



Maryland Department of Transportation
State Highway Administration
Office of Highway Development

MD 210 - LIVINGSTON ROAD/KERBY HILL ROAD INTERCHANGE

Technical Proposal | Contract No. PG7005170
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Engineers · Architects · Environmental Planners Est. 1915

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MD 210 - LIVINGSTON ROAD/KERBY HILL ROAD INTERCHANGE

PROJECT TECHNICAL
ELEMENTS & APPROACH



Project Sequencing

General

The CGI/WRA Team is proposing to design and construct the MD 210 Livingston Road/Kerby Hill Road Interchange Project improvements, consisting of replacing an at-grade intersection with a grade separated interchange, in general arrangement and agreement with the Concept Plans contained in the Request for Proposal (RFP) package. The proposed work includes the widening and rehabilitation of MD 210 for approximately 1.8 miles; a new single span bridge on Livingston Road over MD 210 NB; a new multi-span bridge on Kerby Hill Road over MD 210 SB, Service Road and Carey Branch; new center median exit/entrance ramps between MD 210 and Livingston Road/Kerby Hill Road on retained fill sections; new noise barriers and associated retaining structures along MD 210; multiple pipe and box culvert extensions; realignment of approximately 0.3 miles of Livingston Road/Kerby Hill Road; a new Service Road; a new Bus Loop Road; a reconstructed Murray Hill Drive tie-in; a reconstructed Wilson Bridge Drive tie-in; a new bike path connection between MD 210 NB and Livingston Road; new parking lots; reconstructed driveway and entrance tie-ins; and new utility access roads. Additional project improvements include a new traffic signal at the MD 210 Ramps/Livingston Road/Kerby Hill Road intersection; roadway lighting; roadway signing, including overhead and cantilever structures; pavement markings; new and rehabilitated pavement; open/closed storm drainage systems; stormwater management facilities; stream relocation/stabilization of Carey Branch; roadside and SWM landscaping; reforestation plantings; demolition and removal of existing buildings; utility relocations including water and sewer (WSSC), gas (Washington Gas), and communication (SHA); and coordination with utility relocations by third parties concurrent with the project design and construction, including electric (PEPCO), communication (Verizon), and fiber/cable (Level 3/ Comcast). All work will be constructed within available right-of-way and the established limits of disturbance.

The CGI/WRA Team will focus on coordinating utilities and resolving utility conflicts throughout design and construction through vigorous and robust communication/coordination strategy led by our Utilities Coordinator, Stephan Beckley (CGI). We understand that available utility information is not always accurate or complete and schedules change due to unforeseen reasons resulting in unexpected conflict; however, the CGI/WRA Team is prepared to address these challenges through active and on-going engagement and partnering with SHA and utility owners. We will leverage the combined expertise of our design-build team to develop creative and innovative solutions to avoid or address conflicts and accelerate construction activities when possible. During the noise wall/retaining structure design, we will coordinate the foundation locations and maximize the use of retaining panels, double-wide noise wall panels (underground conflicts), bolt-on flange/split flange posts (High Voltage Act overhead conflicts), and top down construction to minimize impacts to existing utilities; thereby reducing overall construction duration and cost and impacts to the environment and public. All crane picks for lifting posts, panels, and girders will be evaluated during design to ensure constructability and will be coordinated with utility companies well in advance of construction to avoid unnecessary schedule interruptions. We will provide continuous water, sewer, and gas services during relocation construction and installation, with minimal interruptions during tie-ins. We will take into consideration the non-heating season of April through October for any tie-ins for the gas relocation work. We will coordinate with the utility owner and affected customers in advance of any temporary outages. Any temporary power outages that may be allowed due to unavoidable overhead conflicts will be coordinated with PEPCO and will be minimized.

The CGI/WRA Team recognizes that the design development and construction of all of the project's drainage, stormwater management (SWM) and erosion and sediment control (ESC) elements will be critical to a successful project. The project benefits from having a well-developed, conceptual scheme for the drainage and stormwater designs, as well as an advance design for ESC that will allow for expedited utility relocation. We intend to utilize the previous work completed for these disciplines to the greatest extent in order to expedite SHA and MDE approvals. Based upon our proposed phasing of work as described below, we anticipate that drainage, SWM, and ESC designs will be prepared to accommodate and treat runoff during and after construction for each individual phase, with some overlap or advance construction of adjacent phase drainage systems occurring as deemed appropriate. No temporary SWM systems are anticipated to be necessary based upon the proposed construction

duration for individual phases and the overall project.

Project Design and Construction Approach and Project Phasing

The CGI/WRA Team will provide all the design and construction services, including project management, administration, and permitting services, required to complete the MD 210 Project as outlined in the RFP, including all addendums and response to Contractor Inquiries. We will provide all required project coordination and partnering, supplemental data collection, engineering studies, analyses and reports, permitting activities including obtaining permits and permit modifications, community relations and public outreach support, traffic control design and implementation, FAA obstruction evaluations, required mitigation or remediation, project site maintenance, and all other activities required to successfully complete the project to the satisfaction of SHA. The CGI/WRA Team is very familiar with the personnel, procedures, and requirements for the utilities affected by the project (PEPCO, Verizon, Level 3, Comcast, SHA Electric/Communications, Washington Gas, and WSSC) and will leverage this knowledge and experience to minimize issues. We are confident that our approach to the design and construction of the project, including our proposed technical elements, provides SHA with the best value by exceeding the project requirements in regards to highway operational efficiencies both during construction and after completion, minimizing impacts to the traveling public and local community through quality and efficient design and construction, maintenance benefits, innovative and value added elements, and comprehensive coordination, including scheduling, with utility owners for the relocation of utilities performed by third parties or our team.

The CGI/WRA Team is proposing to design and construct the MD 210 Project in general arrangement and agreement with the Concept Plans contained in the RFP package in three primary construction phases with two advanced construction phases to expedite utility relocations. The three primary phases include: 1A) MD 210 outside work and 1B) Livingston Road and Kerby Hill Road temporary tie-ins at MD 210; 2A) MD 210 outside work at the existing Livingston Road/Kerby Hill Road intersection and 2B) MD 210 inside work, bridges, bridge approach roadway work at Livingston Road and Kerby Hill Road, Livingston Road widening, and Murray Hill Drive tie-in work; and 3A) Service Road tie-in work and final Livingston Road and Kerby Hill Road work and 3B) Wilson Bridge Drive work and miscellaneous work along the outside of MD 210. **Exhibits may be found in the Appendix showing our Project Phasing for Phase 1A/1B, Phase 2A/2B, and Phase 3A at the MD 210/Livingston Road/Kerby Hill Road Interchange.** During final design, sub-phases may be incorporated in with the primary construction phases to expedite schedule critical project elements, better coordinate specific construction activities, address construction conflicts and scheduling issues with third party utility relocations, or maintain certain traffic movements for longer durations. Our MOT design and implementation will allow for safe and efficient travel by pedestrians, bicyclists, and motorists while optimizing the project schedule. The following outlines our proposed approach to designing and constructing the MD 210 Project. This approach mirrors our MOT phasing detailed below.

Design and Pre-Construction Activities - Upon notification of selection, the CGI/WRA Team proposes to immediately initiate advanced coordination efforts, supplemental data collection activities, and project design. These early efforts will include, but are not limited to, the following: attend and facilitate the Utility Conference and weekly utility coordination meetings between the CGI/WRA Team, SHA, and utility owners; attend a Pre-Permitting Meeting with SHA; submit our Design Quality Control Plan and design certifications; develop and submit the Public Outreach Plan; develop and submit the transportation management plan; perform the tree survey and prepare and submit the Tree Minimization and Avoidance Report; develop and submit the Geotechnical Planning Report; perform supplemental field survey, utility test pitting, and soil borings and testing; develop and submit an early work package with required MOT and ESC to expedite the relocation of water and gas lines along MD 210 NB and MD 210 SB at the northern end of the project.

As the advanced activities are being undertaken and approvals are being garnered, the CGI/WRA Team proposes to design and submit for review and approval a construction work package inclusive of the Phase 1A/1B work and the Phase 3A/3B work. To expedite review and approval of separate design elements of the project, we will develop multiple design package submittals for the following: 1) Roadway – a package for all grading, roadway, drainage, SWM, ESC, and MOT including the detour route intersection upgrades; 2) Noise Walls (and

associated retaining structures) – four separate packages for Wall 1 (packages separated at each physical break in wall), one for Wall 3, and one for Wall 4; 3) Culverts – one package for C01 and one for C03 (we are proposing to eliminate C02); 4) Stream Restoration – Carey Branch relocation/restoration; 5) Traffic – temporary signals and signal modifications; and 6) Utility Relocations – two packages for water, one for sewer, one for gas, and one for SHA interconnect. Utility relocation packages will be submitted for review and approval by the utility owner through SHA. Extensive utility coordination will take place with all utility companies to ensure utility relocations, including third party utility relocations, are sequenced efficiently and to avoid conflicts and delays. As needed, we will re-sequence our work activities to address construction conflicts and scheduling issues with third party utility relocations.

As design of Phase 1A/1B and Phase 3A/3B progresses and approvals are being garnered, the CGI/WRA Team proposes to design and submit for review and approval a construction work package for the Phase 2A/2B work. We will develop multiple design package submittals for the following: 1) Roadway – a package for all grading, roadway, drainage, SWM, ESC, and MOT; 2) Bridges – one package for Bridge No. 160306 and one for Bridge No. 160307; and 3) Retaining Walls – one package for parallel Wall Nos. 16465R0/16466R0, and one for parallel Wall Nos. 16464R0/16468R0. Approval of Bridge No. 16307 will be an expedited work package since Pier 3 will need to be constructed in Phase 2A since it cannot be constructed when the existing intersection is operational and when traffic is positioned to the outside of MD 210 SB.

In conjunction to the work packages discussed above, the CGI/WRA Team proposes to design and submit for review and approval project-wide work packages for signals, lighting, signing and marking, ITS, and landscaping and reforestation. We also will complete all data collection efforts and we will develop and submit for review and approval all necessary geotechnical and pavement submittals; required permits and permit modifications; project documentation, studies, reports; source of supply/material clearance; shop drawings; etc. in support of the proposed design and construction activities as outlined in the RFP. These efforts will be coordinated with all other work activities to ensure approvals are garnered at the appropriate time to match the overall construction sequencing.

Construction Activities - As a first construction activity, the CGI/WRA Team proposes to implement the MOT and ESC and perform the advanced clearing and grubbing for the third party utility relocations (Advanced Clearing and Grubbing for Utility Installation package). Upon completion of this work, third party utility relocations can progress. Per TC Section 3.15.01.02, third party utility owners have a 12 to 18 month relocation timeframe from the time the clearing and grubbing activities are completed. During this time period, the CGI/WRA Team proposes to begin construction of advanced water and gas relocations and Phase 1A/1B work items along MD 210 NB and MD 210 SB beginning at the northern end of the project and progressing to the south. The water relocation work will include the installation of cathodic protection and the relocation of a test station outside the proposed widening. The progression of our work will be dependent on third party utilities being cleared for the MD 210 improvements; however, our work will generally progress from north to south, with work near the MD 210/Livingston Road/Kerby Hill Road intersection, the Wilson Bridge Drive intersection, and the new Service Road adjacent to MD 210 SB being progressed as late as possible. This approach coincides with utility conflicts/relocations from least impactful/complex to most impactful/complex. We believe this approach will assure adherence to the project schedule and allow for opportunities to accelerate construction. We propose to sequence the Phase 1A/1B work as follows:

- Install MOT and ESC to facilitate construction of the Phase 1A/1B project improvements.
- As water, gas and Level 3 utilities are relocated at the northern end of the project, complete grading, roadway and drainage improvements along MD 210 NB to Sta. 710+00 Lt. and along MD 210 SB to Sta. 698+00 Rt., construct Noise Wall 1-1 including associated retaining structures (Sta. 670+00 Rt. to Sta. 698+00 Rt.), construct Noise Wall 4 including associated retaining structures (Sta. 680+00 Lt. to Sta. 710+00 Lt.), construct the C03 culvert extension, and construct the utility access road. Construct miscellaneous water and sewer relocations as needed or in preparation for full relocations later in Phase 1A. Relocate existing roadway lighting along MD 210 SB as needed. Coordination with Level 3 will be required for work along MD 210 NB and at the Level 3 crossing near Wilson Bridge Drive. We will work with Level 3 to ensure their facilities have

sufficient cover during all phases of construction. Coordination with PEPCO and Verizon will be required for work at the Wilson Bridge Drive intersection; however, we are not proposing improvements at Wilson Bridge Drive until Phase 3B. Particular attention will be paid to the relocation of water and gas, installation of storm drains, and installation of noise wall foundations (underground conflicts) and posts and panels (overhead conflicts). The gas relocation work will proceed from north to south for the full length of the project generally independent of the other improvements along the outside of MD 210 SB. We will use temporary gas line tie-ins as needed to facilitate construction of the project improvements. By the end of Phase 1A, all gas relocation work along MD 210 will be completed.

- As the gas utility is relocated moving south along MD 210 SB, complete grading, roadway, drainage, and SWM improvements along MD 210 SB from Sta. 700+00 Rt. to Sta. 712+00 Rt., construct Noise Wall 1-2 including associated retaining structures (Sta. 700+00 Rt. to Sta. 712+00 Rt.), construct portions of the new water line in preparation for full relocation later in Phase 1A, and construct the utility access road. Particular attention will be paid to the relocation of gas, installation of storm drains and the new water line, and installation of noise wall foundations (underground conflicts). Coordination with third party utilities in this area will be minimal.
- From Sta. 710+00 Lt. to Sta. 723+00 Lt., complete rough grading, roadway and drainage improvements, new gas line in preparation for full relocation later in Phase 1A, and the utility access road. Miscellaneous water and sewer work will be completed as needed or in preparation for full relocations later in Phase 1A. Work will be completed to the fullest extent practical considering the Livingston Road temporary tie-in work in Phase 1B. Coordination with Level 3 and Verizon (underground MD 210 crossing) will be required for work in this area.
- As the gas utility is relocated moving south along MD 210 SB, complete grading, roadway, drainage, and SWM improvements along MD 210 SB from Sta. 725+00 Rt. to Sta. 767+00 Rt., construct a portion of Noise Wall 1-4 including associated retaining structures (Sta. 727+50 Rt. to Sta. 744+00 Rt.), construct the C01 culvert extension, relocate/restore Carey Branch stream (no work between March 1 and June 15, inclusively), and construct the utility access road. Coordination with PEPCO and Verizon will be required for the underground crossings at Sta. 725+75 and Sta. 726+55, respectively. Particular attention will be paid to the relocation of gas and installation of noise wall foundations at these locations. In addition, relocation of gas through this area will require coordination with Verizon's new conduit from Sta. 741+15 to Sta. 745+20 and their underground crossing at Sta. 741+15. Verizon's existing conduit in this area is in conflict with the relocated gas. Verizon needs their new conduit and underground crossing in place before they can abandon the existing conduit. The gas relocation will also need to be coordinated with the construction of the C01 culvert extension and stream relocation/restoration work as there is insufficient cover for the gas line to be relocated over the culvert.
- From Sta. 724+50 Lt. to Sta. 767+00 Lt., complete grading, roadway, drainage, and SWM improvements along MD 210 NB, construct Noise Wall 3 including associated retaining structures (Sta. 724+50 Lt. to Sta. 765+50 Lt.), and construct the utility access road. Extensive coordination with PEPCO, Verizon, Level 3, and Comcast will be required in this work area, particularly in regards to the noise wall and associated retaining structure. The existing poles and associated overhead utilities (PEPCO, Verizon, Comcast and SHA) will need to be relocated prior to construction of the noise wall and associated retaining structure. We will coordinate with Verizon and Level 3 for placement of their conduits and manholes behind the noise wall/retaining structure to ensure their relocations are coordinated and sequenced with our wall work and to ensure that the proposed utilities are placed at the correct depth in relation to the finished ground line. We will also coordinate with PEPCO for their underground crossing at Sta. 725+75 and Verizon for their underground crossing at Sta. 726+55 and Sta. 741+15. The gas crossing at Sta. 744+60 will also be coordinated with the noise wall construction. Particular attention will be paid to the installation of storm drains and noise wall foundations (underground conflicts) and posts and panels (overhead conflicts).
- From Sta. 712+00 Rt. to Sta. 723+50 Rt., construct gas, water, and sewer relocations; complete grading, roadway, drainage, and SWM improvements along MD 210 SB; complete grading, roadway, and drainage

improvements associated with the Service Road, Loop Road, and parking lots; and construct a portion of Noise Wall 1-3 including the associated barrier wall (Sta. 716+00 Rt. to Sta. 723+50 Rt.). All gas, water and sewer relocations at the existing MD 210/Livingston Road/Kerby Hill Road intersection will be completed at this time. Extensive coordination with PEPCO, Verizon, Level 3, and Comcast will be required in this work area, particularly in regards to the gas/water/sewer relocations and noise wall/barrier wall construction. The existing poles and associated overhead utilities (PEPCO, Verizon and Comcast) will need to be relocated to facilitate the water relocation which in turn facilitates the sewer relocation. This pole line also impacts construction of the roadway improvements. We will also coordinate with PEPCO and Verizon for their various underground crossings in this area. Particular attention will be paid to the installation of storm drains and noise wall/barrier wall foundations (underground conflicts) and installation of noise wall posts and panels and placement of barrier wall formwork and rebar (overhead conflicts).

