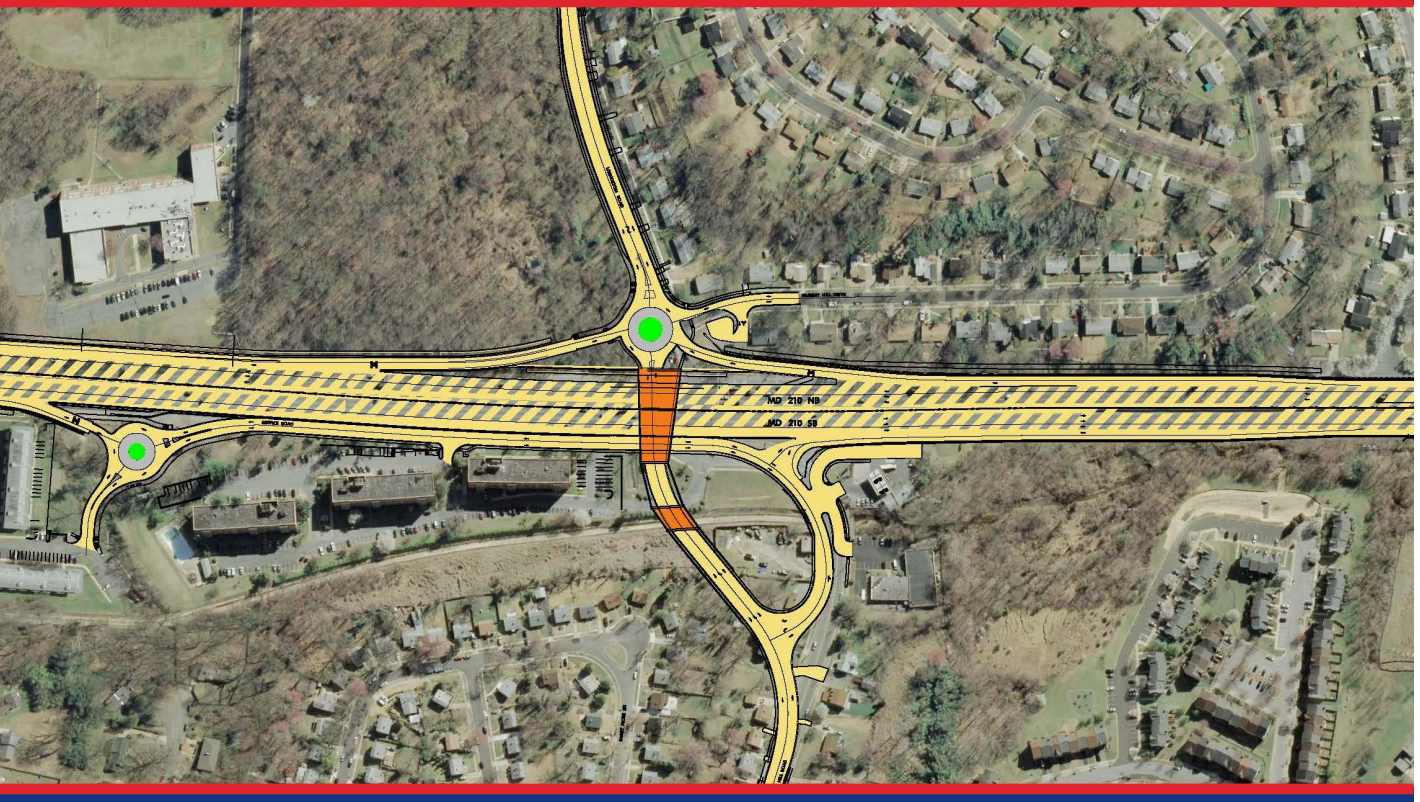
ORIGINAL

RESPONSE TO REQUEST FOR PROPOSALS

MD 210 - Livingston Road/Kerby Hill Road Interchange Design-Build

PRINCE GEORGE'S COUNTY, MARYLAND

Contract No.: PG7005170



SUBMITTED TO: SHA State Highway Administration — Driven to Excel — Maryland Department of Transportation

SUBMITTED BY: SHIRLEY CONTRACTING COMPANY, LLC; Dewberry

Team Commitment to Project Goals:

PROVIDING A SAFE FACILITY AT ALL TIMES

MAINTAINING MOBILITY AND MINIMIZING USER DELAYS

KEEPING THE PUBLIC & IMPACTED STAKEHOLDERS INFORMED

DELIVERING A QUALITY PROJECT

MINIMIZING IMPACTS TO THE ENVIRONMENT

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Dewberry

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Lorton, Virginia 22079
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Table of Contents

2.09.02 - Project Technical Elements & Approach

2.09.02 **Project Technical Elements & Approach**

Introduction & Design Overview

Our Team has reviewed all RFP documents and collected and compiled project specific data through one-on-one meetings with the Administration, detailed site visits, and detailed discussions with third party utility providers. We have incorporated all of the data through a Complete Streets approach in the development of the reconfigured MD 210 at Livingston/Kerby Hill Road interchange. Our Project, includes a modified barbell interchange through the use of the Administration approved ATC#'s 1, 3, and 4. Our Project ***exceeds the RFP*** specified Project Goals and provides significant enhancements to the safe, efficient, multi-modal interchange that provides access, mobility, and safety needs of motorists, bicyclists and pedestrians resulting in less impacts to the surrounding environment. Additionally, our innovations and added value provide significant benefits during the design and construction and long term maintenance phases of the Project. See Exhibit A - Project Technical Elements on Page 2 for our Team's approved interchange concept as compared to the RFP.

Our Project exceeds the RFP specified Project Goals and provides significant enhancements to the safe, efficient, multi-modal interchange that provides access, mobility, and safety needs of motorists, bicyclists and pedestrians resulting in less impacts to the surrounding environment.

Project Sequence

Our Team understands the importance of the four identified project goals plus the importance of schedule (early completion) added through Addendum #3. We have developed a design and construction sequence to meet the "No Excuse Bonus" date of November 27, 2018 and early completion of the Project by April 5, 2019. The Summary Schedule included as Exhibit D, Pages 23-26, in Section 2.09.03 and the Detailed Schedule included in the Appendix illustrates each phase of construction.

We have developed a design and construction sequence to meet the "No Excuse Bonus" date of November 27, 2018 and early completion of the Project by April 5, 2019.

In review of the RFP documents and as incorporated in our approved ATC's, the following factors are critical to the sequence of work:

1. ***Utility Relocations -*** All utilities on the Project, whether relocated by the individual utility company or by our Team, will require a coordinated effort to prepare the site and work closely with the utility owner to avoid scheduling conflicts. Our Team is well positioned through its working relationships with the local utility owners as formed on previous projects to expedite this work. The most significant utility relocation to be performed on the Project involves the relocation by third party utility companies, such as PEPCO and Verizon where planning, scheduling and communication will be the key to successful and timely relocation. The design and construction work of all other utilities has been considered in our Detailed Project Schedule, ie. gas, water, sanitary sewer, ***and we have provided 21 months for concurrent third party utility relocations, exceeding the RFP requirements of 18 months.***
2. ***Access to Property Acquired by the Administration -*** Acquisition of right-of-way by the Administration is critical to facilitate construction efforts and preparing for utility relocations. These efforts are critical towards achieving the April 5, 2019 completion date.

ATC #1: The application of AASHTO Urban Low Speed design criteria on Kerby Hill Road and Livingston Road.

1-1 & 1-2: The proposed radii depicted in these locations are based on Prince George's County DPW&T's Specifications and Standards for Roadways and Bridges, Table I-2: Design Criteria and satisfy the minimum geometric requirements listed therein. In addition, the proposed radii meet or exceed the minimum requirements set forth in Exhibit 3-40 of AASHTO's 2001 Green Book allowing for the implementation of normal crown roadway design through the curves.

ATC #3: Changes the configuration of the MD 210 at Livingston/Kerby Hill Road interchange to a modified barbell. This modification will incorporate the following major geometric changes from the RFP plans.

3-1: The NB and SB MD 210 off-ramps and on-ramps will shift from the median to the outside of MD 210 reducing the impacts to mainline MD 210, allowing for the preferred right-hand location of the exits on and off of MD 210, and reducing the construction complexity on the Project and enhancing safety by meeting driver expectation.

3-2: The Livingston Road and Kerby Hill Road alignments will shift to the north allowing for a significant reduction in construction impacts to the public by allowing the intersection to remain open throughout the majority of construction.

3-3: A roundabout will be constructed on the eastern side of MD 210 to accommodate the NB MD 210 ramp movements, Livingston Road, Kerby Hill Road, and Murray Hill Drive traffic movements.

3-4: The SB MD 210 off-ramp will be moved to the north and exit from SB MD 210 north of Wilson Towers. This change effectively utilizes the Service Road efficiently as a collector-distributer (CD) road and removes the need for a grade-separated exit ramp to access Livingston/Kerby Hill Roads.

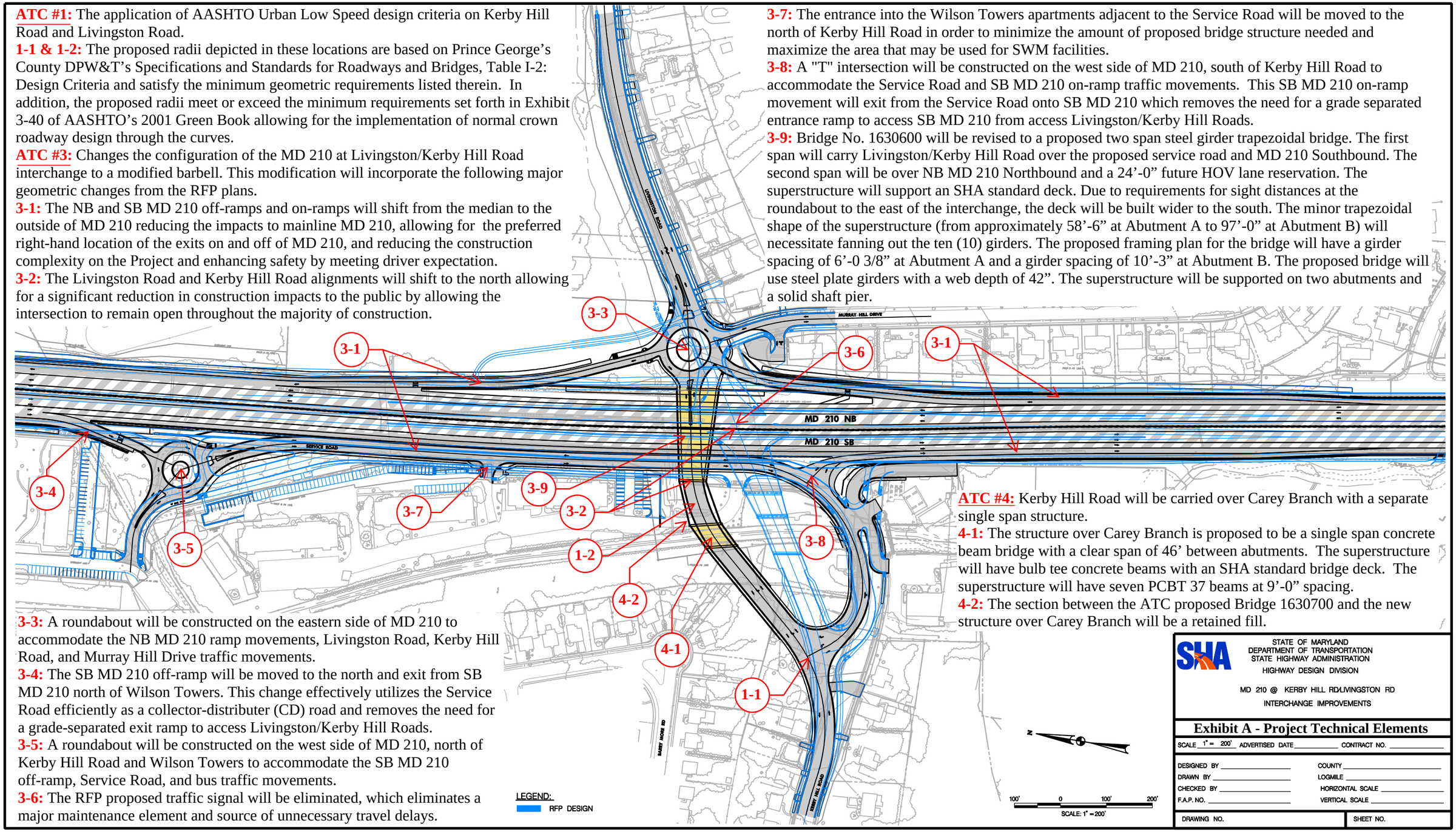
3-5: A roundabout will be constructed on the west side of MD 210, north of Kerby Hill Road and Wilson Towers to accommodate the SB MD 210 off-ramp, Service Road, and bus traffic movements.

3-6: The RFP proposed traffic signal will be eliminated, which eliminates a major maintenance element and source of unnecessary travel delays.

3-7: The entrance into the Wilson Towers apartments adjacent to the Service Road will be moved to the north of Kerby Hill Road in order to minimize the amount of proposed bridge structure needed and maximize the area that may be used for SWM facilities.

3-8: A "T" intersection will be constructed on the west side of MD 210, south of Kerby Hill Road to accommodate the Service Road and SB MD 210 on-ramp traffic movements. This SB MD 210 on-ramp movement will exit from the Service Road onto SB MD 210 which removes the need for a grade separated entrance ramp to access SB MD 210 from access Livingston/Kerby Hill Roads.

3-9: Bridge No. 1630600 will be revised to a proposed two span steel girder trapezoidal bridge. The first span will carry Livingston/Kerby Hill Road over the proposed service road and MD 210 Southbound. The second span will be over NB MD 210 Northbound and a 24'-0" future HOV lane reservation. The superstructure will support an SHA standard deck. Due to requirements for sight distances at the roundabout to the east of the interchange, the deck will be built wider to the south. The minor trapezoidal shape of the superstructure (from approximately 58'-6" at Abutment A to 97'-0" at Abutment B) will necessitate fanning out the ten (10) girders. The proposed framing plan for the bridge will have a girder spacing of 6'-0 3/8" at Abutment A and a girder spacing of 10'-3" at Abutment B. The proposed bridge will use steel plate girders with a web depth of 42". The superstructure will be supported on two abutments and a solid shaft pier.



ATC #4: Kerby Hill Road will be carried over Carey Branch with a separate single span structure.

4-1: The structure over Carey Branch is proposed to be a single span concrete beam bridge with a clear span of 46' between abutments. The superstructure will have bulb tee concrete beams with an SHA standard bridge deck. The superstructure will have seven PCBT 37 beams at 9'-0" spacing.

4-2: The section between the ATC proposed Bridge 1630700 and the new structure over Carey Branch will be a retained fill.

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
HIGHWAY DESIGN DIVISION

MD 210 @ KERBY HILL RD/LIVINGSTON RD
INTERCHANGE IMPROVEMENTS

Exhibit A - Project Technical Elements

SCALE 1" = 200' ADVERTISED DATE _____ CONTRACT NO. _____

DESIGNED BY _____ COUNTY _____
DRAWN BY _____ LOGMILE _____
CHECKED BY _____ HORIZONTAL SCALE _____
F.A.P. NO. _____ VERTICAL SCALE _____

DRAWING NO. SHEET NO.

3. ***Permitting -*** Our Team understands the permitting process and has set forth a design submittal plan to ensure we obtain appropriate approvals from federal, state, and local agencies in a accordance with our Project Schedule.
4. ***Phased Construction to Maintain East/West and North/South Traffic Movements -*** Our Team will utilize phased construction, intermediate traffic switches, and temporary intersections/tie-ins to conform to the RFP requirement of maintaining east-west movements on Livingston/Kerby Hill Road. Specific traffic movements are discussed in more detail below.
5. ***Stream Restrictions -*** The March 1 - June 15th stream restriction is accommodated in our Project Schedule.
6. ***Stakeholder Coordination -*** Our Team will develop and implement a Public Outreach and Community Relations Program to keep the public and impacted stakeholders informed through all phases of the Project.

