

Application Summary

We are pleased to present for your consideration the application for State of Good Repair for Federal Str. No. 3. The following items are included in this application:

- Project Narrative
- Summary of Updates
- SGR Pre-Scoping Report

Project Narrative

Bridge No. 00003 (000-1046)

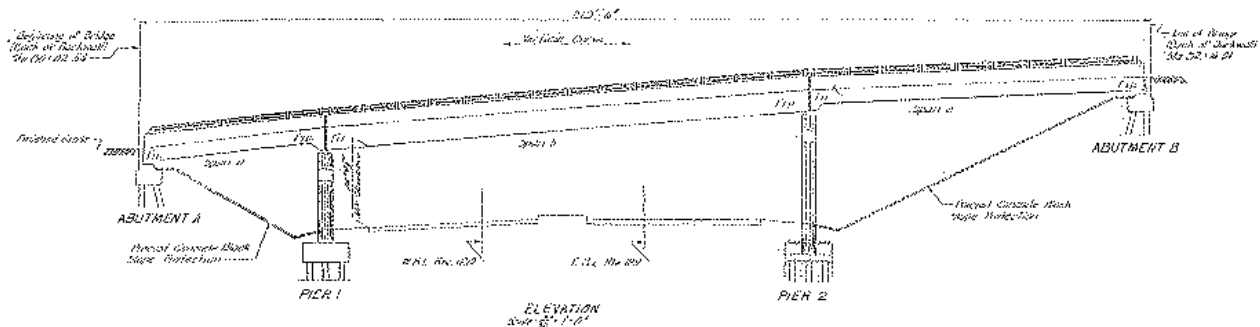
Old Glebe Road over Route 120 Bridge

BRIDGE DESCRIPTION:

Bridge No. 00003 (000-1046) was constructed in 1964 and is in Arlington County in Northern Virginia 0.1 Mile east of Military Road.



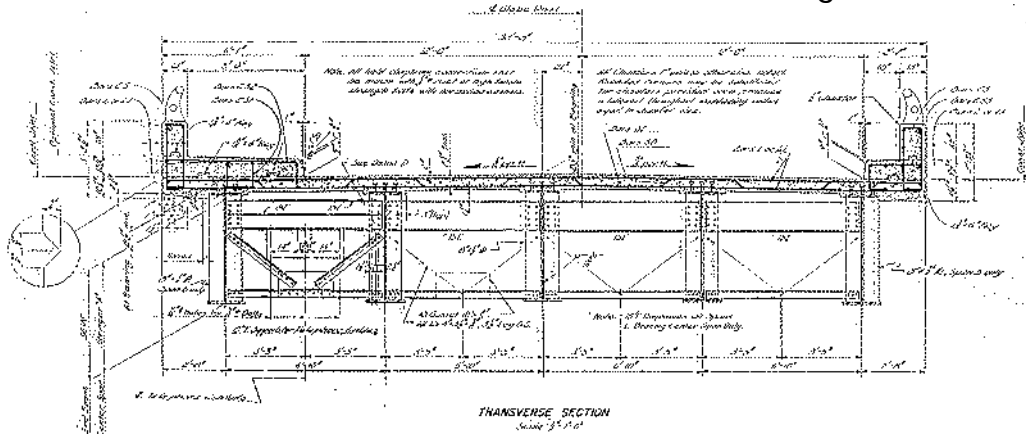
The Old Glebe Road Bridge is a three-span (simple spans) steel multi-girder structure supported on reinforced concrete abutments and two hammerhead piers. The total bridge length is 213'-6" consisting of a 102'-6" long center span, 71'-0" long south span and 38'-0" long north span. The bridge width is 32'-8", consisting of two 12'-0" wide lanes, a 5-foot wide sidewalk on the east side, 1'-6" wide curb on the west side, and there are 1'-0" wide barriers with railings on each side of the bridge. It should be noted that the approach roadway has a sidewalk on both sides.



Project Narrative

Bridge No. 00003 (000-1046)

Old Glebe Road over Route 120 Bridge



BRIDGE CONDITION:

The overall condition rating of the bridge is Poor due to:

- Scaling, cracks, spalls, and delaminated areas in top of deck.
- Spalling with exposed reinforcing, some severe, and delaminated areas in bottom of deck.
- Cracks and spalls on curbs, sidewalk, and parapets.
- Collision damage on railing.
- Broken and deteriorated utility lines with exposed wires.
- Rust and missing anchor bolts on bearings, also rust and peeling paint on beams.
- Cracks, spalls, and delaminated areas on abutments and piers.
- Settlement, cracks, and vegetation on slopes.
- Traffic Safety Features do not meet current standard.

Deck: The condition rating of the Deck is 4 (Poor Condition) due to longitudinal and transverse cracks up to 1/8" wide, delaminations, potholes and edge spalls on deck wearing surface. The deck is upto 1/2" higher than abutment backwall in Span 1. The underside of the deck exhibits several spalls and delaminations.



Project Narrative
Bridge No. 00003 (000-1046)
Old Glebe Road over Route 120 Bridge

Superstructure: The condition rating of the Superstructure is 6 (Satisfactory Condition) except the following:

- There are pitting with up to 1/16" section loss scattered throughout web and bottom flanges.
- Rust and section loss on bearing masonry plates and anchor bolts at many locations
- Surface rust, peeling paint, and sheet rust on beams, bearings, diaphragms, and cross frames.



Per the load rating on file, no posting is required.

Substructure: The condition rating of the Substructure is 5 (Fair Condition).

The abutment backwalls have hairline cracks and delaminations at several locations. There is full length erosion behind Abutment B wingwall.

There is debris buildup on seats and around the bearings.



Project Narrative
Bridge No. 00003 (000-1046)
Old Glebe Road over Route 120 Bridge

The bottom of pier cap exhibits several map cracking, spalls and delamination on all faces. The columns have hairline cracks and delaminations with light efflorescence and rust stain. The patched area exhibits horizontal hairline cracking.



PROPOSED BRIDGE REPLACEMENT:

- Replace the existing structure with a single span 130'± long bridge using staged construction.
- Replace the bridge superstructure and substructure using temporary traffic barrier and staged construction, by maintaining single lane of traffic during the staging and temporary traffic signal on both sides of the bridge during construction.
- Construct a 6' wide sidewalks on both sides of the proposed deck.
- Widen the approach roadway tie in on the east side to accommodate additional sidewalk.
- Install pier protection system in front of proposed abutments if necessary.
- Install pedestrian fence on both sides of the proposed deck.
- Relocate the utility lines as necessary.
- Provide approach pavement.
- Install approach transition and guardrails and finish the grading.

UPDATES TO LAST YEAR'S PRE-SCOPING DOCUMENT

FED STR ID 3 – Old Glebe Rd over N. Glebe Rd

DATE: January 18, 2021

Summary of changes to last year's report are listed below:

- RAILING, CPSR 2 RAIL unit price changed from \$350/LF to \$375/LF (recent two-year NOVA average)
- CONCRETE SUBSTRUCT. SURFACE REPAIR unit price changed from \$1000/SY to \$1100/SY (recent two-year NOVA average)
- Cost Estimate escalation time period updated for anticipated advertisement date of January 2025.
- Accident Report updated.
- Cost Estimate updated per direction from VDOT



Old Glebe Road over Route 120 Bridge

Pre-Scoping Report

Arlington County, VA – NOVA District

UPC 99580

February 26, 2021





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- A1. Pre-Scoping Checklist
- A2. Risk Assessment
- A3. Cost Estimates
- A4. Proposed Plans
- A5. Existing Bridge As-Built Plans
- A6. 2019 Bridge Inspection Report
- A7. Bridge Accident Information



Pre-Scoping Report



Executive Summary

HDR was assigned to produce this pre-scoping report for VDOT as part of their Statewide Limited Services Term Contract for Design of Highway Structures and Bridges. The report provides VDOT with recommendations for repair or replacement alternatives for Old Glebe Road over Route 120 Bridge and necessary improvements to approach roadways. It adheres to minimum AASHTO and VDOT Design Criteria to improve bridge's condition rating with focus on cost effective solutions that qualify for SGR funding and will have minimum impact on the structure's surroundings.

The Old Glebe Road Bridge is a three-span (simple spans) steel multi-girder structure supported on reinforced concrete abutments and two hammerhead piers. The bridge deck has a GCR (General Condition Rating) of 4 which makes the bridge deck repair/replacement eligible for SGR funding. The widening of the bridge for a new sidewalk may not be eligible for SGR funding. Final determination for funding eligibility to be fully evaluated as project progresses

The entire bridge is on a tangent and on a crest vertical curve. The approached roadways are on horizontal curves with T-intersections. The approach roadways have sidewalks on both sides but only the eastern sidewalk extends on the bridge. Based on feedback from Arlington County, a minimum 6' wide sidewalk is required on the west side of the structure and 6' wide sidewalks on both sides is preferred. Maintaining pedestrian traffic over the bridge during construction was also recommended by Arlington County.

There are a number of utilities including water, sewer, gas, communication cables, bridge conduits, and OH power line near the existing structure, some of which will be impacted improving the bridge and approach roadways.

This project is not anticipated to have any adverse environmental impacts and it would be considered low-risk for environmental compliance issues that would adversely impact project schedule or budget.

The following alternatives evaluated in scoping phase of this study based on 2026 (year 1) preliminary engineering (PE) phase:

- Alternative 1: Deck Replacement – Estimated Cost: \$11,100,000
- Alternative 2: Deck Replacement with Bridge Widening - Estimated Cost: \$13,200,000
- Alternative 3: Full Bridge Replacement – ABC - Estimated Cost: \$19,400,000
- Alternative 4: Full Bridge Replacement – Staged Construction - Estimated Cost: \$15,300,000

A Design Waiver may be required for the proposed structure since proposed shoulder width and Common Sense Engineering will be used to as a reason not to increase the shoulder width. A Design Waiver may be also required for vertical clearance of the proposed structure since current vertical clearance does not meet the requirement in Chapter 6 of the VDOT Manual of the Structure and Bridge without significant approach roadway vertical realignment.

Based on total construction cost, enhance durability of the proposed structure and improve pedestrian and bike facilities, Alternative 4 (full bridge replacement with staged construction) is the recommended alternative. Although the initial cost for this alternative is slightly higher that Alternative 2 (widening option), considering the life cycle cost and lower maintenance cost, this alternative will result in more economical long-term option. Should the preliminary engineering and subsequent construction start at a



later date, the estimated cost for 2027 (year 2) and 2028 (year 3) are \$15.8 million and \$16.4 million respectively.

Project Background

HDR was commissioned to produce this pre-scoping report for VDOT as part of their Statewide Limited Services Term Contract for Design of Highway Structures and Bridges (LOA 21). The report provides VDOT with recommendations for repair or replacement alternatives for Old Glebe Road over Route 120 Bridge No. 000-1046 and necessary improvements to approach roadways. It adheres to minimum AASHTO and VDOT Design Criteria to improve bridge's condition rating with focus on cost effective solutions that qualify for SGR funding and will have minimum impact on the structure's surroundings. No Smart Flags are expected to be used for this project. A cost estimate is developed for each alternative and compared to provide a recommended alternative to move forward with design.

Existing Conditions

The Old Glebe Road Bridge is a three-span (simple spans) steel multi-girder structure supported on reinforced concrete abutments and two hammerhead piers. The bridge was built in 1964 and repainted in 1993.

The total bridge length is 213'-6" consisting of a 102'-6" long center span, 71'-0" long south span and 38'-0" long north span. The bridge width is 32'-8", consisting of two 12'-0" wide lanes, a 5-foot wide sidewalk on the east side, 1'-6" wide curb on the west side, and there are 1'-0" wide barriers with railings on each side of the bridge. It should be noted that the approach roadway has a sidewalk on both sides. The bridge deck, based on the August 2019 inspection report, has a GCR (General Condition Rating) of 4 which makes the deck repair/replacement eligible for SGR funding. GCR for superstructure is 6 and for substructure is 5 based on latest bridge inspection report.

Based on VDOT Traffic Volume website, Average Daily Traffic (ADT) for this road is 7,000.

The entire bridge is on a tangent and crest vertical curve. The approached roadways are on horizontal curves with T-intersections. The southern approach curves to the west while forming a T-intersection with Military Road, and the northern approach curves to the east while forming a T-intersection with Richmond Street and continues east as Military Road (or Off-ramp from Route 120) forming an intersection with N. Randolph Street and the On-ramp (essentially a loop ramp) that provides access to WB Route 120.

The approach roadways have sidewalks on both sides but only the eastern sidewalk extends on the bridge. This sidewalk stops at approximately one quarter length of the loop ramp on Military Road on the north and east side of the bridge. The approach roadway sidewalks on the west side of the bridge stop approximately 60 feet from the bridge ends. There is on-the-road bikeway on Military Road south of the bridge that Arlington County plans to connect to the planned Shared Use Path (SUP) on the north side that will provide bike/pedestrian access to the existing Washington DC bike path on Chain Bridge Road Bridge over Potomac River.

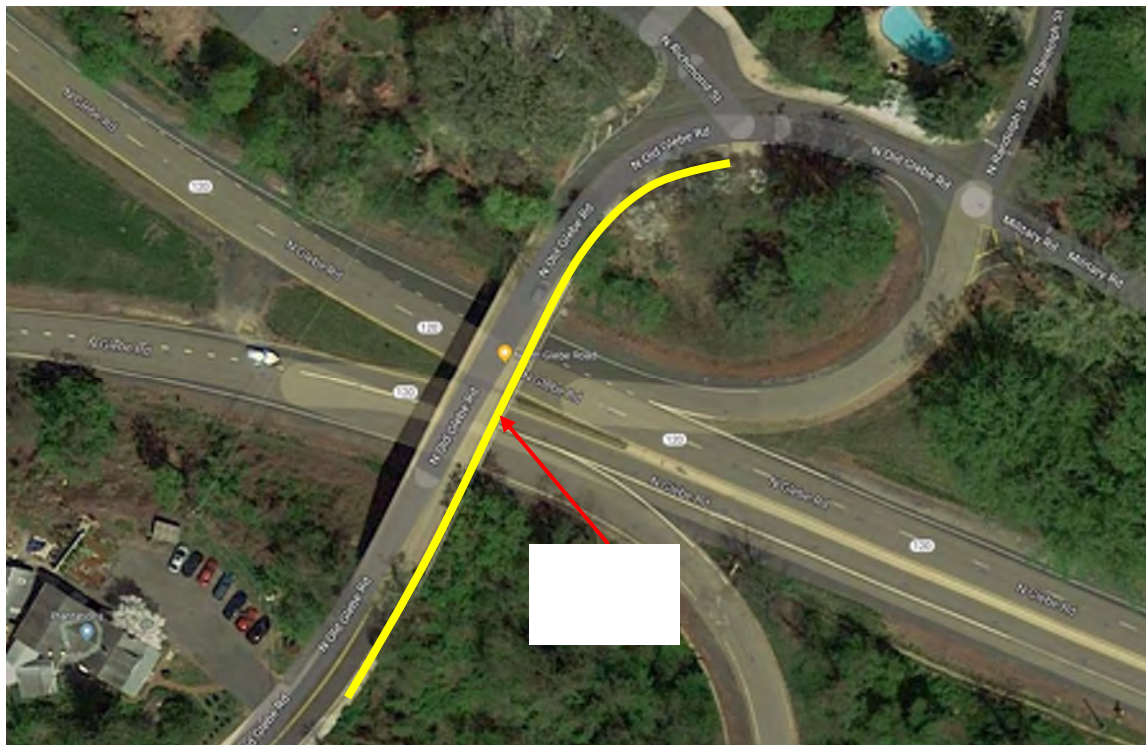


Figure 1 - Old Glebe Road over Route 120 Bridge Aerial View



Figure 2 – Elevation View of Existing Structure Looking East



Figure 3 – Existing Structure Looking North



Figure 4 – Existing Bridge Condition Looking North



There are three reported accidents on the northern approach, one on the bridge, two under the bridge and four on the southern approach since 2014. See the accidents locations and reports in Appendix A5.

Alternatives Considered

Four alternatives were considered to remove the bridge from a structurally deficient status.

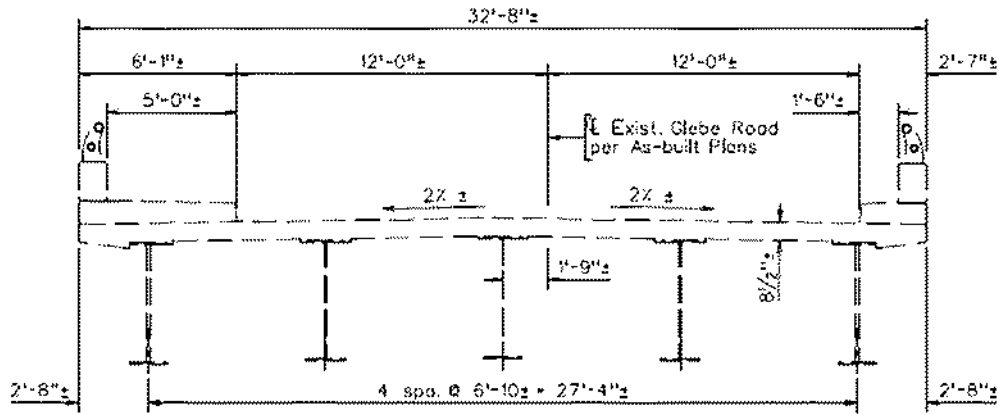
Alternative 1 - Deck Replacement:

This alternative consists of full deck replacement and rehabilitation of existing superstructure and substructure. A 6' wide sidewalk will be provided on the west side of the proposed deck, which necessitates shifting roadway baseline. Minimum one lane of traffic will be maintained during deck replacement and repair. Bridge rehabilitation will include joint closure over the piers and abutments.

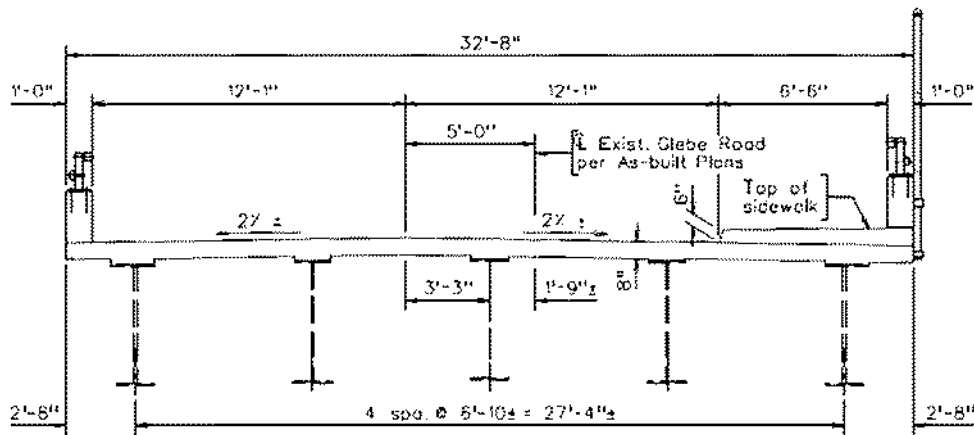
Approach roadway work will include limited roadway widening, sidewalk reconstruction, sidewalk extension, adjusting profiles, relocating and/or reconstructing drainage systems, and affected utilities. Provision of potential left turn and modification of intersections north of the bridge (subject to traffic and safety analysis recommendation) may also be needed.

