Kiewit

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
CONTRACT NO. MO7465171

MD97
BROOKEVILLE BYPASS

Kiewit

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

CONTRACT NO. **MO7465171**

MONTGOMERY COUNTY

TECHNICAL PROPOSAL

JUNE 3, 2015

COPY

Kiewit

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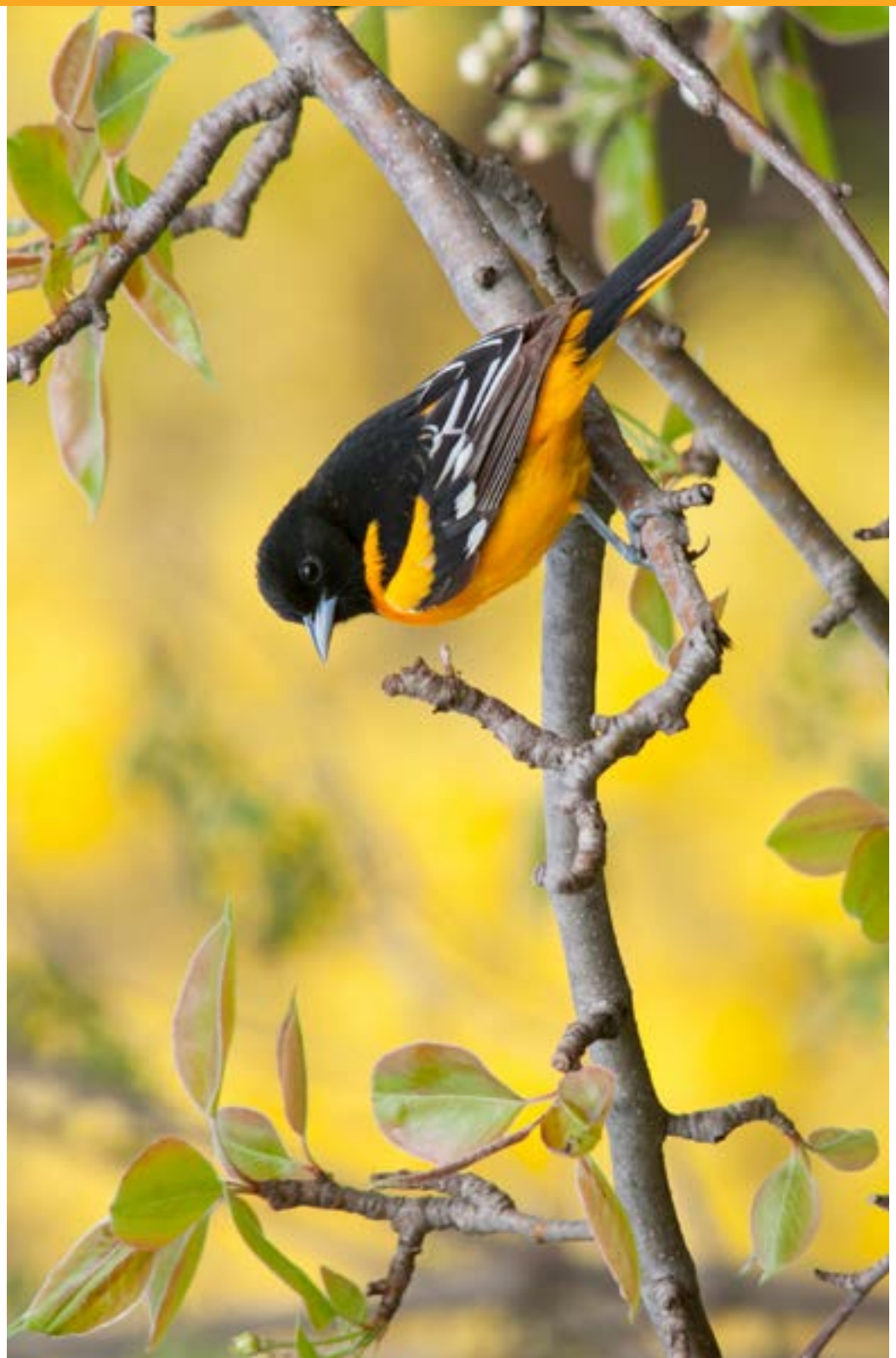


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B.1. Project Management Team

Provide a description of the composition of your project management team. If your team is a joint venture or association, indicate specific responsibilities of each member and firm of the team. Include narrative describing how the proposed Key Staff members will meet the stated project goals, including building a professional and collaborative project time and partnering with both the SHA and the Designer in the project development. CRITICAL

Our Partnership Commitment

Our team is comprised of Kiewit Infrastructure Co. as the prime contractor for all preconstruction and construction services. We have supplemented our capabilities with those of our key subconsultant, Greenman-Pedersen, Inc., a leading local environmental firm. Kiewit and GPI key staff have worked together on previous Maryland projects, and have gained an in-depth understanding of the unique environmental and permitting requirements in Montgomery County. This partnership will ensure a proactive approach to environmental compliance and timely permit submissions.

John Tuschak, Don Arant and Glenn Christensen will take the lead for the MD97–Brookeville Bypass project. We extend our commitment to deliver the best value while protecting and enhancing the existing charm of the Town of Brookeville. Our team respects and understands that maintaining the peace, serenity and character evoked by this historic town are very important to local residents. It is through the strength of partnership with those residents, the project stakeholders, the Maryland State Highway Administration, certified environmental consultants, engineers, and project designers, that we will plan and realize our united goal.

Listening, learning, and communicating are high on our team's list of priorities in service to those residents and stakeholders. John and Don will establish community outreach initiatives, hold town hall meetings and coordinate with stakeholders to provide current project updates. They will listen to concerns and make certain that the residents of the Town of Brookeville are comfortable with our efforts to improve their community. They will work hard to gain their trust and minimize the impact on their daily lives, their environment, and their historical legacy.

John, Don and Glenn have a history of working on alternative delivery projects that include extensive pre-construction efforts. They will implement our design management and quality control processes to provide the best value to SHA and the local community. In addition, our key team members will deliver this project on schedule and within budget utilizing our historic past costs, proven scheduling techniques and our vast craft and equipment resources located in the Mid-Atlantic region.

Partnering with the Community. On the ICC-B project in Maryland, we held many public outreach initiatives like this one to discuss the ongoing design and construction process with local citizens.

Team Cooperation and Communication

We strongly believe partnering begins with the understanding that open communication and teamwork are essential to achieving the goals established for each project. We seek to create a level of trust and cooperation among all members of the team. This level of understanding and honesty allows us to construct the project with problem resolution at the lowest levels possible. Our standard of open and frequent communication will also create an atmosphere for effective team brainstorming and provide an avenue to continually monitor the project goals and the team's progress during both preconstruction and construction.

Daily informal meetings between our Construction Manager and SHA's on-site representative will be held during the construction phase to discuss upcoming issues, field changes, environmental mitigation, permits, material approval, utility relocations, and community concerns. We will work openly and diligently to provide the highest levels of expertise and input through continuous communication and involvement.

B.2. Key Staff

Submit resumes providing job descriptions and responsibilities and authority for each working title. Identify and discuss the qualifications of the following Key Staff including providing qualifications and demonstrating relevant experience for projects of similar scope and complexity, any unique knowledge relevant to the project, and their commitment and time availability for the project. SIGNIFICANT

Our team members will be able to hit the ground running with a solid foundation for the activities, processes, and sequences needed to complete preconstruction and construction services for this project. Carefully selected for their similar project experience, past collaborative experience, CMAR experience, and local knowledge, our key staff members are well suited to understand and achieve project goals.

Our **Project Manager, John Tuschak,** will lead the team through preconstruction and construction services while controlling the entire project with a standard of excellence in safety, quality, environmental compliance, cost control, and on-time completion. He will act as SHA's primary point of contact and the main point of communication to the Project Team. With ***former Montgomery County experience*** as a leader on the ICC-B project and a solid grasp of Maryland's permitting processes, Maryland-National Capital Park and Planning Commission requirements, design specifications and erosion control guidelines, environmental protection concerns, and necessity for partnership and public outreach, John will ensure that all of SHA's project goals are met and exceeded. He will further provide oversight and be responsible for the for the development of the project budgetary cost models, and GMP while providing feedback and suggestions for constructability, specification and contract reviews.

As **Construction Manager, Don Arant** will manage the day-to-day operations on site during construction, will report directly to John, and will be SHA's secondary point of contact. Don's ***years of CMAR experience*** will be immediately leveraged during preconstruction to provide value engineering ideas and develop detailed and accurate sequencing, schedules, and cost models. He will maintain lead over the discipline specific reviews for constructability and value engineering analysis, while tracking changes throughout the design and cost modeling process.

Cost Estimator Glenn Christensen will lean on his *years of estimating experience* and a wealth of knowledge relating to budget development and oversight, issue resolution, project scheduling and phasing, operations management, and DBE outreach. Glenn has familiarity with Montgomery County local culture through his positions as Chief Estimator and Design Coordinator on the ICC-B project, where he and John worked closely with stakeholders to make sure all project goals and community priorities were met. ***Working hand-in-hand with SHA and the Design team***, he will lead the development of an open cost model, GMP proposals, and OPCC estimates detailing an itemized breakdown of the various cost components, outline a clear understanding of the construction costs, identify potential risks, and allow the collective project team to make informed decisions that meet the stated project goals.

FORM A-1 – Key Staff Information

Name of Proposer: **Kiewit Infrastructure Co.**

POSITION	NAME	YEARS OF EXPERIENCE[1]	EDUCATION / REGISTRATIONS	NAME OF EMPLOYER
Project Manager	John Tuschak	13 / 15	BS in Geology, East Carolina University Erosion and Sediment Control Inspector, Green and Yellow Card Certification for Erosion & Sediment Control through MDE and SHA	Kiewit Infrastructure Co.
Construction Manager	Don Arant	12 / 13	BS in Construction Management, University of Nebraska	Kiewit Infrastructure Co.
Cost Estimator	Glenn Christensen	29 / 31	BS in Civil Engineering, University of Akron	Kiewit Infrastructure Co.

[1]*Present Firm/Total*

John Tuschak

Project Manager

Time Commitment: Design 50% | Construction 50%

PROFESSIONAL EXPERIENCE

Since joining the construction industry 15 years ago, John's experience—most of which has been in the Mid-Atlantic region—has included detailed planning, estimating, engineering and scheduling required to manage large, complicated heavy construction projects from the design phase through construction. All of the work John has managed has been delivered on budget and schedule, and has provided high value to our clients. John is a certified Stormwater, Erosion & Sedimentation Control Inspector and holds his Green and Yellow Card certification for Erosion and Sediment Control through MDE & SHA.

HIGHLIGHTED PROJECT EXPERIENCE

Project Manager, Arkendale Third Track Design-Build, CSX, Arkendale, VA, $45M. As Project Manager, John is responsible for overseeing the construction of 11 miles of freight rail adjacent to existing rail that passes through Quantico Marine Base along the Potomac River. The scope of work includes utility relocation coordination, permitting, three rail bridges, a vehicular overpass, one platform station, 15 retaining walls, 240,000 CY of earthwork, and rail construction.

Relevancy: design coordination, value engineering, utility coordination, public outreach, stakeholder coordination, environmental sensitivity and permitting, major earthwork, grading, drainage, bridges and regulated floodplains

Construction Manager, Inter-County Connector, Contract B Design-Build, MDTA (SHA), Silver Spring, MD, $560M. As Construction Manager, John has direct oversight over the erosion and sedimentation control, maintenance of traffic, utility relocations, grading, drainage and asphalt operations. The Design-Build Green Roads project was seven miles long through some highly environmentally sensitive areas, including wetlands, streams and endangered species. John's work with task force meetings and designers for the ICC-B greatly helped lower costs and improve schedule.