- Following completion of the above work activities, construct temporary tie-ins at MD 210 NB/Livingston Road and MD 210 SB/Kerby Hill Road, including temporary signals and intersection lighting and/or temporary base widening along MD 210 for temporary acceleration lanes at both locations. Advanced coordination with PEPCO, Verizon, and Level 3 for work in this area will be required to ensure proper sequencing of work to avoid schedule conflicts. During this time, we will also construct improvements along the westbound approach of Saint Barnabas Road at Tucker Road, the westbound approach of Saint Barnabas Road at Bock Road, and the southbound approach of Tucker Road at Palmer Road. All improvements at these intersections will be completed within the existing roadway footprint. These intersections will be restored to their original configuration upon opening of the interchange after Phase 2B discussed below.

Upon completion of the Phase 1A/1B work, the CGI/WRA Team proposes to close the existing MD 210/Livingston Road/Kerby Hill Road intersection and direct left-in/left-out traffic at MD 210 NB/Livingston Road and MD 210 SB/Kerby Hill Road along the detour routes outlined in the RFP. Upon implementing the detour, the CGI/WRA Team proposes the following sequence of construction for the Phase 2A/2B improvements:

- Install MOT and ESC to facilitate construction of the Phase 2A project improvements.
- Complete Phase 2A grading, roadway, drainage, and SWM improvements along MD 210 NB and MD 210 SB and the existing MD 210/Livingston Road/Kerby Hill Road intersection, and construct Pier 3 of Bridge No. 1630700. Advanced coordination with PEPCO, Verizon, and Level 3 for work in these areas will be required to ensure proper sequencing of work to avoid schedule conflicts. It is assumed that a majority, if not all, third party utility relocations will be completed by this time; however, utility coordination will be on-going until the end of construction. Since the final construction along MD 210 NB will take less time than the Pier 3 construction along MD 210 SB, the CGI/WRA Team will delay the implementation of the Livingston Road detour until it is absolutely necessary.
- In conjunction with the switching of traffic along MD 210 NB and MD 210 SB to the outside, install MOT and reconfigure the temporary intersections at MD 210 NB/Livingston Road and MD 210 SB/Kerby Hill Road.
- After traffic switch is completed, install ESC to facilitate construction of the Phase 2B project improvements.
- As part of Phase 2B construct the bridges over MD 210; the ramp retaining walls and fill; and complete grading, roadway, drainage, and SWM improvements along the inside of MD 210, at the Livingston Road and Kerby Hill Road bridge approaches, for the widening of Livingston Road, and for the Murray Hill Drive tie-in work. Livingston Road and Kerby Hill Road will be constructed while maintaining access at all times to residential buildings, local businesses, and adjacent properties. During this time, the traffic signal, including interconnect, at the new intersection will be installed, partial interchange lighting will be installed, the noise wall in the southeast quadrant will be completed, and miscellaneous remaining sewer and gas work will be completed. We will coordinate with all utility owners as needed for any of their remaining work in the Phase 2B work area.
- Upon completion of the above improvements, the interchange will be opened to traffic.

Upon completion of the Phase 2A/2B work, the CGI/WRA Team proposes the following sequence of construction for the Phase 3A/3B improvements:

- Install MOT and ESC to facilitate construction of the Phase 3A project improvements.
- Remove the temporary intersections at MD 210 NB/Livingston Road and complete the remaining work along the outside of MD 210 NB in this area, including the completion of the 10-foot bike path.
- Complete grading, roadway, drainage, and SWM improvements along the Service Road tie-in at Kerby Hill Road and complete miscellaneous remaining water, sewer and gas relocation work in this area. At the Kerby Hill Road tie-in, rough grading will be performed during the beginning of the project to allow the water, sewer, and gas relocations to be expedited at this location.
- Remove the temporary intersections at MD 210 SB/Kerby Hill Road and complete the remaining work along the outside of MD 210 SB in this area, including portions of Noise Wall 1-3 and Noise Wall 1-4 and their associated retaining structures. We will coordinate with all utility owners as needed for any of their remaining work in the Phase 3A work area.
- Upon completion of the above improvements, open the Service Road to the Wilson Bridge Apartments and complete grading, roadway, and drainage improvements at Wilson Bridge Drive, remove the existing signal, and close the MD 210 median opening at this location.
- In conjunction with the improvements at Wilson Bridge Drive, complete grading, roadway, and drainage improvements at remaining locations along MD 210 SB, including portions of Noise Wall 1-3. We will coordinate with all utility owners as needed for any of their remaining work in the Phase 3B work area.

Upon completion of the Phase 3A/3B work, the final elements of work will be completed including the final roadway signing, remaining traffic barrier elements, and final roadside and SWM landscaping. These elements will be coordinated and completed as segments of the project are finished. Construction of the surface paving course, permanent pavement markings, and removal of MOT and ESC will mark the completion of the project.

Maintenance of Traffic

General

The CGI/WRA Team will develop and implement a Transportation Management Plan (TMP), including all Traffic Control Plans (TCP), in conformance with TC Section 3.16, SP 104.01, and other applicable sections of the RFP. The TMP will be developed to maximize safety of road users and workers and minimize impacts to road users, the surrounding community, and the environment through a detailed evaluation of work zone impacts and strategies to mitigate them through safe and effective traffic control design and implementation and active communication with the public, community and concerned stakeholders. The TMP, including the communication plan, incident management plan, and all TCPs, will be prepared through active partnering with SHA and all effected stakeholders (e.g., Prince George's County, utility owners, emergency responders, public transportation agencies, local schools, etc.) to ensure all concerns are appropriately addressed.

As design and construction progresses on the project, the CGI/WRA Team will work closely with SHA, Prince George's County, utility owners, emergency responders, and other effected stakeholders to refine our TMP, including the communication plan, incident management plan, and TCPs, to further minimize traffic impacts and disruptions while providing the safest possible work zones. We will utilize CHART and SHA variable message signs, portable variable message signs, advanced signs, automated speed enforcement, police enforcement, etc. to supplement our TMP efforts to the greatest extent possible. Maintenance of traffic activities will begin at the start of construction, including preparatory MOT work and mobilization of materials or equipment, and will continue to the completion of the project. The CGI/WRA Team, including our Public Relations Coordinator, will work closely with SHA, through daily construction coordination and active assistance with public outreach, to provide advance notification of traffic changes and construction activities impacting motorists, pedestrians (including those with disabilities and school children on school walking routes), bicyclists, public transportation systems, emergency services, schools, the local community, etc. We will arrange and hold pre-traffic switch meetings with SHA and other affected stakeholders at least two weeks prior to any change in traffic patterns. For third party utility relocations, we will employ extensive pre-planning and active coordination led by our Utilities Coordinator, Stephen Beckley (CGI), our MOT/Traffic Manager, Joe Hall (CGI), and our Project Traffic Engineer, Jeremy Mocny, PE, PTOE (WRA), will be undertaken with utility owners and their respective contractors, to ensure all

third party utility relocations are coordinated with our design, TCPs, and daily traffic control activities.

We will maintain access to all businesses, residences, private driveways and local streets, and we will work with businesses, residents, and Prince George's County to accommodate any special access needs to the fullest extent possible. Fuel delivery access will be maintained at all times for the gas station at MD 210 and Kerby Hill Road. Property owners will be contacted to determine a mutual time when their access point can be reconstructed, with construction time held to a minimum. When the grade of the roadway adjacent to an access point is changed, the access grade will be adjusted with aggregate base course until final grade is made and the access is final paved. Access for all types of emergency responders will be maintained at all times. Existing pedestrian pathways will be maintained or ADA compliant alternate pathways will be provided. Pedestrians will have safe access through the work zone at all times. Existing bicycle routes will be maintained or alternate approved bicycle routes will be provided. Temporary orange construction fence will be installed along sidewalks to prevent pedestrians from wandering into the construction site. Existing public transit stops will be maintained, permanently relocated per the RFP, or we will coordinate with WMATA or Prince George's County for temporary relocations as may be needed to maintain transit services. School bus stops will also be maintained or we will coordinate with Prince George's County Schools and the community for a temporary relocation. We will coordinate with SHA, Prince George's County, and others regarding other construction projects in the area or any special events that may affect traffic patterns through and around the project and adjust our TMP and TCPs as needed. Desired detour routes, regardless of duration, will be based on those outlined in the RFP and submitted to SHA for review and concurrence during the design review process and will provide convenient and logical rerouting of traffic through effective traffic control and advanced notifications. Our TCPs will be designed to minimize the duration of detours for secondary roads within the project limits.

Our full-time on-site MOT/Traffic Manager, Joe Hall (CGI) will supervise and continuously monitor the installation and maintenance of all traffic control devices. He will document all daily maintenance of traffic setups, ensure all deficiencies are corrected, and suggest improvements as needed. Mr. Hall will collaborate and coordinate with our Project Traffic Engineer, Jeremy Mocny, PE, PTOE (WRA), during design to ensure the traffic control design and plans are coordinated and sequenced with all construction activities, including drainage and erosion & sediment control (ESC) phasing and third party utility relocations. During construction, Mr. Hall will ensure the implementation of traffic control devices is in conformance with the approved TCPs. As needed, Mr. Hall will work with Mr. Mocny, SHA, and other stakeholders to make improvements to the traffic control due to unanticipated driver, pedestrian, or bicyclist behaviors. Traffic safety is a primary concern for the CGI/WRA Team, and our Safety Director, Fred Collins (CGI), will review the project for compliance with both the CGI/WRA Team's and SHA's MOT requirements. For any incidents which may occur on the project, our General Superintendent, Chris Kirsch (CGI), will notify the appropriate emergency responders through 911 and Mr. Hall will immediately arrange for safe travel around the incidents. Mr. Hall will have the authority to direct traffic changes to ensure safe and continuous traffic flow and to direct traffic operations after a traffic incident.

To maximize safety and minimize disruptions and delays for all road users, TCPs will be developed to provide a safe route for all road users through the project site by providing travel lanes that meet or exceed the 11-foot minimum on MD 210 and the 10-foot minimum on other roadways while maintaining shoulders wherever possible, and by using temporary concrete traffic barrier adjacent to work areas to the greatest extent practical. Drainage will be evaluated for each traffic phase to ensure positive roadway drainage at all times. Traffic control, ESC, and utility relocation phasing, among other activities, will be coordinated to ensure all work is synchronized and can be completed within permitted impacts. Periodic temporary off-peak lane and shoulder closures will be implemented throughout construction along MD 210, Livingston Road, Kerby Hill Road, and other local roadways in conformance with Section 104.01 for MOT setup and breakdown, material delivery or removal, girder erection, noise wall construction, retaining structure construction, utility and storm drain construction, overhead sign placement, final roadway surfacing and marking, etc. All through lanes on MD 210 will be reopened for peak hour and will never be permanently closed during construction. Any required flagging operations will be performed following proper flagging procedures by ATSSA certified flaggers. Site access from MD 210, Livingston Road, Kerby Hill Road, and other local roadways will be provided through properly signed and protected construction

entrances, and as needed proper flagging procedures will be used to facilitate the movement of construction equipment. No hauling will take place on new permanent paved surfaces. Pavement markings will be properly eradicated by approved methods, and signage that conflicts with temporary traffic control devices will be covered or removed. Existing traffic signals and roadway lighting throughout the project will be maintained and adjusted as needed or temporary traffic signals and temporary roadway lighting will be installed as appropriate. Temporary base widening along roadways will be evaluated and implemented where operational improvements can be made to improve safety and/or reduce construction durations. All temporary roadways, including widening, will be designed in all geometric aspects to meet the posted speed.

Detailed Maintenance of Traffic Approach

The CGI/WRA Team is proposing to design and construct the MD 210 Project in general arrangement and agreement with the Concept Plans contained in the RFP package in three primary construction phases with two advanced construction phases to expedite utility relocations by third parties and utility relocations as part of the PG7005170 Contract. The three primary phases include: 1A) MD 210 outside work and 1B) Livingston Road and Kerby Hill Road temporary tie-ins at MD 210; 2A) MD 210 outside work at the existing Livingston Road/Kerby Hill Road intersection and 2B) MD 210 inside work, bridges, bridge approach roadway work at Livingston Road and Kerby Hill Road, Livingston Road widening, and Murray Hill Drive tie-in work; and 3A) Service Road tie-in work and final Livingston Road and Kerby Hill Road work and 3B) Wilson Bridge Drive work and miscellaneous work along the outside of MD 210. **Exhibits may be found in the Appendix showing our Project Phasing for Phase 1A/1B, Phase 2A/2B, and Phase 3A at the MD 210/Livingston Road/Kerby Hill Road Interchange.** During final design, sub-phases may be incorporated in with the primary construction phases to expedite schedule critical project elements, better coordinate specific construction activities, address construction conflicts and scheduling issues with third party utility relocations, or maintain certain traffic movements for longer durations. The following outlines our proposed approach to maintaining traffic (vehicular, pedestrian and bicyclist) during the construction of the MD 210 Project.

Advanced Clearing and Grubbing for Utility Installation – As a first order of work and to expedite the relocation of third party utilities, the CGI/WRA Team is proposing to perform the advanced clearing and grubbing work along MD 210 NB for the utility installations as shown on the approved Advanced Clearing and Grubbing for Utility Installation contract drawings. The CGI/WRA Team proposes to complete this work using the traffic control plans included with the approved contract drawings and in conformance with Section 104.01. The CGI/WRA Team proposes to provide site access for the third party utility owners from MD 210 NB through properly signed and protected construction entrances at locations depicted on the approved contract drawings. As may be needed through our coordination efforts with third party utility owners, the CGI/WRA Team is proposing to provide additional approved traffic control measures, including isolated locations of permanent shoulder closures behind temporary concrete traffic barriers, to provide protection of isolated work areas needing a greater level of roadside protection. All existing pedestrian and bicycle pathways will be maintained or compliant permanent or temporary access will be provided.

Advanced Water and Gas Relocations – As an early activity and in coordination with the third party utility work, the CGI/WRA Team is proposing to perform advanced utility relocations for water and gas as part of the PG7005170 Contract. The water relocation work along MD 210 NB from Sta. 680+48 to Sta. 694+86 and the gas relocation work at the northern end of the project will be expedited to eliminate the existing water and gas utility conflicts with the project improvements. The CGI/WRA Team proposes to complete some sections of the utility relocations using temporary off-peak right lane and shoulder closures along MD 210 in conformance with Section 104.01. The CGI/WRA Team proposes to perform this work by a daily cut and cover operation. Paved surfaces will be patched each workday prior to re-opening the roadway to traffic. Depending on factors such as the duration of construction, depth of the proposed utility, and complexity of the relocation work, other sections of utility relocations will be performed with positive separation using temporary concrete traffic barrier. Temporary barrier placement for the advanced utility relocations will be coordinated with the location of temporary barrier in subsequent maintenance of traffic phases. All existing pedestrian and bicycle pathways will be maintained or compliant permanent or temporary pathways will be provided.

