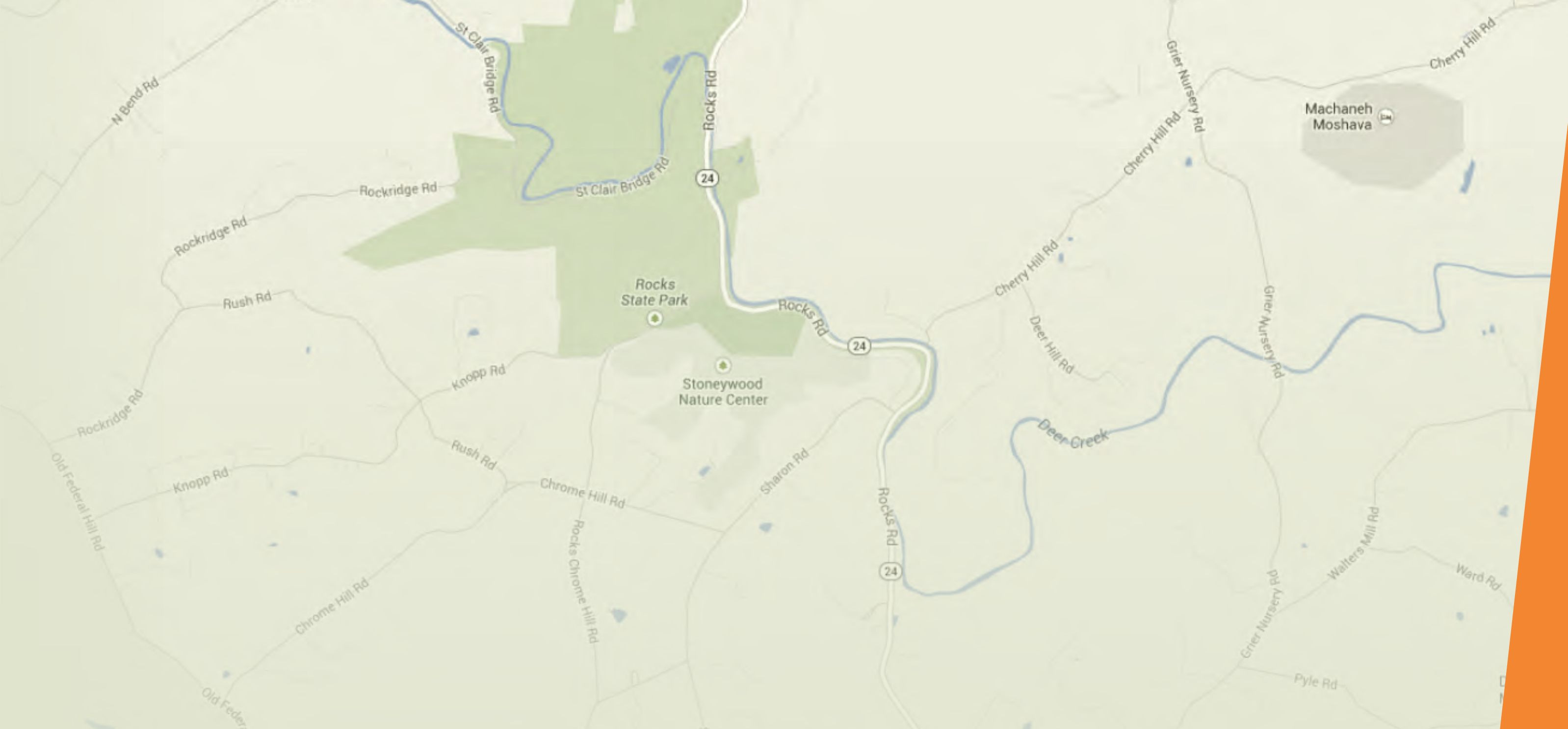


Maryland Department of Transportation

State Highway Administration

Project Number – HA3345171

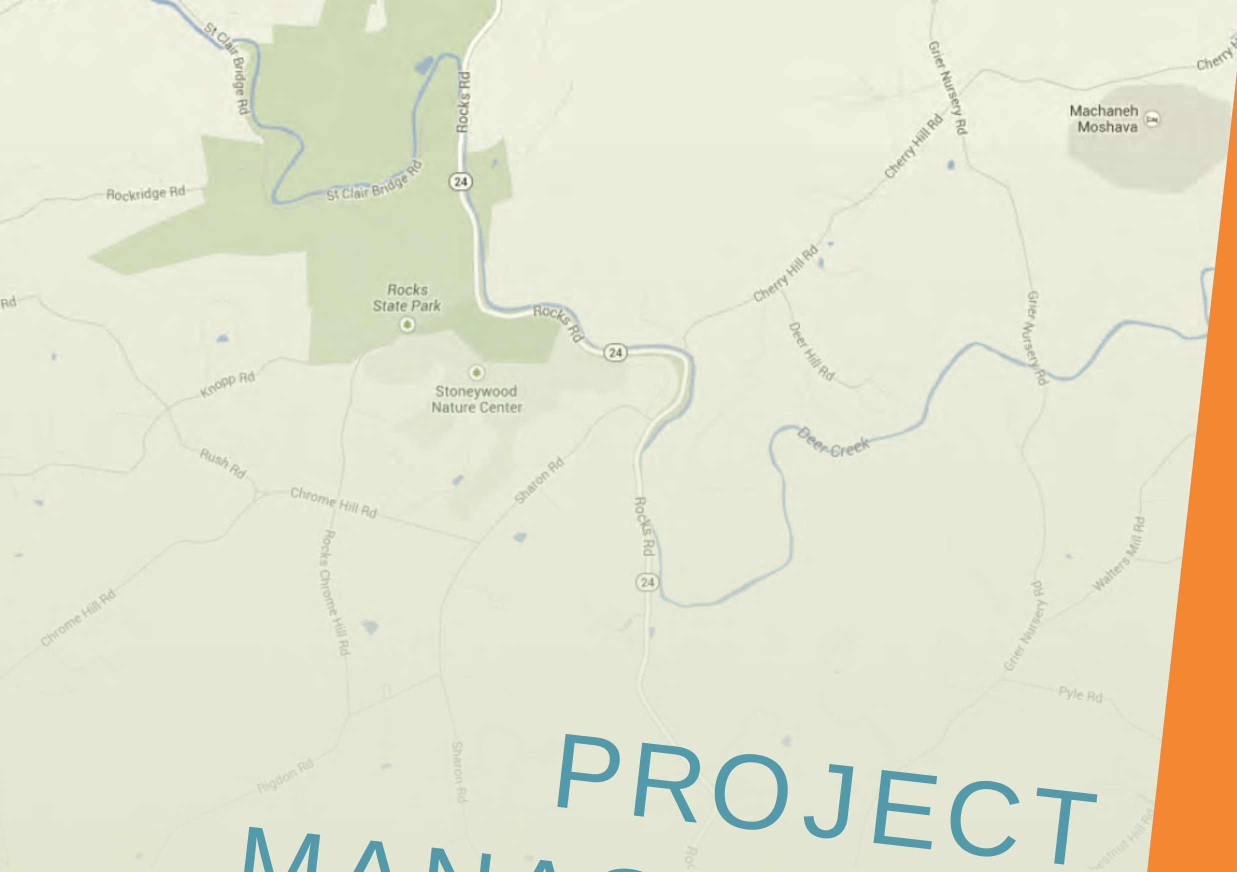
Construction Management at Risk MD 24 - Section A, from Deer Creek Bridge to 1,800 feet South of the bridge; and Section G, from 900 feet South of Sharon Road to 1,700 feet North of Ferncliff Lane

Request for Proposals

October 2, 2013

ORIGINAL

MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION
PROJECT NUMBER – HA3345171 | MD 24 Section A and Section G



PROJECT MANAGEMENT TEAM / CAPABILITY OF THE PROPOSER

B. Project Management Team / Capability of the Proposer

B.1. Project Management Team

B.1.a. Team Strengths

Meeting Your Goals

Meeting the goals that have been outlined in the RFP, and exceeding your expectations for this CMAR project requires an experienced team who knows how to build the work, understands the CMAR process, can anticipate challenges, mitigate risks and deliver a quality project ahead of schedule and under budget. We are committed to providing SHA with economical and innovative solutions that minimize risk, accelerate the project schedule and deliver the best value.

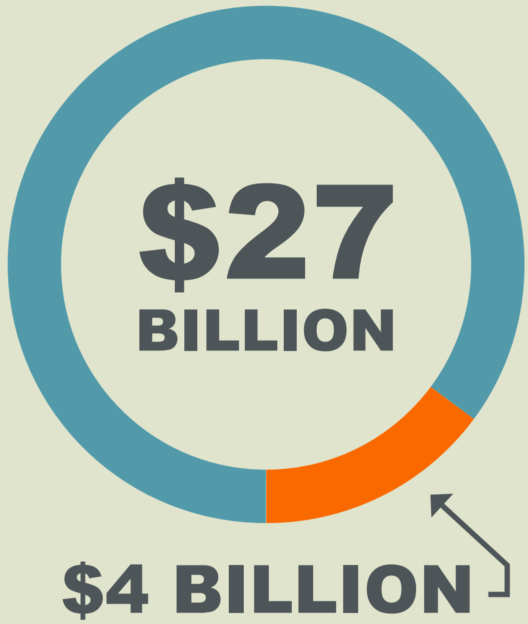
Partnering for Success

Our project team has a long history of partnering with design professionals, engineers, cost consultants, and project owners to achieve success and continually exceed the expectations of all parties involved. We strongly believe that partnering begins with the understanding that open communication and teamwork are essential to achieving the goals established for each project. Our experience in partnering on prior projects has proven that frequent communication with the designer and owner is key to achieving the maximum benefit of contractor involvement during the design and preconstruction process. The experience of our team in working with JMT will also provide an invaluable foundation for strong relationships and communication to build upon for this project.

As a core principle to the partnering process, we seek to create an atmosphere of trust and cooperation among all members of the team. This level of understanding and honesty will allow us to construct the project with issue resolution at the lowest levels possible.

With an understanding and agreement to utilize partnering to its full benefit, we can focus our combined efforts to make this project successful for all. We will establish the standard for open and frequent communication between team members early on. This will be through frequent brainstorming and design discipline lead meetings, constructability, specification review and progress meetings, as well as team building and partnering sessions. This level of interaction and communication will help establish an environment of trust among the team members and will provide an avenue to continually monitor the project goals and the team's progress toward achieving them.

Kiewit and its subsidiaries have been involved in more than $27 billion in alternative delivery projects including $4 billion through CMAR. We know the CMAR process.



We know that the greatest benefit a Construction Manager will bring to a CMAR project is through partnering, value engineering and risk mitigation. We have developed best practices in our construction techniques that we will use on the MD24 project to ensure success.

Safety Programs

As of mid-September, Kiewit's Southeast District has worked an unprecedented **1.34 million manhours** without a recordable OSHA incident. Our focus and determination on accident and damage prevention is documented by each day that we extend our current record of working accident free. Also providing testimony to our Safety Management Program is our Experience Modification Rate (EMR). While the construction industry standard is 1.0, Kiewit's EMR is 0.56—**nearly 100% safer than the average construction contractor**. For more information regarding our safety program in detail, please refer to Section C.2.f. Safety Approach of our submittal.