Following activities are anticipated for Alternative 1:

- Remove and replace the concrete deck using temporary traffic barrier and staged construction, by maintaining single lane of traffic during the staging and temporary traffic signal on both sides of the bridge during construction. Removal of existing sidewalks may be required during the staging. Sidewalks shall be closed to pedestrians during the construction.
- Construct a 6' wide sidewalk on west side of the proposed deck.
- Provide continuous deck over the piers and eliminate expansion joints at piers.
- Modify the abutment backwalls and provide bridge deck extension at abutments in accordance with VDOT S&B Vol. V, Part 2, File 32.09-3.
- Provide temporary support for the utility conduits during the construction and replace damaged and deteriorated utility conduits and attachments.
- Install pedestrian fence on west side of the proposed deck.
- Repair and retrofit the girders, stiffeners, diaphragms and cross frames with deterioration and section loss.
- Replace all existing bearings with elastomeric bearings.
- Clean and paint entire bridge superstructure.
- Repair spalls, delamination and cracks in bridge substructure.
- Install pier protection system at both piers
- Clear the vegetation at both slopes, seal the cracks and repair the damaged slope protection concrete blocks.
- Remove the existing backfill during the staging and place select backfill behind the abutments. Provide shoring during staging as necessary.
- Relocate the utility lines as necessary.
- Provide approach pavement.
- The relocation of the sidewalk to the west side of the bridge will result in 5'-0" shift of CL Glebe Road to the east side of the bridge. Provide approach roadway widening to accommodate the lateral roadway shift from the bridge to the approach roadway.
- Install approach transition and guardrails.



TYPICAL EXISTING BRIDGE CROSS SECTION



PROPOSED BRIDGE CROSS SECTION

Figure 5 – Alternative 1: Deck Replacement (Looking south)

On the positive side, construction cost for this alternative is lower than other alternatives and higher percentage of the cost will be covered under SGR funding. Construction duration for this alternative is shorter than other alternatives. It has minimal ROW/easement impact. This alternative also has lower risk for utility impact since no new foundation is required.

On the negative side, this alternative provides less sidewalk and pedestrian facilities compared to other alternatives. Since sidewalk will be shifted from the east side to the west side of the proposed deck, this alternative requires 5'-0" lateral shift of the centerline of N. Old Glebe Road on the bridge and approach roadways. Furthermore, since this alternative involves only repair of super and substructures, it is not a durable long-term solution for the substructure compared to alternatives 3 and 4. Maintaining the sidewalk during construction is not possible for this alternative.



Estimated construction duration for this alternative is 12 months. Estimated construction cost for this alternative is \$11,100,000. See Appendix A2 for additional information.

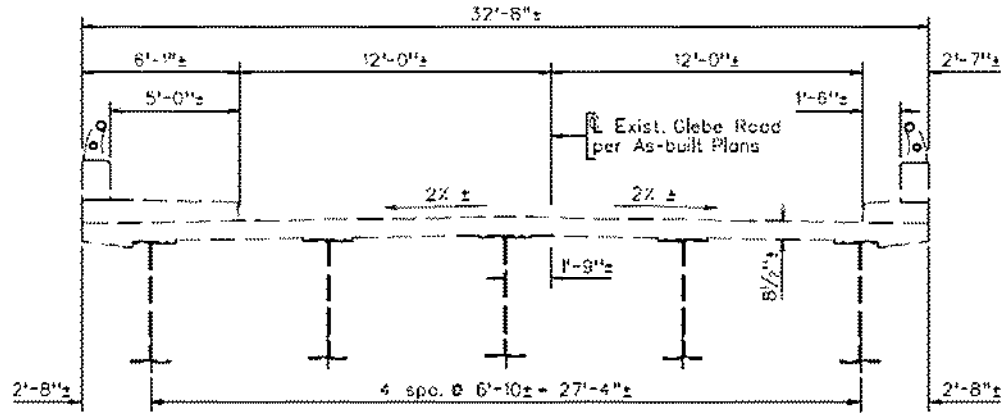
Alternative 2 - Deck Replacement with Bridge Widening:

This alternative consists of full deck replacement, widening the bridge on the east side to accommodate 6' sidewalks on both sides of the structures, and rehabilitation of existing superstructure and substructure. Minimum one lane of traffic will be maintained during deck replacement and repair. Bridge rehabilitation will include joint elimination over the piers and abutments.

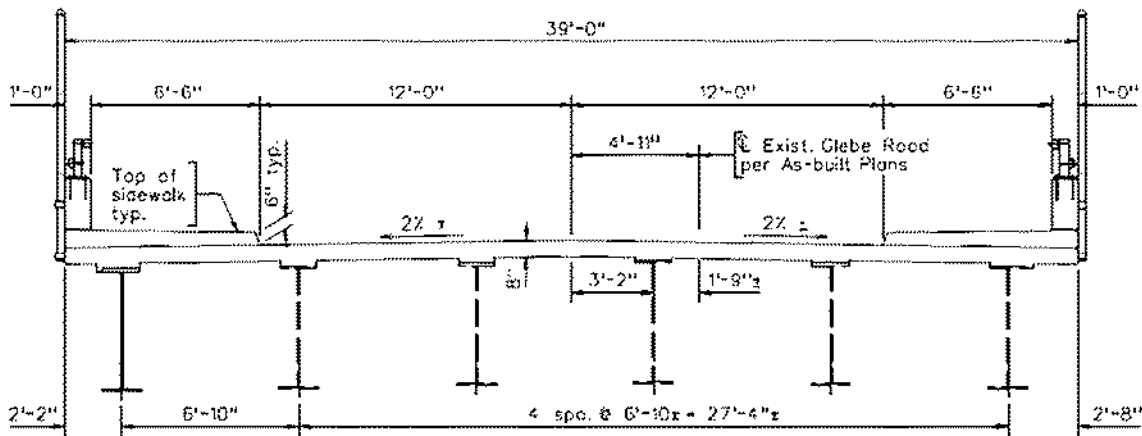
Approach roadway work will include limited roadway widening, sidewalk reconstruction, sidewalk extension, adjusting profiles, relocating and/or reconstructing drainage systems, and affected utilities. Provision of potential left turn and modification of intersections north of the bridge (subject to traffic and safety analysis recommendation) may also be needed.

Following activities are anticipated for Alternative 2:

- Construct superstructure and pier widening and abutment widening on the east side of the structure. The proposed widening girders shall be shallower than existing girders to maintain the existing minimum vertical clearance under the bridge.
- Remove and replace the concrete deck using temporary traffic barrier and staged construction, by maintaining single lane of traffic during the staging and temporary traffic signal on both sides of the bridge during construction. Removal of existing sidewalks may be required during the staging. Sidewalks shall be closed to pedestrians during the construction.
- Construct a 6' wide sidewalks on both sides of the proposed deck.
- Provide continuous deck over the piers and eliminate expansion joints at piers.
- Modify the abutment backwalls and provide bridge deck extension at abutments in accordance with VDOT S&B Vol. V, Part 2, File 32.09-3.
- Provide temporary support for the utility conduits during the construction and replace damaged and deteriorated utility conduits and attachments.
- Install pedestrian fence on both sides of the proposed deck.
- Repair and retrofit the girders, stiffeners, diaphragms and cross frames with deterioration and section loss.
- Replace all existing bearings with elastomeric bearings.
- Clean and paint entire bridge superstructure.
- Repair spalls, delamination and cracks in bridge substructure.
- Install pier protection system at both piers
- Clear the vegetation at both slopes, seal the cracks and repair the damaged slope protection concrete blocks and widen the slope protections.
- Remove the existing backfill during the staging and place select backfill behind the abutments. Provide shoring during staging as necessary.
- Relocate the utility lines as necessary.
- Provide approach pavement.
- Widening the bridge on the east side to new sidewalk will result in 4'-5" shift of CL Glebe Road to the east side of the bridge. Provide approach roadway widening to accommodate the lateral roadway shift from the bridge to the approach roadway.
- Install approach transition and guardrails.



TYPICAL EXISTING BRIDGE CROSS SECTION



PROPOSED BRIDGE CROSS SECTION

Figure 6 – Alternative 2: Deck Replacement with Bridge Widening (Looking south)

On the positive side, construction cost for this alternative is lower than Alternative 3. This alternative also provides additional pedestrian facility and sidewalk compared to Alternative 1.

On the negative side since existing substructure will only be repaired, it provides less durable solution for the substructure compared to Alternative 3. This alternative has higher utility impact compared to Alternative 1. Underground utility investigation is required for the substructure widening. Maintaining the sidewalk during the construction is not feasible for this alternative without additional widening and lane shift.

Estimated construction duration for this alternative is 18 months. Estimated construction cost for this alternative is \$13,200,000. See Appendix A2 for additional information.



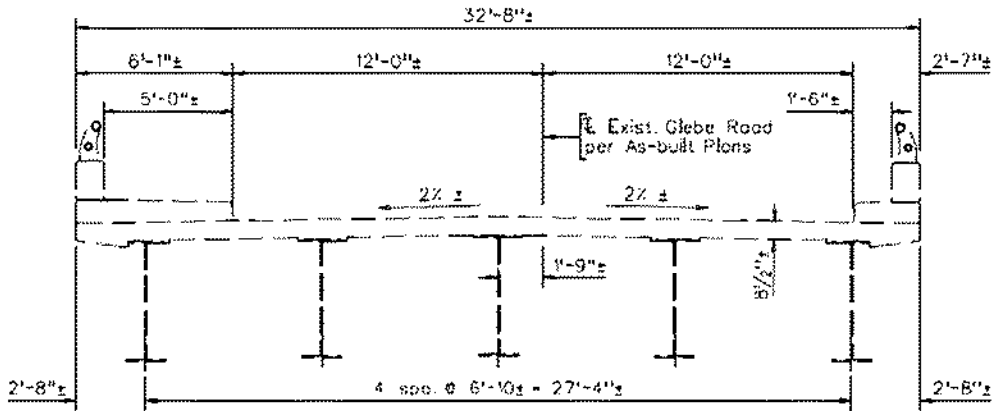
Alternative 3 - Full Bridge Replacement – Accelerated Bridge Construction:

This alternative consists of full replacement of the existing structure with a single span bridge. Proposed full integral abutments will be constructed behind the existing piers and Accelerated Bridge Construction (ABS) will be utilized to remove the existing structure and erect the proposed superstructure and approach slabs to minimize road closure and traffic impact. Proposed structure will include two lanes of traffic and 6' wide sidewalk on both sides of the structure, and it will require approach roadway widening on east side of the existing bridge to accommodate the additional sidewalk.

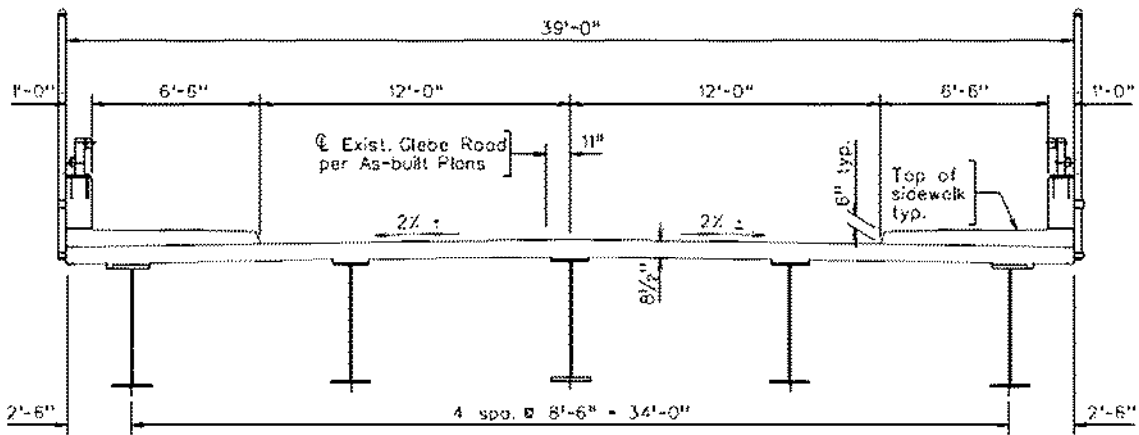
Approach roadway work will include limited roadway widening, sidewalk reconstruction, sidewalk extension, adjusting profiles, relocating and/or reconstructing drainage systems, and affected utilities. Provision of potential left turn and modification of intersections north of the bridge (subject to traffic and safety analysis recommendation) may also be needed.

Following activities are anticipated for Alternative 3:

- Construct proposed abutments and stems behind the existing piers. Drilled shaft of micro piles may be utilized due to limited vertical headroom under the existing superstructure.
- Widen the approach roadway tie in on the east side to accommodate additional sidewalk.
- Construct buried approach slab slipper pads using night and weekend flagging and temporary lane closure.
- Construct the proposed 130'± long superstructure and precast approach slab panel offline. Open area on the west side of the bridge between WB and EB Route 120 may be utilized as potential location to cast the superstructure.
- Relocation overhead utility line from the west side of the existing structure. And relocate other utility lines as necessary.
- Close and detour the Old Glebe Road over the weekend. Remove the existing superstructure and top of substructure. Provide shield and protective measure while removing the existing deck and concrete over traffic. Up to 30 minutes or roadway closure along Route 120 may be utilized to remove the existing superstructure and slide in the proposed superstructure. Erect approach slab panels and fill the closure pours using early strength concrete and pave the approach roadway tie-ins, and open the traffic at the end of weekend closure.
- This alternative will result in approximately one foot lateral shift of CL Glebe Road over the bridge. Provide approach roadway widening to accommodate the bridge widening and the proposed sidewalk from the bridge to the approach roadway.
- Install approach transition and guardrails and finish the grading.
- Remove remaining of existing substructure.
- Install pier protection system in front of proposed abutments if necessary.



TYPICAL EXISTING BRIDGE CROSS SECTION



PROPOSED BRIDGE CROSS SECTION

Figure 7 – Alternative 3: Full Bridge Replacement – ABC (Looking south)

On the positive side, since all bridge elements are new for this alternative, it is a long term durable solution with lower maintenance cost than other alternatives. This alternative requires less road closure and traffic disruption to the community compared to other alternatives. Vertical clearance for the proposed bridge can also be slightly increased and improved compared to existing condition. This alternative also provides approach slab. Sidewalk can be maintained during the construction with exception of the weekend road closure.

On the negative side construction cost for this alternative is higher than other alternatives. This alternative requires specialty contractors with experience in performing ABC to build the proposed superstructure off-line, jack and move the prefabricated superstructure in a slide-out/slide-in operation. This alternative has higher utility impact compared to other alternatives. The overhead utility line on the west side shall be relocated prior to slide-in operation and underground utility investigation is required for the proposed substructure. Project footprint and land disturbance for this alternative is larger than other alternatives.



Estimated construction duration for this alternative is 12 months. Estimated construction cost for this alternative is \$19,400,000. See Appendix A2 for additional information.

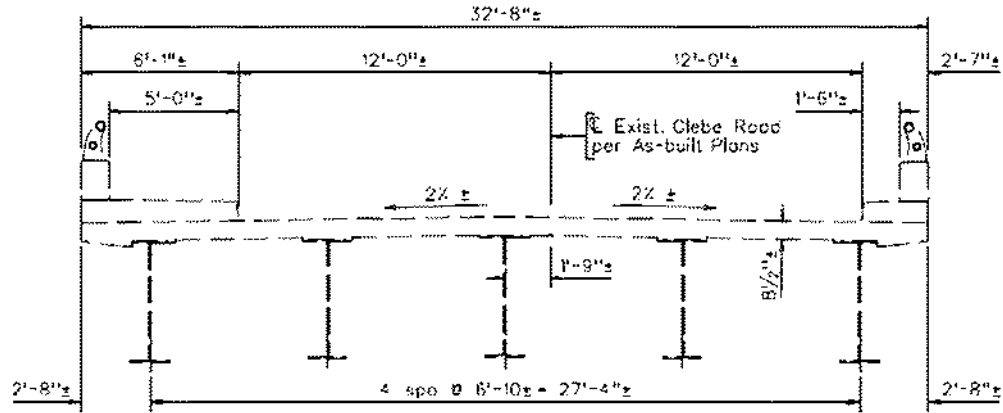
Alternative 4 - Full Bridge Replacement – Staged Construction:

This alternative consists of full replacement of the existing structure with a single span bridge using staged construction. Proposed structure will include two lanes of traffic and 6' wide sidewalk on both sides of the structure and it will require approach roadway widening on east side of the existing bridge to accommodate the additional sidewalk. Minimum one lane of traffic will be maintained during staged construction.

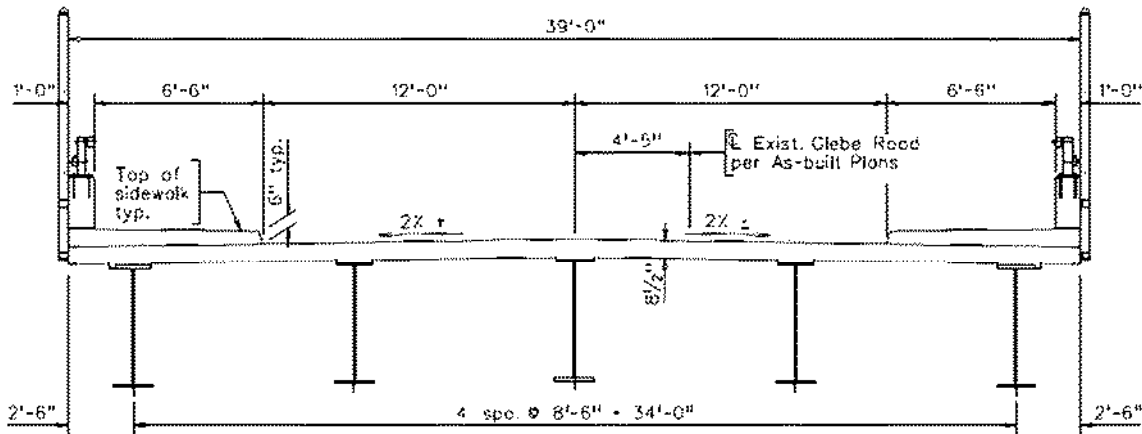
Approach roadway work will include limited roadway widening, sidewalk reconstruction, sidewalk extension, provision of potential left turn and modification of intersections north of the bridge (subject to traffic and safety analysis recommendation), adjusting profiles, and adjusting, modifying, relocating and/or reconstructing drainage systems and utilities.