Relevancy: Montgomery County project, M-NCPPC coordination, environmental sensitivity and permitting, coordination with third parties, design coordination, GPI as environmental consultant, reforestation, landscaping, relocation of native trout streams, earthwork, roadway work, grading work, roundabout, utilities relocation, public outreach, maintenance of traffic and partnership with SHA and local stakeholders

Superintendent, I-4 Reconstruction (from 14th to 50th Street), FDOT, Tampa, FL, $175M. John provided full oversight of scheduling, managing crews, coordinating with subcontractors, ordering materials, and managing equipment. As a superintendent, John coordinated closely with other disciplines and within the constraints of an active adjacent freeway. This project consisted of reconstructing 2.55 miles of the I-4 interstate.

Relevancy: public planning and outreach, interface with pedestrians and bicyclists, historical design elements, major earthwork, drainage, bridges, roadway, and maintenance of traffic

Project Manager, US 19 Sidewalks Design-Build, FDOT, Tarpon Springs, FL, $19M. As Project Manager, John managed cost, field operations, and all functions of the project. This Design-Build project for FDOT consisted of the design and installation of sidewalk, turn lanes and bridge extensions along a 20-mile stretch of US 19.

Relevancy: roadway work, shared use path, minimize environmental impact, minimize public impact, bridge work, and retaining walls

Don Arant

Construction Manager

Time Commitment: Design 50% | Construction 100%

PROFESSIONAL EXPERIENCE

Don has spent his entire professional career on alternative delivery procurements including four CMAR projects, and brings a wealth of knowledge relating to budget development and oversight, design coordination, constructability reviews, issue resolution, project scheduling and phasing, operations management, subcontractor management and public outreach. He demands accountability, accuracy and dependability from his entire staff and keeps projects on track. He has overseen numerous large highway projects involving bridge construction and major earthwork construction. Don's commitment, attention to detail, and high expectations will ensure that all engineering and cost control functions are accomplished with team goals in mind.

HIGHLIGHTED PROJECT EXPERIENCE

Construction Manager, Cotton Lane Bridge CMAR, Maricopa County DOT, Goodyear, AZ, $51.8M. As construction manager, Don provided oversight for all major design and construction operations. This multi-phase, 3.25-mile bridge project spanning over the Gila River was both the largest single contract in MCDOT's history and their first project delivered as Construction Manager at Risk.

Relevancy: CMAR project, GMP development, earthwork, grading, roadway, aesthetic enhancements, environmental sensitivity and permitting, pedestrian paths, roundabout

Design Manager/Construction Manager, C.W. Bill Young Reservoir Design-Build, Tampa Bay Water, Hillsborough County, FL, $130M. Don was responsible for coordinating all aspects of design and construction for this design-build reservoir project. The entire project worked over 700,000 man-hours without a recordable injury. The 15.5 billion gallon reservoir included the removal and replacement of the entire erosion protection system. Kiewit performed all major operations on this project and returned the reservoir to a state of operation ahead of schedule.

Relevancy: design coordination, value engineering, public planning and outreach, environmental sensitivity and permitting, major earthwork, grading

Construction Manager, SR-101L HOV Lanes Design-Build, Arizona DOT, Phoenix, AZ, $90M. As construction manager, Don provided oversight for all major operations including demolition, drainage, utilities, bridges, grading, paving, and barrier wall construction. The project involved the addition of high occupancy vehicle lanes to an existing six-lane active roadway. This fast tracked 60-lane-mile-long project was designed and constructed in 257 days. Don's responsibilities included design coordination, managing crews and equipment, scheduling, coordinating with multiple stakeholders, managing subcontractors, and coordinating with the local community.

Relevancy: design coordination, value engineering, utilities, public planning and outreach, major earthwork, grading, drainage, paving, bridges, maintenance of traffic, coordination with multiple stakeholders

Construction Manager, SR-202L Widening Design-Build, Arizona DOT, Phoenix, AZ, $189M. As construction manager, Don provided oversight for all major design and construction operations. This 10 mile project included 22 bridges and 12 miles of roadway widening. The entire project was designed and constructed in 600 days.

Relevancy: design coordination, value engineering, utilities, public planning and outreach, major earthwork, grading, drainage, paving, bridges, maintenance of traffic, coordination with multiple stakeholders

Glenn Christensen
Cost Estimator

Time Commitment: Design 30% | Construction 15%

PROFESSIONAL EXPERIENCE

Glenn has more than three decades of industry experience, half of which has been in the Mid-Atlantic region. Currently, Glenn oversees all estimating and alternative delivery-related functions for Kiewit's Mid-Atlantic operations. On the individual project level, Glenn has experience in a wide variety of design disciplines and is well versed in solving constructability challenges, along with identifying, analyzing, mitigating and pricing risk items. His relevant experience in Montgomery County will ensure that all environmental, local, state, and stakeholder requirements are incorporated into the design and produce an estimate that is backed by historic costs.

HIGHLIGHTED PROJECT EXPERIENCE

Design-Build Coordinator/Chief Estimator, Inter-County Connector, Contract B Design-Build, MDTA (SHA), Silver Spring, MD, $560M. As the Design-Build Coordinator, Glenn managed all aspects of communication and collaboration between the design and construction team and the owner from the initial planning stages throughout building activities. This included design plan submittals, plan reviews, and ensuring that all deliverables were on schedule. Glenn also served as chief estimator and performed risk mitigation activities during design. The project was a Design-Build Green Roads project that was six lanes wide and seven miles long through some highly environmentally sensitive areas, including wetlands, streams, and endangered species.

Relevancy: Montgomery County project, located near Maryland National Parks, environmental sensitivity and permitting, coordination with third parties, design coordination, GPI as environmental consultant, reforestation, landscaping, relocation of native trout streams, earthwork, roadway work, grading work, roundabout, utilities relocation, public outreach, maintenance of traffic and partnership with SHA and local stakeholders

Chief Estimator, I-4 Reconstruction (from 14th to 50th Street), FDOT, Tampa, FL, $175M. As chief estimator, Glenn led a team of 10 estimators/engineers to develop the entire cost model and construction approach for the I-4 project. In addition, his team developed the initial schedule concept that eventually led to an on-time completion. This project consisted of reconstructing 2.55 miles of the I-4 interstate.

Relevancy: public planning and outreach, interface with pedestrians and bicyclists, historical design elements, major earthwork, drainage, bridges, roadway, and maintenance of traffic

Other Relevant Experience. Glenn has served as chief estimator, project engineer and project manager on numerous projects that have similar aspects to the MD97 project, including:

- Western Beltway $41M
  Relevancy: Chief Estimator
- Orlando Intermodal Terminal CMAR $150M
  Relevancy: Chief Estimator
- Tamiami Trail Bridge $81M
  Relevancy: Chief Estimator
- Lake Roland Dam $4M
  Relevancy: Project Manager, Maryland project
- Old Court Station Line $8.6M
  Relevancy: Project Engineer, Maryland project
- I-83 Rehabilitation $33M
  Relevancy: Project Engineer, Maryland project

Value-Added Staff

In order to provide you with the right team who has all of the capabilities to perform the work, we have included our key subconsultant, GPI, to our team. All of their key staff have experience with SHA and Montgomery County, which will ensure that your goal of minimizing impacts to the physical environment will be achieved.

Off-Site Executive – Ben Carnazzo

Ben is currently the Senior Vice President responsible for executive oversight of all Kiewit Construction operations in the Southeastern and Mid-Atlantic U.S. With over 25 years of Kiewit experience, he has successfully led numerous alternative delivery projects including the successful delivery of over 20 CMAR projects. Ben will provide senior leadership to the project and ensure all necessary resources are available to ensure all project goals are met.

Principal-in-Charge – Andy Douglas, PE

Andy is currently the Area Manager for the Mid-Atlantic region and reports directly to Ben Carnazzo. He has diverse project management and engineering expertise and has experience in major grading, structures and environmental disciplines. Andy will ensure that the project team is executing the project at a high level and will provide regular oversight of the project team.

Environmental Manager – Bill Park

Bill has extensive experience in environmental and storm water management, wetland and waterway delineation and design, environmental resource analysis, water resource design, construction permitting, construction inspection and permit compliance. He is experienced in all facets of environmental compliance, coordination for historic and archaeological resources and coordinating approvals for work within critical areas.

Wetlands Specialist – David Merkey, PhD

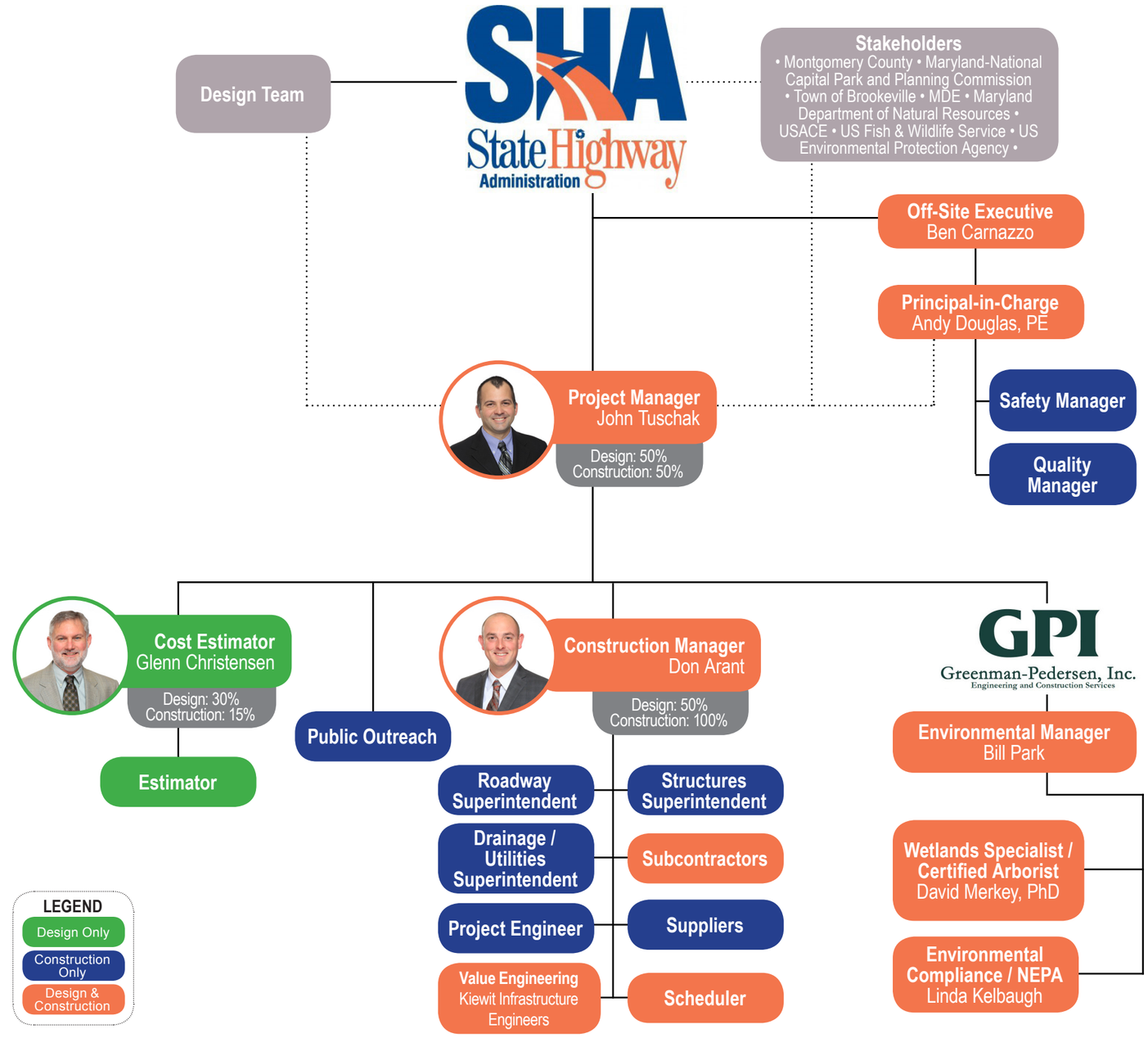
Dr. Merkey brings a diverse professional and academic background to the team. He has worked in the fields of environmental compliance and inspection; stream and wetland mitigation and creation; natural resource permitting; wetland, stream and upland habitat assessment; developed invasive species treatment and monitoring plans; and performed stream, vegetation and water quality monitoring. He has designed wetland mitigation and stream restoration sites; performed wetland and forest stand delineations and tree evaluations, and developed techniques for wetland classification using GIS.

