beltway (I-95/I-495); large employment centers, including Joint Base Andrews; and rural and suburban areas of Prince George's County outside the Capital Beltway. This project shares similar scope and complexity with the MD 32 Phase 2 project such as; The Scope of Work includes the evaluation, design and construction of all aspects of the project including survey, geotechnical, pavement, roadway geometric design and details, bicycle and pedestrian facilities, context-sensitive design, public outreach, storm drain, SWM, ESC, utility coordination and relocation, intersection and roadway lighting, phased maintenance of traffic (MOT), signing and marking, signals, and environmental permitting. Construction activities similar to MD 32 include, realignment of existing 2.2 miles of dualized roadway, application for NOI and implementation of E&SC plans, tree preservation review and protection of specimen trees, clearing and grubbing, 20,000 CY of earthwork, 40,000 TN of new pavement, 6,500 TN of Foamed Asphalt Base (FASB), 1,000 TN of asphalt pavement repairs/rehabilitation, underdrains, utility relocations and utility coordination, 1,400 LF of storm drain and 136 new drainage structures including small drainage structure, installation of bioswales, grass swales and open channels, in-stream work, stream diversions and stream realignment at multiple WUS crossings, plunge pools, outfall protections and stabilizations, structure vibration monitoring, rehabilitation and cured in-place lining of existing storm drain conduits, existing drainage pipe extensions, four-phase MOT, roadway and overhead cantilever signing, three new signalized intersections and two modified signals, and roadway and intersection lighting, temporary and permanent pavement markings, w-beam and cable barriers, curb & gutter, sidewalks and ADA facilities, top soiling and seeding, landscaping, invasive species management and reforestation.

As Lead Designer, Dewberry was responsible for all design aspects of the projects inclusive of survey, geotechnical, pavement design and rehabilitation, existing pavement survey, roadway geometric design and details, bicycle and pedestrian facility design, context-sensitive design, storm drain, SWM, ESC, utilities, lighting, MOT, signing and marking, signals, public outreach, reforestation, invasive species management and environmental permitting. Existing pedestrian facilities include sidewalks at the six intersections that connect to the nearest bus stops; and a six foot wide asphalt trail along northbound MD 4 between Walters Lane and Parkland Drive.

Successful methods, approaches and innovations used on the project: Lane, Dewberry, and MDOT SHA functioned as a collaborative integrated team. We had open, proactive communication through a variety of methods including bi-weekly Design Review Meetings with MDOT SHA; Over-the-Shoulder (OTS) review meetings with MDOT SHA; and monthly Partnering/ Progress meetings. The bi-weekly Design Review Meetings were led by the Design Manager, Mr. Kenneth Davis. He along with Mr. Durant Walters, Design-Build Project Manager, and Mr. Jared Paper-Evers, MDOT SHA Project Manager as well as appropriate design discipline leads and the associated MDOT SHA department representatives (OHD/HHD, OMT, OOTS, OED/LAD, EPD, District 3 Traffic, and others) discussed design progress; identified and worked to resolve comments; reduce rework and agree on path forward; and expedite design. Sometimes these meetings were more "Charrette" in nature as was the landscape design kickoff meeting. An agenda was sent, in advance, weekly so that all relevant individuals were in attendance to discuss issues with the focus on immediate issue resolution.

Lane and Dewberry held regular OTS reviews with Mr. Paper-Evers and other appropriate reviewers to assist with Design Development, RFP compliance, issue identification, potential resolution, and closeout comments received. This interaction was key to the success of the MD 4 project. We were able to provide MDOT SHA with "draft" versions of an upcoming design deliverable for quick review of certain issues/past comments to make sure the approach was appropriate and would meet the requirement of the RFP.

Lane, Dewberry, and MDOT SHA held monthly Partnering/Progress meetings throughout the duration of the project. The project began with a kickoff meeting where the partnering charter was developed and signed by all attendees. All partnering meetings held during the design phase were hosted at Lane's office near the Hanover complex. Once the construction started, the Partnering meetings were held at the project office at the project site. Any project issues that were not resolved at the lowest levels were escalated using the escalation ladder agreed to at the Partnering kickoff meeting. These issues were tracked and elevated for quick resolution. We will bring this approach to the MD32 Phase 2 Project.

In addition, monthly utility coordination meetings were held with each utility representative. The result of the Alternative Technical Concepts (ATC's) eliminated all RFP required utility relocations except for two Pepco poles. Even with the elimination of the relocations, we still needed to work around/over existing utilities. The utility representatives worked with Lane, Dewberry, and MDOT SHA personnel to provide critical clearance dimensions, reviewed proposed avoidance design approaches. Coordination with Pepco included analysis of proposed fill against existing poles. Cross sections were cut at each pole location and defined the amount of additional fill ultimately resulting in the final design not requiring the poles to be relocated. Additional extensive coordination occurred with WSSC and the 30" PCCP waterline along southbound MD 4 near Forestville Road to facilitate the grading adjacent and over top the WSSC facility without needing to relocate it.

Finally, Lane and Dewberry supported MDOT SHA (District 3 Community Liaison) with on-going monthly support for public outreach. As part of the public outreach plan, the team monitored the project 800 telephone number and provided reported issues. We supported MDOT SHA in developing the public meeting materials, boards, and presentation as well as attended and answered questions asked.

Ideas that led to better innovations: Through use of innovative solutions, our team was able to implement four ATC's developed during the bid phase. The ATC's economized SWM concept and application, roadway pavement sections, existing drainage culvert lining, and reduced shoulder widths. These ATC's all contributed to reductions to the limit of disturbance (LOD) of the project by narrowing the roadways footprint. This reduction in width completely eliminated the need for retaining walls and minimized impacts to other perimeter facilities, such as property acquisitions and easements, wetlands, forested area, and reduced the overall impervious area. In addition, the bio-swale concept adopted by the team provides lower facility maintenance for the life of the project.

Stormwater Management (SWM) – complete change to concept type and locations. Dewberry completely redesigned the approach to SWM. The preliminary design included 45 micro-bioretention facilities ranging from 12 to 35 feet in width. Dewberry's final design was an almost continuous 8-foot wide bioswale that ran parallel to the roadway facility utilizing backless inlets eliminating 95% of the proposed concept storm drain pipes. This change significantly reduced the environmental impacts, limit of disturbance, and right-of-way needed. This change also had another significant advantage, the design team was able to eliminate ALL utility impacts associated with the project except two Pepco poles.

DBT Members proposed for MD32:

DBT Member	Role on Project	Role on MD 32 Phase 2
Durant Walters, P.E., DBIA	Design-Build Project Manager	Design-Build Project Manager
Kenneth R. Davis, P.E., DBIA	Design Manager	Design Manager
Michael Rectanus, P.E.	Highway Engineer	Highway Engineer
Rahul Kesarkar, P.E., PMP, LEED AP	Water Resources Engineer	Water Resources Engineer
Luke Williamson	Construction Manager	Assistant Construction Manager
Andrew "Keith" Curtain	Superintendent	Superintendent
Daniel Wungko	Construction Project Engineer	Construction Project Engineer
Kenneth Middleton	Earthwork Superintendent	Earthwork Superintendent
Glenn Bosse	Party Chief	Party Chief
Jose Gonzales	MOT Manager	MOT Manager
Dave Mahoney, P.E.	Project Executive	Project Executive
Aaron Cheskis, P.E.	ESC Engineer	ESC Engineer
Jerry Mrykalo, P.E., PTOE	Traffic Engineer	Traffic Engineer
Aneesha Griffin, P.E., PTOE	Lighting Engineer	Lighting Engineer
Anthony Brown	Public Outreach	Public Outreach

MD 237 from MD 235 to Pegg Road Design-Build

Firm completing the work: Lane

Location: St. Marys County, Maryland

Initial Contract value: $37.6M
Final Contract Value: $37.7M (difference explained on page 9)

Initial Completion Date: 5/2011
Final Completion Date: 10/2011 (difference explained on page 9)

Owner: MDOT SHA
Contact name: Ryan Murphy
Phone Number: (410) 802-9066

Lane was the Design-Builder for this $37M project consisting of the design, reconstruction and dualization of 2.88 miles of MD 237 from a two-lane open roadway to a four lane closed section divided roadway with left-turn lanes at select intersections. Similar to the MD 32 Project, the purpose of the project was to replace a substandard two-lane roadway with numerous driveways and cross-streets with a four-lane divided roadway with control access at intersections through signalization and reduction of left turn crossing movements with the introduction of J-turns at uncontrolled median openings and U-turns at signalized intersections. Roadway improvements included five foot bicycle lanes on MD 237, pedestrian facilities consisting of five foot sidewalks with six foot buffer, ADA compliance at intersection including Audible Pedestrian Signals and detector warning surfaces at cross-walks. Improved roadway signing, pavement markings and lighting were incorporated into the project. Lane was responsible for the design, permitting and construction of the roadway modifications which included raising the vertical alignment 12' in elevation for 2,220 LF to allow for the replacement of undersized pipe culverts with a twin-cell reinforced box culvert (configured so one-cell functions as a wildlife crossing). Additional improvements include resurfacing and reconstruction of 16 intersecting side streets, and over 65 driveways and entrances, intersection channelization, intersection reconstruction, a box culvert at Jarboesville Run (WUS), new closed drainage system, new noise barrier, and other safety improvements. The Project also included 13,500 LF of new pipe for a closed storm water drain system, eight storm water management (SWM) facilities, and extensive phasing of erosion and sediment control (ESC). Three noise barriers totaling 1,700 LF were installed. Utility work consisted of 10,000 LF of waterline replacement, 6,000 LF of gas line replacement, 350 LF of sanitary sewer replacement, coordination with utility companies for the relocation of aerial electric, telephone, and CATV. Traffic engineering and construction services included five new traffic signals, signal interconnect, relocation of school flasher, new signing and pavement markings and intersection street lighting.

Extensive multi-phase maintenance of traffic plans were required to maintain traffic along all roadways and access to driveways/ entrances. The project was divided into four distinct construction zones based on maintaining drainage within each zone. Each construction zone was designed to allow for the complete construction of two of the four lanes while maintaining the existing traffic on the existing roadway. Each phase was staged so as zones were completed, traffic could be switched onto the new pavement and be maintained while constructing the next phase. A temporary fabric MSE wall was installed along the phased fill embankment for maintaining traffic between phases at the box culvert due to an increase in elevation. Temporary cross-overs from newly constructed pavement to the existing pavement were necessary as each portion of the project was completed. Lane constructed a fish ladder on the downstream side of Jarboesville Run that was celebrated by environmentalists all over the region, and will be used as a model for future projects in the State of Maryland.

Successful methods, approaches and innovations used on the project: Similar to our approach proposed for the MD 32 Phase 2 Project, the Design-Build team (DBT) conducted regular meetings with the MDOT SHA Project Manager. An agenda was sent in advance so that all relevant individuals were in attendance to discuss issues with the focus on immediate issue resolution. In addition, monthly utility coordination meetings were held with each utility representative. These focused meetings were held to discuss current avoidance measures and unavoidable relocations. The utility representatives provided critical clearance dimensions, reviewed proposed avoidance design drawings and approved approaches.

Through use of innovative solutions during the design stage, our team economized the SWM concept and eliminated two SWM ponds within the project ROW, reducing clearing and grading impacts. Further design innovation arranged for a portion of the proposed storm drainage to serve dual purposes; during the box culvert installation, the 72" pipe was used for stream diversion. Then, at the completion of the culvert installation, this bypass pipe was converted into a storm drain outfall, eliminating the need for abandonment. Additional impacts were reduced during design by shifting a length of the proposed sidewalk toward the

roadway, thereby eliminating the need to re-grade an existing cut slope which would have required the removal of vegetation. These design innovations all contributed in reductions to the limit of disturbance (LOD) of the project which minimized impacts to other perimeter facilities, such as property acquisitions and easements, wetlands, and forested areas. In addition, the reduction in ponds conceived by the team provides MDOT SHA lower maintenance costs for the life of the project.

Ideas that led to better innovations: The DBT faced three significant challenges throughout this project. First was protecting the environment from erosion and sediment entering tributaries and streams, and raising or lowering of the pH in these tributaries. The most sensitive area was the wetlands that surrounded Jarboesville Run, a waters of the US (WUS) tributary that feeds the Potomac River. One of the main elements of the project was to replace undersized cross culverts at Jarboesville Run, which would frequently cause flooding of the existing roadway, with a two-cell box culvert, 40' long and 14' tall, which required the raising of the roadway's vertical profile. This sensitive area was also the area with the most extensive work to be performed. The design-build team had to come up with ways of building this 864 CY concrete structure in the stream while minimizing the impact to the environment. The one way to accomplish this was to divert the water around the structure using a 72" diversion pipe during construction. During installation of this diversion pipe our first issue arose. The water table was high enough that water was running in on the excavated trench where the diversion pipe was to be placed. This would prove to be the norm for all excavation in this area. To permit construction, the design-build team drove steel plates and used pumps to help control the water, and placed #2 Stone in the trench to obtain firm bedding for the pipes.

Second, which would test us during the extent of our construction in this area, was pumping water out of our construction zone. The Code of Maryland Regulations states that no water can be discharged into the stream that has a turbidity of 50 NTU's on average for 24 hours or 150 NTU's at one time. The Maryland Department of the Environment's regulation states that no water can be discharged into the stream that changes the color of the stream. The design-build team was held to both these standards and having to construct such a structure in an area lower than the water table made these standards difficult to abide by. After much discussion and trials, the best solution was created. There were two sediment basins reachable through pumping and each had limited hydraulic capacity. During construction, with the need to constantly pump water out of our construction zone, a series of pumping operations was set up to minimize sediment leaving the work site. If the water was clean, it could be discharged directly into the stream. If the water started showing signs of discoloration, a designated water monitor who monitored all discharge during any pumping operation would switch the pumping to either of the ponds.

The third significant challenge was controlling pH while constructing the Box Culvert. The Code of Maryland Regulations states that no water with a pH greater than 8.5 or lower the 6.5 can be discharged into a stream. Concrete has a pH of 12 and when it meets water while curing the waters' pH will rise. This occurred during our first foundation pour. We came up with solutions to maintain pH that could be discharged from our job. A solution of mixing the high pH water with enough lower pH laden water from the stream in a tank prior to discharge, while continuously monitoring levels with a hand held pH monitor was our solution. Additionally, during the remaining foundation pours, plastic was placed on the bottom to act as a barrier between the concrete and ground water.

