Bridge Replacement
Steel Girder Bridge No. 0317400
On Putty Hill Avenue Over I-695
Contract No. BA1455180

Technical Proposal

FAY
An i+icon USA Company

MDOT
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

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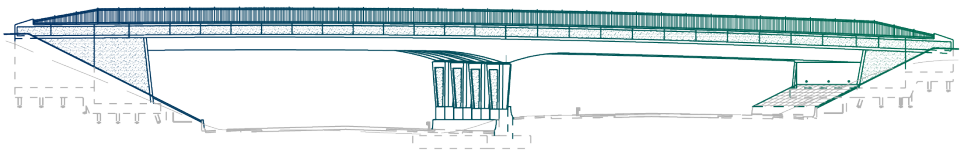
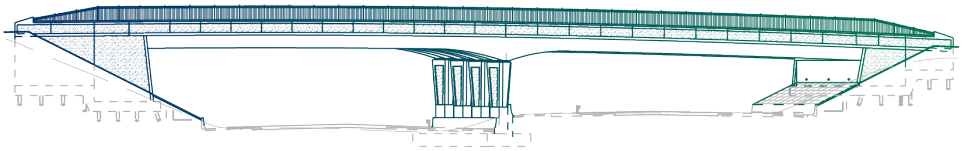


B. Capability of the Proposer

I-70 New Stanton Interchange Reconstruction

Thorn Hill Road Bridge Replacement

SR 910 and Rich Hill Road Bridges Replacement



Bridge Replacement
Steel Girder Bridge No. 0317400
On Putty Hill Avenue Over I-695

B. Capability of the Proposer - 1. Key Staff

Mike Veid – Project Manager **Years of Experience:** With Firm: 19 Total: 35

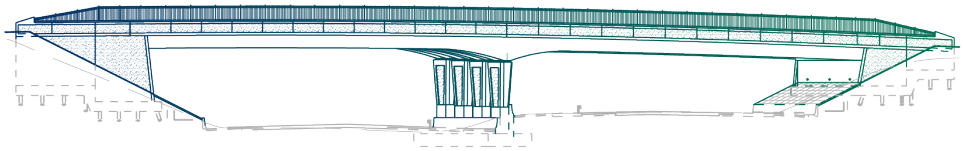
Certifications: SHA E&SC Manager, SHA Traffic Control Manager, ACOE Quality Control Management, OSHA 30-Hour, i+icon Academy Leadership, HCSS Heavy Bid 201, First Aid & CPR, Multiple MOSH Compliance Training. **Education:** AS, Civil Engineering Technology, West Virginia University Tech

Mike has preconstruction and construction experience on numerous MDOT, County, and City highway and bridge projects, including design build aspects. Mike's experience includes similar projects with signalized MOT phases, staged construction, and accelerated schedules. His management responsibilities include estimate development, project planning and management, schedules and budgets, material sourcing and procurement, subcontractor identification, risk identification, value alternatives, stakeholder coordination, project safety, and quality. Mike is proficient with HCSS, Primavera P6, and Viewpoint project management and cost control software. He is a member of the MDOT SHA Partnering Committee. Mike has worked with both Cost Estimator Brett Hause and Construction Manager Ed Chaney on multiple occasions delivering award winning MDOT SHA projects. Recent relevant experience includes:

Auth Road Bridge over I-95/I495 Deck Replacement | MDOT SHA | Prince George's County, MD | $3M | 1/06-4/07 | Project Manager. Mike provided preconstruction estimate support and construction project management for the superstructure replacement of a two-span 300' foot bridge over I-95/495, with selective girder replacement and repairs, cleaning and painting steel beams, substructure repairs, and the relocation of an existing 10" water main supported from the bridge. The project design required a five phase MOT plan, maintaining two directional traffic as the bridge was constructed in stages. Mike coordinated with stakeholders, identified MOT risks, and prepared an ATC for a two phase MOT plan utilizing a temporary traffic signal system with one reversible traffic lane. The ATC resulted in accelerated project completion, reduced safety and quality risks, with a savings of $100,000.00 to SHA. Mike implemented Partnering, participated in monthly schedule reviews and regularly met with stakeholders (SHA, PG DPW, Verizon, Comcast, BG&E, City of Bowie, Washington Gas and WSSC) to keep all informed on progress. ***Working with Ed Chaney as the Construction Manager the project earned an "A" rating from SHA and won – the MdQI Award of Excellence for Structure Rehabilitation.***

Bridge No. 050012 on MD 328 over Tuckahoe Creek Replacement | MDOT SHA | Caroline and Talbot Counties, MD | $11.5M | 9/10-2/13 | Project Manager. Mike served as project manager for the realignment of 2,600 lf of MD 328 and construction of a new 930 lf bridge. Mike led scheduling, budget set-up and control, risk identification, performance tracking, project specific Safety and Health Plan, stakeholder coordination (SHA, MDE, ACOE, and other permitting agencies)and Partnering. Items of work included the removal an existing 20 span steel beam bridge and constructing a new 14 span structure, significant pile foundations in the environmentally sensitive area, significant SWM features, increasing the vertical profile and Verizon utility relocation. The project required the use of a 400' trestle for staged bridge construction, Mike integrated the design/construction team and coordinated with SHA, MDE, ACOE, and other permitting agencies. Critical to construction success: four stages of MOT over 29 months with zero work zone incidents, collaboration with the MD Historical Trust for work adjacent to Tuckahoe Indian burial ground, procurement of MDE and the Caroline County Soil Conservation District permits for new borrow pit, placing 23,000 cy of earthwork excavation and embankment, 4,000 tons of asphalt pavement, 600 lf of new drainage piping and structures, overhead electric relocation, and signing. Mike supported the SHA design team through their design change on the pile foundation, identified the risks, maintained the CPM schedule illustrating possible effects. The project finished on time through four stages of environmental and embankment work quarantine. ***Working with Ed Chaney as the Construction Manager the project maintained an 'A' rating and won the 2012 MdQI Award of Excellence for Partnering.***

Bridge No. 8037 on MD 234 Over Allens Fresh Run | MDOT SHA | Charles County, MD | $1.9M | 7/07-1/08 | Project Manager. Mike supported estimating and supervised planning, risk assessment, safety, quality, procurement, scheduling, Partnering, stakeholder collaboration, and construction for the deck replacement of the 3-span bridge, including substructure repairs, painting existing structural steel, and approach pavement reconstruction. The two-stage MOT plan utilized temporary traffic signalization with one reversible lane. The LOD was extremely limited in this environmentally sensitive area. ***Working with Ed Chaney as the Construction Manager and Brett Hause, as the Cost Estimator Fay was given the full incentive of $39,000 completing the work fifteen days before the deadline, also earning an "A" rating from SHA and the MdQI Award of Excellence for Structure Rehabilitation.***



B. Capability of the Proposer - 1. Key Staff

Ed Chaney – Construction Manager

Years of Experience: With Firm: 21 Total: 45

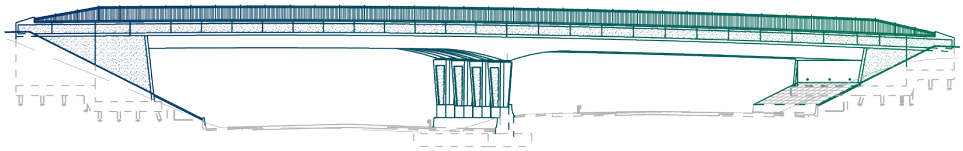
Certifications: SHA E&SC Manager, SHA Traffic Control Manager, ACOE Quality Control Management, OSHA 30-Hour, MSHA Certificate of Training, First Aid & CPR, Master Rigger 1 & 2, Multiple MOSH Compliance Trainings.

Ed Chaney has transportation construction experience managing and building large and complex projects for state transportation agencies, including MDOT SHA. His project experience includes the replacement of structurally deficient bridges (many over interstates with multi-staged MOT phases), highway construction, relocation of major utilities, and the implementation of Best Management Practices. He is responsible for management and scheduling of all construction activities along with coordination of project teams including; owners, stakeholders, crafts and subcontractors. He is accountable for safety and quality, ensuring projects are completed on time, within budget and in accordance with project requirements. Working in and around Maryland's interstate beltways for most of his career, he has significant knowledge and familiarity with permitting agencies and their regulations, along with experience with project stakeholders such as MDOT SHA District 4, Baltimore Co. DPW, BGE, Verizon and MD Historical Trust. Recent relevant experience includes:

Joppa Road and Cowenton Avenue Bridges over I-95 Replacement | MDTA | Perry Hall, MD | $15.1M | 5/06-11/07 | Construction Manager. Ed was in charge of all construction activities, conducted daily safety and quality audits, scheduled Fay and subcontractor operations, and implemented regular meetings to coordinate utilities and stakeholders for the replacement of two separate 300' bridges over I-95 and the realignment of approach roadways. Similar project aspects included replacement of bridge supported utilities (Baltimore Co. water mains (12" and 16"), BGE gas-electric, Verizon, Comcast and Level (3)), multi-phased MOT plans, foundation shoring at I-95 medians, H-pile and design build pile foundations, two span haunch steel girder erection, architectural treatments, drainage, SWM, E&S controls, and full depth pavements. Working with Baltimore Co. DPW and MDTA engineers, Ed developed a sequence of construction and alternate support for the bridge water main that provided for the opening of the Joppa Road Bridge four months early for residents and the Chapel Hill elementary school. Ed was in charge of utility and stakeholder coordination and implemented the Job Specific Hazard Analysis. Ed also played a key role on the project Partnering team, addressed all MDE, traffic control, and permitting compliance and inspection items. ***Under Ed's leadership, the project completed on time, earned an "A" rating from MDTA, and won the MdQI Award of Excellence in the New Structure Category and an Award of Merit from McGraw Hill Construction's "Best of 2007 Construction Projects."***

I-695 and York Road/MD 45 Bridge and Interchange Improvements | MDOT SHA | Baltimore County, MD | $14.1M | 10/03-12/05 | Construction Manager. Ed was in charge of all construction activities, safety and quality inspections, scheduling, and stakeholder/subcontractor coordination for the reconstruction of the I-695 interchange and the reconstruction of 2,500 lf of MD 45. The project's confined footprint was located within a congested urban area. Ed's construction sequencing successfully accommodated access for residents, pedestrians, businesses, and motorists throughout construction. Similar project aspects include a raising of the vertical profile, a multi-phase MOT plan, the multi-stage demolition and reconstruction of the 300' bridge while maintaining traffic, deep pier foundations requiring shoring in the I-695 median, replacing bridge supported utilities including a 30" Baltimore Co. water main, an 8" BGE gas main, and two separate duct banks (BGE & Verizon), and architectural treatments. Other significant items included 72,000 cy of earthwork, 3,500 lf of drainage, SWM, E&S control, BMPs, full depth pavements, BGE, Verizon and Comcast relocations, signalization, lighting, signing, and landscaping. Ed led utility coordination with seven different stakeholders and ensured that all utility commitments were identified and tracked on the project CPM schedule. Ed led the project Partnering team, addressed all MDE, traffic control and permitting compliance and inspection items. ***With Ed's leadership, the project completed on time, received an "A" rating from MDOT SHA and an Excellence for Heavy Construction Award from the ACI.***

Auth Road Bridge over I-95/I495 Deck Replacement | MDOT SHA | Prince George's County, MD | $3M | 1/06-4/07 | Construction Manager. Ed supervised construction for the superstructure replacement of a two span 300' foot bridge over I-95/495, selective girder replacement and repairs, painting steel beams, substructure repairs, and replacing a 10" water main supported from the bridge. Ed, working with Fay's project manager Mike Veid, developed a two phase MOT plan utilizing a temporary traffic signal with alternating traffic direction. The ATC resulted in early completion and a savings of $100,000.00 to SHA. Ed and Mike identified the project risks, detailed them on the CPM schedule, and met with all stakeholders regularly (SHA, PG DPW, Verizon, Comcast, BG&E, City of Bowie, Washington Gas and WSSC). ***Partnering and with Ed's leadership, the project earned an "A" rating from SHA and won – the MdQI Award of Excellence for Structure Rehabilitation.***



B. Capability of the Proposer - 1. Key Staff

Brett Hause – Cost Estimator **Years of Experience:** With Firm: 13 Total: 16

Certifications: HCSS Heavy Bid 101 & 201, AGTEK Earthwork Takeoff, i+icon Academy Leadership, First Aid & CPR. **Education:** BS, Structural Design and Construction Engineering Technology, PSU

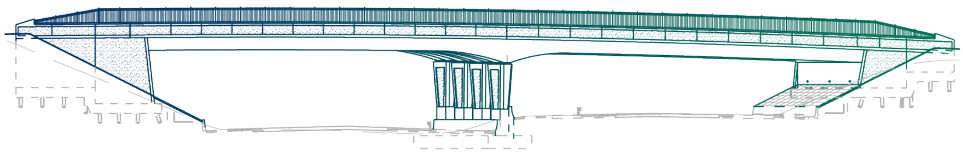
Brett brings multidiscipline cost estimating experience. He is responsible for pricing Fay's Maryland bridge, transportation, utility and other heavy civil construction. He understands local construction pricing, is experienced in developing "take-off" quantities and early work estimates, identifying and mitigating project risk, framing the subcontracting plan to integrate subcontractors and MBE/DBE/Small Businesses at bid time, and offering value analysis and ATC estimates. He works closely with preconstruction teams to manage the cost of Fay's Maryland projects, primarily for public government owners. Brett will be responsible for developing the Opinion of Probable Construction Cost (OPCC) and the Guaranteed Maximum Price (GMP). He will also participate in key meetings involving price, risk, and project assumptions. Recent relevant experience as Cost Estimator includes:

MD 85 at I-270 Interchange Reconstruction | MDOT SHA | Frederick, MD | $57M | 2017 | Lead Cost Estimator. Brett developed the work breakdown structure, take-off, subcontracting and MBE plan, and estimated all major disciplines of this project. The project is for the complete reconstruction of I-270 interchange and 1.3 miles of MD 85 in a heavily congested urban area. Work includes the removal of twin bridges on I-270 over MD 85 and construction of a three-span structure (built in 3-stages), 9-phase MOT, excavation, roadway paving, SWM facilities, bio-swales, drainage improvements, traffic signals, lighting, landscaping and significant utility (water, gas, sewer, and electrical) relocations, stakeholder coordination, and Partnering. ***Brett collaborated with the project's Construction Manager Ed Chaney and Fay's preconstruction team to formulate means and methods and identify risks. Brett provided the cost estimate for an ATC utilizing water-tight HDPE pipe in lieu of the designed flow-fill encased RCCP, saving SHA $238,000.00.***

Bridge No. 050012 on MD 328 over Tuckahoe Creek Replacement | MDOT SHA | Caroline and Talbot Counties, MD | $11.5M | 2010 | Lead Cost Estimator. Brett pooled team resources, identified means and method procedures, identified risks, developed work breakdown structure, take-off, and the subcontracting and MBE plan, and estimated major disciplines of this project for the realignment of 2,600' of MD 328 and construction of a new 930' bridge. Items of work included the removal of an existing 20 span steel beam bridge and constructing a new 14 span structure, significant pile foundations in the environmentally sensitive area, significant SWM features, 23,000 cy of earthwork, 4,000 ton of asphalt roadway construction, increasing the vertical profile and Verizon utility relocation, 600' of new drainage piping and structures, overhead electric relocation, signing, pavement markings, roadway lighting infrastructure, and landscaping. ***Brett led the estimating team, working closely with the integrated preconstruction team including Project Manager Mike Veid and our designer for a design-build trestle for bridge construction. This project won the 2012 MdQI Award of Excellence for "Partnering".***

Joppa Road and Cowenton Avenue Bridges over I-95 Replacement | MDTA | Perry Hall, MD | $15.1M | 2006 | Cost Estimator. Brett performed quantity takeoff and estimated major components for the replacement of two separate 300' bridges over I-95 and the realignment of approach roadways, replacement of bridge supported utilities (Baltimore Co. water mains (12" and 16"), BGE gas-electric, Verizon, Comcast and Level (3)), multi-phased MOT plans, foundation shoring at I-95 medians, H-pile and design build micro pile foundations, architectural treatments, drainage, SWM, E&S controls, full depth pavements, lighting, signing, and landscaping. ***Brett collaborated with the Construction Manager Ed Chaney to provide value analysis to identified risks.***

Allens Fresh Run Bridge on MD 234 Reconstruction | MDOT SHA | Charles County, MD | $1.9M | 2007 | Cost Estimator. Brett served as a cost estimator for this reconstruction of this structure on MD 234 under a strict client deadline. Work included the deck replacement of the three-span bridge, substructure repairs, painting the existing structural steel, and pavement reconstruction. The MOT plan utilized temporary traffic signalization with one reversable lane. ***Brett worked with Project Manager, Mike Veid and Construction Manager Ed Chaney on this project where Fay recieved the full $39,000 incentive for early completion.***



2. Team Past Performance

Replacement of Thorn Hill Road Bridge (WB-400 at Milepost 29.33)

Allegheny County, Pennsylvania

Owner/Client with Point of Contact:
PA Turnpike Commission – Jeffrey Baker,
(724) 755-5000

Project Delivery Method: Design-Bid-Build

Overall Construction Cost:
Initial Contract Value: $6,363,407
Final Contract Value: $6,277,995
Reasons for Difference: Completed Under Budget

Overall Schedule Performance:
Initial Completion Date: October 2015
Final Completion Date: October 2015
Reasons for Difference: Completed On Schedule

Project Description and Specific Nature of Work: The purpose of the Thorn Hill Bridge replacement was to provide 'early works bridge construction' for the subsequent widening of the PA Turnpike at this heavily congested area. The project is located within a business and industrial setting. The project involved the replacement of an existing three-span, steel-girder structurally-deficient bridge. The new bridge, with architectural stone finishes, is a 175' two-span, pre-stressed concrete bulb-tee beam structure. The center bridge pier sits in the median and directly abuts eastbound and westbound turnpike traffic. All bridge pier and abutment foundations are pile supported. Work also included; raising the vertical profile of the project alignment; the full depth replacement of 1,300 lf of approach pavement; mainline Turnpike shoulder reconstruction; and storm water management structures in and adjacent to the sensitive Brush Creek. Stream diversions and other BMPs were utilized for the installation of a 28'x11' pre-cast concrete arch culvert. Major quantities of work included 13,00 cy of roadway excavation, 6,000 cy of structure excavation, 1,300 cy of structure concrete, 2,300 lf of drainage pipe, 3,000 lf MOT traffic barrier 2,300 lf of permanent concrete barrier and 6,000 tons of bituminous paving.

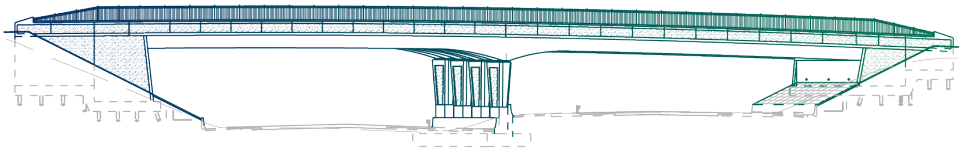
Successful Methods, Approaches, and Innovations: Penalties for late delivery of the project were $79,550.00 per calendar day. Seasonal and holiday work restrictions

Relevance to Putty Hill Avenue Bridge Replacement over I-695

Utilities
- Columbia Gas relocations
- Aerial communication relocations

Maintenance of Traffic
- 7 month accelerated construction
- 4 hour bridge superstructure demolition
- Temporary signals
- Multi-staged project
- Maintained business access

Key Stakeholders
- Environmental compliance through PADEP and Fish and Boat Commission
- DEP Waterways and Wetland Program
- Partnering with PA Turnpike
- Cranberry Chamber of Commerce
- Thorn Hill Industrial Park
- Emergency Services
- North Allegheny School District



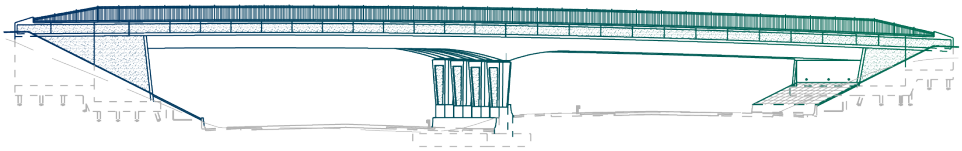
implemented by the Turnpike Authority also imposed schedule risk. Fay accelerated the construction schedule and opened the bridge to traffic in only seven months, the entire project was completed in nine months. Fay executed a four Stage MOT plan, with the bridge work being completed in a single stage. During this stage a MOT detour was implemented and vehicles were regulated by temporary traffic signal systems at intersections on each side of the bridge. A significant accomplishment of Fay's team was the complete removal of the existing bridge superstructure using one four consecutive hour Turnpike traffic stoppage. Fay's innovative phasing kept the project on schedule and on budget.

