NPS response to NCPC Requests and Encouragements from July 9, 2026, Commission Action Report

October 2, 2026

1. Height Justification

Requests the applicant provide a justification for the project's height when the project returns to NCPC for final approval.

Response: The proposed Triumphal Arch is the celebratory contribution of the semiquincentennial generation of Americans. The Arch will serve as a ceremonial gateway to the Nation's Capital, and an important moment of passage either into the District of Columbia, or Arlington National Cemetery; the arch is the fitting architectural incarnation of the site *qua* location for monumental and national architecture. Its proposed location, Memorial Circle, despite being a major linkage and gateway into our Nation's Capital, is currently uncelebrated, and unadorned, which will be remedied through the design of the Arch.

This Arch takes precedent from the long line of triumphal arches throughout the history of Western Civilization. With its harmonious proportions and elegant aperture, the center opening of the arch is sized so as to preserve key historic views of the area. Previously considered smaller versions of the Arch, in which the central opening would be both shorter and narrower, were unable to preserve the view of the Custis-Lee Mansion from Memorial Bridge and the Lincoln Memorial from Memorial Avenue, and were thus rejected. A major aspect of the triumphal arch typologically is its status a portal; therefore, it is key that the Arch frames views and draws connections between the sacred places of our nation, forming a grand expression of entrance both to Arlington National Cemetery and to the District of Columbia.

Additionally, the Arch's design pays homage to the original McKim, Mead, and White concept for Memorial Circle, which included two monumental columns, each 166' tall. The Arch pays homage to this original intent, with the proposed Arch structure at the same height of 166,' but capped with a monumental statue of Lady Liberty above at the center.

At this critical junction between Washington, D.C., and Virginia, the Arch continues the tradition of significant monumental architecture along the National Mall, reinforcing the link between Washington D.C., the seat of our government, and

Arlington National Cemetery, where our Nation's Greatest Heroes have been laid to rest.

2. Pedestrian Safety & Traffic Signals

Encourages the applicant to consider fewer individual traffic signal poles should additional analysis warrant a reduction without compromising safety.

Response: Fifteen (15) proposed traffic signal posts were removed following a closer consideration of approach sight distance at each intersection. The evaluation identified locations where posts could be eliminated while maintaining adequate visibility consistent with applicable MUTCD guidance and AASHTO Green Book criteria. This process is further described in Section 5.3 of the attached memo, "Arlington Memorial Circle: Transportation Access, Safety, and Operations Analysis.pdf." The traffic signal posts eliminated are shown in Figures 23–26.

3. Vehicular Network Impacts

Requests the applicant provide, as part of the final submission, updated information regarding the potential off-site impacts to the vehicular transportation network in response to comments from the District Department of Transportation and Arlington County, Virginia.

Response: In response to this request, the traffic analysis was expanded beyond Arlington Memorial Circle to assess potential impacts on roads and intersections outside the original study area. Section 3.1 of the attached memo, "Arlington Memorial Circle: Transportation Access, Safety, and Operations Analysis.pdf," details this expanded area. Additionally, Section 3.5.2 and Figures 14 and 15 show projected traffic volume changes on nearby routes resulting from the proposed traffic patterns.

Requests the applicant continue to work with the Federal Highway Administration, District Department of Transportation, Arlington County, and other agencies as appropriate, regarding the proposed changes and impacts to the surface transportation network.

- Response: The NPS will continue to work with federal, state, and local transportation agencies regarding changes to the network, as appropriate based on

anticipated impacts. This coordination will be conducted in accordance with standard processes and will ensure collaboration with the responsible agencies to obtain any permits required for temporary construction impacts, such as detours, and permanent modifications to their infrastructure, such as the coordination of traffic signal infrastructure and operations.

4. Loading/Unloading & Parking

Requests the applicant provide details regarding pick-up, drop-off, and loading locations, and coordinate with Arlington National Cemetery prior to final review regarding the use of Memorial Avenue and the cemetery parking garage for arch visitor parking.

Response: Further details on parking, pick-up, drop-off, and loading locations have been provided in Section 5.2 of the attached memo, "Arlington Memorial Circle: Transportation Access, Safety, and Operations Analysis.pdf." The curb use plan for Memorial Ave is shown in Figure 22. The NPS has coordinated with Arlington National Cemetery (ANC) to ensure that impacts to funeral processions and ANC operations are minimized, and will continue such coordination throughout design and construction. Please see the attached correspondence, “2026.08.12 ANC Correspondence.pdf.”

5. Aviation Safety

Requests the final plans include any navigational or safety lighting as required by the Federal Aviation Administration.

Response: On September 18, 2026 the FAA provided NPS with a “DETERMINATION OF NO HAZARD TO AIR NAVIGATION” finding for the Triumphal Arch. See attached document (DET 2026-AEA-8628-OE.pdf). Section 7, on page 7 provides the following condition for safety lighting; “*The proposed structure should be appropriately marked/lighted with a non-standard eternal flame and continuously floodlighted by searchlight projectors installed at three or more equidistant points around the base of the structure. The searchlight projectors should provide an average illumination of at least 15 foot-candles (161.46 lux) over the top one-third of the structure, in accordance with FAA AC 70/7460-1N, Paragraph 4.5, to make it more conspicuous to airmen.*”

The attached lighting design (DC Arch Lighting Design.pdf) is responsive to this requirement. Additionally, a rendering of the eternal flame is also provided in the attached image (Torch Conceptual Rendering.png).