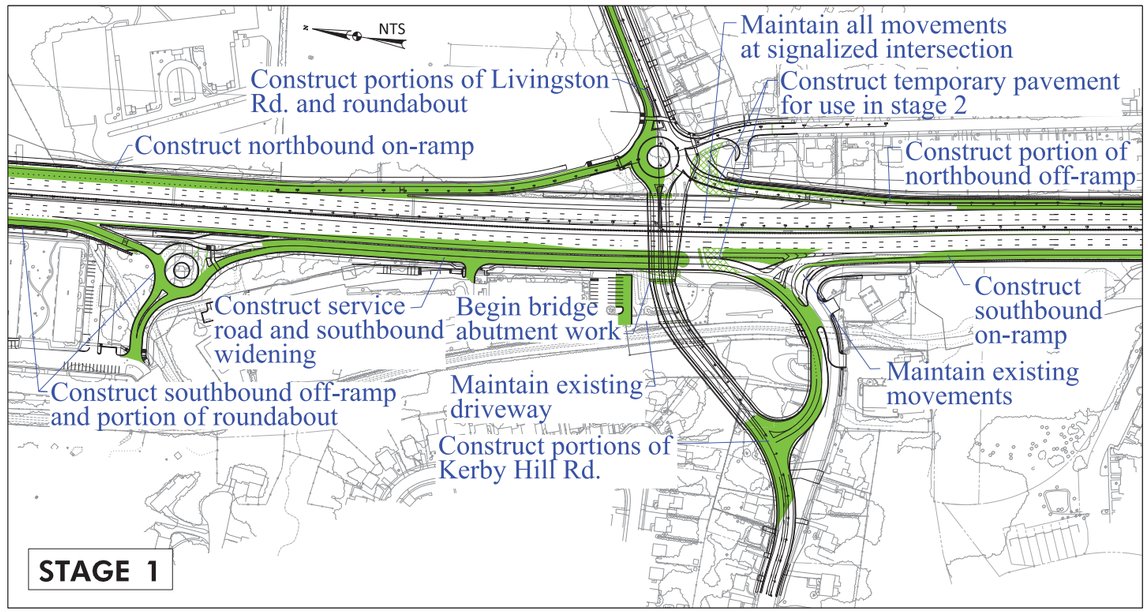
In consideration of these factors, our Team has sequenced the work for into four construction phases as indicated in the Project Schedule. To facilitate this, we have identified approximately 47 design packages (included in the Appendix) and appropriate sequencing to facilitate meeting our proposed schedule including design of early construction packages to meet critical path activities. The early design activities and several full design packages will begin at Notice of Award. The last design package will be Issued for Construction (IFC) on or before November 21, 2016. The following summarizes work to be complete in each construction phase. The proposed sequence of the Project can be found in Exhibit B on page 4 of this proposal. Additionally, Exhibit B of this proposal highlights the extended use of the signal at the intersection of Livingston/Kerby Hill Road and MD 210 to maintain traffic flow longer to reduce the duration of traffic impacts and congestion.

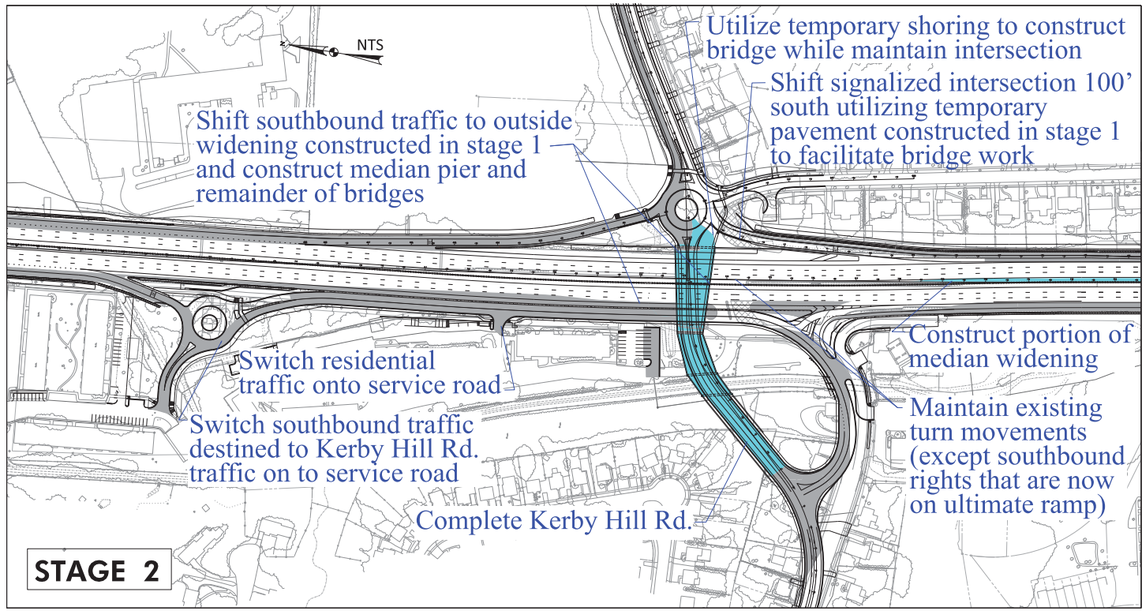
Construction Phase 1

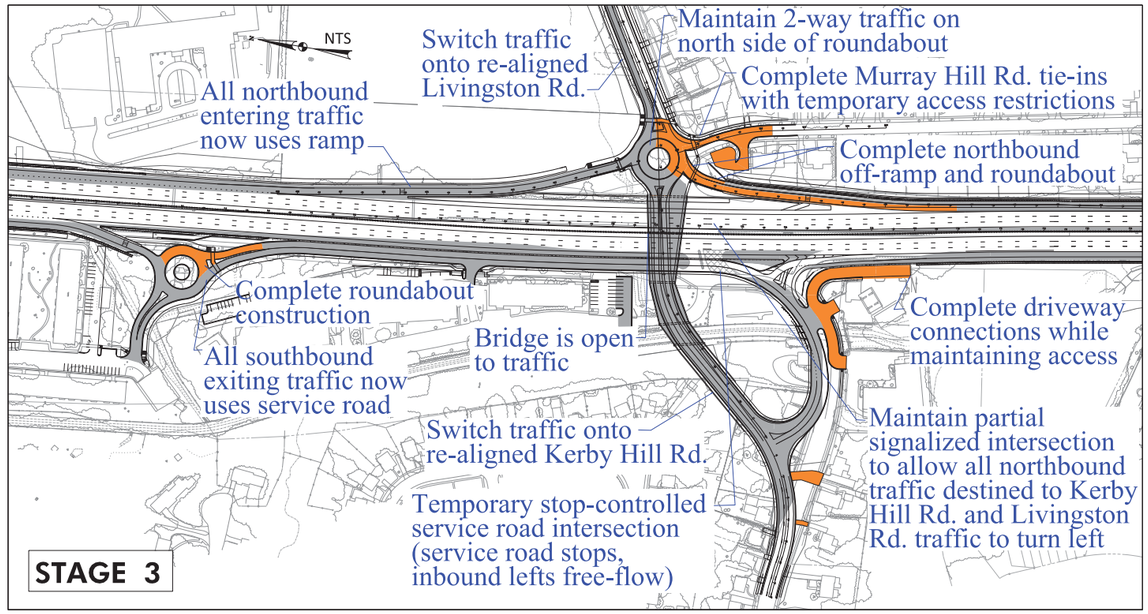
Following the design and permitting of our Team's early access erosion and sediment (E&S) control plan, and maintenance of traffic plan (MOT), construction will commence. This work will include temporary MOT devices to access clearing and grubbing activities and to gain access to utility relocations along northbound and southbound MD 210 limits. Phase 1 work will concentrate on utility relocation throughout the corridor to facilitate the new interchange configuration and bridge construction. Attention to maintaining access to all properties and maintaining WMATA bus stop stations throughout construction will be a priority. Once the utilities are clear, the construction of the new exit ramps to Livingston/Kerby Hill Road from southbound and northbound MD 210 can proceed, inclusive of the excavation, grading, storm drainage, stream relocation, asphalt paving, concrete barrier, noise wall, electric, lighting, signing, and private entrances. Traffic will then exit to the ultimate Livingston/Kerby Hill Road allowing the signal at MD 210 to be modified to maintain all traffic movements in preparation for bridge construction in Phase 2.

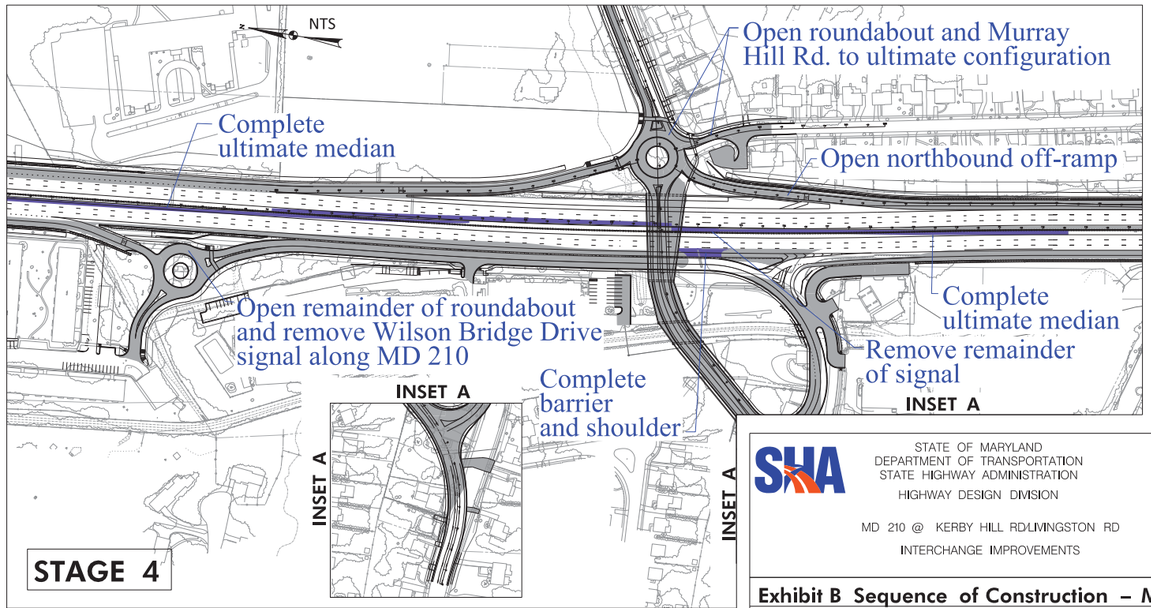
Construction Phase 2

A portion of Phase 1 work will continue during Phase 2 with various traffic movement changes at the signalized intersection at MD 210 at Livingston/Kerby Hill Road to prepare for the start of the bridge construction over MD 210 and Kerby Hill Road bridge over Carey Branch west of MD 210 as shown in our ATC #3. Concurrently constructing Kerby Hill Road roadway approach to the bridges and also constructing the Livingston Road north side approach including the bike trail to the east side of the bridge over MD 210. A temporary retaining wall will be incorporated in building the easterly approach to the bridge in order to maintain traffic.









SEQUENCE OF CONSTRUCTION

LEGEND: (Typ. all phases)

- Stage 1 Construction
- Stage 2 Construction
- Stage 3 Construction
- Stage 4 Construction
- Work Previously Completed

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
HIGHWAY DESIGN DIVISION

MD 210 @ KERBY HILL RD/LIVINGSTON RD
INTERCHANGE IMPROVEMENTS

Exhibit B Sequence of Construction – MD210

SCALE NTS ADVERTISED DATE _____ CONTRACT NO. _____

DESIGNED BY _____ COUNTY _____
DRAWN BY _____ LOGMILE _____
CHECKED BY _____ HORIZONTAL SCALE _____
F.A.P. NO. _____ VERTICAL SCALE _____

DRAWING NO. _____ OF _____ SHEET NO. _____ OF _____

Construction Phase 3

This phase includes opening the new bridges; completing minor traffic shifting to finalize construction from Phase 1; closing outbound Wilson Bridge Drive; completing the traffic circle on the Service Road; completing the new entrance at the Exxon Station tie-in, private entrances, and parking lots. The phase also includes switching traffic to Livingston Road from a right lane exit to a left lane exit; closing right lane to facilitate building the northbound exit to Livingston Road; shifting traffic on MD 210; and moving all lanes to the right in both directions northbound and southbound to allow reconstruction of the median.

Construction Phase 4

This phase includes opening the Livingston Road exit from northbound MD 210, the at-grade signal at Kerby Hill Road and MD 210 is removed and the median reconstruction finalized. Bio-retention and bioswales will be completed and ponds will be converted to their permanent configuration. All landscaping will be completed and roadways will be prepared for final asphalt surface and pavement markings. It should be noted that by maintaining east-west traffic movements off of MD 210 onto Livingston/Kerby Hill Road until the end of the Project allows maximum flexibility in scheduling and construction with less impact on traffic.

Maintenance of Traffic (MOT)

From the outset of design through completion of construction, our Team will hold the safety of motorists, pedestrians, bicyclists, transit, emergency responders, construction personnel, and all other stakeholders to be the number one priority. Our objective is to not just meet the project safety and mobility goals, but instead our Team is focusing on how to significantly exceed the minimum public safety and traveler mobility goals and requirements included in the RFP. We take pride in our constant attention to safety and in every facet of design and construction which can be seen by our commitments to this Project and successful experience with Transportation Management Plans (TMPs) and Traffic Control Plans (TCPs) on similar high-speed, high-volume roadways. Some of the many ways we commit to exceeding the minimum public safety and traveler mobility/delay minimization requirements include:

- An interchange design and sequence of construction that continually maintains all turn movements at the intersection of Livingston/Kerby Hill Road, eliminating the need for the planned long-term detour of turning movements;
- Eliminating additional traffic on local streets that would have resulted from detour implementation;
- Reducing the number of temporary lane closures along MD 210 to minimize delays;
- Eliminating slow-moving fill material delivery vehicles from entering/exiting median;
- Collecting and analyzing 2015 hourly traffic data to limit disruptions to hours of lowest volumes;
- Using enhanced safety devices which exceed standards;
- An in-house work zone safety training program;
- Thorough planning and preparation of incident management procedures; and
- Use of enhanced pedestrian and bicycle safety strategies.

MOT Program That Eliminates Major Anticipated Impacts

Our Team is committed to exceeding the anticipated mobility and safety requirements through our unique design concept and construction phasing approach that was developed specifically with the Project goals of safety and mobility as keystones. We know that setting the stage for a successful and safe project begins with the development of a comprehensive and accurate TMP. As noted in Section 3.16.05 of the RFP, our Team will

prepare a TMP to ensure all proposed construction is fully coordinated, work zone impacts are studied, and incident response plans are defined and well-rehearsed. In addition to the safety and mobility maximization features included in the TMP, site-specific TCPs will be developed for each stage of construction.

The TMP and TCPs will be developed with a constant focus on maximizing safety for the public and construction personnel. The plans will also put heavy emphasis on eliminating travel delays to the public, by keeping all movements operational during interchange construction at the existing Livingston/Kerby Hill Road intersection. Our proposed MOT phases to design and construct the Project are shown on Exhibit B, Page 4. As opposed to the RFP concept that required movements to be detoured for bridge construction, our proposed design shifts the bridge over MD 210 to the north of the existing intersection allowing for bridge construction while safely maintaining all turn movements. This sequence without a detour is an enhancement to the traveling public and the Project Schedule, as it eliminates lengthy traveler delays, congestion, and safety concerns on the local residential street network during construction.

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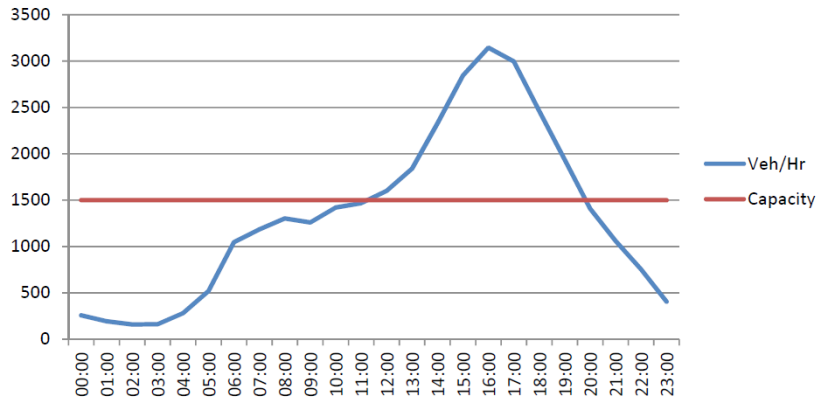
By placing the interchange ramps along the outside of the existing roadway, we have eliminated the major stage of construction associated with the median ramp construction.

In addition to the minimization of delays for local traffic, our proposed sequence also has substantial safety and mobility benefits for traffic on MD 210. By placing the interchange ramps along the outside of the existing roadway, we have eliminated the major stage of construction associated with the median ramp construction. With the RFP design, temporary lane closures would have to be installed on nearly a daily basis for the left thru lane on MD 210 (the fast lane) in order to bring in an estimated 4,500 truckloads of fill material. By placing our ramps on the outside, the majority of earthwork activities can take place without temporary lane closures, and we eliminate the slow hauling trucks entering and exiting the left thru lane. This elimination of hauling trucks from the fast lane is a significant benefit, as speed differentials between slow moving and fast traffic is known to be one of the leading causes of work zone crashes.