The bridge provides primary access to the nearby shopping District of Cranberry Township and is directly adjacent to the Thorn Hill Industrial Park. Fay's construction team was committed to minimizing disruptions to local residents, business owners, emergency services, and the traveling public. Fay's project manager coordinated directly with the Commission's Manager of Public Information & Involvement Construction; holding community meetings and distributing notices related to service interruptions, drive and access construction, traffic MOT phases, and other inconveniences throughout the project duration. Fay also provided information sharing via flyers and on the Turnpike website.

Similar to the Putty Hill project, stakeholder coordination was a significant consideration. Work was coordinated with several utilities, including Armstrong Cable, Columbia Gas, Consolidated Communications, DQE Communications, Marshall Sanitary Authority, and Penn Power, ensuring the avoidance of impacts. The most schedule critical utility relocations included; DQE Communications abandoning of an existing underground line and installing aerial lines along 1,500' of Thorn Hill Road; and Columbia Gas replacing an existing 8" main on Thorn Hill Road.

Environmental impacts to Brush Creek were a major concern on this project. Fay coordinated work with the PA Department of Environmental Protection, Waterways and Wetlands, as well as the Fish and Boat Commission for all BMP measures and inspections. Fay also implemented a Preparedness, Prevention and Contingency Plan to ensure that all measures have been developed to control any potential discharges of pollutants. Fay eliminated a potentially harmful environmental issue that would have resulted from installing the 28'x11' pre-cast concrete arch culvert as detailed on the drawings. The single stage shoring designed did not provide adequate protection of Brush Creek or the work area. Working with PADEP, Fay developed a plan to perform a two stage temporary shoring and stream diversion which allowed excavation for the culvert with no sediment release during normal stream flow.

The project was Partnered and received a project score over 90% (An 'A' rating) from the Turnpike Commission.



2. Team Past Performance

I-70 New Stanton Interchange Reconstruction

New Stanton, Pennsylvania

Owner/Client with Point of Contact:
Pennsylvania Department of Transportation,
Mr. Dominec Caruso, PE, (724) 439-7286

Project Delivery Method: Design-Bid-Build

Overall Construction Cost:
Initial Contract Value: $53,355,512
Final Contract Value: $54,120,000
Reasons for Difference: Owner approved modifications

Overall Schedule Performance:
Initial Completion Date: October 2018
Final Completion Date: March 2018
Reasons for Difference: Significant schedule savings from bridge and MOT ATCs

Project Description and Specific Nature of Work: The purpose of the I-70 New Stanton Interchange Reconstruction project was to enhance safety, improve mobility, and increase access for users along this section of I-70. The project included the replacement of two interchanges and the replacement of three bridges (Center Avenue, Sewickley Creek, and I-70 Mainline). The project location was adjacent to many businesses and residents.

The work included: staged construction for the reconstruction and realignment of I-70 for approximately 1.8 miles; the demolition and construction of three major bridges; construction of mainline interstate, bridge approaches and local connector roads; a Park and Ride; a new retaining wall; geosynthetic reinforced slope system; permanent and temporary MOT traffic signals, signing, pavement markings and lighting; ITS relocation work; utility relocation; SWM, E&SC; stream relocation; excavation and handling of hazardous and contaminated soil and groundwater; and other miscellaneous construction.

Project improvements included the reconstruction of the Center Avenue Bridge over I-70. The original 3-span bridge was replaced with a 165', steel girder, single span bridge, 45' wide. The Sewickley Creek Bridge was reduced from two stages of construction to one and included the replacement of the superstructure and girders for the 385', five span bridge. The I-70 mainline bridge was replaced with a 120' single span,

Relevance to Putty Hill Avenue Bridge Replacement over I-695

Utilities

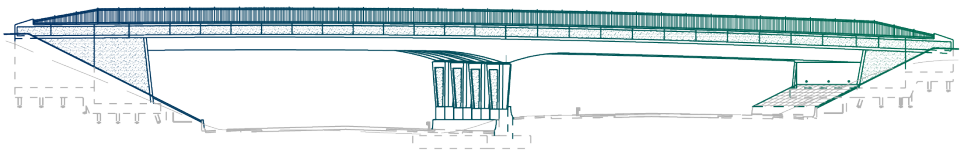
- Fay design and installation for relocation of 1,200' of unknown sewer
- Multiple relocations; electric, gas, cable, water, and sewer

Maintenance of Traffic

- Interstate interchange, bridge over interstate
- ATCs and innovations shortened project 12 months
- Redesigned project MOT; 20 stages to 9 stages
- Temporary traffic signal system
- Redesign Sewickley bridge MOT; saved 80 days
- Pedestrian bridge
- Temporary roadways

Key Stakeholders

- Major revisions to NPDES permit
- Verizon/Comcast
- West Penn Power
- Columbia Gas



bulb-tee girder bridge 90' wide. Other work included the demolition of 12 properties; 653,000 cy of excavation; 230,000 cy of embankment; 600' of bore and jack utility; 99,000 sy of concrete pavement; 115,000 sy of asphalt pavement; 19,000 lf of closed storm drain; 190 drainage structures; 3,299 cy of structural concrete; 23,000 sy of topsoil placement; and planting of 1,226 trees for reforestation. Fay also coordinated with affected utility companies for the relocation of utilities (including Comcast, Verizon, and Allegheny Energy).

Successful Methods, Approaches, and Innovations: Sequencing of the MOT stages presented difficulties with making tie-ins at the final vertical profile for mainline and side streets. Fay constructed portions of the final pavement at the lower vertical elevation, then placed controlled fill and temporary pavement over the 'pre-built' pavement section, allowing for temporary pavement removal and tie-in at later stages without elevation conflict.

Environmental protection was a significant part of this project. Fay was protecting the local environment through wetland and stream mitigation as well as stream relocation. More than 1,500 feet of stream mitigation was being completed with Fay creating ephemeral and perennial streams using native sandstone and trees to create step pools and reforestation with native trees, shrubs, and seeds.

Fay coordinated due diligence with PennDOT for major revisions to PennDOT's NPDES permit. Fay placed excess excavation as fill material at a PennDOT-owned site, which enhanced the property that PennDOT now plans to sell. Fay was responsible for the design, construction, and maintenance of all E&SC features.

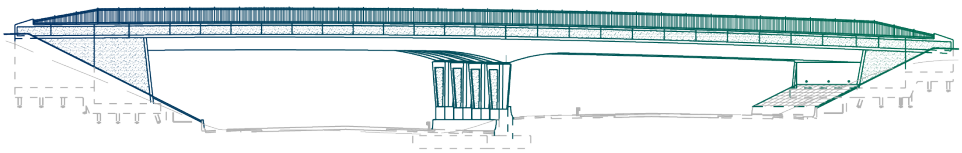
Fay's proposed and accepted ATCs significantly advanced project goals, accelerating the schedule, reducing cost, and enhancing quality. Fay was responsible for implementation of three significant ATCs. Fay provided new structural steel for the Sewickley Bridge in lieu of PennDOT's designed structural steel rehabilitation. The original bridge design called for existing girders to be rehabilitated with structural repairs, followed by sandblasting and painting. Fay's ATC replaced the superstructure with new steel girders, bearings, and paint for a zero dollar cost change and eliminated environmental impacts associated with blasting and painting above the Sewickley Creek reducing the traffic impact by 80 days.

Fay's second ATC redesigned the original MOT plan for the entire project, reducing MOT stages from 20 to 9. The redesign eliminated the use of crossovers to maintain the required two lanes in each direction of unrestricted traffic. This MOT redesign improved traffic flows, reduced quantities of work (cost savings), and accelerated the scheduled completion date. Our traffic and phasing redesign also eliminated the need to place 2-hour accelerated concrete paving mix for the nightly opening of the roadway to traffic. Fay's new MOT plan provided less obstructions to traffic flow and only required normal concrete paving mix. The savings to PennDOT was $700,000 and the change also provided a more durable concrete pavement section with less future maintenance costs.

Fay's third ATC replaced PennDOT's original design of 1:1 sloped rock embankments. Fay provided a geosynthetic reinforced slope system improving slope stability at a zero dollar cost change. This reduced constrution time and eliminated future maintenance concerns.

Fay also partnered with all emergency response services and, together, developed contingency plans during construction. The plans included the local fire department establishing an alternate access around the affected bridges so that they could more easily reach a fire if necessary. Partnering efforts have been a significant part of this project. Our team worked closely with PennDOT, stakeholders, utility owners, subcontractors, and suppliers in an effort to identify and resolve issues in a timely manner. This close coordination has allowed us to remain well ahead of schedule, anticipate potential problems before they occur, and provide open lines of communication so that all stakeholder expectations were met and exceeded.

Finally, Fay provided support to PennDOT through participation in the community relations efforts associated with this work and coordination with stakeholders. Fay sent representatives to participate in community outreach meetings and distributing flyers to notify area residents and businesses about the project.



2. Team Past Performance

Replacement of Bridge WB-443 (SR 910) at MP44.32 and Bridge WB-440 at MP46.33 (Rich Hill Road)

Allegheny County, PA

Owner/Client with Point of Contact: PA Turnpike Commission – John Pavlovich, (724) 755-5183

Project Delivery Method: Design-Bid-Build

Overall Construction Cost:
Initial Contract Value: $ 9,879,543
Final Contract Value: $ 9,643,384
Reasons for Difference: Completed Under Budget

Overall Schedule Performance:
Initial Completion Date: May 2014
Final Completion Date: May 2014
Reasons for Difference: Completed On Schedule

Project Description and Specific Nature of Work: This project involved the replacement of two structurally deficient bridges, SR 910 and Rich Hill Road carrying traffic over the PA Turnpike, and separated by two miles. The project was an 'early works package' for the subsequent widening of the PA Turnpike. Both bridges were rebuilt concurrently with overlapping turnpike traffic control. The traffic on SR 910 was detoured while Rich Hill Road utilized a temporary traffic signal system for single lane bi-directional traffic movement. Rich Hill Road's profile was also raised 3' and widened 12' through staged construction. Environmental and SWM aspects included a stream relocation, channel restoration, culvert extensions and outfall relocations, and maintenance of a wetland. Confined LODs reduced access and laydown area.

The existing SR 910 Bridge was a single-span steel girder bridge. It was replaced with a 250' long three-span continuous composite steel multi-girder bridge. The existing Rich Hill Road Bridge was a three-span cantilever steel I-beam bridge replaced with a 180' long two-span continuous composite steel multi-girder bridge. Both bridges have pile supported piers located in the median, directly adjacent eastbound and westbound traffic. Extensive architectural treatment was provided for both bridges and a retaining wall. Work also included reconstruction of approach roadways; SR 910, Blue Run Road, Rich Hill Road, as well as utility installations, drainage, modifications,

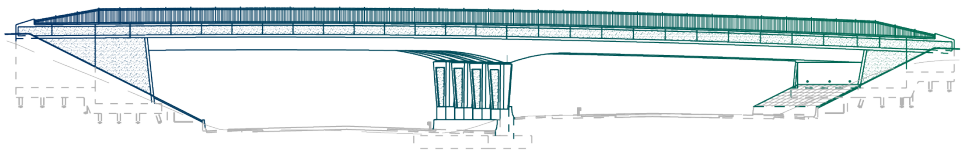
Relevance to Putty Hill Avenue Bridge Replacement over I-695

Utilities
- Underground gas relocation
- Aerial electric relocation
- Water service adjustments

Maintenance of Traffic
- Temporary signals with one lane bi-directional traffic
- 3' roadway profile adjustment
- Multi-staged project
- Accelerated bridge construction
- Overlapping MOT

Key Stakeholders
- ACOE, PA DEP, Allegheny Co. Conservation Dist.
- Harmar & Indiana Township's Emergency Services
- Dorseyville and Rural Ridge Fire Departments
- Lower Valley EMS
- Fox Chapel School District
- Local Businesses

Rich Hill Road Bridge



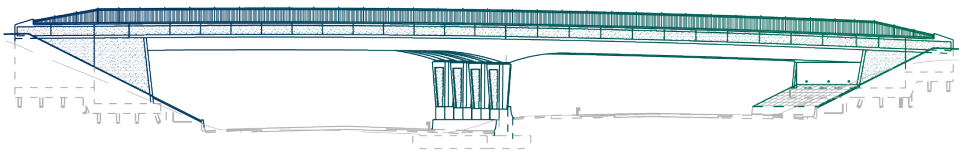
stream relocation, temporary traffic signals, signing, and pavement markings, SOE, and the construction of the mainline median and shoulder at the proposed bridge location. Major quantities included 27,500 cy of excavation, 2,400 cy of structure concrete, 7,800 lf of predrilled H-Piles, 345 tons fabricated structural steel, 10,000 sf of architectural surface treatment, 5,900 lf of drainage pipe and10,000 of bituminous pavement, 5,000 of concrete barrier, 6,150 cy of topsoil. Both bridges were built with multi-staged MOT plans. Construction at each bridge was staged and sequenced; six-stage MOT at SR 910 and four-stage MOT at Rich Hill Road. A three-stage E&S plan was also implemented for the entire project.

Successful Methods, Approaches, and Innovations: Public safety and maintaining preconstruction response times for emergency services was vital to the project's success. The project's initial MOT plan utilizing night time turnpike lane closures as well as a detour and temporary traffic signals all at the same time would be very confusing for the road user. To eliminate the risk of delayed emergency response time and road user confusion, Fay developed a site specific Health and Safety Plan along with an Emergency Response Plan. Our Safety Director, Project Manager and Construction Manager implemented processes to deliver; collaboration with the PA Turnpike and its MOT designers; preconstruction and milestone notification to local news; face-to-face contact with the emergency providers, local business, schools and township supervisors; and regular updates, at least 14 days in advance of a traffic change.

Aerial electric and underground gas lines conflicted with roadway widening and bridge footing construction, immediate relocations were required. To ensure success, the Fay team began communicating with the utility companies immediately at award. Fay's Project Manager led Partnering, the pre-construction utility meeting, and monthly coordination meetings. Open and honest communications allowed the project to be completed without utility delays or service disruptions to customers. Utility stakeholders included Comcast Cable, Verizon, Duquesne Light, Peoples Gas, West Penn Power, Buckeye Partners, DQE Communications, NAVTEQ, and Oakmont Water.

Accelerated completion was a project goal. The SR 910 Bridge was completed and opened to traffic in only nine months. The Rich Hill Road Bridge, Turnpike reconstruction and Environmental work, done concurrently with SR 910, were completed in sixteen months. Acceleration techniques included superstructure demolition and girder erection work during two separate continuous four-hour nighttime Turnpike road closures. Penalties for delay were $24,000.00 per hour. For the closures, our Construction Team prepared a schedule detailing 15 minute milestones for the works activities and rehearsed the procedures. They also implemented other time saving strategies including the installation of shielding and overhangs with beam erection turnpike closure.


SR 910 Bridge



3. Org Chart

Third Party Stakeholders

Local Residents
- Putty Hill Woods
- Evergreen at Putty Hill
- Rolling Crest
- The BLVD at White Springs
- Brightview White Marsh
- Double Rock

Local Businesses
- Putty Hill Plaza
- ClearView Window & Door Co.

Public
- Parkville Middle School
- Parkville Church of the Nazarene
- Traveling Public
- Local Groups

Emergency Response Services

Town of Carney

Maryland National Guard

Federal Highway Administration

Environmental
- MDE
- Maryland Historical Trust

Baltimore County
- Public Works
- Recreation and Parks
- Planning, Permits Approvals, & Inspections

Utility Companies
- SHA - Electric
- SHA - Traffic
- BGE
- Verizon
- Baltimore County
- Fiber/Cable/Phone

MDOT Offices District 4

MDOT Community Liaison

MDOT Project Manager

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

Project Principal
Jim McNelis

Project Manager 🔑
Mike Veid
24 hours/week

Corporate Safety
Chris Reefer, CSP

EEO/DBE
Arleen Dacey

Independent Cost Estimator

MDOT SHA Office of Structures, KCI Technologies & Gannett Fleming Joint Venture, Constellation Design Group

Traffic Engineering

Geotechnical

H&H/SWM/E&SC

Structures

Highway

Environmental & Permitting

Utility

Preconstruction Services

Cost Estimator 🔑
Brett Hause
20 hours/week

Subcontracting Plan Early Procurement
Fay Purchasing

Preconstruction and Construction Services

Construction Manager 🔑
Eddie Chaney
10 hours/week

Director of Demolition Services
Clint Filges

CPM Schedule Quality Assurance
Jason Esser, PE

Worker-Public Safety
Colton Nist

Utility Coordination
Sam Scalleat

Construction Services

Construction Manager 🔑
Eddie Chaney
40 hours/week

Project Superintendent
Ed Gray

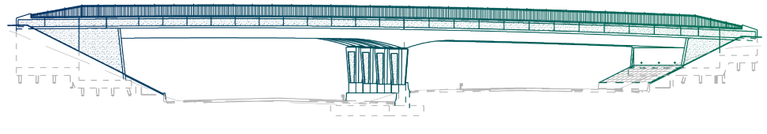
MOT/Traffic Manager
Fay - TBD

E&S - SWM Manager
Fay - TBD

Utility Superintendent
Fay - TBD

Potential Subcontractors
- Asphalt Paving Structural
- E&S
- Guide Rail*
- Landscaping*
- MOT*
- Painting
- Pavement Marking*
- Rebar*
- Steel
- Trucking*

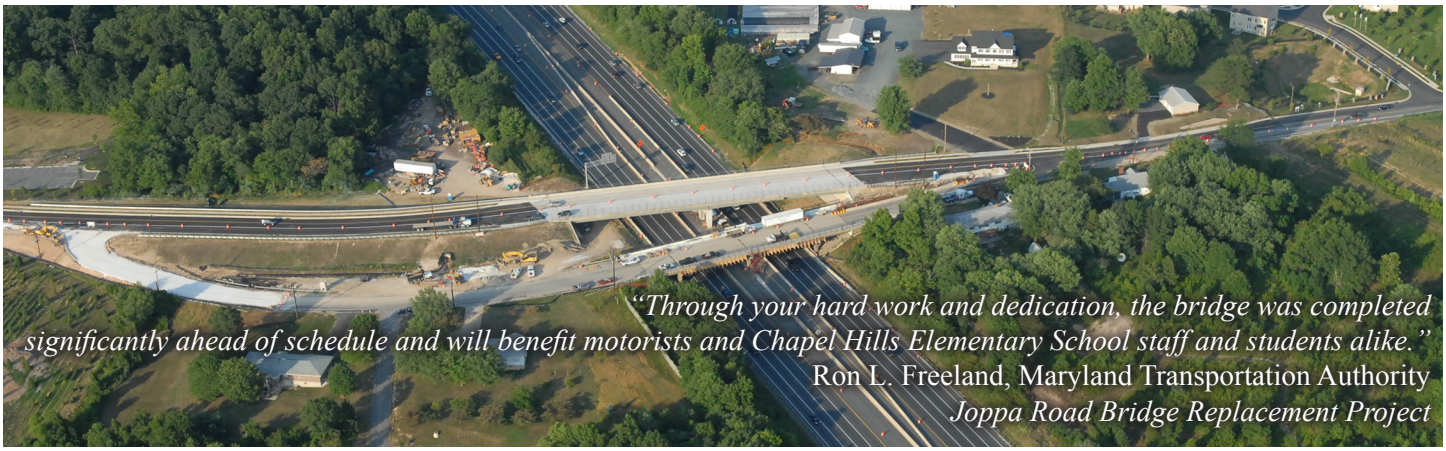
Key
- 🔑 Key Personnel
- Stakeholders
- —— Direct Report
- - - - Coordination and Communication
- * DBE/MBE/Small Business Opportunities



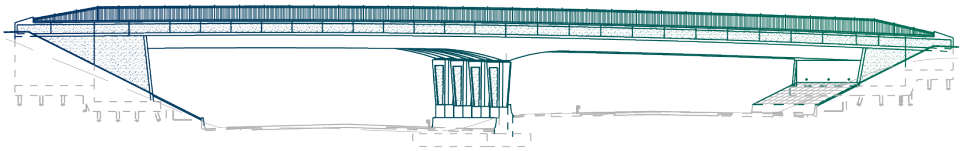
C. Project Approach

MdQI Award of Excellence
Auth Road Bridge over I-95/I495 Deck Replacement

ACI Excellence for Heavy Construction
I-695 and York Road/MD 45 Bridge and Interchange Improvements



"Through your hard work and dedication, the bridge was completed significantly ahead of schedule and will benefit motorists and Chapel Hills Elementary School staff and students alike."
Ron L. Freeland, Maryland Transportation Authority
Joppa Road Bridge Replacement Project



Bridge Replacement
Steel Girder Bridge No. 0317400
On Putty Hill Avenue Over I-695

C. Project Approach

1. Preconstruction Approach

Fay understands the value that the right contractor plays in the Preconstruction Phase of a CMAR project, including cost control, providing value engineering ideas, and meeting project goals. Our skilled personnel will work closely with MDOT SHA and the Design Engineer to form a high-performing, collaborative project team. Our Project Manager, Mike Veid, our Construction Manager, Ed Chaney, and our Cost Estimator, Brett Hause have worked together on multiple MDOT SHA projects including the Auth Road Bridge Over I-95/I-495 Deck Replacement, Allens Fresh Run Bridge on MD 234, MD 328 over Tuckahoe Creek Bridge Replacement, US Route 50 Over Severn River Median Barrier Replacement and Lane Configuration, and MD 85 at I-270 Interchange Reconstruction projects. Fay has also constructed similar bridge projects for other DOT's, including the Thorn Hill Road Bridge, New Stanton Interchange Reconstruction, and SR 910/Rich Hill Road Bridges Replacement. These projects had scopes of work that included phased construction over major highways, utility relocations, single lane MOT with temporary traffic signals, limited footprints for staging, vertical profile adjustments and temporary tie-ins, environmental concerns, and stakeholder coordination.