Phase 1A - MD 210 NB and MD 210 SB Outside Work – As the first major construction phase, the CGI/WRA Team proposes to construct a majority of the improvements along the outside of MD 210 NB and MD 210 SB behind temporary concrete traffic barrier while maintaining three through lanes in each direction along MD 210 and all existing intersection movements. Gaps in the temporary concrete barrier will be provided at Wilson Bridge Drive and Livingston Road/Kerby Hill Road in order to maintain the intersections with MD 210. Proposed work includes construction of the outside widening along MD 210 NB and MD 210 SB, construction of the Loop Road and portions of the Service Road, and construction of proposed parking lot improvements. Also proposed under this phase are the construction of the culvert extension (C01) at Carey Branch along MD 210 SB, the relocation/restoration of Carey Branch, and the culvert extension (C03) along MD 210 NB across from Wilson Bridge Drive. All existing pedestrian and bicycle pathways will be maintained or compliant permanent or temporary pathways will be provided.

Phase 1B - Livingston Road and Kerby Hill Road Temporary Tie-Ins at MD 210 – In advance of closing the existing MD 210/Livingston Road/Kerby Hill Road intersection to facilitate the construction of the Phase 2A work, the CGI/WRA Team proposes to construct temporary tie-ins at MD 210 NB/Livingston Road and MD 210 SB/Kerby Hill Road. These tie-ins will be constructed to permit right-in/right-out movements at MD 210 NB/Livingston Road and MD 210 SB/Kerby Hill Road. The MD 210 SB temporary right-in movement will be directed to use the completed Service Road since there is insufficient space under the proposed bridge for three through lanes plus a deceleration lane. We propose to construct temporary traffic signals at these temporary intersections and/or temporary base widening along MD 210 to provide acceleration lanes along MD 210 based upon a traffic operational analyses performed during final design. In addition to the temporary tie-ins and in preparation for the implementation of detours to address the upcoming left-turn restrictions at MD 210 NB/Livingston Road and MD 210 SB/Kerby Hill Road, the CGI/WRA Team will perform the necessary traffic analyses and detour plans development to obtain SHA and Prince George's County approval of the proposed detour routes outlined in the RFP. The detours include modifying the WB approach of Saint Barnabas Road at Tucker Road to provide an exclusive left-turn lane and an exclusive through lane within the existing roadway footprint; modify the WB approach of Saint Barnabas Road at Bock Road to provide an exclusive left-turn lane and a shared through and right-turn lane with the existing roadway footprint; and modify the SB approach of Tucker Road at Palmer Road to provide a free right movement in the WB direction within the existing roadway footprint. We propose to provide all required traffic control devices for these temporary improvements and propose to restore these locations to their preconstruction condition in conformance with the RFP upon restoring all movements between MD 210 and Livingston Road/Kerby Hill Road. All existing pedestrian and bicycle pathways will be maintained or compliant permanent or temporary pathways will be provided. Through the end of Phase 1B, no traffic will be detoured. Construction of 85% of the outside widening along MD 210 will be completed prior to implementing the detours, thereby minimizing delay to all road users.

Phase 2A - MD 210 NB and MD 210 SB Outside Work at Existing Livingston Road/Kerby Hill Road Intersection – Upon completion of the Phase 1B work and the implementation of the detours, the CGI/WRA Team proposes to construct the remaining outside roadway improvements along MD 210 NB and MD 210 SB at the existing MD 210/Livingston Road/Kerby Hill Road intersection to allow for traffic along MD 210 NB and MD 210 SB to be switched from the inside to the outside. The GCI/WRA Team is also proposing to construct Pier 3 for Bridge No. 1630700 during this phase since it cannot be constructed when the existing MD 210/Livingston Road/Kerby Hill Road intersection is operational or when traffic along MD 210 SB is positioned to the outside. Since, the final construction along MD 210 NB will take less time than the Pier 3 construction along MD 210 SB, the CGI/WRA Team will delay the implementation of the Livingston Road detour until it is absolutely necessary. In conjunction with this work along the outsides of MD 210 NB and MD 210 SB, the temporary intersection tie-ins at Livingston Road and Kerby Hill Road will be reconfigured to match to new traffic patterns along MD 210 NB and MD 210 SB. Upon completion of the intersection reconfigurations, traffic along MD 210 NB and MD 210 SB will be switched to the outside. All existing pedestrian and bicycle pathways will be maintained or compliant permanent or temporary pathways will be provided. The CGI/WRA Team will coordinate with Prince George's County Schools and will maintain access to all bus stops, including the key stop at Kerby Hill Road and the Wilson

Towers Apartments.

Phase 2B - MD 210 NB and MD 210 SB Inside Work, Bridges, Bridge Approach Roadway Work, Livingston Road Widening, and Murray Hill Drive Tie-In – Once traffic along MD 210 NB and MD 210 SB is shifted to the outside, the CGI/WRA Team proposes to construct the improvements along the inside of MD 210 NB and MD 210 SB, including the ramp structures, behind temporary concrete traffic barrier while maintaining three through lanes in each direction along MD 210, the existing intersection at Wilson Bridge Drive, and the temporary right-in/right-out intersections at MD 210 NB/Livingston Road and MD 210 SB/Kerby Hill Road. In addition, to allow for the opening of the interchange to traffic, the CGI/WRA Team proposes to construct the bridges over MD 210 on Livingston Road and Kerby Road, the Livingston Road and Kerby Hill Road roadway improvements at both bridge approaches, the widening of Livingston Road, and the Murray Hill Road tie-in work. With many access points to residences and businesses along these roadways, the CGI/WRA Team will be focused on maintaining access and communicating freely with adjacent residents and business owners. Since children that attend Oxon Hill Elementary School and live east of MD 210 walk along Livingston Road, the CGI/WRA Team will exceed the minimum requirements for pedestrian access during construction phases along this road. Upon completion of this phase, the interchange will be opened to traffic, the detours will be removed and the three intersections modified along the detour routes will be restored to their original configuration. All existing pedestrian and bicycle pathways will be maintained or compliant permanent or temporary pathways will be provided.

Phase 3A - Service Road Tie-In and Final Livingston Road and Kerby Hill Road Work – Upon opening of the new MD 210/Livingston Road/Kerby Hill Road interchange, the CGI/WRA Team proposes to construct the Service Road tie-in at Kerby Hill Road and miscellaneous roadway work along Livingston Road and Kerby Hill Road. At the beginning of this phase, the temporary intersection tie-ins at Livingston Road will be removed and the outside work along MD 210 NB will be completed in this area. After the service road tie-in is completed the temporary intersection tie-in at Kerby Hill Road will be removed and the outside work along MD 210 SB will be completed in this area. This phase includes construction adjacent to the gas station and Christian Center on Kerby Hill Road. The CGI/WRA Team will ensure access is maintained to these businesses including fuel deliveries to the gas station. Other proposed work will include construction of noise walls along MD 210 SB including associated retaining structures, miscellaneous water, sewer, and gas relocations, and construction of the 10-foot bike path in the NE quadrant. All existing pedestrian and bicycle pathways will be maintained or compliant permanent or temporary pathways will be provided.

Phase 3B - Wilson Bridge Drive Work and Miscellaneous Outside Work along MD 210 NB and MD 210 SB – Upon completion of the Phase 3A work, the CGI/WRA Team proposes to construct the improvements at Wilson Bridge Drive and close the MD 210 median opening at this location. Other proposed work will include final roadway work and noise walls including associated retaining structures along MD 210 SB. All existing pedestrian and bicycle pathways will be maintained or compliant permanent or temporary pathways will be provided. At the conclusion of this phase, the CGI/WRA Team proposes to complete final surface paving and pavement markings along MD 210 NB and MD 210 SB to the project limits.

Maintenance Benefits

The CGI/WRA Team proposes to provide the following project technical elements that reduce future maintenance, increase the ease of future maintenance activities, and will not create a detriment to future maintenance:

- Eliminate the extension of culvert C-2 extension thus reducing future maintenance costs
- Maximize the use of concrete noise wall posts eliminating future painting of steel posts
- Install precast retaining panels at noise walls to reduce the need for CIP retaining walls
- Precast retaining panels will incorporate Mix No. 6 concrete versus CIP retaining walls using Mix No. 3 concrete
- Place final surface on all roadways just prior to acceptance for maintenance
- Specify SHA approved materials, qualified producers and products, and pre-approved production facilities
- Install 12” gas main in the MD 210 shoulder for future maintenance accessibility

- Relocate existing cathodic protection test stations which would be inaccessible under proposed improvements
- Install manholes, valves, meters, etc. to locations that can be easily access by maintenance personnel
- Avoid the installation of deep manholes structures
- Minimize the operation of equipment over existing utilities
- Locate noise wall access doors at strategic location for first responders and for access to SWM facilities and utilities
- Use epoxy coated reinforcing steel in retaining/noise wall panels for added protection
- Locate the MD 210/Livingston Road/Kerby Hill Road signal off of the bridge superstructure
- Locate the MD 210/Livingston Road/Kerby Road signal cabinet to an accessible location that is protected from traffic
- Select landscape plantings that will endure roadside conditions
- Minimize turfgrass and sod placement on steep slopes or inaccessible areas (i.e. behind noise walls) where regular mowing is infeasible
- Propose modifications to SHA's bioretention soil mixture (BSM) in order to promote early and sustained vegetation growth in bioswales

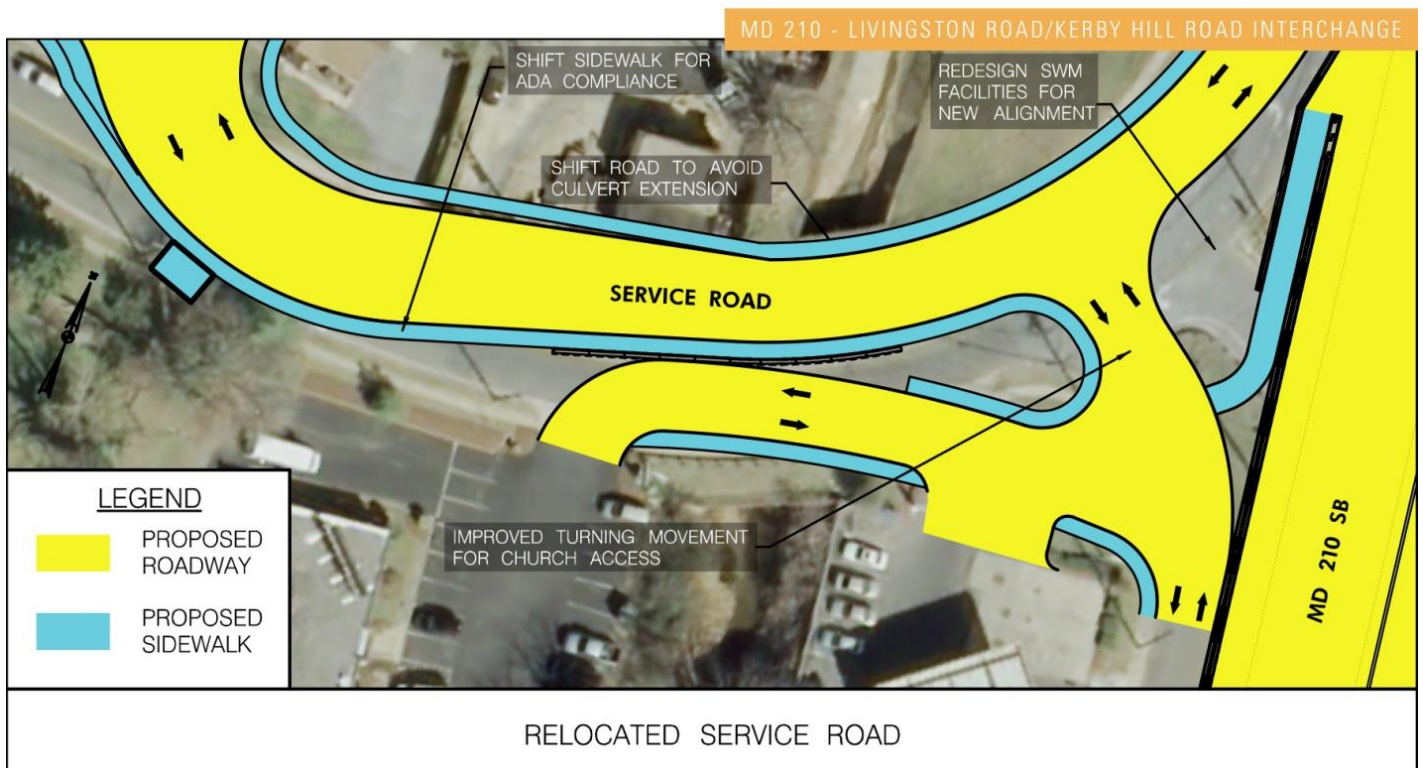
Innovation and Value

The CGI/WRA Team proposes to incorporate the following innovated and value added technical elements into the MD 210 Project bringing increased value to SHA:

- Achieve Milestone 1 by August 30, 2018 (three months before the RFP date) and substantial project completion by November 27, 2018 (seven months before the RFP date).
- Maintain all traffic movements at the existing MD 210/Livingston Road/Kerby Hill Road signalized intersection until 85% of work is completed along the outside of MD 210 NB/SB (Phase 1) thereby deferring the detour of Livingston Road and Kirby Hill Road left-in/left-out traffic for the longest possible time (during Phase 2 only). The full interchange will be operational immediately upon completion of the inside work along MD 210 (Phase 2). This approach substantially minimizes disruption to all road users and the local community.
- Provide right-in access to Kerby Hill Road during the detour of left-in/left-out movements (Phase 2A/B) by using the newly constructed Service Road via a gap in the outside work along MD 210 SB, south of the proposed bridge. This approach provides free flow movement from MD 210 SB and Kerby Hill Road and minimizes impacts to MD 210 SB traffic during the construction of Pier 3 for Bridge No. 16307.
- Maintain all traffic movements at the existing Wilson Bridge Drive signalized intersection until the last construction phase substantially minimizing disruption to Brookside Community residents.
- Align the Service Road to eliminate the extension of culvert C02 resulting in no in-stream impacts, work restrictions and permitting, and a reduction in construction duration and cost, future maintenance, and overall impacts to the environment and public. (See Relocated Service Road Insert below)
- Align the Service Road to improve vehicle turning movement access to the Christian Center and an ADA compliant pedestrian walkway profile resulting in a significant improvement in vehicular and pedestrian access to the Christian Center. (See Relocated Service Road Insert below)
- Install an advanced temporary barrier setup along the outside lanes of the northern sections of MD 210 NB and MD 210 SB to allow for the early construction of water and gas relocations, which in turn allows the installation of noise walls to begin, resulting in a reduction in construction duration and cost.
- Advance the grading along NW-3 to allow Verizon and Level 3 to install their conduits and manholes at a lower elevation and thus allowing for a considerably shorter retaining structure resulting in a reduction in construction duration and cost, future maintenance, and road user impacts.
- Engaged a noise wall fabricator in our preparation of the technical proposal and bidding phase to leverage their expertise in fabrication, handling, and scheduling of noise wall system components. The following

innovations and values have resulted:

- Maximize the use of retaining panel systems in lieu of retaining wall/noise wall systems resulting in less excavation for foundations, a smaller construction footprint, a reduction in construction duration and cost, less future maintenance, more uniform wall aesthetics, and less overall impacts to the environment and public.
- Maximize the use of retaining panels, double-wide noise wall panels, bolt-on flange/split flange posts, and top down construction to minimize impacts to existing utilities reducing construction duration and cost and overall impacts to the environment and public.
- Field applied stains to minimize color differentials due to variances in stain color lots.
- Align the noise wall and utility access road along NW-4 to eliminate a sign structure relocation, resulting in a reduction in construction duration and cost and overall impacts to the public.
- Optimize alignments of the noise walls, utility access roads, and MD 210 to minimize cut/fills thereby minimizing impacts to the environment and the need for slope stabilization.
- Install precast retaining elements instead of cast-in-place retaining walls, providing better control of formliner relief and finished aesthetic product by producing in a shop environment. Also, all concrete for the precast retaining elements will be 5,000 psi Mix 6 in lieu of 3,500 psi Mix 3 for retaining walls.
- The SHA SWM Filtration Facilities Special Provision dictates that bioswale and micro-bioretenion facilities are be constructed after stabilization of all contributing drainage areas, which has typically implied that excavation necessary for filter medium installation must take place after mass earthwork operations. CGI and WRA have recently worked on other projects together to develop methods for excavating this material and protecting the filter beds from damage by sediments, debris and construction equipment, which allows for use of excavated material in the overall earthwork balance, resulting in more cost effective earth moving operations without sacrificing long-term BMP performance.