Environmental Compliance – Linda Kelbaugh

Linda served as former SHA Division Chief of Environmental Programs Division, and brings extensive environmental experience to the project. Linda has experience in the development of environmental compliance processes and training, and will be a critical resource during construction. She will support avoidance and minimization efforts during design and construction, ensure NEPA compliance related to design modifications and construction needs that require post-ROD documentation and approval from FHWA, coordinate and track all environmental monitoring efforts, and oversee the data collection and reporting for preparing environmental summaries.

B.3. Organizational Chart

Provide a separate graphic organizational structure chart, complete with working titles for the project management team in both Design and Construction phases, and showing lines of communcation. IMPORTANT



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B.4. Project Team Past Performance

Using Form A-2, Past Project Description, provide a listing of 3 projects that highlight Construction experience relevant to this project, which the lead Contractor firm functioned as the lead Contractor firm on over the last ten (10) years. Projects should emphasize proposed Key Staff involvement, where feasible, to demonstrate the team's capability to perform work similar to that required for this contract. Provide detailed information why project completion dates or Construction costs were not met. Use one (1) form per project.

Please see the following pages for our past project descriptions.

Environmental Past Performance

Discuss project specific techniques, products and practices you have incorporated into past projects that have resulted in the reduction of impacts to environmental features, or a reduction in waste or pollution. Identify if these techniques, products, or practices were owner directed or suggested by the Contractor. Describe the circumstances of and the actions you have taken in past performance of work to correct any deficiencies related to measures to protect environmental resources or to address any environmental fines, stop work orders, or low ratings. Describe if and how these were addressed on the project and in future practices.

On ICC-B, which covered 325 acres in Montgomery County, Kiewit reduced stream impacts by 4,521 LF and permanent wetland impacts by 1.3 acres compared to permitted impacts, reduced forest impacts by 17.3 acres, and avoided 164 Specimen Trees. Below are some examples of specific techniques, products, and practices that Kiewit implemented on the ICC-B that will be beneficial to the construction of MD-97.

Erosion & Sediment Control Compliance – Kiewit utilized redundant E&S Controls such as:

- Installing shredded mulch from the tree grinding operation between two rows silt fence to provide additional filtering treatment and reinforcement of the silt fence for high flow runoffs in the event of a severe precipitation event.
- Immediate temporary stabilization of disturbed areas after construction had been completed.
- Temporary sediment traps were oversized in order to additional storage to accommodate higher precipitation events.

Redundant controls were contractually required but there was no stipulation the type of redundant controls to be used.

Prevention of Tracking Sediment on Public Streets – Stabilized construction entrances and a self-contained truck washing station were utilized to prevent trackout. The truck washing station was not required by SHA but it was a necessity in order to maintain compliance with their (E&S) Control permit.

Avoidance and Minimization - Additional items incorporated into ICC-B include:

- We minimized impacts to the reproducing trout and Comely Shiner populations or their habitat in the design.
- Storm water management facilities were designed to infiltrate a portion of the runoff to maintain recharge levels to stream and wetland hydrology, and used recycled materials to reduce contaminant migration.
- Minor alignment shifts avoided or minimized impacts to especially sensitive habitats for birds.
- Every effort was made to avoid disturbance to riparian vegetation, particularly within 30 feet of stream banks.
- Every tree along the LOD was evaluated for avoidance and minimization. When disturbance would impact the critical root zone by 30% or less, root pruning was performed to minimize impact to the tree.

Sequence of Construction – On ICC-B, Kiewit began construction of a Sediment Basin/Stormwater Management Pond prior to fully installing an earth dike across a haul road because of a conflict. By not having the earth dike fully installed, the work was considered out of sequence. Once found, The issue was immediately corrected. This was the only non-compliance in 4 years of construction, as a result, the project was completed with an "A" rating from MDE.

FORM A-2 PAST PROJECT DESCRIPTION

Name of Proposer: **Kiewit Infrastructure Co.**

Name of Construction Firm: **MD200 Constructors, a Joint Venture**

Project Role: **Lead Contractor**

Contractor: **X** Other (Describe):

Years of Experience:
Roads/Streets: **over 40 years** Bridges/Structures: **over 40 years** Environmental: **over 40 years**

Project Name and Location: **Inter-County Connector, Contract B | Montgomery County, MD**

Project Key Staff (as applicable to project)

Project Manager: **Tim Cleary / Gwyon Nelson**

Construction Manager: **Gwyon Nelson / John Tuschak**

Cost Estimator: **Glenn Christensen**

Description and Specific Nature of Work for which Firm was responsible and how it is relevant to this contract:

Kiewit Infrastructure Co. was the lead for the joint venture that constructed the design-build project known as the Inter-County Connector, Contract B (ICC-B), which consisted of the middle segment of the ICC automated toll way. The work included more than seven miles of new six-lane highway constructed through some of the most environmentally sensitive and heavily populated areas in the Baltimore/Washington corridor. Construction began in January 2009 and was open to traffic in November of 2011. Key elements included a diamond interchange at MD 182, a single point urban interchange (SPUI) at MD 650, and 10 new bridges.

Additional project features included intelligent transportation systems (ITS), electronic toll collection (ETC), traffic signals, signing and pavement marking, more than 80 acres of reforestation, 12,938 LF of hiker and biker trails, and the relocation of six side roads. In addition to the bridge structures, the project had more than seven miles of sound barriers and more than 65,000 square feet of mechanically stabilized earth (MSE) walls.

At the time, the Inter-County Connector, Contract B project was the largest design-build project ever undertaken by the State of Maryland. The team cleared more than 325 acres, constructed eight

large stormwater management ponds and two large underground stormwater containment structures, moved more than 2.4 million CY of earth, constructed more than 54,000 LF of drainage systems, placed more than 500,000 TN of new asphalt pavement, and built more than 65,000 SF of MSE retaining walls. MD200 self-performed 60% of the work.

MOT REQUIREMENTS

There was no live traffic on the ICC, however the corridor intersected five major roadways which could not be closed during construction. MOT at four of these locations included a temporary detour around the ICC site, during which time our team elevated the intersecting roadway over the ICC and switched traffic back on to the roadway and new bridge before continuing construction of the ICC underneath. The ICC spans over one intersecting roadway. During beam setting and overhead work at this location, traffic was detoured to avoid lane closures.

ENVIRONMENTAL ELEMENTS

Prior to commencing construction, crews relocated wildlife. A turtle exclusion fence was installed along the limit of disturbance to prevent the Eastern Box Turtle from migrating back into the work area. After the fence installation, multiple field sweeps were performed to capture and relocate more than 520 turtles. Specially trained dogs were used to locate and retrieve the turtles. All rescued turtles were relocated to a suitable habitat outside of the project's right-of-way.

Protecting the diverse and sensitive natural environment that was to be traversed by the Inter-County Connector (ICC) required extraordinary focus and effort. To fully address potential impacts during the proposal phase, our environmental and design teams worked closely to design ICC-B with a comprehensive set of avoidance, minimization and mitigation to protect the environment to the utmost extent.

Environmental design functions included: environmental studies and documentation required for design modifications; preconstruction baseline environmental monitoring; environmental reviews during design for additional avoidance and minimization; validation, verification of existing environmental features; environmental design for wetland, streams, fish passage, vernal pools and reforestation; and training construction field staff on environmental issues.

For Contract B, bridges over parks and streams were built longer than normal to lessen the amount of environmental impact in these sensitive areas and allowed greater clearance for wildlife and vegetation. The path of the ICC roadway was lowered into the ground near existing communities to reduce noise and visual impacts.

Environmental mitigation included wildlife monitoring, management of mammal passage, turtle and trout relocation programs, reforestation efforts, and pre and post-construction water quality monitoring. The team utilized an extensive sediment and erosion control system and minimized equipment idle time to reduce emissions.

COORDINATION REQUIREMENTS

Maryland State Highway Authority; Adjacent ICC contracts A and C; Multitude of project stakeholders including Montgomery County, MDE, USFWS, M-NCPPC, MDNR, USACE, EPA, utility companies, environmental agencies, county agencies, adjacent landowners, and community organizations.

PUBLIC OUTREACH ELEMENTS

Project required a full time public outreach team that proactively addressed the upcoming concerns and issues that arose. ***Relevancy: Montgomery County project, located near Maryland National Parks, environmental sensitivity and permitting, coordination with third parties, design coordination, GPI as environmental consultant, reforestation, landscaping, relocation of native trout streams, earthwork, roadway work, grading work, roundabout, utilities relocation, public outreach, maintenance of traffic and partnership with SHA and local stakeholders***

Description of Specific Nature of Work for which Key Staff proposed for this contract was responsible for on project and how it is relevant to this contract:

John Tuschak and Glenn Christensen come to MD97 as veterans of ICC-B, each bringing experience and know-how to the project. On ICC-B John performed a dual role as Construction Manager and Environmental Manager. As Construction Manager, he provided direct oversight over the erosion and sedimentation control, maintenance of traffic, utility relocations, grading, drainage, and asphalt operations. He was instrumental in utilizing best management practices in order to install linear stormwater management features such as: infiltration ditches, underground detention (minimizes footprint), and grass swales. He was also a part of the key staff to conduct public outreach. John has familiarity with all parts of the permitting process and local design specifications and guidelines. Directing the Environmental Group, he oversaw permitting (including but not limited to wetlands permits and compliance permits), reforestation efforts, landscaping compliance efforts, trout stream relocation, turtle relocation, and mammal passage. With his local experience and knowledge earned managing a project like ICC-B, John is an excellent choice to lead MD97 as Project Manager. Glenn served as the Design Coordinator and Chief Estimator. He managed all aspects of communication and collaboration between the design and construction team and SHA from the initial planning stages and risk mitigation activities through construction. This included design plan submittals, plan reviews, and ensuring that all deliverables were on schedule. Glenn will use his years of experience to guide the estimating process on MD97. As Kiewit's Chief Estimator, Glenn comes to MD97 with unmatched estimating expertise in order to fulfill SHA's goals.

List any awards and/or commendations received for the project:

The project received an "A" (Excellent) rating from the Maryland Department of the Environment, ENR Northeast Region Best Project of 2011, ARTBA 2012 GLOBE Award for Major Highway, Project Greater than $100M, Maryland Quality Initiative Silver Partnering Award, and the 2012 National Design-Build Award, Transportation.

Name of Client (Owner/Agency, Contractor, etc.):

Maryland State Highway Administration	
Address: **707 N. Calvert St, Baltimore, MD 21202**	
Contact Name: **Mark Coblentz**	Telephone: (**301) 586-9267**
Owner's Project or Contract No.: **AT3765B60**	Fax No.: (**301) 586-9222**
Contract Value (US $):**$545,092,000**	Final Value (US $):**$560,740,488** (owner directed scope increase)
Percent of Total Work Performed by Company: **60%**	
Commencement Date: **October 2008**	Original Completion Date As Defined in IFB: **January 2012**
Actual Completion Date: **November 2011 (substantial completion)**	
Any disputes taken to arbitration or litigation? Yes No **X**	

FORM A-2 PAST PROJECT DESCRIPTION
Name of Proposer: **Kiewit Infrastructure Co.**
Name of Construction Firm: **Kiewit Infrastructure South Co.** (subsidiary of KIC)
Project Role: **Prime Contractor**
Contractor: __X__ Other (Describe):
Years of Experience: Roads/Streets: **over 40 years** Bridges/Structures: **over 40 years** Environmental: **over 40 years**
Project Name and Location: **I-4 Reconstruction (from 14th to 50th Streets) Tampa, Florida**
Project Key Staff (as applicable to project)
Project Manager: **Paul Carter**
Construction Manager: **Gwyon Nelson**
Cost Estimator: **Glenn Christensen**
Description and Specific Nature of Work for which Firm was responsible and how it is relevant to this contract:

This project, which was the largest roadway project undertaken by the Florida Department of Transportation at the time, consisted of the reconstruction of 2.5 miles of I-4 in Tampa between 14th and 50th streets and a five year maintenance contract. The roadway traversed through historic Ybor City toward one of Florida's busiest interchanges known as "malfunction junction," between I-4 and I-275. The Kiewit project team coordinated and implemented an essential MOT plan with additional measures for safe pedestrian and bicycle passage through the site. The overall purpose of the project was increased capacity and improved safety.