During Preconstruction, we draw upon the experience of our engineers, managers, and superintendents to add value, solve problems, and develop innovation. In addition to our Key Staff, we have selected the following support staff: Jason Esser, P.E., Schedule Manager; Sam Scalleat, Utility Coordinator; and Colton Nist, Safety Manager. Additionally, we will utilize Fay's Director of Demolition Operations, Clint Filges, to provide both innovative and time-tested ideas for design and constructability of the bridge demolition. Clint has 17 years of experience in bridge demolition.

a. Collaboration

Our approach to accomplishing the collaboration objectives requires *Partnering, Collaborative Support with Project Stakeholder, and Trustworthy Estimating.*

Partnering

Partnering will be the cornerstone of our collaborative working relationship with MDOT SHA, the design team, and other stakeholders. Soon after execution of the contract, Mike Veid, Ed Chaney, Brett Hause, and other appropriate Fay staff will attend a partnering kick-off workshop meeting with MDOT SHA, the design team, and other appropriate project stakeholders to develop and commit to a Partnering Charter and Issue Resolution process. The charter will establish the mutually identified goals for the project based on trust and honest dialogue following the MDOT SHA's *Partnering Field Guide*.

Mike Veid will facilitate monthly partnering meetings to be held throughout the life of the project. Mr. Veid will track action items and issue resolution. The monthly Partnering agendas will include discussions related to progress, budget, safety, and other project goals and risks. Items identified include; the timing for initial field investigations; construction access; potential environmental constraints; impacts to adjacent property owners or other stakeholders; identifying long lead time items; determining the best strategy for procurement and early delivery.

Collaborative Support with Project Stakeholders

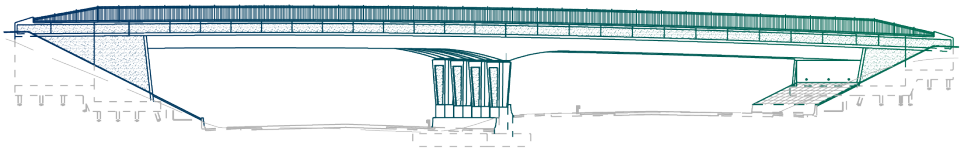
Coordination with the project stakeholders during the Preconstruction phase is essential for this project. The following are some examples of how Fay will support MDOT SHA in its involvement with stakeholders:

Baltimore County: The relocation of the 24 in. waterline will require close coordination with and approval of Baltimore County. Fay will support MDOT SHA by preparing detailed schedules, sequences of construction, and preliminary lay diagrams that can be used by the team in its coordination and design approvals. We will also attend meetings with the County, as necessary, to address any construction or phasing concerns.

MDE: In addition to being Certified Erosion and Sediment (E&S) Control Managers, Mike Veid and Ed Chaney have experience with installing all BMPs currently being approved by MDE for highway projects. We will review E&S Plans and Sequences of Construction prior to submission to MDE in order to address constructability issues in the early stages of the design. We will also assist the design team with responses to MDE comments in order to develop a set of E&S documents that minimize impacts to the environment, facilitate regulatory approvals, and eliminate the need for modifications during the construction phase.

Emergency Response Services: The Fay Team knows that emergency response services (police, fire, and ambulance) are extremely important stakeholders, especially on phased projects with access restrictions. Colton Nist will support MDOT SHA in their coordination with these services by meeting with each individual agency regularly through the preconstruction and construction phases. We will provide construction schedules along with traffic control plans and construction phase diagrams to give a clear understanding of the project.

Fay has had significant experience working with emergency response personnel on its past projects. One example was the SR 910 and Rich Hill Road Bridges Replacement where access to SR 910 was limited with the utilization of a detour. Fay coordinated with the



numerous emergency responders in the area well in the advance of construction to review the detour routes. This coordination continued through construction at the commencement of each new MOT phase, ensuring these important stakeholders were kept up to date.

Local Businesses, Residents, and Traveling Public: The project is located in the immediate vicinity of residential neighborhoods, businesses, churches, and schools. All of these groups, as well as, local commuters, will present the largest stakeholder coordination effort on the project. Their support of the project is critical to its success. Mike Veid will work closely with the MDOT SHA Community Liaison to provide the support they need to effectively communicate the project details to these very important stakeholders. Detailed schedules and work plans will be developed and tailored for each specific group to demonstrate our understanding of their concerns and approach to mitigating their issues. Additionally, we will attend community and public informational meetings conveying a level of professionalism and competence to garner trust from the community that the project will be constructed with minimal impacts.

Utilities: Coordination with Utility Owners takes place on almost every project we construct. Sam Scalleat will secure the involvement of Utility Owners as early as possible to coordinate necessary relocations and minimize overall impacts to the project schedule. Our level of support of MDOT SHA's involvement with the Utility Owners, including MDOT SHA Traffic and Electric, Baltimore Gas and Electric, Verizon, and Baltimore County Public Works, will be significant. Jason Esser will incorporate relocation activities for each utility in the project schedule and refine those activities as the designs evolve. Mr. Scalleat, working with Mike Veid, will facilitate monthly coordination meetings for the Project Team and Utility Owners to review project designs, relocations designs, and schedule progress. Action items for each stakeholder will be recorded on a Utility Tracking Log and distributed to all attendees. Successful coordination is paramount to minimizing construction delays and reducing project costs.

Trustworthy Estimating

To foster trust, Brett Hause will work closely with the Project Team to create an open, fair, and transparent environment for all estimates up to and including the GMP submission. In the early stages of the Preconstruction Phase, he will coordinate with MDOT SHA and the Independent Cost Estimator (ICE) to develop a Work Breakdown Structure (WBS) and estimating cost model based on MDOT SHA standard format and bid items. Shortly after each estimate submission, Mr. Hause will meet with MDOT SHA and the ICE to reconcile cost differences. Working together using the same WBS and cost model, along with an open book format, will greatly reduce the time to analyze estimates and improve the reconciliation efforts.

b. Design and Constructability Review

Fay's approach to Design and Constructability Reviews will draw on our experience and expertise to identify and address Key Project Issues with the objective of *Streamlining the Design Process, Reducing Errors and Omissions, Improving Constructability and Quality, Reducing the Cost of Construction, and Optimizing the Project Delivery Schedule.*

Streamlining the Design Process

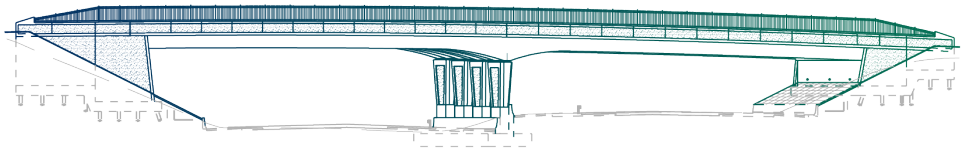
We will review site conditions, as-builts, and conceptual designs at the earliest stages of design development, and will bring PTCs and innovations to the team within the first month of the Preconstruction Phase. PTC packages will be detailed with written reports summarizing benefits to cost, schedule, and quality. This will be done early to ensure time is not wasted developing design concepts that need to change. We have already begun these efforts, including the five PTCs in this technical proposal. We will also be diligent in our reviews of the design submissions with review comments being provided within two weeks.

Reducing Errors and Omissions

Fay embraces the use of technology. We will utilize Bluebeam for Design and Constructability Reviews. All plans and other documents will be set up on Bluebeam Studio where they can be reviewed independently by Fay team members along with others who can provide insight or have innovative ideas. Comments are saved directly on the Bluebeam document and exported to a summary log. From there, the Project Team can track and manage comments to ensure that each one is addressed whether incorporated into the project or rejected. Review comments made to a .pdf file will have the benefit of pointing out inconsistencies or conflicts without jeopardizing the integrity of the design CAD files.

Improving Constructability and Quality

A key element in improving constructability is the experience and knowledge of those performing the reviews. Mike Veid, Ed Chaney, and Brett Hause have 86 years of combined experience estimating and building similar projects in Maryland. One example of their proven track record is the Auth Road Bridge Over I-95/I-495 Deck Replacement. The project was originally designed to be constructed in five MOT stages. We proposed and implemented an ATC that utilized a temporary traffic signal system reducing the MOT to two stages, accelerated project completion, and saved MDOT SHA $100,000. On our New Stanton Interchange Project, Fay reduced the twenty-stage MOT plan to a nine-stage plan. The roadway and bridge were



open to traffic significantly ahead of schedule and Fay offered savings of $700,000 to the client.

Additionally, Fay is well experienced with demolition of structures over interstates, including several for MDOT SHA (Figure 1). Our demolition team commonly analyzes design documents and makes constructability and value engineering recommendations to improve the safety and efficiency of our projects. We will explore the best demolition practices and develop a plan that protect the traffic on I-695 while minimizing inconvenience and disruption to the local residents.

Figure 1 - Demolition Experience Project	Bridge over MD Interstate	Bridge Demo over Traffic	Utility Relocations	Staged MOT	Signalized MOT	Maintained Pedestrian Access	Mike Veid PM	Ed Chaney CM	Brett Hause Estimator	Prime Contractor	Subcontractor
Joppa Road Bridge over I-95 Replacement	X	X	X	X		X	X	X	X	X	
Cowenton Avenue Bridge over I-95 Replacement	X	X	X	X		X	X	X	X	X	
York Road Bridge over I-695 Improvements	X	X	X			X		X		X	
Auth Road Deck over I-95/495 Replacement	X	X	X	X	X	X	X	X		X	
ICC Demolition over I-95	X	X									X
Old Gunpowder Road over I-95 Demolition	X	X									X
Lillian Holt Bridge over I-695 Demolition	X	X									X
Westland Boulevard over I-695 Demolition	X	X									X

Quality is not a single step process, but requires adequate controls, reviews, and verification during each stage of the project development. Jason Esser will provide Document Control and Quality Assurance to Fay's preconstruction team. He will perform 'over-the-shoulder' reviews ensuring that all of our recommendations can be performed in accordance with agency specifications and standards.

Reducing Cost of Construction

Reducing costs is a function of understanding the stakeholder requirements and presenting innovative ideas and PTCs that meet their needs. Fay's Preconstruction team has established working relationships with the stakeholders on this project. A successful example is illustrated by Fay's MD 85 at I-270 Interchange Reconstruction project. The project is being constructed in an area of Frederick County, MD with significant Karst terrain. Because of the fissures and sinkholes associated with Karst terrain, the reinforced concrete pipe (RCP) for storm drainage was designed to be embedded in a cradle of flowable fill to reduce water seepage and further dissolution of the surrounding limestone. Fay provided an ATC to utilize a high performance dual walled polypropylene pipe that provides a water tight seal eliminating the flowable fill requirement. The recommendation was accepted, significantly improved quality, and reduced the project cost by $238,000.

Optimizing the Project Delivery Schedule

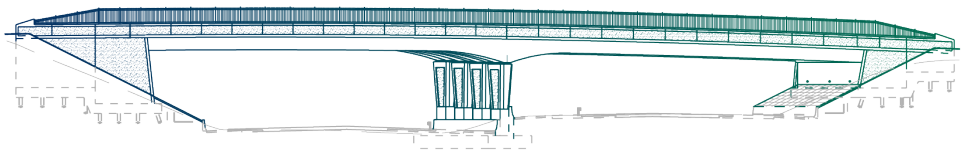
As additional efforts to streamline the design process, Jason Esser will prepare an integrated project schedule using Primavera P6 immediately upon award of the Contract. It will be detailed with activities for design milestones, design QA/QC checks, constructability reviews, milestone meetings, utility relocations, and permit submissions. Mr. Esser and Mike Veid will collaborate with MDOT SHA and the Design Engineer on the development of a baseline that all team members agree to. The schedule will be updated monthly reviewed during regular partnering meetings.

We will also make use of reflection schedules to analyze the impact of design alternatives on the overall completion of the project without affecting the baseline. This will be an effective tool in making quick decisions as to the value of any given alternative. The use of the schedule as a tool during the Preconstruction Phase will hold all team members accountable for meeting project milestones.

c. Risk Management

Approach to Assisting the Project Team in Managing Risks

Fay uses a proven approach to managing risk that we will facilitate for the entire Project Team. The first step is to identify the major risks on the project as a collaborative effort with MDOT SHA and the Design Engineer. Once identified, we will determine the potential impacts and the probability that the impacts will occur, including



the cost and schedule impacts. From there, we will be able to rank the highest risks on the project and develop mitigation strategies for each one. Mike Veid will include his entire Preconstruction Team along with others from our Construction Team, as the need requires. The risk identification and management process begins at the first Partnering. Mr. Veid will develop a communication and meeting protocol specifically for risk assessment. The attendees will include those who can ensure that designs and construction remain in alignment with project goals. The meetings will be regularly held, have an agenda, and the minutes will be documented. Items for risk review will include, at a minimum; utility design and relocation, MOT plans, safety to the public, geotechnical investigations, size of design packages, coordination of design reviews, work calendar restrictions, material availability, etc. Mr. Veid will utilize Mr. Hause to develop the potential costs of the risk and Mr. Esser to evaluate any schedule impacts. Mr. Veid will also implement a Risk Log and maintain it as a living document. The risk will be tracked by level of impact, the control (cost/time), any other residual risk, what action is required and who is the responsible party (Figure 2).

Figure 2 - Risk Log

Item	Description	Impact			Controls		Residual Risk	Action	Responsible Party
		H	M	L	Cost	Time			

The Project Risk Register will be discussed at all team coordination meetings, task force/discipline specific meetings, and monthly partnering meetings to ensure identified issues do not negatively impact the project.

Fay's risk management process and our assistance to the Project Team has already started with the development of this Proposal and will continue throughout the design, cost estimating, GMP development, and construction phases.

Approach to Assisting the Project Team to Develop and Evaluate Potential Innovations

Fay's successful design-build history demonstrates that early integration with the Design Team provides an excellent forum to develop and evaluate potential innovations, as does the CMAR contracting approach. Concurrent with the risk management process, we will bring innovative ideas to the team and encourage team members to do the same. Some examples of innovations that we are currently evaluating include:

- Use of drones equipped with LIDAR for survey verification and modeling
- Underground utility investigations with Ground Penetrating Radar
- Structure and utility modeling
- Accelerated bridge construction methods: precast and prefabrication
- Aesthetically pleasing BMPs suitable for constricted sites and such as Micro-bio retention facilities rather than large SWM ponds
- Removal of the bridge deck without having to relocate the overhead utilities

Fay took an innovative approach to the I-70 New Stanton Interchange Reconstruction that resulted in considerable project betterments. The original design for the Sewickley Bridge called for the existing girders to be rehabilitated with select structural repairs, followed by sandblasting and a zinc rich bridge coating. Thinking 'outside the box' Fay' was able to develop an approach which allowed for completely new girders, bearings, and paint at the same cost of the rehabilitation. This innovative approach eliminated environmental impacts associated with sandblasting and painting operations above the Sewickley Creek and reduced the overall construction schedule.

Each of our team members will play a major role in the evaluation of potential innovations whether proposed by Fay or others. Similar to the risk analysis, Mr. Hause will analyze cost and Mr. Esser will analyze schedule impacts. Mr. Veid, Mr. Chaney, and Mr. Filges will evaluate each idea relative to constructability and impacts to stakeholders. Mr. Esser will track each proposed innovation in an Innovation and Tracking Report (ITPR) that summarizes the evaluations performed by our team.

Due to the fast tracked nature of the project, it is imperative that innovations are developed, evaluated, and vetted early. It would be our goal to complete this exercise within the first two months of the Preconstruction phase. Mr. Veid will be the driving force to complete that effort.

Initial Risk Matrix

Based on the RFP documents, early site investigations, and our local knowledge and experience, we have provided an example of the most relevant risks, their impacts, and mitigation strategies on the following page (Figure 3).