Exceeding Mobility Requirements

In order to achieve the goals of maximizing safety and minimizing travel delays, we will initiate design activities by collecting current 24-hour volume information on MD 210 as well as turning counts at the intersection of MD 210 at Livingston/Kerby Hill Road. We understand that the mandatory lane closure restriction times listed in Special Provision 104.01 are to be followed. Yet by collecting this updated traffic volume information, we can utilize it in development of the TMP to allow for construction activities that do require temporary off-peak lane closures to occur during the hours of lowest volume to minimize impacts. This process will allow us to schedule shorter duration work (such as temporary traffic signal work that may take four hours) during the hours of lowest volume within the longer allowable temporary lane closure window. This process is especially valuable as we recognize volumes on MD 210 will vary greatly within the lane closure windows, and recognize that traffic flow characteristics frequently shift due to changes in traffic patterns associated with other regional projects and off-site development.

Figure 2.09.02-1

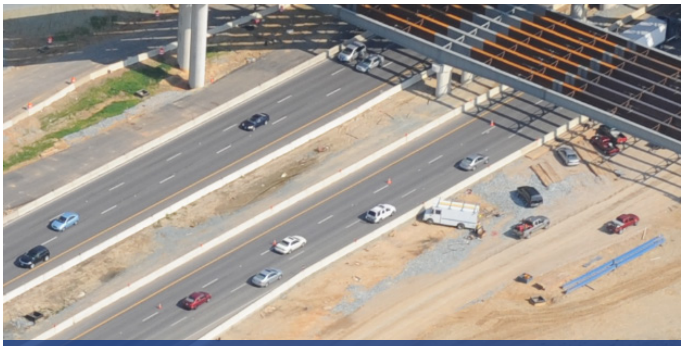


Detailed analysis computations will be performed on the 24-hour traffic volume information using VISSIM, CORSIM and other applicable advanced software packages such as QuikZone, as well as the production of graphics to easily visualize and evaluate the data (Figure 2.09.02-1). This is similar to what we did along I-95 construction as part of the Intercounty Connector (ICC) project in Prince George's County, where we verified overnight operations were limited to hours in which the traffic volumes (shown with blue line) were less than the capacity of the remaining open travel lane (shown with the horizontal red line) in order to provide a significant safety and travel time benefit.

Focus on Safety

Concurrent with the design of the TMP, our Team will develop site-specific TCPs for the Project. The TCPs will detail each and every specific element required during construction of the Project. These plans will be developed for each stage of construction to identify:

- Barrier and channelization locations;
- Safe maintenance of existing pedestrian, bicycle, and transit facilities;
- Temporary sign, marking, and marker locations, and temporary traffic signals;
- Areas of temporary and permanent construction, temporary drainage, detour plans; and
- All other requirements of the Maryland MUTCD, The Book of Standards for Highway and Incidental Structures, and all other applicable criteria.



Similar to the ICC project along US 29, traffic control will maintain full access, mobility, and safety (full shoulders where possible).

Given the temporary shifting of lanes anticipated at the MD 210 at Livingston/Kerby Hill Road intersection, all turning movements will be analyzed with AutoTurn software to ensure temporary geometry accommodates the required fire trucks, transit buses, and gas station tanker trucks. Also, intersection sight distance will be analyzed to avoid the potentially dangerous condition of devices such as temporary barrier or construction materials blocking the sight lines of turning traffic. In addition, Portable Changeable Message Sign (PCMS) device locations and messages will be included in the plans. Specific details of our TCPs, including planned lane closures and lane width restrictions are as follows:

- All three existing thru lanes in each direction MD 210 and all turn lanes will be maintained;
- Minimum 11' wide lanes will be maintained for all thru lanes on MD 210, and where feasible, 12' lanes will be provided, ***exceeding the RFP requirements*** of providing only a 11' lanes to maximize safety, large vehicle movements (including emergency vehicles and buses), and traveler mobility;
- The existing traffic signals along MD 210 at Livingston/Kerby Hill Road and at Wilson Bridge Drive

will be maintained until replacement interchange movements are opened;
- Temporary traffic barrier will be utilized to maximize safety;
- All temporary traffic shifts will be designed to meet the full prevailing speeds along MD 210 wherever possible, ***exceeding the requirements of the RFP***; and
- No MD 210, Livingston Road, or Kerby Hill Road long-term movement restrictions or temporary detours or road closures will be proposed.

Enhanced Safety and Mobility Features & Training

To further enhance our TTC Plans, our Team will employ impact management strategies that ***exceed RFP requirements*** in order to maximize safety and mobility. These strategies will be particularly focused on avoiding potentially high-severity run-off-road, head-on and intersection crashes, given the high traffic volumes, high speeds, and intersections along MD 210.

Impact Management Strategies	Benefits
Full Temporary Raised Pavement Markers, including snow-plowable markers during long-term winter configurations	• Increased visibility at night and wet pavement conditions • Reduces vehicles leaving travel lanes • Eliminates lane closures for replacing plowed-up temporary markers
Wider Lane Line Markings	• Increased delineation of lane shifts
Thermoplastic Temporary Markings	• Provides superior durability and visibility compared to paint
Transverse Rumble Strips	• Alerts motorists of new conditions
Tighter Than Required Channelizing Device Spacing	• Increases work zone delineation • Construction personnel safety
Barrier Fencing and Special Signing for Pedestrian and Bicyclists	• Barriers and safety fencing safely separates pedestrians and bicyclists from traffic and construction activities • Special warning and guide signing provides positive direction and hazard warning

We will also put a focus on expediting the implementation of safety and operational improvements in the interim condition during construction, prior to the final design solutions being constructed. For example, we will analyze the phasing and signal timings for all temporary lane configurations at traffic signals in order to provide maximum benefits for the public. Our design engineers have completed a two-day in-house Work Zone Traffic Control Training program. These qualifications and training program ***exceed RFP requirements***, and allow us to develop TCP and TMP plans that equally exceed safety and mobility minimum standards.

Thorough Incident Management Planning

In the event that an unexpected incident does occur in the work area, our Team is fully prepared to respond quickly and mitigate impacts to traffic, and work to help to restore full traffic operations quickly. We will successfully mitigate the risks of unforeseen incidents by:

- Pre-staging detour signing for pre-designed detour routes;
- Include a comprehensive "telephone tree" of the order of calls to be placed to critical parties in the event of an incident (D-B Team, the Administration, Prince George's County and emergency responders); and
- Providing shoulders and pull-off areas for disabled vehicles and emergency vehicle use.

Our Safety and Mobility Promise

Our Team is adamant about providing and maintaining a safe work zone. We are always looking for ways to improve traffic patterns not only after construction, but during construction. Therefore, with the inclusion of the features detailed above, ***we are committed to exceeding the RFP safety and mobility requirements.*** With features such as detour elimination, reduced lane closures, and enhanced safety devices, we look forward to the privilege of successfully designing and constructing the MD 210 at Livingston/Kerby Hill Road Interchange.

> **We are always looking for ways to improve traffic patterns not only after construction, but during construction.**

Maintenance Benefits

Our Team is committed to providing the Administration and the community with a high-quality facility that meets the Project goals and can be adequately maintained for the life of the facility. All project elements will be designed and built accurately according to all codes and standards with a goal of extended life cycle and reduced future maintenance. Provided life cycle and maintenance benefits include:

Traffic Elements

Through the use of our innovative ATC design as well as constantly considering maintenance in our design development, our interchange will provide for the following traffic maintenance benefits:

- The use of roundabout as opposed to the RFP traffic signal completely eliminates maintenance of the signal and reduces the power consumption of the interchange; and
- Right-hand exit ramps instead of left-hand exits allow for cantilever guide signs to be placed on the outside of the road instead of along the median, allowing lighting maintenance to be performed more safely from the right shoulder.

Structural Elements

A number of elements of the bridge and retaining wall structures will be designed and constructed to provide maintenance benefits to the Administration. Through ATC#3, our Team is able to reduce the RFP crossing over MD 210, future HOV, Service Road and Carey Branch from two bridges (No. 1630600 - 1 span and No. 1630700 - 4 span) to the proposed interchange being carried over MD 210 by a two span steel girder trapezoidal bridge, bridge No. 1630600. Livingston/Kerby Hill Road will be carried over Carey Branch with a separate single span structure, bridge No. 1630700, with the substructures set outside the 100 year floodplain. Since this bridge is only over water, not traffic, a concrete beam superstructure will be built. In addition our ATC's completely eliminate the median MSE retaining walls and significantly reduces the concrete retaining wall along southbound MD 210 and the Service Road. Our design will provide maintenance benefits by:

- Eliminating two spans of bridge compared to the RFP and the span of the bridge over Carey Branch will be reduced. This will eliminate future maintenance of these spans;
- Reducing life cycle costs and maintenance by reducing bridge length from 402'-6 5/8" to 276 LF and bridge reducing deck area from 31,280 SF to 19,490 SF;
- Eliminating the fracture critical members, discontinuity of some girders over the piers and larger than standard girder spacing the bridge should have a longer service life and require less future maintenance and inspection;

- Removing girder discontinuities over the piers in RFP structures which eliminates stress concentrations in the deck that would have led to more potential cracking and thereby reduces future inspection and maintenance efforts;
- Proposed bridges will have less girder surface area to paint reducing the cost of future painting of the bridge;
- Use of new SHA standard abutment details prevents joint leakage from the beamseat and avoids future end of girder, bearing and beamseat deterioration and need for maintenance and repairs;
- Elimination of the RFP traffic signal completely eliminates future structure maintenance associated with pier-cap mounted signals and simplifies overall bridge maintenance;
- Use of joint-less bridges will avoid any water leakage onto the girders bearings at the pier;
- Use of concrete beams for the bridge over Carey Branch eliminates need for future painting of girders;
- Allowing for future bridge deck repair and replacement in the same manner as the RFP design. However, a maintenance benefit to our proposed layout is that the ramps are no longer part of the bridge, removing the need to close and detour any of the ramp traffic while performing deck repairs or replacements;
- Eliminating the RFP proposed retaining walls required for the southbound MD 210 median exit and entrance ramps reducing future retaining wall maintenance for the Project;
- Completely eliminating the RFP median MSE walls; and
- Significantly reducing retaining wall No. 16467R0 height.

Stormwater Management (SWM)/Environmental Site Design (ESD)

Proper maintenance of SWM Best Management Practices (BMPs) is essential to the functionality and longevity of the BMP. We will propose SWM BMPs requiring minimal future maintenance. We will provide appropriate and easy maintenance access to the SWM BMPs to minimize disruptions to pedestrian and vehicular traffic. The landscaping design for the proposed SWM BMPs will be sustainable, ultimately requiring less maintenance.

The Team's SWM will utilize ESD to address the water quality requirements. Our concept provides for future efficiencies in maintenance. We will refine the RFP concept SWM plan to accommodate the revisions in our ATC's.

Our ATC's will result in approximately 0.5 acre reduction in impervious area as well as a 10% reduction in stormdrain system (pipes and structures) within the limits of the interchange, resulting in less future maintenance to the Administration. Our ATC's also provides additional areas for ESD practices that are easily accessible for future maintenance.

Innovation and Value Added

Our innovative solutions to reconfigure the MD 210 at Livingston/Kerby Hill Road RFP interchange to a modified barbell interchange provides added value during the design and construction and long term maintenance phases of the Project. Our proposed project through the use of the Administration approved ATC #'s 1, 3, and 4 provides additional enhancements to the safe, efficient, multi-modal interchange that

Our ATC's will result in approximately 0.5 acre reduction in impervious area as well as a 10% reduction in stormdrain system (pipes and structures) within the limits of the interchange, resulting in less future maintenance to the Administration.

provides access, mobility, and safety needs of motorists, bicyclists and pedestrians resulting in less impacts to the surrounding environment. Exhibit C on page 12 outlines the major enhancements, innovations, and added value of our proposed design concept. The table below also summarizes the benefits of our ATC's.

ATC BENEFITS		
ATC #1	ATC #3	ATC #4
√ Creates favorable entrance ties √ Benefits to drivers, pedestrians, bicyclist, and residents √ Safety benefits to bicycle traffic √ Drainage benefits	√ Significant safety benefits to the public √ Traffic calming √ Traffic operations that exceed the RFP interchange √ Direct access to MD 210 interchange for Murray Hill Community √ Maintenance of traffic benefits √ Eliminated detour √ Significant reduction in retaining walls √ Reduction in storm drain systems √ Traditional bridge layout √ More serviceable structure √ Eliminates two spans of the bridge √ Reduced box culvert extension	√ Reduction in maintenance for bridge over Carey Branch √ Use of concrete girders expedites construction of bridge over Carey Branch

In addition to ATC benefits described above, our design also includes the following environmental benefits:

- Improved bioswale vegetation by considering one of three options currently being considered by SHA;
- 0.5 reduction in impervious area; and
- Dan O'Leary, PE added for SWM and MDE review and coordination.

1: Urban Low Speed design criteria will allow for the use of a normal crown typical section which benefits the Project by the following:

1A. Creates favorable entrance ties to commercial and residential properties.

1B. Benefits to drivers, pedestrians, bicyclists, and residents by providing a context sensitive design that matches the residential nature of these roadways and encourages the limitation of travel speeds to the intended posted speed limits of 25 mph (Kerby Hill Road) and 30 mph (Livingston Road).

1C. Safety benefits to bicycle traffic. Bicyclists will not have to negotiate curves with superelevation or to contend will excessive vehicle speeds.

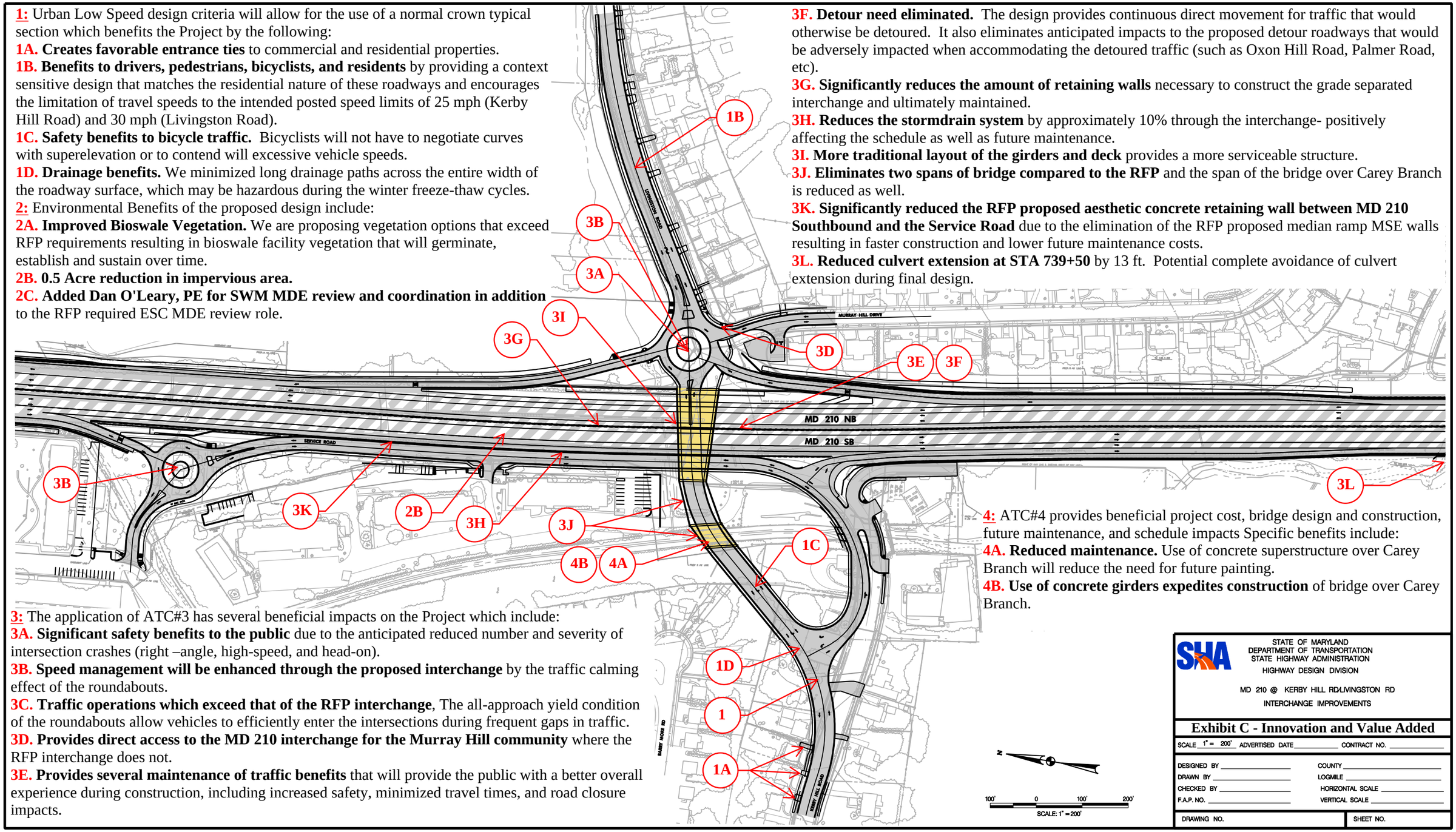
1D. Drainage benefits. We minimized long drainage paths across the entire width of the roadway surface, which may be hazardous during the winter freeze-thaw cycles.