Advises the applicant that if, subject to the full Federal Aviation Administration study, any component of the project design must be altered, the updated design must be submitted to the Commission for review.

Response: This is noted.

6. Viewsheds & Historic Resources

Requests the applicant continue to consult as necessary with the federal agencies and the Section 106 consulting parties, to continue to explore ways to minimize impacts to historic resources, and to determine appropriate mitigation to resolve adverse effects, to be included in a Programmatic Agreement.

Response: The NPS continues to work through the Section 106 process to explore ways to minimize impacts to historic properties, and to determine appropriate mitigation to resolve adverse effects in consultation with federal agencies and consulting parties. NPS will provide NCPC with a decision record documenting the completed Section 106 and NEPA evaluations prior to the Commission's final action.

7. Project Design and Materials

Requests that, prior to final review, the applicant provide information about the final granite cladding selection.

Response: Several stone cladding options remain under consideration. These include Sierra White from Raymond, California; Bethel White from Bethel, Vermont; Barre Granite from Barre, Vermont; and Carrara Marble from Carrara, Italy. To ensure fair and competitive pricing, a final selection has not yet been made at this phase in design.

Requests the applicant submit a narrative describing the proposed lighting concept and its relationship to the Lincoln Memorial and Arlington National Cemetery that includes relevant details on the proposed lighting stanchions and any other site lighting, including illumination levels proposed (foot lamberts, or other measure) to understand the relative

brightness of the monument as compared to other national monuments and memorials, and to protect the lighting hierarchy of the National Mall.

> Response: Please see the attached lighting design (DC Arch Lighting Design.pdf) for relevant details. Lighting studies of other nearby monuments and memorials were also conducted and provided in the attached for comparison.

8. Project Coordination

Requests updates on the Section 106 process and the National Environmental Policy Act (NEPA) evaluation process, as completion of both processes is required prior to the Commission's final action.

> Response: The NPS will provide NCPC with a decision record documenting the completed Section 106 and NEPA evaluations prior to the Commission's final action.

United States Department of the Interior

NATIONAL PARK SERVICE
National Capital Region
1100 Ohio Drive, S.W.
Washington, D.C. 20242

IN REPLY REFER TO:

August 12, 2026

Mr. John G. Knapp
Superintendent
Arlington National Cemetery
1 Memorial Avenue
Arlington, VA 22211

Dear Mr. Knapp,

As part of ongoing collaboration, the National Park Service (NPS) has held several meetings with Arlington National Cemetery staff, both virtually and on-site on June 3rd. These discussions addressed visitor use of the Cemetery parking structure for access to the Triumphal Arch, adjustments to traffic patterns during construction, and anticipated noise impacts related to construction activities. The National Park Service remains committed to ongoing coordination and values the collaboration and expertise your staff have contributed to the planning of this complex project.

Project Background and Construction Timeline

Construction of the Triumphal Arch is planned to occur over approximately two to three years and will proceed in multiple phases. Early work will include site preparation, excavation, installation of temporary utilities, and establishment of fencing, erosion and sediment controls, stormwater management measures, and staging areas. Subsequent phases will involve installation of hundreds of deep foundation elements, including concrete piles, which may generate intermittent noise and require careful coordination with Arlington National Cemetery operations.

Throughout the construction timeline, certain circulation elements, such as crosswalks, signage, and temporary access routes, will be modified. Traffic modeling completed to support this project anticipates high pedestrian demand and considers strategies to improve safety and minimize disruptions, including potential adjustments to vehicular movements in the immediate vicinity.

From our coordination with cemetery staff, the NPS understands that the cemetery's existing parking facility is underutilized and has the capacity to accommodate additional visitor vehicle parking. In addition, the NPS expects a need for motorcoach parking and is planning for that to occur along Memorial Avenue, which is also periodically used as overflow motorcoach parking

for the Cemetery. As the project advances, the NPS looks forward to continued coordination with Arlington National Cemetery to identify opportunities to better manage and distribute motorcoach parking demand along Memorial Avenue. Potential strategies may include encouraging visitation to the Triumphal Arch during off-peak periods for cemetery visitation and promoting alternative access for tour groups, such as walking to the site from designated motorcoach pick-up and drop-off locations on the National Mall or using the Arlington Cemetery Metro Station.

Additionally, the NPS completed a noise analysis for the loudest anticipated construction activity associated with the Triumphal Arch. The analysis modeled a one-second impulsive noise event from diesel impact pile driving at Memorial Circle and evaluated sound levels across the surrounding study area, including Arlington National Cemetery. The purpose was to determine whether noise could reach or exceed 57 dB, the regulatory threshold for areas where quiet is essential, such as cemeteries. The construction proposal includes a noise-reducing barrier, such as a noise curtain or similar measure. With this mitigation in place, the noise analysis indicates that noise levels within Arlington National Cemetery are unlikely to exceed the 57 dB threshold.

Commitment to Operational Continuity

The NPS is committed to ensuring that the Cemetery's daily mission, particularly funeral honors, family visitation, and ceremonial activities, can continue uninterrupted during construction. We will maintain regular coordination with your staff and adjust construction activities when needed to preserve the dignity and solemnity of the grounds.