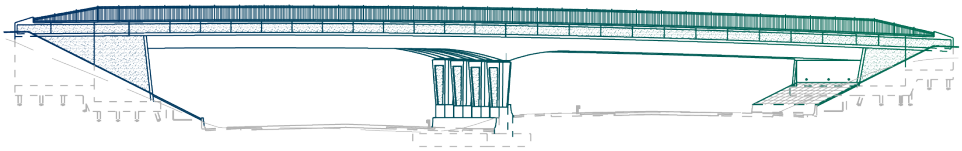
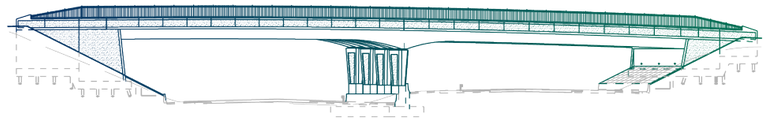


Figure 3 - Initial Risk Matrix

Most Relevant Risks	Potential Impacts	Mitigation Strategy
Third Party Utility Relocations and Design Approvals – Known utility relocations include numerous stakeholders: SHA Electric, BGE Gas & Electric, Verizon, Fiber Optic-Phone-Cable, Baltimore Co. DPW	Possible schedule delays, cost overruns, inconvenience to customers, service interruptions, design and construction inefficiencies caused by stakeholders with different agendas, and delays from utility company third party contractors	• The Contractor's Utility Coordinator will conduct bi-weekly coordination meetings with the appropriate Utilities and Stakeholders. We will establish commitment dates and implement a tracking log and include all Utilities in the partnering process. • Incorporate utility relocation designs into SHA Designer of Record scope of work (BGE electric/water, SHA electric) • Preconstruction CPM schedule to include utility design and permitting, timing and sequence of relocations • Conduct a comprehensive test pitting and identification program and begin relocations as soon as possible
Proposed vertical profile change of the approach roadways and bridge will have potential negative effects to MOT, storm water management, and the environment.	Drivers to adjacent property driveways will encounter reduced access and line of sight. Proposed embankments will create storm water ponding in adjacent lawns. Vehicle access to Glenroy Ave. during Stage 1 will be problematic due to the significant height differential between the work zone and adjacent travel lane during excavation, placement of fill, GAB, and bituminous pavement.	• Lower the proposed roadway and bridge profile maintaining the design speed (30 mph) and minimum bridge clearance (Additional information presented in Fay's PTC) • Use full depth asphalt paving on the west and east approach as much as practical to eliminate excavation and the GAB section. This also removes the need for a retaining structure to hold back Stage 1 fill and GAB from the adjacent travel lane. It will also allow MOT paving into the adjacent lane for ramping and same day road use for vehicles.
The location of temporary traffic signals can create confusion for property owners within the limit of work. Additionally it will be difficult for a two-way signal to keep up with the Putty Hill Avenue ADT of 17,455.	Mobility and safety of the public as drivers are at risk of making the wrong decision and causing an accident. The location of the temporary traffic signals allows for motorists from homes located on either approach sides of the bridge to enter the roadway to oncoming traffic.	• Drives/access between the Putty Hill signals should be signalized with movement in only one direction (east only or west only) • Relocate the signals to just east of Glenroy Avenue and just west of Grove Road and provide a temporary drive east to the signal for the homeowner at station 17+50 • Implement a one-way westbound detour for Putty Hill Avenue with continuous eastbound movements through the project (Additional information presented in Fay's PTC)
I-695 MOT will be controlled by shoulder closures using standard MD.104.05-01. Additionally, the Limits of Disturbance (LOD) for the median pier construction and the east and west abutments does not include the existing shoulder area.	Elevation difference at the median pier between the inner and outer loops of I-695 will require the pier shaft excavation to be shored with an unbalanced system. This creates an unnecessarily confined workspace, hinders access, and creates a safety exposure for travelers and workers.	• Implement permanent protected shoulder closures using MD104.03.01 & MD104.01.23A&B • Increase the LOD on I-695 and implement full shoulder closures
Existing overhead utilities crossing I-695 on the south side of the bridge conflict with Stage 2 crane work.	Conflict with demolition and erection cranes for bridge girders. Construction delays will occur if the relocations are not completed prior to Stage 2 work.	• Temporarily de-energize the conflicting power lines. Implement a Putty Hill detour (night or off peak) to allow Stage 2 girders to be removed and placed with a crane set on the I-695 outer loop just north of Stage 1 (Additional information in Fay's PTC) • Relocate all lines at least 100' south of the bridge • Eliminate feed across bridge
Unknown and unforeseen utilities. There is an electric conduit on exterior south bridge parapet not identified in plans.	Rework caused by utilities that remain which are in poor condition, creating hazards once the project is completed. Potential for abandoned utilities encountered during construction to cause delays while investigating owner/status.	• Perform additional subsurface investigations including test pits, CCTV, interior building surveys or Ground Penetrating Radar (GPR) to locate existing utilities and define existing connections • Identify unknown utilities immediately once uncovered • Fay and MDOT to coordinate in advance with utility owners to identify existing facilities and establish needed service locations
Environmental issues such as noise or encountering unanticipated hazardous materials or delays in permit approvals	Additional cost, design and construction schedule slip, additional inconvenience to property owners	• Early coordination with design/construction teams and permitting agencies. Development of a site-specific Health and Safety Plan (HASP). Explore impact avoidance measures during design. Preconstruction surveys of adjacent properties.
Plans state that the temporary support system for the Stage 1 median pier is conceptual and that the pier support shall be designed by the contractor. Additionally the responsible party for the median SOE construction has not been assigned.	Additional cost to MDOT SHA and possible delays. For a complete design to be provided by the contractor MDOT SHA needs to provide additional information including but not limited to loading requirements, geotechnical requirements, borings, etc.	• Incorporate this scope of work into the MDOT SHA design package.



d. Proposed Technical Concepts

PTC 1

The project design calls for a vertical profile change to the roadway and bridge elevations along the length of the project. The elevation of the west approach increases by almost 2' and the east approach increases by almost 4'. This significant change in grade has the following negative impacts:

Storm Water Management - The storm water management features shown are not sufficient for significant roadway grade change. Raising the road elevation creates low-lying areas for the adjacent property owners.

Storm water ponding will occur in the lawns of adjacent properties located at 17+50lt and 22+50lt.

Storm water inlets I3 and I6 installed during Stage 1 do not have a discharge outlet.

Utilities - Profile change at east approach of almost 4' will require additional structural work to the existing water main vault and phone vault not identified on drawings.

MOT - The permanent profile change allows drivers to increase their speed driving through this dense urban community.

GAB and embankment sections of roadway will have to be held back by a temporary retaining structure to keep material placed in Stage 1 from sloping and raveling into the adjacent existing pavement section and subsequent Stage 2.

Driveways at approximately stations 16+50lt, 17+50lt and 22+70rt are not provided sufficient distance for sloping to the existing grade and sight distance will become an issue.

Sidewalk access to the property at approximately station 22+50rt will no longer be a smooth slope and will require steps without other significant grading performed on that private property.

Significant temporary MOT asphalt will be required at the Glenroy Avenue and Fowler Avenue intersection during Stage 1 road work and paving to provide same day vehicle access to the homes using Glenroy Avenue.

Fay's PTC 1 will improve the ability to meet the project goals, reduce the impacts on time and cost, and increase quality, as described herein.

The project title sheet lists a 30 mph design speed for Putty Hill Avenue. The existing speed limit to the west of the bridge is 30 mph and to the east is 35 mph. The required minimum vertical clearance for the proposed bridge is 16'9". All of these requirements can be maintained with only a moderate change to the bridge profile. For comparison a similar bridge replacement project is under construction at Crosby Road over I-695, a Baltimore County road. Both roads carry one lane, one shoulder, and one sidewalk in each direction. Crosby Road was designed based on a 35 mph design speed. Based on this information, Fay presents two profiles that would provide for a 30 mph and 35 mph design speed. These profiles, (Figure 4 can be found on the following page), will minimize elevation change, storm drainage, full depth pavement, and the requirements for storm water management. This would also reduce the impacts to the existing utilities including the overhead lines that cross Putty Hill Avenue at Fowler Avenue and Grove Road. *This PTC will reduce construction time by at least thirty (30) work days, reduce cost by $335,000.00, and significantly reduce poor quality issues associated with the negative impacts stated above.*

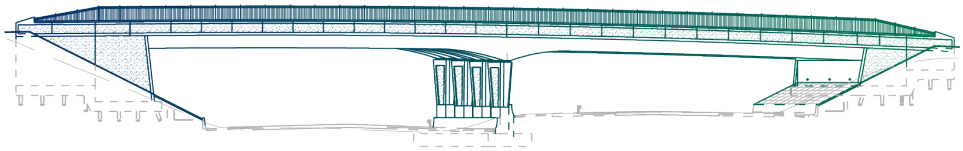


Figure 4 - PTC 1

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

BRIDGE REPLACEMENT STEEL GIRDER
BRIDGE NO. 0317400 ON PUTTY HILL AVENUE OVER I-695

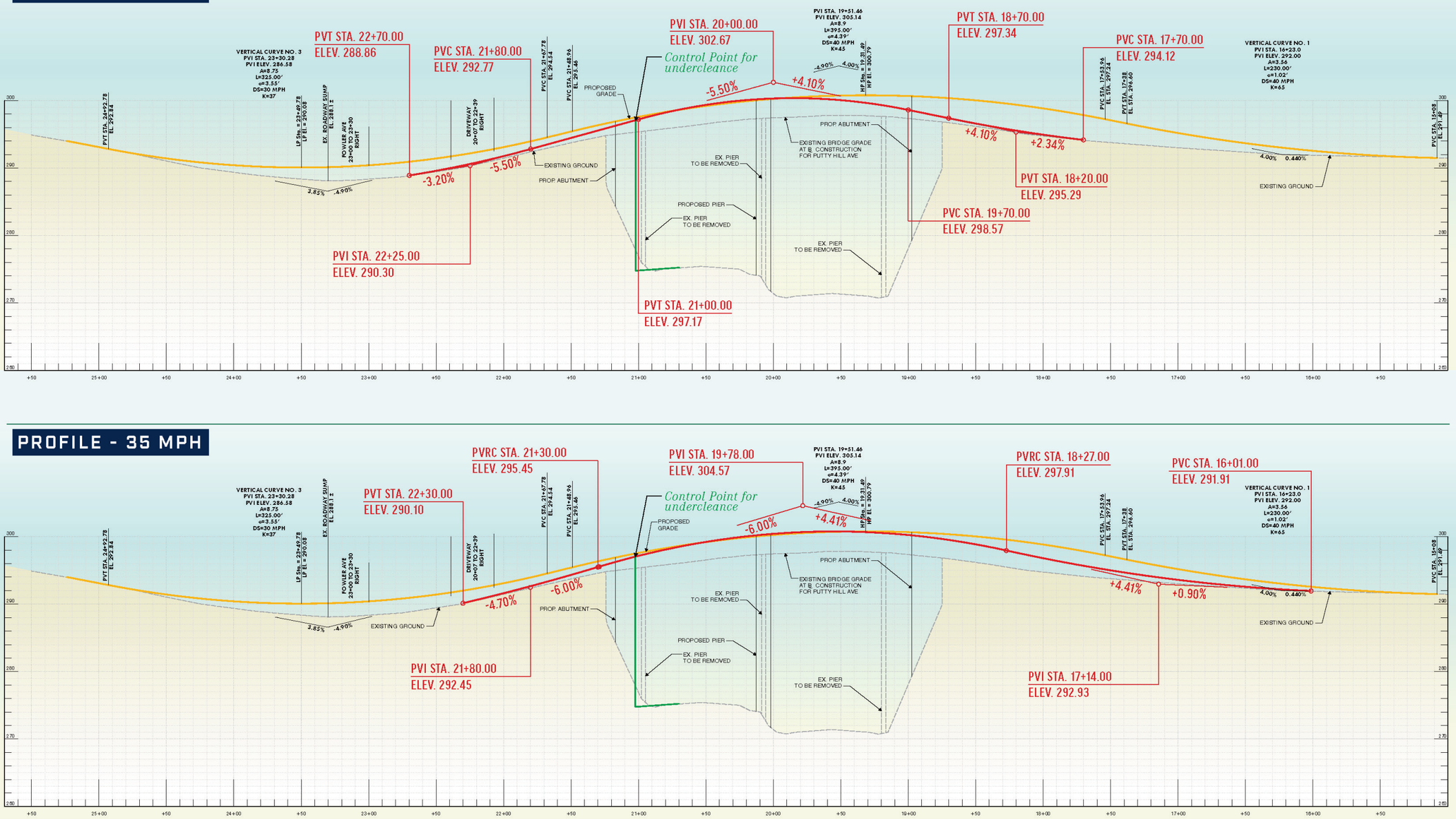
CONTRACT NO. BA1455180

Baltimore County

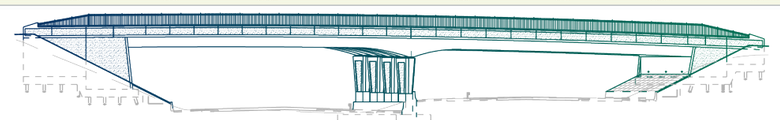
FAY
An I+Icon JBA Company

PROFILE - 30 MPH

LEGEND: Putty Hill Avenue Preliminary Investigation Profile — Putty Hill Avenue Alternative Profile



PROFILE - 35 MPH



PTC 2

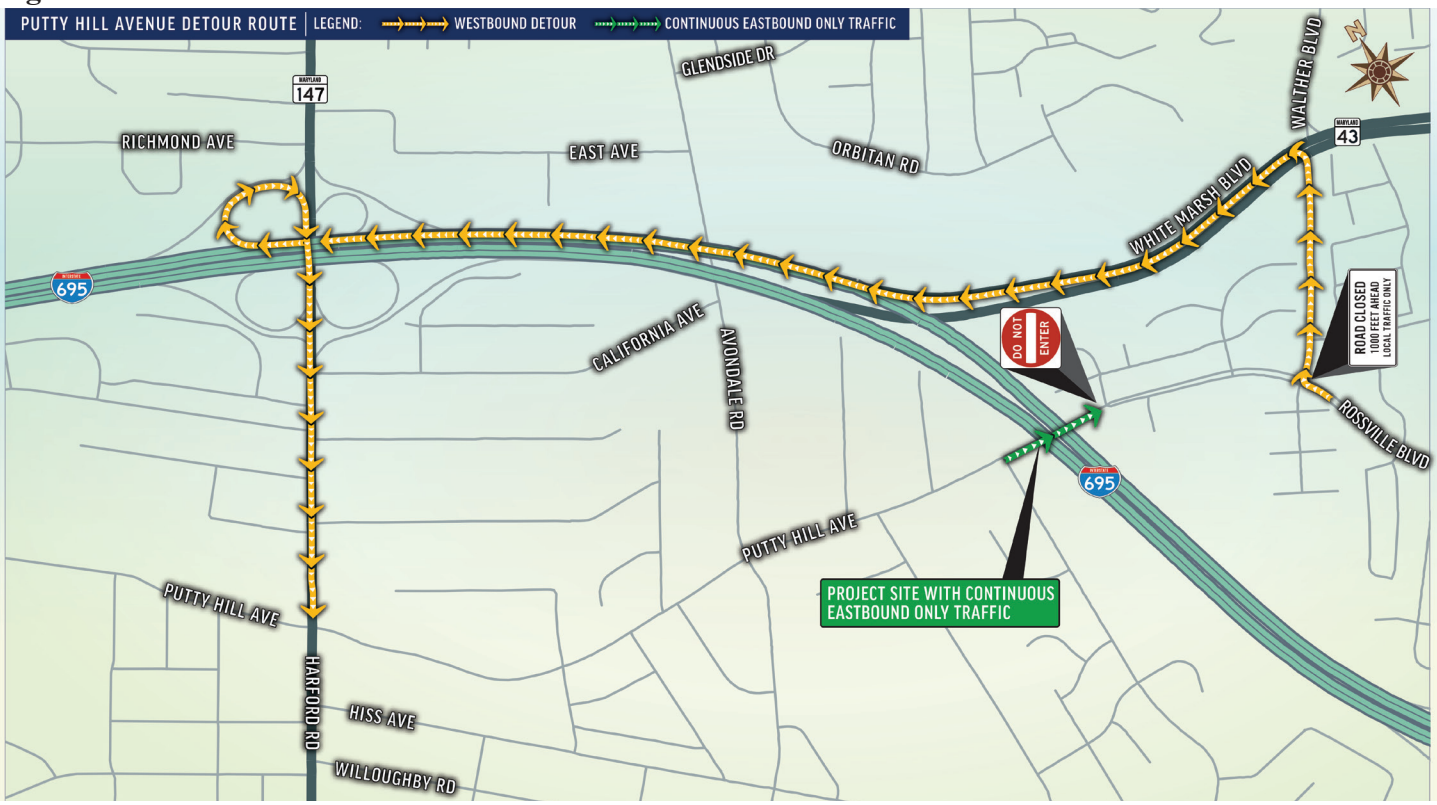
Implement a MOT plan that provides continuous one-way direction (eastbound) for the construction period.

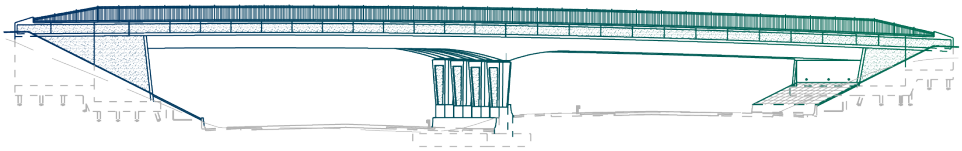
The preliminary MOT and bridge sequence of construction plans show the project occurring in two stages with two-way traffic being maintained in one lane at a time with a temporary signal. It will be difficult for this temporary signal system to keep up with the high traffic volumes present on Putty Hill (ADT 17,455) and queuing may become excessive at peak travel times. The temporary signal as currently designed cuts off access to driveways and Glenroy Avenue, which have no other access points. The MOT plan presents safety issues to motorists turning from driveways and side streets if they are not given signal indications, possibly turning into oncoming traffic. Based on the information provided, Fay proposes to implement a one-way detour for Putty Hill Avenue (Figure 5). Westbound traffic can more easily be detoured along Walther Boulevard northbound to MD 43 westbound merging onto I-695 westbound, exiting onto MD 147 southbound, and finally meeting back up at Putty Hill Avenue. Eastbound traffic could then run continuously over the one side of the bridge being maintained in each stage.

The Problematic Categorical Exclusion (PCE), notes that a proposed detour notification has not been made to the public. The Fay team will support and attend public meetings and outreach efforts reinforce the cost, time, and safety benefits of this PTC.

This PTC will reduce construction time by forty-two (42) work days. This plan would also eliminate installation and maintenance costs for the signals, and potential costs for temporary driveways and additional signals reducing cost by $163,000.00. Safety would greatly be improved.

Figure 5 - PTC 2





PTC 3
Decrease the typical section width of the proposed structure from 50'6" out to out to 46'6".

The existing bridge typical section includes one 12' lane, one 6' shoulder, and one 5'-1" sidewalk in each direction. The existing roadway to the west includes one 12' lane with no shoulders and no sidewalks in each direction. The existing roadway to the east of Grove Road is approximately 50' wide and includes two 10' lanes, no shoulder, and a 4' sidewalk along eastbound and two 10' lanes merging into one lane, no shoulder, and a 4' sidewalk along westbound.

A similar MDOT SHA bridge replacement project is under construction at Crosby Road over I-695. Crosby Road is a Baltimore County Road like Putty Hill Avenue. Both roads carry one lane, one shoulder, and one sidewalk in each direction. Both roads carry a similar high volume of traffic. Crosby Road was designed with one 11' lane, one 5' shoulder, and one 5' sidewalk in each direction.

Most recent MDOT SHA projects use 11' lanes on smaller arterial roadways such as Putty Hill Avenue. 12' lanes are typically reserved for freeways and other high volume/high speed type arterial roadways. 11' lanes are allowable by AASHTO Guidelines. Table 2.1 in the MDOT SHA Bicycle Policy and Design Guidelines shows that roadways such as Putty Hill Avenue with a posted speed limit equal to or less than 35 mph can have a minimum bike lane width of 4' plus a 1' offset to vertical curb. Based on the above information, consideration should be given to using 11' lanes and 5' shoulders along Putty Hill Avenue. This would reduce the proposed bridge width by 4'. The proposed westbound edge of the bridge could be held and therefore provide an additional 4' of offset to the existing overhead utilities along the eastbound roadway. In addition to a cost savings, the power lines may not have to be relocated. Possibly eliminating BGE relocation if temporary outages could be provided during beam removal and erection.

This PTC will reduce construction time by twenty-two (22) work days. This plan would reduce construction cost by $158,000.00. Environmental impacts and future maintenance cost will also be reduced.

PTC 4
Decrease the width of Stage 1 bridge construction from 23'10 ¾" to 21'10 ¾".

Stage 1 construction width provides a 14'-7 ¾" travel lane. This width also requires a split pan detail to be installed between girders 4 and 5. If the phased construction joint was moved to over the top of girder 5, the split stay-in-place form pan would not be required for the subsequent construction in Stage 2. *This PTC will reduce construction time by five (5) work days. This plan would reduce construction cost by $23,000.00. Quality would be served by eliminating the split stay-in-place form pan between the girder bays.*

PTC 5
Structural Steel Temporary Support for Pier 2.

Stage 1 requires temporary support of the north column and footer of Pier 2, utilizing concrete encasement, prior to removing the southern portion of that pier. As a time and cost saving change, the pier can be supported by fabricated structural steel in lieu of the concrete encasement. The structural steel support can be fabricated ahead of time and installed much quicker with better results. The encasement detail presented requires forming and pouring the encasement beneath the restrictions of the overhead bridge deck. *This PTC will reduce construction time by sixteen (16) work days. This plan would reduce construction cost by $38,000.00. Quality would be served by providing for full visual inspection of the existing pier during Stage 1 construction.*

2. Construction Approach

Our construction approach will minimize impacts to the environment and disruption to surrounding residents, maintain traffic flow on I-695, and reduce the time required for the temporary traffic signal system on Putty Hill Ave; all while maintaining schedule and budget.

a. Construction Sequencing

Our construction sequencing will ultimately be determined by the collaborative recommendations and decisions made by the Project Team during the Preconstruction Phase. However, based on the RFP, we have sorted the construction activities into the following schedule groups:

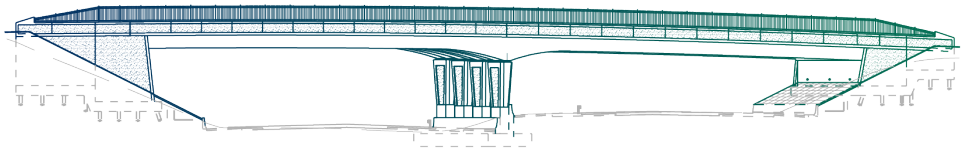
Early Procurement: Identified independent work and early procurement packages.