B.1.b. Key Staff Qualifications

While the following positions have been identified as "key," there are many support positions and activities that we are uniquely capable of filling and performing. Our specific experience with alternative delivery and roadway construction allows us to draw upon our many organizational talents and knowledge to review and provide analysis with value engineering ideas, as well as provide unique solutions to any challenging situation. The team members chosen as key personnel for this project were selected with those qualities in mind, and for their knowledge and experience in addressing and managing the challenges that are anticipated on this project. Highlights of our expertise and the benefits they will bring to you include:

- **A Single, Committed Team for All Project Phases.** Unlike other firms, we assign one project team for the preconstruction and construction phases. As the project transitions into construction, our team will be familiar with the project approach, the design, phasing, and key issues. Our belief—and our commitment is—that the key to any successful project is to assign team members with the right qualifications and background for the duration of the project who are committed to the project from start to finish.
- **A Team That Understands the CMAR Process.** Our team members have extensive relevant experience, and have worked closely with design teams in developing cost effective and constructible designs. We understand the interrelationship between the various elements of the project that can produce a design that supports an effective construction phasing plan.

Following are highlights of our key personnel and their unique qualifications for this project:

Ken Hanna, Project Manager

Under Ken's leadership, Kiewit has developed a reputation for delivering projects ahead of schedule, overcoming complex challenges and providing innovative and cost effective solutions. Ken's strengths lie within his ability to develop innovative solutions, think outside the box and create collaborative and highly successful teams.

Unique Qualifications: In addition to Ken's experiences in assisting clients to develop a successful CMAR procurement model, he has hands-on experience in the executive management of CMAR transportation projects. Ken was directly involved in both the SR-14 Landslide Emergency Repairs and the Mountain View Corridor projects. His involvement included providing input on risk management and innovation development, formal and informal partnering with clients and stakeholders, guiding the GMP development process, and overseeing the project estimating process with the ultimate focus being to minimize costs through transparency.

John Tuschak, Construction Manager

John is well-respected for his experience, creativity, innovation and leadership throughout each project he has been involved in. John's experience includes a variety of management roles on diverse projects. His responsibilities have included detailed planning, estimating, engineering, scheduling, and environmental permitting activities.

Unique Qualifications: John's role on the ICC-B project gives him a unique understanding and intimate knowledge of the project area and specific local geotechnical and environmental conditions. Additionally, his background and proven experiences will ensure that the work is done right, the first time.

Doug Moyer, Cost Engineer

Doug's background includes highway and other civil construction projects involving mass grading, drainage, paving and related civil work. Currently, Doug is a Senior Estimator responsible for estimating heavy civil and grading work.

Unique Qualifications: Doug served as a lead estimator on the ICC-B project, where he developed accurate costs for each phase of the work. He also developed strong relationships with local subcontractors, ensuring that all of the work was done at the right price.

Value-Added Personnel

Our team has in-house capabilities that our competition lacks. By adding environmental and geotechnical specialists to the team, we can offer a great benefit to SHA and the MD24 project. These value added positions will provide discipline-specific, in-house expertise through the life of the project. The individuals selected are preconstruction service experts in their perspective fields and will be available to the project team from day one to provide and assist in optimizing the project design for a low cost, efficiently scheduled and balanced risk project.

Steven Saye, PE, Geotechnical Design Expert – Steven is a Senior Geotechnical Engineer and Design-Build Technical Lead within Kiewit's internal engineering group. Steven is a recognized expert in the development and implementation of innovative geotechnical engineering for alternative delivery projects. He is also a technical expert in the use of in-situ testing to characterize soils, and will provide invaluable insight and out-of-the-box solutions to the geotechnical challenges that the MD24 project presents.

Jamie Miller, Environmental Manager – Jamie serves as Kiewit's Environmental Program Administrator, which entails ensuring all Kiewit employees and subcontractors in the mid-Atlantic and southeastern U.S. have a well-rounded understanding of federal, state and local environmental compliance regulations, procedures, and policies. Jamie's expertise also includes permitting regulations and relationships with those agencies. His experience also includes helping to guide the environmental permitting process on the ICC-B project, which will be a benefit to this project.

Team Resumes

As directed in the RFP, resumes for our key staff are included on the following pages.

B.1.c. Organizational Structure

Exceeding your expectations for this CMAR project requires an experienced constructor who knows how to build the work, can anticipate challenges, mitigate risks, and deliver a quality project ahead of schedule and under budget. Our team has demonstrated relevant expertise, familiarity with the local area and environmental constraints, and an accomplished key leadership team to successfully deliver this project. Our team provides you with the best construction managers in the industry who are 100% dedicated to this project and provide textbook transition from the preconstruction to construction phases.

As shown on the organization charts on page 8, Project Manager Ken Hanna will be the main point of contact for preconstruction services, and will help guide the continuity during the construction phase. Our team brings the history and knowledge of the local market, and recent alternative delivery project experience to ensure success at all levels. Our ability and prior successes in self-performing critical scopes of work result in best value through exceptional quality, schedule, and cost control. We will utilize the talented local craft and labor that have worked on previous Kiewit projects to staff 100% of field craft and labor needs. We expect significant opportunities for local subcontractors and vendors, including Minority, Women-owned, and Disabled Veterans Business Enterprise subcontractors to participate on this project.

"[Kiewit has] made environmental compliance a priority and have been very innovative in finding ways to build a highway in a sensitive watershed with minimal impact to the watershed."

-Melinda Peters, Administrator Maryland State Highway Administration

FORM A-1 – Key Staff Information

Name of Proposer: Kiewit Infrastructure South Co.

Position	Name	Years of Experience[1]	Education/ Registrations	Name of Employer
Project Manager	Ken Hanna	22/28	Civil Engineering	Kiewit Infrastructure South Co.
Construction Manager	John Tuschak	11/11	B.S. Geology	Kiewit Infrastructure South Co.
Cost Estimator	Doug Moyer	28/28	B.S Construction Engineering Management	Kiewit Infrastructure South Co.

[1] Present Firm/Total

KEN HANNA

Project Manager

KEY QUALIFICATIONS

Ken has more than 28 years of experience in transportation, infrastructure, and heavy civil projects. Ken possesses a wealth of construction management experience, having served in various high-profile positions—such as Area Manager, Project Manager, Lead Estimator, Project Engineer, Field Engineer, Project Superintendent, and Quality Control Engineer—and is well-respected for his creativity and leadership. He has also served as Project Director on several Construction Manager at Risk and design-build projects. In addition to vast experience leading every aspect of a project from safety, quality and MOT to overseeing operations, crews, and scheduling, Ken understands how to facilitate effective communication between a project team and the client. This communication is one of the reasons the projects he oversees are successful for everyone involved.

RELEVANT PROJECT EXPERIENCE

Project Director, SR-14 Landslide Emergency Repair CMGC, Cedar Canyon, UT

Ken's leadership and solid decision making ability helped drive this fast-track project to a successful completion, despite the scope of the project nearly doubling due to a second landslide that occurred during construction. He was highly engaged in preconstruction services from day one and his extensive heavy grading background proved invaluable in optimizing construction operations throughout the life of the project. He played an active role in leading client partnering efforts throughout the project and ensured that every element was on track. The SR-14 project involved removing impassable materials from the roadway following a landslide, as well as rebuilding the roadway and restoring the creek.

Project Director, Mountain View Corridor CMGC, Salt Lake City, UT

Ken's commitment to partnering with UDOT throughout the life of the Mountain View Corridor project led to providing more scope for the end users within the original allotted contract time. He worked with UDOT and the designer to identify key risks and establish allowance accounts to serve as CMAR and UDOT contingency pools to keep the job moving forward despite the nuances of dealing with 13 different municipalities on utility relocations and ROW acquisition. He played an active role in leading client partnering efforts throughout the project and ensured that every element was on track. Mountain View Corridor (MVC) in Salt Lake County includes a 15-mile segment of MVC north from Redwood Road (at approximately 16000 South) to 5400 South. The scope of work included more than 4.8 million CY of excavation, 300,000 SY of concrete paving, 290,000-tons of asphalt, 11 bridges and multiple retaining and sound walls. The corridor runs through seven municipalities.

INDUSTRY TENURE
28 years

KIEWIT TENURE
22 years

EDUCATION
- Civil Engineering, Northern Arizona State University

KEY HIGHLIGHTS
- Nearly 30 years of project management expertise, specifically in CMAR and alternative delivery procurement
- Successfully managed more than $2 billion in alternative delivery projects

AREAS OF EXPERTISE
- CMAR, design-build, and P3 procurement and delivery
- Alternative delivery procurement strategy and development processes
- Heavy civil, transportation, water/ waste water
- Infrastructure projects

INDUSTRY TENURE
11 years

KIEWIT TENURE
11 years

EDUCATION
- B.S., Geology, East Carolina University, 2002

KEY HIGHLIGHTS
- More than 10 years of construction expertise, specifically in highway, utility, and MOT methods
- In-depth environmental experience and an understanding of the Maryland Department of Environment processes
- Expertise in stream diversions and maintenance of stream flow

AREAS OF EXPERTISE
- Construction Management
- Environmental Compliance
- Earthwork and Grading

JOHN TUSCHAK

Construction Manager

KEY QUALIFICATIONS

John has more than a decade of construction management experience that has included projects involving building highways, drainage and retaining walls, as well as MOT, utility relocation, environmentally sensitive components and maintaining stream flow. His responsibilities have included detailed planning, estimating, engineering and scheduling of major earth operations. Most recently, he has served as construction manager on the ICC-B Contract in Maryland, giving him insight into the state's environmental regulatory processes and requirements. This extensive background on the ICC-B project makes him uniquely qualified for the role of Construction Manager for the MD 24 Project.

RELEVANT PROJECT EXPERIENCE

Construction Manager, Inter-County Connector, Contract B, Silver Spring, MD

As the Construction Manager, John oversaw erosion and sedimentation, MOT, utility relocations, ITS, lighting and grading operations. The $550 million design-build project is the third contract to construct the 19 mile-long toll road. This segment included 2.4 million CY of excavation, 1.7 million CY of embankment, 500,000 SY of new pavement section, 65,000 SF of MSE walls, over 80,000 LF of drainage, and 15 bridges totaling over 600,000 SF of deck with bridge spans reaching up to 27 feet. The MOT included temporary elevated cross street detours over the ICC mainline at four of the five major roadway intersections.

Grading Superintendent, I-4 Reconstruction (from 14th to 50th Street), Tampa, FL

As Grading Superintendent, John was responsible for scheduling, managing crews, coordinating with subcontractors, ordering materials, and scheduling equipment trucks. The project consisted of the reconstruction of 2.55 miles of I-4 near downtown Tampa. Major project elements included the installation of 25 permanent MSE walls totaling over 835,000 SF along with 7 temporary MSE walls totaling 83,000 SF; embankment on the project consisted of placing 2.16 million CY of material; bridge work included demolishing 20 bridges and installing 18 new bridges. A total of 17,420 CY of structural concrete was placed and 59,000 LF of drainage pipe was installed. John was part of the team responsible for completing the project eight months ahead of schedule.

DOUG MOYER

Cost Engineer

KEY QUALIFICATIONS

Doug has 28 years of industry experience and more than two decades of that experience has involved estimating. He is currently Senior Cost Estimator in Kiewit's Southeast District office for highway and other civil construction projects that involve mass grading, drainage, paving, excavation, retaining walls MOT, structural concrete, and all other similar project scope elements. He is well versed in understanding and handling OPCCs and GMPs, as well as other meetings involving the discussion of price, risk and assumptions.

RELEVANT PROJECT EXPERIENCE

Senior Estimator, Inter-County Connector, Contract B, Silver Spring, MD

Doug served as the senior cost estimator responsible for all estimating aspects of this project, including developing our cost approach and participating in subcontractor selection. Contract B was a seven-mile, six lane toll segment through one of the most-environmentally sensitive areas in the state of Maryland. The work included 2.4 million CY of excavation, 1.7 million CY of embankment, 500,000 SY of new pavement section, 3000 LF retaining walls or ranging from 5 to 28 feet tall, over 80,000 LF of drainage, and 15 bridges totaling over 600,000 SF of deck over environmentally sensitive land.