2: Environmental Benefits of the proposed design include:

2A. Improved Bioswale Vegetation. We are proposing vegetation options that exceed RFP requirements resulting in bioswale facility vegetation that will germinate, establish and sustain over time.

2B. 0.5 Acre reduction in impervious area.

2C. Added Dan O'Leary, PE for SWM MDE review and coordination in addition to the RFP required ESC MDE review role.



3: The application of ATC#3 has several beneficial impacts on the Project which include:

3A. Significant safety benefits to the public due to the anticipated reduced number and severity of intersection crashes (right –angle, high-speed, and head-on).

3B. Speed management will be enhanced through the proposed interchange by the traffic calming effect of the roundabouts.

3C. Traffic operations which exceed that of the RFP interchange, The all-approach yield condition of the roundabouts allow vehicles to efficiently enter the intersections during frequent gaps in traffic.

3D. Provides direct access to the MD 210 interchange for the Murray Hill community where the RFP interchange does not.

3E. Provides several maintenance of traffic benefits that will provide the public with a better overall experience during construction, including increased safety, minimized travel times, and road closure impacts.

3F. Detour need eliminated. The design provides continuous direct movement for traffic that would otherwise be detoured. It also eliminates anticipated impacts to the proposed detour roadways that would be adversely impacted when accommodating the detoured traffic (such as Oxon Hill Road, Palmer Road, etc).

3G. Significantly reduces the amount of retaining walls necessary to construct the grade separated interchange and ultimately maintained.

3H. Reduces the stormdrain system by approximately 10% through the interchange- positively affecting the schedule as well as future maintenance.

3I. More traditional layout of the girders and deck provides a more serviceable structure.

3J. Eliminates two spans of bridge compared to the RFP and the span of the bridge over Carey Branch is reduced as well.

3K. Significantly reduced the RFP proposed aesthetic concrete retaining wall between MD 210 Southbound and the Service Road due to the elimination of the RFP proposed median ramp MSE walls resulting in faster construction and lower future maintenance costs.

3L. Reduced culvert extension at STA 739+50 by 13 ft. Potential complete avoidance of culvert extension during final design.

4: ATC#4 provides beneficial project cost, bridge design and construction, future maintenance, and schedule impacts Specific benefits include:

4A. Reduced maintenance. Use of concrete superstructure over Carey Branch will reduce the need for future painting.

4B. Use of concrete girders expedites construction of bridge over Carey Branch.

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
HIGHWAY DESIGN DIVISION

MD 210 @ KERBY HILL RD/LIVINGSTON RD
INTERCHANGE IMPROVEMENTS

Exhibit C - Innovation and Value Added

SCALE 1" = 200' ADVERTISED DATE _____ CONTRACT NO. _____

DESIGNED BY _____ COUNTY _____
DRAWN BY _____ LOGMILE _____
CHECKED BY _____ HORIZONTAL SCALE _____
F.A.P. NO. _____ VERTICAL SCALE _____

DRAWING NO. | SHEET NO.

2.09.03 - Project Schedule & Project Management

2.09.03 Project Schedule & Project Management

A. Design and Construction Summary Schedule

Our Team recognizes the importance of a well planned and managed Project Schedule to successfully executing the Summary goals. We recognize that as this Project cannot be built in a vacuum, our Team will rely heavily on accurate and reliable schedule information to properly plan our work. As such, our Team has developed a Project Schedule as Exhibit D, Pages 23-26 to meet all project needs, in full consideration of design requirements, maintenance of traffic concepts, utility relocation requirements, and earthwork balancing strategies. In addition to the Summary Schedule, we have included a Detailed Schedule for the design and construction of the Project in the appendix. Our goal is to stage and schedule the Project such that the work can proceed in an orderly and economical manner while minimizing impacts to adjacent stakeholders, the environment, and the public.

Regularly scheduled meetings will be held to maintain the timeliness and accuracy of the schedule's information and make it available to all management, supervisory personnel, the Administration's personnel, subcontractors, suppliers, and other key Project stakeholders. Schedule updates will be used to maintain the planned progress, forecast future activities and address coordination issues and advantages.

As indicated in the Summary Schedule, our Team anticipates selection of the successful design-build team by the Administration by approximately April 1, 2015, upon which all design activities will commence. Milestone 1, will be accomplished by November 27, 2018, and final project completion will be accomplished on April 5, 2019, well in advance of the RFP required completion date.

Design

Our Team has sequenced the work into four construction phases as indicated in the Summary Schedule. To facilitate this, we have identified approximately 47 design packages (included in the Appendix) and appropriate sequencing to facilitate meeting our proposed schedule including design of early construction packages to meet critical path activities. The early design activities and several full design packages will begin at Notice of Award. The last design package will be Issued for Construction (IFC) on or before November 21, 2016.

An illustration of the proposed sequence of construction for the Project can be found in Exhibit B in Section 2.09.02, Page 4. This exhibit illustrates each phase of construction, illustrating the area under construction. Additionally, Exhibit B highlights the extended use of the signal at the intersection at Livingston/Kerby Hill Road and MD 210 to maintain traffic flow longer to reduce the duration of traffic impacts and congestion. A summary of the four major phases of construction are as follows:

Construction

Phase 1 - October 2015 through June 2017

Following the design and permitting of our Team's early access erosion and sediment (E&S) control plan, and maintenance of traffic plan (MOT), construction will commence. This work will include temporary MOT devices to access clearing and grubbing activities and to gain access to utility relocations along northbound and southbound MD 210 limits. Phase 1 work will concentrate on utility relocation throughout the corridor to facilitate the new interchange configuration and bridge construction. Attention to maintaining access to all

properties and maintaining WMATA bus stop stations throughout construction will be a priority. Once the utilities are clear, the construction of the new exit ramps to Livingston/Kerby Hill Road from southbound and northbound MD 210 can proceed, inclusive of the excavation, grading, storm drainage, stream relocation, asphalt paving, concrete barrier, noise wall, electric, lighting, signing, and private entrances. Traffic will then exit to the ultimate Livingston/Kerby Hill Road allowing the signal at MD 210 to be modified to maintain all traffic movements in preparation for bridge construction in Phase 2.

Phase 2 - August 2016 through October 2017

A portion of Phase 1 work will continue during Phase 2 with various traffic movement changes at the signalized intersection at MD 210 at Livingston/Kerby Hill Road to prepare for the start of the bridge construction over MD 210 and Kerby Hill Road bridge over Carey Branch west of MD 210 as shown in our ATC #3. Concurrently constructing Kerby Hill Road roadway approach to the bridges and also constructing the Livingston Road north side approach including the bike trail to the east side of the bridge over MD 210. A temporary retaining wall will be incorporated in building the easterly approach to the bridge in order to maintain traffic.

Phase 3 - October 2017 through November 2018

This phase includes opening the new bridges; completing minor traffic shifting to finalize construction from Phase 1; closing outbound Wilson Bridge Drive; completing the traffic circle on the Service Road; completing the new entrance at the Exxon Station tie-in, private entrances, and parking lots. This phase also includes switching traffic on MD 210 northbound to Livingston Road from a right lane exit to a left lane exit; closing the right lane exit to facilitate building the northbound exit to Livingston Road; shifting traffic on MD 210; and moving all lanes to the right on northbound and southbound MD 210 to allow reconstruction of the median.

Phase 4 - Complete the balance of the contract work by April 2019.

This phase includes opening Livingston Road exit from northbound MD 210, the at-grade signal at Kerby Hill Road and MD 210 is removed and the median reconstruction finalized. Bio-retention and bioswales will be completed and ponds will be converted to their permanent configuration. All landscaping will be completed and roadways will be prepared for final asphalt surface and pavement markings. It should be noted that by maintaining east-west traffic movements off of MD 210 onto Livingston/Kerby Hill Road until the end of the Project allows maximum flexibility in scheduling and construction with less impact on traffic.

B. Project Management

The following section provides an overall description of our Team's Project Management Plan. The success of project communications and coordination, risk, schedule, and change management is founded in the approach and execution of partnering and issue resolution throughout the life of the Project. Immediately after Notice to Proceed (NTP), we will setup a "pre-partnering kickoff meeting" to work through the preliminary logistics of the formal Partnering kickoff meeting. Once complete, we will hold the Partnering kickoff workshop to develop the Project Partnering Charter and Issue Resolution process and will hold monthly partnering meetings for the remaining duration of the Project. The goal of the Team is that key individuals working directly with the Administration and other Project stakeholders be empowered and trained to resolve issues, and making use of the partnering issues resolution process established during the partnering process. The proposed resolution process will encourage issues to be resolved at the lowest possible level. The intent is to define timelines for issues to be held at the lowest level before being elevated to the next higher level. Our Team has found on past Projects that this process keeps decisions with those who have the most knowledge of the issues, resulting in timely and effective resolution.

Project Communication Plan

Design-Build Team As An Integrated Entity

The key to successfully completing a Project as complex as the MD 210 Project under a Design-Build delivery method is full integration of all disciplines throughout all phases of the work. To successfully deliver this Project while achieving all of the identified project goals, we will use our extensive experience working together as a fully integrated team utilizing all of our well-proven process and procedures already in place. There is no learning curve regarding our proposed Key Staff. ***We are a longstanding, fully integrated team having continuously worked together since 2008 on both the ICC Contracts C and D/E Projects and will continue to partner with the Administration to successfully deliver this Project.***

Design-Build Team Management

Shirley will serve as the Design-Builder, and will ultimately be responsible for delivery of this Project. Mr. Gregory Johannes will lead the Design-Build Management Team and will serve as the Design-Build Project Manager (D-B PM). Supporting him will be Mr. Randall Plyler, Construction Manager, and Mr. Ken Davis, PE, DBIA, Project Design Manager. Mr. Johannes will also serve as our single point of contact with the Administration. In this role, he will be responsible for overall Contract management, integration of all Project disciplines, leading our partnering efforts, and coordination with third-party stakeholders. He will coordinate all communication within our Team, as well as with the Administration, and will work closely with the Public Relations Manager to ensure the message to the public is both accurate and timely. Our approach starts with a structured environment that facilitates collaboration, communication, and integration. The primary method of accomplishing this is through a series of Team meetings at various stages of Project development that include:

Design Coordination Meetings: We will hold weekly Design Coordination Meetings to promote a coordinated design effort; share lessons learned with all Team members; and streamline the decision making process. Mr. Greg Johannes, the D-B PM, will lead the meetings and include all key staff, discipline leads, design sub-consultants, as well as key members of the Shirley construction Team. These meetings are used to discuss all issues such as:

1. Status of key design elements, design packages, and sub-consultant deliverables;
2. Current construction issues requiring designer input;
3. Status of plan reviews and approvals; permit acquisition; and utility coordination;
4. Designation of "ownership" of issue resolution and target dates for resolution;
5. Issues requiring meetings, third party input or other action; and
6. To integrate constructability reviews by construction personnel into the design process. These meetings are held in the RFP stage as our concept is developed, begin in earnest during the design phase, and continue through the construction phase until Project completion.

Once construction is underway, we continue to hold these meetings as a way to expedite solutions to any design or construction-related issues or changing conditions that may arise.

Owner Coordination Meetings: As done successfully on our past design-build projects with the Administration, we will once again proactively communicate and coordinate with the Administration on a regular basis throughout the design and construction phases to ensure that there are "no surprises". At a mutually agreeable time and frequency, the Team will plan and hold Owner Coordination Meetings with the Administration and other stakeholders as appropriate. These meetings will focus on communication of Project-related issues and

concerns, scheduling of submittals and the work, and any other topics requiring resolution. This is also an opportunity to provide the Administration with informal "Over-the-Shoulder" (OTS) reviews of our Team's approach to the work prior to making the formal submission. We will discuss both short (3-week look ahead) and long-term schedule updates and Project completion milestones. We will provide the Administration with the schedule for design submittals to aid in managing the Administration's Project resources. We will also discuss other key topics including MDE packages/permit status, MOT changes, utility coordination/relocation and LOD/right-of-way.

Construction Progress Meetings: As the Project transitions to the construction phase, the Construction Manager will lead a weekly Construction Progress Meeting onsite. In attendance are key construction and design personnel, subcontractors, various third parties, quality assurance and control personnel, and the Administration. We will review the schedule and upcoming work activities, discuss upcoming maintenance of traffic plans, inform QA/QC personnel of the schedule, review environmental activities, and to discuss with all parties any issues or areas of concern that need to be addressed. Both 2-week and 6-week "look-ahead" schedules will be reviewed and updated with all parties. Longer term, the overall Project schedule will be reviewed to ensure critical milestones are communicated, that work is on-track, and to update the work progress.

Document Management: We will use several collaborative file-sharing software systems as a means to improve communication among the Team members. As successfully used on ICC Contracts C and D/E, we will implement Bentley's ProjectWise for all design file management to ensure all Team members have access to the latest design files, as well as for formal submission of design packages to the Administration. We will also utilize Autodesk's Constructware for electronic transfer of construction documents for internal document reviews, and for tracking of design decisions and solutions. This software is also very useful for the creation, response, and tracking of construction management services and engineering support during construction including RFI's and as-built drawings. All submissions to and from the Administration will be made through the Administration's ProjectWise server. All submission for third party review and approval will be made via hard copies to the respective agency as well as concurrent to the Administration via ProjectWise.

Construction Staff Role During Design: In the Design-Build process, our Team's involvement in the design preparation allows them to provide constructability comments, availability of materials, economics of installation and phasing as the Project is being designed. It is critical that the construction staff be a proactive part of the Team during the design process developing the construction methods and sequence; thereby fewer issues occur during construction, avoiding schedule delays. Integration of the construction staff with the design Team began during preparation of this proposal.

Design Staff Role During Construction: Once the design has been completed and construction is fully underway, the design Team's work is not done. The design Team will remain intact to address issues in a timely fashion. This way, the Project Schedule, quality, safety and budget can be managed effectively. Some of the design activities during construction include responding quickly and clearly to any RFI's (either formal or informal); reviewing shop drawings; preparing of working drawings; evaluating and adjusting MOT plans and set ups (to meet actual field and traffic conditions); revising designs to meet actual field conditions as changed conditions are encountered, methods or means dictate or material availability changes; and preparation of complete and accurate as-builts.

Public Outreach: We recognize the importance of good communication during the design and construction phases. It will be particularly critical on this Project, with the overall project goal of improving pedestrian and vehicular mobility and safety, while providing continual access to the businesses and residences – all while minimizing impacts to the traveling public. We intend to maintain close coordination to ensure the community's services, access, and other vital functions are maintained. This will be a key measurement of success. The Public Outreach and Community Relations Program's approach is to ensure that accurate and timely information flows from Shirley through the Administration, to local community officials, and the general public (i.e. local residents and businesses, traveling public, and other stakeholders). Our Team's Public Relations Coordinator and program lead, Mr. Anthony Brown will develop the MD 210 Public Outreach Plan and submit within 45 days of NTP. He will work closely with the team's key staff, developing both narrative and graphic materials suitable for public dissemination. One of the most important sections that will be included in the Public Outreach Plan is the media relations section, which will clearly state what to do and who to contact for interaction with media (including emergency situations).

Safety: Providing a safe project for the construction personnel and the general public is the number one priority for our Team. Our Safety & Health Manager Charlie Wilson will be responsible for providing a safe project for everyone involved. Our safety effort will start with the development and implementation of a project specific Health, Safety and Welfare Plan that will include reviewing of plans prior to construction, coordination of all field activities to ensure a safe work area is provided as well as safety training of all project staff. Mr. Wilson will train and inform those engaged in the Project of specific safety hazards and will enforce all aspects of applicable industry safety standards and the Projects Health, Safety and Welfare Plan. Working closely with the Construction Manager, Mr. Wilson will monitor the field activities and crews and will have full and complete authority to halt or suspend any activity not in compliance with applicable safety standards.

Coordination Management

Right-of-Way

We acknowledge that 91 parcels of right-of-way are needed to construct the Project and that the Administration is clearing the right-of-way in a phased approach to support the phased relocation of utilities. As part of the development of our planned sequence of construction we have considered the Administration's right-of-way acquisition schedule to ensure no conflicts develop that could impact our construction schedule. Our Design-Build team will coordinate our efforts with the Administration's acquisition process so we are continually aware of the status of right-of-way acquisition progress. This will allow us to be proactive in the event an issue develops that impacts the planned acquisition schedule allowing us adequate time to work around the situation and maintain the project schedule.

We anticipate that our ATC #3 will an require additional 0.19 acre of right-of-way from one property in the northwest quandrant of the interchange and we will work with the Administration once the Project is awarded to ensure the additional property will be acquired in a timely manner. We are prepared to support the Administration's acquisition efforts with our in house right-of-way resources should they be needed.