The major scope items included 2.2 million CY of embankment, demolition of 20 bridges, installation of 18 new bridges, and 151,000 SY of PCC pavement. Work activities included the installation of 25 permanent MSE walls totaling over 835,000 SF along with seven temporary MSE walls totaling 83,000 SF. Embankment operations involved the placement of 2.1 million CY of material, including 1.6 million CY of borrow material hauled in from off-site. The project also consisted of installations of the water line, sewer, and storm drainage.

The new bridges were either founded on drilled shafts totaling 12,800 LF or concrete piling totaling 28,000 LF. Of the new bridges, fourteen were constructed out of AASHTO beams and four used structural steel. Final quantities featured more than 17,000 CY of structural concrete and approximately 59,000 LF of drainage pipe installed on the mainline and associated side streets. With four bridges spanning two active railroads daily coordination with CSX representatives was required to ensure no conflicts occurred with the rail lines during removal and replacement of the bridges.

The project improvements also included shoulder-mounted 8-ft noise walls adjacent to densely developed residential areas and aesthetic design treatments that complimented the historic neighborhood. The fountain area was built to attract tourists and serves as an attractive community area for locals, which brings the historical feel of the area together. Special care was taken to mimic materials and enhance structures such as the bridge facade and pilings. **This project was finished an impressive eight months ahead of schedule.**

Relevancy: Aesthetic elements added to maintain historical appeal, roadway construction, bridge construction, minimization of public impact, fountains, and noise walls

Description of Specific Nature of Work for which Key Staff proposed for this contract was responsible for on project and how it is relevant to this contract:
Glenn served as Chief Estimator on the I-4 project. He led a team of 10 estimators/engineers to develop the entire project cost model and construction approach, along with risk mitigation and pricing. His role in this project speaks to his more than ample skills to serve as Cost Estimator on MD97. John served as a Grading Superintendent and provided full oversight of scheduling, managing crews, coordinating with subcontractors, ordering materials, and managing equipment for project grading operations. He also coordinated closely with other disciplines and within the constraints of an active adjacent freeway.
List any awards and/or commendations received for the project:
N/A
Name of Client (Owner/Agency, Contractor, etc.):
Florida Department of Transportation
Address: **11201 N. Malcom McKinley Drive, Tampa, FL 33612**
Contact Name: **Richard Frank** — Telephone: (**813) 233-3832**
Owner's Project or Contract No.: **258401 1 52 01/56** Fax No.:(**813) 233-3743**
Contract Value (US $): **$149,898,619** — Final Value (US $): **$175,810,619** (owner directed changes and quantity overruns, early completion bonus)
Percent of Total Work Performed by Company: **72%**
Commencement Date: **October 2003** — Original Completion Date As Defined in IFB: **May 2008**
Actual Completion Date: **September 2007**
Any disputes taken to arbitration or litigation? Yes No **X**

FORM A-2 PAST PROJECT DESCRIPTION

Name of Proposer: **Kiewit Infrastructure Co.**

Name of Construction Firm: **Kiewit Western Co.** (affiliate of KIC)

Project Role: **Lead Constructor**

Contractor: **X** Other (Describe):

Years of Experience:
Roads/Streets: **over 40 years** Bridges/Structures: **over 40 years** Environmental: **over 40 years**

Project Name and Location: **Cotton Lane Roadway and Bridge CMAR | Goodyear, Arizona**

Project Key Staff (as applicable to project)

Project Manager: **Allen Mills**

Construction Manager: **Don Arant**

Cost Estimator: **Brian Stadnick**

Description and Specific Nature of Work for which Firm was responsible and how it is relevant to this contract:

Kiewit Western Co., an affiliate of Kiewit Infrastructure Co., was selected as the contractor of choice to construct the $52M Cotton Lane Bridge project. This multi-phase 3.25-mile bridge project was both the largest single contract in Maricopa County Department of Transportation's history and its first project delivered as a CMAR.

The project scope included constructing a six-lane, 2,100-foot long bridge—including bike lanes and a second pedestrian access—over the Gila River to provide additional access to the growing communities south of the river. Additional scope included providing the channel improvements, flood control, bank stabilization, a new roundabout intersection, and habitat modification along the effected section of the Gila River.

Through the CMAR process, the Kiewit team provided cost estimating, scheduling, planning and phasing, value engineering, constructability reviews, DBE goal setting, and subcontractor selection for the owner, in addition to managing the construction process.

Recognized by MCDOT as "a shining example of what can be accomplished through shared public and private projects," the Cotton Lane Bridge project also won the Southwest Contractor's Best of 2007 award.

INNOVATION

The first thing to see when admiring the Cotton Lane Bridge is the bridge aesthetic package. Designed by Michael Baker Corporation, in conjunction with Kiewit, the aesthetic package includes stenciled and stained pre-cast exterior girders and columns. Each pedestrian alcove shares the same stenciled and stained pattern and includes artistic benches that tie very well with the southwestern theme. As a project with multiple owners, each with goals and visions of what they think the project should become, communication of these goals and strategies to meet them were crucial. One of the main concerns for the City of Goodyear was designing

and building a project that conforms to their "Dark Sky" theme. To minimize the impacts of lights along the bridge, special architectural lighting was used. Now Goodyear can enjoy the benefit of a visually pleasing bridge, while keeping light from bleeding into surrounding communities that could potentially reduce the neighboring residents' ability to stargaze.

LEVERAGING THE CMAR PROCESS

The Cotton Lane Bridge project was comprised of three owners: Maricopa County Department of Transportation, the City of Goodyear, and the local Newland Communities. Using the CMAR process, all owners were capable of expressing their own visions and goals for the project. This included allowing owners, contractors, and designers to consider several different bridge designs and budget options, including box girders, steel girders, pre-cast girders, and arch style girders. Due to the CMAR process, owners were able to see different pricing options while deciding on issues such as aesthetics and their budget. For Maricopa County, cost and schedule were the key items to focus on; for the City of Goodyear and Newland Communities, cost and aesthetics were critical.

ARCHAEOLOGICAL FINDS

During preconstruction, the team performed a site investigation. During this investigation, ruins of a small Hohokam village were uncovered. The team hired a consultant to excavate the village, collect artifacts, and exhume any human remains. Those remains were removed in cooperation with tribal beliefs and customs and were reburied on tribal ground. To prepare for any further discoveries, the team hired an archaeological monitor to remain on-site during excavation operations.

Relevancy: CMAR, roundabout, bridge work, roadway work, archaeological site protection, value added aesthetic innovations, and cost savings

Description of Specific Nature of Work for which Key Staff proposed for this contract was responsible for on project and how it is relevant to this contract:
Don Arant provided oversight for all phases of construction as Construction Manager. Don and his team used value added aesthetic elements to deliver an award winning project that was not only functional, but also served as an expression of the local environmental and cultural sensibilities including protected cactus relocation, new wildlife habitats (bat boxes), and floodplain protection. Don will work in the same way on MD97 to deliver an innovative, environmentally responsible, and well-managed construction site which focuses on delivering the best value.
List any awards and/or commendations received for the project:
Southwest Contractor Best of 2007 and 2008 Precast/Prestressed Concrete Institute (PCI) Design Award
Name of Client (Owner/Agency, Contractor, etc.):
Maricopa County Department of Transportation
Address: **2901 W Durango St, Phoenix, AZ 85009**
Contact Name: **Bill Hahn** — Telephone: **(602) 506-8600**
Owner's Project or Contract No.: **2004-109** — Fax No.: (**602) 506-4750**
Contract Value (US $): $52,984,752 — Final Value (US $): $51,518,582
Percent of Total Work Performed by Company: **65%**
Commencement Date: **October 2006** — Original Completion Date As Defined in IFB: **July 2008**
Actual Completion Date: **June 2008**
Any disputes taken to arbitration or litigation? Yes No **X**


Kiewit

C.1.a. Approach to Maximizing the Project Goals

Discussion on the project's goals and the Proposer's approach to maximizing and attaining the project goals from the Preconstruction phase through the Construction phase.

FUNCTIONAL USE

FUNCTIONAL USE

We will construct a functional bypass around the town.

Ensuring high value during preconstruction, self-performing critical path scope, providing opportunities to the local community, utilizing an approach that reduces cost and schedule, and valuing the voice of the stakeholders and local community.

1

HIGH QUALITY DESIGN & CONSTRUCTION

"Build It Right The First Time"

Develop a proven Quality Management Plan, hold quality only meetings with SHA and perform joint quality only tours, promptly report any quality issues and ultimately develop a foundation of trust and transparency.

ENVIRONMENT

2

NO ENVIRONMENTAL IMPACT

Blend infrastructure with the environment with the least impacts.

GPI will serve as environmental experts to ensure that we properly protect the precious resources, reduce the Limits of Disturbance, perform environmental surveys, and take a proactive approach to protecting the environment.

TIME & BUDGET

CONTEXT SENSITIVITY & AESTHETICS

Enhance the historical character and serene appeal of Brookeville.

Utilize character defining features through the use of an aesthetics review committee, which can include architectural precast, patterned cast in place concrete, landscaping, lighting, and innovative roundabout enhancements.

3

ON TIME & BUDGET OF PROJECT DELIVERY

On time and budget is what you expect, and what we will deliver.

Construct the project within the GMP by reducing risk, utilize an innovative approach to construction, provide value engineering, and ensure detailed constructability reviews. Our 4 phase approach will ensure the project success.

MINIMIZE PUBLIC IMPACT

MINIMIZE IMPACT TO TRAVELING PUBLIC

The safety and satisfaction of traveling public is a top priority.

Work zone impacts minimized during planning, design and construction to eliminate delays, and provide greater safety. Our approach ensures tie-ins are constructed in a short window, and have minimal impact on the public and local residents.

4

SAFETY FIRST

Our top priority is "Nobody Gets Hurt."

Our program ensures that all staff, subcontractors, and traveling public are home to see their loved ones each day. We accomplish this through hazard recognition, craft based safety, and effective MOT.

PARTNERSHIP

5

FACILITATE A COLLABORATIVE PARTNERSHIP

We strive to exceed expectations and build "Raving Fans."