Maryland Department of Transportation
State Highway Administration
Office of Highway Development

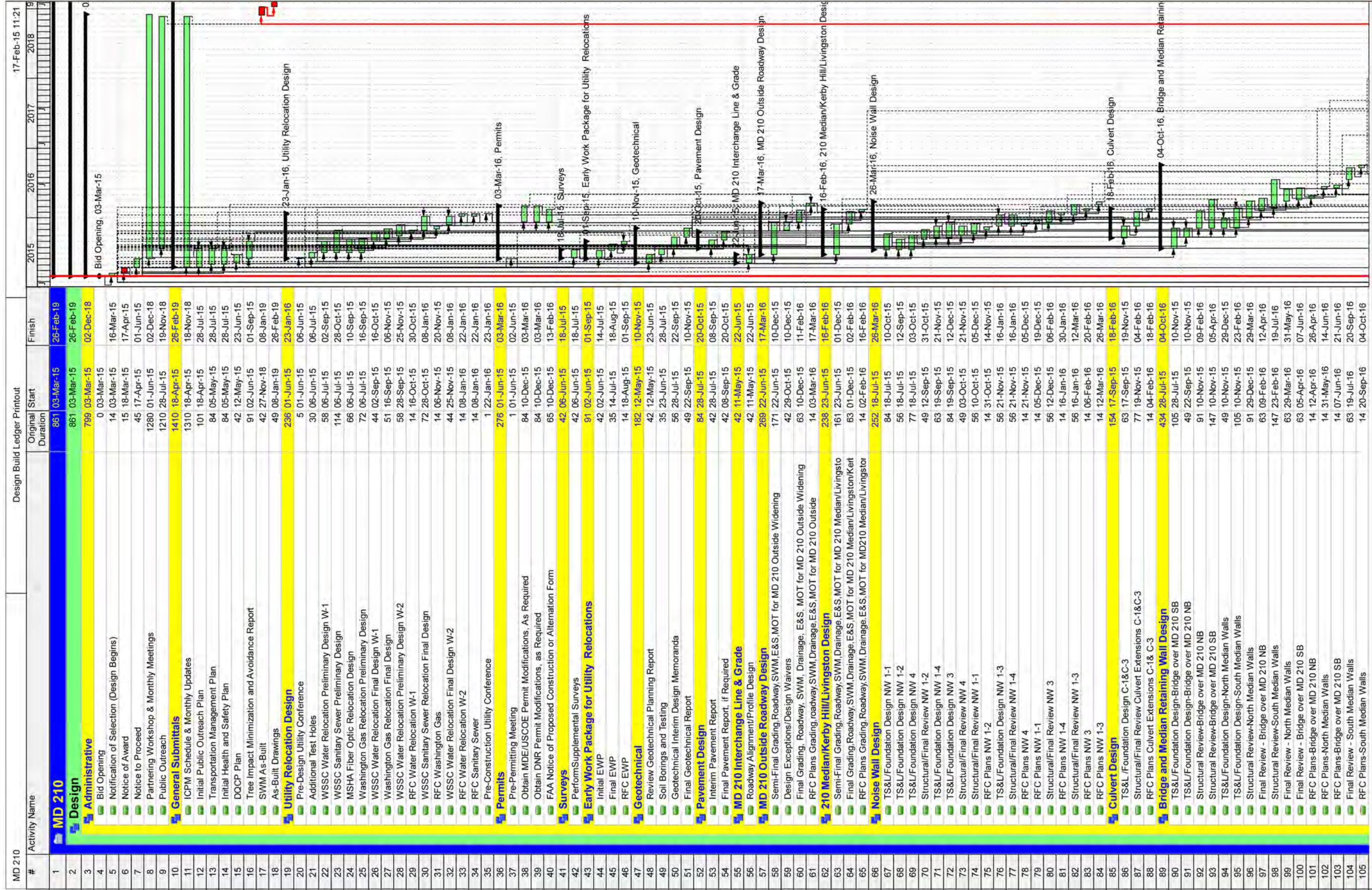
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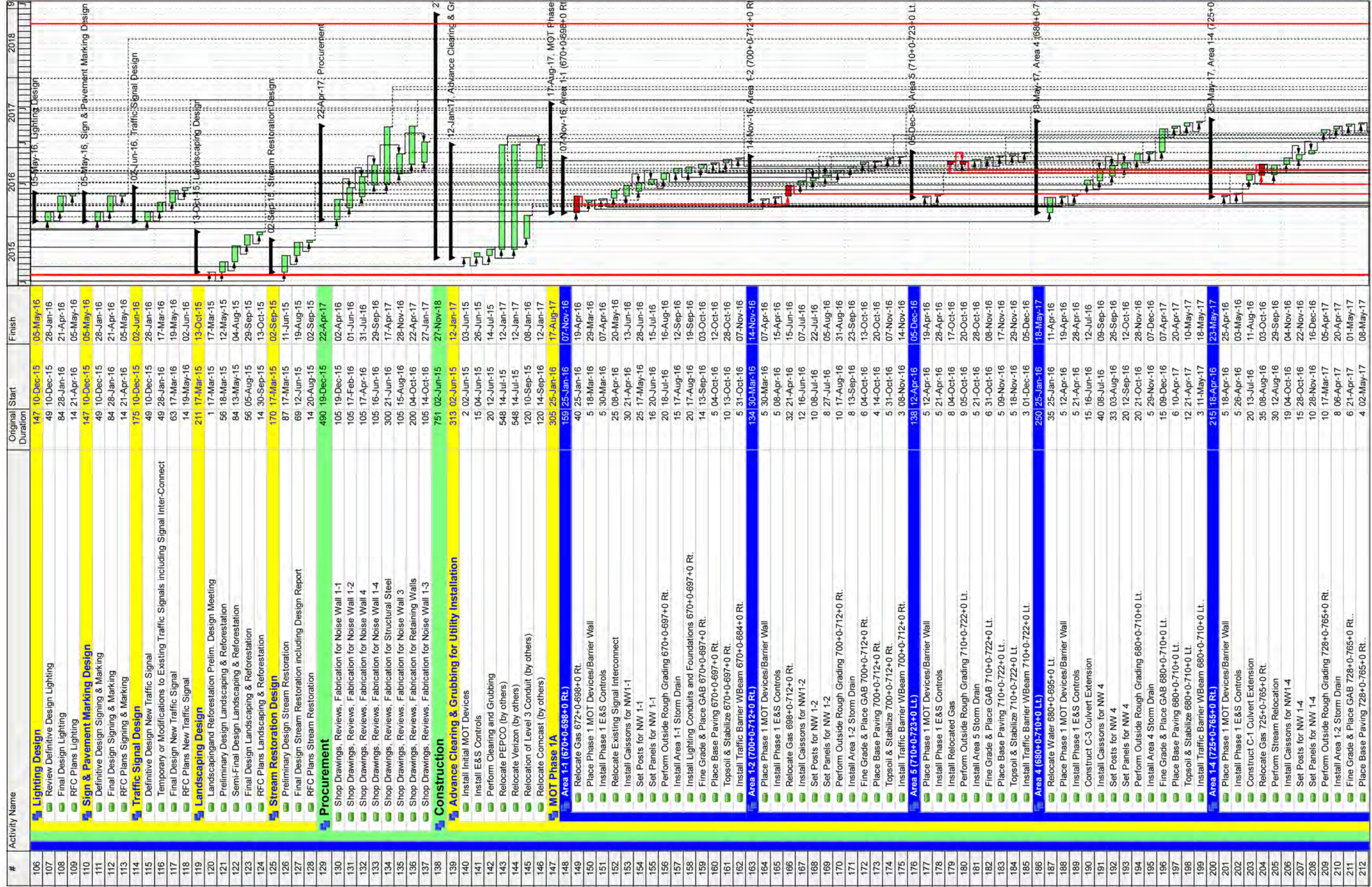
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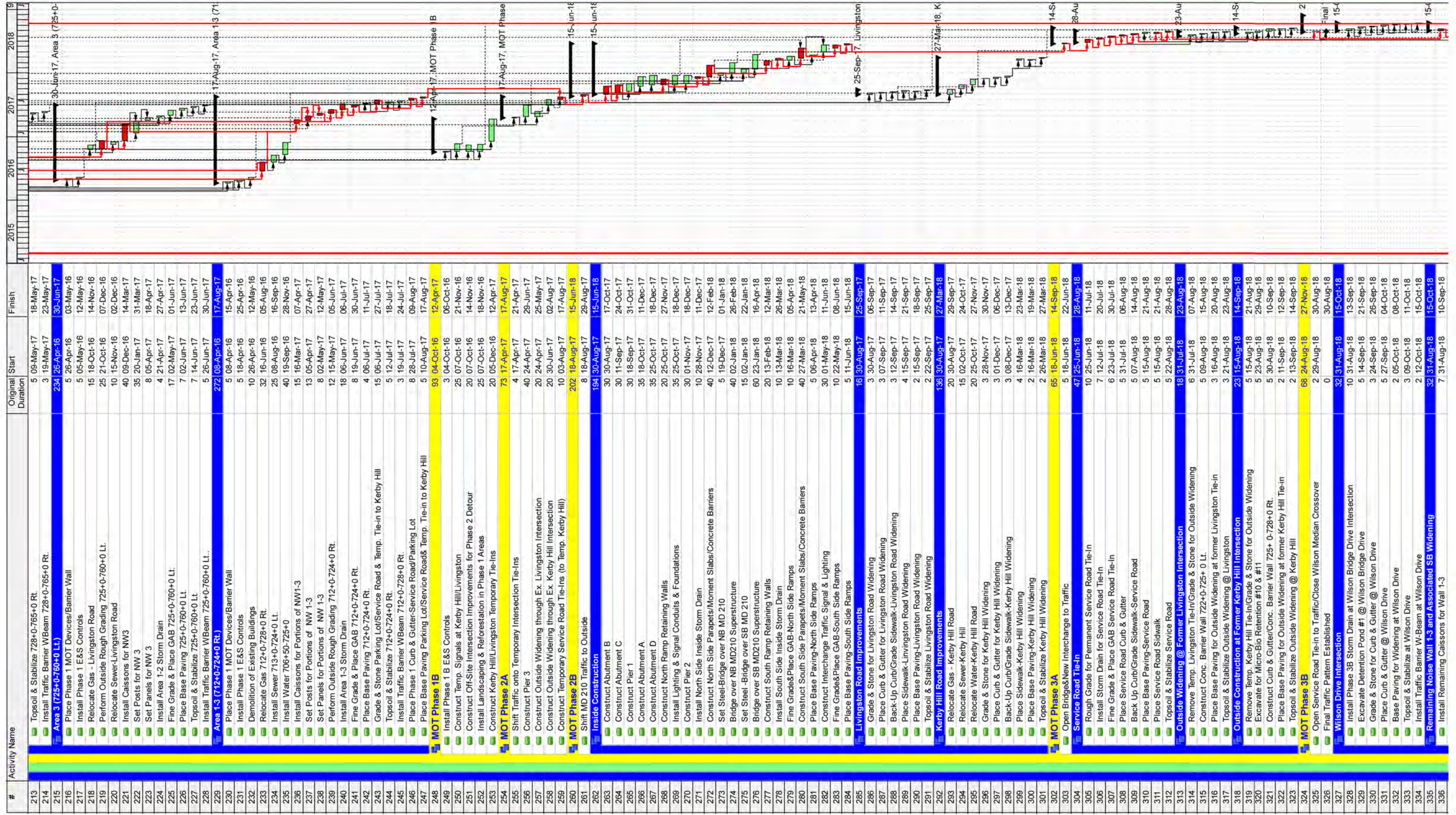
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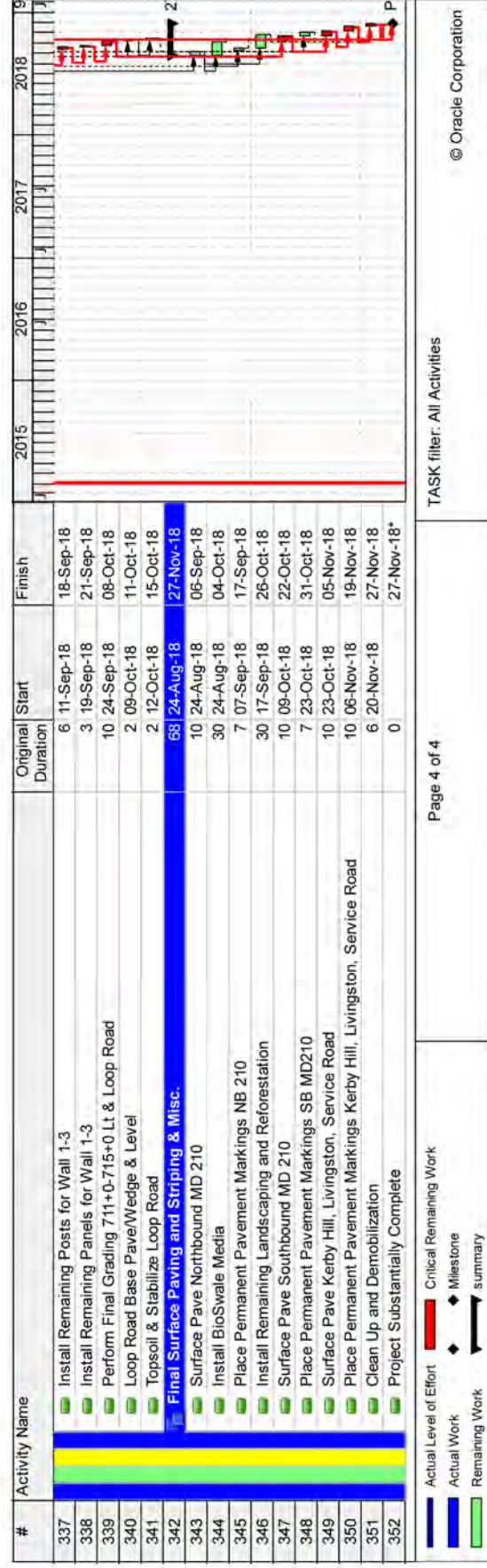


PROJECT SCHEDULE &
PROJECT MANAGEMENT









Design and Construction Summary Schedule Narrative

The Design and Construction Summary Schedule (DCSS) utilizes a Critical Path Method with Work Breakdown Structure (WBS) to group activities by Design, Procurement, and Construction. The Design Activities are further broken down into the various design packages. The Construction Activities are broken down into construction phases. The more extensive construction phases are further broken down by area. Multiple calendars were used while preparing the DCSS. Design and Procurement activities are assigned durations based on calendar days. Construction activities are assigned durations based on working days. Depending on trade and weather sensitivity, the working day calendar was chosen from "General Work Calendar", "Grading", "Stream Restoration", or "Surface Paving & Striping". The general work calendar contains approximately 190 working days per year. The other calendars are based on the general calendar with non-working periods appropriate for the pertinent trade.