Initial Stage: Initial E&S; temporary lane restrictions for utility relocations and pier strengthening

Stage 1: Phase 1 E&S; permanent lane closures: traffic on EB Lanes; storm drainage; bridge demolition/reconstruction, utility, and roadway construction on WB Lanes; temporary tie-ins to cross streets and driveways

Stage 2: Phase 2 E&S; permanent lane closures: traffic on new bridge; bridge demolition/reconstruction, utility, and roadway construction on EB lanes

Final Stage: Stormwater management facilities, final paving and striping, E&S closeout, landscaping, and punchlist.



Maintenance of Traffic (MOT)

Putty Hill Avenue currently experiences a significant volume of traffic, especially during rush hour where considerable back-up is observed in both eastbound and westbound directions. We have reviewed the MOT phasing shown on the Plans and believe that the proposed sequencing will create longer traffic delays, major inconveniences to the neighboring residents, and does not provide sufficient area for construction staging. We are presenting a Proposed Technical Concept (PTC) 2 that would maintain continuous one-way traffic in the eastbound direction developing a simple detour for traffic in the westbound direction.

This alternate approach to the sequencing of the MOT will address all of the concerns listed above, as well as, create a safer environment for pedestrians and workers. We would propose implementing this MOT sequence immediately after the initial utility relocation (including partial 24" water main) has been completed and keep it in place through both stages of bridge construction.

We have also analyzed the current MOT sequence in the event that our PTC 2 is not incorporated. We believe the sequence indicated in the conceptual drawings could be executed, however, there are risks associated storm drainage and vertical profile differences between adjacent roads and neighboring properties that will need to be vetted during the Preconstruction Phase. The current MOT sequence also puts the relocation of the overhead electrical line on the critical path of the project.

We believe there to be a necessity for short-term temporary lane restrictions during both the design phase and the Initial Stage to allow for subsurface utility exploration, relocation of existing utilities, and completion of the required pier strengthening prior to implementing the Stage 1 permanent lane closures. This will shorten the duration for the long-term lane restrictions during the replacement of the Putty Hill Bridge Structure following the same sequence presented in the conceptual drawings (Stages 1 and 2). During the Initial Stage, we will also install permanent median lane closures on I-695 in each direction to allow for pier strengthening. These closures will remain in place through Stage 2.

The Stage 1 MOT will consist of permanent lane closures on Putty Hill Avenue and permanent shoulder closures on the outside lanes of I-695 to perform the bridge and roadway reconstruction of the westbound Lanes. As currently designed, temporary concrete barrier will be installed on Putty Hill Avenue to protect the work zone. A temporary traffic signal system will be installed to control single lane traffic in each direction using the eastbound Lanes. A critical component of the Stage 1 MOT will be the temporary tie-in of the roadways due to the increased vertical profile of the new road. Mike Veid and Ed Chaney have constructed projects with similar elevation issues and are experienced the precautions necessary to provide safe transitions between MOT stages.

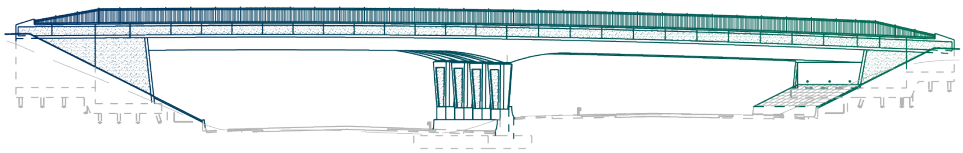
We will also install temporary concrete barrier along the shoulders of I-695 to provide safe work zones and staging areas for construction of the abutments and other bridge substructure. The shoulder closures will extend through Phase 2.

The Stage 2 MOT will consist of switching traffic to the newly constructed bridge using a similar temporary traffic signal system to allow for final utility installation, and bridge and roadway reconstruction of the eastbound lanes. During both Phase 1 and 2 MOT, short-term nightly lane restrictions will be required for the installation of necessary shielding for deck removal. Once the deck has been removed, short-term traffic stoppages will be required at night in order to pick existing structural steel girders. Once substructure elements have been constructed, surveyed, and ground, short-term traffic stoppages will again be required at night in order to set structural steel girders. Following steel erection, short-term nightly lane restrictions will be required for the installation of deck overhang jacks, installation of SIP form panels, and flashing.

In order to provide a clean, complete, and seamless appearance, the Final Stage will be utilized to install the stormwater management facility and landscaping, as well as, final wearing surface and line striping on both the Stage 1 and Stage 2 work areas. This work will be completed using short-term lane restrictions. Once complete, the roadway will once again be opened to unrestricted traffic.

Utility Relocation

The project schedule will incorporate design, permitting, and sequencing of the known utility relocations. We will allot sufficient time for the coordination and completion of the necessary relocations, and their interdependence with our construction sequence. We anticipate relocations of utilities such as fiber optic,



communication, and street lighting will occur over each stage of construction; reinforcing the need for close coordination with the Utility Owners.

As noted in the previous section, the relocation of the overhead power lines could be a critical issue that will require close coordination with not only BGE, but also the communication services attached to the BGE poles. The ideal situation would be to have the utilities relocated in advance, or during the Initial Stage work. However, in anticipation that this may not occur, we are looking at staging the bridge construction in such a manner that the relocation of the overhead lines is taken off of the critical path. PTC 3 provides greater detail to this plan.

The relocation of the 24 in waterline presents another sequencing challenge. Our experience with this exact relocation has shown that the water authority will want test pits performed and tie-in points accurately located on the existing waterline. We would propose that the test pitting activities be performed by Fay, and would also propose to install and cap the tie-in connection during the Initial Stage. This would simplify the tie-in during Stage 1, would reduce the time for long-term lane closures, and reduce the overall project schedule.

Based on the vertical profile change, we anticipate the need for temporary drainage to be installed during the Initial Stage to alleviate flooding of the road and neighboring properties between Stage 1 and Stage 2.

During Stage 1, we will install the permanent storm drains in conjunction with the reconstruction of the westbound roadway. We anticipate these storm drains will be tied-in to the temporary drainage installed in the Initial Phase. The 24" waterline and gas line will also be installed under the new bridge along with the cross-pipes and final connections.

During Stage 2, we will install the remainder of the permanent storm drains and make the necessary connections to the system installed during Stage 1. This will also include the removal of any temporary drain pipes.

Construction Staging

Staging equipment and material is another major challenge on the project. The Fay Team has constructed many projects with limited staging options. We will schedule deliveries with the progress of work to minimize stored material stockpiles. We have the ability to store long lead materials and larger structures at our nearby yard in Curtis Creek. We will export excavated and demolished materials immediately to avoid onsite stockpiles, and will be diligent about maintaining a clean and orderly site.

The timing of the relocation of the overhead lines will also impact our approach to staging, especially relative to the size and locations of our cranes. Regardless, we anticipate that material and equipment will be staged from both Putty Hill Avenue and within the areas behind the long-term should closures on I-695. This will be thoroughly planned and incorporated into the project schedule. PTCs 2 & 3 take staging areas into account and provide for safe and efficient access to store and move materials, and locate major pieces of equipment such as cranes.

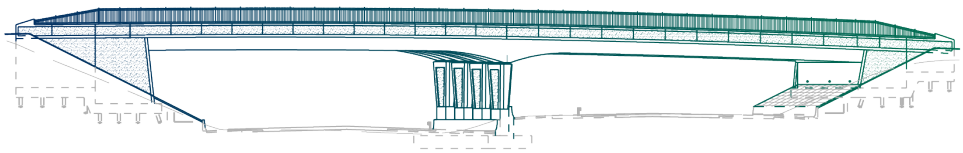
Independent Work Packages/Early Procurement Packages

Independent Work and Early Procurement packages only make sense if they are going to reduce the project duration and/or cost, or can mitigate an unanticipated delay during the Preconstruction phase. We will only make recommendations for early packages if they add value. We have identified several definable features of work that are prime candidates for independent work and/or early release packages:

- Test Pitting, Identification, and Tie-in Installation of the Existing 24 in. Waterline.
- Gas Line Relocation
- Utility Relocations Performed by Independent 3rd Party Contractors
- Procurement of Temporary Signals and Lighting
- Structural Steel Detailing and Fabrication

b. Construction Schedule

The Project CPM Schedule is one of the most important tools Fay uses to manage our projects. For this CMAR project, we will develop a comprehensive schedule using Primavera P6. It will detail the interdependence of all activities between the Preconstruction and Construction phases, including design milestones, permit activities, third party utilities, material procurement, and construction activities. It will be a 'living document' used throughout the lifecycle of the project. The schedule will be developed by our Project Manager, Mike Veid and our Schedule Manager, Jason Esser, P.E. with input from the entire Project Team. The CPM schedule will be updated monthly to show job progress, and reviewed with the Project Team to keep all stakeholders informed of the project status. Mr. Veid will conduct regular stakeholder/Partnering meetings to discuss progress, identify actual or potential schedule issues, and propose betterments. The information



gathered during these meetings will be incorporated into all monthly updates. The construction status report will be developed detailing the progress of the work during construction. This project report will ensure transparency, collaboration, and effective planning. It will convey the necessary initial and updated schedule related information in a uniform and efficient manner to include:

- Critical Path Method (CPM) master schedule sorted appropriately for Work Area, Work Type, and Responsibility;
- Critical Path to each contract milestone;
- Printout of the schedule logic for all schedule activities;
- Construction work cash flow projection with updated actual estimate values for the duration of the Project;
- Identification of discrepancies, conflicts, or ambiguities existing in the construction documents that require resolution;
- And identification of other items that require resolution so as not to jeopardize the opportunity to complete the construction work for the GMP and within the allowable contract time.

The CPM master schedule will be developed to consider the effects of weather, recognized holidays, MOT Restrictions, and restricted material placement periods in conformance with MDOT SHA specifications and special provisions in order to ensure timely delivery meeting the contract expected completion date.

Possible Factors Affecting Schedule

Project team collaboration and communication is critical for early identification and mitigation of items that can negatively impact the schedule. Mr. Veid will ensure that the Team is integrated and potential schedule impacts can be corrected as early as possible.

Outside Constraints

Design Development & Completion: Design changes can waste time and money. Fay's design-build experience proves that contractor-designer integration will allow constructability and sequencing issues to be identified and designed around early. Properly sequenced design packages will provide opportunities to accelerate design and construction. Fay will provide input and identification of long lead items. Fay will continually provide input to minimize risks associated with; constructability within the specifications, design fits within construction schedule, cost effective designs, agency standards, utility impacts, and environmental permit constraints.

Permitting: Permit approval can significantly postpone the notice-to-proceed. The planning effort during and the development of the CPM schedule will expose critical permit dates. Fay will present opportunities to adjust submission dates to include a level of float that the team is comfortable with. Fay will support the Project Team in early communications and pre-permitting meetings, feedback on SWM concepts, and other environmentally controlled aspects of the project.

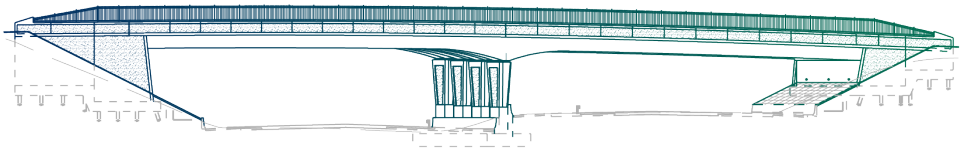
Right of Way Acquisition: We will identify specific Right of Way acquisitions in the project schedule. Their impact on the construction schedule will be known during the early stages of the project. This will give MDOT SHA drop dead dates that acquisitions need to be completed by in order to maintain the overall schedule.

Utility Relocations: Avoidance of utility relocations is the most cost effective means to facilitate design and the construction of the project. Fay will identify potential schedule and constructability impacts early and look at construction strategies that minimize the impacts. All of the utility relocations, including third party relocations will be incorporated into the schedule. Fay's PTCs and Risk Matrix provide additional details on Utility delay and cost mitigation. Mr. Veid will conduct coordination meetings, monthly at a minimum, with the Utility Owners to review commitment dates and status. All schedule impacts will be updated and distributed to the responsible stakeholders as soon as practical. Action items will be assigned to parties owning schedule issues.

Seasonal Work

Bridge Painting: The new structural steel girders will be shop primed with Coat I. Coats II and III will be field applied with calendar restrictions from December 15 to April 15. Additional conditions restricting field painting include rain, snow, humidity, and temperature. Bridge painting is not a schedule risk for this project. Additionally, the sequencing of the project allows for early completion of Stage 1 bridge painting if necessary. A mitigation effort for consideration would be to allow all three coats of paint to be shop applied. This would improve safety and schedule performance.

Bituminous Paving: The project completion date is shown in the RFP as December 20, 2020. The last construction activities in the project schedule will be the final surface paving and striping, there is a potential that temperature restrictions for placing asphalt could impact the substantial completion date. We will endeavor to schedule the project such that final paving occurs early enough to complete the paving activities



before temperatures get too low, however, it will be incumbent upon the entire team to avoid schedule slippage during the early stages of the project.

E&S Items; Seeding, Landscaping, Pond Construction/ Conversion: Our preliminary schedule shows final landscaping falling outside the fall planting season in 2020. For that reason, our final completion date falls past December 20, 2020. However, the only reason for this is the calendar restriction on the Final Stage landscaping. This will not impact full and unrestricted use of the project.

Girder Erection: Our schedule indicates that we will be erecting girders and other structural steel members during the winter months. Lane closures on I-695 will be required. The Construction Team will closely monitor short term and extended weather forecast prior to commencing girder installation. This work should not pose risk to the schedule.

Materials

The possibility of material availability delaying the schedule is minimal at this time, provided the material source does not deviate from the MDOT SHA or local agency specifications. The federal threat of steel tariffs may impact the availability of American steel, but it is too early to predict. To eliminate schedule risk, early on, Fay will identify and plan for long lead time steel fabricated material such as girders and bearings. Related to the MOT plan, early shop drawing approval will be required for the temporary traffic signal system to avoid potential delays.

Equipment & Labor Availability

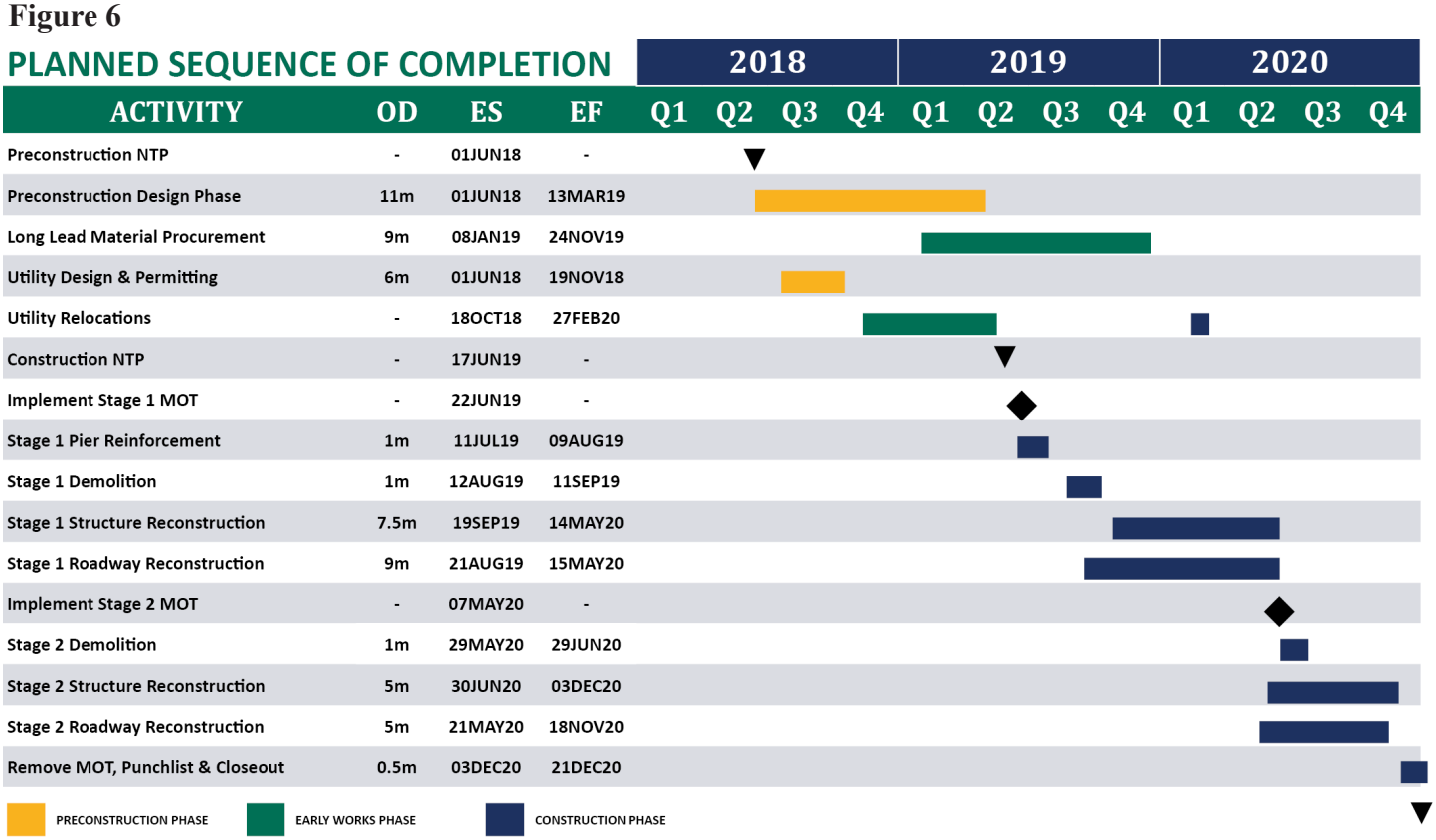
We do not currently believe that there will be any significant labor or equipment availability issues. However, as infrastructure investment increases in Maryland, subcontracting availability could be a factor impacts the schedule. For that reason, we will develop a subcontracting plan early in the project Preconstruction Phase. We will also begin conversations with qualified subcontractors so they are aware of the project and the anticipated dates that the project is released for bidding.

Based on Fay's proposed construction schedule the following graphic (Figure 6) outlines the major activities and their associated time frames. Also, Figure 7 on the following page provides additional detail on the project's longest path.