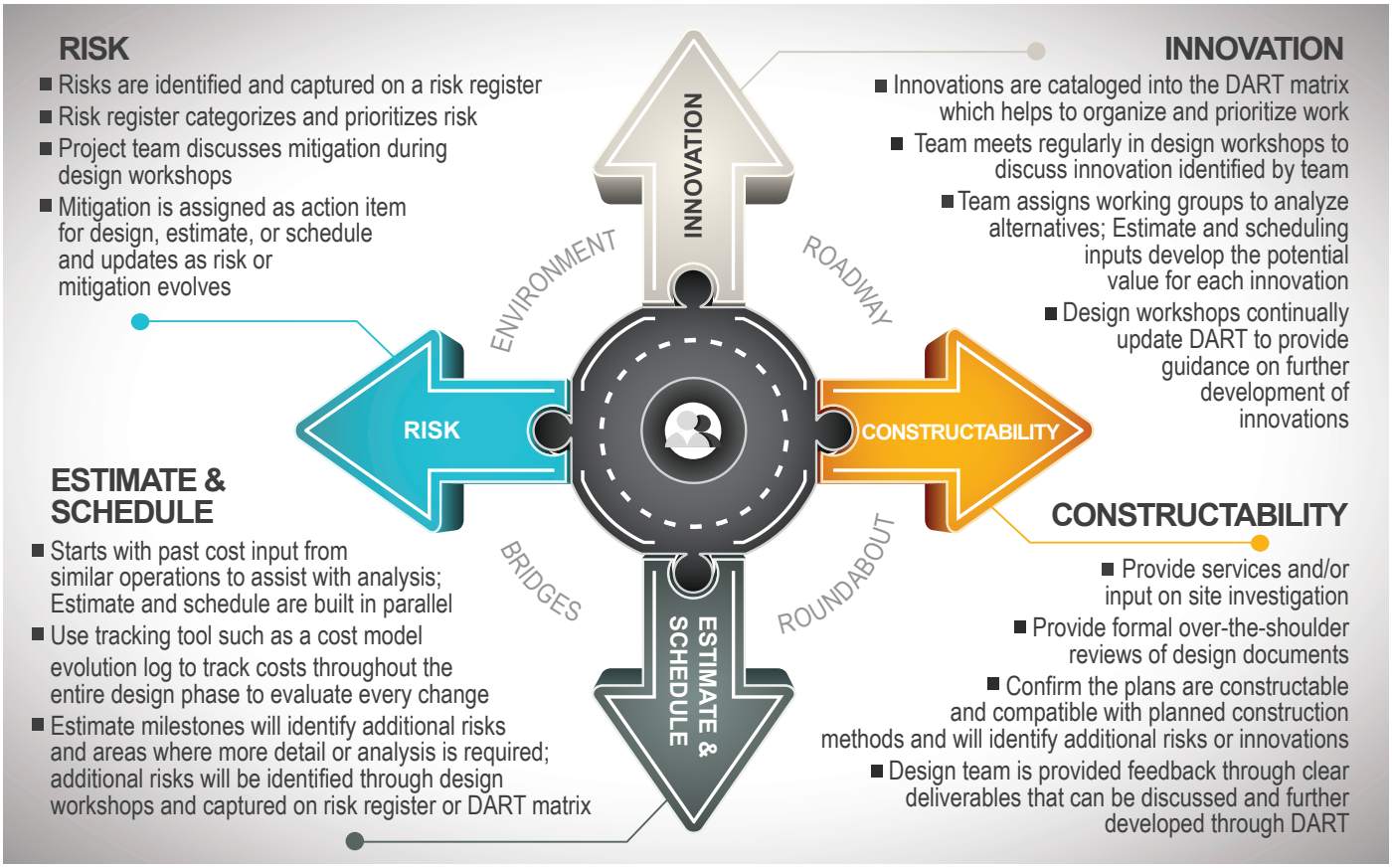
Facilitate an integrated partnership between SHA and all stakeholder to ensure project goals are exceeded. We will accomplish this through partnering, strong communication at all levels, and by doing what we say we are going to do.

C.1.b. Optimizing Value Throughout Design

Discussion of your approach in the Design effort to help reduce errors and omissions, improve constructability, and reduce cost of construction. Describe processes that will be used to support the Design development and decision making process in the Preconstruction phase of the project. How will these proposed process help SHA decide which suggestions to use and how will the cost savings, risk mitigation, and value added be tracked and documented?

Optimizing value during design is an iterative process. Through analyzing risk, innovating design and methods, developing estimates and schedules, and providing constructability reviews, our team, in collaboration with SHA and the design team, will continuously drill down into the project details. Through each process we will further refine details and find additional opportunities to optimize the design. Throughout the process we will draw in expertise from our experienced staff to develop streamlined design, reliable cost and schedule with a strong command and understanding of risk.

Some of the most valuable tools that we will use during the design phase are the Decision Analysis and Resolution Team (DART) tracking matrix and the Cost Model Evolution Log (CMEL). The DART matrix organizes and quantifies innovations developed during design to help the team evaluate the overall change. Each innovation is evaluated based on impacts to design, construction, schedule, the client and overall project goals and weighted scores are entered for each category. This allows the team to make informed decisions for every value engineered or innovative idea. Please see the Appendix for an example.



Throughout the design phase, the CMEL provides detailed cost and quantity tracking for each item of work to show cost evolution of that work item. As the design progresses, the CMEL provides a detailed cost history of each design enhancement and helps determine the cost difference between our original cost models and the independent cost estimate, allowing prompt identification of variances between the two. Please see the Appendix for an example.

These management tools help to maintain professional interaction and organize ideas, prioritize them for the greatest impact, and keeps the entire team focused on what is most valuable for the project.

C.1.c. Project Management Tools and Best Practices

Discussion of your firm's approach in providing successful general contracting services based on prior experience and how it applies to meeting SHA's project objectives. Include specific examples of your firm's processes (estimates, progress reports, schedules, Constructability reviews, value analysis studies, forms, cost savings, plan reviews, general conditions budgets, organizational structures, quality control, etc.).

Design Review Process. We will conduct design review sessions on a regular basis, along with formal comment periods at 30, 60 and 90% design. These sessions are an opportunity to address design ambiguity, discuss constructability issues and value added ideas, make clarifications and develop cost assumptions. **Our project team enjoys the creative challenge of reducing cost while still achieving the fundamental features of the project.** Utilizing our in-house team of professionals specializing in structural, civil, drainage and environmental disciplines, our team can provide maximum value to the project through innovative solutions. To be the most effective, value engineering strategies must be performed during the schematic and design development phases to avoid redesign.

Estimating. Working with SHA and the designer, multiple construction cost estimates will be produced during the development of the design drawings and specifications. Our estimating systems provides a **detailed, itemized breakdown of the various cost components to outline a clear understanding of the construction costs for the project and track every change to allow the project team to make informed decisions.** These systems will also be used to develop our general conditions estimate based on past project histories, and will be an open book review.

Scheduling. At the onset of preconstruction, we will work with the designer to determine the most effective phasing plan for design and construction. Important considerations will include the availability of funding, complexity of design, required design durations and long-lead items such as utility relocations. Once agreed upon, we will incorporate design milestones into the project's CPM schedule in order to track progress of the overall design and ensure we are progressing the project as a team. Our schedule will also be cost and man-hour loaded, to assist with monthly progress billing and other key progress reports. Once construction in the field begins, we plan to utilize several scheduling tools that have ensured on-time delivery on past projects.

- **CPM Schedule.** This schedule is a look at the entire project and is updated monthly or as required. It ensures the overall project is on track and that the team is meeting all critical milestones.
- **90-Day Schedule.** This schedule is a more detailed look at the next 90 days to ensure every detail of the project is planned out. It allows the team to proactively identify challenges and mitigate them before they become an issue.
- **3-Week Look Ahead Schedule.** This schedule is developed weekly and is the primary tool to communicate upcoming activities to the project team, client, stakeholders, and the local community. We will track the accuracy of our rolling schedules to ensure the team is "doing what we say we are going to do."
- **Play of the Day.** The team will hold a daily schedule meeting to discuss the next day's events. This meeting discusses safety and quality for the operations, ensures the proper resources are available, communicates any key restrictions, and lays out the required production for the day.

Quality Control. Our team places significant emphasis on quality and has made it our core value, second only to safety. Our overall program can be summed up in three phases: **Plan It.** Up-front planning results in a safer work site, a higher level of quality, and an on-time and on-budget project. Our detailed work plans provide the team with information necessary to perform each task, including task-specific quality requirements, tolerances and hold points for inspection. The specific plan will be communicated to all team members at the pre-activity meeting. **Build It.** Our team will use their expertise and skills to construct the work in conformance with the project requirements. After the first step is complete on any major operation, we will meet with SHA to review the operation sequence and make any necessary adjustments prior to the next step. The execution cycle will begin once the initial inspection has been completed and any corrective changes have been made. **Check It.** Inspection and testing are the cornerstone to successfully monitoring what is being built in the field. Inspection and testing requirements for all operations will be identified within the work plan, and these requirements will be communicated to all members of the team at the pre-activity and Play of the Day meetings.

Self-Performed vs. Subcontracted Work

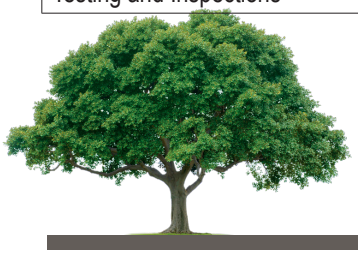
Provide a description of the Construction work the Project Management Team has the capability to self-perform, including qualifications to do such, and to subcontract. Provide a discussion on the process you will utilize to solicit subcontractors during the OPCC and GMP process including compliance with COMAR 21.05.10.05.

We have the staff, craft and equipment resources necessary to self-perform the critical scopes of the work on our projects. On ICC-B, I-4 and Cotton Lane, we self-performed over 60% of the work on scopes similar to MD97.

In order to meet owner and/or project needs, we may also subcontract the same scopes of work. Due to our self-perform expertise, we are uniquely qualified to assemble and manage work packages that attract qualified subs/vendors. We understand the need and responsibility to involve the local community and businesses, and we are committed to providing opportunities for local involvement. **Our self-perform strategy will allow us to control the critical path work yet still provide a great opportunity for the local subcontracting and vendor community to compete for and participate in this project.**

We will integrate subcontractor scopes of work for a seamless implementation of the schedule. We will clearly identify these scopes and, with SHA's participation, define which are best suited for direct self-performance and which will be better suited for subcontractor support. Once the levels of participation are identified, we will submit a competitive bid for the work, while implementing a detailed subcontractor management plan that will bring these members of the team and their expertise to bear as soon as possible on the project.

PROJECT ELEMENT	TYPICAL SELF-PERFORM SCOPE	POTENTIAL SUBCONTRACT SCOPE	POTENTIAL MBE / LOCAL PARTICIPATION OPPORTUNITY
Preconstruction Services	●		
Permitting	●		
Survey	●		
Erosion and Sediment Controls	●	●	●
Traffic Control	●	●	
Clearing and Removals	●	●	●
Excavation and Embankments	●		
Hauling and Trucking	●	●	●
Stream Diversion	●		
Drilled Shafts/Piling	●	●	
Concrete Work (Bridges, Retaining Walls)	●		
Precast Concrete		●	
Concrete Flatwork (Curb, Gutter, Sidewalk)		●	●
Roadway Base	●		
Asphalt Milling		●	
Asphalt Paving		●	
Guardrail		●	●
Pavement Markings		●	●
Drainage Pipe and Structures	●		
Landscaping and Planting		●	●
Testing and Inspections	●	●	●



Understanding and controlling risk on the project will be paramount. Many project elements we have identified as being self-performed are critical components to controlling risk. The specific potential risks associated with these items are directly related to cost and

schedule. While safety, quality and contract compliance will be the primary focus, controlling the cost and schedule will require additional focus.

Controlling schedule risk through self-performance and resource management is a proven technique for mitigating this risk while ensuring quality performance. The associated quantity control for the permanent material scope associated with these tasks is also a necessary requirement for cost control. Managing the commodity material contracts directly allows for more accurate quantity verification, submittal, and specification compliance and the resulting quality and cost assurance.

Subcontractor Procurement Processes

The subcontractor procurement process starts during the early stages of preconstruction with the creation of bid packages, prequalification of subcontractors and the identification of long-lead items. We believe it is critical to establish a detailed procurement plan with SHA at the onset of the project, and our plan is in full compliance with COMAR 21.05.10.05. By establishing a plan at the beginning of the project, our team can increase efficiencies and maximize the project savings.

Our Subcontractor Procurement Plan is designed to ensure that capable, reputable and local subcontractors who are selected on a combination of qualifications and price are performing on the project. With input from the County and Program Manager, we will evaluate and score each subcontractor's proposal based on the evaluation criteria that is established by our collective team.