Senior Estimator, Mars Hill US 23 Interstate Alignment Project, Mars Hill, NC

Doug served as the senior cost estimator for this $121 million project. His responsibilities included participating in subcontractor selection and developing the overall cost approach. Construction of a 6-mile section of four-lane interstate highway that includes the excavation and placement of over 28 million CY of rock and overburden, four new bridges, nine box culvert structures and some 23,000 LF of 60-inch diameter plate drainage piping. The on-site equipment fleet on the project was valued at more than $40 million.

Senior Estimator, US-27 Widening Project: Rome, GA

Doug was the senior cost estimator for this project, which encompassed the widening of a 9-mile stretch of US-27 running through the foothills of western Georgia. His duties included participating in subcontractor selection and developing the overall cost approach. The project included 1.2 million cubic yards of excavation, 750,000 CY of embankment, 16,000 CY of structural concrete, 18 new box culvert structures, 12,000 LF of storm drain, 14,000 LF of gravity sewer main and 22,000 LF of water lines.

INDUSTRY TENURE
28 years

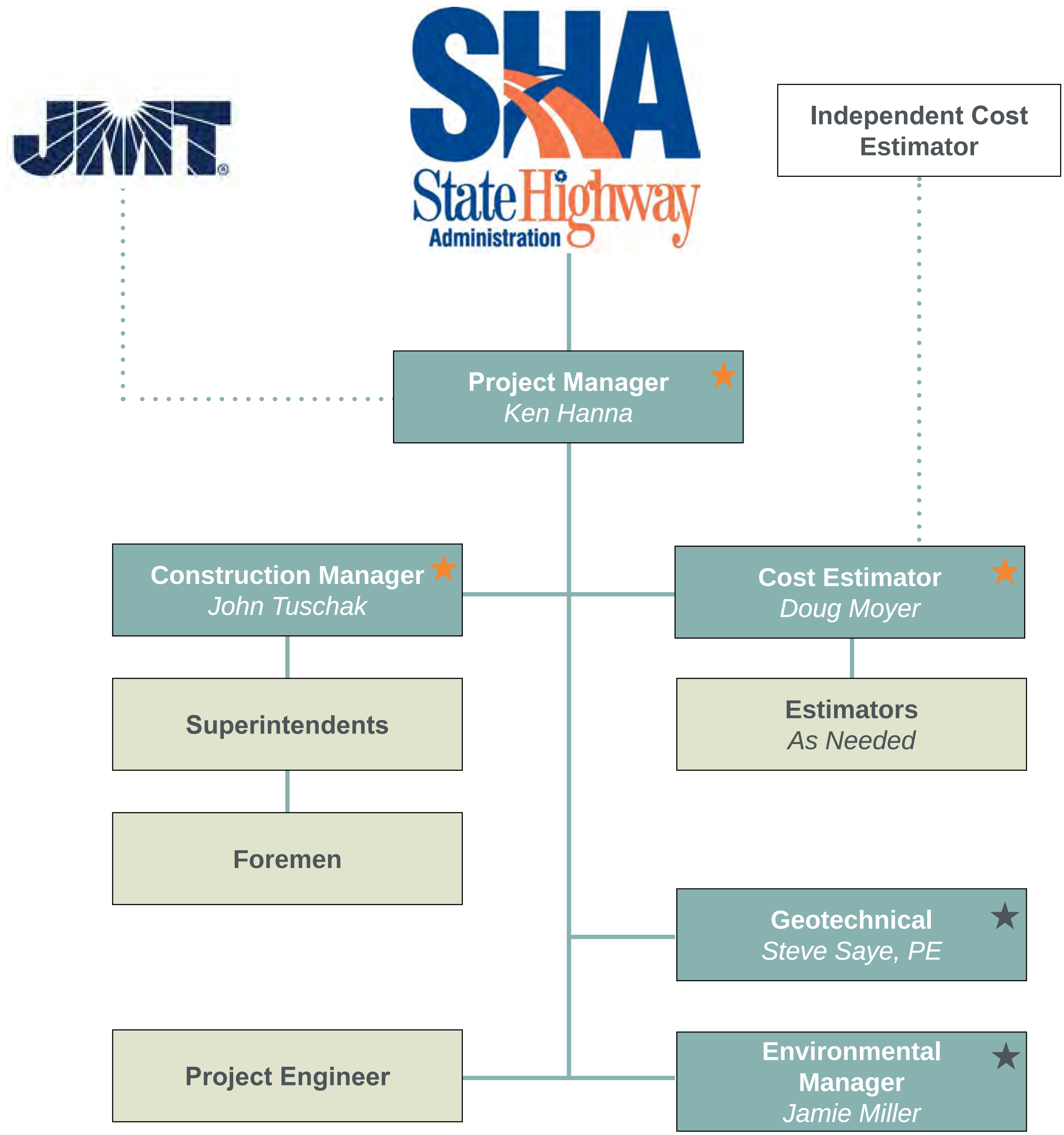
KIEWIT TENURE
28 years

EDUCATION
- B.S., Construction Engineering Management, Oregon State University, 1985

KEY HIGHLIGHTS
- More than 20 years experience in estimating heavy civil work
- Familiar with OPCC process
- Skilled in risk assessment and value engineering

AREAS OF EXPERTISE
- Cost Estimating
- Mass Grading and Excavation
- Paving and Structural Concrete

B.1.c. Organizational Structure



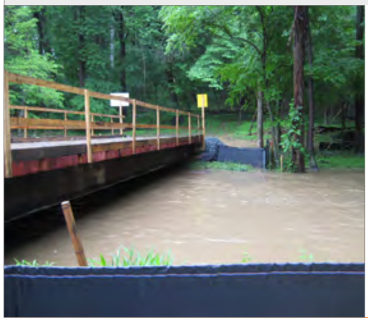
★ Key Staff
★ Value-Added Personnel

Preconstruction and Construction Phase

Construction Phase Only

B.1.d. Project Team Past Performance

As a company, Kiewit has managed more than $4 billion worth of CMAR projects to date, including numerous projects similar to MD24 project. Our experience and understanding of your expectations and goals will create an atmosphere of excellence and teamwork. We will bring forward and implement all of our lessons learned and best practices developed from our past CMAR project experience to streamline and create efficiency throughout all phases of the project. Following is a sampling of projects that reflect similarities to the MD24 project. Full details of each project can be found in our Form A-2 on the following pages.

	Project Name	Client / Delivery Method	Similarities to the MD24 Project	Lessons Learned and Best Practices We will Implement on the MD24 Project
	**SR-14 Landslide Emergency Repair**	UDOT / CMAR (CMGC)	▪ Stream erosion ▪ Nearby recreational areas ▪ Road closures ▪ Extensive environmental permitting ▪ Retaining walls ▪ New contract delivery method for client ▪ Specific construction windows	▪ Collaboration and partnering ▪ Collocation of all team members ▪ Risk mitigation methods ▪ Over-the-shoulder design and constructability reviews
	**Mountain View Corridor**	UDOT / CMAR (CMGC)	▪ Optimization of the design through in-house capabilities ▪ Context sensitivity ▪ Preconstruction value engineering	▪ Collaboration and partnering ▪ Value engineering resulting in added scope ▪ Risk mitigation methods
	**Inter-County Connector, Contract B**	SHA / Design-Build	▪ Extensive environmental permitting ▪ Nearby recreational areas ▪ Protected areas for wildlife ▪ Stream flow diversions ▪ Fish relocation ▪ Stream bank restoration ▪ Reforestation	▪ Early and often communication with all team members ▪ Independent agency reviews ▪ Collaboration and partnering ▪ Early design package for permitting needs

FORM A-2 PAST PROJECT DESCRIPTION

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

Name of Construction Firm: Kiewit Infrastructure West Co.
Project Role: **Construction Manager General Contractor (CMGC)** Contractor: _X_ Other (Describe): ____
Years of Experience: Roads/Streets: __**120+**_ Bridges/Structures: __**120+**_ Environmental: __**40+**_ ___
Project Name and Location: **SR-14 Landslide Emergency Repair CMGC, Cedar Canyon, UT**
Project Key Staff (as applicable to project)
Principal-in-Charge – Ken Hanna
Description and Specific Nature of Work for which Firm was responsible and how it is relevant to this contract:
A significant landslide occurred along SR-14 in Cedar Canyon that destroyed 0.3 miles of road. Large boulders, trees, and soil removed entire portions of the roadway, leaving the road impassable and blocking portions of Coal Creek. Primary efforts for this project required landslide removal, reconstruction of the roadway between MP 7.9 to MP 8.2 and creek restoration. This was challenging due to terrain, slope instability and variety of size and type of debris. The SR-14 project involved challenges similar to those of MD24, namely: severe erosion conditions, inadequate roadway drainage, required pavement repair, and roadside safety concerns. Additionally, like SR-14, Section G of the MD24 project includes roadway embankment failure and areas completely washed away after a major storm. The Kiewit team was able to complete the project on schedule, despite increase in project scope caused by second and third landslides that occurred during construction.
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:
Principal-in-Charge: Ken's involvement on the SR14 project was critical to its success and is a proven testament to his dedication to partnering and teamwork. Ken was in charge of overseeing the management of the project.
List any awards and/or commendations received for the project:
▪ **2013 ENR Mountain States Best Projects Highways/Bridges Merit Award**
Name of Client (Owner/Agency, Contractor, etc.): **Utah Department of Transportation**
Address: **1470 North Airport Road, Cedar City, UT 84721; lcondie@utah.gov**
Contact Name: **Leif Condie, Resident Engineer** Telephone: **435-691-1879**
Owner's Project or Contract No.: **F-0014(34)6** Fax No.: **N/A**
Contract Value (US $): **$10.9 million** Final Value (US $): **$15.1 million due to another slide occurring during construction that increased project scope**
Percent of Total Work Performed by Company: **89%**
Commencement Date: **February 2012** Original Completion Date As Defined in IFB: **Oct. 1, 2012**
Actual Completion Date: **Oct. 1, 2012**
Any disputes taken to arbitration or litigation? Yes ☐ No ☒

FORM A-2 PAST PROJECT DESCRIPTION

Name of Proposer: Kiewit Infrastructure South Co.