Figure 6

PLANNED SEQUENCE OF COMPLETION

ACTIVITY	OD	ES	EF
Preconstruction NTP	-	01JUN18	-
Preconstruction Design Phase	11m	01JUN18	13MAR19
Long Lead Material Procurement	9m	08JAN19	24NOV19
Utility Design & Permitting	6m	01JUN18	19NOV18
Utility Relocations	-	18OCT18	27FEB20
Construction NTP	-	17JUN19	-
Implement Stage 1 MOT	-	22JUN19	-
Stage 1 Pier Reinforcement	1m	11JUL19	09AUG19
Stage 1 Demolition	1m	12AUG19	11SEP19
Stage 1 Structure Reconstruction	7.5m	19SEP19	14MAY20
Stage 1 Roadway Reconstruction	9m	21AUG19	15MAY20
Implement Stage 2 MOT	-	07MAY20	-
Stage 2 Demolition	1m	29MAY20	29JUN20
Stage 2 Structure Reconstruction	5m	30JUN20	03DEC20
Stage 2 Roadway Reconstruction	5m	21MAY20	18NOV20
Remove MOT, Punchlist & Closeout	0.5m	03DEC20	21DEC20



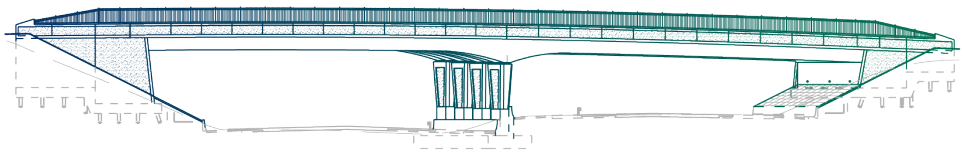
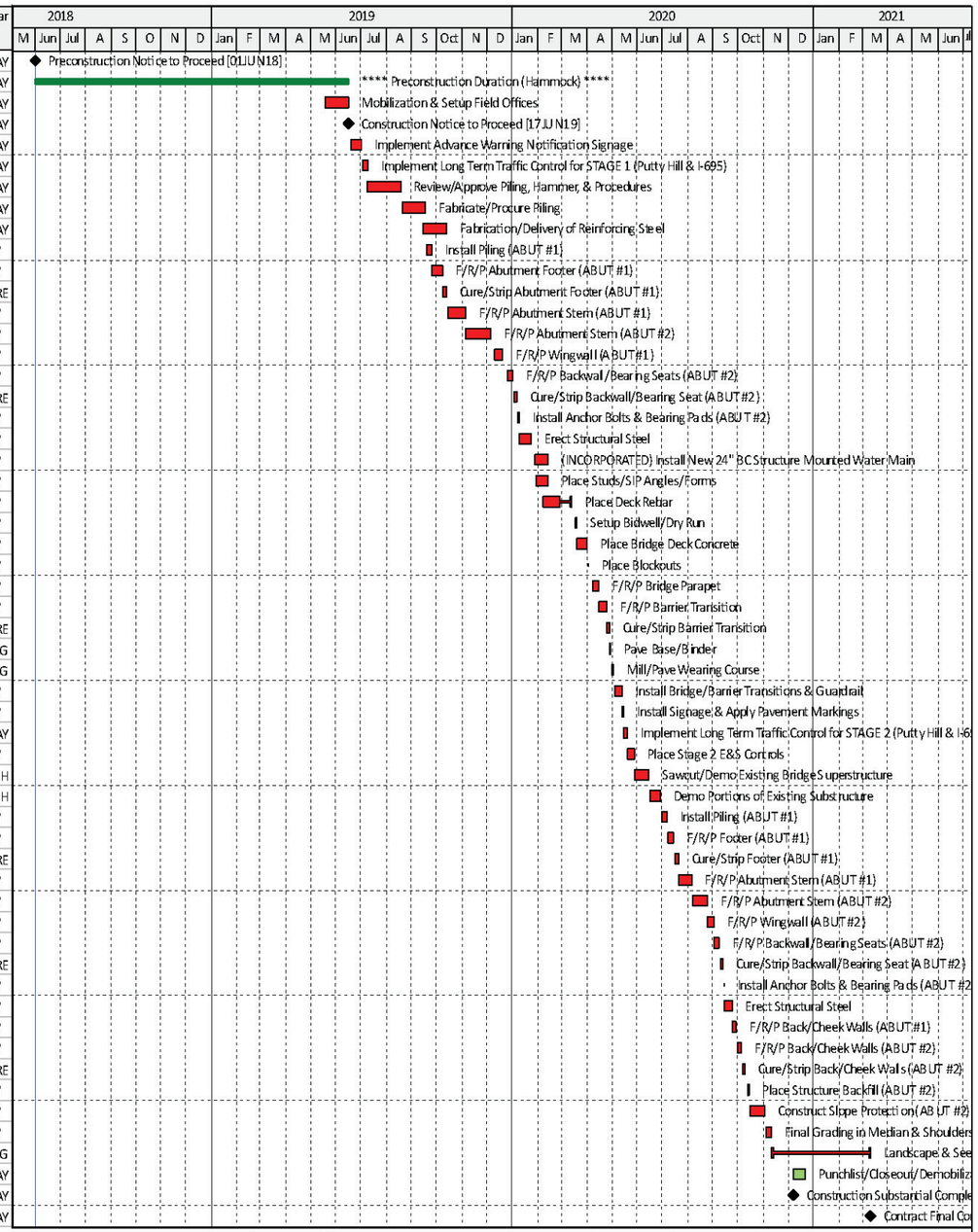


Figure 7 - Longest Path

Activity ID	Activity Name	OD	START	FINISH	TF	Calendar
NTP.PRECON	Preconstruction Notice to Proceed [01JUN18]	0	01-Jun-18*		8	{P} MDSHA 5-DAY
DDUR	**** Preconstruction Duration (Hammock) ****	381	01-Jun-18	16-Jun-19	12	{P} CALENDAR DAY
MOB	Mobilization & Setup Field Offices	30	18-May-19	16-Jun-19	4	{P} CALENDAR DAY
NTP.CONST	Construction Notice to Proceed [17JUN19]	0	17-Jun-19*		4	{P} MDSHA 5-DAY
MOT.ADV	Implement Advance Warning Notification Signage	14	19-Jun-19	02-Jul-19	12	{P} CALENDAR DAY
MOT.SET1	Implement Long Term Traffic Control for STAGE 1 (Putty Hill & I-695)	8	03-Jul-19	10-Jul-19	12	{P} CALENDAR DAY
REVW.CNST.125	Review/Approve Piling, Hammer, & Procedures	30	09-Jul-19	19-Aug-19	4	{P} MDSHA 5-DAY
FAB.117	Fabricate/Procure Piling	30	20-Aug-19	18-Sep-19	5	{P} CALENDAR DAY
FAB.100	Fabrication/Delivery of Reinforcing Steel	30	14-Sep-19	13-Oct-19	3	{P} CALENDAR DAY
ABUT1.S1.100	Install Piling (ABUT #1)	5	19-Sep-19	25-Sep-19	3	{P} 5 @ 8, M-F, H, W
ABUT1.S1.105	F/R/P Abutment Footer (ABUT #1)	6	26-Sep-19	08-Oct-19	3	{P} 5 @ 8, M-F, H, W
ABUT1.S1.110	Cure/Strip Abutment Footer (ABUT #1)	5	09-Oct-19	13-Oct-19	3	{P} CURE
ABUT1.S1.115	F/R/P Abutment Stem (ABUT #1)	15	14-Oct-19	05-Nov-19	3	{P} 5 @ 8, M-F, H, W
ABUT2.S1.215	F/R/P Abutment Stem (ABUT #2)	15	06-Nov-19	06-Dec-19	3	{P} 5 @ 8, M-F, H, W
ABUT2.S1.168	F/R/P Wingwall (ABUT #1)	5	11-Dec-19	20-Dec-19	3	{P} 5 @ 8, M-F, H, W
ABUT2.S1.225	F/R/P Backwall/Bearing Seats (ABUT #2)	3	26-Dec-19	02-Jan-20	3	{P} 5 @ 8, M-F, H, W
ABUT2.S1.235	Cure/Strip Backwall/Bearing Seat (ABUT #2)	5	03-Jan-20	07-Jan-20	8	{P} CURE
ABUT2.S1.240	Install Anchor Bolts & Bearing Pads (ABUT #2)	1	09-Jan-20	09-Jan-20	2	{P} 5 @ 8, M-F, H, W
FINAL	Erect Structural Steel	6	10-Jan-20	24-Jan-20	2	{P} 5 @ 8, M-F, H, W
U-11.CNST	(INCORPORATED) Install New 24" BC Structure Mounted Water Main	7	29-Jan-20	14-Feb-20	2	{P} 5 @ 8, M-F, H, W
SSTR.S1.210	Place Studs/SIP Angles/Forms	5	31-Jan-20	14-Feb-20	2	{P} 5 @ 8, M-F, H, W
SSTR.S1.220	Place Deck Rebar	12	07-Feb-20	13-Mar-20	1	{P} 5 @ 8, M-F, H, W
SSTR.S1.225	Setup Bidwell/Dry Run	2	18-Mar-20	19-Mar-20	1	{P} 5 @ 8, M-F, H, W
SSTR.S1.230	Place Bridge Deck Concrete	5	20-Mar-20	01-Apr-20	1	{P} 5 @ 8, M-F, H, W
SSTR.S1.235	Place Blockouts	1	02-Apr-20	02-Apr-20	1	{P} 5 @ 8, M-F, H, W
SSTR.S1.245	F/R/P Bridge Parapet	4	08-Apr-20	15-Apr-20	0	{P} 5 @ 8, M-F, H, W
ROAD.S1.245	F/R/P Barrier Transition	5	16-Apr-20	24-Apr-20	0	{P} 5 @ 8, M-F, H, W
ROAD.S1.250	Cure/Strip Barrier Transition	3	25-Apr-20	27-Apr-20	1	{P} CURE
ROAD.S1.255	Pave Base/Binder	3	28-Apr-20	30-Apr-20	1	{P} PAVING
ROAD.S1.260	Mill/Pave Wearing Course	2	01-May-20	02-May-20	1	{P} PAVING
ROAD.S1.270	Install Bridge/Barrier Transitions & Guardrail	5	05-May-20	13-May-20	0	{P} 5 @ 8, M-F, H, W
ROAD.S1.275	Install Signage & Apply Pavement Markings	2	14-May-20	15-May-20	0	{P} 5 @ 8, M-F, H, W
MOT.SET2	Implement Long Term Traffic Control for STAGE 2 (Putty Hill & I-695)	5	16-May-20	20-May-20	0	{P} CALENDAR DAY
E&S.S2	Place Stage 2 E&S Controls	5	21-May-20	28-May-20	0	{P} 5 @ 8, M-F, H, W
DEMO.S2.205	Sawcut/Demo Existing Bridge Superstructure	12	29-May-20	15-Jun-20	1	{P} 5 @ 8, M-F, H
DEMO.S2.210	Demo Portions of Existing Substructure	10	16-Jun-20	29-Jun-20	1	{P} 5 @ 8, M-F, H
ABUT1.S2.300	Install Piling (ABUT #1)	5	30-Jun-20	07-Jul-20	1	{P} 5 @ 8, M-F, H, W
ABUT1.S2.305	F/R/P Footer (ABUT #1)	6	08-Jul-20	15-Jul-20	1	{P} 5 @ 8, M-F, H, W
ABUT1.S2.310	Cure/Strip Footer (ABUT #1)	5	16-Jul-20	20-Jul-20	2	{P} CURE
ABUT1.S2.315	F/R/P Abutment Stem (ABUT #1)	12	21-Jul-20	06-Aug-20	2	{P} 5 @ 8, M-F, H, W
ABUT2.S2.315	F/R/P Abutment Stem (ABUT #2)	12	07-Aug-20	24-Aug-20	2	{P} 5 @ 8, M-F, H, W
ABUT2.S2.272	F/R/P Wingwall (ABUT #2)	5	25-Aug-20	01-Sep-20	2	{P} 5 @ 8, M-F, H, W
ABUT2.S2.325	F/R/P Backwall/Bearing Seats (ABUT #2)	3	02-Sep-20	08-Sep-20	2	{P} 5 @ 8, M-F, H, W
ABUT2.S2.335	Cure/Strip Backwall/Bearing Seat (ABUT #2)	5	09-Sep-20	13-Sep-20	2	{P} CURE
ABUT2.S2.340	Install Anchor Bolts & Bearing Pads (ABUT #2)	1	14-Sep-20	14-Sep-20	2	{P} 5 @ 8, M-F, H, W
SSTR.S2.300	Erect Structural Steel	6	15-Sep-20	23-Sep-20	2	{P} 5 @ 8, M-F, H, W
ABUT1.S2.345	F/R/P Back/Cheek Walls (ABUT #1)	3	24-Sep-20	29-Sep-20	2	{P} 5 @ 8, M-F, H, W
ABUT2.S2.345	F/R/P Back/Cheek Walls (ABUT #2)	3	30-Sep-20	05-Oct-20	2	{P} 5 @ 8, M-F, H, W
ABUT2.S2.350	Cure/Strip Back/Cheek Walls (ABUT #2)	5	06-Oct-20	10-Oct-20	2	{P} CURE
ABUT2.S2.355	Place Structure Backfill (ABUT #2)	3	13-Oct-20	15-Oct-20	0	{P} 5 @ 8, M-F, H, W
ABUT2.S2.365	Construct Slope Protection (ABUT #2)	12	16-Oct-20	03-Nov-20	0	{P} 5 @ 8, M-F, H, W
ROAD.S2.ML.300	Final Grading in Median & Shoulders	5	04-Nov-20	10-Nov-20	0	{P} 5 @ 8, M-F, H, W
ROAD.S2.ML.305	Landscape & Seed in Median & Shoulders	5	11-Nov-20	11-Mar-21	0	{P} SEEDING
DEMOB	Punchlist/Closeout/Demobilization	15	07-Dec-20	21-Dec-20	80	{P} CALENDAR DAY
SUBST	Construction Substantial Completion [31DEC20]	0		07-Dec-20*	18	{P} MDSHA 5-DAY
FINAL	Contract Final Completion	0		10-Mar-21	1	{P} CALENDAR DAY



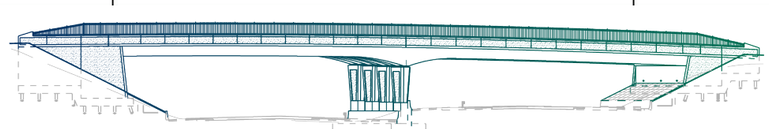
Start: 01-Jun-18
End: 11-Mar-21
Data: 01-Jun-18
Run: 02-Apr-18

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

(18G5018) PUTTY HILL AVE OVER I-695
Longest Path - Reduced | TASK filter: (UDF) LP - Reduced.

Date	Revision	Checked	Approved

FAY
An iicon usa Company



c. Stakeholder Coordination

Safety is paramount and Fay Partners on every project! Communication is critical to a successful project. Mr. Veid will ensure that stakeholder coordination, Partnering, and communication are active and consistent with the Fay Team. Mr. Veid, Mr. Chaney, Mr. Esser, and Mr. Scalleat will participate in monthly Partnering meetings and other project coordination meetings as their expertise is called upon. This group has a strong understanding of its MDOT SHA's organizational structure and the roles each Office performs, especially with respect to stakeholder coordination. We will assist the representative from each Office, providing clear, concise, and consistent communication.

There is a diverse group stakeholders associated with this project. The coordination and communication needs of each stakeholder is not the same. For example, we have found that communication with business groups and resident organization is best led by the MDOT SHA Community Liaison with Fay providing a supporting role. Coordinating with utility owners is often best led by Fay, but working in close collaboration with the MDOT SHA Utility Coordination Specialist.

Our support and assistance in communicating with project stakeholders will take on many forms, including: 1) attending meetings with stakeholders, as requested; 2) providing regular schedule updates and written narratives with specific detail tailored to the individual stakeholder; 3) mass notifications such as the use of variable message signs, flyers, and news print.

The following is a list of some of the major project stakeholders, our approach to communicating with them, and how we will minimize impacts to them during construction.

MDOT SHA – As the primary stakeholder, MDOT SHA will be the cornerstone of a successful coordination effort with all of the other project stakeholders. We will be in continual communication with individual departments such as the Office of Communications, Office of Structures, Office of Construction, and Office of Traffic & Safety to provide the assistance and support. We will establish lines of communications and individual contacts with each MDOT SHA Office during the initial Project Partnering Workshop. We will jointly determine action items and develop a plan for coordination efforts with the other project stakeholders. Early identification of stakeholder needs and a proactive approach to executing the coordination plan will be our best approach to collaborating with MDOT SHA to minimize impacts during construction.

Utility Owners – Coordination with the various utility owners is critical to success of the project, as relocation efforts will be the first construction activities on the critical path of the schedule. The Project Team must be diligent and assertive in our coordination with the utility owners. The importance of this coordination effort cannot be understated. As such, we have assigned Sam Scalleat as Fay's Utility Coordinator assigned to the project. Mr. Scalleat will communicate directly with MDOT SHA's Utility Coordination Specialist and with the individual utility owners to make sure relocation plans are being developed and coordinated with the development of the project plans.

Stakeholders:

Baltimore County:
(Department of Public Works - Utilities, Department of Recreation and Parks - Double Rock Park)

Maryland Department of the Environment

Emergency Response Services:
(Police/Fire/EMS)

Maryland Historical Trust

Baltimore Gas & Electric

Maryland National Guard CW4 Melvin Sherr Armory

Town of Carney

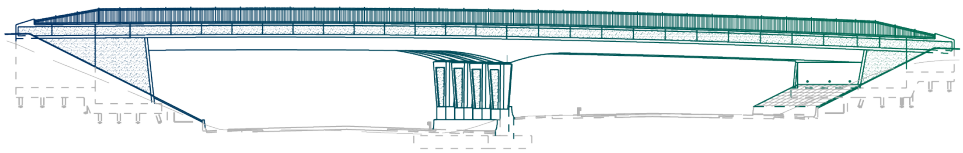
Parkville Middle School and Center Of Technology

Parkville Church of the Nazarene

Local Residents:
(Putty Hill Woods, Evergreen at Putty Hill, Rolling Crest, The BLVD at White Springs, Brightview White Marsh, Double Rock)

Local Businesses:
(Putty Hill Plaza, ClearView Window & Door Co.)

Traveling Public



Baltimore County is a significant stakeholder in the project. The County is the Owner of the proposed roadway and drainage improvements as well as the existing and proposed new water main. As such, they will ultimately manage the maintenance and upkeep for the final product at the project completion. Mr. Scalleat will work with their respective departments or design consultants to track plan development, relocation approvals, and coordinate with other utility relocation plans to vet conflicts early so as to eliminate costly delays during construction.

Baltimore Gas and Electric (BGE) is another utility owner who will play a major role in the success of the project. The existing overhead electric line creates a major conflict with the constructability of the project as currently designed. Fay's PTCs will eliminate the constructability issues and take the relocation of the overhead lines off of the critical path. Regardless, coordination with BGE is paramount. The relocation of all of the BGE utilities will be incorporated into the project schedule, tracked, and updated during regular utility coordination meetings.

Town of Carney – Although the Town of Carney does not have its own local government offices, its community of residents are within the footprint of this project. These residents make up one of the most important stakeholders on the project. As a team, we must convey that the project will be an overall betterment to their lives and that we will minimize community and social impacts during the construction process. Those most directly affected by these impacts will be the individual residencies within the limits of the project along each side of Putty Hill Avenue. The communication effort with the surrounding community will be led by MDOT SHA's Community Laison, however, Fay will play a collaborative role in the communication with this stakeholder. As with similar projects, we will attend community meetings to provide project updates and address the concerns of the local residents and businesses. We will convey a level of expertise and professionalism to garner the trust of the surrounding community that their safety and well-being is a primary goal of the project. We will also provide the Community Laison with regular schedule updates and narratives that can be used in project newsletters, mailings, and social media updates.

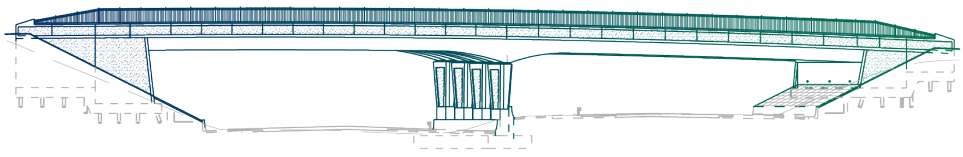
MDE – MDE's role as a project stakeholder is extremely important both during design and construction. Obtaining MDE permits can often have catastrophic impacts on planned schedules. Fay can assist in MDE coordination during the design phase by providing quality constructability recommendations prior to permit submissions, as well as, meeting with MDE during their review to discuss our approach to the construction to eliminate concerns they may have regarding plan approval.

During construction, we approach MDE with the same professionalism and collaboration that we use throughout the project lifecycle. We actively engage with MDE inspectors before beginning work in new areas and stages of the project. We encourage frequent site visits and always take the time to meet with the inspector immediately after their walk through. On the rare occasion that a deficiency is noted, we immediately dispatch a crew to address or correct the concern. Our relationship with MDE on our projects has been one of the foundations of our success.