Design - The CGI/WRA Team is proposing to prepare multiple design submittal packages to expedite design approvals and construction initiation as early as possible. Proposed design packages will include:

- Utility Relocations – WSSC Water, WSSC Sewer, and Washington Gas
- Roadway/Civil including roadway, drainage, erosion and sediment control (ESC), stormwater management (SWM), pavement, and MOT
- Noise Walls, including associated retaining structures
- Bridges
- Ramp Retaining Walls
- Culvert Extensions
- Stream Restoration/Relocation
- Roadway Lighting
- Signing and Pavement Marking
- Traffic Signalization
- Project Wide Landscaping and Reforestation

SHA is acquiring MDE ESC approval for approved Advanced Clearing and Grubbing for Utility Installation work. The approved contract plans include required traffic control. No additional design is proposed for this work.

An Early Work Package for advanced utility relocations is proposed to initiate early water and gas relocation efforts at the northern end of the project to expedite relocations prior to roadway/civil and noise wall construction in this area.

Utility Relocations packages will be submitted to the respective utility owner and SHA for review and approval. Final approval from utility owners will be acquired prior to issuance of Ready for Construction (RFC) submissions.

Roadway/Civil packages include MDE and SHA ESC and SWM reviews and approval.

The Interim Pavement Report submission is based on the use of SHA designed pavement sections. A Final Pavement Report submission is for contingent pavement sections that may be required during final design.

The Stream Restoration/Relocation submission includes US Army Corp of Engineers (ACOE), MDE, and SHA approvals.

MDE/ACOE permit modifications include revisions to permanent impacts to non-tidal wetlands and their buffers, Waters of the US, and 100-year floodplain. DNR permit modifications include revisions to forest impacts.

The project phasing is considered in the FAA Obstruction Evaluation submissions.

All submissions to SHA include a 21 day review period in the design activities. Submissions to other review agencies such as utilities include their specific review period. Prior to all submissions, a QA/QC activity is performed. Also, SHA is notified 14 days in advance of all proposed submission.

Construction - The Construction portion of the DCSS is broken down by construction phase and area. Construction will begin with the Advanced Clearing and Grubbing for Utility Installation work including ESC and MOT for the clearing and grubbing along MD 210 NB. Upon the completion of clearing and grubbing, PEPCO, Verizon, Level 3 and Comcast will initiate their utility relocations.

The installation of the relocated water line (W1) along the north end of MD 210 NB will begin. The critical path gas relocations will begin starting at the north end of MD 210 SB. The gas relocation work will proceed south along MD 210 SB in advance of the noise wall and road construction.

As the gas relocation progresses, and upon the completion of RFC plans for the outside MD 210 work, construction will begin with setup of MOT and ESC in Area 1-1 (670+0-698+0 Rt.). Area 1-1 will start with construction of noise wall NW 1-1 including associated retaining structures and will continue with outside rough grading, storm drain installation, fine grading, placement of GAB, base paving, placement of topsoil and stabilization, and barrier and sign installation. Construction will progress through the project as the utility relocations allow. The planned progression is as follows: Area 1-1 - (670+ to 698+ Rt.), 1-2 - (670+ to 712+ Rt.), 5 - (710+ to 723+ Lt.), 4 - (680+ to 710+ Lt.), 1-4 - (725 Lt. to 765+ Rt.), 3 - (723+ to 760+ Lt.), and 1-3 - (712+ to 724+Rt.). Highlights of construction include the majority of the outside roadway work, noise wall (and retaining structure) construction and utility relocations, culvert extensions C-1 and C-3, and the Carey Branch stream restoration/relocation. As this phase of construction nears completion, construction of the Kerby Hill Road and Livingston Road temporary intersections tie-ins will be performed. Off-site intersection improvements in preparation of the future detour will also be performed.

Upon completion of the above noted construction, traffic on Kerby Hill Road and Livingston Road will be shifted onto the temporary intersections and outside work will be completed through the existing intersections, including the Kerby Hill Road Bridge Pier 3 and a temporary tie-in at the new Service Road. Since the final outside work along MD 210 NB will take less time than the Pier 3 work along MD 210 SB, we will delay the implementation of the Livingston Road detour until it is absolutely necessary. Once completed, MD 210 traffic will be shifted to the outside and construction of the bridges over MD 210 and the median ramp retaining walls will begin. As structure construction progresses, the bridge approach roadways and median ramps will be constructed. Improvements along Livingston Road and Kerby Hill Road will also be constructed during this phase.

Upon completion of the above noted construction, traffic will be shifted onto the new bridges and the new interchange will be opened. Construction during this phase will include roadway construction at the Service Road tie-in and the outside improvements at the former Livingston Road and Kerby Hill Road temporary tie-ins. Upon completion, traffic will be placed into the final traffic pattern including the opening of the Service Road connection to the Wilson Bridge Apartments. At this time, the intersection at Wilson Bridge Drive will be closed. Construction will include ultimate construction of the Wilson Bridge Drive intersection, the remainder of NW 1-3, and miscellaneous small areas of construction along the outside of MD 210.

Construction will be completed with surface grinding and paving, placement of pavement markings, completion of bio-swales, and project wide landscaping.

2.09.03 Project Schedule and Project Management

B. Project Management

Project Communication Plan

The CGI/WRA Team will be responsible for the management of all project communication and coordination within the CGI/WRA Team, and between the CGI/WRA Team and SHA and other project stakeholders. Efficient and effective communication between all involved parties is an essential part of our project management approach and the success of our projects. Our overall communication strategy is built upon a framework of partnering within the CGI/WRA Team and between the CGI/WRA Team and SHA and other project stakeholders. Through partnering, we work to build trust so communication among all parties is open and honest, and issues can be resolved collaboratively and quickly. Upon receiving the notification of selection and continuing through completion, the CGI/WRA Team will develop and periodically update a list of key project members within our team, SHA, and other project stakeholders. Using this list, we will identify each key person's role and responsibility, along with specific protocols for communicating with them and procedures for proper project documentation. We will also establish document control procedures and best practices specific to the project to ensure all project documentation is tracked, stored, and shared with the appropriate parties.

Document Control Methodology – The CGI/WRA Team will use an electronic document management system (DMS) to provide efficient and accurate document control on this project. The DMS will be used to document and track internally and externally generated documents, meeting minutes, approvals/permits, action item logs, project compliance logs, design/construction schedules, material procurement/delivery schedules, closeout checklists, progress payments, etc. Access will be provided to all team members, including subcontractors and subconsultants, and SHA representatives as may be needed. The DMS will provide a quick link to documents and images allowing for the routing, reviewing, and emailing of stored documents.

Externally received and internally generated documents will be issued a file address, scanned, and saved into the DMS, with a hard copy in the project file, held at our team's project office. All paper correspondence/submittals will be stamped with the date received and will be given a specific file reference number, and logged for future retrieval. All file reference numbers will be organized by document type, and tracked in numerical order, chronologically. Incoming correspondence will be entered into a tracking log and routed to various team members to read, take action, or respond. Document management in the DMS will be executed by Andrew Kitchen (CGI). Mr. Kitchen will also be responsible for ensuring that the information on the DMS is properly coordinated with the CGI/WRA Team's submittals, comment responses and other information to be uploaded to ProjectWise. The DMS will be updated with ProjectWise upload information including submittal package number, date, resubmission and any other information that will allow the SHA and the CGI/WRA Team's document management systems to be synthesized.

Internal CGI/WRA Team Communication – The success of any project relies on close collaboration, coordination, and communication between all team members to ensure that the project is well coordinated, moves forward efficiently, meets schedules, and achieves the highest quality product. Leveraging the primary advantage of the design-build contracting method, we will fully integrate the team's design and construction entities and will facilitate joint involvement and decision-making by integrating partnering within the team's daily workflow during design and construction. The integration and collaboration among staff has already taken place between CGI, WRA, and our subcontractors and subconsultants during the SOQ and proposal/bid phases. Led by our Design-Build Project Manager, Butch Lundgren (CGI), our Project Construction Manager, Joseph Kirsch (CGI), our Project Design Manager, Walter Miller, PE (WRA), and our Design/Construction Coordinator, Andrew Kitchen (CGI), key staff from all team members have been collaborating our team's activities on this project through daily phone call/emails, task force meetings, and weekly internal team coordination meetings. As the project moves forward into design then construction, we will continue our daily communication, weekly internal team coordination meetings, and other project meetings to ensure on-going communication between team members, coordination of design and construction activities, progression of critical path items, and the identification and quick resolution of project issues.

Action item logs for key project activities (design submittals/approvals, right-of-way clearance, utility coordination including third party relocations, permitting, shop drawing submittals/approvals, RFIs, material procurement and deliveries, quality control and non-conformance, etc.) will be developed and routinely updated to

aid in keeping key project activities on schedule by tracking key dates and identifying, tracking, and addressing critical issues. In tandem with the action item logs, a 3-week look-ahead schedule will be developed and updated weekly to track the status of actions and responses needed. All logs and the 3-week look-ahead schedule will be reviewed weekly by our Mr. Lundgren, Mr. Kirsch, Mr. Miller, and Mr. Kitchen to ensure appropriate and timely action is being taken on key items. The logs and schedule also will be used during project meetings and Partnering meetings to ensure all appropriate parties are informed and are taking appropriate and timely action on their respective items. Any deviations from the approved schedule will be discussed, and mitigation/recovery solutions will be developed and initiated immediately.

The continual interaction of our design and construction team members throughout design fosters a deep understanding of our collective approach toward design and construction such that decisions are mutually developed while ensuring the project design meets all contract requirements and environmental commitments, and best fits construction means, methods, practices, and products. This same continual interaction during construction ensures construction is being performed as designed, project goals are being met, environmental compliance is being achieved, and construction issues are quickly resolved.

Sharing of materials between team members will take place using the DMS and email communication, ensuring that all team members are informed and have access to project documents. Mr. Kirsch will be responsible for the oversight and coordination of all construction activities with subcontractors, suppliers, etc. and will ensure that each subcontractor, supplier, etc. receives all necessary documents and correspondence and that their work is coordinated with other project activities. As the lead design firm, WRA will be responsible for the oversight and coordination of all design activities with subconsultants. Mr. Miller will ensure that each subconsultant receives all necessary documents and correspondence and that their work is coordinated with other project design elements.

Communication with SHA, Environmental and Regulatory Agencies, and Third Parties – Coordination and communication between the CGI/WRA Team, SHA, environmental agencies (MDE, USACE, DNR), and third parties (Prince George’s County, utility companies, FAA, etc.) are critical to the overall success of the project. We will use SHA’s Partnering in Design and Partnering during Construction principles as the framework for continual coordination and communication with SHA, environmental and regulatory agencies, and third parties. All key CGI/WRA Team personnel will actively participate in an initial Partnering Workshop, monthly Partnering meetings, and other project meetings. We will use these meetings to discuss team member expectations, project scheduling, submittal reviews/approvals, design and construction solutions, environmental permitting compliance, construction means/methods, construction sequencing, and strategies to minimize road user/community impacts. These meetings will serve as a conduit to discuss, coordinate, and resolve design and construction issues (utilities, MOT, right-of-way, etc.) in an integrated and cooperative forum.

All formal communication between the CGI/WRA Team and SHA will be handled through our Project Construction Manager, Mr. Kirsch. He will be responsible for coordinating the formal communication flow to maintain consistent information tracking and documentation throughout the project. This communication flow will travel directly to the SHA’s Project Design Engineer and Project Construction Engineer. All formal project submittals, including design submittals, shop drawings, material certifications, etc., will be incorporated into the approved project schedule. All submittals, including submittals for third party review, will be submitted to the appropriate SHA staff member for distribution. All submittals will be accompanied by a transmittal letter signed by Mr. Kirsch. Point-by-point responses will be provided for all comments received from SHA, environmental agencies, or third parties. Prior to all design submittals, including submittals for third party review, we will perform a thorough quality control review in conformance with our approved Design Quality Control Plan. This review will be led by our Design QC Manager, Brian Riffel, PE (WRA). In addition, we will perform a comprehensive constructability review led by our Construction QC Manager, Shannon Brown (CGI). We will notify SHA 14 days in advance of all design submittals. Design submittals and other design-related information will be placed on ProjectWise in conformance with established SHA procedures, including folder and file naming conventions. Hard copies will be provided as may be required.

Mr. Kirsch and Mr. Miller will be responsible for coordinating all informal communication (e.g., phone calls, emails, etc.) on the project to SHA’s Project Construction Engineer and Project Design Engineer, respectively,

to ensure smooth project coordination. Hard copies and follow-up emails will be documented in the DMS.

The CGI/WRA Team will coordinate with SHA to manage all communication with environmental agencies and third parties, including utility owners, for design submittals, permit applications and modifications, as well as field change requests, and other necessary means of communication. Again, all informal communication will occur between Mr. Kirsch and/or Mr. Miller and the agency/third party point-of-contact, with follow-up e-mails and hard copies sent to SHA's Project Design Engineer and/or Project Construction Engineer.

Public Involvement and External Communication with Others – The CGI/WRA Team is sensitive to the role that good communication plays in helping to minimize the impact of the project, not only on the locality, but also on all road users (motorists, pedestrians, bicyclists, transit, emergency services, school buses, etc.) and will continue the philosophy established by the SHA during the project's planning and RFP development phases. Residents, businesses, local agencies, elected and community officials, the community, road users, the general public, and other interest groups impacted by the project will be kept informed, and their engagement throughout the design and construction process will remain critical to the project's successful completion. We will support and assist the SHA in the development of an integrated communications plan including community participation/interaction activities. Our communications plan will support SHA in informing and engaging adjacent landowners, communities and other interested parties, as well as informing and updating road users and the general public, on the proposed project elements, MOT activities, construction progress, etc. The emphasis of our approach is to ensure that accurate and timely information flows from us, through SHA, to the local communities, traveling public, and all locally represented stakeholders. Our Public Relations Coordinator, Odessa Phillip, PE (AC), will lead the communication efforts for the CGI/WRA Team. She will work closely with SHA's Office of Communications, Highway Design Division, and District 3 staff for all public communication. All communication will come directly from SHA unless otherwise directed. Our communications plan will follow the requirements of TC Sections 3.05.29, 3.16.04.02, and 3.21 of the RFP.

For efforts involving adjacent property owners and communities directly impacted by the project, we will actively support SHA staff in meetings, preparation of materials, documentation of meeting minutes and other correspondence, and preparation of responses to inquiries and comments. We anticipate these types of support efforts to be individualized and focused primarily on site-specific design/construction elements and impacts; construction activities, schedules, and progress; and general communication to address site-specific suggestions, questions, or concerns. Our goal will be to support the active engagement of all affected and interested groups so that they become an integral part of the design and construction process. This support will be primarily provided by our Project Management team with the support of design and construction staff.

For efforts involving local agencies, elected officials, community leaders/members, road users, the general public, and other interest groups, we will actively support SHA staff with the preparation of information related to the project design/construction scope, MOT activities, construction progress, and general communication to address suggestions, questions, or concerns. We anticipate these types of support efforts to have a broader reach but may be topic-specific or site-specific as needed. This support will be primarily provided by Ms. Philips with the support of our Project Management team. We anticipate using the "Projects Page" on SHA's website for project updates and using existing SHA ITS systems, project-specific traffic control devices, mailers, etc. to inform the public of upcoming activities that may impact road users.

Formal Partnering – SHA's Partnering in Design and Partnering during Construction programs will be used for on-going coordination/communication between our team, SHA, environmental/regulatory agencies, utility owners, and other stakeholders. All key design and construction staff from our team will actively participate with SHA and other stakeholders in an initial Partnering Workshop and monthly Partnering meetings.

Our mission will be to develop, initiate, and promote partnering to improve communication, facilitate issue resolution, and timely follow-up. Partnering is a process based on trust and an open, honest communication in which all participants recognize both common and individual objectives, and work to achieve those objectives through improved communication and cooperation. Partnering will create a multi-participant team in which all members are committed to common purposes, goals, and work approaches for which they hold themselves mutually accountable. Shared responsibility means fulfilling commitments to the team and ensuring the success

of all members of the team. Team members will play an important role in the partnering process. They will help with issue resolution and decision-making, offer encouragement, attend meetings, provide input for meeting agendas, and work on completing assigned tasks on time. Key performance areas will be tracked for success and issue resolution will begin at the lowest level and be elevated only by necessity, following a pre-determined “Issue Resolution Ladder” and timeframe developed during the initial Partnering Workshop.