Name of Construction Firm: **Copperhills Constructors (Granite/Kiewit/Clyde JV)**
Project Role: **Kiewit Infrastructure West Co. – member of JV; Contractor** Contractor: _**X**_ Other (Describe): ____________________
Years of Experience: Roads/Streets: __**120+**_ Bridges/Structures: __**120+**_ Environmental: __**40+**_
Project Name and Location: **Mountain View Corridor CMGC, Salt Lake City, UT**
Project Key Staff (as applicable to project)
Principal-in-Charge - Ken Hanna
Description and Specific Nature of Work for which Firm was responsible and how it is relevant to this contract:
The Mountain View Corridor is a planned highway, transit-way and trail system in western Salt Lake and northwestern Utah counties, encompassing 13 municipalities in the project area. To meet projected transportation demands in the year 2030, the full build-out includes a freeway that connects with Interstate 80 in the north and Interstate 15 in the south. The transit component of the project is a high-capacity service line that connects with both the planned Airport Extension at the International Center and Mid-Jordan Line in South Jordan. The contract involves assisting UDOT in the design and construction of this project utilizing a two-phase approach. Phase 1 was a pre-construction services phase that included project scheduling, design and constructability reviews, material procurement, utility coordination, risk analysis and mitigation, and construction cost estimating which ultimately resulted in the development of a GMP. Phase 2 included the construction of two, one-way frontage roads on each side of the future freeway and the outside lanes of the future freeway.
Future construction will build out the remainder of the corridor, including the transit component and enhancement of the initial construction by adding interchanges and more lanes to achieve a fully functional freeway. **Project Successes** ▪ **The team recognized the risk that several existing utilities posed to the construction schedule and collaborated with UDOT and the third party utility companies to adjust schedules and prioritize the utility relocations as to not delay the project.** ▪ **Despite ROW delays in Segment 5, the team was able to collaborate to modify the earthwork flow to move dirt into Segment 6 instead of stockpiling it, and advance construction further north. The efforts of the team resulted in increased project scope, savings to UDOT and no impacts to the original schedule.** **Multiple cities and stakeholders were included in project discussions during the pre-construction phase, allowing betterments to be designed, priced and incorporated into the construction without delaying the overall project schedule.**

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: **Ken's involvement on the Mountain View Corridor project was critical to its success and is a proven testament to his dedication to partnering and teamwork. Ken was in charge of overseeing the management of the project.**
List any awards and/or commendations received for the project:
▪ **2012 Utah AGC Project of the Year; Urban Projects**
▪ **2012 Utah AGC and UDOT Best Partnering Award**
▪ **2011 American Association of State Highway Transportation Officials (AASHTO) presented**
▪ **UDOT its Excellence Award for the project**
▪ **2011 AGC Utah Platinum Safety Award to Kiewit JV for safety ratings 25% below national average**
▪ **2012 FHWA Excellence in Right-of-Way Stewardship Award**
▪ **2012 Utah Best of State Award, Public Works**
▪ **2012 American Road & Transportation Builders Association PRIDE and TransOvation awards**
Name of Client (Owner/Agency, Contractor, etc.): **Utah Department of Transportation**
Address: **5680 W. Dannon Way, West Jordan, UT 84081**
Email: **tnewell@utah.gov**
Contact Name: **Ms. Teri Newell** Telephone: **801-910-2112**
Owner's Project or Contract No.: Fax No.: **N/A**
Contract Value (US $): **$220 million** Final Value (US $): **$248 million** **(The difference is attributable to scope growth, owner initiated changes, betterments and third party utilities.)**
Percent of Total Work Performed by Company: **57%**
Commencement Date: **August 2009 Original Completion Date As Defined in IFB: December 2012**
Actual Completion Date: **October 2012**
Any disputes taken to arbitration or litigation? Yes ☐ No ☒

FORM A-2 PAST PROJECT DESCRIPTION

Name of Proposer: ____Kiewit Infrastructure South Co. ________________

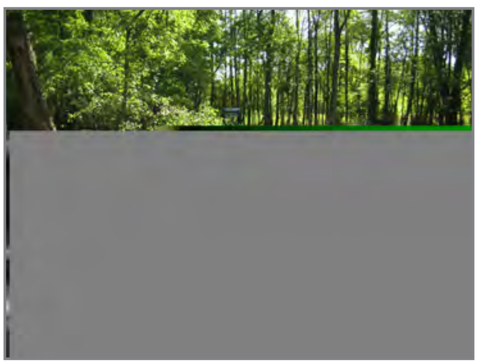
Name of Construction Firm: **Kiewit Infrastructure South Co.**
Project Role: ___Lead Design-Build______________________________________ Contractor:_**X**__Other (Describe): ______________________________________
Years of Experience: Roads/Streets:___**120+**_ Bridges/Structures: ___**120+**_ Environmental: __**40+**___
Project Name and Location: **Inter-County Connector, Contract B, Rockville, MD**
Project Key Staff (as applicable to project)
Superintendent: John Tuschak
Cost Estimator: Doug Moyer
Description and Specific Nature of Work for which Firm was responsible and how it is relevant to this contract:
As the lead in a joint venture role, Kiewit was responsible for the middle segment (Contract B) of the 21- mile InterCounty Connector Toll Road Project. Contract B was a seven-mile, six lane toll segment through one of the most-environmentally sensitive areas in the state of Maryland. The scope of work included 2.4 million CY of excavation, 1.7 million CY of embankment, 500,000 SY of new pavement section, 3,000 LF of retaining wall, more than 80,000 LF of drainage, and 15 bridges with more than 600,000 SF of deck. **The Toll Road is Maryland's first all-electronic, variably-priced toll facility that links existing and proposed development areas between the I-270/I-370 on the West and I-95/US-1 corridors on the East side of the State. The JV team was also responsible for the design and installation of all the toll system infrastructure including. In 2007, it was regarded as one of the most-environmentally progressive projects under construction because portions of the right-of-way went through sensitive parkland and it was also described as the "most-environmentally sensitive construction project Maryland has ever built." The Kiewit team also relocated 520 box turtles, the state reptile, and carefully removed and replanted 1,100 trees to an adjacent stream.**
The Kiewit team exceeded the department's DBE goal of 20%, achieving a 23.7% participation rate.
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 served as Superintendent, responsible for erosion and sedimentation, maintenance of traffic, utility relocations, ITS, lighting and grading on the ICC-B Project. This extensive experience uniquely qualifies him to serve as construction manager for the MD 24 Project. **Senior Estimator: Doug Moyer**
List any awards and/or commendations received for the project:
▪ Environmental efforts won an "A" (Excellent) rating from the Maryland Department of the Environment.
▪ Recognized by Engineering News-Record as Northeast Region Best Project of 2011

▪ **2012 ARTBA Globe Award for environmental success**
Name of Client (Owner/Agency, Contractor, etc.): **Maryland Department of Transportation State Highway Administration**
Address: **11710 Beltsville Drive, Beltsville, MD 20705**
Contact Name:**Mark Coblentz** Telephone: **301-586-9267**
Owner's Project or Contract No.: **AT 3765B60** Fax No.: **301-586-9222**
Contract Value (US $): **$545 million** Final Value (US $): **$560.7 million** **(discrepancy in final value due to change orders)**
Percent of Total Work Performed by Company: **60%**
Commencement Date: **October 2008 Original Completion Date As Defined in IFB: November 2011**
Actual Completion Date: **November 2012**
Any disputes taken to arbitration or litigation? Yes ☐ No ☒

Environmental Past Performance

The ICC-B project, which covers over 325 acres and traverses two watersheds for the Anacostia River—the Northwest Branch and Paint Branch—required five bridges to be built over the floodplains. The contract included both specific and incidental stream restoration work.

Due to the sensitive surroundings, temporary erosion and sediment controls were constructed and maintained job wide for all phases of work and controls remained in place for the duration of the project. In addition to silt and super silt fence, measures included the installation of earth dikes and swales, access bridges, sediment traps, stone outfall structures, sandbag dams and pump-a-rounds. Stream monitoring included temperature testing and turbidity monitoring and with regular monitoring helped detect trends that might indicate increasing erosion in developing watersheds.



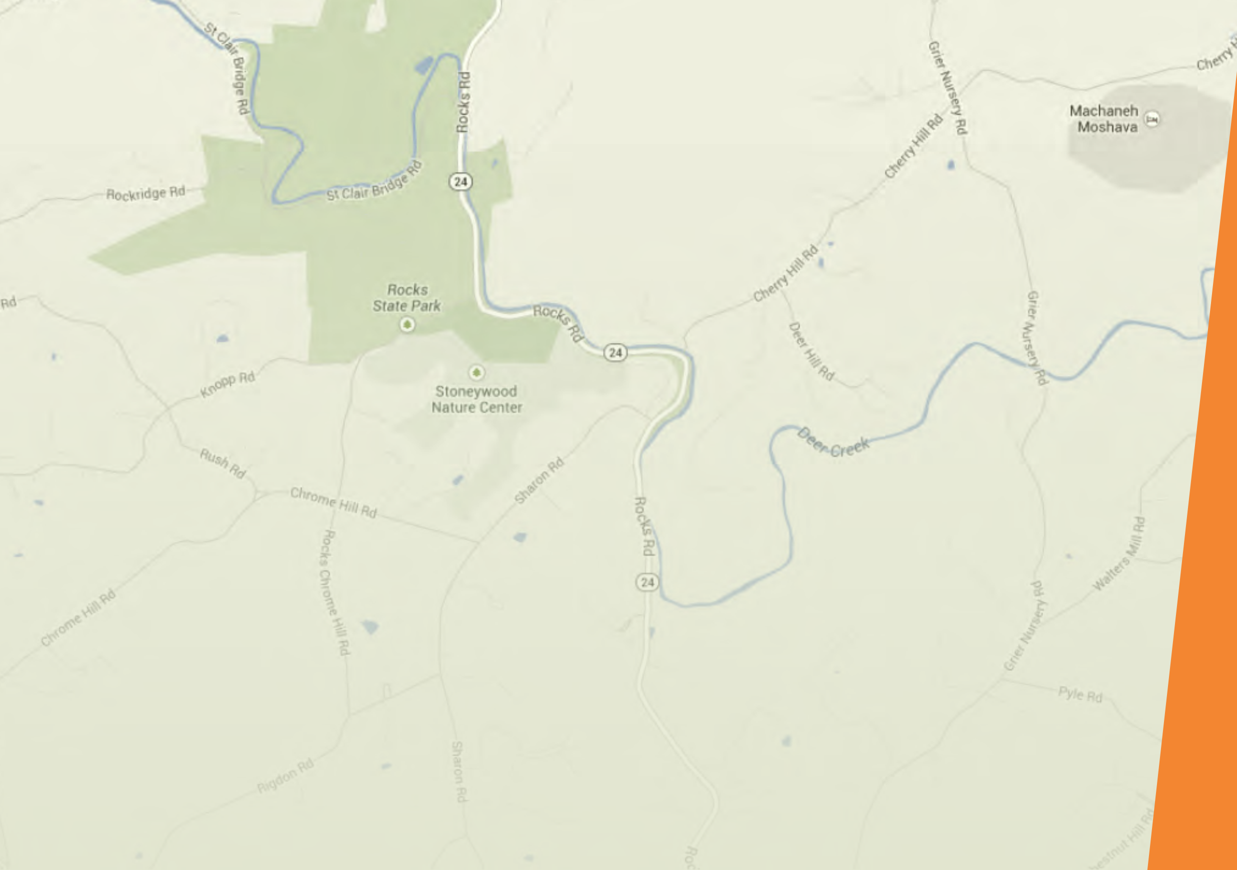
Quarterly updates/alerts were submitted to the Erosion and Sediment Control Manager, Environmental Manager and QA/QC Manager as part of an owner requirement. Our team installed piezometers to monitor ground water in wetlands to ensure maintaining the seasonal ground water tables during construction.

In order to construct the five bridges over the Northwest Branch and Paint Branch tributaries, wood chip haul roads were placed across the floodplains and six temporary bridges were built over the waterways for easy access to the project. Upon completion of all bridge, embankment and drainage work, all temporary structures and devices were removed and +930 trees, +17,850 shrubs and +236,000 native plants and grasses were installed to restore the 11 riparian acres under the bridges to preconstruction conditions. The design and permitting efforts were led by our team.

To prevent erosion, 10 culverts were constructed with riprap inlet and outlet channels at the end walls. Culverts 2, 3, 7, and 8 were constructed with the additional features of plunge pools, +150 LF stone toe protection, stone weirs and channels, and three mammal passage ways, and required the use of select borrow-channel bed material, including live stakes in the landscape planting. Per the owners design, streams were diverted to a temporary location until the final stream location was designed and established.