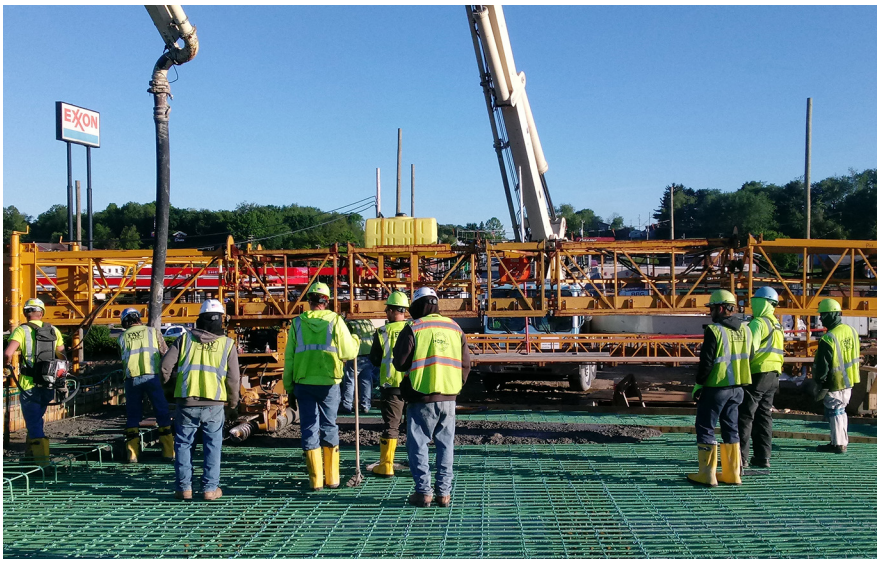
Schools – Based on our background research, we understand that there are a number of local public and private schools in the area that will be affected by new travel patterns during construction. Fay will meet with the transportation departments of these schools and develop a website which will be updated to include current project status information.

Emergency Response Services (Police/Fire/EMS) – Public safety and maintaining preconstruction response times for emergency services is vital to the projects success. We will coordinate with these life-saving stakeholders to keep them informed of current traffic patterns and provide assistance as necessary for these responders throughout the project limits. We will develop a site specific health and safety plan along with an emergency response plan.

Communications will include preconstruction and milestone notifications (at least 14 days in advance of a traffic change).

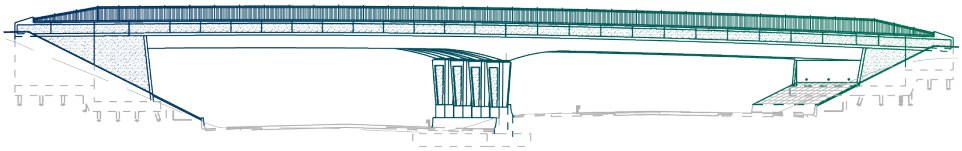


D. Cost Estimating Approach



"Our transportation mission is to keep people and goods moving safety and efficiently, and this project brings some of the latest industry improvements, like roundabouts, home for Pennsylvanians. This interchange improves travel for the public and businesses."
Governor Tom Wolf

"This project (I-70 New Stanton) was a huge success for many reasons, including innovative bidding which encourages bidders to pursue expedited construction. The contractor, Fay, bid the project with innovations that allowed the construction to complete almost one year early."
Joe Szczur, PennDOT



Bridge Replacement
Steel Girder Bridge No. 0317400
On Putty Hill Avenue Over I-695

D. Cost Estimating Approach

1. Estimating Environment

Fay's estimating department in Maryland is led by our Cost Estimator, Brett Hause. Brett has the skills and knowledge to estimate the quantities of materials, labor, and equipment needed for construction. He has been estimating MDOT SHA projects since 2005 and is very familiar with MDOT SHA standards and specifications, local and specialty subcontractors, DBE subcontractors, and market factors that affect project costs. Additionally, Brett has support from Fay's entire estimating staff with the experience needed for this project.

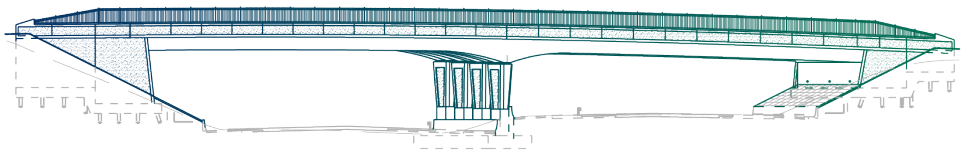
Brett will set the tone for all cost estimates by creating an open, fair, and transparent environment for all estimates throughout the process. At the onset of the project, Brett will collaborate with MDOT SHA and the Independent Cost Estimator (ICE) to create a Work Breakdown Structure (WBS) and estimating cost model based on MDOT SHA standard format and bid items. Establishing an agreed upon format before initial estimating activities commence will ensure an apples to apples comparison with the ICE estimates and MDOT SHA historical pricing. The cost model will be used for the Opinions of Probable Construction Costs (OPCC), Value Analysis estimates, early procurement estimates, and ultimately the Guaranteed Maximum Price. The level of detail we will provide in our cost estimates, along with our design and constructability recommendations and project schedule management, will enable the Project Team to make sound financial decisions that will minimize project delivery time, impacts on the environment, and impacts on the traveling public.

Brett and his estimating team will use their experience to identify potential risks and methods to mitigate them during the Preconstruction Phase. Open discussions will be held with the Project Team to ensure MDOT SHA is receiving the most accurate cost estimates at designated design milestones. As design progresses, bid quantities will be developed. Working with MDOT SHA and the ICE, we will compare bid quantities and come up with an agreed upon quantity list for each item in our estimate. This will be a key component to having an open and transparent estimating environment as we eliminate variability in costs based on variations in estimated quantities. We will also provide a complete list of labor rates with a break out for burden and fringes, as well as, equipment costs with our initial estimate. These costs will be provided as another example of our open and transparent approach to the estimate, and to foster an early conversation regarding actual labor costs versus published wage rates.

Fay utilizes HCSS Heavybid as our estimating software. This is the premier estimating software for the civil construction industry. HCSS Heavybid helps streamline the entire estimating process and can help reduce time spent building our estimate by directly importing bid items from MDOT SHA websites. Activities and bid items can be built as needed, copied from any previous estimate, or pulled from a list of standardized activities of work. Quote folders in the estimate allow the contractor to quickly solicit quotes and analyze them against other subcontractors or our own self-performed work.

Our estimates begin by setting up the Bid Items established in our cost model; labor rates that include base rates, burdens, and fringes; and equipment and crews necessary to complete the scope of work. The bid items are then broken into specific work activities. Crews are assigned to each activity, along with production rates, temporary and permanent materials, subcontract work, and trucking and disposal, to provide a cost for each activity within a Bid Item. The aggregate sum of each activity within a Bid Item will then roll up to provide a direct cost for each Bid Item. Further, we will set up our estimates with parent/child items to match MDOT SHA Bid Categories. We will be able to provide cost data summarized across the full spectrum of the estimate from total project cost down to work activities within a bid item.

Our estimate will also provide a detailed breakdown of our indirect costs including small tools, project offices, and supervisory costs not included in the CMAR Management Fee Percentage. Indirect costs are typically then spread across the Bid Items and the CMAR Management Fee Percentage applied as our mark-up. Our estimates will also clearly show any contingencies and/or allowances being carried along



with the justification for their inclusion. From there, we will be able to provide any number of reports detailing our direct costs; labor, equipment, and material summaries; subcontractor quote comparisons; and indirect spreads and mark-up. The reports provided with our estimates will define our open and transparent approach to the estimate.

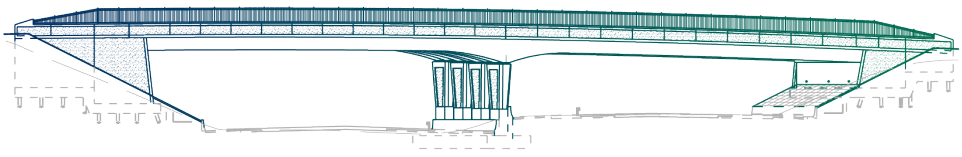
Fay will develop an OPCC to provide up to three progressively refined construction cost estimates at designated milestones for each section, phase or construction package. Based on our experience with similar projects, we are confident in providing reasonable OPCC estimates as early as 30% Design. Fay and the ICE will develop separate cost estimates for the same scope of work. Both estimates will be sent to MDOT SHA for review. MDOT SHA will determine the acceptability of the price by comparing Fay's estimate to the ICE estimate, similar projects, and state averages. At that point, we will meet with MDOT SHA and the ICE to reconcile each estimate. The reconciliation meeting will also serve as an opportunity for the team to review potential cost savings.

We do anticipate subcontractor participation during the early OPCC estimates. We will strive to get a minimum of three subcontract prices for each definable feature of work and will evaluate each price against our estimate to self-perform the work in order to determine a fair price. We will also begin to identify Disadvantaged Business Enterprises (DBE) that would be utilized and begin an outreach effort to engage new small businesses and DBEs who may be interested in the project. As the scope of work becomes more defined through the design process, our estimates will become more detailed, subcontractors will become more engaged, and allowances and contingencies will be reduced.

MDOT SHA has identified the need for early release packages to meet the Project Goal of minimizing project delivery time. Those packages may be in the form of either early procurement or early construction packages. For either case, a value analysis will be performed for each potential early release package including an estimating effort to determine its OPCC. Once the determination has been made that an early release package provides value to the project, Fay shall submit a sealed price to the administration. The price will be compared against a matching price prepared by the ICE. If pricing is acceptable, MDOT SHA will prepare a Construction contract amendment to cover the defined procurement services. If pricing is not acceptable, MDOT SHA may enter into a process of risk identification to identify differences in pricing between Fay and the ICE. Fay and the ICE will compare crews, equipment and productions, as well as the means and methods used to identify and resolve any differences in cost.

Through the Design Phase, the team will develop, propose, and track potential innovations and alternative designs for incorporation into the project. Fay will provide value analysis of alternative designs, systems and materials so that each alternative can be evaluated based on cost, construction schedules, availability of labor, equipment and materials, and construction feasibility. Cost estimates of alternate concepts will be evaluated to include industry standard operating and maintenance costs to evaluate life-cycle costs. A value analysis proposal will be prepared for each alternative and incorporated into the Innovation Tracking and Performance Report.

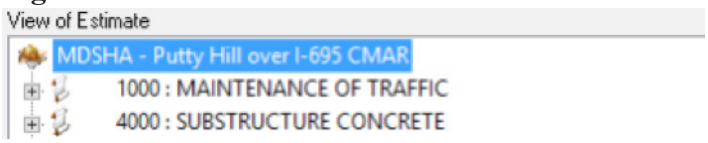
It is MDOT SHA's desire to proceed to a GMP at 80% design. The GMP estimate will follow the same format and backup documentation of the OPCC and value analysis estimates. The GMP estimate will be more detailed and will include hard quotes from subcontractors and suppliers. In addition to the reports provided in the previous estimates, we will provide a comparison between our estimate for self-performed work against subcontractor quotes for matching scopes or work, and provide a final DBE Plan.



2. Sample Estimate

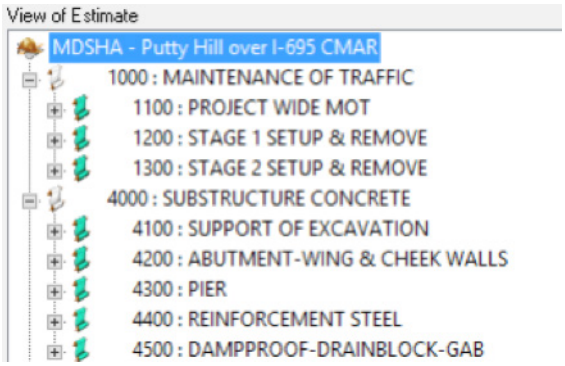
Fay builds the estimate based on a Work Breakdown Structure (WBS) that allows all costs, durations and sequence of tasks to rolls up to MDOT SHA's specific Bid Item. As shown below (Figure 8) and for this example, the highest level (parent item) is the Bid Item; 1000 - Maintenance of Traffic and 4000 - Substructure Concrete.

Figure 8



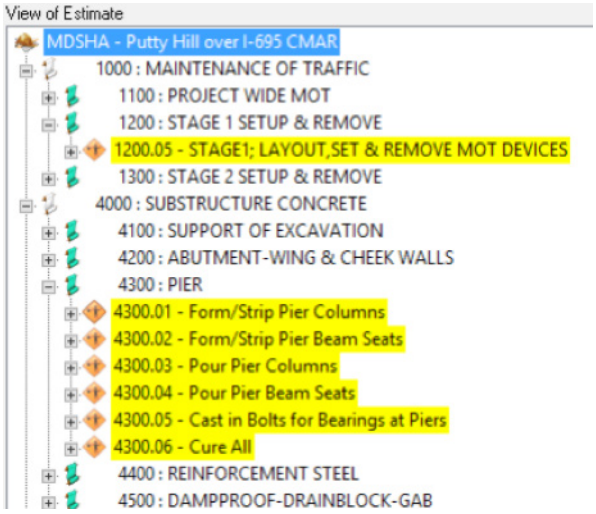
Within each Bid Item, the second analysis level (child item) is a Stage or Phase of the work item or unrelated work scopes. As shown below (Figure 9), Item 1000 – MOT is further broken down by work Stage; 1100-Project Wide, 1200-Stage 1 and 1300-Stage 2. Similarly, Item 4000 Substructure Concrete is categorized by work type; 4100 – SOE, 4200-Abutment, 4300-Pier, 4400-Reinforcement, etc.

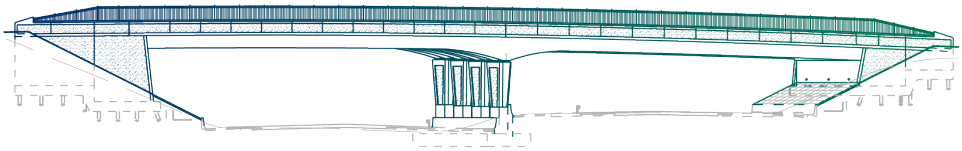
Figure 9



Finally the lowest level within the child item is the activity. The activity includes the individual costs for craft labor, material, equipment, trucking, and subcontractors. The detail below (Figure 10) illustrates the activities within 1200-Stage 1 Setup and Remove and within 4300 Pier. The activity pricing for items highlighted in yellow follows.

Figure 10





Cost Report

18GPUTTY MDSHA - Putty Hill over I-695 CMAR SHA Bid Item 03/27/2018 2:36 PM

Biditem Child

1100

PROJECT WIDE MOT

Takeoff Qty: 18.000 MO

Bid Qty: 18.000 MO

Client #: 1000

	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
U. Cost	3,705.33	1,606.84	5,312.17	3,296.70	520.58	0.00	0.00	0.00	0.00	0.00	9,129.45
Total	66,696.00	28,923.13	95,619.13	59,340.52	9,370.40	0.00	0.00	0.00	0.00	0.00	164,330.05

Manhours	Unit/MH	MH/Unit	$/MH	Base Labor/MH	Total Labor/MH	Unit/CH
3,462.0000	0.0052	192.3333	47.4668	19.2652	27.6196	0.0131

Activity: 1100.01 FLAGGING LOCAL ROADS Quantity: 30 Unit: DYS

	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
U. Cost	369.20	231.15	600.35	38.55	0.00	0.00	0.00	0.00	0.00	0.00	638.90
Total	11,076.00	6,934.47	18,010.47	1,156.56	0.00	0.00	0.00	0.00	0.00	0.00	19,167.03

Crew $/Unit	Crew Hrs/Unit	Units/Crew Hr	$/Crew Hour	Shifts	Units/Shift	Shifts/Unit	$/Shift
638.9010	8.0000	0.1250	79.8626	30.0000	1.0000	1.0000	638.9010

Manhours	Unit/MH	MH/Unit	Total Labor/MH	Base Labor/Unit
600.0000	0.0500	20.0000	30.0175	369.2000

Calendar: 40 STANDARD CALENDAR Hrs/Shift: 8

Crew: LB003 FLAGGING CREW Prod: S 30 Eff: 100.00 Crew Hrs: 240.00 Labor Pcs: 2.50 Equipment Pcs: 0.50

Resource	Description	Pcs/Wste	Quantity	Unit	Unit Cost	Tax/OT %	Actual UC	Total
8ITRPU2	Pickup 4x2	0.50	120.00	HR	9.64	100.00	9.64	1,156.56
L6	Flagger	2.00	480.00	MH	17.20	100.00	28.59	13,722.72
LF	Labor Foreman	0.50	120.00	MH	23.50	100.00	35.73	4,287.75

Activity: 1100.10 LANE CLOSURES I-695 Quantity: 72 Unit: DAY

	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
U. Cost	639.20	240.79	879.99	733.42	130.14	0.00	0.00	0.00	0.00	0.00	1,743.55
Total	46,022.40	17,337.17	63,359.57	52,805.96	9,370.40	0.00	0.00	0.00	0.00	0.00	125,535.93

Crew $/Unit	Crew Hrs/Unit	Units/Crew Hr	$/Crew Hour	Shifts	Units/Shift	Shifts/Unit	$/Shift
1,613.4101	8.0000	0.1250	217.9443	72.0000	1.0000	1.0000	1,743.5546

Manhours	Unit/MH	MH/Unit	Total Labor/MH	Base Labor/Unit
2,304.0000	0.0313	32.0000	27.4998	639.2000

Duration Production

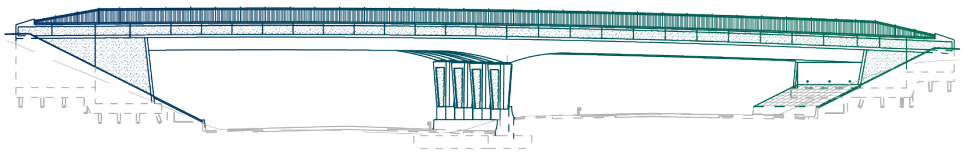
Calendar: 40 STANDARD CALENDAR Hrs/Shift: 8

Crew: LB004 LANE CLOSURE CREW Prod: S 72 Eff: 100.00 Crew Hrs: 576.00 Labor Pcs: 4.00 Equipment Pcs: 4.00

Notes: 4 mo x 18 days = 72 shifts

Resource	Description	Pcs/Wste	Quantity	Unit	Unit Cost	Tax/OT %	Actual UC	Total
2DRUMS	Drums for MOT	1.00	80.00	EA	70.00	106.00	74.20	5,936.00
2SIGNS	MOT SIGNS	1.00	136.00	SF	15.00	106.00	15.90	2,162.40
2SS	sign stands	1.00	8.00	EA	150.00	106.00	159.00	1,272.00
8ITFAR	Arrow Board	1.00	576.00	HR	4.55	100.00	4.55	2,620.80
8ITRCRASH	Crash Truck	1.00	576.00	HR	67.85	100.00	67.85	39,082.18
8ITRPU2	Pickup 4x2	2.00	1,152.00	HR	9.64	100.00	9.64	11,102.98
L1	Common Laborer	2.00	1,152.00	MH	17.20	100.00	25.36	29,219.33
LF	Labor Foreman	1.00	576.00	MH	23.50	100.00	35.73	20,581.20
TRI	Triaxle Teamster	1.00	576.00	MH	22.00	100.00	23.54	13,559.04

Activity: 1100.20 MOT MAINTENANCE Quantity: 558 Unit: DAY



	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
U. Cost	17.20	8.34	25.54	9.64	0.00	0.00	0.00	0.00	0.00	0.00	35.17
Total	9,597.60	4,651.49	14,249.09	5,378.00	0.00	0.00	0.00	0.00	0.00	0.00	19,627.09

Crew $/Unit	Crew Hrs/Unit	Units/Crew Hr	$/Crew Hour	Shifts	Units/Shift	Shifts/Unit	$/Shift
35.1740	1.0000	1.0000	35.1740	69.7500	8.0000	0.1250	281.3920

Manhours	Unit/MH	MH/Unit	Total Labor/MH	Base Labor/Unit
558.0000	1.0000	1.0000	25.5360	17.2000

Calendar: 40 STANDARD CALENDAR Hrs/Shift: 8

Crew: LB001 General Labor Crew Prod: MU 1 Eff: 100.00 Crew Hrs: 558.00 Labor Pcs: 1.00 Equipment Pcs: 1.00

Notes: MAINTENANCE AT 1 MH/DAY = 18 MO X 31 DAYS = 558 DAYS X 1 HOUR = 558 MH

Resource	Description	Pcs/Wste	Quantity	Unit	Unit Cost	Tax/OT %	Actual UC	Total
8ITRPU2	Pickup 4x2	1.00	558.00	HR	9.64	100.00	9.64	5,378.00
L1	Common Laborer	1.00	558.00	MH	17.20	100.00	25.54	14,249.09

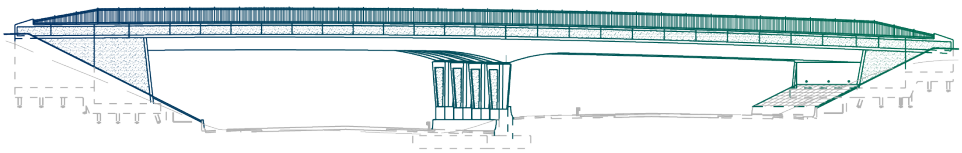
Report Summary

	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
Total	66,696	28,923	95,619	59,341	9,370	0	0	0	0	0	164,330