Throughout the course of the MD 237 Design-Build project, the DBT was cognizant of the need to be environmental stewards for community interests. For example, our team adjusted the limits of disturbance by constructing a small retaining wall to preserve a property owner's cherished cherry blossom trees, which were to be impacted by the concept design. Another example of stewardship was our effort in working with an adjacent property owner to alleviate flooding in their private pond, which abutted the MD 237 right-of-way. The limits of construction were minimized as much as possible to reduce impacts to wetlands and forested buffers. The DBT minimized delays and ensured safety and mobility while minimizing the impact to the environment, and together finished the project in this sensitive area. The application of the methods developed and knowledge gained during the construction of culverts in high-water table, environmentally sensitive areas, will ensure that when similar conditions are encountered on MD 32 Phase 2, our team will perform in accordance with all permit criteria and protect the project's environmental resources.

Description of owner added scope: Project schedule changes for surface paving to be completed in spring rather than winter months, owner advertisement delay, additional severe weather events, and additional time and cost to complete additional scope work that was not part of the original contract.

DBT Members proposed for MD32:

DBT Member	Role on Project	Role on MD 32 Phase 2
Richard McDonough	Project Executive	Lane Project Executive

Route 29 Solutions - Route 29 Widening Design-Build

Firm Completing the Work: Lane

Location: Albemarle County, VA

Initial Contract value: $116M
Final Contract value: $129M (difference explained on page 11)

Initial Completion Date: 10/2017
Final Completion Date: 7/2017 (difference explained on page 11)

Owner: VDOT
Contact name: Dave Covington
Phone number: (434) 305-0348

Lane was managing partner of the joint venture that delivered the Route 29 Solutions contract that contained three project elements designed to improve safety and increase mobility along the Route 29 corridor in Charlottesville and Albemarle County. The Route 29 Widening Project Element was one of three elements and involved the total reconstruction of 1.8 miles of Route 29 from a 4-lane to a 6-lane divided highway between Rio Mills Road to Town Center Drive. The DBT designed and constructed Route 29 in a way that maximized the project elements, improved corridor traffic operations, and improved safety while being compatible with future planned Route 29 corridor improvements. The scope of work included: design, right-of-way acquisitions, utility relocations, stormwater management, open cut storm drainage, excavation (earth and rock), jack & bore storm pipe systems, new ductile iron water main, retaining structures (permanent and temporary), new stone and asphalt road bed, and demolition of the existing ITS and new traffic signals with a fiber communication interface. Environmental design and permitting included: wetland delineations and stream assessments; determination of wetlands and stream compensatory mitigation requirements; secured rare, threatened and endangered species clearances; and secured numerous other clearances and permits. The project also provided multi-use trails the length of the project providing citizens safe access along the corridor. Extensive MOT was required to maintain service to four major residential and commercial intersections plus high volumes of through traffic with no loss of capacity during construction.

The Route 29 Widening roadway required total reconstruction primarily due to the substandard condition of the existing roadway - rolling profile, minimal to no shoulders and poor site distances. Drainage improvements included both open cut and jack and bore operations. Cut to fill grading operations were sell-performed, areas of rock were resolved by hoeram and controlled blasting. Traffic signals and IT, were part of Route 29 and were self-performed- they will also be self-performed on MD 32 allowing us the flexibility to control our own progress.

The DBT minimized overall utility impacts and provided innovative designs that eliminated the relocation of a Dominion Power distribution line the entire length of the project. MOT and traffic phasing was reduced by utilizing more of the existing pavement during construction and building more of the new pavement in each phase than considered in the preliminary engineering concepts. This resulted in a minimization of the disruptions to the community and the traveling public. Lane and Dewberry will utilize the similar innovations on MD 32. We have a strong design and construction team in place and a strong history collaborative working experiences.

Successful methods, approaches and innovations used on the project: Lane's Public Relations Manager worked alongside VDOT's Public Outreach Manager, providing support to the Project Development Advisory Panel and providing updates to VDOT from the DBT. The Public Relations Manager handled hotline calls, met with citizens, business owners, homeowners associations and others to brief on project developments and upcoming events. Many visits were performed both well in

advance and just ahead of when construction activities were about to impact a property or facility so all parties were well aware of the plans to be employed and how best to work together. We will utilize our Public Relations Manager on the MD 32 project to ensure the community and traveling public are well informed and inconveniences are minimized. We are committed to meeting all project goals and key issues including minimizing impacts and proactive coordination. The DBT will use our knowledge from past design-build projects like this one to create a well thought out and well executed project plan.

The DBT coordinated with seven major utilities. Due to the outreach effort with the various utilities, timely coordination and direct involvement with each company, the team managed a seamless process to keep the utility issues from impacting the construction. Several of the utility conflicts were resolved by modifications to the design to accommodate their in place facilities. The major Dominion Power line was avoided by attention to detail, on-sight coordination and planning. We will have the utility coordination team in place for the MD 32 project and we are confident our tried and practiced processes will be a success here as well.

Ideas that led to better innovations: Lane developed a MOT plan to maintain traffic on Route 29 that utilized more of the existing pavement to maintain traffic and eliminate a phase from the original concept plans. This process facilitated an early completion to the project. The public enjoyed no level of service drop during construction. Multiple major intersections feeding housing developments and businesses were maintained without issue. Numerous direct access entrances were also maintained with strong planning and notification of the property owners and HOAs; all similar in nature to the work on MD32 Phase 2. Lane and Dewberry will use similar strategies to deliver MD 32 Phase 2 safely, on time and with minimal impacts to the traveling public. This will result in an efficient and safe flow of traffic along MD 32 and the nearby roadway network in the future.

VDOT Commissioner, Charles Kilpatrick said of Lane and the Route 29 project, “These projects represent a new way of doing business for VDOT. We are already implementing some of the successful strategies developed by the Route 29 Solutions team on other projects across Virginia. One in particular, the early engagement and continued involvement of the local community and stakeholders, resulted in projects that addressed their concerns and reflect the desires of the community. The benefits of those strategies, including savings in time and money as well as projects completed more quickly, will be realized by all the citizens of the Commonwealth.”

Description of schedule and contract difference: Route 29 Widening project was completed almost three and a half months ahead of schedule and under budget. The JV received a $1,085,124 incentive for early completion of the Route 29 Widening project. Final contract amount includes the incentive bonus for early completion. The JV was under budget.

DBT Members proposed for MD32:

DBT Member	Role on Project	Role on MD 32 Phase 2
Richard McDonough	Project Executive	Lane Project Executive

Dewberry

Intercounty Connector, MD 200 Contract C, (ICC-C) Design-Build

Firm completing the work: Dewberry

Location: Montgomery and Prince George's Counties, Maryland

Initial Contract value: $513M ($36M Design)

Final Contract Value: $526M ($39M Design) (difference explained on page 13)

Initial Completion Date: 11/2011

Final Completion Date: 11/2011

Owner: MDOT SHA
Contact name: Rob Shreeve
Phone number: (410) 545-8644

MD 200 InterCounty Connector, Contract C was a lump sum, design-build project with Dewberry as the Lead Designer for the IC3 contracting entity. In addition to Dewberry, Whitney, Bailey, Cox, and Magnani (WBCM), Hillis-Carnes Engineering Associates (HCEA), and Remline (all part of the proposed design team for MD 32 Phase 2) provided major subconsultant roles during design and construction. Dewberry was responsible for all design and environmental permitting of the 3.8 mile new six lane divided highway, one mile of reconstruction along I-95, two miles of CD roads along I-95, one half a mile of four-lane divided reconstruction, and three quarters of a mile of two-lane undivided roadway reconstruction (Old Columbia Pike and Old Gunpowder Road). The project also included a three-level interchange at Route 29, a new interchange with Briggs Chaney Road and a new three-level interchange with I-95. The contract included 20 bridges, numerous retaining walls, phased erosion and sediment control packages, 12 SWM ponds including MD 378 embankments, several grass swales for quality treatment, major culvert crossings, ground improvement techniques. MOT was performed on two of the State's most heavily traveled roadways with extensive environmental protection features, landscaping, aesthetic treatments of bridges, walls, and noise barriers to compliment the surrounding area.

Dewberry was responsible for all design activities including roadway and interchange modification design; structural (retaining wall and culvert extensions) and bridge design; hydrologic and hydraulic studies and design, stormwater management, MD 378 embankments, drainage design, outfall protection and stabilization, stream assessment, relocation and restoration, floodplain studies, erosion and sediment control design; traffic analyses, maintenance of traffic protecting vehicles, pedestrians, and bicycles; signing, marking, signals, lighting, ITS, ETC, erosion and sediment control design; noise analysis; landscaping, on-site reforestation, environmental compliance and final permitting; right-of-way coordination; as well as significant utility design and coordination – all of which were divided into distinct design packages based on discipline, geographic location, as well as permitting, right of way, and construction priorities. Additional responsibilities included field surveys and base mapping, coordination with ICC, MDE, MDE Dam Safety, public outreach and stakeholder coordination, design support during construction (RFI's, shop drawings, as-builts), extensive coordination with adjacent projects (ICC Contract B), design QC and QA.

As proposed on MD 32 Phase 2, Mr. Leon Kriebel, P.E., was the Design Quality Manager. He developed the Design Quality Control Plan and was responsible for training ALL design staff and ensuring all design milestone submissions received constructability, environmental, and inter-disciplinary reviews. He conducted periodic audits to ensure compliance.

Remline led the public outreach program inclusive of community meetings at local schools and civic centers. Specifically, the Dewberry design team worked closely with Remline and the stakeholders to ensure that concerns were quickly addressed.

Successful methods, approaches and innovations used on the project: Similar to our approach proposed for MD 32 Phase 2, the team broke the project into distinct work areas (Area E, M, and W) for design and construction activities. Within each area, additional breakout packages were identified, designed, permitted and constructed concurrently to keep key critical path activities on schedule and the project moving forward. Constant communication between construction and design staff aided in identifying critical packages that required early completion, immediate clearing and grubbing, advance steel packages for structures, detour to avoid travel impacts, MOT and stand-alone utility packages. The team met every week during the entire duration of the project to discuss issues such as key design elements; status of all design disciplines including plan reviews and approvals, permit acquisition, utility relocations; construction means and methods for specific situations, and identification of issues needing timely resolution (by designer, contractor, or MDOT SHA). In addition to the weekly IC3 design/construction coordination meetings, design specific task force meetings were held on a weekly basis with the ICC team to communicate progress and resolve issues at the lowest levels. Issues that needed escalation were discussed at the weekly owner progress and monthly partnering meetings.

Ideas that led to better innovations: Dewberry and WBCM developed the majority of the design innovations during the development of the ATC's submitted during the RFP process and refined/ finalized these design innovations with the issuance

of the IFC plans throughout the design process. Our team's innovative designs minimized project costs, reduced projects schedule, reduced future maintenance costs, avoided existing utilities, and avoided and minimized impacts upon natural, cultural, and social features within the project limits. The three level interchanges between ICC (MD 200), I-95 and US 29 were redesigned and optimized. Throughout the project corridor, the stormwater management design was enhanced to reduce the number of facilities and associated impacts. The team improved the typical section along sensitive corridors to narrow the footprint needed for reducing the right of way (ROW) and easements onto adjacent parcels. Innovative geotechnical design (ground improvements) was implemented in the poor soils west of I-95 along the MD 200 mainline eliminating the RFP designed bridges in that area and reducing impacts to the neighboring landowners, environmental features, and a major, regional electric transmission line

Measurable results from Dewberry and WBCM's design innovations reduced the following environmental impacts identified in the Final Environmental Impact Statement (FEIS) for the project: wetland reduced by 19.06 acres (52%), wetland buffer reduced by 5.06 acres (27%), perennial/intermittent water of the US by 1930' (15%), ephemeral WUS by 1830' (53%), open waters by 0.70 acres (14%), forest by 32.64 acres (17%), floodplain by 9.85 acres (62%), ecologically sensitive areas by 0.27 acres (100%), and reduced structural SWM ponds by seven (35%). In addition to the reduction in environmental impacts, the design innovations decreased the ROW needed by ~14 acres. The geotechnical innovation for the ground improvements removed 320,000 SF of bridge deck (and their future maintenance costs) from the project. The ground improvements allowed for the mainline profile to be lowered, removing the conflict with the electrical transmission lines, thereby deleting a $5 million utility relocation from the project scope.

These changes required extensive coordination with FHWA and with the regulatory agencies within the Interagency Working Group (IAWG) to maintain the project schedule while meeting or exceeding the environmental permit requirements. IAWG consisted of USACE, MDE, MDP, DNR, MCDPWT, MHT/MD SHPO, M-NCPPC, NPS, EPA, USFWS, FHWA, MDOT SHA, MDOT MDTA and MDOT. We prepared documents for modifications and amendments to previously approved environmental summary (ES) and supplements for FEIS, and received approval for the revised IAPA. Our team designed stream diversions and phased construction within streams outside the stream restriction periods.

We also performed environmental compliance including substantial environmental monitoring, development of avoidance and minimization plans, training for procedures to minimize the environmental impacts during field visits and construction, prepared spill prevention plans, HazMat Survey Plan, and Noxious Weed Plan. We performed continuous water quality monitoring during the construction and one year post construction. The ICC project had both environmental stewardship goals and specific permit conditions related to Rare, Threatened and Endangered (RTE) species. A permit condition for the project mandated protecting the eastern box turtle (Terrapene carolina), a species of concern by both state and federal definitions. We used a unique approach utilizing trained turtle dogs to locate the turtles resulting in relocating over 360 turtles. We performed a tree survey along the alignment to determine saving or removal of trees due to safety hazards within the LOD. We identified specimen trees and gave special consideration for avoidance and minimization. In addition, we designed retaining walls in portions of the roadway to minimize permanent impacts to the surrounding forest over the original project design.

Description of owner added scope: Dewberry received 45 change orders (approx. $3M in owner directed change orders) including $1.5M due to ICC D/E delay in procurement and provided temporary ties to I-95 and Virginia Manor Road until ICC D/E could be procured. Additional changes equaling $198K were for additional utility work. There were a number additional smaller change orders not reflected here.