Thank you again for your continued partnership. Please feel free to contact Tammy Stidham via email at tammy_stidham@nps.gov or 202-619-7474 if you need additional information or have questions.

Sincerely,

Frank Lands
Deputy Director for Operations
National Park Service

For

Jennifer Nersesian
Regional Director
National Capital Region
National Park Service

Arlington Memorial Circle: Transportation Access, Safety, and Operations Analysis

Prepared for the National Park Service by the
U.S. Department of Transportation Volpe Center
August 2026

1. Background and Purpose

This report provides a traffic and safety evaluation of proposed pedestrian circulation improvements around the Arlington Memorial Circle (AMC). The proposed pedestrian circulation improvements address existing pedestrian safety and circulation challenges around AMC, as well as potential future pedestrian circulation patterns related to the use of the site for the Triumphal Arch to be constructed in the central island.

The purpose of this report is to update previously completed traffic impact analyses related to the proposed pedestrian circulation improvements and to provide additional analysis and information, as needed, to support evaluation of the proposed improvements. In June 2026, new traffic volume data was collected around the AMC and nearby intersections to better model and evaluate potential traffic impacts to the transportation network. The previous traffic evaluation report, dated May 2026, contained traffic volume data from 2019 that was adjusted using data collected in June 2026. The new traffic data provides a current assessment of traffic evaluation and impacts, and responds to recent questions and requests. This report also expands the study area to incorporate nearby intersections and roadway segments, providing a more comprehensive analysis of the surrounding transportation network associated with the proposed pedestrian circulation improvements and construction of the Triumphal Arch.

The existing pedestrian demand at AMC demonstrates a current need for protected pedestrian crossings, independent of the proposed changes to the site. The current roadway geometry poses multiple safety challenges between pedestrians, bicyclists, and vehicles, including indirect pedestrian routes that encourage unsafe crossing attempts along natural desire lines; uncontrolled crosswalks that rely on driver yielding compliance; and unconventional traffic operations that may be confusing for motorists who are unfamiliar with the site. The proposed transportation improvements address these longstanding deficiencies by providing eight fully protected and signalized crosswalks, including four new pedestrian crossing routes. These crossings eliminate conflicting movements, improve the pedestrian connection between the north side of Arlington Memorial Bridge (AMB) and the Mount Vernon Trail (MVT), and simplify vehicle operations. Existing pedestrian volume counts demonstrate crossing volumes exceeding 150 people during the peak hour, further reinforcing that protected signalized crossings are warranted to safely accommodate both existing users and future visitors. During periods of higher pedestrian visitation, the traffic signals will prioritize pedestrian movements and improve safety for the most vulnerable road users. During weekday commuter periods with lower pedestrian visitation, the traffic signals will support efficient vehicle throughout to help accommodate peak commuting traffic volumes.

The addition of the Triumphal Arch reinforces the existing need for protected pedestrian crossings by increasing pedestrian activity around the site. Alternative approaches for providing safe pedestrian access pedestrian access were also considered, including limiting pedestrian access to only the western side of AMC where traffic volumes are lower; constructing pedestrian tunnels under the roadways to avoid vehicle conflicts; and installing Rectangular Rapid Flashing Beacons (RRFBs) and Pedestrian Hybrid Beacons (PHBs) instead of conventional traffic signals. Ultimately, full signalization on both sides of the site was selected as the preferred option given the high level of current and future pedestrian activity; the visitor experience and anticipated pedestrian demand for safe, direct, and intuitive access from both sides of the site; the familiarity and predictability of conventional traffic signals for all roadway users; and the ability to accommodate existing traffic operations with minimal operational impacts.

The traffic operations analysis found that the only recurring congestion in the study area occurs during the weekday morning commuter peak period along Washington Boulevard at the merge point with the George Washington Memorial Parkway (GWMP) ramp, south of AMC. National Park Service (NPS) experience at comparable memorials indicates the Triumphal Arch will generally attract the highest volumes of visitors during early afternoon, weekends, and holidays, when vehicular traffic demand through AMC is substantially lower. The analysis further concluded that both existing and future traffic delay are driven by the downstream weave condition south of AMC at the Washington Boulevard/GWMP ramps, not by the proposed traffic signals or pedestrian circulation improvements. The weave condition leads to an average queue length of about 2,700 feet in the existing condition and is expected to maintain a length of about 3,000 feet in the future. This average queue length does not extend to the interchange with I-395, which is approximately 7,000 feet south of AMC.

The traffic operations analysis also found that vehicle queues originating from the proposed traffic signal at the Washington Boulevard northbound approach to AMC are expected to extend about 270 to 470 feet and not extend into the Washington Boulevard/GWMP ramp weave area. Therefore, the proposed traffic signals are not expected to exacerbate existing traffic congestion, and the congestion that already occurs today will remain localized without affecting the broader transportation network.

The proposed pedestrian crosswalks and median island areas are expected to regularly accommodate high volumes of pedestrians. The eastern median island, with over 2,000 square feet (sf) of waiting area, can accommodate more than 2,400 pedestrians per hour while still providing more than 25 sf of space per pedestrian. Although pedestrians may have to adjust their path to avoid conflicts and their walking speed and ability to maneuver may be slightly restricted, this level of space provides adequate room for pedestrians to safely maneuver through the crosswalks, triangular median refuge islands, and into the site of the Triumphal Arch.