Calendars Used In Estimate

40 STANDARD CALENDAR

Total cost of Activities in the Child Item 1100



Cost Report

Fay

Page 1 of 2

18GPUTTY MDSHA - Putty Hill over I-695 CMAR

SHA Bid Item

03/27/2018 2:33 PM

Biditem **4300** ← Child

PIER

Takeoff Qty: 1.000 LS

Bid Qty: 1.000 LS

→ **Client #: 4000**

	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
U. Cost	24,374.72	12,810.25	37,184.97	16,681.95	15,271.63	14,204.00	2,328.42	0.00	0.00	0.00	85,670.97
Total	24,374.72	12,810.25	37,184.97	16,681.95	15,271.63	14,204.00	2,328.42	0.00	0.00	0.00	85,670.97

Manhours	Unit/MH	MH/Unit	$/MH	Base Labor/MH	Total Labor/MH	Unit/CH
936.0000	0.0011	936.0000	91.5288	26.0414	39.7275	0.0068

Activity: 4300.01 Form/Strip Pier Columns Quantity: 2680 Unit: SF

	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
U. Cost	7.83	4.16	12.00	5.92	0.00	5.30	0.00	0.00	0.00	0.00	23.22
Total	20,993.28	11,159.21	32,152.49	15,860.06	0.00	14,204.00	0.00	0.00	0.00	0.00	62,216.55

Crew $/Unit	Crew Hrs/Unit	Units/Crew Hr	$/Crew Hour	Shifts	Units/Shift	Shifts/Unit	$/Shift
17.9151	0.0328	30.4545	707.0063	11.0000	243.6364	0.0041	5,656.0500

Manhours	Unit/MH	MH/Unit	Total Labor/MH	Base Labor/Unit
792.0000	3.3838	0.2955	40.5966	7.8333

Duration

Production

Calendar: 40 STANDARD CALENDAR Hrs/Shift: 8

Crew: CM002 Form/Strip Stems Prod: S 11 Eff: 100.00 Crew Hrs: 88.00 Labor Pcs: 9.00 Equipment Pcs: 3.00

Notes: prep forms - purchase for 2 piers each = 5 days

Resource	Description	Pcs/Wste	Quantity	Unit	Unit Cost	Tax/OT %	Actual UC	Total
3FOGNA00PS	pier stem forms - steel rent	1.00	2,680.00	SF	5.00	106.00	5.30	14,204.00
8ICRRT050	50Ton RT (LB HSP8050)	1.00	88.00	HR	128.86	100.00	128.86	11,339.68
8IML066	66' Manlift	1.00	88.00	HR	41.73	100.00	41.73	3,672.24
8ITRPU2	Pickup 4x2	1.00	88.00	HR	9.64	100.00	9.64	848.14
C1	Carpenter	6.00	528.00	MH	26.01	100.00	40.38	21,321.01
CF	Carpenter Foreman	1.00	88.00	MH	35.00	100.00	50.00	4,400.00
L1	Common Laborer	1.00	88.00	MH	17.20	100.00	25.36	2,232.03
O2	OE-Group 2 >35 Tn Crane/Pump	1.00	88.00	MH	30.30	100.00	47.72	4,199.45

Activity: 4300.03 Pour Pier Columns Quantity: 116 Unit: CY

	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
U. Cost	29.15	14.23	43.38	7.09	131.65	0.00	20.07	0.00	0.00	0.00	202.19
Total	3,381.44	1,651.04	5,032.48	821.89	15,271.63	0.00	2,328.42	0.00	0.00	0.00	23,454.42

Crew $/Unit	Crew Hrs/Unit	Units/Crew Hr	$/Crew Hour	Shifts	Units/Shift	Shifts/Unit	$/Shift
50.4687	0.1379	7.2500	1,465.9013	2.0000	58.0000	0.0172	11,727.2100

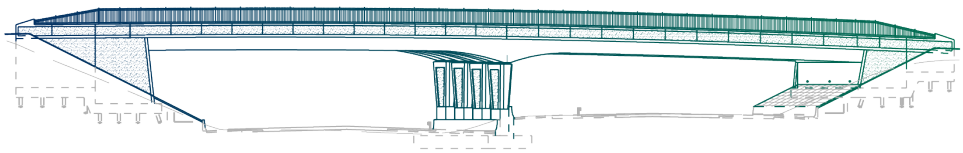
Manhours	Unit/MH	MH/Unit	Total Labor/MH	Base Labor/Unit
144.0000	0.8056	1.2414	34.9478	29.1503

Calendar: 40 STANDARD CALENDAR Hrs/Shift: 8

Crew: CP002 Pour Substructure Prod: S 2 Eff: 100.00 Crew Hrs: 16.00 Labor Pcs: 9.00 Equipment Pcs: 2.00

Notes: Pier 1; Stage 1 - 58 cy; Stage 2 - 58 cy

Resource	Description	Pcs/Wste	Quantity	Unit	Unit Cost	Tax/OT %	Actual UC	Total
2CON03	Mix Design 3 (MD)	1.08	125.28	CY	115.00	106.00	121.90	15,271.63
4PUMP	Concrete Pump per Day	1.00	2.00	DAY	1,033.71	100.00	1,033.71	2,067.42
4PUMP1	Concrete Pump per CY	1.00	116.00	CY	2.25	100.00	2.25	261.00
8IML066	66' Manlift	1.00	16.00	HR	41.73	100.00	41.73	667.68
8ITRPU2	Pickup 4x2	1.00	16.00	HR	9.64	100.00	9.64	154.21



C1	Carpenter	2.00	32.00	MH	26.01	100.00	40.38	1,292.18
CF	Carpenter Foreman	1.00	16.00	MH	35.00	100.00	50.00	800.00
F1	Finisher	2.00	32.00	MH	24.61	100.00	35.97	1,151.13
L1	Common Laborer	3.00	48.00	MH	17.20	100.00	25.36	1,217.47
LF	Labor Foreman	1.00	16.00	MH	23.50	100.00	35.73	571.70

Report Summary

	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
Total	24,375	12,810	37,185	16,682	15,272	14,204	2,328	0	0	0	85,671

Calendars Used In Estimate

40 STANDARD CALENDAR

Total cost of Activities in the Child Item 1100

Direct costs associated with Small Tools and Supplies will be calculated by the following:

Biditem

999999

SMALL TOOLS, SUPPLY AND SAFETY

Takeoff Qty: 1.000 LS

Bid Qty: 1.000 LS

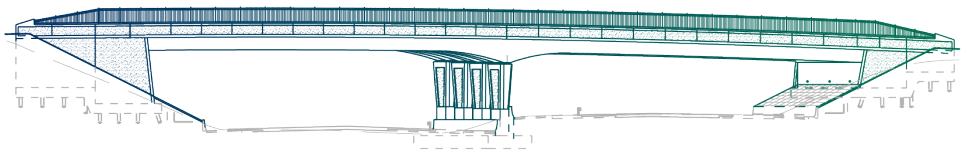
	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
U. Cost	0.00	0.00	0.00	0.00	0.00	36,503.75	0.00	34,437.50	0.00	0.00	70,941.25
Total	0.00	0.00	0.00	0.00	0.00	36,503.75	0.00	34,437.50	0.00	0.00	70,941.25

Activity: 9SFTYST Safety/Small Tools Adjustments Quantity: 1 Unit: LS

	Base Labor	Burden	Total Labor	Equipment	Perm Matls	Const Matls	Sub	STools	Truck/etc	P.D.A.	Total
U. Cost	0.00	0.00	0.00	0.00	0.00	36,503.75	0.00	34,437.50	0.00	0.00	70,941.25
Total	0.00	0.00	0.00	0.00	0.00	36,503.75	0.00	34,437.50	0.00	0.00	70,941.25

Calendar: 40 STANDARD CALENDAR Hrs/Shift: 8

Resource	Description	Pcs/Wste	Quantity	Unit	Unit Cost	Tax/OT %	Actual UC	Total
3GCSFS*DHSA	safety costs- job adjustment	1.00	13,775.00	LBHR	2.50	106.00	2.65	36,503.75
6GENST*DHJA	small tools adjustment	1.00	13,775.00	LBHR	2.50	100.00	2.50	34,437.50



Estimate Summary

	On Bid Quantities	%
Direct Cost	1,312,873	83.20%
Indirect Cost	70,941	4.50%
Addons	0	0.00%
Bond	8,125	0.51%
Pass Through Cost	0	0.00%
Direct Markup	178,803	11.33%
Indirect Markup	7,301	0.46%
Markup Addons	0	0.00%
+ / - Adjustments	0	
Pass Through Adjustment	0	
Unbalancing Difference	0	0.00%
Rounding Difference	0	
Desired Bid	0.00	
Final Bid Total	1,578,043.13	100.00%
Final Markup (% Based on Cost)	186,104	13.37%

Totals by Cost Type - Bid Quantities

	Direct	Indirect	Total	% of Total
Base Labor	326,279	0	326,279	23.58%
Burden	164,087	0	164,087	11.86%
Total Labor	490,366	0	490,366	35.44%
Inside Equipment	119,515	0	119,515	8.64%
Outside Equipment	0	0	0	0.00%
EOE	145,198	0	145,198	10.49%
Total Equipment	264,713	0	264,713	19.13%
Permanent Materials	286,796	0	286,796	20.73%
Construction Materials	65,902	36,504	102,405	7.40%
Subcontractors	203,818	0	203,818	14.73%
STools	0	34,438	34,438	2.49%
Truck/etc	1,280	0	1,280	0.09%
P.D.A.	0	0	0	0.00%
Totals	1,312,873	70,941	1,383,814	100.00%

Balanced Markup Calculation

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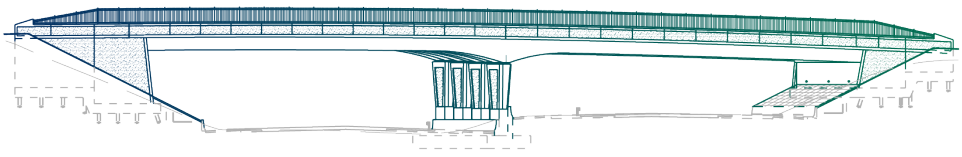
	Cost	Markup %	Markup $
Labor	326,279	20.00%	65,256
Burden	164,087	20.00%	32,817
Permanent Materials	286,796	20.00%	57,359
Construction Materials	102,405	20.00%	20,481
Inside Equipment	119,515	0.00%	0
Outside Equipment	0	0.00%	0
EOE	145,198	0.00%	0
Subcontractors	203,818	5.00%	10,191
STools	34,438	0.00%	0
Truck/etc	1,280	0.00%	0
P.D.A.	0	0.00%	0
Overrides	0	0.00%	0
Total	1,383,814	13.45%	186,104

Addons, Bond and Markup Summary

Dependent on Bid Summary

	Total	%
Bond		
Bond	8,125	0.51 %
Markup		
Resource Markup	186,104	11.79 %
Total Markup	186,104	11.79 %
Markup, Addons, and Bond Total	194,229	12.31 %



3. Contracting Plan

In accordance with MDOT specifications, Fay must self-perform at least 50% of the work to complete its projects. Based on local projects of similar size and scope, Fay has the ability to self-perform at least 70% of the work on this project. This percentage will be adjusted based on DBE requirements and more competitive subcontract pricing. Subcontractor selection will be evaluated on factors in addition to price, including DBE participation, past performance, and special qualifications.

Approach to developing a subcontractor selection plan that will allow for the competitive solicitation of bids from quality subcontractors.

With the completion of the estimate's Work Breakdown Structure (WBS), Brett Hause will begin coordinating with Mike Veid and the others on the estimating team to compile a subcontractor and material supplier opportunity list. This list will identify work scopes for ready, willing, and able subcontractors/suppliers, whether or not this work is self-performed by Fay, with both DBE and non-DBE contractors/suppliers. Work items will be broken down into economically feasible units to facilitate DBE participation. With over twenty years of local estimating history, Fay has compiled a significant database of quality and prequalified construction firms who have performed successfully on past SHA projects. In addition to the database Fay will use the MDOT Directory of Certified MBE, DBE, SBE, and ACDBE Firms, the Blue Book, internet sourcing sites and subcontractor contacts. Mike Veid will ensure that specific attention is given to DBE outreach and will memorialize this information for inclusion in the Outreach Efforts Compliance Statement (Form C) and Subcontractor Project Participation Statement (Form D).

All identified firms will be solicited with sufficient time to respond (at least fourteen days). Notification includes emails, faxes, and phone calls. All contacts are documented and notes include subcontractor's intent and special follow-up or requirements. A newspaper circulation local to the project will advertise a 'Procurement Day' to provide face-to-face interaction for local businesses at a location close to the project site (i.e. the armory).

Project information including plans, specifications, schedules, wages, and other requirements are provided digitally on a project specific FTP site. Hard copies of these documents are available for use or to copy at Fay's 'plan room' in the Glen Burnie office.

Demonstrate subcontractor's prices are competitive.

The estimating team maintains a goal of at least three subcontractor/supplier prices for each scope item. All pricing is kept confidential. Quotes received are evaluated for completeness of scope, firm's capability and history, experience, price, and DBE requirements. Fay's preconstruction team has decades of involvement with the work required to construct this project. Past cost history along with subcontractor scope and pricing comparisons will be used to identify competitive pricing. Fay can also use RSMeans cost data and similar catalog pricing. Fay will utilize excel spreadsheets and Heavy Bid Subcontractor routinely to provide transparent evidence that prices are competitive. The screenshot on the following page (Figure 11) shows how quotes are easily compared by price after being entered into the system for a specific scope of work (in this case, guiderail). The price of each bid item is reviewed against Fay's historical price (Plug Price) on the left and each of the competing subcontractors. The program also allows for identify and select DBE contractors. The team will also identify risks, if any, of using one subcontractor over another and communicate this information to the ICE.

Commitments to enhance DBE participation.

Fay is committed to DBE opportunity which is evident by the past success of exceeding project goals at completion. Fay has an active Mentor/Protégé Agreement with one of our DBE partners, which will enhance the capabilities and foster growth and development of the DBE protégé.

To carry out the goals of the project, in addition to the support described above, Fay will work to provide:

1. Assistance in obtaining bonding, lines of credit, insurance as required by MDOT by introducing DBE to professionals in these fields.
2. Waive the requirement for project bond, as possible.

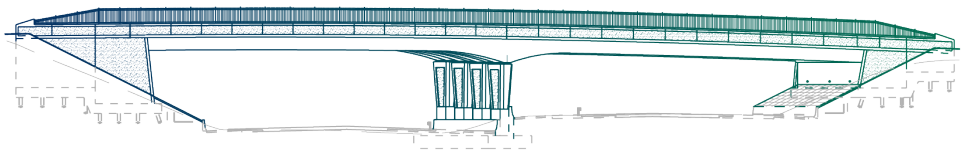
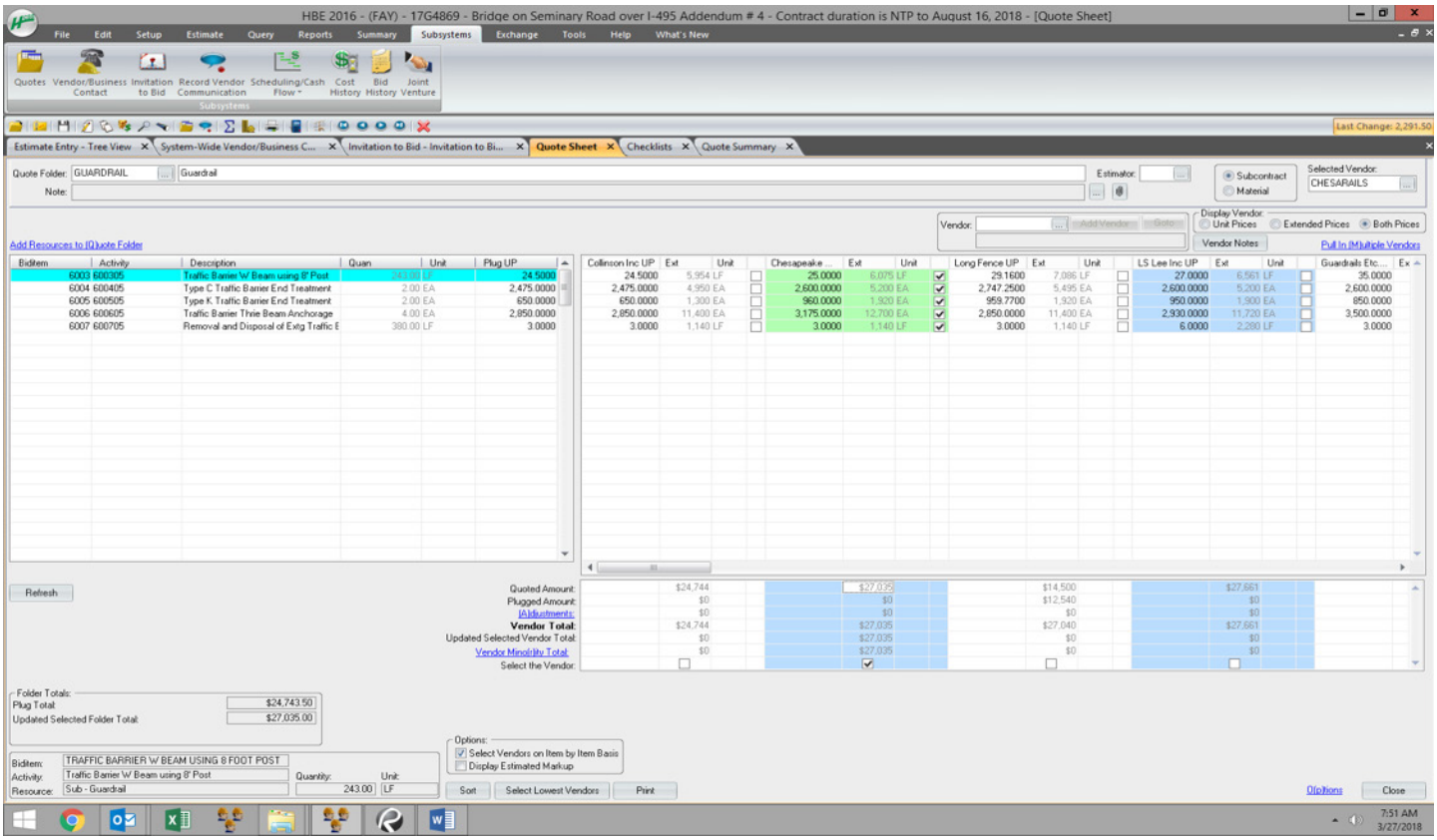


Figure 11



3. Provide assistance in obtaining necessary equipment, supplies, and materials required for the scope of service.

Brett Hause will ensure that DBE participation commitments and goals are met and that all reasonable opportunities are provided to those firms for this project. Specific items we have preliminarily identified for DBE sourcing include landscaping, pavement marking, MOT, reinforcement installation, steel girder installation, trucking, E&S controls, and milling.

Fay also ensures that subcontractors work safely on every project. All subcontractors are required to participate in all safety meetings, receive the required training, and comply to the site-specific safety program administered by Fay.

How Fay will comply with COMAR 21.05.10.05.

Mike Veid along with Brett Hause will implement the strategy previously described which will ensure COMAR 21.05.10.05 is fulfilled. Any modifications to the Contracting Plan will be in compliance with the code.

Our Contracting Plan will lay out our approach to procuring Trade Contracts in accordance with COMAR Section 21.05.10.05. Understanding that Fay will assume all risk for the cost, schedule, and performance of our Trade Contracts, we will employ a prequalification process early in the Preconstruction Phase to guarantee the most qualified subcontractors are bidding the project. We will work collaboratively with the procurement officer, we will prequalify subcontractors based on factors such as MBE participation, past performance, special qualifications, and safety records. Prequalification factors will be provided to the Governor's Office of Minority Affairs and the procurement agency so that any solicitations associated with the project are include the prequalification process.

Our contracting plan meets the requirements set forth in COMAR 21.05.10.05. If changes are made during this procurement process, adjustments will be made to maintain compliance.