Following activities are anticipated for Alternative 4:

- Replace the bridge superstructure and substructure using temporary traffic barrier and staged construction, by maintaining single lane of traffic during the staging and temporary traffic signal on both sides of the bridge during construction. Removal of existing sidewalks may be required during the staging. Sidewalks shall be closed to pedestrians during the construction. Maintaining a narrow sidewalk over the bridge will require additional lane shift and will increase the construction cost. Proposed structure is a single span 130'± long bridge.
- Sequence of construction may be as follows:
 - o Close sidewalk and lane on east side of existing bridge and install temporary barrier to protect single lane on west side of existing bridge. A temporary traffic signal will be required for the duration of staged construction.
 - o Remove portion of existing bridge, including 2 girders on east side of bridge.
 - o Construct portion of new bridge, including 3 easternmost girders and temporary barrier. Shift single lane of traffic from existing bridge to new bridge.
 - o Demolish the remaining portion of existing bridge and construct remaining portion of new bridge.
 - o Open new bridge to 2 lanes of traffic and complete final construction of sidewalks as needed.
- Place select backfill behind the abutments during staged construction and provide shoring during staging as necessary.
- Construct a 6' wide sidewalks on both sides of the proposed deck.
- Provide temporary support for the utility conduits and maintain/relocate the utilities during the construction.
- Widen the approach roadway tie in on the east side to accommodate additional sidewalk.
- Install pier protection system in front of proposed abutments if necessary.
- Install pedestrian fence on both sides of the proposed deck.
- Relocate the utility lines as necessary.
- Provide approach pavement.
- This requires 4'-5" shift of CL Glebe Road over the bridge. Provide approach roadway widening to accommodate the lateral roadway shift from the bridge to the approach roadway.
- Install approach transition and guardrails and finish the grading.



TYPICAL EXISTING BRIDGE CROSS SECTION



PROPOSED BRIDGE CROSS SECTION

Figure 8 – Alternative 4: Full Bridge Replacement – Staged Construction (Looking south)

On the positive side, construction cost for this alternative is lower than Alternative 4. This alternative also provides additional pedestrian facility and sidewalk compared to Alternative 1. Since all bridge elements are new for this alternative and it provides more durable solution and lower maintenance cost for the proposed bridge. Full integral abutments can be used to provide a jointless structure. Vertical clearance for the proposed bridge can also be slightly increased and improved compared to existing condition. This alternative also provides approach slab.

On the negative side construction cost for this alternative is higher than alternatives 1 and 2. This alternative has higher utility impact compared to Alternative 1 due to new substructure.

Estimated construction duration for this alternative is 18 months. Estimated construction cost for this alternative is \$15,300,000. If live cycle cost is considered, this cost could be lower than the other alternatives. See Appendix A2 for additional information.



Roadway and MOT

Approach roadway improvements for all alternatives will be limited and tie into the existing approach alignment as quickly as possible while adhering to applicable design criteria with none or minimum Right of Way impact. Approach roadway work will include limited roadway widening, sidewalk reconstruction, sidewalk extension, adjusting profiles, relocating and/or reconstructing drainage systems, and affected utilities. Provision of potential left turn and modification of intersections north of the bridge (subject to traffic and safety analysis recommendation) may also be needed. The scope of this project is to correct the structural deficiencies of the structure, and improve safety for motorists, pedestrians and cyclists. Substandard approach roadway geometrics will also be evaluated for design waivers. No geometric design exception is expected (FHWA does not require design exceptions for low speed on NHS roadways, and this bridge is on non-NHS, low speed, urban minor arterial roadway).

For maintenance of traffic including motorists and pedestrians, one lane operation or a weekend closure with detour is expected depending on the alternative. Temporary signals on both approaches of the bridge will be required for alternatives 1, 2 and 4. No MOT other than limited signing and short overnight lane closure (up to 30 minutes) are expected on Route 120 under the bridge for alternatives 1, 2 and 4.

Pedestrian Accommodation

HDR attended a meeting with VDOT and Arlington County on 12/6/19 and discussed the pedestrian/bike needs for Old Glebe Road particularly over the bridge. Based on feedback from Arlington County, as a minimum a 6' wide sidewalk is required on the west side of the structure; two 6' wide sidewalk one on each sides of the proposed deck is preferred. Maintaining pedestrian traffic over the bridge during construction was also recommended by Arlington County. At some point in the future, Arlington County hopes to connect the bike and pedestrian system in this part of the county to the existing Washington DC bike path on Chain Bridge Road Bridge over Potomac River.

Right-of-Way

Based on Arlington County property map, ROW lines on the property on the south-east side of the bridge is not clear. Due to anticipated utility relocation and impact, ROW is anticipated for all alternatives. Additionally, due to guardrail and MASH requirements, ROW may be required for approach roadway work. Once the topographic, utility and right-of-way lines are surveyed, ROW and easement impacts will be evaluated.



Figure 9 – Arlington County Property Lines

Utility

There are utility conduits at first bay of the existing structure (east side) based on As-Built plans and bridge inspection report. Utility designation is required to evaluate if these conduits are in service. Temporary support or relocation of these utility conduits is also required during the construction.

There are several additional utilities including water, sewer, gas, communication cables and OH power line, near the existing structure, some of which will be impacted by improving the bridge and approach roadways. Of particular note is a gas monitoring station located near the southwest corner of the bridge. The risk associated with the unknown details of these utilities has been documented in the risk assessment (Appendix A2) and the contingencies have been adjusted accordingly in the cost estimates (Appendix A3).

There is an overhead utility line over Route 120 and parallel to the existing structure, approximately 70' on the west side of the existing bridge, as well as overhead utility lines crossing over Old Glebe Road approximately 25' from both ends of the bridge. Deck replacement and other repair for Alternative 1 can be completed within safe distance of the existing utility lines. For Alternative 3, de-energizing the overhead utility line on the west side of the existing bridge may be required during construction. Underground utility investigation is required for the substructure widening for alternatives 2, 3 and 4.



Figure 10 – Underground Utilities on South-East Corner of the Bridge



Figure 11 – Underground Utilities and Gas Monitoring Station on South-West Corner of the Bridge



Figure 12 – Underground Utilities on South-West Corner of the Bridge



Figure 13 – Drainage Inlets on South End of the Bridge



Figure 14 – Utility Conduits Supported by the Existing Superstructure



Figure 15 – Overhead Utility Line on West Side of the Existing Structure



Environmental Considerations

Environmental review of the proposed project is meant to provide a general analysis to inform planning-level decisions. The review is based on the analysis of information acquired through federal and state database searches, remote sensed geographic information, and environmental experience with similar projects. It is subject to modification based on final scope, design, field investigations, agency coordination, and public involvement.

The repair and replacement alternatives have similar project areas, construction requirements, MOT, etc. and based on preliminary review, no significant environmental impacts are anticipated under any option. No alternative under consideration was identified as being environmentally preferred, primarily because there are very limited environmental impacts anticipated in any scenario and any potential negative impacts would be appropriately minimized and mitigated.

In compliance with the National Environmental Policy Act (NEPA), if applicable, the project would meet the requirements outlined in the 2017 FHWA Virginia Division and VDOT MOU to qualify for a Programmatic Categorical Exclusion (PCE) under category c28 for bridge rehabilitation or replacement.

There are no mapped or known jurisdictional waters and/or wetlands of the U.S. (WOUS) within the project area and based on geographic review, no impacts to WOUS are anticipated. Likewise, no Clean Water Act Section 404 or state permits are anticipated.

There are architectural resources over fifty-years of age proximal to the project area that would likely require documentation. The bridge itself is not eligible for the National Register. The area is disturbed and no archeological resources are anticipated. Section 106 consultation with the State Historic Preservation Officer (SHPO)/Virginia Department of Historic Resources (DHR) will guide investigation requirements, but no adverse impacts to eligible or potentially eligible historic resources are anticipated. Of note, a DHR historic marker is located near the bridge.

Regarding hazardous materials investigations, the bridge will need inspection for Asbestos Containing Materials (ACMs); specifications would apply according based on test results. Per VDOT policy, the structure would be treated as having lead based paint and would be handled accordingly. No right of way acquisition is expected and contaminated soils requiring special handling are not anticipated, but it is unknown if a Phase I Environmental Site Assessment (ESA) would be required.

There are no documented federally protected threatened and/or endangered species identified within the project area. Section 7 consultation will be required; however, no adverse impacts to any federal or state listed species is anticipated.

The project would not result in a capacity increase and a noise study would not be required. A standard air analysis is anticipated, but environmental commitments are expected to be limited to those typical for the region (i.e. no open burning, no use of cutback asphalt, etc.).

In summary, the proposed bridge repair or replacement project is not anticipated to have any adverse environmental impacts. This environmental review did not reveal any other statutorily protected lands or resources that would be directly impacted by the project. Overall, based on preliminary review under any




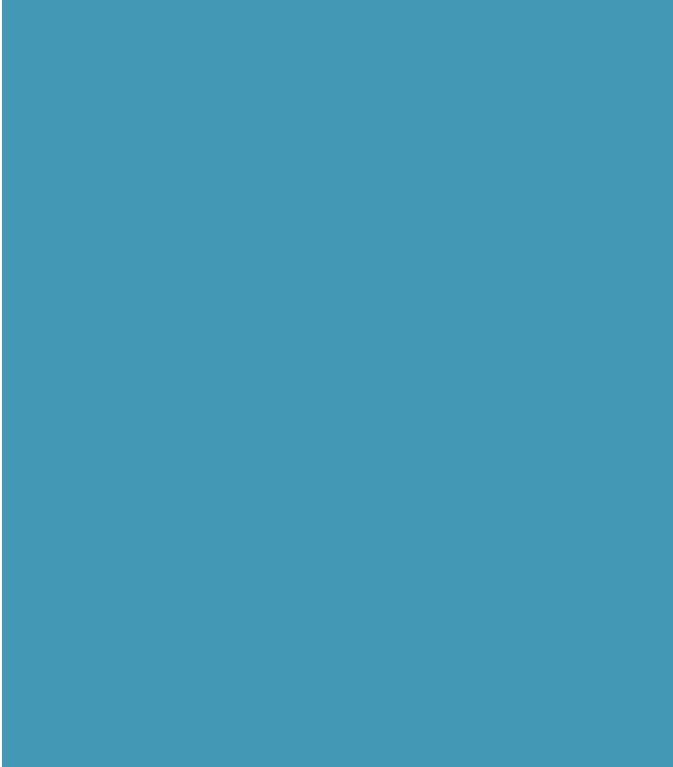

alternative, the project would be considered low-risk for environmental compliance issues that would adversely impact project schedule or budget.

Design Exceptions and Design Waivers


A Design Waiver may be required for the proposed structure since proposed shoulder width does not meet the requirement in Chapter 6 of the VDOT Manual of the Structure and Bridge. Common Sense Engineering will be used to as a reason not to increase the shoulder width. A Design Waiver may also be required for vertical clearance of the proposed structure since current vertical clearance does not meet the requirement in Chapter 6 of the VDOT Manual of the Structure and Bridge without significant approach roadway vertical realignment. Based on AASHTO minimum girder depth requirements, the minimum vertical clearance for the proposed structure can be expected to be approximately 15'-6". This is an improvement on the current minimum vertical clearance of 15'-0" as shown in the latest inspection report. Since existing horizontal and vertical roadway is substandard, raising the roadway profile to increase the vertical clearance is not feasible due to significant ROW impact and significant approach roadway work beyond the scope of State of Good Repair projects.

Recommendation

Based on total construction cost, enhanced durability of the proposed structure and improved pedestrian and bike facilities, Alternative 4 (full bridge replacement with staged construction) is the recommended alternative. Although the initial cost for this alternative is slightly higher than Alternative 2 (widening option), considering the life cycle cost and lower maintenance cost, this alternative may result in more economical long term option.



Appendix A
Pre-Scoping Checklist





SCOPING

Alternative Evaluations (Repair, Rehab, Replace)

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Completed	Visit the site with the project team to evaluate existing conditions and identify areas that may be high risk and influence the project scope or have potential impacts on the project schedule or budget.		1
Completed	Complete an initial evaluation of alternatives, including life cycle analysis where appropriate and select a conceptually recommended alternative.	2	2
Completed	Consider whether the bridge's structurally deficient status can be addressed by a less costly intervention. SGR is not intended to be a bridge replacement program.	2, 6	3
Completed	Consider future deterioration that will occur prior to construction.	2	4
Completed	For deck replacement or superstructure replacements, determine if any minor widening requirements are needed (ex. additional shoulder width).	1	5

1. A site visit was conducted on 12/14/2019. High risk items include utility designation of existing bridge conduit, overhead utility line, underground utilities for widening alternatives and survey to establish the existing properties and ROW lines.
2. Four alternatives have been evaluated:
 - Alternative 1: Deck Replacement
 - Alternative 2: Deck Replacement with Bridge Widening
 - Alternative 3: Full Bridge Replacement – Accelerated Bridge Construction
 - Alternative 4: Full Bridge Replacement – Staged Construction
3. Replacement will address the deteriorated superstructure and substructure. Bridge widening will also provide opportunity to address the geometry issues and accidents on the north end of the project.
4. Repair quantities used in the cost estimate have been increased by percentages appropriate for each individual quantity item to account for possible future deterioration that could occur before an approximate construction date of 2028.
5. For alternatives 2, 3 and 4, roadway widening is anticipated for provision of additional sidewalk on the west side of the bridge.



Eligibility Requirements for SGR Funding

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Complete	Evaluate the project scope for conformance with S&B Manual Chapter 6 and IIM-235, "Common Sense Engineering (CSE) Context Sensitive Solutions to Transportation Problems"	1, 7	1
Complete	Review the lists of qualifying and non-qualifying work items listed in IIM-S&B-95 and compare with the project scope.	6	2
Complete	Review the project limits for conformance with IIM-S&B-95 "Touchdown Points"	6	3
Complete	Verify that all non-qualifying items or permanent items beyond the touchdown points have been identified and approved.	6	4

1. Common Sense Engineering (CSE) has been considered to minimize the construction cost and project footprint. Context Sensitive Solutions are not anticipated for this project.
2. Existing bridge deck is structurally deficient and meets the general requirements for SGR funding per IIM-S&B-95 for the bridge replacement. The widening of the bridge for a new sidewalk may not be eligible for SGR funding. Final determination for funding eligibility to be fully evaluated as project progresses.
3. This project and the recommended alternative meets the "Touchdown Points" requirements in IIM-S&B-95.
4. No items beyond the project touchdown points are anticipated.



Cost Estimating

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Complete	Develop project cost estimate using PCES workbook (or equivalent) based on information identified in the pre-scoping checklists and other conceptual information	10	1
Complete	Apply appropriate growth factors and contingencies for repair/ rehabilitation construction activities which tend to be nonstandard with limited bid history and difficult to quantify.	2	2
Complete	Include appropriate factors to account for inflation based on the project schedule.		3
Complete	Determine if project will use Design-Build or Design-Bid-Build delivery method.		4
Complete	Add appropriate built-in costs for Design-Build, if appropriate.		5
Complete	Review proposed schedule and acceleration requirements and consider this in the Project Cost Estimate (include working in winter months, night work and possible contract incentives).		6
Not Completed	Determine if the project will be designed in house or by a consultant and the effects on preliminary design costs.		7
Complete	Complete Project Cost Estimate Summary.		1

1. The Project Cost Estimate Summary was calculated and attached to this report.
2. Repair quantities used in the cost estimate have been increased by percentages appropriate for each individual quantity item to account for possible future deterioration that could occur before an approximate preliminary engineering date of 2026 and construction date of 2025. Unit cost estimates have been escalated by 3% (PE and RW) or 3.718% (CN) annually to estimate 2028 costs in relation to 2021 costs.
3. Cost estimates have been increased by an inflation rate of 3% (PE and RW) or 3.718% (CN) annually to an estimated construction date of 2028.
4. It is recommended this project be delivered through the Design-Bid-Build method.
5. It is not anticipated that this project is appropriate for Design-Build delivery.
6. The estimated construction duration for different alternatives were calculated and attached to this report. For Alternative 3, Accelerated Bridge Construction is anticipated to minimize the road closure.
7. This item to be evaluated and addressed by VDOT.



STRUCTURE AND BRIDGE

General

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Complete	Determine if any design exceptions or waivers will be required.	8	1
Complete	Determine if bridge aesthetics will influence the project and include costs for items such as architectural treatment if necessary.		2
Complete	Consider cross slope effects when determining low chord for hydraulic opening or vertical clearance.		
Complete	Determine if a curved alignment or complex geometry will be required.		
Complete	Consider Select Backfill (Abutment zone) requirements when estimating costs for excavation and backfill for abutments including effects of foundation type.	4	
Complete	Evaluate the existing bridge details to determine whether phased construction is feasible. Phased construction may not be suitable for bridges that are fracture critical, have two column piers or spill-thru abutments, etc.		3
Complete	Consider whether temporary shoring is required and include in the estimate if phased construction is anticipated.		4
Complete	Evaluate the risk that an offset alignment may be required.		5
Complete	Describe any Structure and Bridge items not included in this checklist that could be considered high risk and impact the schedule or budget of this project.		

1. Two Design Waivers for bridge shoulder width and vertical clearance are required.
2. Bridge aesthetics are not required and have not been considered.
3. Phased construction is anticipated for alternatives 1, 2 and 4.
4. Temporary shoring will be required to place select backfill during staging and it is included in the estimate.
5. Minor offset alignment is required for all alternatives and included in the estimate and approach roadway evaluation.