DBT Members proposed for MD32:

DBT Member	Role on Project	Role on MD 32 Phase 2
Kenneth R. Davis, P.E., DBIA	Deputy Design Manager and Lead Roadway Engineer	Design Manager
Michael Rectanus, P.E.	Lead Highwayway Engineer, Area M	Highway Engineer
Rahul Kesarkar, P.E., PMP, LEED AP	Lead Water Resource Engineer, Area E	Water Resources Engineer
David J. Mahoney, P.E.	Design Manager and Dewberry Project Executive	Dewberry Project Executive
Jerry Mrykalo, P.E., PTOE	Lead Traffic Engineer, Area E	Traffic Engineer
Rich Cassidy, P.E.	Lead Utility Engineer	Utility Coordination/Design
Aaron Cheskis, P.E.	Lead ESC Engineer	ESC Engineer
Mike Johnson, P.E.	Lead Geotechnical /Pavement Engineer	Geotechnical/ Pavement Engineer
Leon Kriebel, P.E.	Design Quality Manager	Design Q/A Manager
Aneesha Griffin, P.E., PTOE	Lighting Engineer	Lighting Engineer

Dewberry

Intercounty Connector, MD 200 Contract D/E, Design-Build

Firm completing the work: Dewberry

Location: Prince George's County, Maryland

Initial Contract value: $89M ($6.7M Design)

Final Contract Value: $107M ($9.1M Design) (difference explained on page 15)

Initial Completion Date: 11/2013

Final Completion Date: 11/2014 (difference explained on page 15)

Owner: MDOT SHA
Contact name: Rob Shreeve
Phone number: (410) 545-8644

MD 200 InterCounty Connector, Contract D/E Modified, was a lump sum, design-build project with Dewberry as the Lead Designer for the IC3 contracting entity. In addition to Dewberry, Whitney, Bailey, Cox, and Magnani (WBCM), Hillis-Carnes Engineering Associates (HCEA), and Remline (all part of the proposed design team for MD 32 Phase 2) provided major subconsultant roles during design and construction. The contract represents the fourth and final contract of the overall ICC projects. Contract D/E extends MD 200 to US 1 completing the I-95 CD roads (northbound and southbound) to MD 198. The scope of Contract D/E included approximately four miles of new collector-distributor roads along I-95, one mile of a new 6-lane divided highway (MD 200), 3,500 feet of 4-lane divided highway dualization reconstruction and the widening of a new half diamond interchange with Virginia Manor Road (VMR), and 3,300 feet of roadway reconstruction and widening of a new Continuous Flow Intersection (CFI) with US 1. The contract included four new and one reconstructed signal, 1.8 miles of new bicycle facilities, one new bridge, three retaining walls, two major culverts, three structural stormwater management ponds designed per MD 378 embankment requirements/criteria and several different types of ESD/LID practices such as 13 bio-retention facilities, approximately 5,000 linear feet of bio-swales, and 600 linear feet of grass swales. The Project also included two locations along I-95 roadway embankment which were considered as MD 378 embankments due to the attenuation behind them. These embankments were upgraded to meet the MD 378 and MDE Dam Safety requirements and approved by MDE. A dam breach analysis was performed on three ponds including the analysis of ponds in series to take in to account the existing County owned ponds downstream of the project limits

Dewberry's responsibilities on this contract included mapping, surveys, geotechnical investigations, and design for the roadway, interchange, bridge and structures, stormwater management, floodplain studies, culverts, storm drain (open and close), outfall protections, stream and channel stabilization, erosion and sediment control, maintenance of traffic (development of the TMP and multiple phases of TCP to safely convey vehicular, pedestrian, and bicycle traffic), signing and marking, signals, ITS system, electronic toll collection (ETC), lighting, traffic analysis, extensive environmental compliance, and final permitting services, noise analysis, landscaping, on-site reforestation, and utility relocations for WSSC including 4,200 LF of waterline (30" and 42"; 8" sanitary relocation), telephone, cable, power, 31,000 LF of fiber optic relocations, as well as coordination of electrical power drops and associated access road requirements. Due to limited right-of-way along US 1, Dewberry proposed a combined underground ductbank to be utilized by multiple utility companies. Dewberry was responsible for the ductbank design as well as the coordination of associated utility companies.

Dewberry also coordinated with two adjacent projects; SHA's Contee Road Interchange project and the Prince George's County Virginia Manor Road project. Dewberry led coordination meetings every two weeks with design, construction, and owner representatives for each project to discuss all elements of design, construction, and schedule issues. Dewberry provided construction quality management in association with the development of the Construction Quality Control Manual and conducted field inspections. Attendance at weekly quality control task force meetings was essential to design quality development. As with all of the ICC contracts, public outreach and involvement was a critical aspect. Remline led the public outreach program.

Dewberry attended, presented, and answered questions at numerous meetings with the West Laurel Civic Association as well as general information meetings. During construction, the design engineers were responsible to answer requests for information (RFI's); attend pre-construction meetings; attend pre-traffic switch meetings; and deliver as-built plans.As proposed on MD 32 Phase 2, Mr. Leon Kriebel, P.E., was the Design Quality Manager. He developed the Design Quality Control Plan and was responsible for training ALL design staff and ensuring all design milestone submissions received constructability, Environmental, and inter-disciplinary reviews. He conducted periodic audits to ensure compliance.

Successful methods, approaches and innovations used on the project: Similar to our approach proposed for MD 32 Phase 2, the team broke the project into distinct work areas (I-95, VMR, and US 1) for design and construction activities. Within each area, additional breakout packages were identified, designed, permitted, and constructed concurrently to keep the key critical path activities including ESC, MOT, SMW, and the VMR steel package, on schedule. Significant coordination occurred to incorporate extensive environmental requirements of the project such as time-of-year stream restrictions and RTE habitat. The team met every week during the entire duration of the project to discuss issues such as key design elements; status of all design disciplines including plan reviews and approvals, permit acquisition, utility relocations; construction means and methods for specific situations, and identification of issues needing timely resolution (by designer, contractor, or MDOT SHA). In addition to the weekly IC3 design/ construction coordination meetings, design specific task force meetings were held on a weekly basis with the ICC team to communicate progress and resolve issues at the lowest levels. Issues that needed escalation were discussed at the weekly owner progress and monthly Partnering meetings.

Ideas that led to better innovations: Dewberry and WBCM developed the majority of the design innovations during the development of the ATC's submitted during the RFP process and refined/finalized these design innovations with the issuance of the IFC plans. Throughout the design process, our team's innovative designs minimized project costs, reduced project schedule, reduced future maintenance costs, avoided existing utilities, and avoided and minimized impacts upon natural features within the project limits. Most measures focused on adjusting horizontal and vertical alignments, using steeper slopes (2:1), retaining walls, as well as minimizing required ESC measures to reduce LOD footprint. Additional measures including eliminating the RFP proposed SWM Pond (southeast quadrant of ICC and VMR) – provided a much smaller ESD treatment facility to significantly reduce impacts in this area. The LOD was shifted in approximately 40 feet to minimize impacts to a forested area along Ramp VE, from Sta. 110+00 to Sta. 114+50. The amount of avoided forest is approximately 0.43 acres. LOD was shifted north of Ramp VW to avoid 424 LF of impacts to Stream 6K. Incorporated 30 feet of riparian stream buffers in the initial E&SC clearing plans to reduce impacts to stream WNN along NB/SB I-95 at the northern Contract limits.

Measurable results from Dewberry and WBCM's design innovations reduced the following environmental impacts identified in the Final Environmental Impact Statement (FEIS) for the project: wetland buffer by 0.31 acre (26%), perennial/intermittent water of the US by 1273' (37%), ephemeral WUS by 767' (24%), open waters by 0.31 acres (49%), forest by 11 acres (11%), FID Bird Habitat direct impacts by 0.14 acre (23%), FID Bird Habitat buffer impacts by 0.47 acre (12%).

These changes required extensive coordination with the regulatory agencies within the Interagency Working Group (IAWG) to maintain the project schedule while meeting or exceeding the environmental permit requirements. IAWG consisted of USACE, MDE, MDP, DNR, MCDPWT, MHT/MD SHPO, M-NCPPC, NPS, EPA, USFWS, FHWA, MDOT SHA, MDOT MDTA and MDOT. We prepared documents for modifications and amendments to previously approved environmental summary (ES) and supplements for FEIS. Our team designed stream diversions and phased construction within streams outside the stream restriction periods.

Description of owner added scope: Dewberry received 21 change orders totaling approximately $2.4M including $1.3M for I-95 waterline design and the removal of the interim milestones (continued design support until project completion). Additional change orders include $256K for the US 1 time extension for right-of-way delay; $159K for the CFI modifications; $117K for an emergency sinkhole repair. There were a number of additional smaller change orders not reflected here.

DBT Members proposed for MD32:

DBT Member	Role on Project	Role on MD 32 Phase 2
Kenneth R. Davis, P.E., DBIA	Design Manager	Design Manager
Michael Rectanus, P.E.	Lead Highway Engineer	Highway Engineer
Rahul Kesarkar, P.E., PMP, LEED AP	Lead Water Resource Engineer	Water Resource Engineer
David J. Mahoney, P.E.	Dewberry Project Executive	Dewberry Project Executive
Jerry Mrykalo, P.E., PTOE	Lead Traffic Engineer, I-95 and VMR	Traffic Engineer
Rich Cassidy, P.E.	Lead Utility Engineer	Utility Coordination/Design
Aaron Cheskis, P.E.	Lead ESC Engineer	ESC Engineer
Aneesha Griffin, P.E., PTOE	Traffic and Lighting Engineer	Lighting Engineer
Leon Kriebel, P.E	Design Quality Manager	Design Q/A Manager
Mike Johnson, P.E.	Lead Geotech Engineer	Geotech/Pavement Engineer
Kenneth Middleton	Grading Superintendent	Grading Superintendent
Durant Walters, P.E., DBIA	Estimator	Design-Build Project Manager

Dewberry

Dulles Corridor Metrorail Project, Phase 2, Package A Design-Build

Firm completing the work: Dewberry

Location: Fairfax and Loudoun Counties, Virginia

Initial Contract value: $1.17B ($60M Design)

Final Contract Value: $1.45B ($455M Civil Construction Value) ($92M Design) (difference explained on page 17)

Initial Design Completion Date: 3/2015

Final Design Completion Date: 3/2016 (difference explained on page 17)

Owner: Metropolitan Washington Airports Authority (MWAA)

Contact name: Shirlene Cleveland, P.E., DBIA - Package A Project Director

Phone Number: (703) 572-0505

Dulles Corridor Metrorail Phase 2 extends the WMATA Silver Line 11.4 miles west from Reston, through the Washington Dulles International Airport, and into Loudoun County. While this project is a rail based project, a significant portion of the project is similar in nature to MD 32 Phase 2. The design-build project included design and construction of improvements to the Dulles Greenway, the Dulles Toll Road (DTR), the Dulles International Airport Access Highway (DIAAH), Reston Parkway, Sunrise Valley Drive, Loudoun Station Drive, Route 606, Moran Road, and Lockridge Road to accommodate the new rail line and associated facilities. As a major design subconsultant, Dewberry was responsible for comprehensive civil and structural design, interchange modification design, and intersection design (including roundabouts). Design tasks included significant structural, traffic, hydraulics, environmental, permitting, utility avoidance, utility relocation, and right-of-way coordination tasks associated with the roadway improvements. The plans and permits were divided into distinct design packages based on discipline, geographic location, and construction priorities. While the total project value is $1.45B, the civil construction value for scope similar to MD 32 is $455M.

Specific roadway elements include 5.2 miles of DIAAH reconstruction, 3.4 miles of Greenway reconstruction, two miles of adjacent two-lane undivided and local road reconstruction,1.5 miles of new access roads, three major intersection improvements including one new signal and five signal modifications. Structural elements included 16 miles of track retaining walls, six new bridges, nine new pedestrian bridges, seven retaining walls, and 1,265 LF of noise walls. SWM elements included 31 SWM facilities (including six wetland mitigation sites, seven bioretention basins and four filtering practices). Utility relocations include 1.3 miles of ITS conduit and associated CCTV cameras, 3.8 miles of new communications conduit, 0.75 mile of new electric relocation, 2.2 miles of new waterline, and 1.5 miles of new sanitary line.

Dewberry's Role: Dewberry was responsible for ALL civil scope including roadway and interchange modification design; structural (retaining wall and culvert extensions) and bridge design; hydrologic and hydraulic studies and design, stormwater management, drainage design, stream relocation, floodplain studies, erosion and sediment control design; station site design; traffic analyses, maintenance of traffic; signing, marking, signals, lighting, ITS, erosion and sediment control design; environmental delineations, studies, compliance, and final permitting; right-of-way coordination and development of final right-of-way plans; as well as significant utility design and coordination – all of which were divided into distinct design packages based on discipline, geographic location, as well as permitting, right of way, and construction priorities. Additional responsibilities included field surveys and base mapping, public outreach and stakeholder coordination, design support during construction (RFI's, shop drawings, as-builts), extensive coordination with adjacent projects (Phase 1, developer projects, county projects), design QC and QA, architectural design; mechanical, electrical, and plumbing design.

Successful methods, approaches and innovations used on the project: Similar to our approach proposed for MD 32 Phase 2, the team broke the project into distinct work areas (East, Airport, and West Segments). As part of the project, numerous stakeholder directed changes took place which Dewberry successfully incorporated into the design development. This effort included updating the design schedule and design packages to be broken out in to priority packages to minimize construction delays on the project resulting from the directed changes. These included (but were not limited to); geometric modifications; drainage adjustments; changes to guide signs; and a change to the stormwater management criteria. This stormwater management change shifted the design effort from "end-of-pipe" structural ponds to linear site treatment similar to ESD to MEP done in Maryland. As a major project element, Dewberry designed a Temporary Traffic Control Plan (TTC) that exceeded minimum requirements for safety and mobility. Temporary lane shifts were designed to be twice the minimum length, to promote enhanced mobility and a reduction in the likelihood of side-swipe crashes. Also, all temporary markings were supplemented

with temporary raised pavement markers (reflectors) to enhance driver mobility at night and during wet conditions. To reduce the impacts that construction trucks had on public traffic, dedicated truck acceleration and deceleration lanes were embedded within the workzone at lengths that met AASHTO recommendations. Dewberry participated in weekly design and construction coordination meetings with the Contractor and other design leads to ensure all facets of the design (roadway, track, structures, station, systems, and utilities) were coordinated and to work through design challenges. We participated in numerous Internal Design Review (IDR) meetings required for all the milestone packages in all the different disciplines. We also participated in numerous formal and over-the-shoulder review meetings with MWAA, WMATA, VDOT and other locality stakeholders to work though comment resolutions.

Similar to MD 32 Phase 2, Dewberry was required to ensure that future corridor improvements were accommodated during the design phase. Specifically, the DIAAH improvements into Dulles Airport accommodated the future North Area Roads Improvements and the additional lanes through the East Segment of the project. Dewberry conducted a separate study to show possible future alignments and documented the impacts and future design exceptions to the existing infrastructure. Dewberry worked with MWAA's engineer to share their findings from MWAA's initial report and met with MWAA to coordinate the documentation. Consequently, during this process Dewberry discovered some flaws with the preliminary design and adjusted the design during design development to minimize the number of current and future design exceptions. For the Dulles Greenway improvements, Dewberry was responsible for ensuring that the proposed design would not preclude the future eight and ten lane wide typical sections and that the drainage design would accommodate these future improvements.

Finally, as the Deputy Civil Design Manager, Mr. Kenneth Davis was responsible to ensure that all Dewberry and subconsultant design staff followed the Project Design Quality Control Manual including specific quality control procedures and required reviews (constructability, environmental, and interdisciplinary). He reviewed all comments received on all design milestone packages to ensure they were addressed and complied with all project performance requirements.