Coordination Management

Throughout the design and construction phases, the CGI/WRA Team, including our subconsultants and subcontractors, will actively communicate and coordinate internally and externally through phone calls, email, and frequent meetings, including video conferences. All design and construction activities will be coordinated, both individually and collectively, to ensure the seamless integration of all design components and the coordinated progression of construction. Meetings will include weekly team coordination meetings, weekly task force/discipline specific meetings, daily and weekly on-site construction meetings, monthly Partnering meetings, design quality control meetings, constructability review meetings, and other project coordination meetings to address specific activities or issues.

Weekly team coordination meetings will be led by our Design-Build Project Manager, Mr. Lundgren, our Project Construction Manager, Mr. Kirsch, and our Project Design Manager, Mr. Miller. These meetings will be held to ensure all design and construction activities are being coordinated, critical issues are being addressed, and design and construction schedules are being met. Our action item logs and 3-week look-ahead schedule will be reviewed to ensure all appropriate parties are informed and timely action is being taken on all key items.

In addition, weekly task force/discipline specific meetings will be held to ensure specific tasks or disciplines of work are properly coordinated, sequenced, and their respective schedules are being met. Meetings will include, but are not limited to: design review; constructability review; and design quality control, construction progress, utility, permitting, right-of-way and MOT meetings. In the beginning, meetings will be focus on addressing design progress and scheduling, critical path design activities, design issues and planned actions, quality control actions and consistency of work, construction sequencing and constructability, environmental and right-of-way clearances and minimization actions, contract commitment compliance, and other items necessary to ensure coordination of all design elements, minimization of environmental and right-of-way impacts, constructability of proposed designs, and overall compliance of the design with the Contract Documents. Once construction begins, the meetings will address both design and construction activities. In addition to the design items discussed previously, we will also discuss upcoming construction activities to ensure the construction team fully understands the intent of the design, construction progress and scheduling, shop drawing approvals and material clearances, critical path items, construction issues/planned actions, quality control, safety, and other items necessary to ensure construction is progressing as planned.

To promote innovation and creativity and facilitate informed decision-making, our Design/Construction Coordinator, Mr. Kitchen, will work on a daily basis with Mr. Kirsch and Mr. Miller, and their staff, to bring together our collective expertise on all key decisions and critical issues. Mr. Kitchen will attend all team and critical design/construction meetings and will act as a direct conduit to promote out-of-the-box thinking to develop innovative solutions to daily problems and help drive decisions on key items or critical issues.

Utility Relocations – The CGI/WRA Team understands the many challenges associated with the protection, maintenance, and concurrent relocation of utilities on the MD 210 project. As such, our Project Utility Coordinator, Stephen Beckley (CGI), will proactively oversee and coordinate all design and construction activities effecting utilities. During the bidding phase of the project, our team, led by Mr. Beckley, held numerous meetings to discuss the sequencing and scheduling of all design and construction activities with that of the third party utility relocations (PEPCO, Verizon, Level 3 and Comcast). From these discussions, we developed a coordinated design and construction schedule that sequences all anticipated utility relocation work with our work activities, including the required advanced utility clearing and grubbing work. However, upon notification of selection and as a first order of work, we will immediately request, conduct, and facilitate (led by Mr. Beckley) a Utility Conference with SHA and all utility owners to preview and discuss the status of all utility relocations, third party utility relocation schedules, our design/construction schedule, coordination

between relocation activities and our design and construction, and an issue resolution process and matrix. Following the Utility Conference, we will hold weekly utility coordination/partnering meetings with SHA and all utility owners to ensure the adequate protection and maintenance of all utility service, to resolve identified conflicts, to discuss and adjust schedules, to evaluate avoidance alternatives, to discuss MOT and permitting, and otherwise ensure seamless, coordinated efforts of all design and construction activities. Utility coordination will be discussed at every weekly team coordination meeting, weekly task force/discipline specific meetings, and monthly Partnering meetings. As design and construction progress, Mr. Beckley will work with utility owners to resolve issues quickly and proactively.

Maintenance of Traffic – A priority of the design and construction of the project will be to maximize work zone and site safety and minimize the disruption to road users (motorists, pedestrians, bicyclists, transit, emergency services, school buses, etc.), while maintaining continuous access to all adjacent properties. To this end, during the design phase we will hold MOT task force meetings led by our Project Traffic Engineer, Jeremy Mocny, PE, PTOE (WRA), and our MOT/Traffic Manager, Joe Hall (CGI), to discuss and coordinate MOT with construction scheduling/sequencing, including drainage and erosion & sediment control. As design progresses, we will actively work with SHA and project stakeholders to evaluate ways to design and sequence our work activities to minimize closures of secondary roads, duration of detours, and overall impacts on road users and the community. As the project moves into construction, we will continue our task force meetings in order to coordinate daily work zone activities, evaluate additional minimization strategies, and address MOT changes that may be required due to sequencing revisions or unanticipated road user behavior. Extensive pre-planning and active coordination will be undertaken with utility owners and their respective contractors, to ensure all third party utility relocations are coordinated with our design, traffic control plans (TCP), work site access, and daily construction activities. A comprehensive public outreach plan will be implemented to ensure road users, the community, and the public are engaged and informed of upcoming and on-going project activities. At least two weeks prior to any change in traffic patterns, we will arrange and hold pre-traffic switch meetings with SHA, Prince George’s County, and other affected stakeholders. MOT coordination will be discussed at all weekly team coordination meetings, weekly task force/discipline specific meetings, and monthly Partnering meetings. Any issues identified at these meetings will be brought to the Mr. Mocny and Mr. Hall’s attention for evaluation and resolution.

Right-of-Way Acquisition – The CGI/WRA Team understands that SHA intends to phase right-of-way clearance to facilitate advanced utility relocations beginning along MD 210 NB followed by right-of-way clearance along MD 210 near the intersection with Kirby Hill Road. We also understand that SHA anticipates having total right-of-way clearance by April 1, 2015. With bids due on the project on March 3, 2015 and the CGI/WRA Team not proposing significant revisions to the design concept or footprint of the project, all right-of-way clearance should be completed by the time we undertake construction activities. However, delays in this process may occur that may impact our ability to work in certain areas. The CGI/WRA Team understands that we may need to be flexible in our sequencing and scheduling of construction activities to alleviate right-of-way clearance issues. In the event the CGI/WRA Team identifies any additional right-of-way acquisition needs during final design, we will work diligently and cooperatively with SHA to discuss available and reasonable strategies to minimize or eliminate property takes and ways to mitigate the impact of the property acquisition on the project schedule and cost. In addition, the CGI/WRA Team will assist SHA to the fullest extent practical to work through the plat development, appraisal, negotiations, and acquisition phases. We understand that property acquisition is sometimes a fluid process requiring an iterative process as negotiations unfold. As such, we will make a good faith effort to work with SHA and property owners to mitigate impacts proposed during both design and construction. This may be in the form of re-designs, schedule changes or work restrictions, additional measures employed during construction (e.g., fencing/screening, landscaping), etc.

Permit Restrictions – The CGI/WRA Team understands the importance of understanding and coordinating permit restrictions during design, and when evaluating construction sequencing and developing a workable yet flexible construction schedule. Our Environmental Compliance Manager, James Ashby (WRA) will proactively oversee and coordination all environmental permitting activities to ensure our design and construction activities

account for all environmental permit restrictions, including the prohibition of in-stream work in Carey Branch between March 1 and June 15, inclusively. Upon NTP, the CGI/WRA Team will request and attend a Pre-Permitting Meeting with SHA to preview and discuss our SWM and erosion & sediment control concepts, submission schedules, permitting timeframes, submission requirements and quality control expectations. Mr. Ashby will lead weekly permitting meetings during design and construction to ensure all permit conditions are being met, impacts are being minimized through design refinements and construction means and methods, and permit restrictions are being accounted for during sequencing and scheduling. Permitting status will be discussed at all weekly team coordination meetings, weekly task force/discipline specific meetings, and monthly Partnering meetings. Mr. Ashby will pursue resolution of any issues identified at these meetings.

Risk Management

The CGI/WRA Team's risk management process has already started during the proposal/bid phase and will continue throughout design and construction. Project risks are typically items that have the potential to impact schedule, quality, safety, and costs. The CGI/WRA Team will manage all project risks by using a Project Risk Register. The risk register will be used to identify, assess, analyze, classify, rate, and rank project risks, and then we will use it to help develop a plan to manage, mitigate and/or eliminate each project risk. Based on our past experience on similar projects, the CGI/WRA Team has identified the following items as major risks inherent on this project: utility coordination and relocations; MOT; construction scheduling/sequencing and constructability; plan review timeframes and permitting approvals; right-of-way clearance; and unforeseen field conditions, including unidentified utilities. These items will be discussed at all weekly team coordination meetings, weekly task force/discipline specific meetings, and monthly Partnering meetings to ensure any identified issues are being addressed in a timely manner to avoid impacts to the project schedule or cost.

Utilities – The coordination of project improvements with the protection, maintenance, accessibility, and concurrent relocation of utilities within the project area present one of this project's greatest risks. The CGI/WRA Team understands that we are responsible for overall utility coordination on the project, including PEPCO, Verizon, Comcast and Level 3 utilities being designed and relocated by their respective utility owners. We also understand we are responsible for the coordination, design and construction of gas, water, sewer, and SHA owned facilities on the project. To ensure all existing utilities to remain and all relocated utilities are properly coordinated with the project improvements, we will employ a comprehensive coordination and communication strategy for this project as previously discussed under the Coordination Management section above. As previously discussed, all utility coordination efforts will be led by our dedicated Project Utilities Coordinator, Stephen Beckley (CGI), who will be supported by a dedicated utility team comprised of design and construction personnel. Their function will be to ensure the design, construction, sequencing, and scheduling of all work has been coordinated with utilities on the project. As an early activity, the utility team will be charged with identifying and resolving utility design and construction issues to eliminate them from the critical path. Outage restrictions, splicing and tie-ins times, relocations scheduling, sequencing of work activities, and constructability will be evaluated. The utility team will also be charged with identifying opportunities for redesign or re-sequencing of work to minimize or eliminate utility impacts and to accelerate utility construction to the fullest extent practical. Examples may include constructing select utility lines or sleeves in earlier phases in advance of the complete relocation work, installing portions of service connections to clear other construction activities prior to installing the main pipe, installing thrust blocks ahead of time to allow for curing, providing temporary tie-ins to accelerate utility work, etc. In addition to work undertaken by our utility team, particular scrutiny will be paid during constructability reviews to work affecting utilities. As an example, Level 3 conduits under the access road along MD 210 NB will need to be coordinated with our work to ensure their conduits have sufficient cover during all phases of the project. Also, there may be locations where proposed utility poles may need to be installed deeper in cut areas or higher in fill areas to account for proposed grading. Also, particular scrutiny will be paid to the High Voltage Act and underground clearance restrictions when constructing noise wall foundations, erecting noise wall posts and panels, driving piles, erecting steel, etc. Construction of utility work-arounds will be considered to maintain the construction schedule. Utility test pits and topographic surveys are scheduled early to ensure we are working with accurate

and up-to-date information. Relocation plans will be submitted early for the owner's and SHA's approvals to minimize delays. For third party utilities, we will ensure our design and construction activities are coordinated with their design and construction activities. During design and construction, any identified issues will be worked out between parties as quickly as possible. All existing utilities to remain in place will be protected from damage during construction. When working on or around utilities, worker protection will be paramount.

Maintenance of Traffic – Due to the size and complexity of the MD 210 project, the CGI/WRA Team has identified coordinating and implementing the project improvements, while providing a safe work zone for all road users, workers, and the public at-large, as a significant risk. To mitigate this risk, our traffic team led by our Project Traffic Engineer, Jeremy Mocny, PE, PTOE (WRA), and supported by our MOT/Traffic Manager, Joe Hall (CGI) and his construction staff, will prepare a detailed and comprehensive Transportation Management Plan (TMP). The TMP will evaluate work zone impacts and will provide strategies to mitigate them through safe and effective traffic control and active communication with the public, community and concerned stakeholders. Our Public Relation Coordinator, Ms. Phillips, will have a primary role in ensuring all stakeholders are notified of pending changes in traffic patterns, proposed detours and temporary disruptions to local business and residents. During design and construction, we will actively work with SHA, Prince George's County and project stakeholders to evaluate ways to design, construct, and sequence our work activities to minimize closures of secondary roads and overall impacts on road users and the community. During the design phase we will hold MOT task force meetings led by Mr. Mocny and Mr. Hall involving both design and construction staff to discuss and coordinate MOT required during design activities such as surveys, test holes, soil borings and construction activities including utility relocations performed by utility owners. Extensive pre-planning and active coordination will be undertaken with utility owners and their contractors to ensure all third party utility relocations are coordinated with the traffic control plans (TCP). The task force meetings will continue into the construction phase in order to coordinate daily work zone activities and address MOT changes that may be required. At least two weeks prior to any change in traffic patterns, we will arrange and hold pre-traffic switch meetings with SHA and other affected stakeholders. During construction, Mr. Hall will ensure all traffic control devices are implemented in conformance with the approved TCPs. He will supervise and continuously monitor and document all daily MOT setups, ensure all deficiencies are corrected, and suggest improvements as needed. Mr. Hall will have the authority to direct traffic changes to ensure safe and continuous traffic flow and to direct traffic operations after a traffic incident. Also, under a predictive severe weather event, traffic will be returned to its non-working hour configuration followed immediately by a traffic inspection at the end of the event to evaluate traffic control devices and correct deficiencies.

Construction Scheduling/Sequencing and Constructability – Due to the complex nature of constructing an interchange on a high volume roadway at the location of an existing at-grade intersection, coupled with extensive utility impacts/concurrent relocations, numerous new noise walls, new bridges, stream restoration/relocation work and a confined corridor abutted by high density housing, the CGI/WRA Team has identified construction scheduling/sequencing and constructability as a significant risk item on this project. As discussed above, utility coordination and MOT, among many other project activities, will require proactive management and coordination to ensure the project design is well coordinated and constructible and all construction activities are well planned and properly sequenced to avoid schedule delays or cost impacts. We will leverage the advantages of the design-build approach to project delivery by engaging an integrated design and construction team in all facets of our daily design and construction workflow. In the design phase, CGI will be heavily involved in design and constructability decisions in preparation of design submittals. Over-the-shoulder reviews and constructability reviews will be integrated into the design process with a focus on scheduling, sequencing, means/methods, material selection, construction access, permit compliance, etc. Our Design/Construction Coordinator, Mr. Kitchen, will work on a daily basis with Mr. Kirsch and Mr. Miller, and their staff, to bring together the insight and expertise of our design and construction staff on all key scheduling, sequencing and constructability decisions to help prevent problems before they occur.

Plan Review Timeframes and Permitting Approvals – The CGI/WRA Team understands the challenges inherent in soliciting review comments and receiving permitting approvals from resource/permitting agencies.

We understand that a significant portion of this burden falls on our team to provide clear, consistent, and regular communication with SHA and resource/permitting agencies, and to produce high quality plans, reports, permit applications, supporting documentation, and other necessary information based on sound design and construction practices and principles. We will mitigate this challenge through strict compliance with regulations and contract commitments; strict enforcement of our QA/QC procedures; collaboration between our team, SHA, and resource/permitting agencies through partnering, proactive problem recognition/resolution, and minimization schedule delays by reallocation of resources or re-scheduling. In addition to the normal focus on securing final SWM and ESC approvals from MDE, particular attention on this project will be paid to the Carey Branch restoration/relocation work to ensure its design and construction sequencing and scheduling are coordinated with the stream restriction period of March 1 through June 15. In addition, particular attention will be paid to the demolition, removal, and disposal of hazardous materials at the six properties in the project area requiring demolition. Our Project Design Manager, Mr. Miller, will be responsible to work with our design and construction staff to mitigate this risk and address any areas of concern as they may arise.