Obtaining MDE Permits

Stormwater Management (SWM) and Erosion and Sediment Control Plans (E&S) permits will need to be obtained in a timely manner as to support the project schedule. In order to expedite the MDE permitting process, we will use Mr. Dan O'Leary, PE, an approved MDE reviewer, for all of our submissions to MDE. Mr. O'Leary will review all of our SWM and E&S plans for compliance with MDE regulations prior to submission

to the Administration and MDE for review and approval. We acknowledge that our ATC #3 changes the RFP design requiring changes to grading, E&S control, and SWM. We will revise the current SWM concept report and resubmit to MDE for review and approval prior to submitting final stormwater plans. Once construction begins, we will have one of our supervisors who is fully yellow card trained and experienced in E&S work directing the installation and maintenance of all devices.

Other Permit Restrictions: The culvert extensions and Carey Branch stream relocation will be scheduled to accommodate the time-of-year restrictions that will be imposed annually from March 1 to June 15th.

Utilities Coordination and Relocation

Utility conflicts are always a major source of potential delays and represent a significant element of this Project. Our Team will continue the Administration's coordination meetings with the existing utility providers in the Project area. This will be the responsibility of our Project Utility Coordinator, Mr. Todd Kief, who will coordinate with all utilities on the overall project design, schedule and construction. Mr. Kief and his team have extensive experience from our ICC Contracts C and D/E projects, as well as numerous other projects requiring utility design and relocations, coordinating and relocating utilities with the same owners as impacted on this Project. Mr. Kief will schedule early kick-off and schedule coordination meetings, and field coordination efforts to prevent scheduling issues from affecting the Project. He will also be responsible for obtaining any utility permits. The WSSC and Washington Gas work does require coordinating specific shutdowns of service for their existing facilities. Our Detailed Project Schedule has taken the seasonal demand loadings into account to allow acquired shutdowns to be done off-peak to minimize service impacts.

Coordinating with Utility Relocations by Others

Our Team will apply our past experience to continue work with PEPCO, Verizon, Comcast and Level 3 during the completion of their designs and during the relocations. We will help layout a design to keep the utilities overhead as they prefer. We will assist with MOT during relocation and protect their facilities after relocation. Our goal is to coordinate and accommodate the utility relocations to meet or stay ahead of the project schedule.

Utility Relocations by our Team

Obtaining Approved WSSC Relocation Plans to Support the Project Schedule: We will identify unavoidable conflicts with the existing WSSC facilities and begin design of the relocations as early in the design phase as possible so as to not negatively impact the project schedule. We have designed and constructed numerous small diameter and large diameter WSSC water and sewer relocations on many design-build projects in the area. We understand the seasonal restrictions WSSC has in place for shutdowns and temporary services. We have proven experience and expertise to develop the relocation plans, coordinate with WSSC and obtain their approvals, coordinate the shutdowns, construct the relocations, test the facilities and work with the assigned WSSC inspector for their return to service.

Design and Relocation of Washington Gas: Our Team has designed and relocated Washington Gas facilities throughout their full service area. We are experienced with their design/construction standards and staff. As with the other utilities described above, we will identify unavoidable conflicts, follow Washington Gas design requirements and relocate their facilities utilizing one of the approved designers identified in the RFP. We will utilize one of the pre-approved Design-Consultants for Washington Gas to submit designs for review and approval/comment. Washington Gas operates on a seasonal basis and our Team will coordinate shutdowns and pressure reductions with Washington Gas for tie-ins and connection points.

SHA Traffic Control Devices: Our Team will coordinate the design and construction of any impacted utility service connections to SHA traffic control devices on the Project to ensure continuous operation.

Risk Management

As with every design-build project, there are risks that can affect the cost and/or the schedule. Our Team's extensive experience in delivering over $2 billion in civil infrastructure projects in this area have provided us with a vast range of expertise to identify, manage, avoid, and mitigate potential risks that could negatively affect the successful delivery of this Project. The major design and construction risks include:

Design Risk	Mitigation Approach
Obtaining MDE permits	• We (including Dan O'Leary, PE, our Approved MDE reviewer) will identify the approach for E&S and SWM design, the review process and obtain buy-in from the Administration and MDE at the Pre-permitting meeting as well as throughout the Project. • We will proactively meet with the Administration and MDE on a regular basis to work through design related issues to avoid construction delays.
MDE review and approval of modified SWM Concept	• ATC #3 reduces impervious by approximately 0.5 AC. Overall the concept is relatively similar to the RFP SWM Concept. • We will work with the Administration and MDE through Dan O'Leary, PE to obtain approval early in the design development phase.
Obtaining WSSC approved relocation plans	• All impacted WSSC water and sewer facilities have been identified through the proposal process. Design for these facilities will begin immediately and approvals obtained as quickly as possible as to not impact the construction schedule
Obtaining additional ROW not already in process by the Administration	• We will identify the additional right-of-way needs early in the design process and work with the Administration to begin the process as early as possible to avoid construction delays
Performing a new noise analysis/model	• We will revise the noise model and provide noise abatement measures compliant with RFP and project commitments
Permit modifications	• We will identify any additional impacts early in the design process and revise the necessary permits for approval.
NEPA Environmental Summary/Re-evaluation	• We will provide all information early in the design process for the Administration to complete this work.
Additional public outreach due to revised interchange design	• We will work with the local community and elected officials through coordination with the Administration during the Roundabout review process.
Provide safe bicycle access across proposed outside exit and entrance ramps off MD 210	• We will use MUTCD and AASHTO design guidelines to provide safe access across the proposed exit and entrance ramps.

Safety/Maintenance of Traffic

Public safety and the safety of our work force is our primary concern. We will work diligently to ensure everyone

involved, the public and our workers, are protected. This will be accomplished by providing separation of work zones and vehicles by using devices such a temporary concrete barriers, truck mounted attenuators, and barrels. We will keep the traveling public safe by alerting them to potential hazards and by using modern and effective traffic control devices. We will use construction signage, VMS units, and pavement markers for this purpose. Pedestrians will be provided safe passage around work zones. We intend to request speed monitoring equipment be installed throughout the life of the Contract.

Schedule Control

Maintaining or improving the Contract Schedule is a primary responsibility of our management team. Our Project Schedule will be constantly monitored to avoid slippage and to make corrections as circumstances warrant. If, during the course of the Project, we encounter delays to the Project's Critical Path, we will complete a Time Impact Analysis (TIA), re-sequence the schedule, and prepare a schedule recovery plan to reclaim lost time. This plan may include increasing work shifts, adding crews and resources to construct Critical Path activities concurrently, and changing MOT schemes or modifying the design to remove activities from the critical path. If it is early in the Project at the time the delay is encountered, schedule recovery may require adjustments by any or all discipline managers including Design, Permitting, Right-of-Way, Utility Relocation, and Construction. However, if all other design-build disciplines have completed their tasks, re-sequencing the construction schedule by the Construction Manager will be the primary focus in order to mitigate the delay.

Cost Control

The management and control of the overall Project's costs starts day one. Our Team will work to provide a constructible, practical design that meets the Administration's criteria while providing the greatest value for the owner. The management and control of the cost of the Project will continue during the finalization of the design by continuing the involvement of the construction and design personnel side by side. In addition, our Team will continue to control the cost of the Project through a multiple input format for the procurement of all required materials and subcontractors for the Project. This process involves both the estimating department and the Project field staff, independently scoping and acquiring prices for the materials and subcontractors necessary. Upon compilation of the information, the two groups sit down, review and analyze the information and propose a best value. Finally, during construction, a customized Project cost control system will be implemented. The Project cost control system is accomplished by the use of a proprietary accounting system that tracks production costs on a daily basis. Our field personnel will track and report daily productions for major work items. A Project Cost Engineer will then produce and distribute to the Team, a daily cost feedback report. This daily cost feedback then allows for immediate adjustments in either the means and/or methods of that activity or resources being used to accomplish that activity. In addition, this feedback will provide very early warning signs of activities that may ultimately exceed the budget. Our Team has a very detailed cost accounting system, which can track every cost aspect of the Project. A detailed budget is developed from the bid documents and used to track cost versus budget for every item on the Project. Cost details are always available immediately to the managers. We will generate a weekly cost report based on weekly progress quantities turned in. An extremely detailed report is done quarterly. From these reports, a manager will spot issues early on and look for solutions or alternatives.

Unknown Utilities

From experience on many projects in this area, we know that there is a good chance that we will discover unmarked or unknown underground utilities during construction. Should this occur, we will notify the Administration immediately and conduct an on-site meeting to identify the utility and determine what course

of action must be taken to avoid or relocate if possible. We will work together with the Administration to mitigate potential schedule impacts.

Schedule Management

Project Schedule

Another critical element in a fully integrated Design-Build Team is the development and maintenance of the Project Schedule. Our Team understands that one of the major benefits of completing the Project as Design-Build is the ability to advance the overall project schedule, from design completion to ground breaking, meeting milestone 1, to opening day. Prior to NTP, we will develop a schedule that ties all elements of the Project into a single integrated schedule from design through construction. Our schedule will clearly identify key elements with milestone completion dates by physical location; design deliverables, and construction phases of civil and structural work. As part of this overall schedule, Dewberry will provide a schedule of deliverables to Shirley and the Administration to ensure that reviews of the design packages can be communicated to all in order to provide the appropriate lead time to meet construction deadlines. We will review and update this schedule as needed, with a goal of providing as much time as possible. Emphasis is placed on the long lead items such as obtaining MDE permits; WSSC relocation approvals; coordination with third party utilities for relocations by others; and early steel package for the bridges.

Progress Schedule

Our Team will aggressively control the Project Schedule through the creation, weekly review, and continual updating of several schedules. From the overall schedule, a milestone schedule will be developed to provide interim goals. The milestone schedules will then be used to develop two to six week look-ahead schedules for the work crews in planning their daily work activities. Finally, detailed subcontractor schedules will be developed to provide a customized picture for the subcontractors. Subcontractor performance will be tied directly to the subcontractor milestone schedule. In addition, the cost feedback reporting system will also provide real time data as to progress of each of the major work items. This reporting system, coupled with the other schedules, will allow the Team to detect and identify the necessary adjustments to the work at a very early stage and therefore ensure timely completion of the Project.

Both our Design-Build Manager and Construction Manager have extensive experience in developing, managing, and maintaining project schedules on similar projects. The final development and the updating of our Project Schedule will be performed by our Construction Manager, while members of our Team will contribute to this effort and review the schedule and its updates to ensure accuracy and completeness. Shirley will fully rely on our in-house capabilities' using Primavera P6 software for project scheduling and processing the required schedule reports for the baseline submission, as well as all updates and revisions. Self-performance allows our managers to be intimately aware of the job's needs, closely monitor progress, and take immediate corrective action if the schedule is potentially affected.

There are a number of potential problems that could affect progress: regulatory delays; right-of-way acquisition delays; public opposition; unanticipated utility conflicts; differing site conditions; owner-directed changes; shortages of manpower, availability of equipment or material; non-responsive subcontractors or vendors; or any other problem will be addressed promptly if or when they occur. As for known factors, critical path and long-lead time items are identified early in the scheduling process and given special attention to avoid schedule slippage. Our managers are vigilant in securing sufficient manpower and equipment as well as ensuring needed construction materials are available.

In the unlikely event that we fall behind schedule of our own accord or through contract changes that may occur, we have several potential remedies to maintain our schedule depending on the nature of the problem. Although we carefully screen our subcontractors and vendors, problems do occasionally occur. In the event of poor performance, we are always prepared to use alternative sources. Another possible solution might be to provide a recovery schedule that re-sequences our planned order of work to avoid, work around, or overcome problems. We can also provide additional manpower and equipment and/or work selective overtime to regain lost time. It is an integral part of our managers' job duties to be prepared for and to take necessary measures to remain on schedule.

Change Management

Complex Design-build projects often encounter changes as the design is ongoing and released for construction, prior to the final completed design. Typically these changes fall into two categories; changes inside the scope or outside the scope of the Project. Our Team will continuously review all field changes whether owner directed or issues outside the original contract scope, as well as contractor-requested changes such as constructability issues, changes for the contractor's convenience, overlooked details or other similar reasons. All changes to the design and/or construction to be implemented in the field, regardless of responsibility, will be properly discussed with the Administration in advance. For changes in scope, we will promptly inform the Administration of the specific issue, promptly hold a meeting to discuss and consider available options, then provide recommendations, and follow-up with a written proposal prior to proceeding with the revised design and only after we receive concurrence from the Administration. All revisions will receive the same care and scrutiny that the original design underwent. All changes will be tracked and be available to all required staff through our Document Control procedures that tracks revisions, approval process, reason for change, and a narrative or description of the change.

Issued for Construction (IFC) Drawings

Upon design review and acceptance, the IFC drawings are issued. The design team will remain involved and will have decision-making authority with respect to any changes. The design team will visit the site on a regular basis and, if necessary, station a Senior Engineer on-site, to maintain coordination between Dewberry and Shirley once construction starts. The Designer will coordinate required adjustments, clarifications or formal design changes to meet the needs of the contractor and project. The Project Design Manager will attend the regular construction coordination/schedule meetings to identify potential issues, provide advice, answer or explain RFIs, expedite shop drawing reviews or provide interpretation or clarification of the IFC drawings. If a change requires revisions to an IFC drawing, a Notice of Design Change will be developed, follow the QC and QA process, and then will be issued IFC. All changes will be clearly posted and all affected parties will be properly notified. Conformed plans will then be issued for field use.

As-Built Drawings

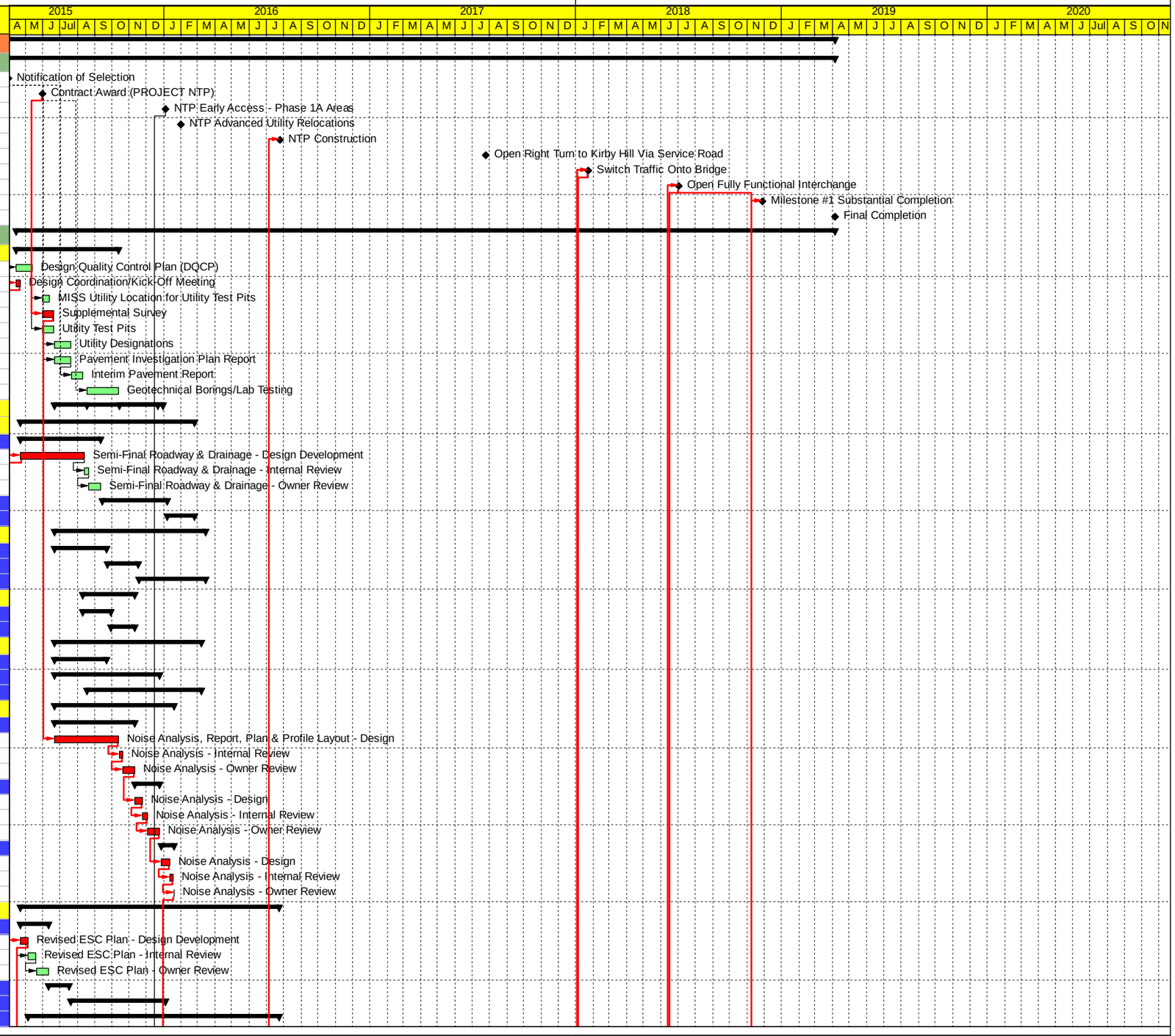
Final drawings will be issued which reflect all changes that have been incorporated into the Project. These drawings will be continually assembled on site throughout the duration of the Project. Just prior to areas of work being turned over for use, Dewberry will perform as-built surveys as needed. Upon completion of the Project, the final submittal will be assembled, checked and verified by all appropriate members of Shirley. Shirley will then furnish one comprehensive set of as-built plans at the completion of the Project that are signed and sealed by the Engineer.