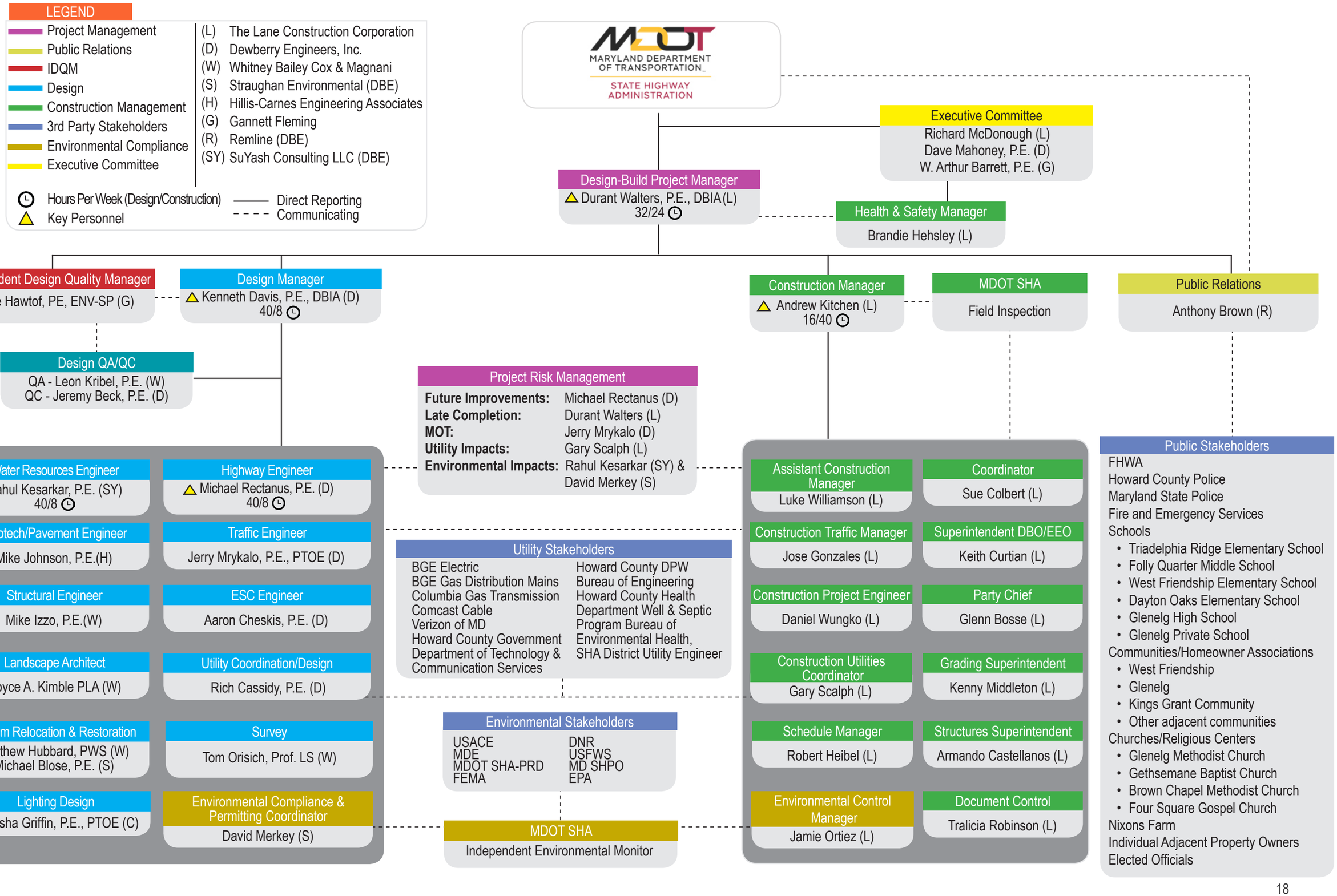
Ideas that led to better innovations: Extensive alternative designs were developed and approved including adjustments to the size, shape, and depth of track retaining walls as well as the associated track drainage systems, several modifications to the rail stations and pedestrian bridges, alternate roadway alignments to maximize safety and reduce property impacts, alternate bridge concepts which reduced long-term maintenance and provided construction efficiency, as well as numerous other ATCs which provided best value principles to the project stakeholders.

During the design development of the off-site station improvements, Dewberry engaged MWAA to initiate two changes to the preliminary design to further reduce impacts and costs to the project. The first was the Reston Parkway improvements at the Reston Station. Dewberry worked with MWAA, as a change order, to study and redesign the Reston Parkway alignment to minimize impacts to the adjacent commercial properties and to accommodate a recent sidewalk project being completed by Fairfax County. The change not only reduced property impacts, but also eliminated a proposed retaining wall along northbound Reston Parkway. The second change was for the Fairfax County Parkway improvements at the Herndon Station. Dewberry reanalyzed the turning movements of the intersection with Sunrise Valley Drive and reconfigured the turn lanes to reduce property and utility impacts and eliminated a proposed retaining wall.

Description of owner added scope: Dewberry received 147 change orders ($12.5M in owner change orders) including 54 civil/utility related change orders. The largest change order received was the SWM criteria change to "IIB" or linear LID type facilities like Maryland's ESD to MEP practice - $6M. Additional change orders received included $500K Dulles Station/Aerial guideway change, $500K Herndon South revisions, $475K various owner directed design studies, $420K SWM coordination with the Greenway and revised SWM design (separate from the "IIB" change).

DBT Members proposed for MD32:

DBT Member	Role on Project	Role on MD 32 Phase 2
Kenneth R. Davis, P.E., DBIA	Deputy Civil Design Manager	Design Manager
Michael Rectanus, P.E.	Lead Highway Engineer, East Segment	Highway Engineer
Rahul Kesarkar, P.E., PMP, LEED AP	Lead Water Resource Engineer, East Segment	Water Resources Engineer
David J. Mahoney, P.E.	Project Technical Manager and Dewberry Project Executive	Dewberry Project Executive
Jerry Mrykalo, P.E., PTOE	Lead Traffic Engineer	Traffic Engineer
Rich Cassidy, P.E.	Lead Utility Engineer	Utility Coordination/Design
Aaron Cheskis, P.E.	Lead ESC Engineer	ESC Engineer


LEGEND
Project Management
Public Relations
IDQM
Design
Construction Management
3rd Party Stakeholders
Environmental Compliance
Executive Committee
(L) The Lane Construction Corporation
(D) Dewberry Engineers, Inc.
(W) Whitney Bailey Cox & Magnani
(S) Straughan Environmental (DBE)
(H) Hillis-Carnes Engineering Associates
(G) Gannett Fleming
(R) Remline (DBE)
(SY) SuYash Consulting LLC (DBE)
Hours Per Week (Design/Construction)
Key Personnel
Direct Reporting
Communicating
MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION
Executive Committee
Richard McDonough (L)
Dave Mahoney, P.E. (D)
W. Arthur Barrett, P.E. (G)
Design-Build Project Manager
Durant Walters, P.E., DBIA (L)
32/24
Health & Safety Manager
Brandie Hehsley (L)
Independent Design Quality Manager
Steve Hawtof, PE, ENV-SP (G)
Design Manager
Kenneth Davis, P.E., DBIA (D)
40/8
Construction Manager
Andrew Kitchen (L)
16/40
MDOT SHA
Field Inspection
Public Relations
Anthony Brown (R)
Design QA/QC
QA - Leon Kribel, P.E. (W)
QC - Jeremy Beck, P.E. (D)
Project Risk Management
Future Improvements: Michael Rectanus (D)
Late Completion: Durant Walters (L)
MOT: Jerry Mrykalo (D)
Utility Impacts: Gary Scalph (L)
Environmental Impacts: Rahul Kesarkar (SY) & David Merkey (S)
Water Resources Engineer
Rahul Kesarkar, P.E. (SY)
40/8
Highway Engineer
Michael Rectanus, P.E. (D)
40/8
Geotech/Pavement Engineer
Mike Johnson, P.E.(H)
Traffic Engineer
Jerry Mrykalo, P.E., PTOE (D)
Structural Engineer
Mike Izzo, P.E.(W)
ESC Engineer
Aaron Cheskis, P.E. (D)
Landscape Architect
Joyce A. Kimble PLA (W)
Utility Coordination/Design
Rich Cassidy, P.E. (D)
Stream Relocation & Restoration
Matthew Hubbard, PWS (W)
Michael Blose, P.E. (S)
Survey
Tom Orisich, Prof. LS (W)
Lighting Design
Aneesha Griffin, P.E., PTOE (C)
Environmental Compliance & Permitting Coordinator
David Merkey (S)
Utility Stakeholders
BGE Electric
BGE Gas Distribution Mains
Columbia Gas Transmission
Comcast Cable
Verizon of MD
Howard County Government Department of Technology & Communication Services
Howard County DPW Bureau of Engineering
Howard County Health Department Well & Septic Program Bureau of Environmental Health,
SHA District Utility Engineer
Environmental Stakeholders
USACE
MDE
MDOT SHA-PRD
FEMA
DNR
USFWS
MD SHPO
EPA
MDOT SHA
Independent Environmental Monitor
Assistant Construction Manager
Luke Williamson (L)
Coordinator
Sue Colbert (L)
Construction Traffic Manager
Jose Gonzales (L)
Superintendent DBO/EEO
Keith Curtian (L)
Construction Project Engineer
Daniel Wungko (L)
Party Chief
Glenn Bosse (L)
Construction Utilities Coordinator
Gary Scalph (L)
Grading Superintendent
Kenny Middleton (L)
Schedule Manager
Robert Heibel (L)
Structures Superintendent
Armando Castellanos (L)
Environmental Control Manager
Jamie Ortiez (L)
Document Control
Tralicia Robinson (L)
Public Stakeholders
FHWA
Howard County Police
Maryland State Police
Fire and Emergency Services
Schools
• Triadelphia Ridge Elementary School
• Folly Quarter Middle School
• West Friendship Elementary School
• Dayton Oaks Elementary School
• Glenelg High School
• Glenelg Private School
Communities/Homeowner Associations
• West Friendship
• Glenelg
• Kings Grant Community
• Other adjacent communities
Churches/Religious Centers
• Glenelg Methodist Church
• Gethsemane Baptist Church
• Brown Chapel Methodist Church
• Four Square Gospel Church
Nixons Farm
Individual Adjacent Property Owners
Elected Officials

B. PROJECT UNDERSTANDING AND DESIGN-BUILD APPROACH

B. Project Understanding and Design-Build Approach

i. Understanding of the Project Goals and Scope

The Design-Build Team (DBT) of The Lane Construction Corporation (Lane) and Dewberry understands the MD 32 Phase 2 project is a continuation of MDOT SHA's and Howard County's need to improve safety and capacity throughout the MD 32 corridor from I-70 to limits of the current dualization at Linden Church Road, while minimizing environmental and right-of-way impacts. With the steady growth in population, residential development, and employment centers within the immediate vicinity of the MD 32 corridor, trip generation will expand as well. As trip distribution and route assignment gets more complicated, the majority of traffic assignments share a common route, MD 32. It is inevitable that traffic volume will soon exceed the acceptable Level of Service (LOS) along MD 32. There is an urgency for this project to improve traffic capacity and safety. This project will take a step forward in completing the Patuxent Freeway System that provides a full access control highway that connects traffic from Annapolis to I-70. The DBT fully understands the project goals and scope as outlined in the Phase One – RFQ document and will use the knowledge learned through past experiences as a successful DBT on prior MDOT SHA projects to achieve the project goals:

Goal One – Provide a project that maximizes the project elements to improve corridor traffic operations and safety while being compatible with the future planned corridor improvements: The DBT understands MDOT SHA's intent for this corridor and the needs fulfilled by this project. Our solution will provide MDOT SHA with the outlined subgoals of:

1. Improve corridor traffic operations by improving the network capacity and reducing traffic delay of AM and PM peak periods for 2040 design year when compared to the no build option. Particular attention will be paid to all signalized intersections for proper signal timing to reduce queues.
2. Ensure all traffic operations at intersections along the corridor will operate at LOS E or better in the 2040 design by analyzing traffic counts, signal timing, queues, delays, as well as properly designed ingress and egress along the corridor.
3. Improve safety by reducing traffic crash rate along the corridor, including between MD 144 and the I-70 interchange though the use of practical design. Special attention and innovation will be required on the north end of the project. Detailed traffic analysis will be used in developing the design to maximize traffic flow at these busy intersections.
4. Provide compatibility to the maximum extent practical with future planned corridor improvements including new interchanges at the Dayton Shop, Rosemary Lane, and MD 144 along with modifications to the I-70 interchange through coordination with future development plans. Considerations are already in motion for a potential alternative technical concept (ATC) at the Dayton Shop interchange. The DBT is considering maximizing project elements at this intersection by incorporating future design into this Contract, thus saving future expense for MDOT SHA.
5. Conducting Road Safety Audit (RSA) of existing conditions and final design. Perform pre-construction safety upgrades to corridor to address RSA identified deficiencies.

Goal Two – Provide a project that minimizes inconvenience to the community and the traveling public: The DBT will have a dynamic scheduling and maintenance of traffic (MOT) approach to produce a prudent and comprehensive construction sequencing plan and efficiently execute it to achieve project completion in the shortest time possible, all while minimizing the construction duration and impacts that cause disruption and delays to the local communities and traveling public. The DBT understands that to achieve the above objective, the construction pace will have to be rapid and detours/crossovers kept to a minimum. The DBT will utilize the following measures during design and construction to reduce impacts:

1. Minimize impacts to existing utilities, environmental resources and right-of-way during the design process to expedite utility and environmental approvals and right-of-way clearance to start construction activities as soon as possible.
2. Expedite the start of construction by using rolling design packages.
3. Optimize the construction sequencing to open key areas of the project for use by the traveling public early in the schedule; such as the southern terminus with the Phase 1 improvements.
4. Eliminate or minimize detours for the reconstruction of the Triadelphia Road Bridge over MD 32, by evaluating staged construction; using multiple structure crews; and/or Accelerated Bridge Construction techniques to accelerate and shorten construction durations, which will help maintain access to local schools and lesson inconvenience to the public.
5. Adjust structure locations to eliminate the need for temporary culvert and stream realignments during phased construction to maximize project elements and reduce the construction timeline.
6. Minimize flagging operations to reduce impacts to motorist by using temporary cross overs.
7. Inform the traveling public of changes to traffic patterns and emergency detours using Variable Message Signs and project web site as needed.
8. Implement safety measures during phased construction to minimize accidents/incidents.
9. Coordinate the placement of ITS innovative technologies and temporary speed enforcement cameras in the work zone to assist in slowing down motorists and improve work zone safety.
10. Perform construction operations during daytime hours to the greatest extent practical out of respect of nearby residents.