Subcontractor Prequalification Process

In addition to making sure the most qualified subcontractors have the opportunity to bid the project, the prequalification process also guarantees that both local and certified MBE subcontractors have ample opportunities to participate in the project. During the prequalification process, our team will reach out to the local community. We plan to advertise the opportunities in publications like the Montgomery County Sentinel. Our process for ultimately grading and prequalifying subcontractors will be a combination of pass/fail criteria and weighted value criteria. Final scoring and recommendations for prequalification will be made in collaboration with SHA.

Each prequalified subcontractor will receive a copy of the invitation to bid, and calls will be placed to all prospective bidders to confirm they are bidding the work. After establishing a list of confirmed bidders (list will be used to track their bid status), we will make sure that we have a minimum of three bidders per trade and report to the SHA Program Manager the status of the bid process. The bids will be recorded and awarded to the firm with SHA's input that provides the best value.

SUBCONTRACTOR PREQUALIFICATION CRITERIA

Safety / Quality. Subcontractors must provide their Experience Modification Rate (EMR) for the past three years. Does the Subcontractor utilize a formal written Quality Plan?

Past Performance. Each subcontractor's past performance is evaluated on: shop drawings, procurement, change order response, schedule response, work quality, safety, clean-up, punch list and any other appropriate categories specific to the project.

Capability. References are requested from three past projects to verify the subcontractor's ability to complete projects satisfactorily (within budget, on time, quality and safety).

Management / MBE. Each subcontractor is asked to provide a list of their firm's principal parties and their specific State Contractor's License numbers. Additionally, the company's ownership as it relates to MBE status and the company's minority status as it relates to County, City or State applications.

Capacity. Provide information on past annual sales (revenues) and a statement as to their total bonding capacity. This information is analyzed to provide the most relevant data as to whether the subcontractor can perform on a specific task and a subcontract amount at which they will be able to perform.

Financial Stability. If the subcontractor's scope of work is likely to exceed $50,000, an annual financial statement is required from the subcontractor. A letter from the subcontractor's Surety Company stating bonding availability will be required.

C.1.d. Minimizing Environmental Impacts

Discussion on your approach to minimizing environmental impacts during the Design phase and the Construction phase and how you would coordinate, balance, and address the needs of the various stakeholders.

In order to meet the environmental goals of the MD97 project the selected contractor must possess the depth and breadth of experience to efficiently and effectively coordinate, collaborate, and deliver the documented environmental commitments. Our environmental approach and strategies are based on this premise. By including GPI on ourEnvironmental Compliance Team, led by John Tuschak, you can be assured that **we have some of the most experienced environmental specialists in the area** who have a successful history of working with us and SHA and are **familiar with every aspect of state, federal and local environmental regulations regarding environmental impacts**, as well as the requirements of SHA and Montgomery County.

The MD97 project is surrounded by several sensitive environmental areas, including waterways (Meadow Branch and Reddy Branch which are tributaries to the Howling River and are part of the Patuxent River watershed), Use IV-P waters (recreational trout waters and public water supply), forest tracts (which may support species such as migratory song birds), and wildlife and plant species habitats (Shingle Oak Protection Area). Several of these tributaries, wetland systems, floodplains, groundwater seeps, local parks, and unique and sensitive upland areas have the potential to be directly or indirectly impacted by the project.

We deeply appreciate the importance of these environmentally sensitive areas. Our environmental mitigation approach will fully address potential impacts **during the design phase**. Our environmental team will work closely with the designer to develop solutions to avoid these resources wherever possible. Where impacts cannot be avoided, we will jointly develop mitigation actions to minimize impacts. These efforts will be continued throughout the final design and construction phases. The environmental team, with the knowledge from the design team, will provide continuity during construction by working directly with the construction crews to ensure that the project is built to preserve the natural environment. **During construction**, there are several areas that will require specific mitigation methods. Below are a few of the major areas and our mitigation plan for each:

Our earthwork disturbance area plan will be included in the construction schedule, with phased erosion and sediment control work to maximize the protection of downstream resources and property from the construction related sedimentation. The erosion and sediment control design will also be coordinated with the traffic control plans. Our objective is to minimize the soil exposure period within the project limits and the potential for soil runoff.

Haul roads will be designed with a minimum amount of grading, clearing and grubbing, keeping subsequent construction areas undisturbed as long as possible. When entering existing roadways is unavoidable, we will provide the necessary track-out protection at the construction entrances.

We will install silt fence at all stream and wetland crossings and orange construction fence at wetlands and streams to prevent unauthorized disturbance of these areas. When longer periods of soil exposure are anticipated in environmentally sensitive areas, we will recommend to the designer to provide redundant designs including super silt fence with earth berms or other erosion sheet flow control measures and provide additional storage area in sediment basins/traps. In response to severe weather, damaged erosion and sediment control devices will be repaired or replaced within 48 hours.

In addition to the specific activities during design and construction, there are numerous **environmental agencies and stakeholders** (such as Montgomery County, M-NCPPC, MDE, Maryland Department of Natural Resources, USACE, US Fish & Wildlife Service, and the EPA) that we will need to partner and coordinate with on a regular basis to monitor compliance and perform joint inspections.

C.1.e. Construction Approach

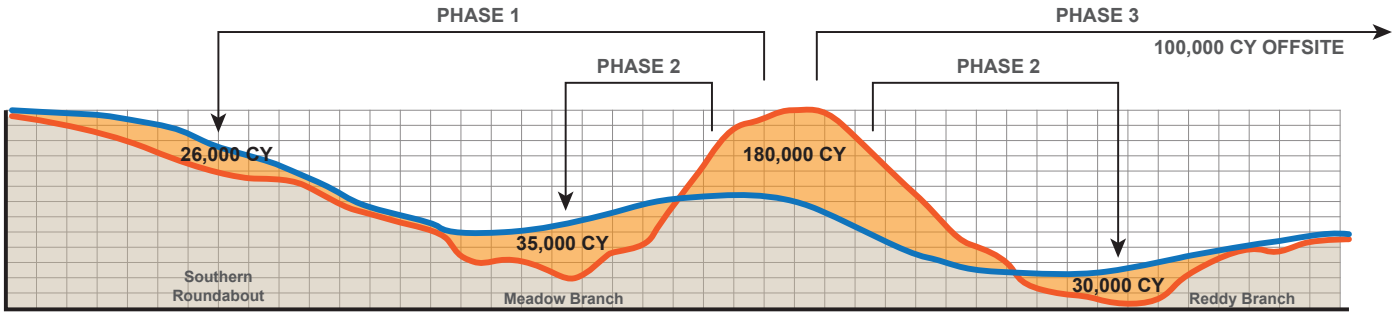
Propose a Construction approach and sequence that optimizes value to the project both from a budget and schedule perspective, with a realistic view of known constraints. Discuss factors that would affect budget and schedule such as outside constraints, utilities, seasonal work, materials, equipment and labor availability, etc.

The MD97–Brookeville Bypass project has several details that must be properly identified and managed to ensure project success. Our planned approach helps balance the unique needs of the project through careful analysis of the available information, but as the project develops during design and preconstruction, we anticipate that many enhancements can be made as a team to further improve the plan. Our initial plan focused on the following elements to determine the optimal approach for construction:

- Long-lead third party utility relocations
- Environmental restricted windows present at the stream locations
- Weather challenges during the different seasons
- Limiting the locations of disturbance at any given time
- Minimizing impacts to the local community and traveling public

In order to maximize budget and schedule of this project, our team's initial concept includes a preconstruction phase and four distinct phases of construction, as illustrated on page 25.

Due to the existing terrain of the project, there are several areas of the project that require either cuts or fills in order to construct the project to the proposed project profile. As illustrated below, the earthwork will require careful phasing. The new project profile requires the excavation of approximately 180,000 CY of material from Station 54+50 to 64+50 to generate the needed fill at Station 36+52 to 44+80, Station 45+30 to 46+30, Station 71+50 to 73+00, and at both bridge abutment locations, along with final export to facilitate roadway construction in the cut area. In order to facilitate the start of roadway construction, it is necessary to generate the needed fill material early in the project schedule.



Preconstruction Considerations

Potential Permits

We will conduct a meeting with SHA, USACE, and MDE to discuss permit conditions, compliance measures, design review and coordination, and scheduling. We have identified several critical permits including:

- **Historical Trust Permit**
- **MDE Waterway Construction Permit.** This permit will be prepared based on the final phasing of the project to reduce the LOD at any given time and ensure each phase is stabilized prior to the start of the next phase.
- **USACE 401 and 404 Permit.** The 404 and 401 permit are required based on the discharge of fill material into the wetlands that are present on site.

Construction Materials

- **Precast Elements.** In order to facilitate bridge construction, it will be important to finalize design and procure the precast elements early in the preconstruction process. Early procurement of concrete items will reduce schedule time on the bridge construction, which shortens our window when working in the sensitive stream areas.

Third Parties

- **Overhead Utilities.** We have identified three locations (located at the southern Roundabout on MD97, the northern Roundabout on Brookeville Road, and the northern tie-in on MD97) where overhead power lines are in conflict and will likely require relocation. We will identify each utility, submit the required plans and permits for relocation, and manage the schedule of the relocations.
- **Underground Sewer.** There is an underground line located at Station 48+50. During preconstruction, we will perform a subsurface investigation to identify any potential conflicts with the new roadway, and if necessary, work with the team to develop solutions if the utility conflicts with construction.

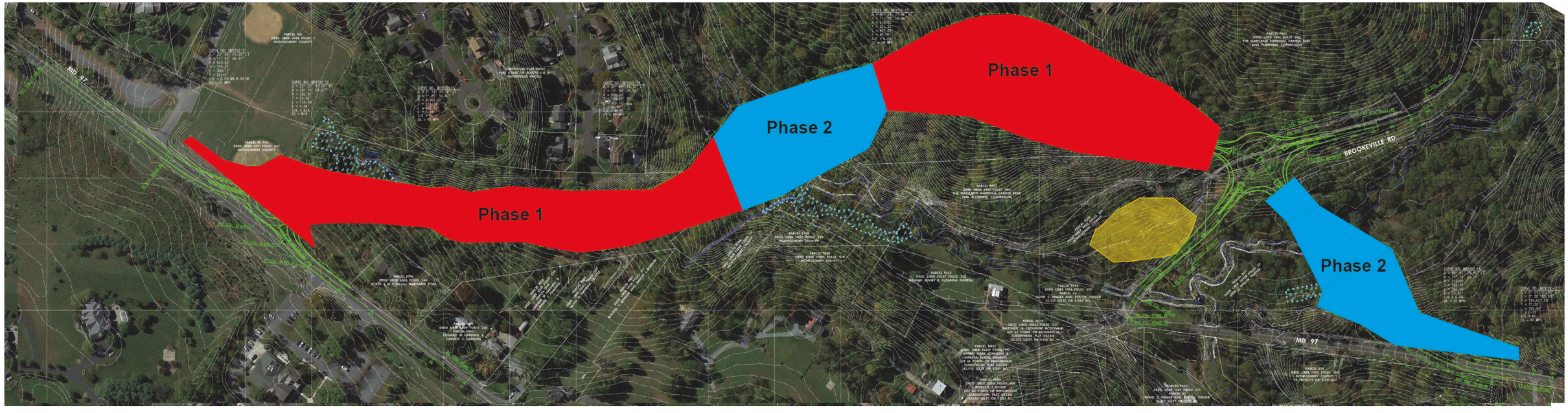
Environmental Surveys

- **Vegetation and Wildlife.** Due to the sensitive nature of this project, it will be important to perform environmental surveys of the area to identify sensitive plant and animal species.