Contract requirements for tree clearing on the ICC-B mandated that we harvest and deliver +1,400 trees ranging in height from 20’ to 70’ tall and 25,000 CY of wood chip mulch to the SHA for use on NW 160 and NW 170 Stream Restoration Projects that were being performed by others. In the course of satisfying this requirement, we constructed 650 LF of temporary road through Northwest Branch Stream Valley Park property and a 70-foot-long bridge across a Northwest Branch tributary for the NW 160 work. Because the area to be disturbed by the road was in a floodplain and construction traffic could not exceed 8 psf, the haul road was constructed with three-ply wooden mats placed over 12-18” of hardwood mulch.

During the early stages of the project, we were issued a stop work order for out-of-sequence construction, which impacted our environmental rating. To ensure future compliance, a comprehensive sign-off on the sequence of construction was used for all craft and subcontractors. The foreman/superintendent and the environmental QA/QC signed off on all compliance prior to moving into sensitive areas or moving on to the next major sequence event. As a result of the corrective action, the project was completed with an “A” rating from the Maryland Department of the Environment.



PROJECT APPROACH

C. PROJECT APPROACH

Our team understands the scope and environmental considerations for the MD24 project, and we have the record of excellence and knowledge needed to deliver a successful project to SHA. Using the CMAR process, we will partner with SHA and JMT to deliver the project on schedule and within budget. In our experience, risk management, innovation, value engineering and constructability are critical to optimizing the schedule and project budget without sacrificing quality—and ultimately exceeding your goals and expectations for this project.

C.1. Project Goals

C.1.a. / C.1.b. Our Understanding of and Approach to Attaining the Project Goals

Our expertise and experience with local projects, partnering, risk identification, construction estimating, and heavy civil/earthwork will enable Kiewit to deliver all of the Administration's project goals. Our approach to achieving the goals set for the MD24 project is as follows.

The Goal and the Approach to Achieving It	Best Practices	Innovations
Maximize Safety ▪ Safety is number one priority ▪ "Nobody Gets Hurt" philosophy ▪ Applies to our workers, travelling public and recreational users	▪ PM promotes safety program ▪ Plan for safety (traffic control, hazard analyses, recreational routes) ▪ Make safety visible (signage, slogans, delineation) ▪ "See something, say something, do something" culture	▪ Behavior based program ▪ Craft engagement (safety tours, craft ambassadors) ▪ Temporary structures and construction devices risk matrix
High Quality Design and Construction ▪ Constructability reviews ▪ Management engagement ▪ Build it "Right the First Time" philosophy	▪ Use in-house geotech / hydraulics experts ▪ Construction methodology: optimized dewatering; stream flow diversion; slope stabilization design ▪ Detailed work plans with hold points ▪ Quality Only meetings	▪ Imbricated stone wall mock-up ▪ Specialized in-house engineering support ▪ Machine grade control ▪ Quality four-square matrix
No Environmental Impacts ▪ Minimize impacts at Deer Creek ▪ Local environmental agency and stakeholder involvement ▪ Zero NOVs, recordable spills, debris/ sediment washout incidents ▪ Minimize impact to stream flow and endangered species habitats	▪ Provide high quality environmental protection that minimizes maintenance costs ▪ Implement same measures for parkland, forests, streams and endangered species as utilized on the ICC-B ▪ Incorporate permitting and environmental work window restrictions into the CPM schedule ▪ Turbidity monitoring at streams	▪ Invite state and local agencies to participate in reviews ▪ Early involvement in the preconstruction services phase ▪ Potential use of permit expediter ▪ Potentially avoid stream diversion ▪ Use of wood mulch for access/stabilization
Minimize Impacts to the Travelling Public ▪ Minimize delays, eliminate crashes, and provide greater safety for all project stakeholders ▪ Work zone impacts carefully considered through planning, design and construction ▪ Coordinate with Hartford County schools and DNR	▪ Use of flaggers and police officers ▪ Highly visible positive protection measures ▪ Employ incident management strategies in design and construction ▪ Daily traffic control reporting	▪ Public information blitzes/awareness ▪ Early staging of VMS boards ▪ Lead-in signs showing countdown to road opening
Facilitate a Collaborative Partnership ▪ Integrated partnering between SHA, JMT, and Kiewit	▪ Open book approach ▪ Living risk register ▪ Advisory Committee Updates ▪ Weekly progress meetings	▪ Risk sharing model ▪ Invite state and local agencies to participate in reviews ▪ Operation pre-activity meetings

The Goal and the Approach to Achieving It	Best Practices	Innovations
On Time and On Budget Project Delivery ▪ Construct the project within the GMP ▪ Reducing risk in all phases ▪ Innovative approaches and detailed constructability	▪ Method analyses/time studies ▪ Integrated design and construction schedule ▪ Estimates founded on Kiewit historical costs ▪ Weekly progress meetings ▪ Detailed recovery plans	▪ Integrated financial, reporting and scheduling system ▪ Schedule commodity curves ▪ Production benchmarking ▪ Port-a-dam ▪ Grapple attachment for stone placement
Context Sensitivity and Aesthetics ▪ Preserving MD24 ▪ Maintaining overall character and enhancing its scenic value	▪ Cost effective solutions ▪ Character-defining features ▪ Collaborative approach to design and construction ▪ Establish an aesthetics review committee	▪ Redi-rock alternate retaining wall ▪ Establish an aesthetics allowance
Efficient Risk and Cost Model ▪ Early contractor involvement ▪ Effectively priced alternatives ▪ Identify risks and value of risks ▪ Better informed decisions	▪ Systematic approach to identify, price, mitigate and/or eliminate risk ▪ Living risk register ▪ Complete thorough risk analysis	▪ Establish allowance accounts
EEO and Non-Discrimination ▪ Committed to valuing employee diversity ▪ Individual's unique strengths and abilities are developed and valued	▪ Demonstrate mutual respect and acceptance in the work place ▪ Zero tolerance of harassment, unlawful discrimination or intimidation	▪ Monthly compliance training
Small and Disadvantaged Businesses ▪ DBE and SBE Compliance	▪ Develop DBE and SBE goals ▪ Hold informational sessions ▪ Thorough documentation of good faith efforts	▪ Provide CMAR training for DBE and SBE firms

C.2. Project Approach

C.2.a. Approach to Contracting

Our team has had an interest in and has been tracking the MD24 project since we attended the CMAR Informational Session given by the Authority in July. We know we are a good fit for the job and will bring the most benefit to you given our experience and ability to maximize scope flexibility, opportunities for innovation and value engineering, and opportunities for risk mitigation. Our strategic approach to this project is founded on the core philosophy of providing an integrated, proactive management team that focuses on innovation and providing benefit to SHA and JMT. The following table illustrates how our project control processes and best practices (including cost control tools) align with this strategic approach and most importantly, your project objectives.

Project Control Best Practices

Transparent Cost Estimating
- Perform quantity takeoffs and compare with SHA and the independent cost estimator
- Share pricing efforts through open book negotiation
- Solicit Pricing from reliable and experienced subcontractors and vendors

Cooperating with Project Team and Third Parties
- Collocate with the project team fostering good communications
- Identify key goals and dates with third parties
- Engage third parties in coordination meetings

Value Engineering
- Provide in-depth constructability and bid-ability reviews for VE proposals
- Lead VE workshops at agreed upon Milestones

Ensuring Quality of Construction
- Develop and implement a Construction QC Plan
- Dedicate experienced QC staff to interim GMP reviews

Meeting Schedules
- Communicate the overall flow of work to job team
- Review status of key dates bi-weekly, monthly
- Monitor performance metrics for key activities

Being Responsive to SHA's Requests

- Our Project Manager, Ken Hanna, will be the primary point of contact
- Requests will be delegated to a responsible individual with set dates for follow-through

Cost Control Tools

Cost Trend Reporting

- A cost loaded schedule will be tracked against actuals for all major operations
- Field engineers will produce trend charts for costs and quantities vs. time

Subcontractors Change Management and Claims Avoidance

- Design documents will be developed for every operation to eliminate conflicts
- Subcontractor packages will be as detailed as possible regarding scope, schedule and budget expectations
- Prequalification will separate out sub-par subcontractors

Management of Allowances and Unit Prices

- Allowances and unit prices will be established with SHA and the ICE based upon the design documents and site survey investigations
- We will maintain a log of quantity allocation and actual usage from preconstruction through the construction phase

Overrun Mitigation

- Budget will be monitored by line item, promptly report variances and take actions
- Work plans will be developed for every operation to maximize our preparation and allow work to progress more efficiently
- Quantities will be reconciled with SHA and the ICE to develop consensus
- We will perform two independent quantity determinations, then reconcile them, for critical aspects of work
- Construction quantities will be tracked with quantity records and commodity curves

The MD24 Playbook

The project controls and cost control tools listed above are just a few of many standardized procedures Kiewit has implemented based on lessons learned and best practices over the years. Our approach from day one will be to collaborate with the SHA project team to tailor these procedures and/or add new procedures to fit the needs of the team and the MD24 project. We will then capture and implement these processes and procedures in the MD24 Playbook to serve as the Project Management Plan. It will establish the way our team will conduct business throughout the life of the project with a focus on accurate and timely data, streamlined communication and positive accountability. Major elements of the MD24 Playbook are shown in the following table and in more detail throughout this section.

PROJECT MANAGEMENT PROCESSES, METHODS, AND SYSTEMS

ESTIMATING	MANAGING	PLANNING	SCHEDULING
▪ Subcontractor Performance Evaluation Plan ▪ DBE Utilization Plan ▪ Value engineering workshops ▪ Past cost database ▪ Cost comparisons/change log ▪ Kiewit estimating system for an open book comparison ▪ Risk identification ▪ Subcontractor/supplier quote comparison plan	▪ Safety, quality, compliance programs ▪ "Play of the Day" meetings ▪ Weekly safety/quality meetings ▪ Daily cost/quantity tracking ▪ Weekly labor reports ▪ Monthly cost reports ▪ "How are we doing" meetings ▪ Partnering meetings	▪ Construction management and work plans ▪ Work planning matrix ▪ Pre-activity meetings ▪ Operation work plans/job hazard analyses ▪ Operation quality analysis ▪ Utility coordination meetings	▪ CPM schedule ▪ 90-day operation schedules ▪ 5-week look ahead schedules ▪ Daily operation schedules ▪ Earned manhour schedules ▪ Operation commodity curves ▪ Design coordination meetings

GMP Development

Through our CMAR experience, we have learned that there is a difference between pure cost estimating and true GMP development. As part of the preconstruction services for Sections A and G, up to three progressively refined construction cost estimates will be developed prior to reaching GMP. These cost estimates will provide a detailed, itemized breakdown of the various cost components to provide a clear understanding of the construction costs for the project. This open-book approach and methodology results in transparency at all levels within the cost model and includes the following GMP development best practices:

The **cost model evolution log** serves as the cornerstone for GMP development. It consists of establishing a sound baseline for each work item based on the first construction cost estimate. Each work item is then logged as the evolution of cost and quantity changes, including the reasoning for each change. Similar to its ability to determine variances with previous cost models, the cost model evolution log also aids in determining the variances with the independent cost estimate.

Prior to the development of the initial cost estimate, we will initiate an **independent cost estimate reconciliation** process. This will entail meeting and coordinating with ICE early on to discuss and agree on items such as quantity reconciliation and subcontractor/supplier market-based unit prices, and how support services such as survey, quality control, and construction water will be priced within each party's estimate.

In addition to our standard comment form and constructability log, we will implement a design decision log tracking matrix we jointly developed on a previous CMAR project called the **decision analysis and resolution team (DART)** tracking matrix. This tool provides a detailed breakdown of items that the project team believes are risks to the project, and will be used to assist in the decision analysis and to prioritize potential construction or design issues or innovations that may impact the project's schedule or budget.