11. Create a Traffic Management Plan that will accelerate schedule, keeping in mind cut-to-fill movement, structure phasing, and pipe crossings. This plan will require the DBT to improvise and allow for access to site cuts and fills as the earth movement on the project will control the phasing of the project due to cut to fill proximity with each other. A logical well thought out plan will ease passage for motorists, recuse incidents, and minimize delays.
12. Provide active monitoring and management of the project schedule ensuring an on-time completion and minimal detour durations.

Goal Three – Provide a project that minimizes overall impacts (utilities, environmental resources, etc.) and provides proactive coordination. The DBT understands that proactive communication with MDOT SHA and other project stakeholders is a priority for successful project completion. Our teams' goal is also to be sensitive to and minimize impacts to the surrounding environmental resources, utilities, and right-of-way.

1. The proposed widening and dualization of MD 32 will have many environmental impacts and will require a variety of regulatory approvals and permits. The vicinity of the MD 32 corridor has a distinct natural landscape along with residential homes. The DBT understands the importance of preserving waterways, wetlands, forests, and the floodplain. The DBT has engaged some of the region's top environmental specialists and SWM designers to evaluate impacts to the environmental resources identified in the preliminary plans and propose mitigation strategies with the intent to minimize the impacts already shown in the preliminary design. In fact, members of the DBT are PRD reviewers and experts in their field. This expertise and insight will result in minimizing impacts to the natural environment all while expediting the acquisition of permits.
2. The utility coordinators on the DBT will work with the various utility owners to expedite plan review and to get concurrence that their facilities will not be impacted and/or provide updated design information for the utility owners to complete their utility relocation plans in a timely manner. The DBT will make every effort to avoid utility relocations on the project; however, we are aware that some overhead and underground utilities as shown in the Draft RFP will need to be relocated.
3. The DBT will provide transparent and proactive communication with the local stakeholders and traveling public. Our public outreach team members will coordinate with MDOT SHA for public meetings, mass media, social media outlets, and website to proactively engage the local communities and solicit feedback.
4. The DBT management team will provide regular progress updates to the MDOT SHA Design Manager and Project Engineer, fostering a transparent communication among all stakeholders.
5. ATC's will consider and minimize potential impacts.

Understanding of the Project Scope: The DBT understands that the project has a fixed price of $85,250,000 and will maximize the project elements to achieve the best value for MDOT SHA. The general scope of work is to design and construct MD 32 from a two-lane arterial to a four-lane divided highway from north of Linden Church Road to I-70 within Howard County. The typical section of MD 32 will provide four 12-foot lanes, 4-foot inside and 10-foot outside shoulders and a 26-foot wide grass median with continuous traffic barrier proposed. The existing Triadelphia Road Bridge will be reconstructed and three new bridges spanning over relocated streams will be required. Access roads will be required to accommodate residents along southbound MD 32, whose current access to MD 32 will be cut off from the dualization. New intersection channelization are required to be installed at many intersections. The design will accommodate future corridor improvements.

The specific scope items of the improvements are anticipated to include, but not limited to, the design and construction of earthwork, new pavement construction, existing pavement rehabilitation, drainage, storm water management, E&S, MOT, reforestation, landscaping, signing and marking, intersection lighting, major structures (four bridges), small structures (culverts), and stream realignment and rehabilitation. In support of the design and construction activities, the DBT will perform independent design quality management, design QC and QA, utility coordination, environmental permit acquisition, public outreach, survey, geotechnical exploration, coordination with other contracts, and construction phase services. Other services anticipated include partnering, general coordination with MDOT SHA and project stakeholders, production of required deliverables, development and implementation of a Design Quality Control Plan and public outreach plan, maintenance of the project site, implementation of required mitigation or remediation and other items to successfully complete the project.

ii. Understanding of the most relevant and critical risks in achieving the Project Goals

Developing a strategic plan to mitigate the major project risks is critical to meeting or exceeding the project goals of improving corridor traffic operations and safety, minimizing inconvenience to the community and the traveling public, and minimizing the overall impacts to utilities, environmental resources, along with other elements. The DBT's experience in identifying, quantifying, and managing project risks has been proven on projects such as ICC Contracts C, D/E, Route 29 Solutions, MD 235, and MD 4. Having completed several design-build projects for MDOT SHA, the DBT is acutely aware of the requirements, schedule implication and effort needed to advance the MD 32 Phase 2 project within the allotted timeframe. Our proactive approach is to collaborate with MDOT SHA, starting with a risk development workshop. We will develop a risk mitigation plan that focuses on the project goals and builds flexibility into the design and construction phases. These identified risks are then tracked and assessed for mitigation throughout design and construction by assigned risk managers as represented in our organization chart. Risk managers are held accountable for mitigation and achieving project goals. As a prelude to the risk development workshop, the DBT has specifically identified the following risks as critical to the successful execution of the project.

Goal One – Provide a project that maximizes the project elements to improve corridor traffic operations and safety while being compatible with the future planned corridor improvements. The DBT interprets Goal One as being in the final build condition (not during construction). While there are risks that could impact improving corridor traffic operations and safety, most of these risks are more minor in nature. The DBT's focus on using good engineering judgement and meeting all project design performance requirements along with quality construction will result in a project that meets Goal One. The most relevant/critical risk in achieving Goal One focuses more on designing without the future planned corridor improvements in mind:

Relevant/Critical Risk to Achieving Goal One: Design is not compatible with future improvements.

Why is the risk critical?: Failure to meet this goal will not allow MDOT SHA to complete the ultimate build out of this critical corridor and alleviate future congestion, mobilization and safety issues. Failure to meet the ultimate operations and safety goals means that travel delay will persist beyond 2040, LOS will not increase beyond LOS of E, and crashes may still persist in the areas where future improvements are planned.

Impacts: Failure to accommodate future improvements will have impacts to the community and traffic operations of the corridor in the future. For example, not allowing for the ultimate build-out of the future Dayton Shop Interchange will prevent safe, free-flow access to and from the shop once MD 32 is widened, speeds increase, and reaction times decrease for left turn movements. The signalized intersection at MD 144 will ultimately fail and create future delays to and from I-70. Most importantly, safety will be compromised (not maximized) as crashes will persist at these locations as speeds and volumes increase. Additionally, the costs to construct the future improvements will be increased as certain elements will need to be reconstructed and additional MOT or detours will be necessary.

Mitigation Strategies: It is critical for the DBT to design the corridor with the ultimate corridor facility in mind. Our Team will layout the conceptual configuration of each future improvement and show MDOT SHA how this project accommodates all future planned improvements. The DBT will design and construct the MD 32 Phase 2 permanent elements so there is no need to demolish any part of this project in the future to construct additional planned improvements. Once shortlisted, we plan to develop and receive approval for several innovative ATC's that will reduce overall project costs with the goal of incorporating some of the future planned improvements in this Phase 2 project. We have assigned Michael Rectanus, P.E., our Highway Engineer as the Risk Manager for this item. Mr. Rectanus has significant experience and success with this issue.

Experience Mitigating Similar Risks: Dewberry served as the Lead Designer for ICC Contract C and D/E. In both of these projects, Dewberry managed these same risks. On ICC Contract C, we conceptually designed the future planned interchange for Konterra and MD 200 in Area M. We adjusted the location of toll gantries, SWM facilities, and access roads to not impact design and construction of this future facility. In addition, we designed the shoulders and roadside grading to be able to immediately receive the future construction. On ICC Contract D/E we provided additional shoulder width along westbound ICC to be used as a deceleration lane for the future loop ramp at Virginia Manor Road. The design team superimposed the future widened bridge and loop ramp with our proposed design to show that the future configuration works with the bike trail alignment and bridge clearances.

Project Stakeholder Role in Addressing Risk: MDOT SHA can provide all available designs for the planned future improvements in MicroStation format to expedite the review and inclusion to ensure that this project will not preclude future projects.

Goal Two – Provide a project that minimizes inconvenience to the community and the traveling public. The DBT interprets Goal Two as pertaining to the construction phase of the project. The most relevant/critical risks in achieving Goal Two include 1) Late Project Completion; and 2) ineffective MOT.

Relevant/Critical Risk to Achieving Goal One and Goal Two: Late Project Completion

Why the risk is critical?: Failure to meet project milestones throughout the performance of the Contract will have a cascading effect on the project's completion date. Failure to identify slipping milestones early on, and over the course of the project, will reduce the team's ability to mitigate delays through resequencing, phasing changes, staffing revisions or accelerations.

Impacts: Poor schedule performance/not finishing the project on time will impact the project goals of improving corridor traffic operations and safety along with minimizing the inconvenience to the community and the traveling public. Extending the project's completion will impact Goal One and cause the public additional time in unsafe conditions and dysfunctional traffic operations. Late completion will also impact Goal Two, and increase public inconvenience and further environmental resource risk. These extended delays will also cause the public to view the project, the DBT, and MDOT SHA negatively.

Mitigation Strategies: It is critical for the DBT to execute this project with a well thought out and effective plan that contains a matrix for measuring performance, assigns accountability for the action of team members, and has proper resource allocation, monitoring, and expert oversight. This plan is more than just developing a realistic project schedule. It includes the management and updates of the schedule and this is accomplished only through proactive communication between the whole team for the duration of the project. The following section highlights specific activities and meetings that will be used on MD 32 Phase 2 to complete the project on or ahead of schedule.

Our project plan starts with the development of a comprehensive Primavera P6 project schedule that includes all design, permitting/approvals, construction, and other project activities (utility relocations, ROW clearance, etc.) including activities requiring third party actions and assigns them to specific P6 calendars that define any work restriction periods, weather allowances, holiday closures, or seasonal restrictions. Our schedule and sequence of work will provide the framework for how the project will be designed, permitted/approved, and constructed in the most efficient manner starting from NTP to final clean-up and the metrics for tracking our performance, identifying delay and avenues of relief. The project management team will meet weekly during design and construction, as was done recently on our MD 4 D-B project, and proactively monitor and adjust the schedule. Design activities have specific milestone deadlines and are managed proactively. Status is monitored on a weekly basis with specific attention made to those that are on the Critical Path. Managing the design schedule is critically important because delays to certain activities can have far reaching effects on the project. Identified impacts to the schedule may include: delays in obtaining permits/approvals, unforeseen site conditions, weather delays, unavailable ROW, or delays from third party utility relocations. Any impacts will be immediately communicated to SHA and project stakeholders for assistance with their resolution.

Management of the schedule will be conducted proactively for the full project duration. Our team is an expert at managing the schedule with all stakeholders, MDOT SHA, and plan reviewers. We have also excelled at minimizing and coordinating utility relocations as proven on our MD 4 project. We will use the same schedule management techniques on MD 32 Phase 2 as prior projects and implement a series of work sessions that have proven to keep our progress on schedule.

Weekly status meetings: Lane and Dewberry operate with the open and honest communication that results from years of working together. This structure permits genuine discussions at our weekly project status meetings. At the start of each weekly meeting, the project schedule is reviewed. All members are accountable for updating their design and construction activities, and the combined schedule is reviewed for impacts. The team is tasked for maintaining progress at all levels, and for jointly mitigating delays.

Design QA/QC meetings: Prior to making a design submission to our IDQM, the DBT will host a meeting with QC reviewers to communicate design developments, design intent, and conformance to requirements. This initial kick-off expedites the QC review by providing the reviewer with an in-depth understanding of the design lead's objectives and expedite the review.

Design SHA-PRD meetings: Our experienced water resources personnel understands the need to meet with MDOT SHA-Plan Review Division and SHA-Highway Hydraulics prior to plan development. This kick-off meeting and subsequent work sessions provide the designer and reviewers the opportunity to explore concepts and efficiencies in an expedited environment. It is our experience, that often SHA-HH has vetted avenues we wish to explore and can advise of trip hazards in advance. These communications result in expedited design and review.

Design review meetings: Upon the receipt of design submission comments, our team hosts a meeting with the MDOT SHA design lead and reviewers to review all comments and confirm their intent. Solutions will be proposed at the meeting and discussed prior to spending time on rework that will not meet the reviewer's expectations. This open, informal communication has proven to expedite our design timeline, and has been critical in resolving conflicts with reviewers that are impracticable in their reviews.

Utility coordination meetings: Monthly meetings will be held with all present utilities over the course of the project, continually communicating to them the design and construction deadlines needed for the project's success. These are attended by our management and design leads, MDOT SHA's utility and design leads, along with all impacted utilities.

To ensure the timely project completion, we have assigned the Design-Build Project Manager (DBPM), Mr. Durant Walters, P.E., DBIA, as the Risk Manager for this issue. Mr. Walters has nearly to 30 years of experience in the scheduling and execution of design-build and design-bid-build projects.

Experience Mitigating Similar Risks: The MD 4 Design-Build project was delivered using the integrated approach described here to achieve the on-time completion of all design packages and construction milestones. The same key staff members from the MD 4 team are slated for the MD 32 Phase 2 project and will bring with them their integrated approach of schedule tracking and management. On MD 4, the DBT reviewed the CPM schedule on a weekly basis throughout the duration of the project and provided MOT SHA's Design Manager and Project Engineer status updates on all Critical Path activities and milestone dates. Over the course of design and construction, adjustments were made to keep cCritical Path activities on track, such as re-sequencing deliverables and applying additional resources. MDOT SHA's DM and PE both assisted in expediting reviews when necessary to maintain schedule because of the regular updates and their understanding of the schedule.

Project Stakeholder Role in Addressing Risk: The DBT will partner with MSOT SHA, MDOT SHA-PRD, regulatory/resource agencies, utilities, and other project stakeholders for the timely review and approval of plans and permits. It is our expectation that MDOT SHA's design reviewers, PRD consultants, and in-house engineers will meet regularly with the DBT and collaborate on solutions to issues. We have experienced this true partnering engagement by MDOT SHA on past projects and believe we will experience the same commitment on this critical project.

Relevant/Critical Risk to Achieving Goal Two: Ineffective Maintenance of Traffic (MOT)

Why the risk is critical?: Carrying over 24,000 vehicles per day, MD 32 is a critical route for local, commuter and commercial traffic in the heart of Howard County. In addition to providing access for communities such as West Friendship, Glenelg, and Dayton, the roadway is a vital regional route connecting the I-70 corridor to the US 29 and I-95 corridors. The combination of these high traffic volumes, high travel speeds (posted speed 55 mph), and frequent driveways and crossovers make maintaining a high level of mobility and project safety challenging. Furthermore, the planned Triadelphia Road bridge reconstruction adjacent to Triadelphia Ridge Elementary School, Folly Quarter Middle School, and Glenelg has the possibility of severely affecting community connectivity and student safety. In combination, these factors underscore the importance of thoroughly planning, accurately designing, and carefully implementing a MOT program that prioritizes the maximization of mobility, the maximization of safety, and the minimization of disruptions to the community and the traveling public.