MD 210 at Livingston Road/ Kirby Hill Road Interchange

SUMMARY SCHEDULE

February 18, 2015

Activity ID	Activity Name	Original Duration	Start	Finish
MD 210 Design-Build		1018	01-Apr-15	05-Apr-19
PROJECT MILESTONES		1018	01-Apr-15	05-Apr-19
1.100	Notification of Selection	0	01-Apr-15	
1.115	Contract Award (PROJECT NTP)	0	01-Jun-15*	
1.125	NTP Early Access - Phase 1A Areas	0	05-Jan-16	
1.120	NTP Advanced Utility Relocations	0	01-Feb-16	
1.130	NTP Construction	0	25-Jul-16	
1.135	Open Right Turn to Kirby Hill Via Service Road	0	26-Jul-17	
1.500	Switch Traffic Onto Bridge	0		23-Jan-18
1.600	Open Fully Functional Interchange	0		03-Jul-18
1.700	Milestone #1 Substantial Completion	0		27-Nov-18*
1.750	Final Completion	0		05-Apr-19
DESIGN		1008	15-Apr-15	05-Apr-19
PRELIMINARY DESIGN-SURVEY/MAPPING		127	15-Apr-15	13-Oct-15
2.00.100	Design Quality Control Plan (DQCP)	20	15-Apr-15	12-May-15
2.00.115	Design Coordination/Kick-Off Meeting	5	15-Apr-15	21-Apr-15
2.00.110	MISS Utility Location for Utility Test Pits	10	01-Jun-15	12-Jun-15
2.00.120	Supplemental Survey	15	01-Jun-15	19-Jun-15
2.00.125	Utility Test Pits	15	01-Jun-15	19-Jun-15
2.00.130	Utility Designations	20	22-Jun-15	20-Jul-15
2.00.140	Pavement Investigation Plan Report	20	22-Jun-15	20-Jul-15
2.00.145	Interim Pavement Report	15	21-Jul-15	10-Aug-15
2.00.135	Geotechnical Borings/Lab Testing	40	18-Aug-15	13-Oct-15
GEOTECHNICAL		132	22-Jun-15	30-Dec-15
ROAD & DRAINAGE		214	22-Apr-15	25-Feb-16
SEMI-FINAL		100	22-Apr-15	11-Sep-15
2.00.470	Semi-Final Roadway & Drainage - Design Development	80	22-Apr-15	13-Aug-15
2.00.475	Semi-Final Roadway & Drainage - Internal Review	5	14-Aug-15	20-Aug-15
2.00.480	Semi-Final Roadway & Drainage - Owner Review	21	21-Aug-15	11-Sep-15
FINAL		79	14-Sep-15	07-Jan-16
ISSUED FOR CONSTRUCTION		35	08-Jan-16	25-Feb-16
MAINTENANCE OF TRAFFIC		185	22-Jun-15	15-Mar-16
SEMI-FINAL		65	22-Jun-15	22-Sep-15
FINAL		40	23-Sep-15	17-Nov-15
ISSUED FOR CONSTRUCTION		80	18-Nov-15	15-Mar-16
INTERIM PAVEMENT		65	11-Aug-15	10-Nov-15
SEMI-FINAL		35	11-Aug-15	29-Sep-15
FINAL		30	30-Sep-15	10-Nov-15
ENVIRONMENTAL		179	22-Jun-15	08-Mar-16
SEMI-FINAL		65	22-Jun-15	22-Sep-15
FINAL		129	22-Jun-15	24-Dec-15
ISSUED FOR CONSTRUCTION		139	18-Aug-15	08-Mar-16
NOISE ANALYSIS		144	22-Jun-15	19-Jan-16
SEMI-FINAL		100	22-Jun-15	10-Nov-15
2.00.165	Noise Analysis, Report, Plan & Profile Layout - Design	80	22-Jun-15	13-Oct-15
2.00.170	Noise Analysis - Internal Review	5	14-Oct-15	20-Oct-15
2.00.175	Noise Analysis - Owner Review	21	21-Oct-15	10-Nov-15
FINAL		29	11-Nov-15	24-Dec-15
2.00.240	Noise Analysis - Design	10	11-Nov-15	24-Nov-15
2.00.245	Noise Analysis - Internal Review	5	25-Nov-15	03-Dec-15
2.00.250	Noise Analysis - Owner Review	21	04-Dec-15	24-Dec-15
ISSUED FOR CONSTRUCTION		15	28-Dec-15	19-Jan-16
2.00.315	Noise Analysis - Design	10	28-Dec-15	11-Jan-16
2.00.320	Noise Analysis - Internal Review	5	12-Jan-16	18-Jan-16
2.00.325	Noise Analysis - Owner Review	0	19-Jan-16	19-Jan-16
EROSION & SEDIMENT		318	22-Apr-15	23-Jul-16
ADVANCED UTILITY 1ST		35	22-Apr-15	10-Jun-15
2.00.605	Revised ESC Plan - Design Development	10	22-Apr-15	05-May-15
2.00.610	Revised ESC Plan - Internal Review	10	06-May-15	19-May-15
2.00.615	Revised ESC Plan - Owner Review	21	20-May-15	10-Jun-15
ADVANCED UTILITY FINAL		26	11-Jun-15	17-Jul-15
EARLY ACCESS		115	20-Jul-15	04-Jan-16
INITIAL AND FINAL		308	06-May-15	23-Jul-16



Remaining Level of Effort
Summary
Remaining Work
Critical Remaining Work
Milestone

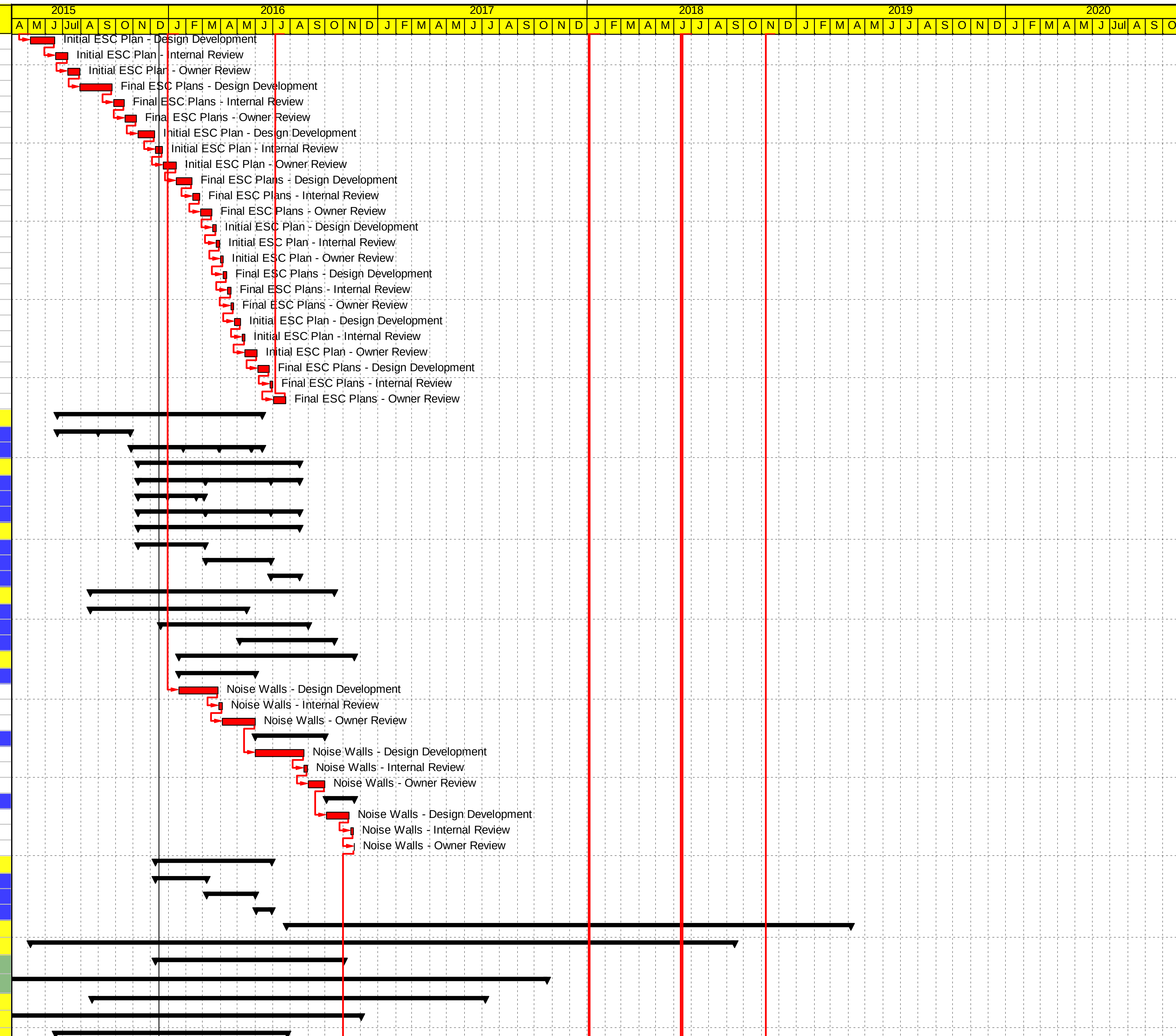
SHIRLEY CONTRACTING COMPANY, LLC

MD 210 at Livingston Road/ Kirby Hill Road Interchange

SUMMARY SCHEDULE

February 18, 2015

Activity ID	Activity Name	Original Duration	Start	Finish
2.00.635	Initial ESC Plan - Design Development	30	06-May-15	17-Jun-15
2.00.640	Initial ESC Plan - Internal Review	15	18-Jun-15	09-Jul-15
2.00.645	Initial ESC Plan - Owner Review	21	10-Jul-15	30-Jul-15
2.00.650	Final ESC Plans - Design Development	40	31-Jul-15	25-Sep-15
2.00.655	Final ESC Plans - Internal Review	15	28-Sep-15	16-Oct-15
2.00.660	Final ESC Plans - Owner Review	21	17-Oct-15	06-Nov-15
2.00.665	Initial ESC Plan - Design Development	20	09-Nov-15	08-Dec-15
2.00.670	Initial ESC Plan - Internal Review	10	09-Dec-15	22-Dec-15
2.00.675	Initial ESC Plan - Owner Review	21	23-Dec-15	14-Jan-16
2.00.680	Final ESC Plans - Design Development	20	15-Jan-16	11-Feb-16
2.00.685	Final ESC Plans - Internal Review	10	12-Feb-16	25-Feb-16
2.00.690	Final ESC Plans - Owner Review	21	26-Feb-16	17-Mar-16
2.00.725	Initial ESC Plan - Design Development	5	18-Mar-16	24-Mar-16
2.00.730	Initial ESC Plan - Internal Review	5	25-Mar-16	31-Mar-16
2.00.735	Initial ESC Plan - Owner Review	5	01-Apr-16	05-Apr-16
2.00.740	Final ESC Plans - Design Development	5	06-Apr-16	12-Apr-16
2.00.745	Final ESC Plans - Internal Review	5	13-Apr-16	19-Apr-16
2.00.750	Final ESC Plans - Owner Review	5	20-Apr-16	24-Apr-16
2.00.695	Initial ESC Plan - Design Development	10	25-Apr-16	06-May-16
2.00.700	Initial ESC Plan - Internal Review	5	09-May-16	13-May-16
2.00.705	Initial ESC Plan - Owner Review	21	14-May-16	04-Jun-16
2.00.710	Final ESC Plans - Design Development	15	06-Jun-16	24-Jun-16
2.00.715	Final ESC Plans - Internal Review	5	27-Jun-16	01-Jul-16
2.00.720	Final ESC Plans - Owner Review	21	02-Jul-16	23-Jul-16
STORM WATER MANAGEMENT		248	22-Jun-15	13-Jun-16
CONCEPT SWM REPORT		90	22-Jun-15	27-Oct-15
FINAL SWM PLANS		158	28-Oct-15	13-Jun-16
SIGNS, TEMP SIGNALS & LIGHTING		195	09-Nov-15	17-Aug-16
SIGNS & MARKINGS		195	09-Nov-15	17-Aug-16
TEMP SIGNALS		79	09-Nov-15	04-Mar-16
LIGHTING		195	09-Nov-15	17-Aug-16
ITS		195	09-Nov-15	17-Aug-16
PRELIMINARY		80	09-Nov-15	04-Mar-16
FINAL		80	07-Mar-16	27-Jun-16
ISSUED FOR CONSTRUCTION		35	28-Jun-16	17-Aug-16
STRUCTURAL		295	18-Aug-15	17-Oct-16
TS&L		189	18-Aug-15	16-May-16
FINAL		180	18-Dec-15	01-Sep-16
ISSUED FOR CONSTRUCTION		114	05-May-16	17-Oct-16
SOUNDWALL		216	19-Jan-16	21-Nov-16
TS & L		95	19-Jan-16	31-May-16
3.00.330	Noise Walls - Design Development	50	19-Jan-16	28-Mar-16
3.00.335	Noise Walls - Internal Review	5	29-Mar-16	04-Apr-16
3.00.340	Noise Walls - Owner Review	40	05-Apr-16	31-May-16
FINAL		86	01-Jun-16	30-Sep-16
3.00.405	Noise Walls - Design Development	60	01-Jun-16	24-Aug-16
3.00.410	Noise Walls - Internal Review	5	25-Aug-16	31-Aug-16
3.00.415	Noise Walls - Owner Review	21	01-Sep-16	30-Sep-16
ISSUED FOR CONSTRUCTION		35	03-Oct-16	21-Nov-16
3.00.480	Noise Walls - Design Development	30	03-Oct-16	11-Nov-16
3.00.485	Noise Walls - Internal Review	5	14-Nov-16	18-Nov-16
3.00.490	Noise Walls - Owner Review	0	21-Nov-16	21-Nov-16
LANDSCAPE		142	09-Dec-15	30-Jun-16
PRELIMINARY		61	09-Dec-15	07-Mar-16
FINAL		61	08-Mar-16	01-Jun-16
ISSUED FOR CONSTRUCTION		20	02-Jun-16	30-Jun-16
CONSTRUCTION SUPPORT		685	25-Jul-16	05-Apr-19
PUBLIC OUTREACH		852	06-May-15	14-Sep-18
RIGHT-OF-WAY ACQUISITIONS		230	09-Dec-15	02-Nov-16
UTILITY RELOCATIONS		650	01-Apr-15	23-Oct-17
LEVEL 3 RELOCATIONS		475	21-Aug-15	07-Jul-17
WATER RELOCATIONS		425	01-Apr-15	02-Dec-16
SEWER RELOCATIONS		280	18-Jun-15	26-Jul-16



Remaining Level of Effort
Summary
Remaining Work
Critical Remaining Work
Milestone