Bridges over Waterways

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
N/A	Consider whether a replacement structure can be sized based on hydraulic equivalency, or whether a full hydrologic and hydraulic analysis is required. Consider the potential cost effects on the roadway profile, project footprint and preliminary engineering efforts.		1
N/A	Consider the condition of the existing stream bank when setting bridge length. Example: stream banks may have eroded around the existing abutments causing the existing abutments to be inside ordinary high water. The proposed bridge will have to be longer than the existing bridge to account for this.		1
N/A	Consider the direction of flood-stage water flow and skew when setting bridge length, locating substructures, and determining the substructure type.	4	1
N/A	Consider the risk of scour as it pertains to the bridge foundation type assumed (shallow foundations/ piles/ drilled shafts), required scour protection, suitability of retaining wall structures, etc.		1
N/A	Investigate the need for cofferdams.		1
N/A	Investigate the need for a causeway or work bridge.		1
N/A	Determine if the bridge is over a navigable waterway and if Coast Guard coordination is required. Complete initial contacts with Coast Guard to obtain preliminary information on navigation clearances if necessary.		1
N/A	Determine if a temporary stream diversion will be required and coordinate with Hydraulics and Environmental Sections.		1

1. This bridge is not over a waterway and this section is not applicable.



Bridges over Railroad/Transit

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
N/A	Determine the location of existing RR facilities (tracks, drainage ditches, maintenance roads, etc.)		1
N/A	Complete initial contacts with Railroad or Transit Authority to obtain preliminary information on vertical and horizontal clearances, future tracks, maintenance roads and drainage ditches. It is not uncommon for the Railroad to request two future tracks for bridge replacement projects.	1	1
N/A	Determine the vertical and horizontal clearances required during construction and evaluate whether they may restrict the contractor's means and methods.	1	1
N/A	Evaluate whether crash walls will be required to protect substructures.	1	1
N/A	Consider whether temporary shoring will be required for excavation within the influence of the tracks.	1	1
N/A	Consider if the construction activities will be required within Railroad Right of Way. If it is an Amtrak or other heavily travelled line, track time and durations may be limited.		1
N/A	Estimate flagging costs based on recent similar projects, and adjusted for inflation and complexity.		1

1. This bridge is not over a railroad and this section is not applicable.



Grade Separations

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Completed	Determine the vertical and horizontal clearances required for the ultimate condition.	1	1
Completed	Determine the vertical and horizontal clearances required during construction, and evaluate whether they may affect contractor's means and methods or MOT.	1	2
Completed	Determine the required geometrics for the roadway below the bridge.	1	3
Completed	Determine whether the constrained long-range plan includes provisions to widen the roadway below the bridge. If so, additional bridge length to accommodate widening is eligible for SGR funding. Otherwise, additional bridge length is not eligible for SGR funds. (see IIM-S&B-95).	6	4
Completed	Evaluate whether pier protection systems will be required to protect substructures.	3	5
Completed	Consider pedestrian/ bike/ trail connectivity below the bridge and applicability of SGR funding.	6	4

1. Based on latest bridge inspection report, minimum vertical clearance under the existing bridge is 15'-0" which can be slightly increased for the recommended alternative. Minimum vertical clearance required is 16'-6" for this road classification in accordance with Chapter 6 of the VDOT Manual of Structure and Bridge which cannot be achieved without major roadway adjustment. A Design Waiver may be required for existing vertical clearance. A Bridge Pier Protection System will be provided.
2. The minimum clearances during construction are not anticipated to be less than the clearances required in the ultimate condition.
3. The existing geometrics of Route 120 below the bridge are not anticipated to change. No widening or increased shoulder width is expected or accounted for in conceptual design.
4. No widening or addition of pedestrian/ bike/ trail facilities are anticipated to be added to Route 120.
5. Bridge Pier Protection System will be required to be added for the recommended alternative.



TRAFFIC

Maintenance of Traffic

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Completed	Evaluate the needs of local emergency response (police, fire, EMT, etc.)		1
Completed	Evaluate traffic volumes and how this may affect the proposed bridge typical section.	1	1
Completed	Evaluate the needs of local organizations (school buses, community centers, local festivals, etc.)		1
N/A	Consider whether the existing structure provides the only public access to the other side of the crossing (dead end road). If so, full closure with a detour would not be suitable and temporary access will be required.		1
Completed	Evaluate the detour route to verify that it does not have a bridge that is posted with a weight restriction or if there is an anticipated construction project that would coincide with the detour.		2
Completed	Determine the minimum lane width and number of lanes required to be open during phased construction.		1
Completed	Review site for safety issues and crash history and determine if improvements need to be made and are in compliance with the limitations of IIM-S&B-95.	6	3
Not Completed	Complete an initial consultation with Regional Operations Centers for permissible lane restriction requirements.		4
Completed	Describe any traffic related items not included in this checklist that could be considered high risk and impact the schedule or budget of this project.		3

1. Following the project scope and Interstate guidelines, for the recommended alternative, one 11ft wide lane of traffic with temporary traffic signals on both sides will be open during the construction at all times. Traffic analysis is required in the next phase of design to establish the traffic impact during the construction and staging. Detour options will also be evaluated in the next design phase and presented in the Public Involvement meetings. Based on preliminary evaluation, detour options do not include weight or other restrictions.
2. No detour is being considered for this project.
3. There are ten accidents; one on the bridge, two under the bridge, four on southern approach Intersections with Military road, three on northern approach Intersections with N. Richmond and N. Randolph streets since 2014. Modification of northern approach roadway and intersection (including provision of left turn lane and improved signing) could improve safety. However, traffic and roadway safety analysis need to be conducted to identify issues and solutions
4. Lane restrictions beyond those recommended in the Road Design Manual are not anticipated. VDOT Regional Operations Centers review the single lane traffic over the bridge with temporary traffic signals on both sides during construction.



Bike and Pedestrian Accommodations

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Complete	Evaluate existing pedestrian accommodations on each end of the bridge to determine if pedestrian accommodations on the bridge will qualify for SGR funding.	1, 6	1
Complete	Evaluate the pedestrian and bicycle activity in the area utilizing appropriate planning documents (six-year plan and comprehensive plan) and determine if pedestrian accommodations on the proposed bridge is justified based on SGR limitations.	6	1
Complete	Determine minimum widths and locations of pedestrian accommodations (including minimum shoulder width) if required.	1, 6	1
Complete	Determine if horse and buggy accommodations are required during phased construction or in the final condition.		1
Complete	Determine if there are any trails or cross walks in the area that will need to be maintained or if temporary detours will be required.		2, 4
Complete	Determine if there are any existing or proposed trails under the bridge and if there are any vertical or horizontal clearance requirements that must be met.		3
Complete	Coordinate with MPO and Locality for other funding sources as needed for components that are not eligible for SGR or other such funding.	6	1
Complete	Describe any items related to bicycle and pedestrian accommodations not included in this checklist that could be considered high risk and impact the schedule or budget of this project.		1, 4

1. There is a 5' wide sidewalk over the existing bridge. For the recommended alternative, 6' sidewalk will be provided on both sides based on request from Arlington County.
2. Existing sidewalk may need to be closed during the construction and staging however, Arlington County prefers maintaining pedestrian traffic during construction. Maintaining a narrow sidewalk for the recommended alternative is feasible but it may require additional lane shift and increase in construction cost.
3. There is no trail under or along the bridge.
4. There is on-the-road bikeway on Military Road south of the bridge that Arlington County plans to connect to the planned SUP on the north side that will provide bike/pedestrian access to the existing Washington DC bike path on Chain Bridge Road Bridge over Potomac River.



ROADWAY

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Completed	Determine design criteria to set geometrics, typically SGR projects are considered small bridge improvement projects and the guidelines provided in IIM-LD-227/ IIM-S&B-70 shall apply.	1, 6, 8	
Completed	Determine if an alignment shift will be required due to phased construction or the final bridge configuration/location.		1
Completed	Consider approximate length and termination requirements of proposed guardrail based on site conditions, existing entrances, and existing guardrail when setting project limits.	1, 6	
Completed	If the existing roadway profile is raised, consider existing topography based on a site visit and GIS mapping when estimating the limits of proposed fill.		2, 4
N/A	Consider the effect on the project limits/ bridge touchdown points if a temporary bridge or on-site detour is anticipated.	6	3, 5
Completed	Determine the transition length required to tie into the proposed bridge section.	6, 8	5
Completed	Determine the minimum sight distance requirements and how this may affect the limits of construction.	8	5 6
Completed	Evaluate the limits of construction to determine survey limits.		5
Completed	Estimate the land disturbance area to determine permitting requirements.		5
Completed	Develop a conceptual profile and alignment based on existing survey or GIS mapping data.		5
Completed	Describe any roadway related items not included in this checklist that could be considered high risk and impact the schedule or budget of this project.		7

1. For the recommended alternative, 4'-5" alignment shift is required for bridge widening and the new sidewalk.
2. The existing roadway profile change will be minimal and negligible.
3. No temporary bridge or on-site detour is anticipated.
4. Profile can be easily tied to existing road on the south side. However, there is limited opportunity to raise the roadway profile on the north side of the bridge without impact to private properties.
5. Topographic and utility surveys need to extend from south of the N. Old Glebe Road intersection with Military Road on the south side to both intersections on the north side of the bridge including the intersection of Military Road with N. Richmond Street and N. Randolph Rand covering the entire Loop Ramp.
6. Sight distance on the north side could be affected by the trees and shrubs within the NE loop ramp. The low level shrubs, tree branches, and bushes need to be cut and grass maintained to improve sight distance.
7. Shifting the side walk to the west require widening of the roadway along the east side, which impact curve radius on the north side and drainage and utilities on both end of the bridge.



HYDRAULICS

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
N/A	Determine the FEMA flood zone designation and how this will impact the project.		
N/A	Review any existing H&HA studies including any FEMA Analysis.		
N/A	Determine if overtopping will be allowed at this location.		
N/A	Evaluate the historical performance of the existing structure (history of scour, flooding, overtopping, sedimentation, maintenance, etc.).		
N/A	Complete a conceptual analysis to determine approximate hydraulic opening.		
Complete	Determine if bridge deck drainage will be required.		1
Complete	Consider drainage and SWM facilities when determining proposed RW and temporary construction easements.		2
Complete	Include costs for any SWM facilities that may be required.		2
N/A	Determine if a hydraulic (river mechanics) analysis is required or if the project will qualify for a Hydraulic Equivalent Replacement Structure (HERS). If an analysis is required, include costs for analysis and additional survey as required.		
N/A	Determine if any existing culverts will need to be replaced or extended.		
N/A	Complete a scour screening, including consideration of existing geotechnical information and that of nearby projects.		
N/A	Complete a conceptual assessment of the foundation type (including pile depth, if applicable) as it relates to scour.		
Complete	Consider any existing erosion issues and determine if mitigation is required.		3
N/A	Describe any H&H related items not included in this checklist that could be considered high risk and impact the schedule or budget of this project.		

1. For the recommended alternative, deck drainage is likely not required due to vertical profile of the bridge and narrow bridge deck. This will be confirmed in the final design.
2. SWM facilities are not required for this project for the recommended alternative. Relocation and modification or adjustment of existing drainage ditches and approach roadway drainage systems are needed



RIGHT OF WAY

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Complete	Evaluate the project limits for necessary RW acquisition including temporary, permanent and utility easements.		1
Complete	Estimate the total number of parcels that will be impacted. Identify parcels that may be high risk such as businesses, churches and historical or protected areas.		1
Complete	Evaluate the risk that partial RW takes may become total RW takes as design progresses.		1
Complete	Consider whether the project site provides the Contractor with adequate staging area and construction access (material storage, delivery, crane locations, girder erection, etc.).		2
Complete	Evaluate existing septic systems and wells that may be impacted.		3
Complete	Describe any right of way related items not included in this checklist that could be considered high risk and impact the schedule or budget of this project.		1

1. Due to utility relocation requirements, ROW acquisition is anticipated to be needed for all alternatives for this project. This needs to be verified when survey is completed and property lines are established. Improvement of the intersection with N. Richmond Street on the northern approach may require partial R/W or easement from private properties.
2. There is adequate staging/storage are on west side of the existing structure between EB and WB Route 120.
3. There are no known septic systems or wells at the project location.



UTILITIES

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Not Completed	Contact “Miss Utility” to mark locations of known utilities at the project site prior to the site visit.		1
Compete	Identify utilities that required replacement or relocation. Note: SGR funding can only be applied to in-kind replacement or relocation of utilities that are the responsibility of the bridge owner.	6	2, 3
Complete	Identify utilities that will remain and evaluate whether they will conflict with construction activities (i.e. Overhead utilities adjacent to pile driving or beam erection, underground utilities near excavation, etc.).		2, 3
Complete	Evaluate the risk of unidentified or poorly located underground utilities prior to survey.		2, 3
Complete	Determine if there are utilities attached to the existing bridge and if they will have to be attached to the proposed structure. Include costs for supporting these utilities during construction if necessary.		2
Complete	Describe any utilities related items not included in this checklist that could be considered high risk and impact the schedule or budget of this project.		3

1. VDOT to coordinate with “Miss Utility”. Underground utility conflicts are unknown but are an anticipated risk. There are utility conduits connected to the existing superstructure and there is an overhead utility line on the west side of the structure which are documented in this report.
2. There are utility conduits connected to the existing superstructure that shall be supported during staging and there is an overhead utility line on the west side of the structure which is not affect for the recommended alternative.
3. There are a number of underground as well as OH utilities including water, sewer, gas, communication and OH Power lines within the roadway in the vicinity of bridge on both approaches.



MATERIALS

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Complete	Evaluate all available sources for geotechnical information (i.e. project specific investigation, borings and foundation types for existing bridge plans, borings and foundation types for nearby bridge plans, etc.)		1
Complete	Consider whether there is known regional geology that may affect bridge foundations (karst, boulders, clay, diabase, peat and other organic materials, etc.)		1
Complete	Evaluate the selected assumed foundation type using the geotechnical information available.		1
Complete	Evaluate requirements for the geotechnical investigation (number of borings and estimated depths).		1
Complete	Determine if there is a potential for unsuitable soils that may require undercut.		1
Complete	Evaluate the potential for rock coring during the geotechnical investigation and for the proposed substructures.		1
Complete	Describe any materials or geotechnical related items not included in this checklist that could be considered high risk and impact the schedule or budget of this project.		1

1. Geotechnical investigation will be completed during the next phase of this project. Anticipated pile lengths for the scoping cost estimate are based on as-built bridge plans and pile supported structure is anticipated based on existing structure details. During the final design, borings at approach roadway will also be collected for pavement design due to minor alignment shift and approach roadway widening.



ENVIRONMENTAL

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Completed	Evaluate NEPA requirements and how this may impact the project cost and schedule.		1
Completed	Evaluate the potential for wetland impacts, hazardous materials, endangered species, air and noise impacts, etc.		2
Completed	Identify the necessary permits that are anticipated and evaluate schedule impacts.		3
N/A	Determine whether construction activities will be required or permitted inside ordinary high water.		4
Completed	Evaluate potential time of year restrictions.		5
Completed	Consider the historical significance of the existing bridge or surrounding area and whether it factors into the selected intervention.	7	6
Completed	Determine what investigations will be required, architectural survey, archeological survey, mussel survey, etc.		7
Completed	Investigate the potential for contaminated soils or hazardous materials.		8
Completed	Describe any environmental related items not included in this checklist that could be considered high risk and impact the schedule or budget of this project.		9

1. The proposed project would repair or replace the bridge near the current alignment within the existing right of way. It is not anticipated to result in any significant adverse effects to natural or cultural resources and would meet all statutory requirements to qualify for a Programmatic Categorical Exclusion (PCE) NEPA document under Category c28 for bridge rehabilitation or replacement.
2. The proposed project was evaluated with respect to the following:
 - Jurisdictional Waters/Wetlands of the US (WOUS): Based on geographic review, no WOUS are mapped within the project area; therefore no permits would be required.
 - Hazardous Materials: Since the project is anticipated to be constructed within the existing right of way, a Phase I ESA is not anticipated. The existing structure would be inspected for asbestos containing materials (ACMs) and standard specifications would apply if they are identified. Paint on the bridge is assumed to be lead based under VDOT policy and appropriate management during demolition would be required.
 - Protected Species: The project area was reviewed for threatened and endangered species on federal and state online databases. There are no federally protected species listed within the project area and no adverse effects are anticipated based on the project scope and geography.
 - Cultural Resources: The project area was reviewed in the VCRIS system for known cultural resources proximal to the project area. There are architectural resources inventoried near the location that are anticipated to require evaluation. No adverse effects to architectural or archaeological resources are anticipated. Of note, there is a Virginia Department of Historic Resources historic marker (C-1) near the bridge entitled: "Clay and Randolph Duel". The physical location of the Clay and Randolph duel is



approximately one half mile north, so there is no issue with physical setting. It is anticipated the sign would be removed if necessary during construction and replaced in its existing location.

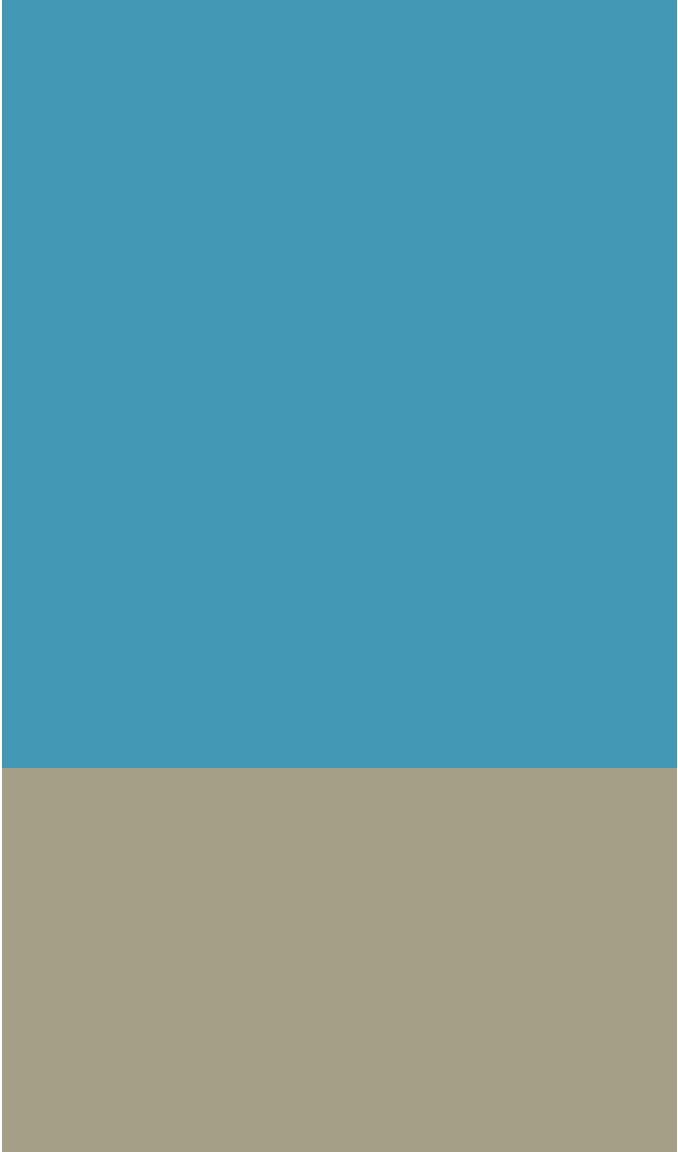


- Air/Noise: The project scope consists of the repair or replacement of an existing structure with no additional capacity. Standard air analysis and commitments are anticipated apply based on the location. The project would be considered Type III for noise and no study would be required.
3. Based on geographic review, no jurisdictional WOUS are mapped within the project area. Likewise, no Section 404 or other permits are anticipated to construct the project. Field investigation should be conducted for confirmation.
 4. There is no jurisdictional stream within the project area.
 5. No time of year restrictions (TOYR) anticipated because there are no federal or state listed species within the project area that would be adversely impacted by the project.
 6. See cultural resources comment above; no cultural resource impacts are anticipated.
 7. Architectural survey is anticipated to be required by the Virginia Department of Historic Resources. Field review to confirm no WOUS in the project area should be conducted. It is unknown if a Phase I ESA would be required by VDOT.
 8. Bridge will need inspection for Asbestos Containing Materials (ACMs); the structure is a Type B and would be treated as such regarding handling procedures associated with lead based paint. Contaminated soils requiring special handling are not anticipated, but a Phase I ESA may be required. The environmental review did not reveal any high or medium risk issues that would impact the project schedule or budget. Overall, the project under any alternative being considered would be considered environmentally low-risk.