The Value of Our Approach

While there are several approaches available to construct the MD97 project, this initial plan optimizes value by providing the following benefits:

- All long-lead utilities are managed and relocated during preconstruction, and the **initial phasing plan is not impacted by any utility relocations** that are potentially delayed into the construction period.
- All long-lead construction materials are procured during preconstruction and the start of bridge construction in Phase 2 **allows ample time for precast procurement**.
- The majority of construction hauling equipment is able to stay within the project footprint, therefore **reducing construction traffic on the existing roadways**.
- Dirt flows are maximized and will **minimize the need for re-handling of material**. By only touching the earthwork once, **we are able to reduce cost and schedule**.
- Throughout construction, we are fully completing one phase prior to starting the next. This approach **minimizes our limits of disturbance and overall environmental impacts** over the life of the project.
- Our approach ensures that bridge construction is completed in one season, and outside of the restriction windows. By completing the bridges in a short timeframe, we are **reducing the risk of experiencing a major weather event during bridge construction**.
- All major paving and earthwork are completed during the warm months of the year. This approach ensures that **all operations are completed in a productive manner**, and are not impacted by major winter weather events.
- By performing the roadway tie-ins toward the end of project, we **reduce impacts to the local community during construction**, and allow them to utilize the permanent roadway without lengthy detours and traffic impacts.
- We currently own the majority of equipment required for major earthwork, grading, and bridge construction including 40 ton haul trucks, excavators, motor graders, dozers, rollers, water trucks and cranes. The benefits of Kiewit-owned equipment means greater flexibility in the scheduling of activities, reduced standby equipment costs, and high quality maintenance, which **increases productivity and reduces the potential for environmental impacts** due to spills.
- We have a strong following of craft from the local unions, who have roadway and structure experience. By bringing in local craft, we have a team that understands the local requirements, know the safety and quality expectations of Kiewit, reduce the learning curve, and are able to **better support the local communities**.



Phase 1

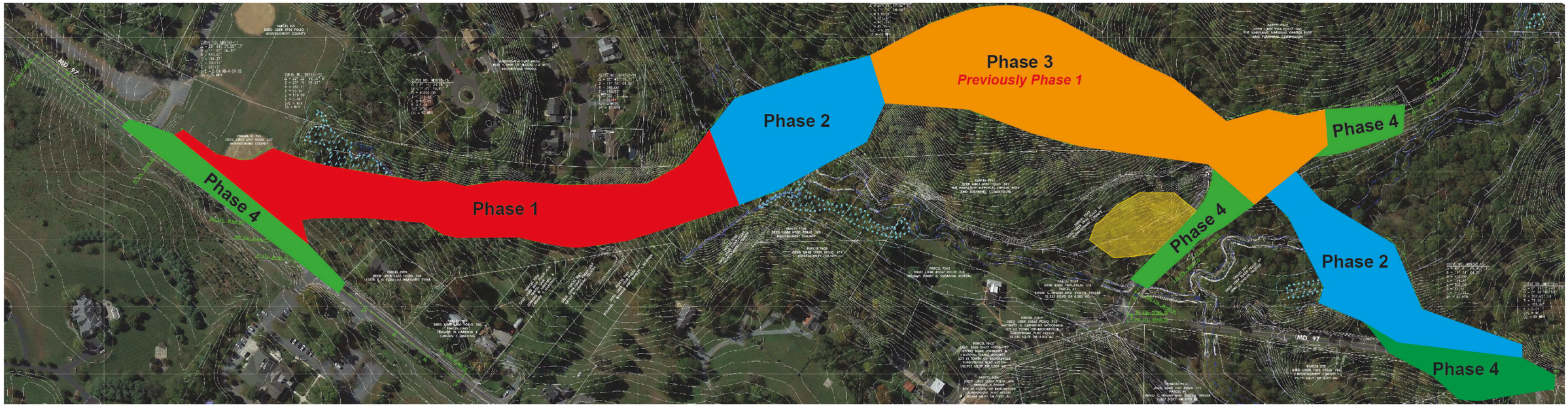
Due to the profile of the existing project and required relocation of intermittent watercourse 3, it would be most beneficial to start roadway construction at Station 36+52 to 44+80 in Phase 1.

- During Phase 1, construction would begin by performing minimal perimeter clearing of the main cut area at Station 54+50 to 64+50 and the new roadway area at Station 36+52 to 44+80 to facilitate the installation of the erosion control measures for this phase of the project.
- Once the E&S measures are inspected and approved, we would proceed with the remaining clearing that is required in the 8.5 acre footprint.
- Temporary trestle bridge will be constructed across Meadow Branch to facilitate the dirt haul operation, located adjacent to the new permanent bridge, which keeps truck traffic off of the local roadways and within the project limits.
- Approximately 26,000 CY of earthwork fill begins from Station 36+52 at the highest elevation to Station 44+80 and working towards Meadow Branch. We would also concurrently mitigate the stream during fill construction. This sequence keeps the existing stream functioning properly throughout construction. New drainage swales and structures on both sides of the roadway will be constructed as the fill reaches final elevations.
- Once the earthwork operations are complete, we would begin the roadway grading and the installation of the roadway base material, along with the early construction of the first roundabout at Station 38.
- Construction of the roundabout will not impact any traffic on MD97 (Georgia Avenue), and the remaining roundabout construction and tie-ins will be completed in a future phase. Overhead utilities will be relocated by this time.
- The curb, gutter, multi-use path and other concrete flatwork will then be installed.
- The pavement would then be installed on the permanent roadway and a large portion of the roundabout.
- Once major operations are complete, the entire area will be landscaped, stabilized, and restored to the final design requirements.

Phase 2

Both bridges would start construction after the May 31, 2017 in-stream restriction window. Both bridges will be complete in 2017, which will ensure no in-stream construction occurs in the 2018 restriction window. This approach also allows the continual removal of earthwork from the large cut area.

- We will first perform minimal perimeter clearing at each bridge location. Once the E&S measures are inspected and approved, we would proceed with the remaining clearing that is required in the 5.5 acre footprint for both bridges.
- Bridge construction would then begin at Meadow Branch and Reddy Branch
- First, we will install the substructure portion of the both bridges including the foundations, and both abutments. Once complete, the remaining fill will be placed on both sides of the bridges to facilitate future roadway and approach slab construction.
- Precast concrete girders will be transported on the newly constructed roadway from the southern end of the project for Meadow Branch. The new roadway will provide good access for delivery trucks and will also provide a firm and level surface for the crane that will pick and set the girders for the Meadow Branch bridge. For Reddy Branch, girders will be delivered off of Brookeville Road, and the crane will also be positioned in the center of the future roadway. This approach also ensures that no additional area is required for the crane, with eliminates any additional limits of disturbance.
- Once girders are complete, we will proceed with the bridge deck and barrier construction. After the completion of this bridge, the temporary bridge will be removed, and all access across the job site will now be on the permanent bridge.
- Now that bridge construction and earthwork operations are complete, we will begin the roadway grading, drainage, and the installation of the roadway base material, along with miscellaneous concrete and mutli-use path construction.
- Install the roadway pavement on the permanent roadway to tie into the Phase 1 southern section at Station 36+52 to 44+80, and on the new roadway at northern end of the project from Station 69+00 to 73+50.
- The entire area will be completed and restored to the final design requirements.



Phase 3

For Phase 3, we propose to construct a temporary asphalt bypass on Brookeville Road in the location of the new northern roundabout. The bypass will be installed within the project footprint and will not increase the limits of disturbance. By constructing a bypass, traffic will not be interrupted during construction, and the roundabout can be completed in one phase, which will improve schedule, quality, and overall cost.

- Once the bypass is functioning, we will proceed with the retaining wall construction on the southern edge of the roundabout near the existing Newlin's mill.
- Once the retaining wall is complete, fill will be placed from Station 63+00 to 66+00 which will complete the major fill operations on the project.
- During Phase 3, all remaining earthwork will be exported off-site to facilitate the final portion of roadway construction from Station 55+00 to 64+00. We currently estimate that there is about 100,000 CY of excess material that will need to be exported from the project.
- Once the earthwork operations are complete, we would begin the roadway construction from Station 55+00 to 65+35, including the northern roundabout. Roadway construction will include all grading, drainage and the installation of roadway base material.
- Once the earthwork operations are complete, we would begin the roadway grading and the installation of the roadway base material.
- Curb, gutter, multi-use path, and other concrete flatwork construction would then be installed in the roundabout.
- Install the roadway pavement on the permanent roadway and on the roundabout.
- The entire area will be landscaped, stabilized, and restored to the final design requirements.

Phase 4

During Phase 4 construction, all of the newly constructed work will tie into the existing roadways.

- First we will tie in the southern roundabout into MD97 (Georgia Avenue). The work will include sawcutting, removals, grading, and roadway paving. This work can be completed with minimal impact to existing traffic, and traffic flagging will be included to keep the traveling public safe.
- Once the roundabout tie in is complete, any existing roadway that is no longer needed will be removed, and the entire area will be restored to the final configuration. Traffic will then be shifted onto the new roundabout, and while the southern roundabout will be fully functional, the new bypass will still be closed during this phase, until the northern roundabout and other tie-ins are complete.
- Next, we will complete the tie in of the new bypass to the northern portion of MD97 (Georgia Avenue). The work will include sawcutting, removals, grading, and roadway paving. This work can also be completed with minimal impact to existing traffic, and traffic flagging will be included to keep the traveling public safe. Once the tie in is complete, traffic will no longer be able to drive on the existing MD97 roadway due to the new northern configuration.
- The roadway closure on the southern roundabout will be opened, and traffic will now function on the new bypass, including the northern roundabout.
- After all traffic is shifted onto the new bypass, remaining work on Brookeville road can begin. Local traffic will be detoured to Olney Laytonsville Road during Brookeville Road construction. During this time, the temporary Brookeville Road bypass from Phase 3 will be removed.
- The new Brookeville Road will be reconstructed or resurfaced as required, and final tie-ins will occur at the northern roundabout and existing MD 97 (Georgia Avenue).
- After Brookeville Road construction is complete, the detour on Olney Laytonsville will be removed, and the new MD97 bypass will be fully functional.
- We will demolish the existing roadway and Reddy Branch bridge south of our northern MD97 tie in all the way back to Reddy Branch.
- Lastly, the entire area will be landscaped, stabilized, and restored to the final design requirements.

C.1.f. Unique Resources and Capabilities

Identify other resources and capabilities. Describe additional unique resources and capabilities that your company will bring to the project and how these unique resources and capabilities will be beneficial in achieving project goals.

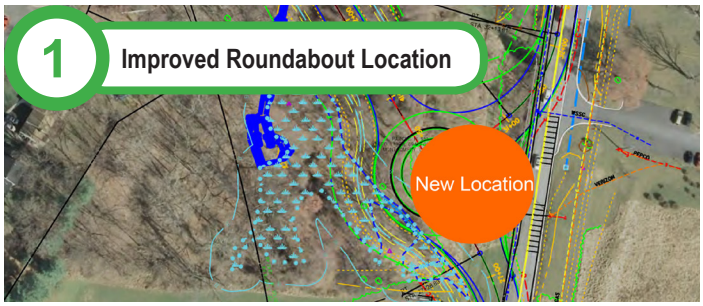
Kiewit brings a multitude of unique resources and qualifications to the MD97 project that will enhance the overall process and ensure that all project goals are met. These unique resources include:

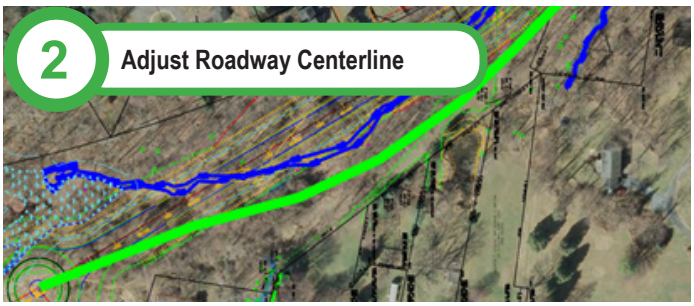
- All of our team members have extensive design-build experience. In all cases, our team was involved during the pre-construction phase of these projects, and understand how to add the highest value into the final design.
- Two of our key staff members, and our environmental subcontractor GPI, have local relevant experience from the ICC-B project and understand the critical environmental challenges for this project. This experience will ensure that all local requirements are understood and executed at a high level.
- Kiewit owns the majority of the construction equipment required for this project. Our well maintained equipment will reduce the potential for petroleum spills, and will allow the project more flexibility during the construction phase.
- Kiewit is able to provide full-service engineering and design management, through the use of Kiewit Infrastructure Engineers (KIE). KIE is staffed with the best-in-class designers and managers, and act as a great support resource for all projects that include a design phase with specific expertise on roadway and geotechnical. Our design group is also capable of developing innovative temporary design for temporary structures.
- Kiewit Virtual Construction is capable of creating data-rich intelligent 3D models. These models help provide quantity certainty in our estimates, which provides cost certainty. These models feed into our numerous systems, including the CPM schedule, which maximize their use and contribution to your specific project. These models will also help with permitting, and overall design optimization.