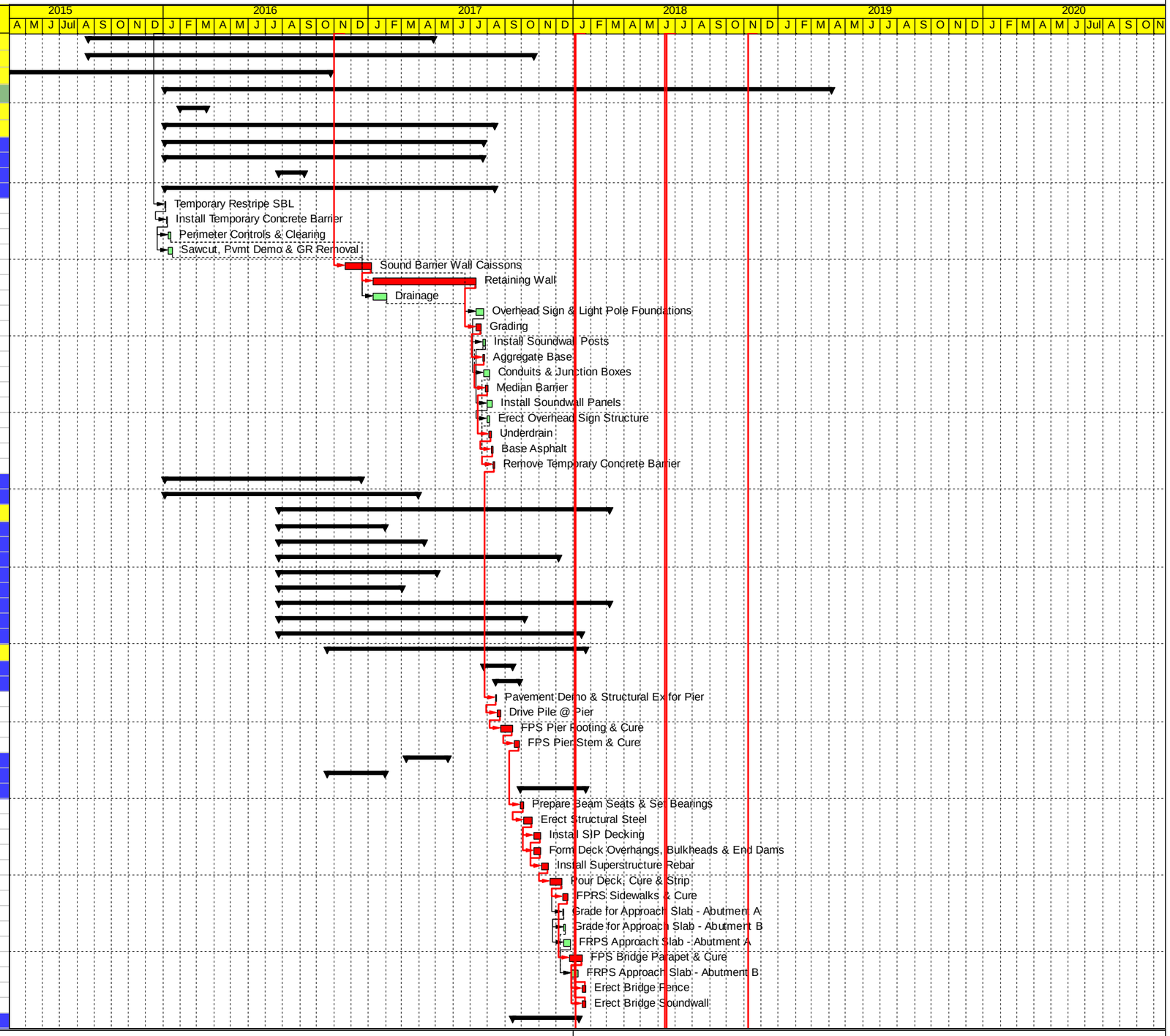
SHIRLEY
CONTRACTING COMPANY, LLC

MD 210 at Livingston Road/ Kirby Hill Road Interchange

SUMMARY SCHEDULE

February 18, 2015

Activity ID	Activity Name	Original Duration	Start	Finish
	PEPCO RELOCATIONS	425	21-Aug-15	26-Apr-17
	VERIZON & COMCAST RELOCATIONS	550	21-Aug-15	23-Oct-17
	WASHINGTON GAS RELOCATIONS	400	01-Apr-15	26-Oct-16
	CONSTRUCTION	827	05-Jan-16	05-Apr-19
	STAGE 1 UTILITY-PREP	35	01-Feb-16	18-Mar-16
	STAGE 1A CONSTRUCTION	410	05-Jan-16	14-Aug-17
	SERVICE ROAD	396	05-Jan-16	25-Jul-17
	SOUTHWEST RAMP	395	05-Jan-16	24-Jul-17
	INTERSECTION DETOUR	34	25-Jul-16	09-Sep-16
	SB RTE 210 OUTSIDE STA 699 TO 732	410	05-Jan-16	14-Aug-17
100100	Temporary Restripe SBL	2	05-Jan-16	06-Jan-16
100110	Install Temporary Concrete Barrier	2	07-Jan-16	08-Jan-16
100120	Perimeter Controls & Clearing	5	11-Jan-16	15-Jan-16
100130	Sawcut, Pvmt Demo & GR Removal	6	11-Jan-16	18-Jan-16
100140	Sound Barrier Wall Caissons	30	21-Nov-16	06-Jan-17
100150	Retaining Wall	130	09-Jan-17	11-Jul-17
100180	Drainage	20	09-Jan-17	03-Feb-17
100160	Overhead Sign & Light Pole Foundations	10	12-Jul-17	25-Jul-17
100190	Grading	8	12-Jul-17	21-Jul-17
100200	Install Soundwall Posts	5	24-Jul-17	28-Jul-17
100220	Aggregate Base	4	24-Jul-17	27-Jul-17
100170	Conduits & Junction Boxes	8	26-Jul-17	04-Aug-17
100230	Median Barrier	4	28-Jul-17	02-Aug-17
100210	Install Soundwall Panels	8	31-Jul-17	09-Aug-17
100270	Erect Overhead Sign Structure	5	31-Jul-17	04-Aug-17
100240	Underdrain	3	03-Aug-17	07-Aug-17
100250	Base Asphalt	3	08-Aug-17	10-Aug-17
100290	Remove Temporary Concrete Barrier	2	11-Aug-17	14-Aug-17
	NORTHWEST RAMP	245	05-Jan-16	19-Dec-16
	REPLACEMENT PARKING	315	05-Jan-16	30-Mar-17
	STAGE 1B CONSTRUCTION	409	25-Jul-16	06-Mar-18
	Kirby Hill Road & Service Road Connection	130	25-Jul-16	30-Jan-17
	LIVINGSTON ROAD WIDENING	180	25-Jul-16	10-Apr-17
	SBL RTE 210 SOUTH OF SW RAMP	346	25-Jul-16	05-Dec-17
	NBL RTE 210 SOUTH OF SE RAMP	196	25-Jul-16	02-May-17
	SBL RTE 210 NORTH OF WWB DR TO STA 693	152	25-Jul-16	01-Mar-17
	SOUTHEAST RAMP	409	25-Jul-16	06-Mar-18
	NORTHEAST RAMP	306	25-Jul-16	06-Oct-17
	NBL RTE 210 NORTH OF NE RAMP	373	25-Jul-16	15-Jan-18
	STAGE 2 CONSTRUCTION	317	20-Oct-16	23-Jan-18
	CAREY BRANCH CROSSING ABUTMENT B	36	26-Jul-17	14-Sep-17
	MD 210 PIER	31	15-Aug-17	27-Sep-17
201000	Pavement Demo & Structural Ex for Pier	3	15-Aug-17	17-Aug-17
201010	Drive Pile @ Pier	5	18-Aug-17	24-Aug-17
201020	FPS Pier Footing & Cure	15	25-Aug-17	15-Sep-17
201030	FPS Pier Stem & Cure	8	18-Sep-17	27-Sep-17
	ABUTMENT A	54	09-Mar-17	23-May-17
	ABUTMENT B	69	20-Oct-16	31-Jan-17
	SUPERSTRUCTURE	80	28-Sep-17	23-Jan-18
205000	Prepare Beam Seats & Set Bearings	5	28-Sep-17	04-Oct-17
205010	Erect Structural Steel	12	05-Oct-17	20-Oct-17
205020	Install SIP Decking	10	23-Oct-17	03-Nov-17
205030	Form Deck Overhangs, Bulkheads & End Dams	10	23-Oct-17	03-Nov-17
205040	Install Superstructure Rebar	10	06-Nov-17	17-Nov-17
205050	Pour Deck, Cure & Strip	15	20-Nov-17	12-Dec-17
205060	FPRS Sidewalks & Cure	8	13-Dec-17	22-Dec-17
205100	Grade for Approach Slab - Abutment A	2	13-Dec-17	14-Dec-17
205110	Grade for Approach Slab - Abutment B	2	15-Dec-17	18-Dec-17
205120	FRPS Approach Slab - Abutment A	8	15-Dec-17	27-Dec-17
205070	FPS Bridge Parapet & Cure	15	26-Dec-17	16-Jan-18
205130	FRPS Approach Slab - Abutment B	8	28-Dec-17	09-Jan-18
205080	Erect Bridge Fence	5	17-Jan-18	23-Jan-18
205090	Erect Bridge Soundwall	5	17-Jan-18	23-Jan-18
	CAREY BRANCH CROSSING SUPERSTRUCTURE	80	15-Sep-17	10-Jan-18



Remaining Level of Effort
Summary
Remaining Work
Critical Remaining Work
Milestone

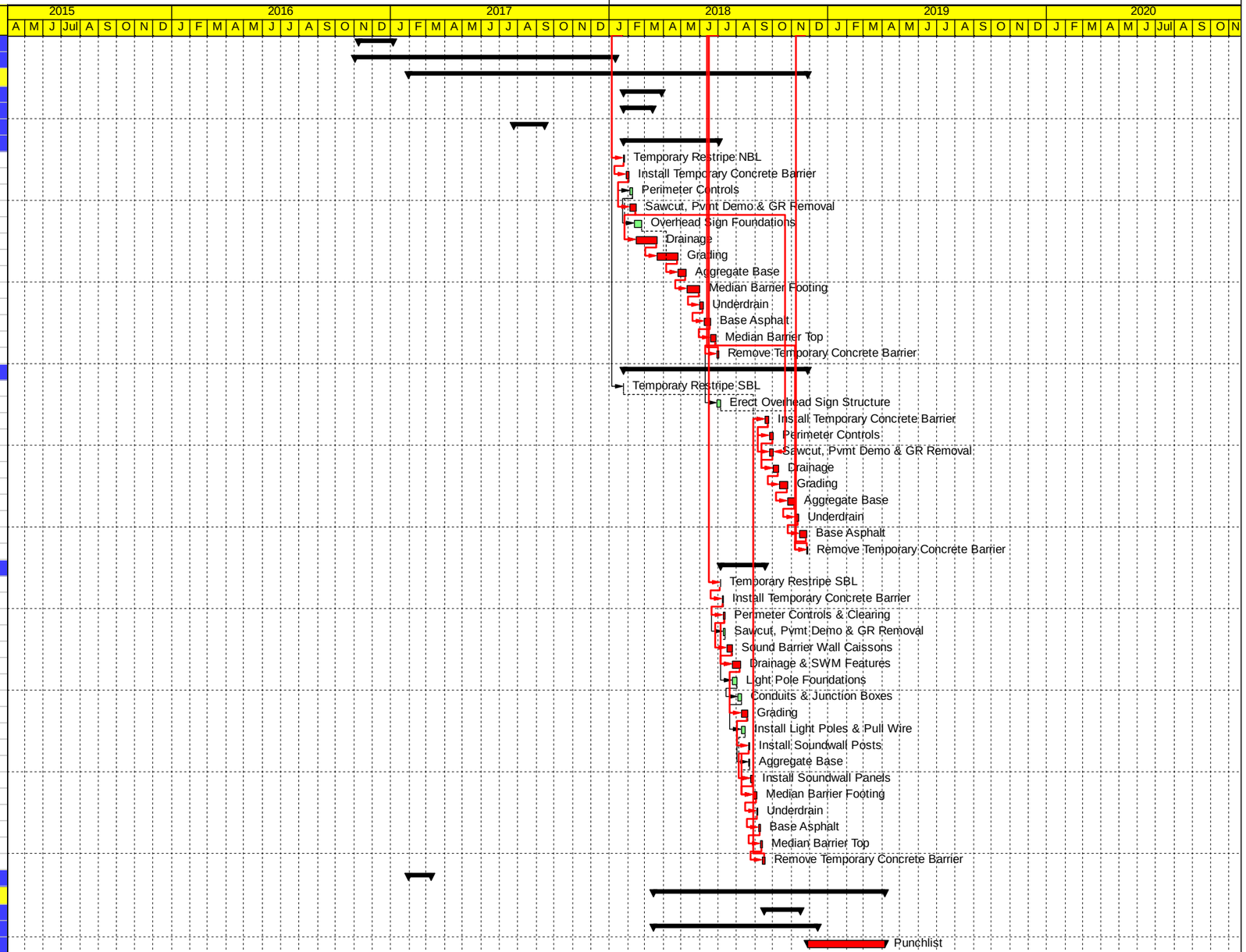
SHIRLEY CONTRACTING COMPANY, LLC

MD 210 at Livingston Road/ Kirby Hill Road Interchange

SUMMARY SCHEDULE

February 18, 2015

Activity ID	Activity Name	Original Duration	Start	Finish
	CAREY BRANCH CROSSING ABUTMENT A	36	09-Nov-16	04-Jan-17
	MSE AREA BETWEEN BRIDGES & CONN TO EXISTING	299	03-Nov-16	11-Jan-18
	STAGE 3 CONSTRUCTION	464	31-Jan-17	27-Nov-18
	SOUTHEAST RAMP	47	24-Jan-18	29-Mar-18
	LIVINGSTON TRAFFIC CIRCLE	36	24-Jan-18	14-Mar-18
	NORTHWEST RAMP TRAFFIC CIRCLE	37	26-Jul-17	15-Sep-17
	ROUTE 210 MEDIAN NORTHBOUND	114	24-Jan-18	03-Jul-18
303010	Temporary Restripe NBL	3	24-Jan-18	26-Jan-18
303020	Install Temporary Concrete Barrier	5	29-Jan-18	02-Feb-18
303260	Perimeter Controls	5	05-Feb-18	09-Feb-18
303310	Sawcut, Pvmt Demo & GR Removal	8	05-Feb-18	14-Feb-18
303340	Overhead Sign Foundations	10	12-Feb-18	23-Feb-18
303330	Drainage	25	15-Feb-18	21-Mar-18
303350	Grading	25	22-Mar-18	25-Apr-18
303390	Aggregate Base	10	26-Apr-18	09-May-18
303410	Median Barrier Footing	15	10-May-18	31-May-18
303430	Underdrain	5	01-Jun-18	07-Jun-18
303440	Base Asphalt	7	08-Jun-18	18-Jun-18
303450	Median Barrier Top	8	19-Jun-18	28-Jun-18
303460	Remove Temporary Concrete Barrier	3	29-Jun-18	03-Jul-18
	ROUTE 210 MEDIAN SOUTHBOUND	215	24-Jan-18	27-Nov-18
303320	Temporary Restripe SBL	2	24-Jan-18	25-Jan-18
303550	Erect Overhead Sign Structure	5	29-Jun-18	06-Jul-18
303360	Install Temporary Concrete Barrier	5	18-Sep-18	24-Sep-18
303370	Perimeter Controls	5	25-Sep-18	01-Oct-18
303380	Sawcut, Pvmt Demo & GR Removal	5	25-Sep-18	01-Oct-18
303420	Drainage	8	02-Oct-18	11-Oct-18
303480	Grading	10	12-Oct-18	25-Oct-18
303520	Aggregate Base	8	26-Oct-18	06-Nov-18
303560	Underdrain	5	07-Nov-18	13-Nov-18
303570	Base Asphalt	7	14-Nov-18	26-Nov-18
303590	Remove Temporary Concrete Barrier	1	27-Nov-18	27-Nov-18
	RTE 210 SBL STA 693 TO 699	52	05-Jul-18	17-Sep-18
303050	Temporary Restripe SBL	2	05-Jul-18	06-Jul-18
303090	Install Temporary Concrete Barrier	2	09-Jul-18	10-Jul-18
303130	Perimeter Controls & Clearing	3	11-Jul-18	13-Jul-18
303150	Sawcut, Pvmt Demo & GR Removal	3	11-Jul-18	13-Jul-18
303160	Sound Barrier Wall Caissons	8	16-Jul-18	25-Jul-18
303170	Drainage & SWM Features	10	26-Jul-18	08-Aug-18
303180	Light Pole Foundations	6	26-Jul-18	02-Aug-18
303200	Conduits & Junction Boxes	5	03-Aug-18	09-Aug-18
303190	Grading	8	09-Aug-18	20-Aug-18
303210	Install Light Poles & Pull Wire	5	10-Aug-18	16-Aug-18
303220	Install Soundwall Posts	3	21-Aug-18	23-Aug-18
303230	Aggregate Base	3	21-Aug-18	23-Aug-18
303240	Install Soundwall Panels	4	24-Aug-18	29-Aug-18
303250	Median Barrier Footing	3	30-Aug-18	04-Sep-18
303270	Underdrain	2	05-Sep-18	06-Sep-18
303280	Base Asphalt	2	07-Sep-18	10-Sep-18
303290	Median Barrier Top	3	11-Sep-18	13-Sep-18
303300	Remove Temporary Concrete Barrier	2	14-Sep-18	17-Sep-18
	KIRBY HILL PRIVATE ACCESS	28	31-Jan-17	09-Mar-17
	STAGE 4 CONSTRUCTION	269	16-Mar-18	05-Apr-19
	REFORESTATION & PLANTINGS	45	17-Sep-18	16-Nov-18
	FINAL PAVING	191	16-Mar-18	14-Dec-18
	CLEANUP AND PUNCHLIST	91	28-Nov-18	05-Apr-19



Remaining Level of Effort
Summary
Remaining Work
Critical Remaining Work
Milestone

SHIRLEY CONTRACTING COMPANY, LLC

2.09.04 - Environmental Approach

2.09.04 Environmental Approach

Introduction

A successful project in today's environment requires the design-build team to meet or exceed all environmental commitments, avoid and minimize impacts to the surrounding environment and, where feasible, improve upon existing conditions. To do this, all parties involved must have a thorough understanding of the project scope and of the commitments made to ensure compliance with applicable federal, state, and local environmental regulations as well as to local stakeholders. Our Team will identify and assess the construction activities that will impact environmental resources early in the design process to facilitate alternatives analysis and to maximize the impact avoidance and minimization. It is not adequate to simply comply with regulatory requirements during design process, rather we will incorporate the intent of the regulations to truly achieve compliance. During design and construction, open lines of communication between the Designers, the Contractor, the Administration, and regulatory agencies will ensure that additional opportunities to protect the environment are not lost. The major environmental elements of the Project are listed below along with our Team's understanding.