Lastly, dedicated space along Memorial Avenue will serve pick-up/drop-off activities, staff parking, bus loading and unloading, and delivery and service operations. Memorial Avenue is a 60 foot wide roadway, which can sufficiently accommodate activities along the curb while maintaining two-way traffic. There is sufficient parking available for personal vehicles at the Arlington National Cemetery (ANC), while motorcoaches will continue to use ANC or Memorial Ave in the case of overflow. Close coordination with the ANC related to parking and access will continue as the project moves forward.

2. Proposed Design Plan

The transportation design plan remains generally consistent with the previously submitted approach. The design includes four (4) new signalized intersections with eight (8) signalized pedestrian crossings. This configuration enhances pedestrian circulation and improves visitor safety by providing controlled crossing opportunities throughout the project area. The signalized intersections provide fully protected pedestrian crossings and restricts permissive turning movements and conflicting pedestrian and vehicle movements. Additionally, all pedestrian signals will operate with automated pedestrian detection limiting the need for people to manually push a button to request a pedestrian signal. This operational approach will prioritize pedestrian movements during periods with expected high visitation to the Triumphal Arch and lower vehicular traffic volumes, such as weekends and holidays, while prioritizing vehicle movements during periods of high traffic volumes, such as the weekday morning commuting period.

Additional benefits result from the signalization of AMC by addressing several existing safety concerns. First, pedestrian and bicycle connections between the north side of AMB and the MVT will be much more direct via the two crosswalks on the eastern side of AMB, which eliminates the need for users to circulate all of AMC to cross the bridge. This will help discourage the unsafe pedestrian and bicycle desire path from the north side of AMB to MVT across the lanes of GWMP north of AMB. The signals will also allow for the removal of the short Arlington Boulevard left-most lane exiting AMC. The lane quickly tapers to reduce the number of travel lanes from three to two lanes before the crosswalk. This lane was added to manage conflicts between northbound vehicles coming from

the traffic circle and AMB. This geometry is unconventional and can be confusing for people unfamiliar with the intersection.

While the initial signal design included 32 traffic signal posts to be located throughout AMC, that number has been further refined and reduced to 17 in the current proposal. The plan may be adjusted through detailed design phases which will continue to optimize the traffic signal placement for safety and operations, while minimizing the number of posts where feasible. The design will maintain all Manual on Uniform Traffic Control Devices (MUTCD) requirements for traffic signal locations within the driver's cone of vision and location of pedestrian signal indications.

3. Updated Traffic Volume and Crossing Data

The traffic analysis was refined with updated vehicle, pedestrian, and bicycle traffic volume data and an expansion of the study area. These updates allowed for a more comprehensive evaluation of traffic operations and potential impacts to the broader transportation network.

New traffic volume data was collected throughout the study area between Wednesday, June 10, and Tuesday, June 17, 2026. Data collection included intersection turning movement counts and directional traffic volumes along key roadway segments to and from AMC, including AMB, Washington Boulevard, Arlington Boulevard, and Memorial Avenue. This data was used to characterize traffic patterns and variations in travel demand by time of day and day of week.

3.1 Expanded Study Area

The study area was expanded to the south and west to evaluate potential impacts to the broader transportation network resulting from concerns that projected vehicle queues extended beyond the original study limits. Previous iterations of the traffic analysis only included AMC. This analysis was expanded to 4 additional approaches in the larger transportation network. The study area is shown in Figure 1 and includes the following areas and intersections:

1. AMC, including all surrounding approaches
2. Washington Boulevard at GWMP Ramps
3. Memorial Avenue at Richmond Highway/GWMP Off-Ramp
4. Memorial Avenue at Richmond Highway SB On-Ramp
5. Richmond Highway NB Off-Ramp at GWMP SB Off-Ramp

Figure 1: Study Area Intersections



3.2 Updated Existing Traffic Volume

The Existing (2026) Scenario traffic volumes at the study area intersections are shown below in Figure 2, Figure 3 through Figure 4 during the weekday a.m. peak, weekday p.m. peak, and Saturday midday peak hours.