Impacts: The failure to prioritize mobility and safety during construction can have far-reaching impacts, such as impacting the community and traffic operations during construction, compromising safety, and hindering the ability to complete construction on time. For example, temporary lane closures on MD 32 are especially impactful, as traffic must alternate in a single reversible lane utilizing flagging. Also, the failure to minimize lane closures associated with Triadelphia Road bridge reconstruction can have significant impacts on Howard County School students, Howard County emergency services, and the local community. Most importantly, the failure to implement a well-designed and carefully executed MOT plan can lead to increases crashes and injuries within the work zone.

Mitigation: We are committed to exceeding industry standards to achieve these goals by measures such as:

1. Minimizing lane closures. The DBT has proactively developed a sequence of construction that accomplishes this goal. We anticipate constructing the new barrel behind barrier, minimizing the need for lane closures on the existing roadway, and maximizing safety by providing positive protection for the traveling public and workers.
2. Designing lane shifts for enhanced mobility. We anticipate utilizing lane shift lengths that are twice as long as required, providing smooth transitions that avoid the need for traffic to slow for shifts, and also enhances the safety of lane shifts.
3. Enhanced Devices. We know the importance of enhanced temporary traffic control devices on high speed, high volume roadways to maximize safety. Examples of techniques we plan to employ include: reduced channelizing device spacing for better delineation of lane shifts, extra-wide markings for increased visibility of lane lines, work zone ITS devices such as temporary CCTV cameras and PCMS signs, and oversize warning signs.
4. Limiting Triadelphia Road Impacts. To accomplish this we will a) focus on limiting the closure period to less than the anticipated one year duration, and b) strive to increase capacity during construction. To increase capacity, we will first strive to design the bridge structure and horizontal alignment of the bridge in a manner that maintains two lanes in either one or both of the anticipated stages of construction. If it is determined that only a single lane can be maintained, we will investigate maintaining two-way traffic via a temporary signal, which can be timed to prioritize AM and PM movements to and from the school, limiting community impacts and avoiding a lengthy bus route detour.
5. As part of our analysis to reduce construction delays at Triadelphia Road, we will look at innovative ways to stage construction including aspects of Accelerated Bridge Construction (ABC).
6. Early opening of key areas. We believe it is feasible to prioritize and open critical areas of added mobility prior to full project completion. For example, at the southern end of the project, we will strive to complete the new southbound lanes early, allowing early expansion of the dualization achieved with the Phase 1 project. In addition, we will strive to open the I-70 interchange improvement early, providing significant benefits to interchange operation as well as traffic connecting to/from MD 144 in the West Friendship area.
7. We will work on balancing earthwork within adjacent work areas to eliminate using exiting MD 32 roadway as a haul route.

To ensure the design and execution of effective MOT, we have assigned Traffic Engineer, Mr. Jerry Mrykalo, P.E., PTOE, as the Risk Manager for this issue. Mr. Mrykalo has 13 years of experience in the ensuring mobility, and designing and implementing MOT on large, complex projects on both design-build and design-bid-build projects.

Experience Mitigating Similar Risks: On ICC Contract C, with similar ROW constraints to MD 32 Phase 2, we were able to revise the horizontal alignment of Old Gunpowder Road over I-95 to accommodate building the new bridge offline maintaining two way traffic on the existing bridge minimizing impacts to the local communities**.**

Project Stakeholder Role in Addressing rRisk: We anticipate MDOT SHA to be involved from a review and approval standpoint for the TMP and TTC plans. We also anticipate MDOT SHA to be an active partner helping the DBT promote safety and public outreach.

Goal Three – Provide a project that minimizes overall impacts (utilities, environmental resources, etc.) and provides proactive coordination. The DBT interprets Goal Three as multi-faceted. It is the combination of designing and building a project that minimizes the overall footprint of the project with the goal of avoiding or minimizing impacts to the surrounding

facilities and natural environment. It also includes the schedule component and any delay caused by utility coordination or environmental permitting will have an adverse effect on Goal Two (see relevant risk section on schedule above). The most relevant/critical risks in achieving Goal Three include 1) Utility Coordination and Relocation; 2) Environmental Permitting; and 3) Existing SWM Ponds and Roadway Embankments considered as MD 378.

Relevant/Critical Risk to Achieving Goals Two and Three: Late Utility Coordination and Relocation

Why the risk is critical?: The coordination of all known, and identification of unknown third party utilities, is critical to the project schedule. Utility relocations are notorious for taking longer than expected, and the location of facilities can prevent the construction of project elements, delaying the project. Additionally, if the design of the relocations is not coordinated with the overall project design, there is a risk that the permitted environmental impacts could increase or not effectively accommodate the relocations.

Impacts: Utility owner design and relocation delays can impact the DBT project schedule by delaying the start of construction activities or forcing construction activities to be re-sequenced, ultimately delaying the project.

Mitigation: The DBT has extensive experience coordinating with the utility owners identified for MD 32 Phase 2 and will extend this coordination for the duration of the project in order to meet Goals One, Two, and Three. Our mitigation efforts include:

1. Once shortlisted, meet with each utility owner identified in the draft RFP to discuss anticipated relocations expected versus the concept design developed by MDOT SHA. We will identify critical constraints including Time-of-Year (TOY) restrictions and cutover requirements. We will discuss the utility owner's design and relocation durations to be included in the DBT CPM schedule. We will also discuss the facilities, access requirements, and predecessors to each realignment and include this sequence in the CPM. As part of this phase of procurement, we will analyze and develop strategies to avoid or minimize impacts to each of the utilities. Our team has found that avoidance is always best.
2. Following award, we will conduct a Utility Coordination Kick-off Meeting with representatives from all utility owners listed in the RFP; the MDOT SHA PM and the District 7 Utility Engineer, and the DBT key staff and utility coordination staff to begin the proactive communication between all parties to ensure all relocations are designed and relocated in coordination with the project schedule.
3. Monthly Utility Coordination meetings will continue to be held to discuss progress and identify any issues that need resolution. Prior to each meeting, agendas and current DBT design progress will be provided to all attendees to facilitate anticipated discussions. Each utility will also provide their progress updates to ensure the project remains on track.

To ensure the timely relocation of utilities, we have assigned the Utility Coordinator, Mr. Gary Scalph, as the Risk Manager for this issue. Mr. Scalph has over to 30 years of experience in the coordination, sequencing and execution of utility relocations on design-build and design-bid-build projects.

Experience Mitigating Similar Risks: Both our DBPM, Mr. Walters and Design Manager (DM), Mr. Davis worked together recently on the utility coordination of the MD 4 design-build project. To begin, Mr. Davis led the design of ATC's to redesign elements of the design, including SWM, to eliminate all RFP identified water, sewer, communication, and natural gas utility relocations except two Pepco poles. This began during procurement and carried through design development. Mr. Walters led monthly utility coordination meetings to keep each utility owner up-to-date on the DBT design progress. He developed and submitted agendas along with the utility impact matrix in advance of each meeting. Each utility representative reviewed our design documents to ensure all design proposed avoided their facilities. For the Pepco relocations, we worked closely with them on their time requirements to design and relocate their facilities. We incorporated this into the CPM schedule and monitored to keep the project on schedule.

Project Stakeholder Role in addressing risk: The DBT will partner with MDOT SHA and each utility owner to achieve all utility relocations as planned in the project schedule in order to avoid any delays to the project. We anticipate all utility owners to approach this project in a proactive manner by providing the appropriate resources to design, relocate, and/or review DBT design info to keep all relocations on schedule.

Relevant/Critical Risk to Achieving Goals Two and Three: Environmental Permitting and Timely Approvals
Why the risk is critical: This risk has an impact on Goal Two and Goal Three. Based on the current MDOT SHA's design concept, some of the proposed SWM BMPs may not be feasible due to narrow medians and wetland areas. The DBT will need to revise the Concept SWM design to obtain approval. This will have an impact on the overall design schedule and require additional reviews from PRD and MDE. Additionally, in order to begin work on early construction packages, initial ESC plans may need to be approved by PRD and this cannot happen until SWM Concept is approved.

There are seven existing SWM facilities within the LOD that may need to be upgraded to MD 378 standards and may result in changing the hazard classification of an existing pond embankment into a higher category. Changes to the embankment hazard classification would be subject to MDE office of dam safety review resulting in additional time for approval.

In addition to SWM, there are numerous culvert crossings throughout the project limits. Some of these culverts will need to be upsized which can create the potential for downstream flooding; additional quantity management; and additional outfall protections (some outside the LOD). Also culvert extensions within 100-year floodplains may result in increase in headwater elevations for 100 year storm events. The DBT anticipates that the final SWM approved plans by PRD will most likely have additional impacts to surrounding environmental features in certain locations, which will require additional permit modifications.

Impacts: Impact to design schedule, additional reviews by review agencies, impact to the construction schedule, additional delays and inconvenience to public due to extended MOT duration. In addition to schedule delays, there will be additional impacts to surrounding environmental features in certain locations.

Mitigation: Our team has a comprehensive knowledge of PRD and MDE's regulations. Mr. Rahul Kesarkar, P.E., a PRD reviewer, will be supported by other PRD/MDE reviewers on our team. Additionally, our PRD/MDE reviewers will follow Dewberry's detailed design-build QA/QC process (the Design Quality Control Plan – DQCP) to ensure a high quality submittal and minimize review comments. We will identify opportunities to move SWM BMPs out of regulated resources and locate them where greater potential for infiltration or subsurface storage exists thereby reducing the amount of treatment needed. This approach will help minimize the SWM BMP footprints, impacts to environmentally sensitive features and reduce permit review times associated with wetlands and waterways.

We will review as-built plans and other available documents for all existing ponds to determine if the ponds are in compliance with MD 378 standards. We will avoid/minimize impacts to existing MD 378 embankments to avoid permit delays associated with MDE Office of Dam Safety review. If we cannot avoid impacts, MD 378 embankments design will be one of the early design activities to begin coordination with MDE Office of Dam Safety. In addition to Mr. Kesarkar, our team has Mr. Mike Blose, P.E., an approved MDE reviewer, who is currently managing several existing BMP retrofit projects throughout the state as part of the TMDL program for MDOT SHA WPD and has a thorough understanding of MD 378 and MDE office of Dam Safety requirements.

We will provide innovative upstream flood mitigation strategies to manage downstream flooding. For example, at Middle Patuxent River stream relocation we will use existing stream footprint to provide oxbow ponds integrated with the stream relocation to provide flood mitigation without impacting additional adjacent environmental features. In doing so, we will be able to receive concurrence from the permitting agencies resulting in timely approvals.

To ensure timely environmental permitting and approvals, we have assigned our proposed Water Resources Engineer, Mr. Rahul Kesarkar, P.E. and Environmental Specialist, David Merkey, as the Risk Managers for this issue. Mr. Kesarkar is a MDOT SHA PRD reviewer and has a comprehensive knowledge of water resource requirements. Mr. Merkey is a Senior Environmental Scientist with Straughan Environmental and extensive experience obtaining environmental permits and ensuring environmental compliance is achieved.

Experience Mitigating Similar Risks: The DBT revised a MDE approved SWM concept for the recently completed MD 4 Design-Build project and received both Concept and Final SWM-ESC approvals within 12 months. The revised concept met the SWM requirements for the project while avoiding impacts to most of the environmental features, existing utilities, and right-of-way.

As part of ICC D/E, Dewberry and Mr. Kesarkar coordinated with the MDE Office of Dam Safety for review and approval of two locations along the I-95 roadway embankment due to the attenuation behind them. In addition, three MD 378 pond embankments were designed and approved through MDE.

Project Stakeholder Role in addressing risk: MDOT SHA could expedite concurrence for innovative approaches and non-standard designs. MDOT SHA could facilitate regular meetings with PRD, MDE and other permitting agencies. MDOT SHA can bring expedited MDE reviewers on-board for MD 378 reviews. For significant or high hazard embankments, MDOT SHA can assist in preparation of Emergency Action Plan, notifications to the downstream property owners within the danger reach.

iii. Discuss the Proposer's approach to Design-Build from design initiation through construction completion.

Lane, as a company has successfully delivered over 80 design-build projects worth $4B and Dewberry has successfully delivered over 75 design-build projects worth $9 Billion. From a local perspective, Lane and Dewberry have delivered numerous design-build projects in the Baltimore/Washington area including ICC Contracts C & D/E, MD 237, I-495 Arena Drive, I-495 HOT Lanes, Pentagon Secure By-pass, VA 29, Dulles Rail Phase 1, Dulles Rail Phase 2, and most recently, MD 4 Design-Build Community and Safety Enhancement Project (MD 4). Our continuity of staff, extensive experience and open and frequent communications set the foundation of our approach to design-build from initiation through completion that will result in the delivery of a successful project for MDOT SHA. The DBT members proposed for MD 32 Phase 2 are the same professionals that have completed the design and construction of MD 4.

The DBT is well trained and is committed to the design-build process. Both Lane and Dewberry are Industry Partners in the nationally recognized Design-Build Institute of America (DBIA). This commitment extends throughout the leaders selected for this project. The DBPM and DM are both DBIA Certified Professionals and subscribe to the foundations of the best practices in design-build. As the DBPM, Mr. Durant Walters, P.E., DBIA, has 29 years of heavy-civil construction experience and has delivered five design-build projects with a construction value of $107M. As the DM, Mr. Kenneth Davis, P.E., DBIA, has 20 years

of design-build experience and has delivered six design-build projects with a construction value of $3.39B including leading four design-build projects for MDOT SHA worth $658M. These members are fully invested in design-build, and regularly present, attend, or contribute to both regional and national DBIA meetings and conferences.

As a result of our experiences working as a unified team over the years, the Lane/Dewberry DBT has adopted a sequence of steps and best practices for the delivery of projects. These steps focus on continuous communication between the DBT, MDOT SHA, and the project's stakeholders. Our goal as a design-builder is to provide the Owner with a seamless progression of activities from start to finish while regularly communicating updates and engaging everyone in the decision-making process. We start by developing an initial communication structure during Step 2 of the procurement where we meet with MDOT SHA in one-on-one meetings; develop innovative ATC's; and ask the essential questions that will allow us to fully understand the intricacies of the project. As part of the communication structure, Risk Managers have been identified and assigned based on the risks presented in this SOQ package. Once the project is awarded, these Risk Managers will continue to monitor, measure, report, and mitigate collaboratively with members of the DBT, MDOT SHA and the key stakeholders. With the project scope, risks, goals, and key issues thoroughly mapped, the DBPM, DM, CM and key sub-consultants and subcontractors will refine the project schedule developed for Step 2 of this solicitation. Our team uses the CPM throughout design and construction as our road map to success. Its accuracy, regular updating and monitoring are critical to the project's success.