The **project contingency development plan** consists of two separate contingency groups that are set aside for unforeseen events or conditions and for additional scope items requested by the project owner. The CMAR contingency (which is the final product of the cost model evolution log and the DART tracking matrix), and tracks items such as unsuitable soils, flood events and permitting delays that may have a contingency line item with an estimated budget amount. The owner's contingency contains line items (determined by SHA to identify their amount of contingency for the project) that would be used to compensate the CMAR for any owner-generated scope additions during construction. The inclusion of an owner's contingency line item permits any additional scope items to be clearly identified, tracked, and paid for as part of the GMP and contract.

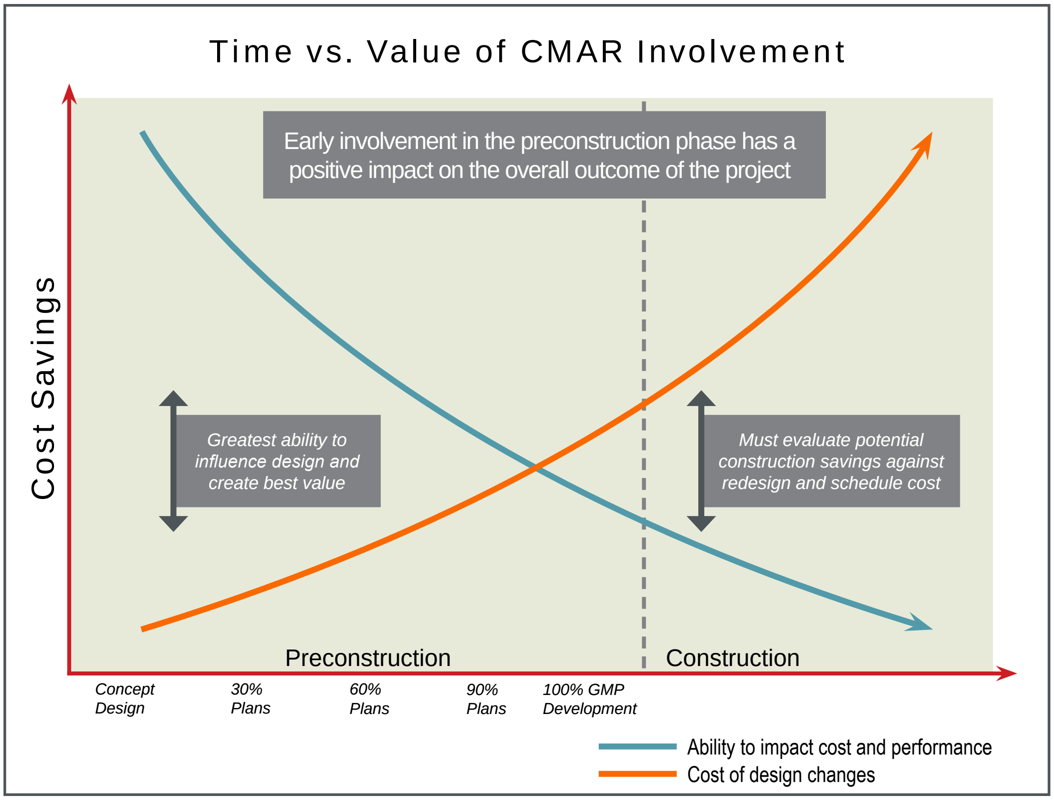
Integrated Preconstruction and Construction Schedules

Working in close collaboration with JMT and SHA, the schedule will be produced at the interim and final design stages and will include all necessary activities, resources, milestones, sequencing and logic. The preconstruction and construction schedules will be integrated to comprise an overall project Critical Path Method schedule that includes design milestones, permits, environmental work restrictions, and SHA milestones. The CPM schedule also highlights the relationships between tasks such as long-lead items and their effect on construction. Progress will be monitored closely, and regularly scheduled review meetings will be held to keep all parties informed on schedule performance. Our preliminary integrated schedule for MD24 can be found page C-13 of this proposal.

Kiewit	Decision Analysis and Resolution Team (DART) Tracking Matrix	DART #	00001
		Proposer	
		Date	
Discipline	☐ Drainage ☐ Roadway ☐ Structures ☐ Utilities		
Area of Improvement	☐ Constructability/Phasing ☐ Material Substitution ☐ Standard Spec Change ☐ M&P Change ☐ Design Alternative ☐ General Condition ☐ Other		
Item Description			
Proposed Concept			

Impacts to Design Scope on a Dollar Basis	Impacts to Construction Scope on a Dollar Basis	Impacts to Owner on a Dollar Basis	Impacts to Schedule on CPM Basis
Factor (Check appropriate box)	Factor (Check appropriate box)	Factor (Check appropriate box)	Factor (Check appropriate box)
4 ☐ > $250K in Cost	4 ☐ > $250K in Cost	4 ☐ > $250K in Cost	4 ☐ > 5 Weeks added
3 ☐ $101K - $249K in Cost	3 ☐ $101K - $249K in Cost	3 ☐ $101K - $249K in Cost	3 ☐ 2 – 4 Weeks added
2 ☐ $50K – $100K in Cost	2 ☐ $50K – $100K in Cost	2 ☐ $50K - $100K in Cost	2 ☐ 1 – 2 Weeks added
1 ☐ $1 - $50K in Cost	1 ☐ $1 - $50K in Cost	1 ☐ $1 - $50K in Cost	1 ☐ < 1 Week add
0 ☐ No impact	0 ☐ No impact	0 ☐ No impact	0 ☐ No Affect
-1 ☐ $1 - $50K in Savings	-1 ☐ $1 - $50K in Savings	-1 ☐ $1 - $50K in Savings	-1 ☐ < 1 Week reduction
-2 ☐ $50K – $100K in Savings	-2 ☐ $50K – $100K in Savings	-2 ☐ $50K - $100K in Savings	-2 ☐ 1 – 2 Week reduction
-3 ☐ $101K – $249K in Savings	-3 ☐ $101K – $249K in Savings	-3 ☐ $101K - $249K in Savings	-3 ☐ 2 – 4 Week reduction
-4 ☐ > $250K in Savings	-4 ☐ > $250K in Savings	-4 ☐ > $250K in Savings	-4 ☐ > 5 Week reduction
Weighted Score (Factor x 10)	Weighted Score (Factor x 35)	Weighted Score (Factor x 35)	Weighted Score (Factor x 20)
ROM Cost:	ROM Cost:	ROM Cost:	ROM Time Impact:
			Total Score:

Champion (s):	
Attachments:	
DART Recommendations:	
Schedule to Follow-up:	
Final Resolution:	
Date Closed	NO ☐ Implemented YES ☐



Constructability Reviews

As the chart above illustrates, it is our experience that the earlier and more proactive the construction team is in brainstorming and collaborating with the design team, the more of a beneficial impact we can have to the schedule, safety and quality performance, and cost control of the project. By being involved from the very beginning, we can maximize cost and schedule savings through the design reviews, continuous over-the shoulder reviews, site investigations and value engineering studies. This will aid JMT in achieving an optimized design that not only results in the lowest possible construction costs and shortest construction schedule, but also minimizes the overall design costs by avoiding late design changes.

Value Analysis

We are committed to continually providing informal input on constructability, value analysis and costs. Conducting immediate constructability reviews in conjunction with an early site investigation will facilitate a comprehensive value analysis study on the interim plans. We will lead value analysis workshops with JMT and SHA staff to evaluate alternative designs, systems and materials and capture any recommendations developed within each interim phase. The recommendations from these workshops will be captured in written reports consisting of cost-benefit analyses, key stakeholder input and life cycle costs.

Quality Control

Kiewit believes in building work "Right the First Time," with Quality Control starting during the preconstruction phase and based on these basic principles:

- **Owner Involvement:** Detailed pre-activity meetings for every operation, biweekly quality only meetings, four-square matrix communication platform, root cause analyses and sharing of best practices and lessons learned.
- **Know It:** Detailed specification reviews, craft training on methods and step-by-step work plans with hold points.
- **Build It:** Use of mock-ups when applicable (i.e. imbricated stone wall), initial inspections, method analyses and adherence to hold points.
- **Check It:** Assessments and audits at planned intervals, checklists for release of hold points and independent release of hold points.
- **Prove It:** Systematic filing system for all required documentation, as-builts kept up to date and above all a product that SHA, JMT and Kiewit are pleased with.

Self-Performance Capabilities and Subcontracting Opportunities

The table below highlights our capabilities to self-perform scope items and potential opportunities for subcontractor and DBE involvement. We have self-performed the notated scope items on the SR-14, Mountain View Corridor and ICC-B projects highlighted in the project pages in this proposal.

Scope Item	Self-Performance Capabilities	Subcontract Opportunities	Minority/ Small Business
Preconstruction Services	■		
Survey	■		
Erosion and Sediment Controls	■	■	■
Traffic Control	■		
Clearing and Removals	■	■	■
Excavation and Embankments	■		
Hauling and Trucking	■	■	■
Stream Diversion	■		
Site Concrete	■		
Imbricated Stone Walls	■		
Asphalt Milling		■	
Asphalt Paving		■	
Guardrail		■	■
Pavement Marking		■	■
Drainage Pipe and Structures	■		
Landscaping and Plantings		■	■
Testing and Inspections	■	■	■

C.2.b. Environmental and Permitting Approach

We understand that there are several commitments made during the environmental and permitting process, and that there is a potential for serious risks and impacts involved with not fulfilling these commitments. In order to minimize the level of risk, we have named John Tuschak as our Construction Manager. John was instrumental in helping to expedite the permitting process during the preconstruction phase of ICC-B and remained onsite to implement the highly sequenced erosion and sediment control measures before mass construction operations could start. John was promoted to Construction Manager for the latter part of the ICC-B project, and was highly engaged in final restoration, punchlist and permit closeout. His hands-on experience and in-depth understanding of these specific challenges will ensure that the environmental and permitting process on the MD24 project proceeds without issue or delays.

Our approach to environmental and permitting activities is highlighted in the CPM schedule shown in Section C.2.c, and incorporates stream disturbance restrictions and mussel survey/translocation windows. We will take extra precaution to minimize impacts to stream flow through use of a patented port-a-dam cofferdam system fit tightly to construction limits and maximizing stream flow. We will also minimize impact to stream habitats in Deer Creek by shortening the construction window through pre-staging of imbricated stone, placement of imbricated stone using an excavator fitted with a grapple attachment working from the roadway elevation and use of the quick to assemble/disassemble port-a-dam system.

Erosion and Sediment Control

Following receipt of the NPDES permit, the limits of the permanent work zone will be delineated with staked silt fence Type IV and turbidity barriers as per the erosion control plan. No access or activity will be allowed beyond the silt fence except for foot traffic to collect turbidity samples and to monitor birds and wildlife. The integrity of the silt fence and turbidity barriers will be monitored daily as part of the QC program, and should the integrity be compromised, corrective measures will be implemented. Additional erosion control measures will be placed in proximity to specific operations during the roadway demolition.

C.2.c. Construction Approach

Construction Sequence

Our integrated CPM schedule (shown on page C-13) outlines our overall approach for preconstruction services and construction activities for Section A, and preconstruction services for Section G.

Upon NTP, we will mobilize to the site and install all required traffic control devices for the road closure and detour. We will then take baseline turbidity readings at the streams. Once baselines have been established, we will install the stream diversion for Wall #2 utilizing a port-a-dam diversion system we have successfully used on other projects in Atlanta, GA, and Wilmington, NC. We elected to only work in one stream at a time to lower the cost of the port-a-dam system (reuse) and minimize impact to stream flow. Once the diversion is in place, we will dewater inside the port-a-dam using submersible pumps with socks at the discharge location to control sediment. Once the water level is lowered at least 1' below the bottom of the excavation limits, we will excavate for the for the new wall using a 320 excavator sitting on the roadway surface loading into haul trucks that will take the material to an approved dump site. We based our production for this operation on similar structures excavation past cost at 40 CY/hr.