COMMUNITY IMPACTS

Completed Not Completed High Risk	Action	Ref. Docs.	Notes
Complete	Determine potential impacts to the community and how they will affect the project.	7	1
Complete	Investigate if there is a history of active community organizations in the area that may impact the project.		1
Complete	Consider access to adjacent properties and businesses.	7	1
Complete	Consider school bus routes and turn around areas if a detour is proposed.		1
Complete	Consider seasonal and community events such as festivals, graduations, sporting events, etc.		1
Complete	Consider routes/ accommodations for emergency vehicles.		1
Complete	Consider holding a pre-project public meeting if project potentially has controversial public/ stakeholder issues.		1
N/A	Complete initial consultation with Locality, MPO, and others.		3
Complete	Describe community impacts not included in this checklist that could be considered high risk and impact the schedule or budget of this project.		1

1. Since reducing the traffic to one lane during the construction using temporary traffic signal is required for deck replacement, a traffic analysis shall be completed to establish the traffic impact and Public Involvement is required for this project to communicate the traffic impact and potential detour options during the construction.
2. No active community organization have been identified at this location.
3. This bridge is not located in a Locality or MPO.

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Appendix A2

Risk Assessment

PROJECT #	Old Glebe Road over Glebe Road (Rte. 120)
UPC #	99580
PROJECT LOCATION	Arlington County
VDOT DISTRICT	Northern Virginia

Risks	RISK ASSESSMENT			Comments/Notes
	Probability	Impact	Probability * Impact	

I. Roadway Design (Design Considerations; Design Exceptions, Status of Preliminary Plans, Typical Sections, Roadway Classification/Traffic Data)

Design Waivers for Final Alignment	1	1	2	
Impacts of Offset Alignment (Drainage, Utilities, etc.)	2	2	4	
Vertical Clearance	3	2	6	
MOT and Construction Staging Over and Under the Bridge	2	2	4	

II. Bridge Design (Design Considerations; Staged Construction, Demolition of Existing Structure, Bridge Aesthetics)

Challenges of Existing Structure Demolition	2	1	2	
Staged Construction Design Requirements	2	1	2	

III. Right of Way (Total takes, Relocations, Railroad)

ROW and Property Lines to be Confirmed by Survey	2	1	2	

IV. Environmental (Status of Environmental Document; Noise Study, Air Study, T&E, Water/E&S Permits, Hazmat, Stream Relocation)

Agency Consultation Delays	1	2	2	


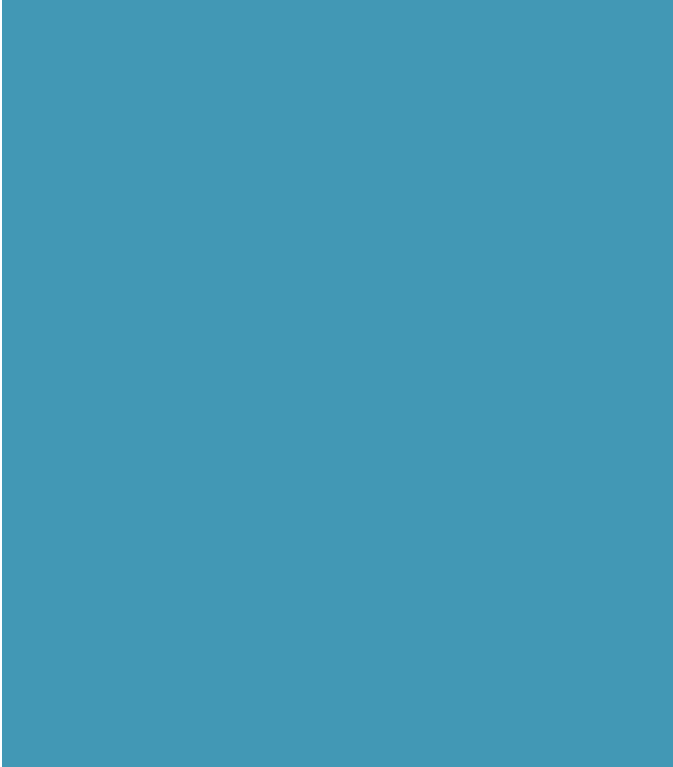

V. Utilities (Underground/Overhead Utilities; Power lines, Gas lines, unknown (governmental) utilities)

Unidentified Underground Utilities	2	3	6	
Impact to known gas line, water line, overhead utilities, conduit on bridge	3	3	9	


VI. Geotechnical (Preliminary Geotechnical Investigation Status, Boring Logs, Final Soils and Pavement Report, Minor Structure Foundation design, etc.)

Unknown Subsurface Conditions	2	1	2	

VII. Drainage (Replacement/Flowable Fill of Culverts, Outfall, Large Pipe Installation)				
VIII. Construction (MOT; Time of Day Restrictions, Incentives/Disincentives, DBE, staging area; Clearing of trees)				
Material Price Increase	2	2	4	
Additional Funding for Pedestrian Improvement (if SGR does not cover the funding for new sidewalk)	2	3	6	
IX. Public Involvement (Localities, Elected Officials, Citizens, Other Agencies)				
County Request for Additional Bike Accommodations	2	3	6	
Lane Closure and Temporary Traffic Signal During Construction	2	2	4	
X. Approvals/Concurrence (VDOT/external agencies)				
XI. Coordination with other Ongoing Projects in the Corridor				
XII. Additional Issues (Third Party Requirements, Funding/Budget)				



Appendix A3
Cost Estimates



**Old Glebe Road Over Route 120
Alternative 1 - Deck Replacement
Cost Estimate - Scoping**

Preliminary Engineering (PE)				
Discipline	Source	Base (\$)	Contingency (%)	Total
Roadway	Consultant	\$160,000	12%	\$179,200
Hydraulics				
In-plan Utilities	Consultant	\$5,000	12%	\$5,600
Traffic	Consultant	\$40,000	12%	\$44,800
Structure/Bridges	Consultant	\$200,000	12%	\$224,000
Materials/Geotechnical	Consultant	\$40,000	12%	\$44,800
Survey	Consultant	\$80,000	12%	\$89,600
Environmental	Consultant	\$10,000	12%	\$11,200
Right-of-Way	Consultant	\$20,000	12%	\$22,400
Project Development Activities/Oversight (VDOT)	30%	\$167,000	12%	\$188,000
Total PE Estimate		\$722,000	12%	\$809,600
Inflation Factor (%)	3%			
Anticipated PE Year 2026	5			
Total Inflated PE Estimate				\$939,000

Right-of-Way and Utilities				
Discipline	Source	Base (\$)	Contingency (%)	Total
Right of Way	Consultant	\$100,000	50%	\$150,000
Out-of-plan Utilities	Consultant	\$50,000	75%	\$87,500
Total RW Phase Estimate		\$150,000	50%	\$237,500
Inflation Factor (%)	3%			
Anticipated PE Year 2026	6			
Total Inflated RW Estimate				\$284,000

Construction				
Discipline	Source	Base (\$)	Contingency (%)	Total
Mobilization	Consultant	\$292,000	40%	\$408,800
MOT	Consultant	\$300,000	40%	\$420,000
Roadway	Consultant	\$400,000	40%	\$560,000
Hydraulics				
In-plan Utilities	Consultant	\$150,000	75%	\$262,500
Traffic				
Structure/Bridges	Consultant	\$2,968,000	40%	\$4,155,200
Materials/Geotechnical				
Soundwalls				
Other				
Total Bid Items		\$4,110,000	40%	\$5,806,500
Incidental - Claims & Work Orders	5%	\$205,500	40%	\$290,325
Railroad Flagging/Coordination				
State Forces				
State Police		\$50,000	40%	\$70,000
Contract Requirements (Incentive/Disincentive)	5%	\$205,500	40%	\$290,325
CEI (Environmental Inspection)				
CEI (VDOT or Locality)	20%	\$822,000	40%	\$1,150,800
CEI (VDOT Oversight)				
Total CEI		\$822,000	40%	\$1,150,800
Inflation Factor (%)	3.718%			
Anticipated PE Year 2026	7			
Total Inflated CN Estimate		\$5,393,000	40%	\$9,824,000

Total Project Cost Estimate				\$11,100,000
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**Old Glebe Road Over Route 120
Alternative 1 - Deck Replacement
Cost Estimate - Scoping**

Bid Items

Description	Unit	Quantity	Unit Cost	Cost
Bridge deck grooving	SY	587	\$10	\$6,000
Concrete Class A4	CY	226	\$1,500	\$339,000
Corrosion Resistant Reinf. Steel	LB	50800	\$6	\$305,000
Dismantle and Remove Exist. Str.	LS	1	\$180,000	\$180,000
Recoat Existing Structure	LS	1	\$950,000	\$950,000
Env. Prot. And Health and Safety	LS	1	\$20,000	\$20,000
Env. And Worker Protection	LS	1	\$50,000	\$50,000
Disposal of Material	LS	1	\$20,000	\$20,000
Superstructure Steel Repair	LS	1	\$300,000	\$300,000
Structural Excavation	CY	447	\$100	\$45,000
Select Backfill Abutment Zone	TON	1450	\$75	\$109,000
Temporary Shield for Repair	LS	1	\$50,000	\$50,000
Crack Repair Type B	LF	300	\$100	\$30,000
Conc. Substructure Surface Repair	SY	120	\$1,100	\$132,000
Conc. Block Slope Protection	LS	1	\$20,000	\$20,000
Steel Sheet Piling	SF	453	\$40	\$19,000
Ped. Fence 8'	LF	214	\$140	\$30,000
Railing, CPSR 2 Rails	LF	428	\$375	\$161,000
Replace Bearing	EA	30	\$5,000	\$150,000
NBIS Bridge Inspection	DAY	2	\$2,000	\$4,000
Pier Protection System 54"	LF	100	\$350	\$35,000
Barrier Service Concrete Parapet	LF	255	\$50	\$13,000
Approach RW Widening and Tie-ins	LS	1	\$300,000	\$300,000
MOT and Temporary Signals	LS	1	\$300,000	\$300,000
Erosion & Sediment Control	LS	1	\$100,000	\$100,000

Old Glebe Road Over Route 120				
Alternative 2 - Deck Replacement with Widening				
Cost Estimate - Scoping				
Preliminary Engineering (PE)				
Discipline	Source	Base (\$)	Contingency (%)	Total
Roadway	Consultant	\$150,000	12%	\$168,000
Hydraulics				
In-plan Utilities	Consultant	\$5,000	12%	\$5,600
Traffic	Consultant	\$40,000	12%	\$44,800
Structure/Bridges	Consultant	\$240,000	12%	\$268,800
Materials/Geotechnical	Consultant	\$70,000	12%	\$78,400
Survey	Consultant	\$80,000	12%	\$89,600
Environmental	Consultant	\$10,000	12%	\$11,200
Right-of-Way	Consultant	\$20,000	12%	\$22,400
Project Development Activities/Oversight (VDOT)	30%	\$185,000	12%	\$208,000
Total PE Estimate		\$800,000	12%	\$896,800
Inflation Factor (%)	3%			
Anticipated PE Year 2026	5			
Total Inflated PE Estimate				\$1,040,000
Right-of-Way and Utilities				
Discipline	Source	Base (\$)	Contingency (%)	Total
Right of Way	Consultant	\$150,000	50%	\$225,000
Out-of-plan Utilities	Consultant	\$50,000	75%	\$87,500
Total RW Phase Estimate		\$200,000	50%	\$312,500
Inflation Factor (%)	3%			
Anticipated PE Year 2026	6			
Total Inflated RW Estimate				\$374,000
Construction				
Discipline	Source	Base (\$)	Contingency (%)	Total
Mobilization	Consultant	\$348,000	40%	\$487,200
MOT	Consultant	\$380,000	40%	\$532,000
Roadway	Consultant	\$420,000	40%	\$588,000
Hydraulics				
In-plan Utilities	Consultant	\$150,000	75%	\$262,500
Traffic				
Structure/Bridges	Consultant	\$3,611,000	40%	\$5,055,400
Materials/Geotechnical				
Soundwalls				
Other				
Total Bid Items		\$4,909,000	40%	\$6,925,100
Incidental - Claims & Work Orders	5%	\$245,450	40%	\$346,255
Railroad Flagging/Coordination				
State Forces				
State Police		\$50,000	40%	\$70,000
Contract Requirements (Incentive/Disincentive)	5%	\$245,450	40%	\$346,255
CEI (Environmental Inspection)				
CEI (VDOT or Locality)	20%	\$981,800	40%	\$1,374,520
CEI (VDOT Oversight)				
Total CEI		\$981,800	40%	\$1,374,520
Inflation Factor (%)	3.718%			
Anticipated PE Year 2026	7			
Total Inflated CN Estimate		\$6,431,700	40%	\$11,701,000
Total Project Cost Estimate				\$13,200,000

Old Glebe Road Over Route 120				
Alternative 2 - Deck Replacement with Widening				
Cost Estimate - Scoping				
Bid Items				
Description	Unit	Quantity	Unit Cost	Cost
Bridge deck grooving	SY	571	\$10	\$6,000
Concrete Class A4	CY	298	\$1,500	\$447,000
Corrosion Resistant Reinf. Steel	LB	67100	\$6	\$403,000
Dismantle and Remove Exist. Str.	LS	1	\$200,000	\$200,000
Recoat Existing Structure	LS	1	\$950,000	\$950,000
Env. Prot. And Health and Safety	LS	1	\$20,000	\$20,000
Env. And Worker Protection	LS	1	\$50,000	\$50,000
Disposal of Material	LS	1	\$20,000	\$20,000
Superstructure Steel Repair	LS	1	\$300,000	\$300,000
Structural Excavation	CY	544	\$100	\$55,000
Select Backfill Abutment Zone	TON	1667	\$75	\$126,000
Temporary Shield for Repair	LS	1	\$50,000	\$50,000
Crack Repair Type B	LF	300	\$100	\$30,000
Conc. Substructure Surface Repair	SY	120	\$1,100	\$132,000
Conc. Block Slope Protection	LS	1	\$40,000	\$40,000
Steel Sheet Piling	SF	453	\$40	\$19,000
Ped. Fence 8'	LF	428	\$140	\$60,000
Railing, CPSR 2 Rails	LF	428	\$375	\$161,000
Replace Bearing	EA	30	\$5,000	\$150,000
NBIS Bridge Inspection	DAY	2	\$2,000	\$4,000
Pier Protection System 54"	LF	130	\$350	\$46,000
Barrier Service Concrete Parapet	LF	255	\$50	\$13,000
Concrete Class A3	CY	50	\$1,600	\$81,000
Reinf. Steel	LB	9100	\$3	\$28,000
Str. St. Plate Girder, Grade 50	LB	60000	\$3	\$180,000
Steel Piles 12"	LF	400	\$80	\$32,000
Dynamic Pile Test	EA	2	\$4,000	\$8,000
Approach RW Widening and Tie-ins	LS	1	\$320,000	\$320,000
MOT and Temporary Signals	LS	1	\$380,000	\$380,000
Erosion & Sediment Control	LS	1	\$100,000	\$100,000

Old Glebe Road Over Route 120				
Alternative 3 - Full Bridge Replacement - ABC				
Cost Estimate - Scoping				
Preliminary Engineering (PE)				
Discipline	Source	Base (\$)	Contingency (%)	Total
Roadway	Consultant	\$275,000	12%	\$308,000
Hydraulics				
In-plan Utilities	Consultant	\$5,000	12%	\$5,600
Traffic	Consultant	\$40,000	12%	\$44,800
Structure/Bridges	Consultant	\$280,000	12%	\$313,600
Materials/Geotechnical	Consultant	\$80,000	12%	\$89,600
Survey	Consultant	\$80,000	12%	\$89,600
Environmental	Consultant	\$10,000	12%	\$11,200
Right-of-Way	Consultant	\$20,000	12%	\$22,400
Project Development Activities/Oversight (VDOT)	30%	\$237,000	12%	\$266,000
Total PE Estimate		\$1,027,000	12%	\$1,150,800
Inflation Factor (%)	3%			
Anticipated PE Year 2026	5			
Total Inflated PE Estimate				\$1,335,000
Right-of-Way and Utilities				
Discipline	Source	Base (\$)	Contingency (%)	Total
Right of Way	Consultant	\$200,000	50%	\$300,000
Out-of-plan Utilities	Consultant	\$150,000	75%	\$262,500
Total RW Phase Estimate		\$350,000	50%	\$562,500
Inflation Factor (%)	3%			
Anticipated PE Year 2026	6			
Total Inflated RW Estimate				\$672,000
Construction				
Discipline	Source	Base (\$)	Contingency (%)	Total
Mobilization	Consultant	\$516,000	40%	\$722,400
MOT	Consultant	\$280,000	40%	\$392,000
Roadway	Consultant	\$940,000	40%	\$1,316,000
Hydraulics				
In-plan Utilities	Consultant	\$150,000	75%	\$262,500
Traffic				
Structure/Bridges	Consultant	\$5,440,000	40%	\$7,616,000
Materials/Geotechnical				
Soundwalls				
Other				
Total Bid Items		\$7,326,000	40%	\$10,308,900
Incidental - Claims & Work Orders	5%	\$366,300	40%	\$515,445
Railroad Flagging/Coordination				
State Forces				
State Police		\$50,000	40%	\$70,000
Contract Requirements (Incentive/Disincentive)	5%	\$366,300	40%	\$515,445
CEI (Environmental Inspection)				
CEI (VDOT or Locality)	20%	\$1,465,200	40%	\$2,051,280
CEI (VDOT Oversight)				
Total CEI		\$1,465,200	40%	\$2,051,280
Inflation Factor (%)	3.718%			
Anticipated PE Year 2026	7			
Total Inflated CN Estimate		\$9,573,800	40%	\$17,381,000
Total Project Cost Estimate				\$19,400,000