With the path forward defined by these initial meetings, the design development will initiate with an overarching focus on environmental compliance and permit requirements. Again, ongoing communication between design leads, construction personnel, MDOT SHA, and environmental agencies will lead this development. The projects design development will continue to use this communication though the process of iterative Design Coordination Meetings, Practical Design Meetings, and the development of Design Packages. Design development will be paired with Quality Control, Quality Management, and Independent Design Quality Management by our Team Partner, Gannett Fleming.

As approved packages are issued for construction, the construction members of our team will transition from design constructability review and collaboration to construction activities. The construction team will have contributed to our project schedule and continue to adhere to the commitment dates. The transition to field operations will also mandate the ramping up of our public outreach coordination and safety practices. The stakeholder relationships initiated at kick-off will transition to daily construction coordination of facility relocations, environmental compliance, and subcontractor management. The construction management staff will implement procedures for document management, issue notification, and change management while continuing partnering meetings, utility coordination meetings, and public outreach established earlier in the project. The project design group continues to be active during construction in monitoring the projects' progress, responding to RFI's, reviewing submittals and compiling as-builts. Designers will actively participate in regular partnering meetings ensuring the project is following the tract they envisioned and to have a thorough understanding of any issues that arise. This unified, fully integrated team, solidified by constant communication, will successfully implement these project components as elaborated in this section to deliver the project on-time while meeting all the project goals.

Project Initiation: We see the kickoff meeting and workshop as one of the most important meetings for the entire project. At this meeting, the entire team begins to develop key relationships that will be carried throughout the entire project, gains a deeper understanding of the project progress, project concepts and current issues, and sets the tone for an elevated level of performance for the next several years. Our method and approach to the kickoff meeting is to review and discuss the project scope, the basis of concepts, and any adjustments necessary for cost management within MDOT SHA's dedicated funding. We also want to understand every hot button that will define overall success on the project. These items often include safety, budget, schedule, aesthetics and traffic operations. Lastly, we like to work with the team to develop and assign specific action items to ensure that items are being completed every day, which help move the project forward. Often times, this project kickoff meeting is combined with the Partnering kickoff meeting.

Partnering Meetings: Partnering is the best way to integrate the team and ensure the project achieves the maximum value of the design-build process. At the initial partnering meeting we will establish and clearly define each team member's roles and responsibilities as they relate to the project. During this meeting we will also define lines of communication and identify points of contact and their counterparts between organizations. Throughout design and construction, we will hold monthly informal partnering meetings. These meetings give the team ample opportunities to discuss progress, set action items, discuss design/construction progress and collaborate to find innovative ways to meet project goals. To track all positive and negative trends, we will maintain a matrix of issues so all team members can review hot issues at-a-glance. This matrix is created as a collaborative tool and is updated at each meeting. As issues are added to the list, the goal is to resolve them as quickly as possible. If an item remains on the list more than one month, it automatically becomes an urgent issue and is escalated.

We invite stakeholders such as local governments, utility companies, adjacent property owners, and local businesses to understand their concerns and ensure that they are addressed from the beginning. In our experience, the effort devoted to partnering directly correlates to successful project results, including under budget and ahead of schedule performance. Formal partnering will be set at regular intervals to involve executives and upper management into the project. We typically

hold this meeting on a quarterly interval. Attendees include the key staff, MDOT SHA upper management, Lane and Dewberry executives, and other key project stakeholders. This meeting allows the team to understand project progress and issues, check in on goals, and build strong relationships at all levels of management and between all entities involved. While most issues should be solved at the project level, it is important to give upper management insight into the direction of the project, and to help resolve larger issues that linger beyond a few weeks. Lastly, we will review the roles and lines of communication as the project progresses and make adjustments as necessary as a team.

Risk Management: Developing a strategic plan to mitigate the major project risks is critical to meeting or exceeding the project goals. The DBT's experience in identifying, quantifying, and managing project risks has been proven on projects such as ICC Contracts C, D/E, Route 29 Solutions, MD 235, and MD 4. Having completed several design-build projects for MDOT SHA, the DBT is acutely aware of the requirements, schedule implication and effort needed to advance the MD 32 Phase 2 project within the allotted timeframe. Our proactive approach is to collaborate with MDOT SHA, starting with a risk development workshop. We will develop a risk mitigating plan that focuses on the project goals and builds flexibility into the design and construction phases. These identified risks are then tracked and assessed for mitigation throughout design development by assigned risk managers as represented in our organization chart. Risk managers are held accountable for mitigation and achieving project goals.

Schedule Management: Given the aggressive nature of the schedule, team of Lane and Dewberry will develop an integrated CPM Schedule using Primavera P6 as a part of the Step 2 Proposal. Creating an integrated schedule is step one in thoroughly understanding how the project is assembled to ensure construction completion and provide a usable facility to the public as soon as possible. Step two is the management and implementation of the schedule, which is critical. Utilizing the CPM schedule, we will identify and track design deliverables, ROW coordination, utility relocation coordination, PRD and permitting, quality review submissions, production goals, QC testing needs, equipment and labor resource requirements, subcontractor schedules, and major deliveries.

Continuous tracking of the schedule will be implemented at our weekly Design and Construction Coordination Meetings to identify upcoming activities and approaching milestones. Our "no excuse" policy will ensure early detection of any challenges and resolve them through providing innovative solutions to safely deliver the project. The same approach was used to deliver the MD 4 Design-Build project design, storm water management, and E&S permits on time.

To meet the schedule goal's key issue of providing a usable facility to the public as soon as possible, early design and approvals are of critical significance to the project. Our approach is to build a mutual understanding that will advance packages to the benefit of the project schedule. This will allow for priority work elements such as ROW and utility to be progressed while analysis and design remain to be completed – truly embracing the design-build method.

The DBT will use specific scheduling tools to manage all aspects of the project including the following:

1. CPM Summary Schedule (P6) – includes activities for all design elements, permitting, submittals, material procurement, fabrication and construction.
2. Five-Week Look Ahead Schedules – includes each field task and activity. Schedule gives the team a four-week look-ahead and one week of as-built progress to determine if the project is staying on schedule. This schedule will be distributed and discussed at the partnering meetings.
3. HCSS HeavyJob – an electronic project documentation system which includes information for the crews to determine the production required daily in order to stay on-schedule, also helps project management staff to see if there are any issues that the owner needs to be aware of and keep the communication transparent.

Design Development: Dewberry's design development will be founded in DBIA's principle of Design Excellence which is defined as the execution of good judgment and sound decision making by a professional, integrated, collaborative and well-trained team. Dewberry has added strategic exclusive subconsultants to the design team based on their areas of expertise and the long standing design-build relationship in Maryland. Our strategic subconsultant partners include WBCM (lead Structures, Stream Relocation/Restoration, and Landscape Architecture), Straughan Environmental (Environmental Permitting, SWM, ESC, and Stream Relocation/Restoration support), and Hillis-Carnes Engineering Associates (Geotechnical). Additional subconsultant partners include SuYash Consulting (Lead Water Resources), CST (Traffic, General Civil, and Structural support), and Remline (Public Outreach). The certified MBE's listed above will support Dewberry in meeting the 26% MBE goal for professional services. Every one of these subconsultants has been a part of past successful design-build projects that Dewberry has delivered for MDOT SHA.

The design team will work diligently throughout Step 2 to identify project portions that can as well as need to be accelerated like early construction packages, critical path design packages, and long lead permitting packages. Potential critical design packages include ESC packages for early access areas, advance steel packages for bridges, advance detour and MOT packages and the Middle Patuxent River relocation package. Key factors include: environmental permitting utility easements; utility relocations and avoidance of utility impacts; right-of-way issues; phased design development that coincided with construction activities; and proper construction execution and delivery.

The design team will take the following approach to applying Practical Design to the design of the MD 32 Phase 2 project. It is important to note that this process has already begun and will continue through Step 2 once shortlisted. We will:

1. Review the conceptual/preliminary engineering documents provided as part of the RFP;
2. Examine the project's existing conditions;
3. Focus on purpose and need, project goals, and key issues;
4. Identify innovative ATC's and implement engineering solutions that minimize project impacts; and
5. Continuously apply Practical Design.

We intend to execute these steps through continuous collaboration and partnering with MDOT SHA for the duration of the project. Through Practical Design, we will deliver the MD 32 Phase 2 project for the identified fixed price while maximizing project elements and being compatible with future planned corridor improvements while still achieving the goals of preserving assets, improving safety and mobility and ultimately satisfying the customers. The overall intent will be to make the facility safer upon completion while meeting the minimum thresholds for design to "right-size" the project, by filtering out the "wants" from the "needs".

The DBT is committed to developing innovative solutions for projects that not only save time, but reduce cost and deliver the best value to the owner, with minimal impacts to the surrounding environment and all stakeholders. To achieve these goals, we have assigned Risk Managers with the specific skills and experience needed to ensure that to each of the risks identified in Section B.ii are managed effectively. The Risk Managers will report to the DBPM, Mr. Durant Walters and will coordinate with the DM, Mr. Kenneth Davis, and the CM, Mr. Kitchen for the duration of the Project. The Risk Managers are responsible for monitoring their respective risk and alerting Mr. Walters of any issues before they impact the Project. The Risk Managers are proactive in addressing issues and developing risk mitigation strategies.

Environmental Stewardship: The DBT will continue MDOT SHA's environmentally sensitive project approach during the preparation final design plans and throughout project implementation. Avoidance and minimization (A&M) and on-site mitigation of environmental resources is critical to the project's success. The DBT is committed to achieving or exceeding the projected on-site reforestation target of 120.72 acres. Phase 2 Wetland and Stream (Rosemary Lane Tributary) Mitigation Plans will be prepared by environmental scientists and engineers with extensive experience developing design plans that fulfill USACE and MDE mitigation criteria, in particular we identified engineers with experience modeling stream restoration projects for fish blockage removal projects. We recognize that Mitigation Plans are a Critical Path item, because their approval is required for final Wetland and Waterway permit issuance. The DBT is committed to working collaboratively with MDOT SHA and regulatory agencies to incorporate standard A&M design considerations, such as increasing side slopes (>2:1), retaining walls, MSE walls, and reinforced earth slopes. Additionally, innovative solutions will be thoroughly evaluated at all environmentally sensitive areas. The design team plans to evaluate all options for reconfiguring concept storm water management facilities that impact wetlands, buffers, and waterways.

Environmental permits and approvals required for the project that are in various stages of development (USACE Corridor Permit, Section 404 Individual Permit, Water Quality Certification and MDE Nontidal Wetlands & Waterways Permit (USACE and MDE), DNR Reforestation, Phase 2 wetland mitigation plan approval, Phase 2 Rosemary Lane tributary stream mitigation plan approval, USACE and MDE permits for TMDL Terrapin Branch stream restoration, FEMA LOMR, MDOT SHA-PRD ESC & SWM, MDE NPDES), MDE dam safety approval and water appropriation and use permit. The DBT has the expertise and experience to work together with MDOT SHA to facilitate timely approval of permits by sound engineering judgment during our design development, and providing all the necessary documentation in a timely manner to ensure that environmental authorization is granted in the fastest possible manner. Water Resources Engineer Rahul Kesarkar, P.E., PMP, LEED AP will lead the MDOT SHA-PRD ESC & SWM approval process. Rahul is trained and experienced in the PRD review process. The DBT also brings Jim Kramperth, P.E. as a value-added internal, approved MDE and PRD reviewer to internally review SWM and E&S design and plan submissions, assuring the packages are fully compliant when submitted to PRD. David Merkey, PhD, PWS and Justin Haynes will lead the permit compliance with USACE, MDE, and DNR requirements, both have experience with Design/Build projects and MDOT SHA procedures. The DBT includes MD professional engineers, landscape architects, certified arborists, professional wetland scientists, and licensed tree experts to obtain environmental approvals and implement appropriate preservation and protection measures. We are committed to deliver a project with minimal impacts to environmental resources.

During design and construction, open lines of communication between the DBT, IDQM, MDOT SHA, and regulatory agencies will ensure that additional opportunities to protect the environment are not lost. Our approach will be characterized by the following elements:

1. An integrated design process that incorporates consideration of environmental issues and requirements into the design process rather than as an afterthought.
2. FEIS and Reevaluation, Reforestation Approval, USACE Corridor Permit, MDE Nontidal Wetland and Waterway Permit, SWM Concept Design, BMPs for working in Nontidal Wetlands, TOY restrictions for Use IV-P waters (March 1 through May 31), and other Environmental Performance Specifications (PR 13)

3. Careful tracking of environmental commitments throughout the design and construction process.
4. A dedicated Environmental Manager to coordinate with MDOT SHA's Independent Environmental Monitor (IEM) and prepare quarterly Compliance Reports.
5. Rigorous monitoring and inspection during construction coupled with clear lines of communication for effective reporting of problems and well-defined lines of responsibility for timely response and resolution.
6. Environmental compliance training for construction managers and supervisors. Clear information on protection requirements (e.g. temporary orange construction fencing and signage; treatment of sediment laden construction water; proper installation of ESC measures).
7. We will ensure that all necessary permits outlined in PR 13 will be obtained should there be any changes made outside the NEPA approved LOD.

Thorough advanced planning and scheduling will ensure that environmental permits and approvals are received on-time and requirements are maintained throughout the design and construction process. The DBT provides proven environmental personnel that have consistently delivered successful environmental results on design-build projects.

Utility Coordination: Utility designation is just the first step to identifying risks in the work zone, once identified, smart design as well as direct coordination with the Utility owner is paramount. If design can work around or avoid a utility completely, then you have achieved safety without even approaching the actual hazard. All utilities will be identified in the early stages of design. Test pitting will be required to confirm location and elevation. All data will then be integrated into the design set of drawings and tested in 3D. All conflicts will be addressed and mitigated by either design changes or by relocation if needed. Relocation of an existing utility will be avoided at all costs; however, some may be unavoidable. For additional utility coordination, please refer to mitigation efforts listed in Section B.ii (utility coordination risk).

DBT Design and Construction Coordination Meetings: The successful execution of the design-build method demands constant, clear and concise communication between the contractor and engineer. The most useful tool to accomplish this is the weekly Design and Construction Coordination Meeting to promote a coordinated design effort, share lessons learned with all team members, and streamline the decision-making process. It is critical that the construction staff be proactive during the design process to develop the best methods and sequence; thereby, fewer issues occur during construction thus avoiding schedule delays. This process has been utilized by the DBT during completion of MD 4 and will be utilized for MD 32 Phase 2. All disciplines will work together collaboratively to satisfy clearly established goals and objectives for each design element. These meetings are used to discuss issues such as:

1. Decision making authority;
2. Design quality management;
3. Status of key design elements;
4. Status of major risk items and ongoing mitigation efforts;
5. Current construction issues requiring designer input;
6. Methods to minimize impacts on the environments;
7. Methods to minimize adverse impacts to the operation of MD 32 and Triadelphia Rd;
8. Coordination with concurrent and future corridor improvements;
9. Status of plan reviews and approvals, permit acquisition and utility coordination;
10. To integrate constructability review by construction personnel early-on in the design preparation to allow constructability comment input, availability of materials, economics of installation and phasing as the project is being designed;
11. Develop action items and future deliverables;
12. Track design progress against baseline schedule;
13. Identify and resolve design conflicts.