Right-of-Way Clearance – With SHA actively obtaining needed right-of-way for the project with an anticipated clearance date for all properties of April 1, 2015, right-of-way clearance should not be a major risk. However, delays in this process may occur or we may identify additional right-of-way acquisition needs during final design that may impact our ability to work in certain areas. We understand that we may need to be flexible in our sequencing and scheduling of construction activities to alleviate right-of-way clearance issues. Also, as discussed above, we understand that we may need to work in good faith with SHA and property owners to mitigate or eliminate potential impacts during design and construction. Lastly, we understand that there are structures with the presence of hazardous materials in or around them on six properties on the project that will require demolition. Our Certified Industrial Hygienist will prepare and submit for approval a Health and Safety Plan as an early activity. The plan will address monitoring during demolition, removal of hazardous materials and the proper disposal of said materials. Right-of-way clearance issues will be evaluated and addressed by our Project Construction Manager, Mr. Kirsch, and/or our Project Design Manager, Mr. Miller, as needed.

Unforeseen Field Conditions – Unforeseen field conditions, specifically unidentified utilities or subsurface conditions, are a risk that the CGI/WRA Team has minimized with proper due diligence in the proposal/bid phase. However, additional test pits, soil borings, and utility coordination may uncover unknown conditions that may impact the project's design and/or construction. If unknown conditions are discovered during design or construction, we will work with SHA and other parties (utility owners, OMT, environmental agencies, etc.) to address the issue quickly and with the least impact to the project schedule or cost. As needed, task forces will be formed by our Project Construction Manager, Mr. Kirsch, and/or our Project Design Manager, Mr. Miller, to address significant issues so design/construction solutions can be identified and approvals garnered quickly.

Impacts to Wetlands, Waterways, Floodplain, and Forest Stands – In addition to the risk associated with the permit approvals we need to garner as discussed above, the CGI/WRA Team understands the environmental commitments that SHA has made on this project, and we will complete our design and perform our construction activities in strict compliance with these commitments and the permitted impacts approved in the Nontidal Wetlands & Waterways Permit and Section 404 Individual Permit, the Reforestation Law Approval, and the Erosion and Sediment Control Approval for the Advanced Clearing and Grubbing activities. In addition, we will look for opportunities as design progresses to minimize impacts to the greatest extent practical and complete permit modifications as needed. However, since the permitted impacts are based on conceptual design, there is a risk that final design or required construction activities may require modifications or increases to the previously permitted impacts. In these cases, our Environmental Compliance Manager, Mr. Ashby, will work with SHA, resource/permitting agencies and our design and construction personnel to discuss strategies to minimize additional impacts and prepare permit modifications as may be needed.

Schedule Management

The CGI/WRA Team understands the schedule commitments on this project, including the “No Excuse Bonus” expedited completion date. We further understand the scheduling challenges associated with concurrent utility relocation work by others (with completion timeframes), utility relocations by our team, overall utility

restrictions/limitations, MOT restrictions, regulatory approvals/permits, time-of-year restrictions, design reviews and approvals, right-of-way clearances, and weather limitations. To confront these challenges, we have developed an integrated Design and Construction Summary Schedule (included herein) that logically outlines the necessary design and construction work activities and timing for the successful design, construction, and completion of the project. The schedule accounts for the challenges noted above while providing flexibility to adapt to changes that may occur throughout the project timeline. The schedule also accounts for preconstruction and design activities that must take place for the final design packages to be issued for construction, addresses critical lead-time items, and is structured to minimize disruption to road users and project stakeholders as well as disturbance to the environment. Upon Notice to Award, a comprehensive project schedule will be updated and provided to SHA for approval.

Our Project Scheduler, Stephen Beckley (CGI), will be responsible for the development and maintenance of the project schedule and he will represent the CGI/WRA Team on all matters related to the project schedule. The CGI/WRA Team will develop, review, and update weekly a 3-week look-a-head schedule along with action item lists to aid in the monitoring of key schedule items and to identify and address critical issues. The schedule and logs also will be used during project meetings and Partnering meetings to ensure all appropriate parties are informed and are taking appropriate and timely action on their respective items. We will continually measure the progress of each project activity against its timetable and address potential delays before they affect other project activities and the overall project schedule. Any deviations from the approved schedule will be discussed, and mitigation/recovery solutions will be developed and initiated immediately. Particular attention will be paid to schedule critical or high risk activities such as utility relocation/coordination, plan reviews/approvals, permit reviews/approvals and compliance, time-of-year restrictions, and right-of-way clearances by assigning dedicated personnel to facilitate coordination and issue resolution such as our Utilities Coordinator, Design/Construction Coordinator, and Environmental Compliance Manager. In addition, we are very familiar with the personnel, procedures, and requirements for the utilities on the project (PEPCO, Verizon, Comcast, Level 3, WSSC, Washington Gas, and SHA), as well as the environmental permitting and compliance needs. Over-the-shoulder, constructability, and quality control reviews will be a routine process to ensure quality, constructible construction documents meeting all project requirements. During our weekly schedule reviews, an action item list will be generated and used by our project managers and dedicated coordinators/managers to focus attention on the resolution of specific schedule issues. We will proactively contact or meet with SHA or other project stakeholders and use the partnering process to quickly resolve issues. We will encourage SHA and other project stakeholders to attend our design review, task force/discipline, and construction meetings to promote over-the-shoulder reviews and real-time feedback on design and construction decisions to minimize surprises and speed the review and approval process.

The key to successful scheduling and project execution is to breakdown the overall project into discrete, manageable design and construction packages that are sequenced in an orderly and logical manner providing for the greatest degree of flexibility while accounting for all project requirements/restrictions. As such, we have developed our design packages in a manner that they can be designed, reviewed, and approved in a timeframe to allow construction to progress within the completion timeframe. Upon notification of selection, early activities such as supplemental surveys, soil borings, TMP, environmental field work and reports, etc. will be undertaken so they are completed for early design review and permit submissions. In addition, discrete design packages within each construction phase will be developed to facilitate the early start of critical construction elements or procurement of long lead-time materials, such as utility relocations, structure foundations, structural steel fabrication, signalization, etc.

Change Management

Changes During Design - During design and construction, situations may arise that result in changes to the scope of work. Changes during design are typically a result of revisions to design goals, procedures, environmental and community commitments, or desired modifications to construction specifications/procedures that require integration into the final construction documents. In order to manage the effect of scope changes at the design level, the CGI/WRA Team will first identify when a modification to the scope occurs, for example,

as the result of review comments. In such a case, our Project Design Manager, Mr. Miller, will immediately contact the SHA Project Design Engineer to discuss the potential for a particular comment or comments to result in a scope modification. An important first step in this process is identifying when a change in scope is warranted by careful review of comments relative to critical RFP sections including, but not limited to, Performance Specifications, Special Provisions, permit commitments, and community commitments. We will discuss the situation, describe the proposed changes, permitting issues, right-of-way impacts, and the potential scheduling effect. Through the Partnering process, we will partner with SHA, inviting appropriate personnel to further discuss the change in scope. If upon the further discussion, the change is considered to be SHA's responsibility, our Design-Build Project Manager, Mr. Lundgren, will immediately notify SHA by submitting a detailed written request for change in scope. The request will present SHA with a detailed description of the issue, including an estimate of potential schedule and cost changes; alert SHA that the CGI/WRA Team believes the issue is the responsibility of SHA; and outline potential solutions to eliminate or mitigate the issue. In order to mitigate the impact of the potential change, we will work diligently with SHA to address the issue as quickly as possible. This may require additional meetings, preliminary design sketched, modification to work activities, additional manpower or resources, alternative equipment or methods of construction, etc. Upon receiving authorization from SHA to proceed with the most reasonable solution selected and approved by SHA, our team will expeditiously proceed with the change. If the SHA believes it is not responsible, we will continue with the potential remedy to obtain SHA approval and then address the issue of responsibility so as not to adversely delay the project. Should environmental permits require reassessment as a result of the change, the plans and supporting documents will be submitted to the environmental agencies for approval. The proposed revisions will only be initiated after receiving the appropriate environmental and regulatory agencies approval.

Changes During Construction – Changes to the scope during construction are often a result of changes to field conditions discovered as construction progresses. Prior to initiating any change to approved “Ready for Construction” (RFC) documents, we will work with SHA to identify and determine an appropriate resolution similar to the procedure for change management for design noted above. Once the change and its solution are identified, our Design Project Manager, Walter Miller, PE, will collect all required SHA or third party approvals, by preparing and submitting through our Project Construction Manager, Joseph Kirsch (CGI), a redline revision to SHA's Project Design Engineer, for review and approval by appropriate SHA staff or third parties. All changes to approved RFC plans will be tracked and documented in the DMS to ensure they are included on final as-built drawings. Revisions which require minor changes to RFC documents will be shown on office copies of current as-built set of plans and be later documented on the project as-built drawings at the project completion. Only construction documents that are stamped and signed as RFC will be used for construction. Our Project Quality Control team will be responsible for auditing plan sets used in the field to ensure that they are current and approved. The Project Superintendent will also be responsible for checking the control sets to make sure that they are using the most up-to-date documents.

As-Built Drawings – During construction, all RFC plans will be updated for all field changes and field surveys, and all redline revisions will be incorporated. Final approval will be given by Mr. Kirsch and Mr. Miller after review. Each set of RFC plans will be incorporated into a set of as-built drawings and consecutively numbered. The as-built documents will then be submitted to SHA for approval and review. Once finalized, the approved signed and sealed set of as-built drawings, including an index sheet and a key plan, will be posted to ProjectWise and hard copies submitted to SHA. We will keep a hard copy and electronic copy in the project file. The SWM Facility As-Built Certification will be a separate submittal per TC Section 3.05.16.3.



Maryland Department of Transportation
State Highway Administration
Office of Highway Development

ENVIRONMENTAL APPROACH

Contract No. PG7005170

MD 210 - LIVINGSTON ROAD/KERBY HILL ROAD INTERCHANGE



2.09.04 Environmental Approach

The CGI/WRA Team understands the importance of conducting every element of this project in strict adherence to the environmental commitments made by SHA to date. As such, we will perform the following:

Project's Major Environmental Features

The major environmental features impacted by this project include forest stand, nontidal wetlands, wetland buffer, Waters of the U.S. and floodplain. The project is currently authorized by Maryland Department of the Environment (MDE) and the U.S. Army Corps of Engineers (USACE) for impacts to 1,959 SF of nontidal wetlands, 5,611 SF of nontidal wetland buffer, 1,925 LF of stream and 2.24 acres of floodplain, along with associated temporary impacts to the resources as detailed in the MDE and USACE Letters of Authorization (LOA). In addition, the Department of Natural Resources (DNR) has authorized forest clearing in the amount of 14.08 acres, of which 7.23 acres is to be replaced on-site. Of the noted jurisdictional impacts, permanent wetlands and wetlands buffer impacts are considered to be the most minimal; however, every effort will be made to protect and reduce impacts to them as a part of our overall environmental approach.

One of the project's major environmental components is the relocation of approximately 1,000 linear feet of Carey Branch, a tributary to Henson Creek. The concept plans currently specify relocation of approximately 650 linear feet of stream channel using a typical section which incorporates nominal floodplain benching. Nine (9) riffle grade controls (RGCs) are specified along the relocated reach. Two (2) additional RGCs are specified upstream of the relocated reach in order to ensure channel stability between the reach and Kerby Hill Road. These additional RGCs are currently not permitted under the approved JPA. We will prepare all necessary documentation for the JPA modification in accordance with TC-3.20.06. It is anticipated that final design of the stream channel will not only protect the future roadway embankment from erosion and undermining, but provide improved habitat for stream biota. The following illustrates our approach the final stream channel design:

- The existing condition of the stream shows some of the degradation effects of urbanization: excessive scour, bank undermining, and loss of habitat including riparian vegetation. The existing culverts as well as natural riffles have acted as grade controls somewhat stabilizing the bed incisement. However, this did not prevent the stream from being disconnected from its natural floodplain. The stream relocation design will incorporate features to improve stabilization, and replace loss of habitat within the stream and riparian area. The SWM pond west of the relocation constrains the floodplain at that location; however, upstream along the baseline of the channel relocation there is additional area available to re-grade the floodplain and re-establish connectivity to the stream, thereby improving the riparian habitat. The re-grading may include small depressions to encourage wetland development.
- Natural channel design will be used to the greatest extent practicable. Bed material, mostly cobble, will be reused within the new channel and woody debris and trees within the floodplain will be used for rootwads, fascines, and other controls embedded into the floodplain as habitat. Instream structures such as RGCs along the stream alignment and at culvert tie-ins will be designed in a manner that will not impede fish and aquatic organism passage.
- Landscaping will provide not only channel and floodplain stability, but also greatly increase the available aquatic and terrestrial habitats. Live stakes will be planted on the banks to provide stability, habitat and thermal regulation. Native woody and herbaceous plants will be planted within the floodplain and will include wetland and upland species.
- Soil amendments to the channel bank and floodplain soils through the incorporation of carbon such as leaves, woodchips and biochar to enhance water-holding capacity, sediment and nutrient retention and microbial development may also be considered.

We are committed to protecting the environment during design and construction by avoiding and minimizing impacts to the greatest extent possible. All stream relocation work will be constructed in strict compliance with the approved maintenance of stream flow plans. For the protection of aquatic life, instream work will not occur during the closure period for USE I streams (March 1 through June 15 of any year, inclusive) in order to avoid impacts to aquatic habitat spawning periods, and the work will comply with COMAR water quality standards.

Regarding the project's other major environmental resource, the existing forest stand, team members led by our Project Landscape Architect, Diane Szekely (SI), along with our ISA Certified Arborist, Michael McQuade (WRA), will complete an on-site assessment of forested areas and individual trees, including specimen trees, in conformance with TC Section 3.13 of the RFP. This assessment will be completed as a first order of work. Per the RFP, individual trees and forested areas less than one acre will be regulated by the Roadside Tree Law, whereas impacted forested areas over one acre will be regulated by Maryland Reforestation Law.

While the RFP dictates the order of precedence for the location of reforestation (within the limits of disturbance (LOD) first and off-site mitigation second), our team will make every effort, primarily through design refinements, to reduce forest impacts. Where impacts are unavoidable, mitigation design and implementation, in particular plant species, will be in accordance with the RFP.

Permit Application/Compliance/Non-Compliance and Coordination with State, Federal and Local Agencies to Secure Environmental Permits

Our approach to coordinating with state, federal, and local regulatory agencies is based on the 20-plus years of experience our team members have working with the regulatory agencies and their personnel on SHA projects.

The MD 210 project has many elements typical of SHA projects relative to project stakeholders. Two of the typically major stakeholders include the **MDE's Nontidal Wetlands and Waterways Division (NTWWD)** and the **USACE** for the regulation of impacts to Waters of the U.S. and floodplains. The NTWWD and USACE typically receive input from various resource agencies such as **U.S. Fish and Wildlife (USFWS)** and **DNR**, and we expect coordination with those agencies as well. We anticipate less than normal coordination with USFWS and DNR relative to wetlands and waterways, but higher than normal coordination with **DNR Forest Service (DNR-FS)** as a result of the anticipated forest impacts on the project. In addition, we anticipate the **MDE's Stormwater and Sediment Plan Review Division** being a primary and key stakeholder throughout design and construction for stormwater management (SWM) and erosion and sediment control (ESC) approval and construction inspection. We will work proactively with the MDE Reviewer during design and will have all ESC plans reviewed and certified by signature by our Certified MDE Reviewer, Richard Sobott, PE (DCI), who is a Maryland Registered Professional Engineer. Also note that our team is experienced in the review of ESC implementation by SHA's Quality Assurance Division. We also understand our responsibility for coordinating with the Maryland State Historic Preservation Officer and SHA's Archaeologist, Dr. Julie Schablitsky, should any unanticipated archaeological resources be discovered during construction.