Major Environmental Features

A critical component in protecting the natural environment is the successful design and implementation of both stormwater management (SWM) and erosion and sediment control (E&S) measures, in strict conformance with environmental commitments made and permits obtained to date by the Administration. The project site contains unique environmental, geological, and hydraulic conditions. Environmentally sensitive features include jurisdictional nontidal wetlands and waterways (Waters of the US), wetland buffers, 100-year floodplains, and forests. Stormwater runoff from the Project ultimately ends up in the Chesapeake Bay.

Our Team understands that the Administration has had extensive coordination with State and Federal environmental agencies to gain approval for this Project. The Administration has obtained individual permit authorization to impact nontidal wetlands, floodplains and waters of the US from the United States Army Corp of Engineers (USACE) and Maryland Department of the Environment (MDE), authorization to impact forested areas from Maryland Department of Natural Resources (MDDNR) under the Maryland Reforestation Law. These impacts are summarized as follows:

Environmentally Sensitive Feature	Project Impact	Environmentally Sensitive Feature	Project Impact
Waters of the US	1,925 LF (Permanent)	Wetland Buffers	5,611 SF
Waters of the US	109 LF (Temporary)	100-year Floodplain	97,948 SF
Wetlands	1,959 SF	Forest	14.08 AC*

*7.23 acres of on-site replacement is estimated to be provided by the Design Build Team

Additionally, the Administration has submitted a letter of intent (LOI) for the SWM concept from MDE and obtained E&S plan approval from MDE for clearing and grubbing associated with early utility relocation.

Upon contract award, our Team will request a Pre-Permitting meeting through the Administration between our

Team, MDE and the Administration. Our Team will present changes to the Project as a result of incorporation of approved ATC's, revised SWM concept, E&S concepts, submission schedules and overall Project Schedule. Per the RFP, an independent MDE reviewer is only required for E&S reviews. Our Team has Mr. Dan O'Leary, PE, an approved MDE reviewer to perform independent E&S as well as SWM reviews prior to MDE submittals. Revisions to SWM will be done such that it best fits the site context, the adjacent community and the local ecology. Once the SWM and E&S packages are approved and signed off by Mr. O'Leary, we will submit those packages simultaneously to MDE and to the Administration for review and approval. Our Team will submit the Water Quality Summary Sheet (WQSS) with final design and make sure there is no net increase in debit or net reduction in credit from the concept SWM to the Administration's Water Quality Bank. We understand the Administration has submitted a complete Notice of Intent (NOI) form to MDE in accordance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activities and is anticipated to be approved prior to the NTP for this Project.

Our Team will also obtain the Federal Aviation Administration (FAA) Obstruction Evaluation permit. We understand it is our responsibility to obtain any other approvals, permits and licenses, payment of all charges, fees and taxes, and placement of notices necessary or appropriate for the implementation of the Project beyond those obtained by the Administration. This includes, but is not limited to approvals for on or off-site staging, stockpiling areas, disposal sites and borrow pits.

Noise barrier systems are proposed to alleviate the noise to residents adjacent to the Project corridor. They will be designed to meet structural requirements, line-of-sight requirements, and to provide the same, or improved, insertion loss as in the preliminary Noise Technical Analysis Report provided by the Administration.

Environmental Compliance

Our Team will utilize existing proven Best Management Practices (BMPs) in order to meet or exceed the RFP requirements as well as applicable Federal, State, and local laws, ordinances, and regulations. Our Team will obtain any modifications to the NOI due to our design changes and obtain approvals to NOI modifications. We will not start the earth disturbance prior to E&S and NOI approvals. All sensitive areas will be demarcated before any work in the area begins. These areas will be deemed off limits to all employees unless necessary for approved construction and only with permission from our E&S Manager (ESCM). As part of the initial orientation required for all employees working on site, the importance of protection of these features and the methods required to do so will be explained in detail. Written warnings will be given to employees for any and all actions deemed to not be in accordance with our Environmental Compliance Plan (ECP). Repeated violations will be grounds for removal from the Project

Forested Areas and Water Resources

Impacts to forested areas and nontidal wetlands and waterways will be avoided to the maximum extent feasible. Our Team will integrate permit conditions from the nontidal wetlands and waterways permits and the Maryland Reforestation Law Site Review into the design constraints and the project work plan. Environmental professionals will work with design engineers and construction managers to ensure the Project proceeds according to regulatory requirements and the Administration's proactive approach to environmental stewardship. Our Team will actively pursue any compensatory mitigation on-site by improving impaired waterways and outfalls. As with wetland and waterway impacts, forest impacts will be reduced below permit authorization thresholds wherever possible. Our Team includes landscape architects, certified arborists, and licensed tree experts to implement tree preservation and protection measures. We are committed to an integrated

team of environmental specialists, engineers, and construction managers to minimize impacts to resources and provide on-site mitigation. ATC's incorporated into the design will require changes to the limits of disturbance that may require modifications to the USACE and MDE nontidal wetland and waterway permit authorizations and the MDDNR Reforestation Law Site Review. We will coordinate with the Administration to provide all necessary information required to request modification to these permits. Any additional wetland, waterway, or forest mitigation required by the approval of modifications will be the responsibility of our Team.

Implementation of Effective Erosion and Sediment Control

Our Team will design and install E&S measures that meet the current MDE Standards and Specifications. During the design phase, engineers and contractors will work together to coordinate the construction phasing and identify constructability issues. This upfront coordination between designers and contractors should result in an effective E&S plan and minimize field changes during construction. Mr. O'Leary's reviews will expedite the overall review process by identifying and resolving issues internally. Once designs are approved, the E&S controls will be installed per plan and maintained under the supervision of the ESCM. The plans for this Project will be designed in phases in coordination with the construction sequence. This will both protect the environment and allow construction to progress efficiently. It will be understood by all field personnel that deviating from the approved sequence of construction is unacceptable.

The effective implementation of an E&S plan is imperative to a successful project. Educating the workforce on E&S allows for greater oversight and proper maintenance of E&S measures. Placing an emphasis on installation and maintenance will result in maximum containment of sediments on-site. Managers and supervisors will ensure that every worker has the responsibility to prevent damage to installed controls. The ESCM will inspect the installed E&S measures daily. Any deficiencies or maintenance items will be noted for repair and regular maintenance of E&S will be directed by the ESCM. Our Team believes that a proactive approach is the best way to ensure E&S compliance. If a storm is forecast, the ESCM will conduct a pre-storm inspection to make sure that the site is best prepared for the anticipated precipitation and run-off. After the storm, the ESCM will perform a post-storm inspection to identify areas that need maintenance or repair. All Team field personnel will look for, and report, any E&S measures that require repair or maintenance. Overall site disturbance will be minimized by coordinating the locations of the final SWM BMPs with the E&S measures used during construction. For example, we will use proposed structural BMP locations for sediment basins during construction.

Coordination with the Administration and MDE is a necessary element of an effective E&S plan. The inspectors will be included in all relevant meetings discussing E&S on-site. The ESCM will provide weekly status reports to the MDE Inspector and Administration's-Environmental Manager (SHA-EM) using the Administration OC-61 form. The weekly status reports will detail the on-site conditions of the E&S.

Environmental Planning & Cultural Resources

The Administration has reevaluated the environmental consequences of the conceptual design contained in the RFP for consistency with the design of the selected alternative identified in the Final Environmental Impact Study (FEIS) prepared for this Project. ATC's incorporated into the design will require a reevaluation. Our Team will coordinate the reevaluation with the Administration and provide information prior to initiation of construction sufficient for the Administration to complete the reevaluation. We will routinely determine that the current design is still within the LOD defined for the reevaluation.

Design changes will require our Team to consider impacts to cultural or archaeological historic properties in order to comply with Section 106 of the National Historic Preservation Act and the Maryland Historical Trust Act of 1985. We will review cultural resources investigation reports and the Project Effects Determination produced by the Administration, FHWA, and the Maryland Historical Trust during project planning. Any proposed design changes will be reviewed against known resources. Our Team will provide cultural resource professionals that will consult with the Administration to identify, evaluate, and determine project effects to any cultural resources encountered due to design changes. This information will be provided to the Administration prior to construction in the form of narratives and figures.

Archaeological resources may be encountered unexpectedly during project construction. If this occurs, construction will be halted immediately and our Team will contact the Administration's Project Engineer. Once construction has been halted, our Team's archaeologists will consult with the Administration regarding archaeological resources encountered, and will investigate, evaluate and consult with the Administration on avoidance, preservation, data recovery, or destruction without recovery of the resources encountered.

Project Specific Techniques, Products, Practices and Innovation

Our Team recognizes the importance of Environmental Stewardship and has incorporated measures into the design and construction processes to ensure that cultural and natural resources are protected to the greatest extent possible. Several internal processes that have proven successful involve training and communication so that every person on a project understands the importance of protecting natural resources. Special attention is given to resources that are of a high concern for the Administration and permitting agencies. Daily and weekly tool-box meetings are held to review the activity at hand and to remind everyone of the presence of any sensitive areas, and any restrictions that are required.

Stormwater Management

Our Team has submitted and received approvals for several ATC's. The incorporation of the ATC's in design and revised storm drain layout will ultimately result in: ***Reduction of impervious area by 0.5 ac, reduction in storm drainage crossings along existing MD 210 by 800 feet and reducing overall storm drainage systems, resulting in less environmental disturbance.*** Our Team's final SWM design, per current MDE criteria and SHA SWM site development criteria, will ultimately result in net additional impervious area treatment and reduction in debit to the Administration's Water Quality Bank.

Our Team will construct the ESD practices along with the roadway construction. Areas upstream of the filter media of the ESD practices will be stabilized using sod, filter media will be covered with impermeable sheeting, and sediment-laden water will be directed away from the filter area using diversion practices. These facilities will be ready to be online by removing the diversions and/or impermeable sheeting once the upstream area is stabilized, minimizing the area and duration of disturbance. Overall reduction in the disturbance will result in reduced impacts to environmental features and trees which enhances the environment and improves water quality.

Stream Realignment

The final self-mitigating stream realignment design of an approximately 1000-foot long portion of Carey Branch will follow the recommendations of the concept stream relocation design plan to the maximum extent possible. Stream relocation will occur after initial E&S controls are in place and before roadway construction commences. Sandbag and clear water diversions will provide dry construction conditions.

The stream relocation will employ a threshold channel design approach due to rigid site constraints, and sediments entering the stream will be routed. Sediment competence will be determined empirically through pebble counts, sediment bar samples, entrainment equations, and HEC-RAS models. The stream relocation design will include evaluations for the potential SWM BMP outfall pipe realignment, existing concrete encasement removal, sewer protection/avoidance, right-of-way constraints, and the possible removal of the tributary headwall near MD 210. Though a 1,500-foot concrete-lined channel downstream of the Project site currently poses a barrier to fish, the proposed design will not create an additional fish barrier. Our Team will investigate if the proposed restoration has a potential for a TMDL credit to the Administration according to the current MDE guidance.

It is anticipated that the final roadway design will result in some local in-stream shear stress increases, so riffle grade controls (Figure 2.09.04-1) and stone toe protection are proposed as compensation. An approach that promotes sediment transport, streambed pattern, grade control, streambank stability, habitat improvement, and infrastructure protection and is recommended by the Administration.

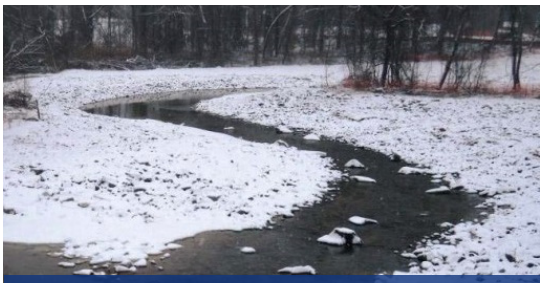


Figure 2.09.04 - 1 Riffle Grade Controls

Coir fiber rolls (Figure 2.09.04-2), livestakes, and other native vegetation will be used in addition to RGCs and toe protection. These soft structures provide temporary streambank protection and facilitate the establishment of native riparian vegetation. Once the streambanks and riparian area are colonized by trees and shrubs, the coir fiber decomposes, leaving a stable, natural stream.

Figure 2.09.04 - 2 Coir Fiber Rolls

The Final Hydraulic Analysis will: (1) update parameters from the concept HEC-RAS model to reflect the final roadway and stream design and (2) determine any impacts from the flow that escapes the study limits along the west side of MD 210. The final stream design will evaluate techniques to minimize or eliminate encroachment of the 100-year floodplain.

Noise Mitigation

The traffic noise analysis and mitigation analysis will be conducted according to FHWA guidelines, MD SHA Traffic Noise Policy and guidance as well as in coordination with the SHA Office of Planning & Preliminary Engineering (OPPE), Environmental Planning Division (EPLD), and Noise Abatement Design & Analysis Team (Noise Team). The following is our approach to noise analysis and mitigation.

NOISE ANALYSIS AND MITIGATION STEPS	
Proposed Build TNM Model	Use validation models from the 1/15/2015 Noise Technical Analysis as a base for the Future Build Conditions TNM Model. Proposed modeled receivers roadways, surfaces, barriers, terrain lines and traffic noise barriers with zero height will be input and the model run using the worst case traffic noise scenario volumes.
Impact Analysis	Determine traffic noise impacts.

NOISE ANALYSIS AND MITIGATION STEPS	
Mitigation Analysis	• Verify critical sensitive and limit receptors from the 1/15/2015 Noise Technical Analysis and adjust if needed. • Input Barrier heights to create a constant top elevation barrier that is much higher than the expected noise barrier height with perturbation increments set such that the barrier height never drops below seven foot. • Perform a Line-of-Sight Check on each critical sensitive and limit receptor by decreasing each panel using 1 foot increments to determine the minimum height top of wall elevations needed to block line-of-sight. • Determine the Critical Line-of-Sight Height profile and the governing receptors by using the maximum line-of-sight height for each noise barrier segment. • Compile the line-of-sight profile and smooth using the Level Top/Single Drop method where the stepping between panels will transition uniformly using a maximum of six inches. Stepping will meet the line-of-sight minimum and be aesthetically pleasing. • Check the line-of sight profile to ensure that it is providing the same or improved line-of-sight breaks at each critical sensitive and limit receptors as determined from the Preliminary Investigation (PI) stage. Increase barrier height if necessary. • Determine beginning and end barrier locations. • Confirm that the noise reduction at any benefited residence or benefited outdoor noise sensitive use (ONSU) is not reduced from that provided by the PI barrier as documented in the 1/15/2015 Noise Technical Analysis by running in TNM. Increase barrier height/length if necessary to provide additional noise reduction. • Assess noise abatement for feasibility and reasonableness.
Noise Report	Document results from the traffic noise and mitigation analysis and mitigation design using the latest SHA OPPE and EPLD Noise Team criteria and guidelines.

Other Project Specific Innovative Techniques, Products, and Practices

Our Team is fully up to speed on implementing environmental stewardship programs that work to enhance the existing conditions and facilitate the correct implementation of environmental controls for new projects. These innovative techniques, products and practices incorporated into past transportation projects include:

- Use of low sulfur/ultra low sulfur fuels in equipment to lessen the emissions from the equipment;
- Use of Cat II or higher engine emission standards – having a fleet of equipment that is recently new and has the newest factory-installed emission equipment brings low emission performance;
- Setting up regular maintenance schedules for all equipment assures the performance meets the design expectations of the equipment. It also provides the highest levels of up-time performance eliminating disruptive downtime for the equipment and brings the assurance that our equipment is meeting the safety standards set by the manufacturer and industry regulatory agencies;
- Use of recycled products;
- Specifying measures to reduce noise and vibration during construction;
- Dust control with use of water truck;
- Use of solar powered monitoring equipment, overhead lighting, VMS, and Arrow Boards; and
- Chipping clean wood/land-clearing debris on-site for erosion control.