Figure 2: Existing (2026) Vehicular Traffic Volumes, Weekday a.m. Peak Hour

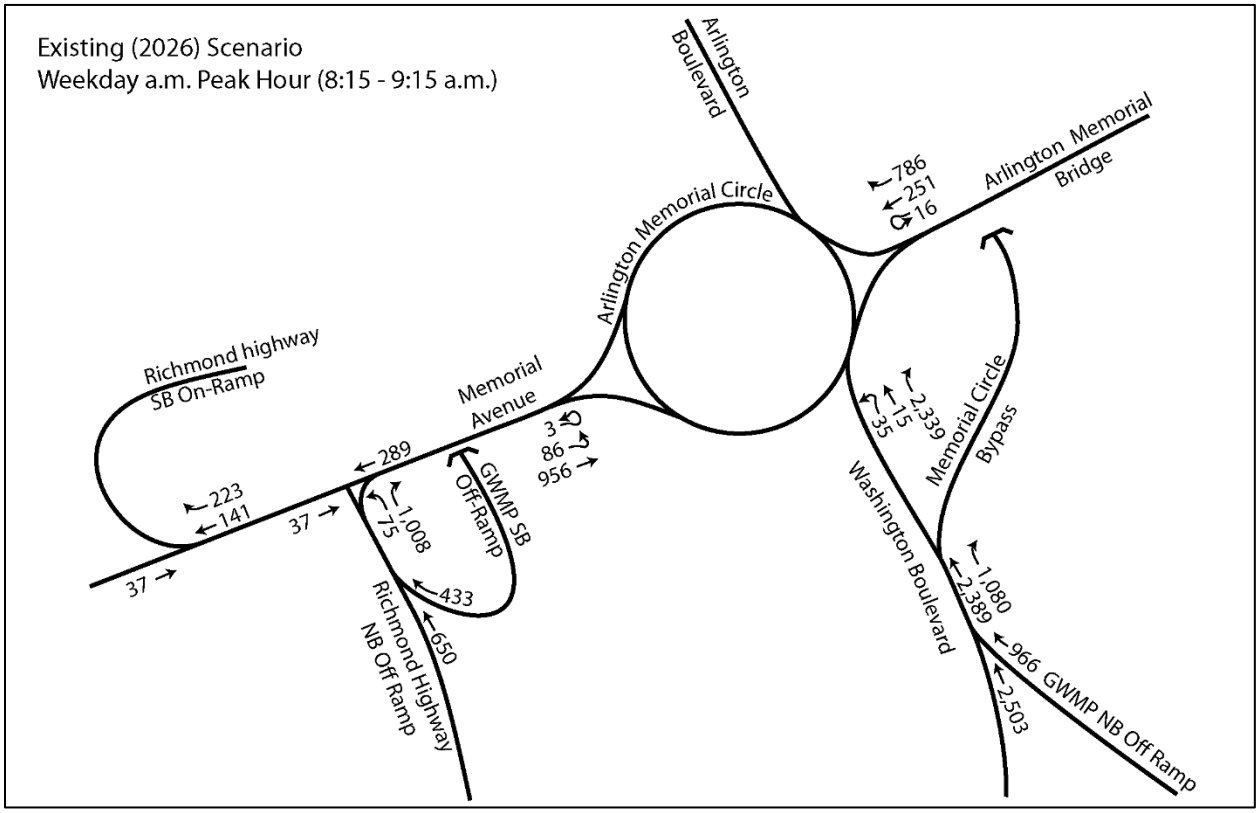


Figure 3: Existing (2026) Vehicular Traffic Volumes, Weekday p.m. Peak Hour

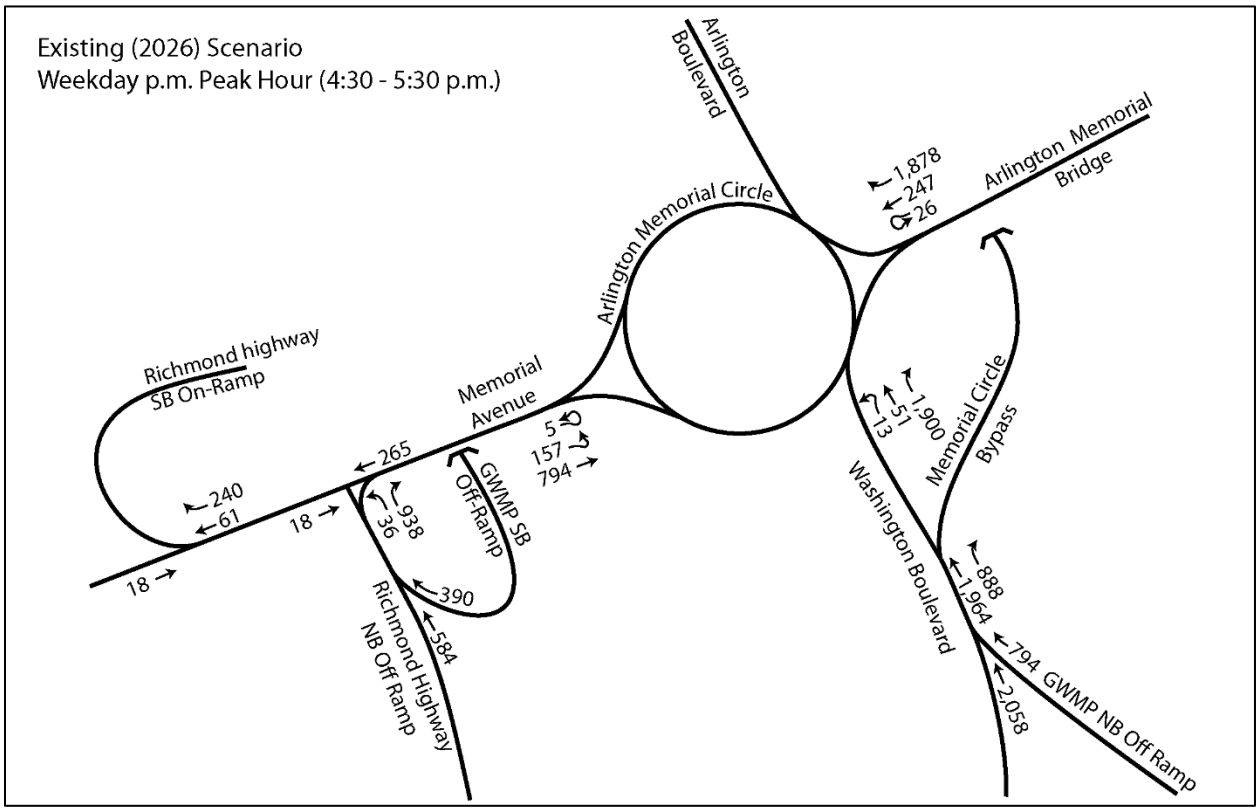
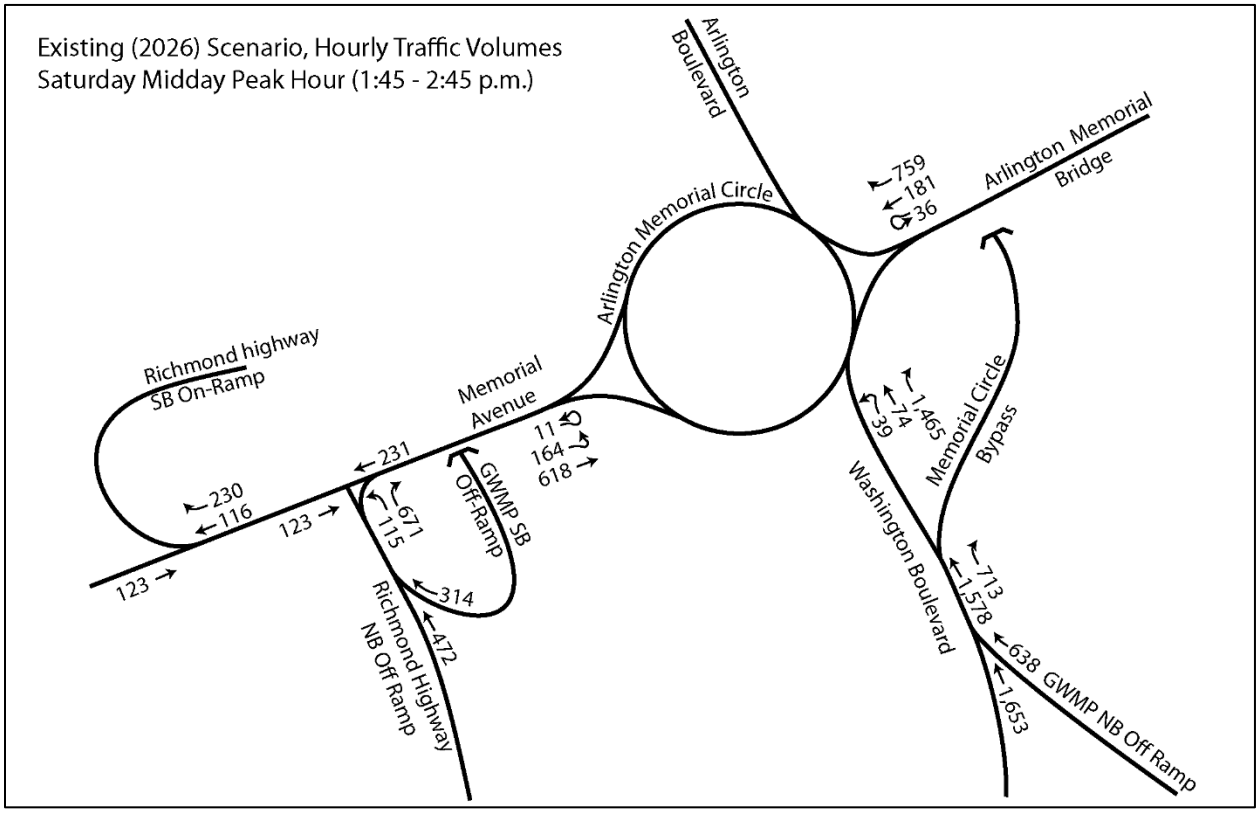


Figure 4: Existing (2026) Vehicular Traffic Volumes, Saturday Midday Peak Hour



Throughout AMC, the highest traffic volumes occur at the Washington Boulevard northbound right turn movement and the Memorial Avenue eastbound through movement. Traffic from Washington Boulevard and from Memorial Avenue combine into traffic traveling over the AMB towards Washington D.C. The hourly traffic volume throughout one week is shown in Figure 5. The highest volume occurs during the morning commuting period with a second peak occurring during the afternoon commuting period. The morning commuting period is shorter with a higher peak exceeding 3,000 vehicles per hour, while the afternoon commuting period is longer, extending about 4 hours between 2:00 to 6:00 p.m, with less concentrated volumes.

Figure 6 shows the hourly traffic volumes along the AMB in the westbound direction, which is significantly lower with a peak of under 2,500 vehicles per hour. Additionally, the westbound direction does not have a morning peak. Figure 7 shows the hourly traffic volumes along Washington Boulevard in the northbound direction approaching AMC. This generally mirrors traffic volumes along the eastbound direction of AMB.