Once the excavation is complete we will swap out the bucket for the grapple attachment on the 320 (saving money vs. mobilizing another piece of equipment) and use it to place the imbricated stone. Our analysis of this operation concluded that each stone on average weighs about one ton each, and that the stones are indeed stackable. We based our production for this operation on "dental" riprap past cost at 18 tons/hr which equates to 18 ea/hr. We also followed up with the stone suppliers to ensure they could support these productions.

Backfill (although not a required pay item to price in this submittal) would be loaded in lifts with the stone, utilizing the loader that's already on site. It is important to note that up to this point, we have avoided demolishing the existing asphalt pavement and base course. This is in order to minimize the amount of disturbed surfaces we have open at one time. Once Wall #2 is constructed to final grade, we will relocate the port-a-dam to Wall #1 and remove the remainder of the existing pavement section at 100 SY/hr using the 320 and bucket, loading into haul trucks and hauling to either designated dump sites or recycling facilities (preferred option).

Our preliminary cost analysis shows that this demolition operation is cheaper than subcontract milling the full asphalt pavement section. Using a small grading spread, we will then proof-roll, compact and finish the subgrade at 175 SY/hr, place and compact the aggregate base, and place the structural asphalt. This process will then be repeated for Wall #1 through its completion. Finally, after we complete the asphalt paving (including the milled and resurfaces sections), install guardrail, apply pavement markings, and complete the landscaping and restoration work, Section A will be open to traffic.

Schedule Constraints

Known constraints that could affect the schedule include stream disturbance windows, mussel survey/translocation windows, and preconstruction services (including design, permitting and GMP development). We feel that these known constraints can be mitigated within the RFP milestone dates and still yield a resource-leveled, optimized construction approach. Other factors that could affect schedule would be weather delays (due to excessive rainfall), trouble dewatering to excavation limits (requiring temporary sheet-pile to cutoff the water) or a flood event (greater than a 1-year event design capacity of temporary diversion system). Equipment availability, materials and seasonal work are not seen as factors that could impede construction of Section A.

C.2.d. Unique Resources and Capabilities

Value-Added Personnel

As highlighted in Section B.1.b of this proposal, Kiewit, unlike most contractors, has in-house design engineering resources that focus on innovation and critical concept development for alternate delivery projects. Kiewit Infrastructure Engineers is comprised of designers that range in expertise from geotechnical, hydraulics and hydrology to structures, materials, roadway design, and traffic control. This group of in-house experts can bring value to the MD24 project through optimizing dewatering techniques and exploring alternate slope stabilization techniques.

C.2.e. Potential Project Challenges and Mitigation Methods

Pilot CMAR Project

This is the first CMAR project procured by SHA and is bound to have some early challenges. Our mitigation strategy is to assign the right key personnel, who have direct CMAR experience and recent experience with the Authority, who will work as an integrated partner with SHA and JMT from Day One to meet all project goals.

Stakeholder Coordination

We understand that an extensive amount of coordination has taken place to get the Section A design to 75% complete. On-going coordination and communication with the established Advisory Committee is essential to finalizing the design of Section A and moving on to the design of Section G. Our mitigation strategy is to attend Advisory Committee and project stakeholder meetings throughout preconstruction and construction to seek feedback on construction details and inform each group of project status.

Context Sensitivity and Aesthetics

Selecting a stabilization structure that performs to 100-year flood expectations and matches the historical and environmental characteristics of MD24 in the Rocks State Park is going to be a challenge. Our mitigation strategy is to find an alternative system that has a random stone pattern such as Redi-Rock, which is known for providing tall non-reinforced walls with the "essence of natural rock" in situations like we see at MD24.

Road Closure

Although closing MD24 completely allows for ease of construction, it also impacts the traveling public, recreational users and even school buses in the area. Our mitigation strategy is to coordinate road closures with Hartford County Public Schools and DNR-Park Services, and to coordinate ingress/egress at all times for the local traffic in Section G. Should continuing issues arise, we will work SHA to either accelerate construction to minimize the closure window, or to phase our construction sequencing to allow for one open lane, controlled by flaggers at each end.

Section G Design

We understand that there are currently three design alternatives currently under review for Section G, as well as similar constructability issues and aesthetics requirements as in Section A. It also appears as though funding for Section G will not be identified until the anticipated construction cost and schedule is determined. Our mitigation strategy is to assist SHA by developing rough order of magnitude (ROM) pricing/scheduling to assist with analyzing the design options and with obtaining funding. We are accustomed to doing ROM estimates for private owners and can produce them very quickly with a relatively high level of accuracy.

C.2.f. Safety Approach

Safety is our number one priority. It is the first agenda item for every meeting we conduct, and the first thing we address if we're performing a constructability review or walking the construction site. Our philosophy is simple… "Nobody Gets Hurt." This includes our workers, our team members (SHA and JMT), subcontractors and suppliers, the traveling public, and the recreational users of the area.

Our safety program is led by active management engagement and will be the top priority of our project team. We will also plan for safety by developing compliant traffic control plans, preparing detailed hazard analyses for every operation and designing for safety (eliminating the hazard all together).

To supplement our planning, we will make safety fresh and highly visible through use of signs, slogans and clear delineators for our workers and recreational users. Lastly, we will promote a culture of intervention to stop and immediately correct safety issues as they occur. The key to developing this culture will be the use of a craft-led safety program where the craft conduct planned training, perform safety tours and, above all, look out for one another.

Supplemental safety measures we plan on implementing for this project include use of life jackets and life rings near streams, use of police officers when installing/removing road closures, maintaining at least three personnel that are certified flaggers and only allowing Kiewit-qualified designated operators to operate equipment.

C.2.g. Innovations

We have identified several technical/production related innovations that may help the project team reduce time and cost, while maintaining a quality product.

Port-a-Dam Stream Diversion System. This system is a patented cofferdam alternative to sheetpile, earthen dams or sandbags. We have used this system with great success on projects in Atlanta, GA and Wilmington, NC. Additionally, given how high the water is expected to rise during a 1-year storm event on the MD24 project, sandbags do not appear to be feasible. We recommend using the Port-a-dam system for stream diversion on MD24 because of these benefits:

- Unlike conventional sheet pile cofferdams, the system does not penetrate the subsurface
- The system does not use earthen materials to create the structure (which avoids the additional risk of sedimentation)
- The component parts of the system are quick to assemble and remove, allowing for reuse and minimizing the stream impact window
- The system is cheaper, faster to install/remove, and is less environmentally disruptive than sheetpile

Redi-Rock Walls. This patented retaining wall system, which has been used successfully in most states across the country, including Maryland, was recommended by our geotechnical engineers at Kiewit Infrastructure Engineers on the MD24 project for the following benefits:

- It maintains the desired random stone pattern
- It is cheaper to buy and install than imbricated stone (about 10% savings)
- The system has a patented interlocking system that is easier to install versus the varying shapes/sizes of the imbricated stone

Excavator Mounted Grapple Attachment. This is a specialized attachment utilized for stone placement. The benefits of using the grapple attachment on the MD24 project include:

- It has a much better grip on the stone vs. traditional use of bucket and thumb – increasing safety and minimizing damage to the stone
- It requires minimal labor support, and has the ability to pick stones directly from a delivery truck
- It achieves optimal production at 18 stones per hour (one stone every three minutes)

C.3. Risk and Innovation Management

C.3.a. Risk Mitigation and Innovation Process

Although on some projects, some issues may appear minor on the surface, we have learned through our experiences that without regular communication and proper attention, those minor issues have the potential to become major issues. While there can be various solutions to each specific issue, the method for resolving each issue is consistent:

IDENTIFY **the issue, its root cause, and barriers** → ***ASK*** **for ideas on resolutions** → ***DECIDE*** **who does what, and when** → ***EXECUTE*** **action plan** → ***FOLLOW UP*** **with all parties regularly**

Some of the best practices we regularly implement to ensure that all issues—no matter how small they may seem—are communicated to the entire team and resolved quickly and efficiently include regular partnering meetings; design and constructability reviews; weekly progress and task force meetings; risk matrix and management plan; and quality checks.

Risk Mitigation

The guiding principle of our risk management philosophy is to consider everything through the eyes of our client: SHA. While some may evaluate risk as it affects the bottom line of a project, our team knows that protecting our clients' interests and performing intensive preconstruction planning yields the best results in the long run. We evaluate risk early, revisit as things change, and carefully consider the short and long term implications of the decisions we make.

Risks on transportation projects such as MD24 can impact the project team in three main ways: Cost, Schedule and Community Perception (Reputation). The process we will use to eliminate and/or mitigate risk throughout the life of the project is the Construction Management Association of America endorsed "Risk Register" approach. This entails the following key elements:

- **Identification** through thorough constructability reviews, discipline specific task force meetings, stakeholder coordination, trend (cost and schedule) reporting and cost estimating reviews by senior management
- **Determine Ownership** by understanding who is responsible for the risk and who may be best suited to manage the risk
- **Quantify Impacts** with respect to cost, schedule and reputation
- **Assign Probability**, typically done by low, medium, high classifications with commensurate probability percentages
- **Prioritize** in a formal, regularly updated and reviewed Risk Register based on impact and probability
- **Mitigate or Eliminate the Risk** by developing and executing a detailed Risk Elimination Plan for the specific risk
- **Revisit the Risk Register** as a living and breathing tool to track and report risk mitigation

Innovative Savings

Under the GMP Development section of this submittal, we proposed to implement a tracking matrix we jointly developed on a previous CMAR project called the DART tracking matrix to track and report innovative saving. Similar to the Risk Register, the DART tracking matrix will be a living document, and we will use it to continually strive for innovative solutions through constructability reviews, task force meetings and Value Analysis Workshops.

C.3.b. Top Five Risks or Innovations

Potential risks are inherent with CMAR construction methods. The keys to successfully anticipating and eliminating those risks for a successful project are to identify, understand, and mitigate them before they impact the project. Our team has assembled specific design and construction professionals who know how to minimize risks. We have reviewed the RFP documents and identified the top five categories that we will help manage during preconstruction and construction, as shown on the next page.

Risk or Innovation Description	Probable Cost Savings	Probability of Occurrence	Cost Savings to Project	Schedule Impacts to Project	Implementation or Mitigation/Elimination Plan
Create Allowance for Builder's Risk Deductible	$250,000	50	$125,000 (User)	0 days	If no events take place, then allowance amounts will be an owner savings
Create Allowance for Additional/ Unforeseen Environmental Compliance Requirements	$50,000	25	$12,500 (User)	0 days	Unused allowance amounts will be an owner savings
Stream Diversion Design/Impacts of Groundwater Piping	$50,000	20	$10,000 (Constr.)	20 days full risk 0 days mitigated	Utilize in-house geotech and hydraulics experts for alter-nate design
Differing Site Conditions (unsuitable soils)	$60,000	50	$25,000 (Constr.)	15 days full risk 0 days mitigated	Utilize in-house geotech experts for alternate design
Evaluate Alternate Wall Designs (Redi-Rock)	$45,000	75	$33,750 (User)	0 days (safety/quality benefits)	Alternate wall designs that satisfy design criteria

C.3.c. Additional Risk Mitigation or Innovation

Many of our innovative savings concepts have been discussed in Sections C.2.e, C.2.g and C.3.b of this proposal. The following are some additional risk mitigation and innovation measures we can take to guard against and improve the community perception of this project.