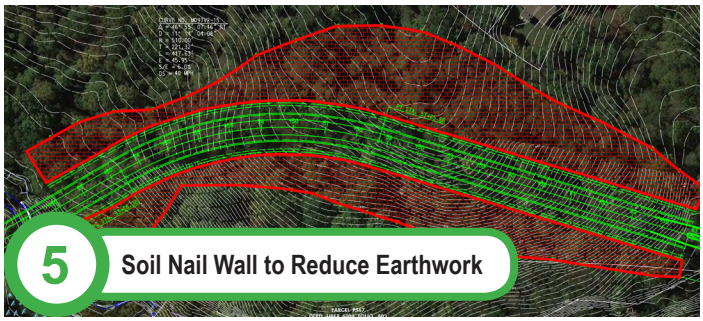
C.1.g. Innovations

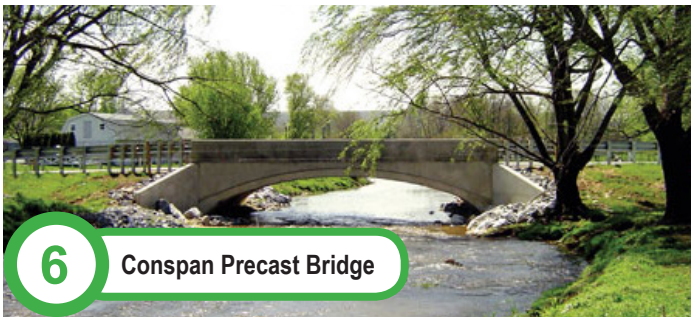
In conjunction with your team's Project Approach, your team may have some innovative ideas or proposed technical concepts that may or may not meet the requirements of this RFP and could increase the likelihood of success and help balance the project goals. Describe these innovative ideas or proposed technical concepts and how they may further improve reaching project goals including impacts on time, cost, and quality.

As illustrated on the following page, we have brainstormed several potential innovations for the project that could help balance the project goals. We look forward to discussing these concepts with you and the design team to explore their feasibility on the MD97 project.









INNOVATION 1 — Move Southern Roundabout to the Northeast

Benefits: Reduces impact to wetlands, preserves existing ballpark, moves the roadway further from homeowner's property, and reduces curves entering/exiting roundabout
Challenge: May require small temporary bypass on MD97
Impact on Time/Cost/Quality: Savings of $20,000 and reduces wetland mitigation

INNOVATION 2 — Adjust Roadway Centerline to the East on Southern End of the Project

Benefits: Reduces impacts to intermittent waterway 3
Challenges: Puts the roadway closer to east properties, creates larger curve in roadway near Meadow Branch
Impact on Time/Cost/Quality: Savings of $78,000 and reduces stream mitigation

INNOVATION 3 — Balanced Earthwork Sections (Sta 34+00 to Sta 51+25, Sta 52+60 to Sta 66+70, and Sta 68+50 to Sta 73+50)

Benefits: Potentially eliminates the need for temporary crossings at Meadow Branch bridge, reduces amount of earthwork to be moved, reduces cost/schedule, and shrinks Limits of Disturbance to reduce environmental impacts
Challenges: Requires different phasing approach and creates steeper grades on roadway
Impact on Time/Cost/Quality: Savings of $920,000 and 25 days and eliminates need to export 100,000 CY of material

INNOVATION 4 — Reduce Design Criteria for Speed

Benefits: Minimizes super elevations on curves, optimizes the roadway profile, and reduces amount of earthwork to reduce cost/schedule
Challenges: Creates steeper grades on roadway
Impact on Time/Cost/Quality: Included in previous item

INNOVATION 5 — Construct Soil Nail Retaining Wall From Sta 55+60 to 63+00 in Lieu of 2:1 Slopes

Benefits: Significantly reduces project footprint which minimizes environmental impact (3.32 Acre reduction), significant reduction in earthwork which eliminates need to export 100,000 CY, potential cost/schedule savings, and ability to add aesthetics to wall construction
Challenges: Creates tunnel effect through roadway, creates manmade structure through corridor, and requires additional design effort for addedd structures
Impact on Time/Cost/Quality: Savings of $250,000 and 20 days - cost of wall offset by savings in eliminating hauling of earthwork offsite, since this roadway is constructed in Phase 3 soil nail wall does not increase schedule, and reduced hauling saves schedule time

INNOVATION 6 — Conspan Precast Bridge Construction at Meadow Branch and Reddy Branch

Benefits: Reduces overall schedule and cost, ability to utilize aesthetics in precast concrete, minimizes cast in place concrete over sensitive water ways, and reduces environmental risk
Challenges: Span lengths are shorter than traditional precast girder construction
Impact on Time/Cost/Quality: Savings of $888,000

INNOVATION 7 — Extend Reddy Branch Bridge to Northern Tie-in at Georgia Avenue

Benefits: Greatly reduces Limits of Disturbance in environmentally sensitive wetlands, eliminates the need for earthwork fill in northern portion of the project, and eliminates need for wetland mitigation which could reduce cost
Challenge: Increases schedule and cost for the overall project and increases the amount of material to be hauled off of the project if the roadway profile remains the same
Impact on Time/Cost/Quality: Adds $560,000 and 30 days (bridge is more expensive than wetland mitigation, but environmental impacts are greatly reduced)

C.2.a. Risk Management Process

The CMAR process is intended to eliminate or reduce risk and apply innovations. This will reduce the cost of Construction and provide the best value to the public. Discuss in your proposal the process you will use to eliminate, and/or mitigate risk and apply innovation during the Design phase. Discuss how you will track and report risk mitigation and innovative savings. Discuss how the Proposer will support the team during Preconstruction and Construction activities to achieve a favorable cost, including ways to bring the project costs down, and on a schedule that is better than traditional projects.

Reducing risk and applying innovation is critical to the success of any project. All work has a potential for risk, however this can be diminished by careful management with appropriate proactive action and bringing innovation to potentially risk-prone areas. Risk management begins by defining the risks associated with the project. Understanding the potential for a risk as well as its potential impact is essential to managing and mitigating it. Based on our experience, we have found that CMAR projects are most often subject to risk in these categories:

- Finances (Costs)
- Environmental Compliance
- Permitting
- Schedule
- Product Quality
- Community Acceptance (Reputation)

We will work in partnership with the SHA and the designer to identify, analyze, innovate, and manage any potential risks that may occur on the project. Working closely together, we will develop a plan and strategy that:

- Identifies all potential risks that may arise during the project
- Determines which party "owns" each risk item
- Determines the correct contingency amounts for those risks that cannot be eliminated
- Separates any risk out of the cost models
- Regardless of ownership, develops approaches that either eliminate or minimize those risks

Development of Risk Registers

One of the key elements to a successful risk management program is early identification. An advantage of the CMAR model is the opportunity to identify risks in the preconstruction phase. This allows the project team to perform early identification whereby risks can be reduced or eliminated from the design and construction approach.

Assigning a risk level and probability will enable the project team to focus on those items that represent the largest risks to the project and the best opportunity for cost reduction. Starting with the elimination/minimization of the largest risk items first and then working down to the smaller risk items, the team will be able to minimize the amount of contingency needed for construction. Separating the cost component associated with risk from the cost model, the team will be able to quickly see how risk is affecting the project cost while the individual bid items within the cost model remain transparent.

Approach to Allocation/Mitigation of Risks

By utilizing the CMAR procurement, the team has the flexibility to influence design decisions with innovation and eliminate risk, or price the risk to assign allowable contingency that will help to manage the risk in the construction phase.

After identification of the risk on the matrix, our team will go through a process of analyzing risk that leads to appropriate innovations and developing mitigation and innovative strategies, along with efficient allocation of risks. As a team, we will compare costs, schedule, and risk between different design alternatives and construction practices to develop the best overall approach that eliminates or reduce risk. Since the risks can change as the team decides which concepts and approaches will be adopted, we will utilize the risk register as a living document to prioritize and track progress during design and construction to mitigate risk.

Based on our initial evaluation, we have identified the top risks that we expect to encounter on the project. Because of our extensive experience on other CMAR, roadway, and environmentally sensitive projects, our team will also provide SHA with proven strategies and best practices to eliminate or mitigate their impacts altogether.

C.2.b. Risks and Innovation

In the table below, identify the top risks and innovations that the Proposer will help manage in Design and Construction and how it will mitigate/eliminate the risks and implement the innovations. Identify projected cost or time savings, if any. In the second column for probable costs savings, identify what portion of the savings is Construction cost savings and what portion is user cost savings.

RISK OR INNOVATION DESCRIPTION	PROBABLE COST SAVINGS OF RISK MITIGATION OR INNOVATION	PROBABILITY OF OCCURRENCE	COST SAVINGS TO PROJECT (PROBABLE COST X PROBABILITY OF OCCURRENCE)	SCHEDULE IMPACT TO PROJECT (DAYS)	SUMMARY OF MITIGATION/ELIMINATION OR IMPLEMENTATION PLAN
Encountering Rock or Unsuitable Materials In Cut Section *(Sta 54+50 to 64+50)*	**Construction:** $532,000 **User:** $132,500	75%	$498,375	53 days	■ Perform geotechnical investigation during preconstruction to identify types of material ■ Adjust roadway profile to reduce amount of cut material if rock is found ■ Utilize wall construction in area to reduce amount of cut material
Delays in Overhead Utility Relocation	**Construction:** $60,000 **User:** $70,000	90%	$117,000	28 days	■ Conduct thorough utility investigation early in preconstruction ■ Begin working through design/permitting with utilities early in preconstruction ■ Have utility relocations performed by utility companies prior to the start of project construction ■ Utilize phased approach to allow more time for utility relocations
Adverse Weather *(Historically, snow occurs Dec–Feb)*	**Construction:** $100,000 **User:** $75,000	90%	$157,500	30 days	■ Perform bulk of grading operations between March – October ■ Perform asphalt paving between April – September due to temperature requirements
Unknown Archaeological Finds During Construction	**Construction:** $120,000 **User:** $150,000	80%	$216,000	60 days	■ Perform additional site investigation by the Environmental Compliance Team during preconstruction ■ If found, prepare mapping, delineation, avoidance and minimization studies
Protected Animal or Plant Species Located Within Limits of Disturbance	**Construction:** $60,000 **User:** $225,000	80%	$228,000	90 days	■ Perform additional site investigation by the Environmental Compliance Team during preconstruction ■ If found, implement plan for relocation or protected species if possible ■ Implement design solutions to minimize or avoid protected species |
Delayed Permits	**Construction:** $120,000 **User:** $150,000	80%	$216,000	60 days	■ Begin permitting process early in preconstruction ■ Incorporate permitting into preconstruction schedule to track progress ■ Utilize experience from past projects to fast track permit development
Underground Gasoline Storage Tank Near Roundabout Mitigation *(from FEIS)*	**Construction:** $30,000 **User:** $75,000	50%	$52,500	30 days	■ Perform investigation during preconstruction including location of tank and soil sampling ■ Mitigate during preconstruction or during first phase of construction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