Clear, consistent, and regular communication with the above stakeholders is a key component in our approach to coordinating with agencies during both design and construction. During design, our Environmental Compliance Manager (ECM), James Ashby (WRA), will track all permits and approvals on a weekly basis. This tracking will include permit number, authorized LOD and construction activities, critical path approvals, and any other relevant permit conditions. This tracking will be included in regular coordination meetings with SHA's Environmental Programs Division (EPD) and distributed in regular coordination with the agency contacts. During construction, our ECM will prepare a quarterly Environmental Compliance Report which tracks and confirms compliance with each commitment on the project. This Environmental Compliance Report will be submitted to SHA within one week of the end of each quarter. The report will include charts that compare permitted, as-designed, and as-constructed impacts by design/construction package and for the overall project to ensure the project is taking advantage of minimization opportunities during design and construction.

We recognize that changes that affect permit requirements are a part any design-build project and our ECM and other technical staff will work with SHA to walk every change, whether temporary or permanent, through the agency review processes to facilitate agency understanding of why the change is necessary and its impact on overall project. We will prepare all required permit modifications necessary to obtain agency approval.

In terms of identifying and remediating non-compliance, we stress a preventative approach that instructs all personnel on recognition of potential non-compliance so that it can be remediated prior to issuance of a notification of non-compliance or a stop-work order. This approach is based upon our knowledge of the applicable laws and permits, which are always displayed at the project site, and are augmented by, for example, Green and Yellow Card training materials, which provide straight forward guidelines for identifying non-

compliance relative to ESC. We recognize the critical role disturbed area stabilization plays in ESC and wetlands and waterways non-compliance; therefore, we make this a cornerstone of non-compliance identification and remediation. For example, based upon the most current MDE requirements, any worker noting a slope 3:1 and steeper that has not been stabilized for two days will identify the area to their supervisor as a pending area of non-compliance based upon the three-day stabilization requirement for such areas (seven days for all others). In terms of remediation strategies, CGI makes ample quantities of temporary (e.g., straw, Type E SSM and temporary seeding) and permanent (e.g., seeding, stone, riprap) stabilization materials available at all times to remediate non-compliant areas prior to inspections or stop-work orders. In addition, we stress the importance to all project personnel of performing all work within the approved sequence of construction. All personnel are instructed to notify the owner and resource agency of any problems with the sequence of construction immediately to resolve any problems. Combined with our thorough understanding of the MDE/USACE wetlands and waterways permit general and special conditions, in particular stream closure periods and the need to monitor receiving waters for any discoloration, this proactive approach is successful in preventing non-compliance throughout construction. We do recognize that, in the event of non-compliance, work must be stopped and a remediation plan developed and implemented immediately. We rely upon the Partnering strategy described previously in order to ensure that non-compliance remediation satisfies the concerns of all stakeholders and brings the project into compliance as quickly as possible.

Approach to Implementing an Effective Erosion and Sediment Control Plan

The CGI/WRA Team recognizes the importance of a well-managed and well-implemented ESC plan and will strive to achieve an “A” rating on all independent quality assurance inspections throughout the duration of the project. This rating will not be achieved if the project only prepares for an upcoming inspection. To achieve this rating, we will design and implement an ESC plan that is a top priority throughout the duration of the project. We recognize through experience that implementing an effective ESC plan is best served by innovation, quick response, and cooperation. As noted above, our staff has completed training in the SHA’s Erosion and Sediment Control Program, and is well-versed in design and construction strategies necessary to minimize the discharge of sediment-laden runoff from construction sites. In addition, our Design-Build Project Manager will create an ESC Task Force that will include the Project Design Manager, Lead Project H&H Design Engineer, ECM, Project Construction Manager, ESC Manager, and Site Superintendent. The task force will be responsible for continuous ESC quality assurance throughout all stages of design and construction. ESC compliance and any issues identified during construction are discussed at all team meetings with changes implemented as needed to ensure best practices are in place and compliance at all times.

In general, the ESC design for each phase of construction will be developed such that it can be integrated smoothly into previous and subsequent phases. Of particular importance will be the design of diversion devices for a minimum of the two-year storm event using pipes, channels or other isolation devices, which are considered critical to preventing site damage and sediment-laden discharge. Daily inspection of the diversion devices is just as critical. Diversion pipes are typically not backfilled and so must have, for example, pipe joints anchored, inspected, and repaired routinely to prevent ruptures and damage to the sites.

Beginning with the installation of ESC devices for clearing and grubbing and advance utility relocation operations, and continuing throughout the project, daily inspections by our ESC Manager will take place. These inspections will critique the project on a daily basis. A daily log book will be kept to provide a project record that will be made available to MDE on-site. The ESC Task Force will use the sequence of construction as a baseline to create a checklist of the initial ESC devices and procedures that will be installed at the onset of construction. These initial elements will include, but will not be limited to, the demarcation of LOD, tree protection areas, stabilized construction entrances, silt fence, etc. This checklist of initial elements will be agreed upon by the ESC Task Force, the MDE Inspector, and the SHA Quality Assurance Inspector.

Following implementation of the initial ESC elements and using MDE-approved plans, earthwork or other early operations for each phase will begin. Adjustment, resetting, and/or revision to ESC controls will take place during initial operations as specified on the approved plans, or as directed by the SHA Quality Assurance Inspector or the MDE Inspector. ESC devices such as pipe slope drains, temporary berms, incremental

stabilization, and temporary seeding will be installed, inspected, and maintained. The CGI/WRA Team recognizes the initial phase as the most difficult to initiate, inspect, and maintain. Also, during earthwork operations, we recognize that the site is the most vulnerable to erosion. Our Project Construction Manager, Joseph Kirsch (CGI), along with his staff, will make any necessary upgrades, adjustments, and additional maintenance that may be required to assure that the site is protected from any sediment runoff throughout construction.

Meeting the discharge standards of the modified General Permit is ultimately the goal of a well-implemented ESC plan. Although the project RFP does not include a provision for turbidity monitoring at outfall points, we are prepared to implement a monitoring program, as required by provisions of the new General Permit.

Measures for Ensuring a Proactive Approach to Maintaining/Correcting Effective ESC Devices

The overall method described above is merely the game plan for a successful project relative to ESC. Ultimately, our success will be measured on the construction site. In order to ensure that success, we recognize that adjustments and changes to the ESC plan are necessary due to a variety of factors including storm damage, field revision to construction access locations, modifications to LOD, the discovery of colloidal clays, or alternate methods of maintaining positive drainage due to construction methods. We recognize that revisions need to target the specific issue to be resolved and not merely be acceptable from a review and inspection standpoint. For example, if check dams are failing, the solution may not be additional check dams but rather diversion of off-site runoff. The ESC Task Force will consider all options for the resolution of issues and work with the SHA and ESC Inspectors to develop solutions. We also realize that revisions need to be formalized with the proper documentation (e.g., Form OOC62) and sent through the proper approval channels.

We have chosen individuals for this project who understand the importance of inspecting and maintaining effective ESC devices on a daily basis. Accountability will be required by all persons assigned to this project in terms of not only their individual department functions but also to the environment. We are committed to and will budget for properly installing, maintaining, and correcting any and all ESC devices.

On the project site, Mr. Kirsch, along with his field staff, will require that all employees, including operators and laborers, recognize the importance of ESC. This training and education will start on Day One and will continue throughout the project's duration. We will also require crew foremen to immediately repair any damaged or substandard ESC devices within their work areas.

Along with training and education, our team members will police themselves with guidance from our ECM and ESC Manager. These individuals will document all activities regarding the installation/maintenance of ESC devices. We will also encourage SHA and MDE to inspect and recommend changes that will benefit the project. During construction, weather conditions will be monitored. If a significant weather event is imminent, we will meet with SHA to determine if additional controls should be implemented and will inspect controls immediately after storm events to implement any necessary repairs. We believe that accountability, proper design, education, training, and inspection will ensure a proactive approach to ESC for the project.

Ensuring Compliance with Requirements of Environmental Approvals and Laws Relating to Cultural and/or Environmental Resources

Our team will ensure comprehensive compliance with all permit and approval conditions, and applicable laws relating to cultural and/or environmental resources. The permits, RFP, and final design plans will be used by our ECM to develop a cultural (if discovered during construction) and environmental compliance schedule and database that will include resource locations, construction activities and schedule, design status, projected changes in LOD, and locations of potential conflicts. This database will be updated weekly and will be discussed during Partnering meetings and quarterly Environmental Compliance Reports will be generated.

The element to ensuring environmental compliance is a thorough understanding of not just the resource stakeholders, but of the laws governing the protection of these resources. In that regard, we anticipate focusing upon three primary elements of compliance: 1) minimization of tree impacts and reforestation; 2) minimization and treatment of discharge of stormwater from the construction site; and 3) adherence to permitted impacts, and if possible a reduction of impacts to wetlands and waterways.

The first of these involves our approach to addressing the project's most impacted resource: existing forest stands and roadside trees. Our main goal in approaching impacts to forest stands is not merely to ensure that

permitted impacts are not increased, but to minimize impacts through creative design and construction practices. We have been successful with this approach in the past. For example, on the I-95/I-495/I-295 Interchange project (part of the Woodrow Wilson Bridge project), we designed special root-protective matting that allowed construction equipment to traverse areas adjacent to specimen trees. The trees would normally have been removed; however, this technique ensured their preservation. We also recognize our responsibility for implementing a comprehensive reforestation plan to mitigate the unavoidable impacts.

The second element of ensuring complete environmental compliance relates to the General Discharge Permit for Stormwater Associated with Construction Activities (the “General Permit”), which was recently finalized with an effective date of January 1, 2015. The reissuance of the General Permit did not include numerical effluent limitations, as was previously anticipated, but it did place a heavy emphasis on adherence to the MDE 2011 Erosion and Sediment Control Standards and Specifications including the following requirements:

- ESC plans must be developed in consideration of rare, threatened and endangered species;
- All design and construction personnel must be trained to comply with the provisions of the General Permit. *We meet this requirement by ensuring that all construction personnel minimally possess Green Card certification and that all design personnel possess Green and Yellow Card certifications.*
- The project’s design and construction must minimize the discharge of pollutants through wash waters, must minimize exposure of construction materials/wastes to stormwater, and must take measures to prevent potential pollutant spills and leaks and respond to them when they happen.

A detailed understanding of the new General Permit and its focus on the elimination of sediment-laden discharge from any construction site is considered a critical element of complying with Maryland environmental laws, and we recognize that, although specific numerical limits for discharge (i.e., turbidity) are not included in the new permit, the quality of discharge from the construction site still requires the utmost of scrutiny from the team. In that regard, we are experienced in the design of advanced filtering systems for stormwater runoff from construction sites and, as well, are experienced in turbidity monitoring of construction site runoff, which we performed on previous design-build projects, should it be deemed necessary for this project. We are prepared to meet the challenges of the new permit and our team continues to monitor legislative and regulatory changes as Maryland moves into the next generation for the prevention of pollution to receiving waters.

The team also recognizes the importance of minimizing impacts to waterways and will coordinate actively with SHA EPD, MDE, USACE, DNR and USFWS directly regarding protection of these resources. A detailed understanding of the regulated resources relative to construction activities will be transferred to project personnel working in the vicinity to ensure that avoidance assumed in the permit is achieved. A focus on opportunities/techniques to reduce encroachment beyond the permitted limits will be emphasized with project personnel and tracked in the ECM database. In addition, based upon our team’s recent SHA design-build experience, we understand that clear communication and reasoning for impact revisions are necessary to facilitate changes. For example, additional impacts necessary to expedite construction will only be pursued if they are temporary in nature and only when there is a defined benefit to a resource. Throughout the project, we will present to the EPD the results of construction in sensitive areas as each stage of construction is completed. This will include determination of the actual encroachment area, photographs of the area immediately following construction, and updating of the ECM database. Upon completion of construction, we will review as-built plans to verify that final construction impacts match the authorized thresholds and submit final permit modifications.

Finally, the CGI/WRA Team will develop a Health and Safety Plan for disposal of hazardous materials and contaminated soil and groundwater resulting from structure demolition in accordance with the RFP.

Innovative Techniques, Products and Practices in to Protect Resources and Reduce Pollution

The CGI/WRA Team’s primary approach to protection of the project’s environmental features is based upon an awareness of the features and good housekeeping practices. This awareness begins at the design level with all design disciplines fully invested in the need to not only minimize direct impacts but also prevent secondary impacts and maximize opportunities for stewardship. Elements adjacent to environmental features will be

subjected to additional scrutiny by design and construction staff during design to ensure that all opportunities for stewardship have been employed and that secondary impacts are avoided.

The same approach applies during construction with all field personnel being aware of the need to properly demarcate environmental features and LOD by using orange construction fence, flagging, multi-lingual wetland identification signage, etc. While innovative, the ideas implemented by our team during construction take a common sense approach to protecting the environment and reducing the impact, and/or footprint, of the project. We have the experience and environmental background to predict these opportunities and implement prior knowledge in construction techniques to reduce waste and pollution and environmental impact. The techniques that are common sense to our team may be considered innovative to others who have less experience and expertise in managing construction from an environmental perspective.

We are always investigating and implementing innovative methods to reduce impacts and protect environmental resources. Changes in equipment, access, and adjustments to LOD have all been identified in past projects in order to reduce impacts to resources. On a previous project, significant impacts to wetlands and waters was avoided by maintaining a steeper slope behind a long stretch of noise wall by stabilizing the slope with a mix of rip rap, matting, and specialty seed mix. This stabilization avoided grading which would have resulted in impact to wetlands and filling of streams, which was not authorized and would have resulted in a project delay.

Innovative ESC techniques will be used to reduce runoff pollution from the project site. Redundancy in sediment control devices and flocculant-based dewatering equipment has improved sediment removal and prevention; both have contributed to reduced environmental impact. In fact, WRA recently revised the Erosion and Sediment Control Field Guide for an adjacent state's Department of Transportation and is researching products such as Polyacrylamide-infused filter logs to aid contractors in flocculation of sediment-laden discharge, thereby meeting discharge standards. An example of innovation preventing sediment-laden discharge was WRA's MD 237 design-build project, which encountered colloidal clays during the foundation construction of a large cross culvert. Construction was immediately halted when the discharge was noted to be passing through several MDE-approved sediment control devices. A meeting with the D-B team, the IEM, and the MDE Inspector was immediately organized. Working with the MDE Inspector's recommendations, the sediment-laden water was pumped to a hydroseeder and aerated by spraying into an adjacent forested buffer. The technique was successful and allowed construction to proceed. We are prepared, if necessary, to employ modern flocculation techniques to prevent sediment-laden discharges to Carey Branch and, ultimately to Henson Creek.

Other innovative methods we have implemented to reduce impact to resources, or prevent pollution, include: utilizing vegetable-based motor oil for equipment used in sensitive environments, installing mandatory concrete wash out pits and working with trucking companies to stress the importance of proper clean out, and installation of wooden mats and PSI restrictions on equipment to protect wetlands and critical root zones of significant trees within project areas.

CGI has adopted Ultra Low Sulfur diesel fuel on all of its equipment, with the goal of maximizing the use of clean fuels and low-emission engines in their construction equipment. All vehicles less than 26,000 lbs. go through an emission control program with all non-compliant vehicles being immediately replaced. Unnecessary diesel equipment idling pollutes the air, wastes fuel, and causes excess engine wear. Idle times are limited on equipment to reduce pollution. CGI's equipment is fitted with automatic kickdown devices that reduce idling when the equipment is not being operated, resulting in less vehicle emissions. To further reduce emissions, CGI is moving to newer emissions control technologies that will substantially lower emissions of PM from diesel engines.

Noise pollution is another potential concern during construction, especially when working adjacent to residential and commercial areas. The CGI/WRA Team has experience in mitigating noise pollution and have worked on noise minimization techniques and monitoring. Implementing special work hours and methodologies for demolition, installing temporary curtains, and providing advanced notification to the surrounding community have all helped mitigate potential noise issues. In addition, the CGI/WRA Team has staff that is experienced in monitoring noise pollution so that the success of these techniques can be documented.

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