Activity	Related Issues	Mitigation Methods
Traffic Control	▪ Maintaining business and residential access ▪ Vehicular and pedestrian access and safety ▪ Approval of traffic management plans	▪ Perform detailed traffic assessments and make design recommendations to allow for necessary construction access and staging ▪ Delineate pedestrian walkways with adequate protection from work zone and provide adequate signage to delineate detours ▪ Utilize local police details during traffic changes
Erosion Control	▪ Installation/maintenance of control systems ▪ Monitoring system effectiveness	▪ Identify areas of concern in preconstruction phase and evaluate mitigation options ▪ Perform maintenance inspections on systems regularly ▪ Weekly inspection walks and checklist documentation
Treatment and Control of Runoff	▪ Inadequate site drainage ▪ Water quality compliance (sediments, turbidity, concreting activity impacts water pH)	▪ Improve drainage by cleaning out existing swales and other systems ▪ Construct new systems as needed ▪ Filter/treat runoff before release into the drainage systems/ swales ▪ Use pH tempering and flocculent equipment/tanks where required ▪ Perform periodic water quality testing to ensure compliance
Dust Mitigation	▪ Inconvenience to abutters/air quality	▪ Implement approved water sprinkling or other methods
Noise Mitigation	▪ Inconvenience to abutters	▪ Regulate machinery and equipment idle times ▪ Use of equipment silencers where possible ▪ Restrict certain loud activities to set hours/designated times

C.3.d. Past Performance in

Mitigating Risks

SR-14 Landslide Emergency Repair

This project involved the emergency repair of landslide in Cedar Canyon, UT. The following risk mitigation measures and innovative solutions are directly applicable to MD24:

- **Full road closure that required a 60-mile detour for users:** We utilized our in-house Kiewit Infrastructure Engineers group to assist with making well-informed decisions in a timely manner to expedite the design and get to work ahead of the original schedule.
- **Restricted access to recreational area:** We worked with the owner and designer to achieve a Memorial Day road opening prior to project completion. This was accomplished by sequencing the schedule to have all aggregate base course in place prior to the holiday weekend, then commencing with asphalt pavement operations afterwards.
- **Minimizing impacts to the adjacent river:** We implemented measures to stabilize the material that had slid, put positive protection measures in place, and then commenced with removal of the debris in a controlled environment.
- **On time completion despite another unforeseeable landslide:** The scope essentially doubled, but the same cost and schedule saving concepts we developed on the first slide allowed us to take on the additional scope with no impact to the overall road closure schedule, opening to the travelling public on time.

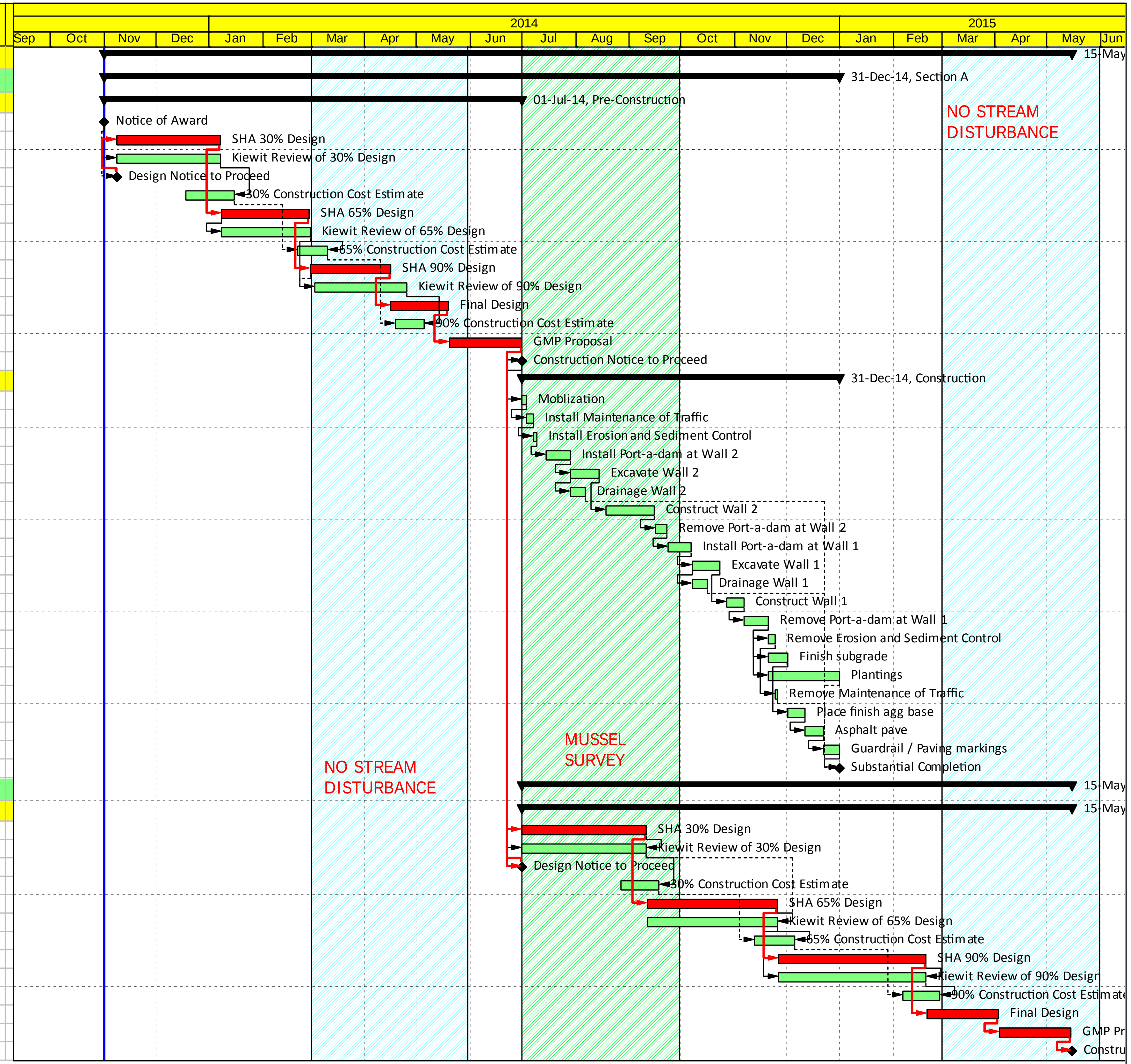
Mountain View Corridor

This project involved a constructing a Greenfield highway in Salt Lake City, UT. Although this project is much larger in size than MD24, the following risk mitigation measures and innovative solutions are still applicable:

- **Establishment of allowance accounts:** Similar to the contingency pool that SHA is considering establishing, the project team was able to identify risk sharing items and assign allowance accounts should the risk arise. In this case, an allowance was established for unsuitable soils. The team was able to utilize some simple ground improvement techniques in lieu of more substantial undercutting and save the majority of the allowance account, of which the saving went back to the owner.
- **Additional scope:** As a result of some of the design and construction innovations developed on the project to reduce the base scope and schedule duration, the team was able to use the money saved to extend the limits of the project and capture more of the master development scope for the corridor while staying within budget and still finishing ahead of schedule.

- **Stakeholder involvement:** This project encompassed numerous municipalities, utility companies and other stakeholders. The team recognized the inherent risks associated with utility relocations and ROW acquisitions, included the applicable stakeholders during the preconstruction phase, and was able to re-sequence the schedule without impacting the overall job duration.

Activity ID	Activity Name	Original Duration	Start	Finish
MD 24 Section A and Section G		350	01-Nov-13	15-May-15
Section A		264	01-Nov-13	31-Dec-14
Pre-Construction		166	01-Nov-13	01-Jul-14
A1000	Notice of Award	0	01-Nov-13*	
A1010	SHA 30% Design	38	08-Nov-13	07-Jan-14
A1040	Kiewit Review of 30% Design	38	08-Nov-13	07-Jan-14
A1005	Design Notice to Proceed	0	08-Nov-13*	
A1070	30% Construction Cost Estimate	17	18-Dec-13	15-Jan-14
A1020	SHA 65% Design	37	08-Jan-14	27-Feb-14
A1050	Kiewit Review of 65% Design	38	08-Jan-14	28-Feb-14
A1080	65% Construction Cost Estimate	11	21-Feb-14	10-Mar-14
A1030	SHA 90% Design	33	28-Feb-14	16-Apr-14
A1060	Kiewit Review of 90% Design	40	03-Mar-14	25-Apr-14
A1095	Final Design	24	16-Apr-14	19-May-14
A1090	90% Construction Cost Estimate	11	18-Apr-14	05-May-14
A1100	GMP Proposal	29	20-May-14	30-Jun-14
A1110	Construction Notice to Proceed	0	01-Jul-14	
Construction		115	01-Jul-14	31-Dec-14
A1120	Moblization	2	01-Jul-14	03-Jul-14
A1130	Install Maintenance of Traffic	1	03-Jul-14	07-Jul-14
A1140	Install Erosion and Sediment Control	2	07-Jul-14	09-Jul-14
A1150	Install Port-a-dam at Wall 2	9	15-Jul-14	28-Jul-14*
A1160	Excavate Wall 2	11	29-Jul-14	14-Aug-14
A1440	Drainage Wall 2	6	29-Jul-14	06-Aug-14
A1170	Construct Wall 2	16	18-Aug-14	15-Sep-14
A1180	Remove Port-a-dam at Wall 2	4	16-Sep-14	22-Sep-14
A1190	Install Port-a-dam at Wall 1	8	23-Sep-14	06-Oct-14
A1200	Excavate Wall 1	10	07-Oct-14	23-Oct-14
A1450	Drainage Wall 1	6	07-Oct-14	16-Oct-14
A1210	Construct Wall 1	8	27-Oct-14	06-Nov-14
A1220	Remove Port-a-dam at Wall 1	8	06-Nov-14	20-Nov-14
A1230	Remove Erosion and Sediment Control	1	20-Nov-14	24-Nov-14
A1390	Finish subgrade	4	20-Nov-14	01-Dec-14
A1430	Plantings	21	20-Nov-14	31-Dec-14
A1240	Remove Maintenance of Traffic	1	24-Nov-14	25-Nov-14
A1400	Place finish agg base	7	01-Dec-14	11-Dec-14
A1410	Asphalt pave	4	11-Dec-14	22-Dec-14
A1420	Guardrail / Paving markings	6	22-Dec-14	31-Dec-14
A1380	Substantial Completion	0		31-Dec-14
Section G		224	01-Jul-14	15-May-15
Pre-Construction		224	01-Jul-14	15-May-15
A1250	SHA 30% Design	50	01-Jul-14	10-Sep-14
A1260	Kiewit Review of 30% Design	50	01-Jul-14	10-Sep-14
A1270	Design Notice to Proceed	0	01-Jul-14*	
A1280	30% Construction Cost Estimate	15	27-Aug-14	18-Sep-14
A1290	SHA 65% Design	54	11-Sep-14	25-Nov-14
A1300	Kiewit Review of 65% Design	54	11-Sep-14	25-Nov-14
A1310	65% Construction Cost Estimate	15	12-Nov-14	05-Dec-14
A1320	SHA 90% Design	60	26-Nov-14	19-Feb-15
A1330	Kiewit Review of 90% Design	60	26-Nov-14	19-Feb-15
A1340	90% Construction Cost Estimate	15	06-Feb-15	27-Feb-15
A1350	Final Design	30	20-Feb-15	02-Apr-15
A1360	GMP Proposal	30	03-Apr-15	14-May-15
A1370	Construction Notice to Proceed	0	15-May-15*	



Remaining Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | ◆ Milestone

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