Figure 5: Existing (2026) Vehicular Traffic Volumes, AMB Eastbound Hourly Traffic Volume

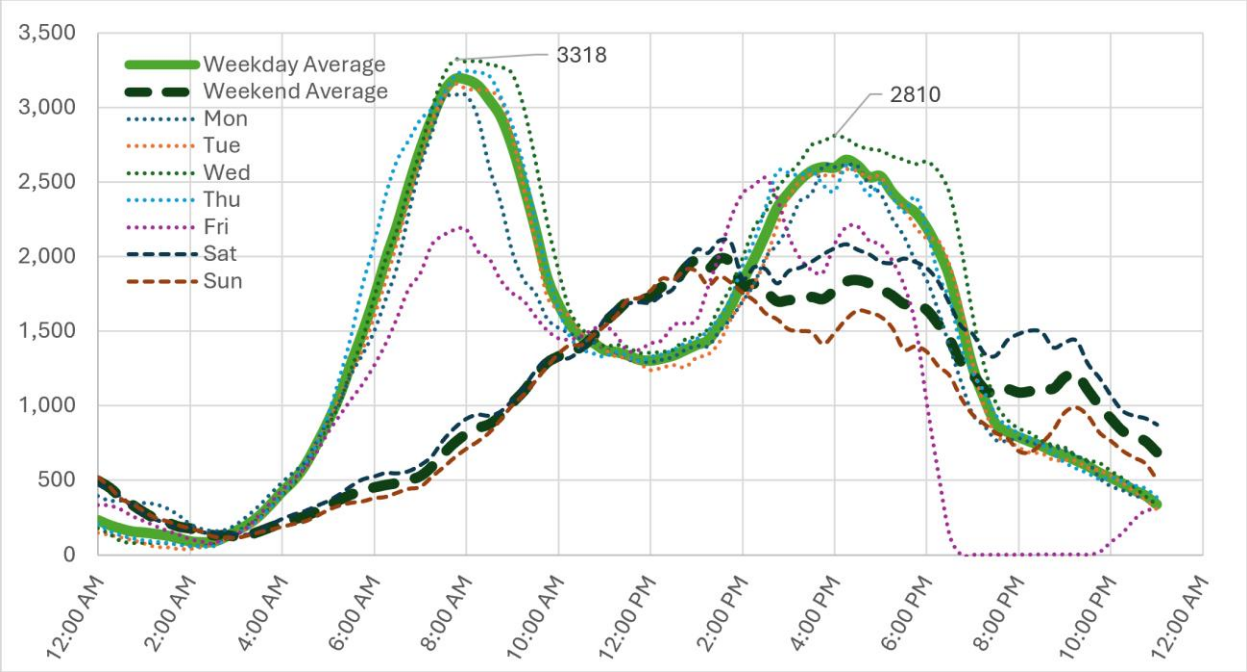


Figure 6: Existing (2026) Vehicular Traffic Volumes, AMB Westbound Hourly Traffic Volume

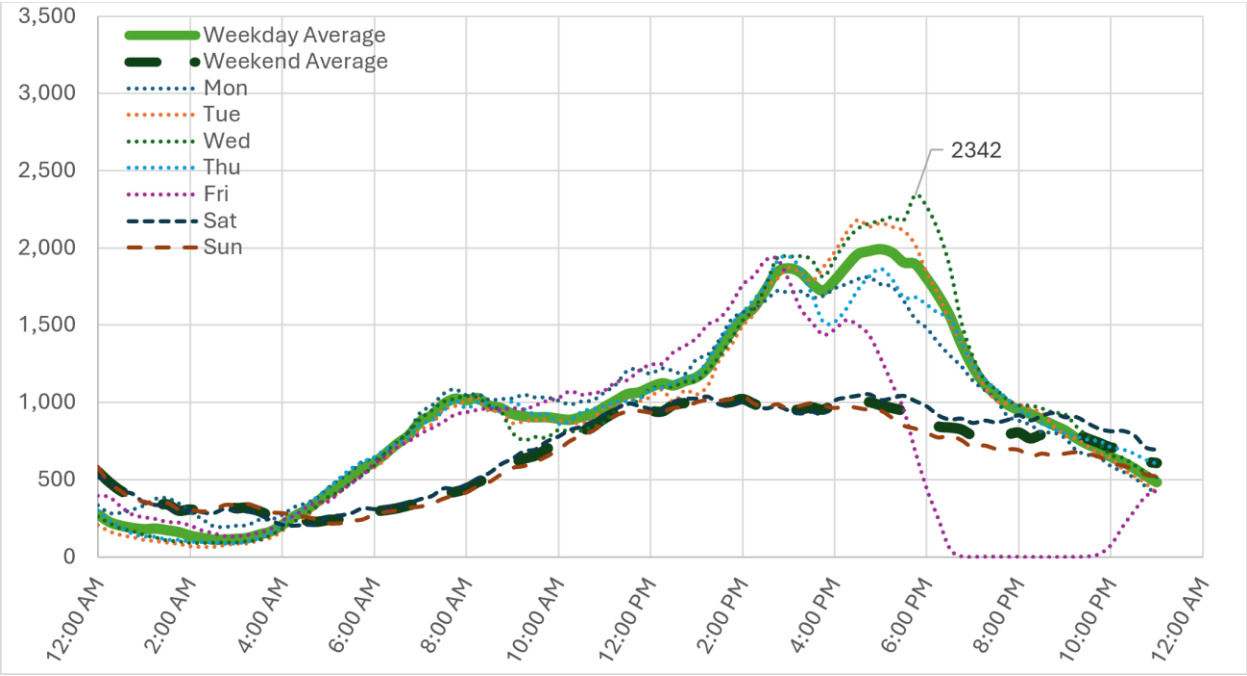
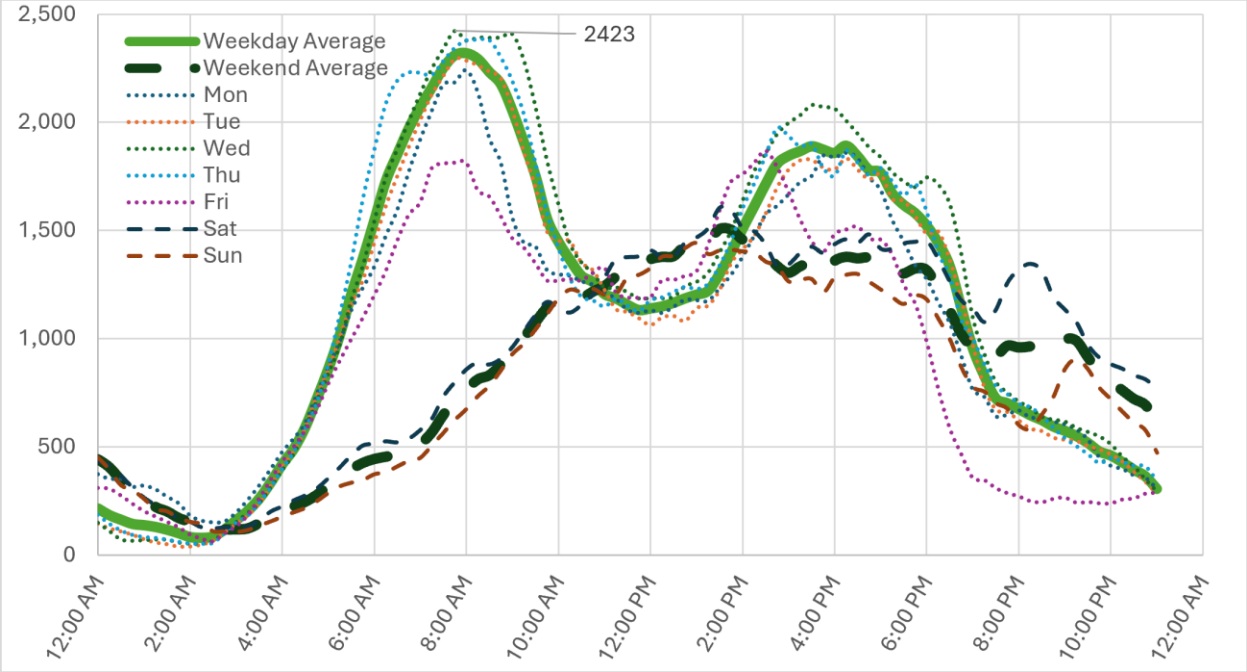