These meetings begin during the development of our technical proposal, will continue through schedule and pricing, and then throughout the design and construction phase until project completion. Once construction is under way, we will continue to hold these meetings to expedite solutions to any design or construction related issues or changing conditions that may arise.

Owner Coordination Meetings (OCMs): We believe it is critical to collaborate with MDOT SHA throughout the design and construction process as milestone reviews of the design packages will not be submitted for compliance until the 100% level, excluding the structural design packages. At an agreeable time and frequency (usually tied into the Partnering meetings), the team will plan and hold OCMs to review design and construction progress updates as well project related issues and concerns raised throughout the project. This opportunity provides MDOT SHA with OTS reviews to address issues as they arise between the appropriate stakeholders. The interaction is key to the success of the design-build project and will be a regular occurrence over the life of the project. OTS reviews also provide the DBT with the opportunity to share the team's approach to the work prior to making the formal submission. OCMs will also serve as a forum to short – (2 week look ahead) and long – term schedule updates and completion milestones. Other key topics include upcoming MOT changes, matters involving third parties, items such as ROW, and any contractual issues or concerns.

Design Quality Management Program: Our commitment to providing MDOT SHA a quality design with integrated and well documented quality management and the highest quality project involves developing, instituting, training and following a multi-faceted, project specific Design Quality Management Program (DQMP). There are three principles to our DQMP:

1. Project specific Design Quality Control Plan (DQCP) by Dewberry;
2. Document management; and
3. Independent Design Quality Management (IDQM) performed by Gannett Fleming.

Dewberry will develop and implement a Design Quality Control Plan (DQCP) with policies and procedures to verify that design services meet the standards of quality in accordance with MDOT SHA's expectations. The DQCP accounts for all design processes, procedures, goals and key issues outlined in the draft RFP. The plan identifies individuals and organizations that will implement the QC and QA requirements and describe their function, responsibilities, and procedures for documenting the activities for the design of the project. The DQCP highlights the approach to allow QC personnel to maintain independence while focusing on quality versus meeting schedule and budget.

To improve communication among the Team members, we intend to utilize several collaborative file-sharing software systems. As successfully used on ICC Contract C, D/E, and most recently on MD 4, we will implement Bentley's ProjectWise for design file management to ensure all Team members have access to the latest design files, as well as for formal submission of design packages to the IDQM and ultimately to MDOT SHA. We will also use ProjectWise for electronic transfer of construction documents for internal document reviews (IDRs), Constructability Reviews (CRs), Environmental Compliance Reviews (ECRs), and for tracking of design decisions and solutions.

In continuing with the recent approach to using an Independent Design Quality Management (IDQM) as part of the DBT to performed milestone reviews to ensure conformance with contract requirements, Lane Construction has added Gannett Fleming to serve in this role. The integrated team the DBT and Gannett Fleming understands that we are solely responsible for the design and construction of the MD 32 Phase 2 project in conformance with the Contract Requirements.

Our DQMP fully integrates the IDQM, Gannett Fleming, into the project team. Gannett Fleming is the IDQM for MD 32 Phase 1. Mr. Steve Hawtof, P.E., ENV-SP from Gannett Fleming will lead a team of discipline reviewers who will review design packages throughout all phases of the project (including design changes during construction) for conformance with Contract requirements and attend Design Coordination, OTS, Owner Coordination and Partnering Meetings. Gannett Fleming will develop a formal comment response tool to document review comments for all submissions. The IDQM will have dedicated folders on Dewberry's ProjectWise server to store/document all quality reviews. Dewberry will be responsible for responding to, addressing, and resolving all IDQM comments.

The DM, Mr. Davis will be the only point of contact from the design team who will directly coordinate with Steve Hawtof for review of design packages. Gannett Fleming will share these reviews with MDOT SHA to ensure the design review process and submissions are in compliance with the DQCP and the performance requirements listed in the RFP. It is understood that Gannett Fleming can only certify compliance of the design packages and cannot make interpretations or decisions for MDOT SHA. Additionally, Dewberry will conduct regular bi-weekly meetings with Gannett Fleming to keep the IDQM team updated of the design changes and address potential issues related to design comments. Gannett Fleming will establish an issue resolution process at the partnering kick-off meeting.

Construction: As design packages are issued for construction, the construction forces will begin to focus on field activities. The focus on updating and managing the project schedule will continue throughout construction. Safety management is critical for the engineers, construction workers and the traveling public. Safety will always be FIRST and enforced to the highest level by the DBT's in-house Health and Safety Manager (HSM). Safety does not stop with just construction personnel, safety needs to extend to the traveling public, utilities, and environmental concerns. The DBT's onsite staff, including the Construction Manager, Superintendent, Traffic Control Manager (TCM), and Erosion and Sediment Control Manager (ESCM) will work in conjunction with the HSM to identify and mitigate all safety hazards. At a minimum, weekly safety meetings will be held to coordinate upcoming work activities across the project. Daily safety meetings will kick off the shift for each crew, the Foreman will identify all risks to their crew first thing every morning to remind all employees of the current hazards.

Maintenance of Traffic Management: The TCM will be solely responsible for installing and maintaining all traffic devices. Cleanliness and proper placement of devices is key to delivering a clear message for traffic movement through and around the work zone. Special attention and monitoring of any traffic shifts will be necessary to ensure that all designed MOT elements are performing as intended. The TCM will responsible for inspecting the MOT elements daily and submitting the daily traffic control reports. Earth movement on this project will likely control phasing of the MOT, due to the location of cuts and fills and their relative proximity to each other. Additionally, ROW acquisition may restrict availability to access certain work zones, therefore careful attention will be required to develop a safe MOT plan. Consideration will be made to take in account that the existing MD 32 project from MD108 to Linden Church may still be under construction when Phase 2 work will begin. The design team will work with the TCM to create the safest strategy to accommodate the traffic patterns in this area in coordination with the existing MD 32 project.

Public Outreach/Coordination with Stakeholders: The project limits have an impact on residents, schools, businesses, and the traveling public. Lane recognizes the importance of good communication during the design and construction phases. It will be particularly critical on this project, with one of the project goal's being providing a project that minimizes inconvenience to the community and the traveling public. We intend to maintain close coordination to ensure the community's services, access, and other vital functions are maintained. This will be a key measurement of success. The Public Outreach and Community Relations Program's (POCRP) approach is to ensure that accurate and timely information flows from Lane through MDOT SHA, to local community officials, and the general public (i.e. local residents and businesses, traveling public, and other stakeholders). The DBT POCRP Coordinator and program lead, Mr. Anthony Brown will follow the procedures agreed to at project initiation by Lane and MDOT SHA. Mr. Brown will regularly visit the site and participate in partnering meetings to ensure his understanding of the project's details. He will work closely with the team's key staff, developing both narrative and graphic materials suitable for public dissemination.

We will work closely with MDOT SHA to plan, develop, and execute public meetings (if required). These personal and direct interactions allow Lane to put faces and names to the effort, to highlight the benefits and progress of the work, and to encourage public input. We will promote site visits in tandem with these meetings to further public understanding of the effort, and to establish trust with neighboring communities and stakeholders. We are committed to first minimizing impacts while delivering the highest quality, and then as practicable making reasonable adjustments to improve the project for all stakeholders. The need to have consistent, accurate and timely communication with the public is the best way to minimize or avoid the disruptive nature of the construction activities. Our experience and preparation for this project means we can best assist MDOT SHA in communicating with the public in a variety of formats and venues. We will take a supportive role; MDOT SHA will set the message to fulfill their goals for the project.

Third Party Coordination: Approximately 300 feet of ROW was previously acquired for this project, including impacts to 25 properties (one total take and 24 partial impacts) totaling 40 acres of acquisition that will be required for construction that are not yet in possession by MDOT SHA. While ROW services are not a part of the design-build Scope of Work, the DBT understands the significant risks the ROW acquisitions pose to the project schedule. To mitigate this risk, Lane will have engineering documents including design plans and permit applications completed well in advance of the ROW acquisition so that construction can commence immediately upon the receipt of ROW Clearance. Additionally, we will endeavor to develop a construction phasing plan that will allow for work to commence in areas where ROW has previously been acquired without disturbance to the areas where additional ROW is needed.

Environmental Management: The ESCM will be responsible for the environmental safety and compliance on the project, including, but not limited to, maintaining all erosion control devices, coordinating daily with the environmental monitor, checking the weather for potential events, and walking the LOD looking for any potential washouts. Environmental safety and compliance is key to protecting our streams and wetlands and avoiding construction delays. Our ESCM will be responsible for coordinating with any subcontractors working on sediment control items, ensuring that all items are installed per plan and specifications. The ESCM will have authority to stop all construction activities that may adversely affect the environment, by self-policing we are taking environmental responsibility to the next level. The proposed widening and dualization of MD 32 will have environmental impacts and will require many regulatory approvals and permits.

Construction Planning and Coordination: Once plans are released for construction, our superintendents and engineers will work with our craft to develop a plan for each major operation. One of the risks associated with a rolling design-build approach is building work from superseded plans, resulting in rework and schedule delays. The DBT will use PlanGrid document management software which provides our field personnel with only the most current plan sheets, electronically to their tablets. Therefore, updated plans will be available always onsite. The construction management team will oversee quality control on the project, and will ensure all elements adhere to plans and specifications.

Additionally, the DBT will use Prolog tracking project communications. It will create, track responses, and track engineering support during construction for RFI's, submittal, shop drawings, and as-built drawings. This tool helps manage the volumes of documentation that is generated on a design-build project. Our Prolog site uses several smart forms to aid in the timeliness and tracking of key project information. For example, a project submittal is logged into a smart form. Once complete, Prolog sends the submittal to the required parties and the submittal log is automatically generated. This tool helps the team understand who is currently responsible for approval, and helps identify any bottlenecks on the project. All submissions to and from MDOT SHA will be made through MDOT SHA's ProjectWise server.

Subcontractor Management: The DBT understands the importance of holding the entire design and construction team, including subcontractors, to MDOT SHA's high standards. Key subcontractors will be integrated into the entire design-build process, and will participate in weekly constructability reviews. Subcontractors will incorporate the same safety, quality and compliance programs into their own practices. During construction, all subcontractors are fully integrated into the team and participate in indoctrination, construction schedule, and work planning. We will perform extensive MBE and DBE outreach during the bid preparation phase to ensure the 26% goal is met or exceeded.

Design Staff Role during Construction: Once the design has been completed and construction is fully underway, the designers are integral to supporting construction and related activities. The design team will remain intact to address issues in

a timely fashion, thus effectively managing schedule, quality, safety and budget. Design activities during construction include responding quickly and clearly to any RFIs (formal or informal); review shop drawings; prepare working drawings; evaluate and/or adjust MOT plans and set ups (to meet actual field and traffic conditions); revise designs to meet actual field conditions as conditions are encountered or material availability changes; as well as preparation of complete and accurate as-builts. Throughout the project, the designers make regular site visits to review construction and based on field conditions may even revise design to provide the best solution for project success.

Issue Notification: While discussing project issues can be an uncomfortable topic, we believe that having timely open and honest communication is the key to identifying these items early. It is inevitable that any large project will experience some challenges. Early identification of these challenges allows the DBT to develop proactive low-cost solutions, and ensures that small issues do not grow due to a lack of resolution. On every project, we implement a detailed contract administration process. We will jointly develop our Partnering Escalation Ladder to guide our engagement. This guide highlights the obligations of each party, proper issue notification protocol and timelines, project counterparts at all levels, and the process for dealing with project changes.

During design and construction, an issue documentation form will be provided for each issue that arises. This form will highlight the issue, contract reference, and proposed mitigation strategies. These topics will be discussed at our weekly progress meetings which allow the team to discuss proactive solutions and mitigate them with the least amount of impact. Each issue will be tracked on an issues log, detailing the description, status, potential cost and schedule impact, and mitigation strategy for the issue. This log is shared at our weekly and monthly meetings, which helps keep all team members informed and ensures prompt resolution to project issues.

Change Management: Design-build projects often encounter changes during design or after release for construction. The Lane Team will continuously review all field changes resulting from unanticipated field conditions, owner directed changes, changes for the contractor's convenience, constructability issues, or other similar reasons. One example of a potential need for review and change would be for establishing MOT changes to meet actual field conditions. If this occurs the designers and construction staff, as well as MDOT SHA and appropriate stakeholders, will immediately meet on site and brainstorm on alternate MOT means and methods to improve the condition. All recommended changes to design and/or construction implemented in the field will be properly discussed with MDOT SHA and outside stakeholders as appropriate. This work will only be performed after review and under authorization by MDOT SHA. All changes will be tracked and available to all required staff through our Document Control software, Prolog, that tracks revisions, approvals, and the reasons for the changes, from their inception as a project RFI or correspondence, through full resolution.

Project Completion: The DBT will see the project through final completion, including delivering as-builts and closing out permits as needed. All closeout documentation will be provided per specification, including all landscape inspections and warranty.

The DBT of Lane/Dewberry will provide the successful delivery of the MD 32 Phase 2 project through the application of effective techniques and approaches used on our previous design-build projects. Our approaches are founded in the promotion of continuous communication between the DBT, MSOT SHA, and the project's stakeholders. Our process proactively involves all stakeholders in the assessment of risk to constrict the variability of unknowns and then assigns accountable managers to further minimize schedule impacts. We will use our frequent contact with MSOT SHA, agencies and utility representatives to vet our design development, thereby minimizing environmental impacts and utility relocations. This regular contact has also proven to maximize the project elements through the iterative development and joint decision making. The early and continual engagement of our construction personnel and specialized subcontractors with the design and permitting personnel will generate a concise and achievable project schedule. The joint management of the schedule by the DBT ensures that every member is held accountable for the on-time project completion and the minimization of detours, thusly ensuring public inconvenience is minimized and a safe, efficient roadway is provided to the public as soon as possible. These approaches, which entail the collaboration of MDOT, the DBT, and stakeholders, communicating openly and sharing in the decision-making process, will maximize the project elements, minimize inconvenience to the public, and minimizes overall impacts to environmental resources and affected utilities. We look forward to employing our proven techniques on this project and expanding our successes with MDOT SHA.

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