Old Glebe Road Over Route 120
Alternative 3 - Full Bridge Replacement - ABC
Cost Estimate - Scoping

Bid Items

Description	Unit	Quantity	Unit Cost	Cost
Bridge deck grooving	SY	571	\$10	\$6,000
Concrete Class A4	CY	248	\$2,500	\$620,000
Corrosion Resistant Reinf. Steel	LB	55800	\$6	\$335,000
Dismantle and Remove Exist. Str.	LS	1	\$430,000	\$430,000
Env. Prot. And Health and Safety	LS	1	\$20,000	\$20,000
Env. And Worker Protection	LS	1	\$30,000	\$30,000
Disposal of Material	LS	1	\$50,000	\$50,000
Structural Excavation	CY	795	\$100	\$80,000
Select Backfill Abutment Zone	TON	7200	\$75	\$540,000
Temporary Shield	LS	1	\$10,000	\$10,000
Ped. Fence 8'	LF	428	\$140	\$60,000
Railing, CPSR 2 Rails	LF	428	\$375	\$161,000
NBIS Bridge Inspection	DAY	2	\$2,000	\$4,000
Pier Protection System 54"	LF	150	\$350	\$53,000
Concrete Class A3	CY	314	\$2,000	\$629,000
Reinf. Steel	LB	56600	\$3	\$170,000
MSE Wall	SF	1440	\$90	\$130,000
Str. St. Plate Girder, Grade 50	LB	173000	\$4	\$692,000
Micro Piles	LF	1600	\$200	\$320,000
Prepare Site for Precast Superstr.	LS	1	\$100,000	\$100,000
Jacking and Slide-in Operation	LS	1	\$1,000,000	\$1,000,000
Approach RW Widening and Tie-ins	LS	1	\$660,000	\$660,000
MOT	LS	1	\$280,000	\$280,000
Erosion & Sediment Control	LS	1	\$280,000	\$280,000

Old Glebe Road Over Route 120				
Alternative 4 - Full Bridge Replacement - Staged Construction				
Cost Estimate - Scoping				
Preliminary Engineering (PE)				
Discipline	Source	Base (\$)	Contingency (%)	Total
Roadway	Consultant	\$275,000	12%	\$308,000
Hydraulics				
In-plan Utilities	Consultant	\$5,000	12%	\$5,600
Traffic	Consultant	\$40,000	12%	\$44,800
Structure/Bridges	Consultant	\$250,000	12%	\$280,000
Materials/Geotechnical	Consultant	\$80,000	12%	\$89,600
Survey	Consultant	\$80,000	12%	\$89,600
Environmental	Consultant	\$10,000	12%	\$11,200
Right-of-Way	Consultant	\$20,000	12%	\$22,400
Project Development Activities/Oversight (VDOT)	30%	\$228,000	12%	\$256,000
Total PE Estimate		\$988,000	12%	\$1,107,200
Inflation Factor (%)	3%			
Anticipated PE Year 2026	5			
Total Inflated PE Estimate				\$1,284,000
Right-of-Way and Utilities				
Discipline	Source	Base (\$)	Contingency (%)	Total
Right of Way	Consultant	\$200,000	50%	\$300,000
Out-of-plan Utilities	Consultant	\$150,000	75%	\$262,500
Total RW Phase Estimate		\$350,000	50%	\$562,500
Inflation Factor (%)	3%			
Anticipated PE Year 2026	6			
Total Inflated RW Estimate				\$672,000
Construction				
Discipline	Source	Base (\$)	Contingency (%)	Total
Mobilization	Consultant	\$395,000	40%	\$553,000
MOT	Consultant	\$380,000	40%	\$532,000
Roadway	Consultant	\$980,000	40%	\$1,372,000
Hydraulics				
In-plan Utilities	Consultant	\$150,000	75%	\$262,500
Traffic				
Structure/Bridges	Consultant	\$3,690,000	40%	\$5,166,000
Materials/Geotechnical				
Soundwalls				
Other				
Total Bid Items		\$5,595,000	40%	\$7,885,500
Incidental - Claims & Work Orders	5%	\$279,750	40%	\$394,275
Railroad Flagging/Coordination				
State Forces				
State Police		\$50,000	40%	\$70,000
Contract Requirements (Incentive/Disincentive)	5%	\$279,750	40%	\$394,275
CEI (Environmental Inspection)				
CEI (VDOT or Locality)	20%	\$1,119,000	40%	\$1,566,600
CEI (VDOT Oversight)				
Total CEI		\$1,119,000	40%	\$1,566,600
Inflation Factor (%)	3.718%			
Anticipated PE Year 2026	7			
Total Inflated CN Estimate		\$7,323,500	40%	\$13,313,000
Total Project Cost Estimate				\$15,300,000

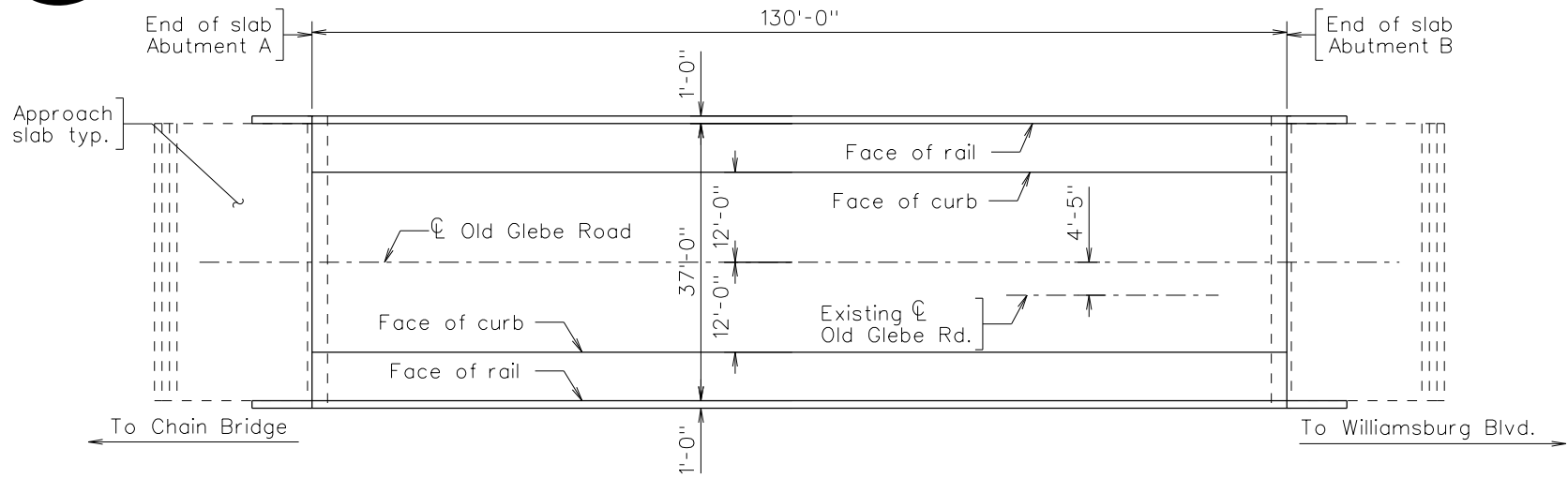
Note: This cost is based on 2026 (year 1) preliminary engineering start date. The estimated cost for year 2027 (year 2) and 2028 (year 3) are \$15.8 million and \$16.4 million respectively.

Old Glebe Road Over Route 120				
Alternative 4 - Full Bridge Replacement - Staged Construction				
Cost Estimate - Scoping				
Bid Items				
Description	Unit	Quantity	Unit Cost	Cost
Bridge deck grooving	SY	571	\$10	\$6,000
Concrete Class A4	CY	248	\$1,800	\$447,000
Corrosion Resistant Reinf. Steel	LB	55800	\$6	\$335,000
Dismantle and Remove Exist. Str.	LS	1	\$430,000	\$430,000
Env. Prot. And Health and Safety	LS	1	\$20,000	\$20,000
Env. And Worker Protection	LS	1	\$30,000	\$30,000
Disposal of Material	LS	1	\$50,000	\$50,000
Structural Excavation	CY	795	\$100	\$80,000
Select Backfill Abutment Zone	TON	7200	\$75	\$540,000
Temporary Shield	LS	1	\$10,000	\$10,000
Steel Sheet Piling	SF	800	\$40	\$32,000
Ped. Fence 8'	LF	428	\$140	\$60,000
Railing, CPSR 2 Rails	LF	428	\$375	\$161,000
NBIS Bridge Inspection	DAY	2	\$2,000	\$4,000
Pier Protection System 54"	LF	150	\$350	\$53,000
Concrete Class A3	CY	314	\$1,500	\$472,000
Reinf. Steel	LB	56600	\$3	\$170,000
MSE Wall	SF	1440	\$90	\$130,000
Str. St. Plate Girder, Grade 50	LB	173000	\$3	\$519,000
Steel Piles 12"	LF	1600	\$80	\$128,000
Barrier Service Concrete Parapet	LF	255	\$50	\$13,000
Approach RW Widening and Tie-ins	LS	1	\$700,000	\$700,000
MOT and Temporary Signals	LS	1	\$380,000	\$380,000
Erosion & Sediment Control	LS	1	\$280,000	\$280,000



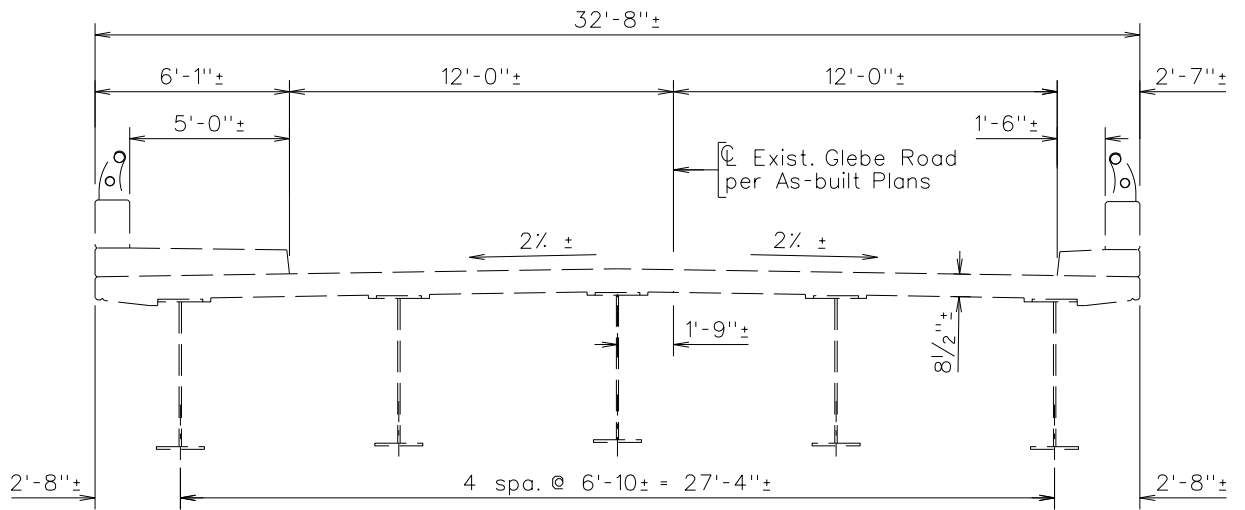
Appendix A4
Proposed Plans

ALTERNATIVE - 4

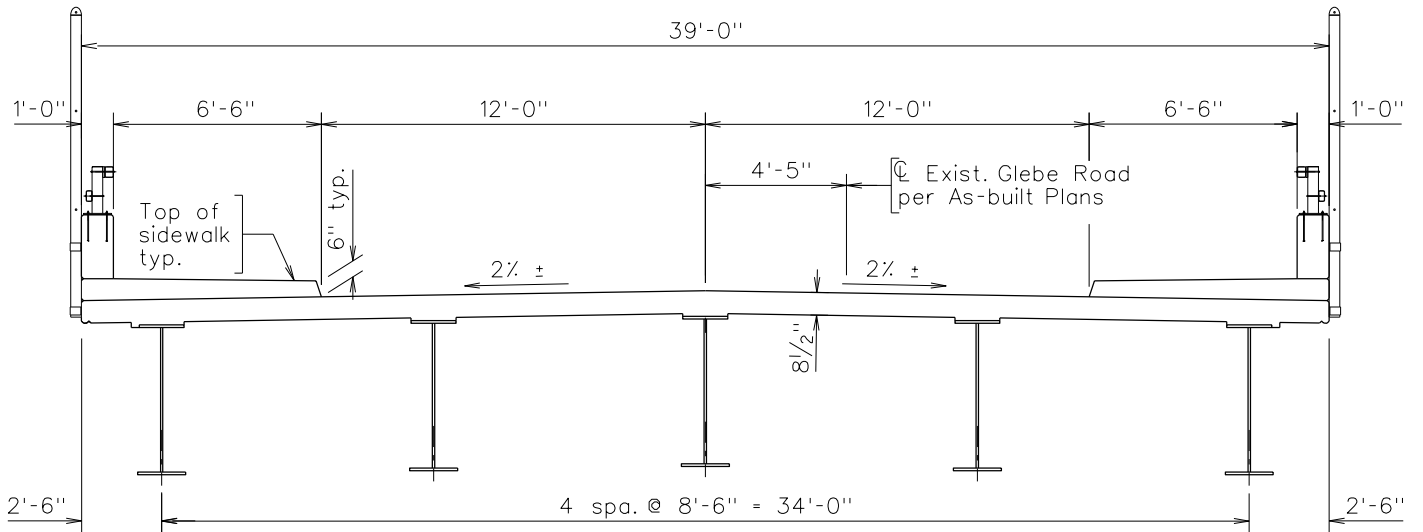


PROPOSED BRIDGE PLAN

ALTERNATIVE - 4



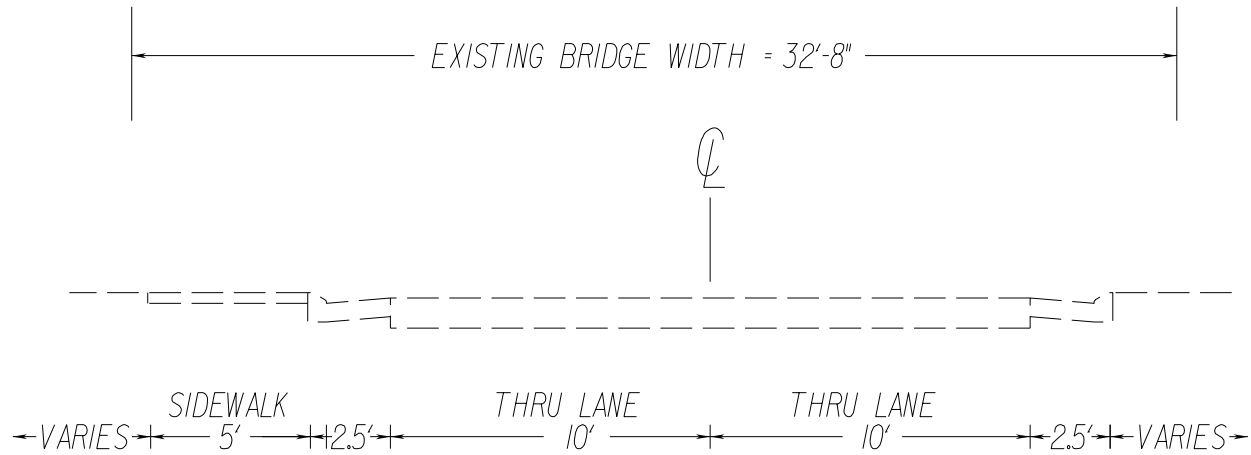
TYPICAL EXISTING BRIDGE CROSS SECTION



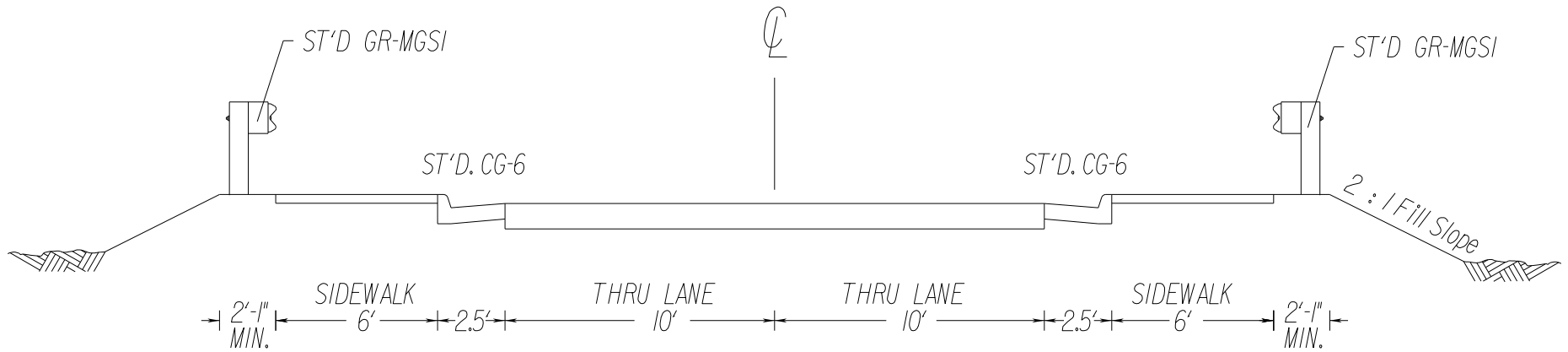
PROPOSED BRIDGE CROSS SECTION



ALTERNATIVE - 4



TYPICAL EXISTING ROADWAY CROSS SECTION

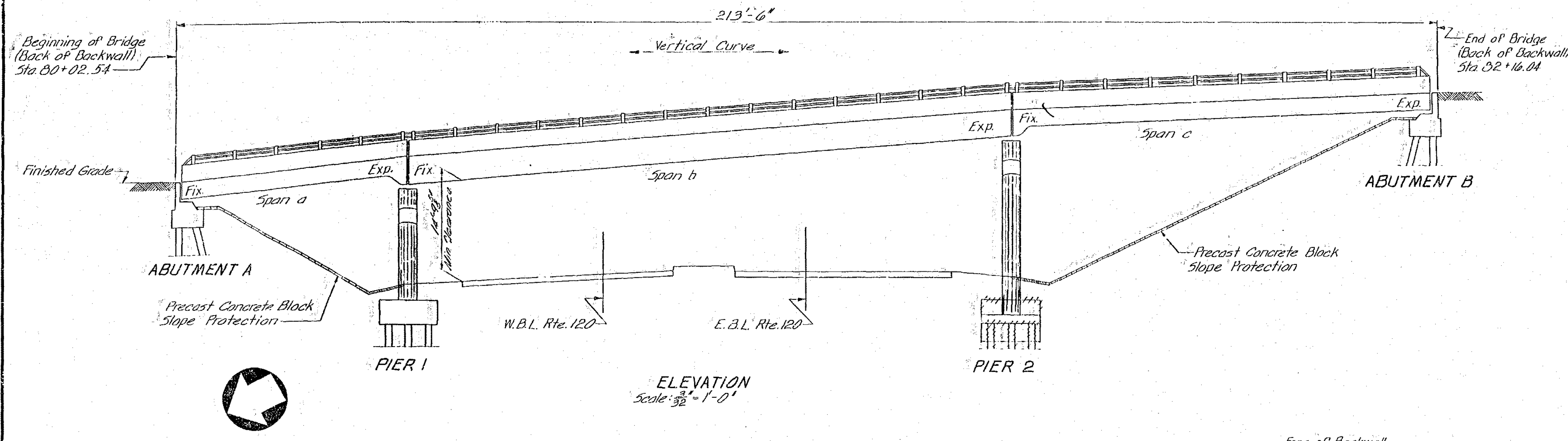


PROPOSED ROADWAY CROSS SECTION



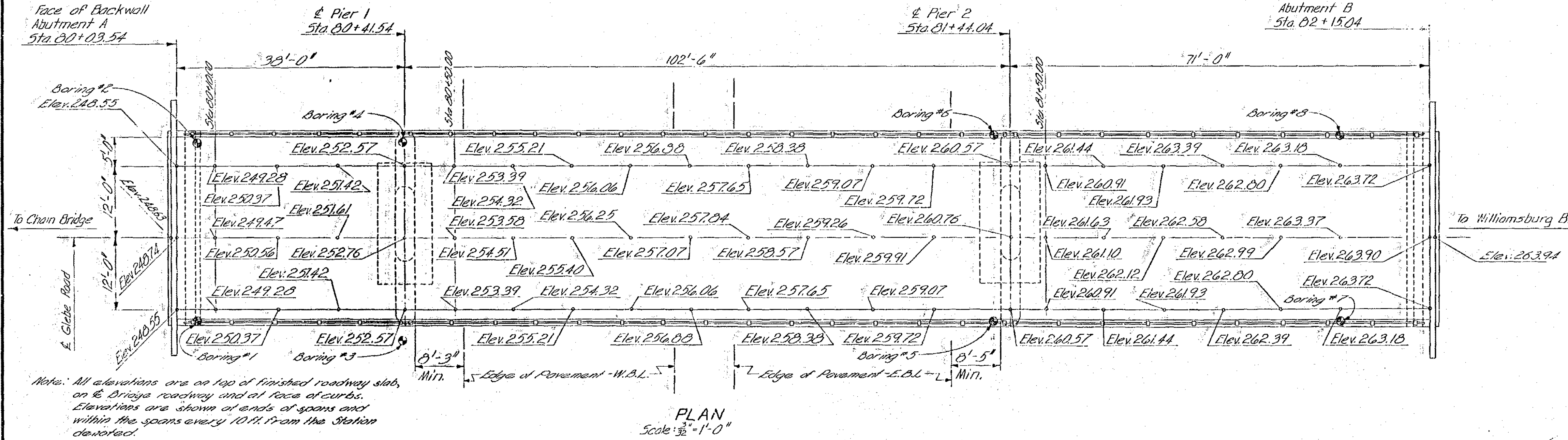
Appendix A5
Existing Bridge As-Built Plans

PUB. NO.	REGION	STATE	FEDERAL AID		STATE		SHEET NO.	TOTAL SHEETS
			ROUTE	PROJECT	ROUTE	PROJECT		
2	1	VA	U-101-1162	120	0120-000-101, B601	1-5	8	



GENERAL NOTE

Roadway: 24'-0" clear, 1'-5"-0" sidewalk.
 Capacity: 120-316-44 haulings, S.P.R. modified loading for military vehicles.
 Specifications: General - Virginia Department of Highways Road and Bridge Specifications, 1958.
 Design: A.A.S.H.O. Standard Specifications for Highway Bridges, 1961.
 Supplemental:
 "Aluminum Alloy and Aluminum Railing", revised March 29, 1961.
 "Structural Backfill", dated April 11, 1961.
 "Roads for Masonry Bearing Areas", revised March 3, 1961.
 "Curing Concrete", revised August 23, 1961.
 "Boring Piles", revised February 15, 1960.
 "Structural Steel", revised February 16, 1962.
 "Composite Stringer-Sub Construction", revised October 10, 1961.
 Special Provisions:
 "Self-Lubricating Bronze or Copper-Alloy Bearing Plates", revised June 23, 1959.
 "Structural Prestressed Concrete", revised March 1, 1961.
 Specifications and Special Provisions referred to above and on Standard Plans are necessary to make these plans complete.
 Concrete in prestressed piles shall be Prestressed Concrete. All other concrete shall be Class (A).
 Care in method of vibration, the use of low slump concrete or other means shall be employed to prevent downward movement of newly placed slab concrete.
 All bridge seat bearing areas shall be finished to truly level plane surfaces at the elevations shown.
 All reinforcing bar dimensions on the detailed drawings are to centers of bars except where otherwise noted.
 Structural steel for spans a, b, & c shall conform to the Tentative Specification for Structural Steel, A.S.T.M. Designation: A36-61.
 The Nelson Composite Beams shown on these drawings are covered by United States Patent Number 2,937,853 and may be employed without any restriction on this project, regardless of the date of construction of the source of beams, stud shear connectors, and concrete, under a royalty-free license issued by the Nelson Steel Working Division of Gregory Industries, Inc., Lorain, Ohio.
 Piles shall be driven to a bearing capacity of 36 tons per pile.
 Further details of 12" prestressed concrete piles are shown on Standard Plan PSP-1 as revised to May 22, 1961.
 B.M.: 3 Nails in base 38" Oak 45" Lx. Sta. 39+72 (Survey) Elev. 273.82
 Stud shear connectors - Manufactured by Bethlehem Steel Co. of Lebanon, Pa. and applied with vented ceramic arc shield ferrules with commercially pure aluminum flux projections as manufactured by Eastern Connectors.



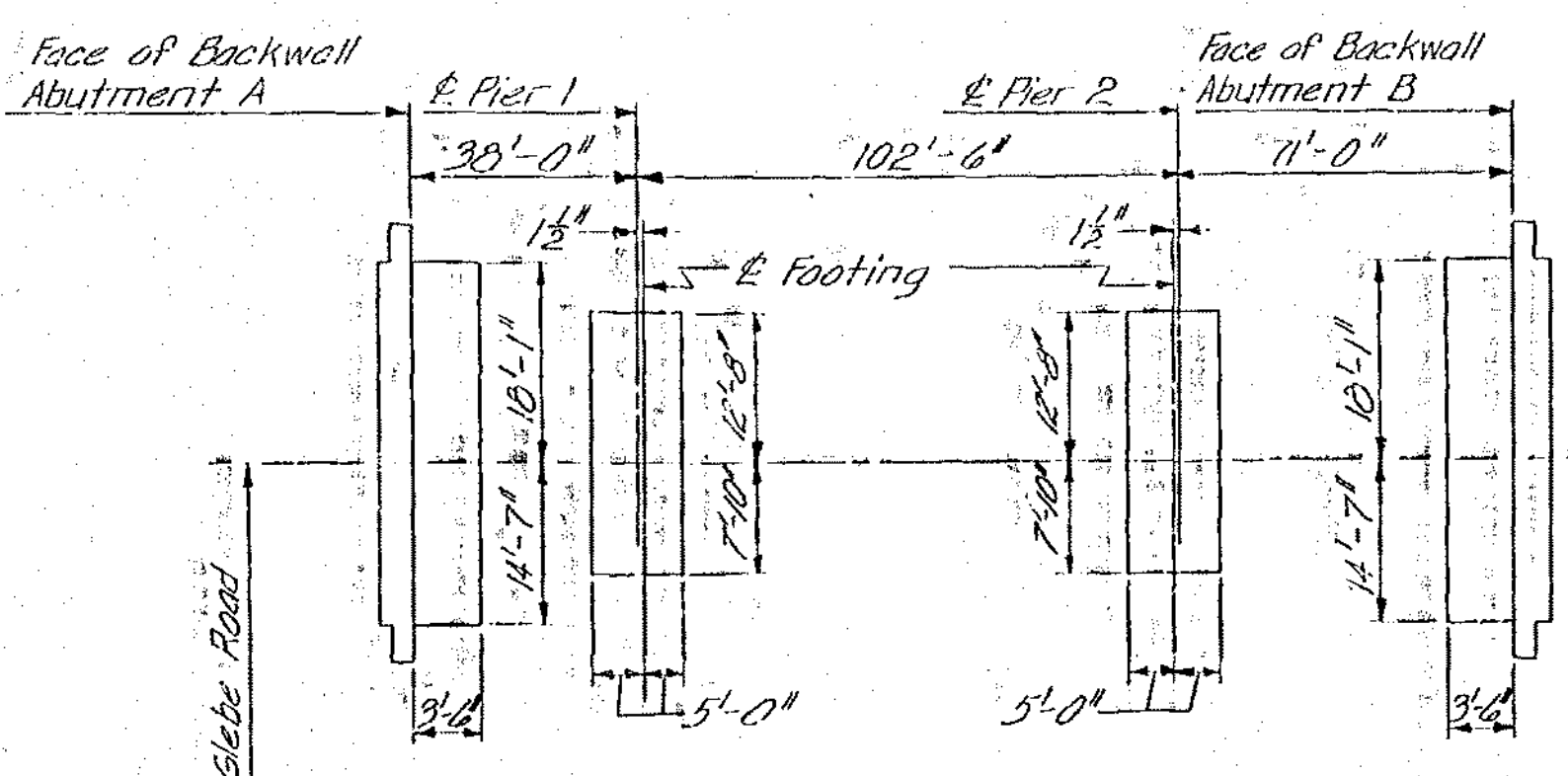
Note: All elevations are on top of finished roadway slab, on E. Bridge roadway and at face of curbs. Elevations are shown at ends of spans and within the spans every 10 ft. from the station centered.

PLAN Scale: 1/32" = 1'-0"

FINAL ESTIMATED QUANTITIES

	Concrete Class (A) Cu. Yds.	Reinforcing Steel Lbs.	Structural Steel* Lbs.	12" c.i.p. Prestressed Concrete Piles Lin. Ft.	Precast Conc. Block Slope Protection Sq. Yds.	Structure Excavation Cu. Yds.	Aluminum Railing Lin. Ft.
Superstructure	249.6	37,750	256,400				427
Abutment A	31.6	1,720	265,578	160-132.8	154-159	75-61	
Pier 1	66.5	6,960		200-239.7		68-77	
Pier 2	85.5775	7,630	7,851	200-0		68-107	
Abutment B	31.7	1,720	265,578	140-106.3	242-311	76-79	
Total	464.9	55,980	535,407	500-478.8	456-410	327-324	427

Lump Sum (Does not include \$300 for 8' channels and connector B's. supporting telephone conduits.)
 Quantities for items for which lump sum bids are asked are approximate and given only for estimating purposes.
 12" Cast-in-place concrete piles may be substituted for 12" prestressed concrete piles.
 ** Telephone Conduits - Lump Sum. Item includes telephone conduits, their attachments, structural supporting struts and connector B's. 100% cost reimbursement to be made by C.S.P. Telephone Co.
 *** Non-participation



SUBSTRUCTURE LAYOUT *Not to Scale

COMMONWEALTH OF VIRGINIA DEPARTMENT OF HIGHWAYS

PROPOSED BRIDGE
 GLEBE ROAD OVER RTE. 120-ARLINGTON COUNTY
 0.1 MI. E. OF INT. MILITARY ROAD-PROJ. 0120-000-101, B601
 STA. 81+10
 1-102 FT. STEEL GIRDER SPAN
 1-71 FT. & 1-38 FT. STEEL BEAM SPANS

Finals Posted Sept. 30, 1964
 Culpeper Dist.

Recommended for Approval: *J. N. Nelson* Bridge Engineer
 Recommended for Approval: *D. M. Huddlestone* Assistant Chief Engineer
 Approved: *[Signature]* Deputy Commissioner and Chief Engineer

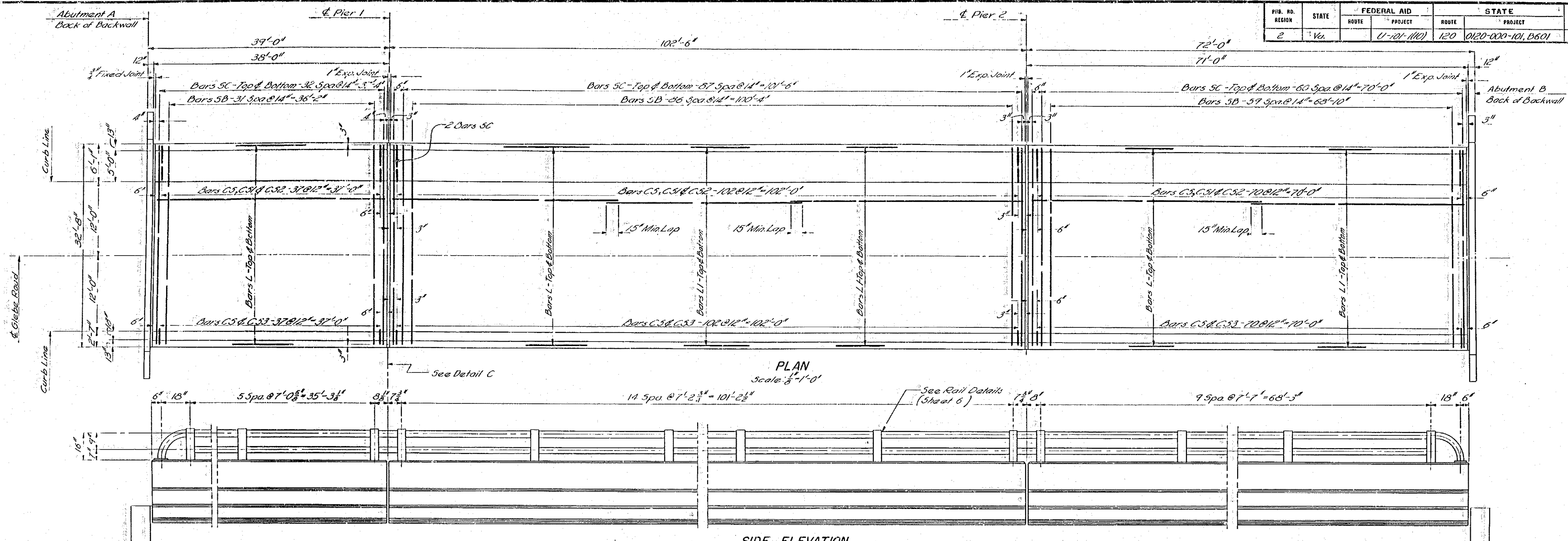
Revised: August 22, 1962
 July 30, 1962

CLXV-25
 Sheet 1 of 8

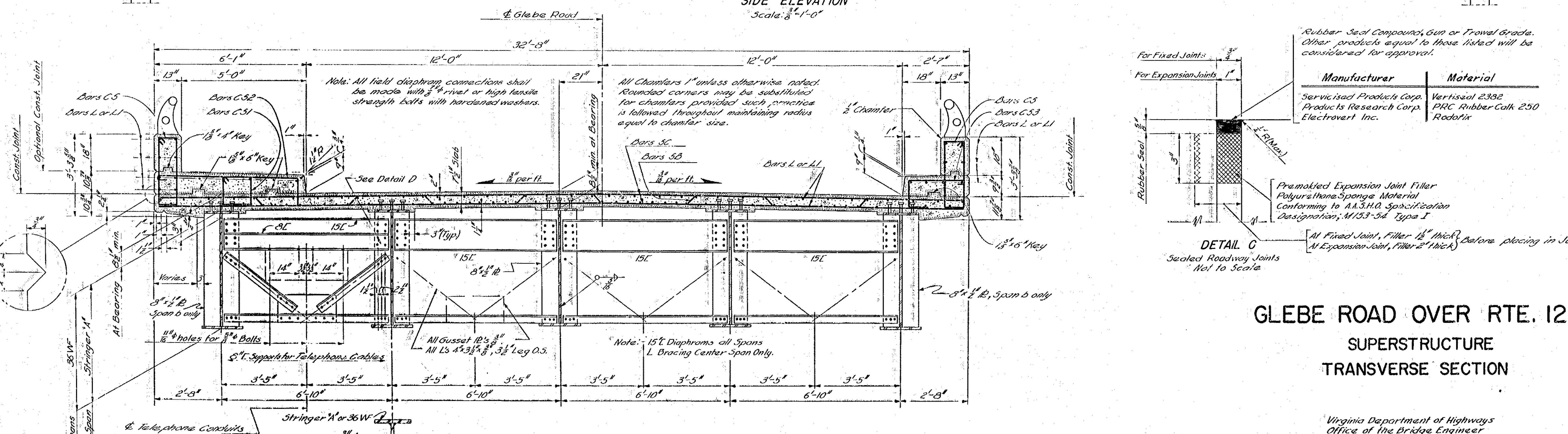
Drawn by: R.W.E.
 Traced by: R.W.E.
 Checked by: P.V.M.

10105-25-16

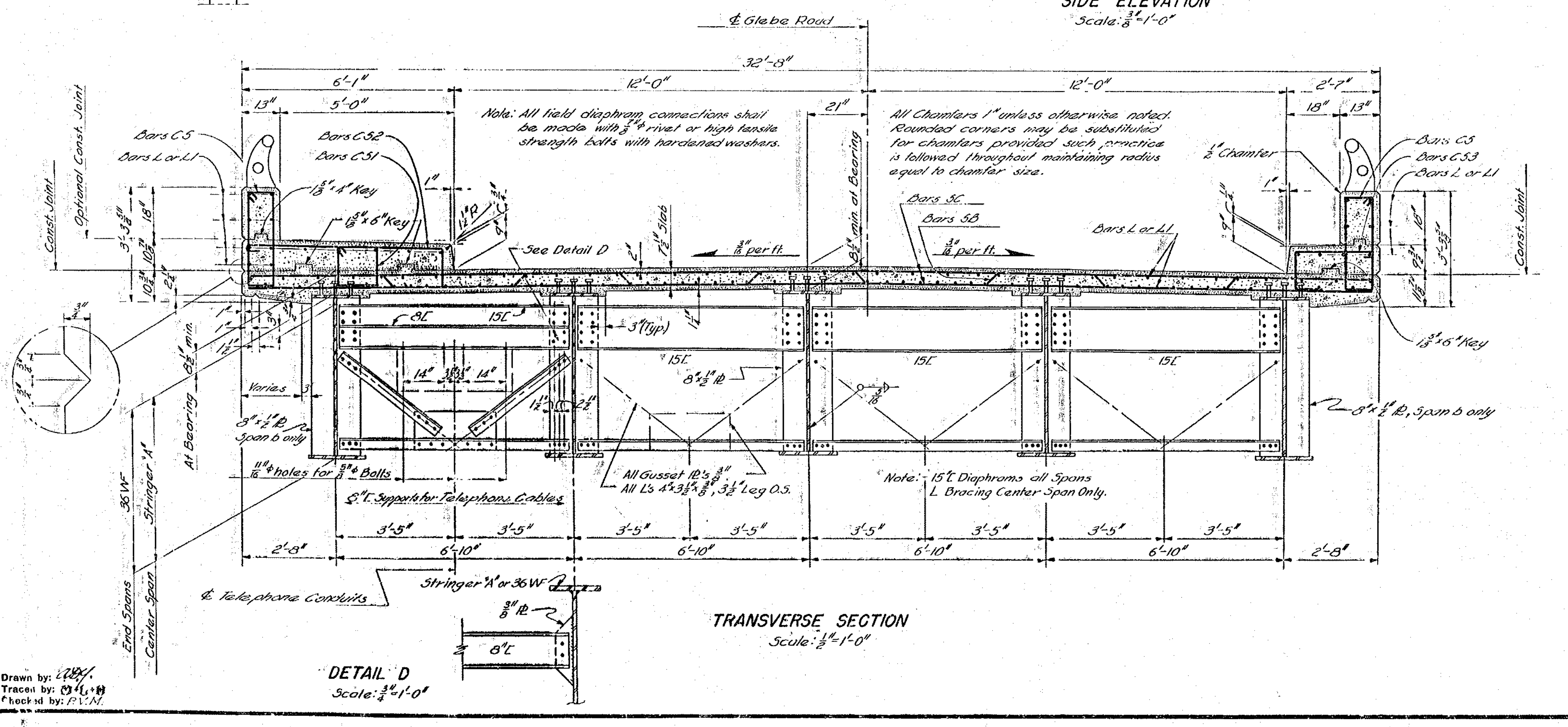
FED. REGION	STATE	FEDERAL AID		STATE		SHEET NO.	TOTAL SHEETS
		ROUTE	PROJECT	ROUTE	PROJECT		
2	Va.	11-101-1100		120	0120-000-101, B501	4-3	8



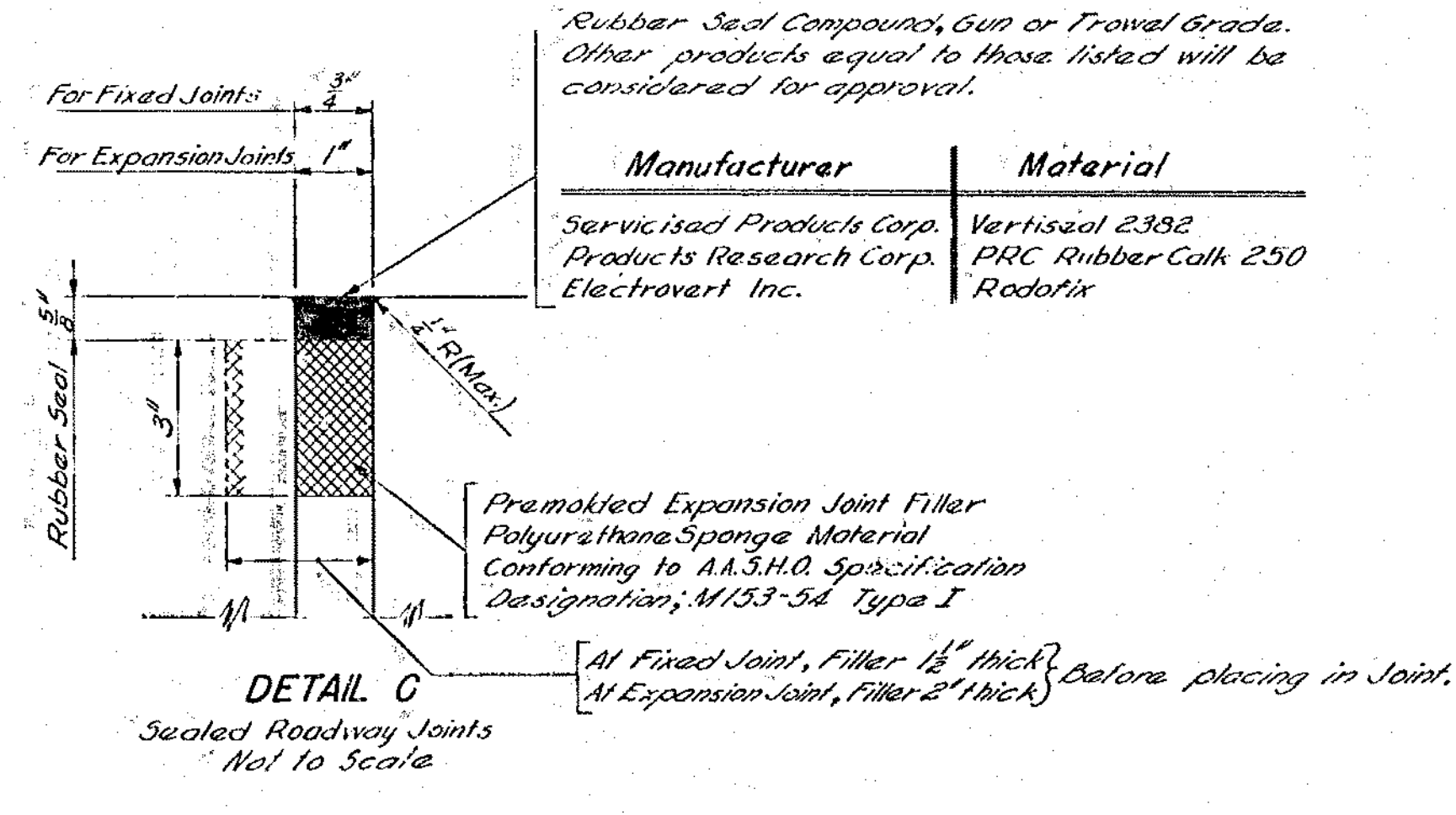
PLAN
Scale: $\frac{3}{8}$ " = 1'-0"



SIDE ELEVATION
Scale: $\frac{3}{8}$ " = 1'-0"



TRANSVERSE SECTION
Scale: $\frac{1}{4}$ " = 1'-0"



DETAIL C
Sealed Roadway Joints
Not to Scale

Rubber Seal Compound, Gun or Trowel Grade. Other products equal to those listed will be considered for approval.

Manufacturer	Material
Serviced Products Corp.	Vertisool 2382
Products Research Corp.	PRC Rubber Calk 250
Electrovert Inc.	Redofix

Premolded Expansion Joint Filler
Polyurethane Sponge Material
Conforming to A.A.S.H.O. Specification
Designation, M153-54, Type I

All Fixed Joint, Filler 1/2" thick Before placing in Joint.
All Expansion Joint, Filler 2" thick

GLEBE ROAD OVER RTE. 120
SUPERSTRUCTURE
TRANSVERSE SECTION

Virginia Department of Highways
Office of the Bridge Engineer
Richmond, Va. July, 1962

Drawn by: [Signature]
Traced by: [Signature]
Checked by: [Signature]

DETAIL D
Scale: $\frac{3}{8}$ " = 1'-0"

CLXV-25
Sheet 4 of 8

165-25-04



Appendix A6
2019 Bridge Inspection Report

Note the full Bridge Safety Inspection Report was included in the application. Due to CII, this report has not been included in this public sample application.



Appendix A7
Bridge Accident Information





Document Number	Crash Date	Crash Time	Day Of Week	Collision Type	Crash Description	First Harmful Event	First Harmful Event Location	KABCO Severity Code	Route Name	Route Number	Secondary Location
140625132	3/3/2014	7:21	Mon	1. Rear End	VEHICLE 1 WAS COMING DOWN THE RAMP ONTO NORTH GLEBE ROAD OFF PRIVATE ROAD AND FAILED TO MAINTAIN CONTROL OF HER VEHICLE. VEHICLE 2 WAS TRAVELING SOUTH ON NORTH GLEBE WHEN VEHICLE 1 CRASHED INTO VEHICLE TWO. THERE WAS SIGNIFICANT DAMAGE TO VEHICLE 1 BUT MINIMAL DAMAGE TO VEHICLE 2. PLOW. NO INJURIES WERE REPORTED AND BOTH DRIVERS REFUSED MEDICAL ATTENTION. VEHICLE 1 WAS TOWED AT OWNERS REQUEST.	20. Motor Vehicle In Transport	1. On Roadway	No Injury (O)	CR-6743N (Arlington County)	6743	MILITARY ROAD
141145084	4/24/2014	8:40	Thu	5. Sideswipe - Opposite Direction	VEH #1 WAS TRAVELLING N/B ON NORTH OLD GLEBE ROAD APPROACHING NORTH RICHMOND STREET. VEH #2 WAS TRAVELLING S/B ON NORTH OLD GLEBE ROAD AND HAD JUST PASSED NORTH RICHMOND STREET. THE INTERSECTION OF NORTH OLD GLEBE ROAD AND NORTH RICHMOND STREET IS ON A SLIGHT GRADE AND A CURVE. AS EACH VEHICLE CONTINUED IN THEIR RESPECTIVE DIRECTIONS VEH #1'S VEHICLE CROSSED OVER THE DOUBLE YELLOW LINE. THE DRIVER SIDE CORNER OF VEH #1 STRUCK THE CENTER OF VEH #2 AS A RESULT.	20. Motor Vehicle In Transport	1. On Roadway	No Injury (O)	CR-6743S (Arlington County)	6743	N. RICHMOND STREET
143365331	11/29/2014	7:15	Sat	3. Head On	VEHICLE 2 WAS NORTHBOUND ON N. GLEBE RD., APPROACHING THE ON-RAMP TO MILITARY RD. THE VEHICLE RAN OFF THE ROAD, LEAVING BEHIND SKID MARKS ON THE ROADWAY AND A TRAIL OF TIRE MARKS THROUGH THE GRASS INTO THE TREELINE. THE VEHICLE WAS FOUND ABANDONED. THE REGISTERED OWNER OF VEHICLE 2 WAS CONTACTED VIA 703-517-3780. THE REGISTERED OWNER DECLINED TO COMMENT ON WHO WAS DRIVING THE VEHICLE AND HOW THE VEHICLE WAS ABANDONED IN THE TREELINE. HE ONLY WISHED TO GAIN INFORMATION IN HOW TO CLAIM HIS VEHICLE FROM THE POLICE IMPOUND LOT.	2. Trees	1. On Roadway	No Injury (O)	CR-6743N (Arlington County)	6743	MILITARY RD. ON-RAMP
171455043	5/7/2017	0:51	Sun	9. Fixed Object - Off Road	VEHICLE #1 WAS TRAVELING SOUTHBOUND ON NORTH GLEBE ROAD APPROACHING OLD GLEBE ROAD WHEN A DEER RAN OUT IN FRONT OF IT. THE DRIVER SWERVED TO THE RIGHT AND STRUCK THE UNDERPASS OF OLD GLEBE ROAD.	7. Tunnel, Bridge, Underpass, Culvert, etc.	2. Shoulder	No Injury (O)	VA-120E	120	CHAIN BRIDGE ROAD
172515157	9/8/2017	10:10	Fri	2. Angle	VEHICLE #2 WAS HEADED NORTH ON N OLD GLEBE RD AT THE INTERSECTION WITH N RICHMOND ST. VEHICLE #1 WAS HEADED SOUTH ON N OLD GLEBE RD. THE DRIVER OF VEHICLE #1 WAS LOOKING AT HER GPS DEVICE AND GOT CONFUSED WITH THE INTERSECTION. VEHICLE #1 VEERED INTO THE ONCOMING LANE OF TRAVEL AND STRUCK VEHICLE #2 HEAD ON.	20. Motor Vehicle In Transport	1. On Roadway	Non-incapacitating Injury (B)	CR-6743N (Arlington County)	6743	N RANDOLPH ST
181225353	5/2/2018	19:18	Wed	2. Angle	VEHICLE #2 WAS SLOWING TO MAKE THE LEFT TURN ONTO THE RAMP TO N GLEBE RD. VEHICLE #2 CROSSED THE DOUBLE YELLOW LINE AND ATTEMPTED TO PASS VEHICLE #2 ON THE LEFT. VEHICLE #2 STUCK VEHICLE #1.	20. Motor Vehicle In Transport	1. On Roadway	No Injury (O)	CR-6743S (Arlington County)	6743	OLD GLEBE
183185348	11/14/2018	9:26	Wed	1. Rear End	VEHICLE 2 WAS TRAVELING NORTHBOUND ON N. GLEBE ROAD FROM THE EXIT RAMP OF MILITARY ROAD. VEHICLE 2 DRIVER WAS SLOWING AND FURTHERMORE PREPARING TO STOP FOR A VEHICLE THAT HAD CUT HER OFF. VEHICLE 1 WAS TRAVELING BEHIND VEHICLE 2 AND ATTEMPTED TO STOP SUBSEQUENT TO VEHICLE 2 SLOWING DOWN. VEHICLE 1 REAR ENDED VEHICLE 2 CAUSING SIGNIFICANT AND DISABLING DAMAGE TO VEHICLE 2. VEHICLE 1 SUSTAINED MINOR DAMAGE AND WAS DRIVABLE. THERE WERE NO INJURIES. THE DRIVER OF VEHICLE 1 WAS CITED FOR FOLLOWING TOO CLOSELY.	20. Motor Vehicle In Transport	1. On Roadway	No Injury (O)	SC-99052U Ramp 3B (Arlington County)	99052	MILITARY ROAD
192955500	10/22/2019	21:25	Tue	9. Fixed Object - Off Road	ON 10/22/19, AT APPROXIMATELY 2125 HOURS, A 2005 TOYOTA SEDAN BEARING VA TAGS- VTY02066 LOST CONTROL IN A CURVE ON N. GLEBE ROAD AND STRUCK A GUARD RAIL. THE VEHICLE WAS DRIVEN BY SHRINAL PAREKH, WHO WAS THE SOLE OCCUPANT AND THE VEHICLE SUSTAINED DISABLING DAMAGE. MS. PAREKH STATED SHE LEFT MARYMOUNT UNIVERSITY AND WAS TRAVELING HOME TO STAFFORD WHEN SHE LOST CONTROL OF HER VEHICLE. MS. PAREKH STATED SHE BELIEVED SHE WAS TRAVELING APPROXIMATELY 30 MPH AND MAY HAVE SLIGHTLY TRAVELED OFF THE ROAD ONTO GRAVEL. BEFORE SHE LOST CONTROL BUT SHE WAS UNSURE. IN ADDITION, SHE STATED SHE WAS AWARE THAT IT HAD BEEN RAINING THROUGHOUT THE DAY. THE ONLY ISSUES MS. PAREKH MENTIONED ABOUT HER VEHICLE WAS THE BRAKES. MS. PAREKH COMPLETED A WRITTEN STATEMENT WHICH WAS SUBMITTED TO RECORDS. MEDICS CHECKED MS. PAREKH AND SHE WAS RELEASED AT THE SCENE. MS. PAREKH WAS ISSUED A WARNING FOR FAIL TO MAINTAIN PROPER CONTROL. HER VEHICLE WAS TOWED BY REDMAN'S TO THEIR LOT AND SHE WAS PROVIDED THEIR BUSINESS CARD AND THE CASE NUMBER.	28. Ran Off Road	2. Shoulder	No Injury (O)	CR-6743N (Arlington County)	6743	MILITARY ROAD
201145124	4/22/2020	19:33	Wed	9. Fixed Object - Off Road	VEHICLE 1 WAS DRIVING NORTH ON MILITARY RD. AT A HIGH RATE OF SPEED. DRIVER 1 LOST CONTROL OF THE VEHICLE AND DROVE ACROSS OLD GLEBE RD AND OFF OF THE ROADWAY. VEHICLE 1 ROLLED OVER MULTIPLE TIMES DOWN AN EMBANKMENT AND ONTO N. GLEBE RD. DRIVER 1 ADMITTED TO DRINKING ALCOHOL AND WAS CHARGED WITH DWI.	2. Trees	1. On Roadway	Incapacitating Injury (A)	CR-6743N (Arlington County)	6743	OLD GLEBE RD
201685211	6/16/2020	12:30	Tue	9. Fixed Object - Off Road	VEHICLE 1 WAS TRAVELING ON NORTH OLD GLEBE ROAD ATTEMPTING TO MAKE A LEFT TURN ONTO SOUTHBOUND MILITARY ROAD. DUE TO THE TRUCKS HEIGHT, VEHICLE 1 STRUCK A POWER LINE. THE POWER LINE THEN SWUNG DOWN AND STRUCK VEHICLE 2 IN THE FRONT CAUSING MINOR DAMAGE. THE INTERSECTION OF NORTH OLD GLEBE ROAD AND MILITARY ROAD WAS SHUT DOWN FOR AN EXTENDED PERIOD OF TIME.	15. Other Fixed Object	1. On Roadway	No Injury (O)	CR-6743S (Arlington County)	6743	MILITARY ROAD

Latitude	Longitude	TREDS Jurisdiction	Route Or Street Name	Crash Severity	Pedestrian Fatality Count	Non Pedestrian Fatality Count	Pedestrian Injury Cnt	Non Pedestrian Injury Count	Work Zone Related
38.926060	-77.122100	Arlington County	N. GLEBE ROAD	property damage crash	0	0	0	0	2. No
38.926260	-77.121850	Arlington County	4000 N. OLD GLEBE ROAD	property damage crash	0	0	0	0	2. No
38.925310	-77.122550	Arlington County	N. GLEBE RD.	property damage crash	0	0	0	0	2. No
38.925990	-77.122060	Arlington County	NORTH GLEBE ROAD (4400 BLOCK)	property damage crash	0	0	0	0	2. No
38.926270	-77.121800	Arlington County	N OLD GLEBE RD	injury crash	0	0	0	0	1. 2. No
38.925320	-77.122660	Arlington County	MILITARY	property damage crash	0	0	0	0	2. No
38.925940	-77.121970	Arlington County	N. GLEBE ROAD	property damage crash	0	0	0	0	2. No
38.926220	-77.121870	Arlington County	4525 NORTH GLEBE ROAD	property damage crash	0	0	0	0	2. No
38.925430	-77.122620	Arlington County	N. GLEBE RD	injury crash	0	0	0	0	3. 2. No
38.925430	-77.122590	Arlington County	NORTH OLD GLEBE ROAD	property damage crash	0	0	0	0	2. No