Figure 7: Existing (2026) Vehicular Traffic Volumes, Washington Blvd Northbound Hourly Traffic Volume



3.3 Pedestrian and Bicycle Traffic Volumes

The state of Virginia maintains the Virginia Statewide Active Transportation Count Network, including bicycle and pedestrian counters owned by Arlington County, which provide continuous pedestrians and bicycle data collection along AMB. This data is highly useful to understand the trends in behavior and volume of people walking and biking along the AMB. Between March and October, as shown in Table 1, daily users regularly exceed 1,000 people per day on both the northern and the southern sides of AMB. The southern sidewalk accounts for about 60% of the total users and the northern side is used by about 40% of the users. Pedestrians also make up more of the total volume of users with about 57% of all people walking over the bridge and 43% of people biking over the bridge.

Table 1: Average Daily Pedestrian and Bicycle Volume over AMB by Month

Month (2025)	North Side Average Daily Pedestrians	North Side Average Daily Cyclists	North Side Average Daily Users	South Side Average Daily Pedestrians	South Side Average Daily Cyclists	South Side Average Daily Users
January	329	216	545	291	289	580
February	350	272	621	430	408	838
March	638	439	1,077	1,063	748	1,811
April	675	470	1,145	873	779	1,651
May	609	498	1,107	1,034	747	1,781
June	495	455	950	2,355	691	3,046
July	521	517	1,038	507	750	1,256
August	703	536	1,239	820	829	1,648
September	670	514	1,184	970	786	1,756
October	671	490	1,162	998	676	1,674
November	443	390	833	536	514	1,050
December	260	295	556	320	414	734

The counters also demonstrate the daily variation in pedestrian and bicycle volumes, with volumes varying due to the weather and on weekdays vs weekend. Weekend days have about 30% more people walking and biking over the AMB. This contrasts with vehicular volumes, which tend to be higher on weekdays compared to weekends.

Concurrent with the traffic volume data, pedestrian and bicycle data was also collected at the crosswalks around AMC. During the updated data collection, about 0.6 inches of rain fell on Wednesday, June 10 and impacted the volume of pedestrians and bicyclists that were in the area. According to data at the counters, the number of people walking and biking along the bridge were down about 25 to 40% during rainy conditions relative to times when it was not raining. On Saturday, June 13, the weather was sunny without rain and the volume of people walking and biking represented a typical nice weekend in June on the corridor.

The existing pedestrian and bicycle volume during the weekday a.m., p.m., and Saturday midday peak hours are shown in Figure 8 and Figure 9.

Figure 8: Hourly Pedestrian and Bicycle Volumes at Washington Boulevard Crosswalk, Tuesday, June 16

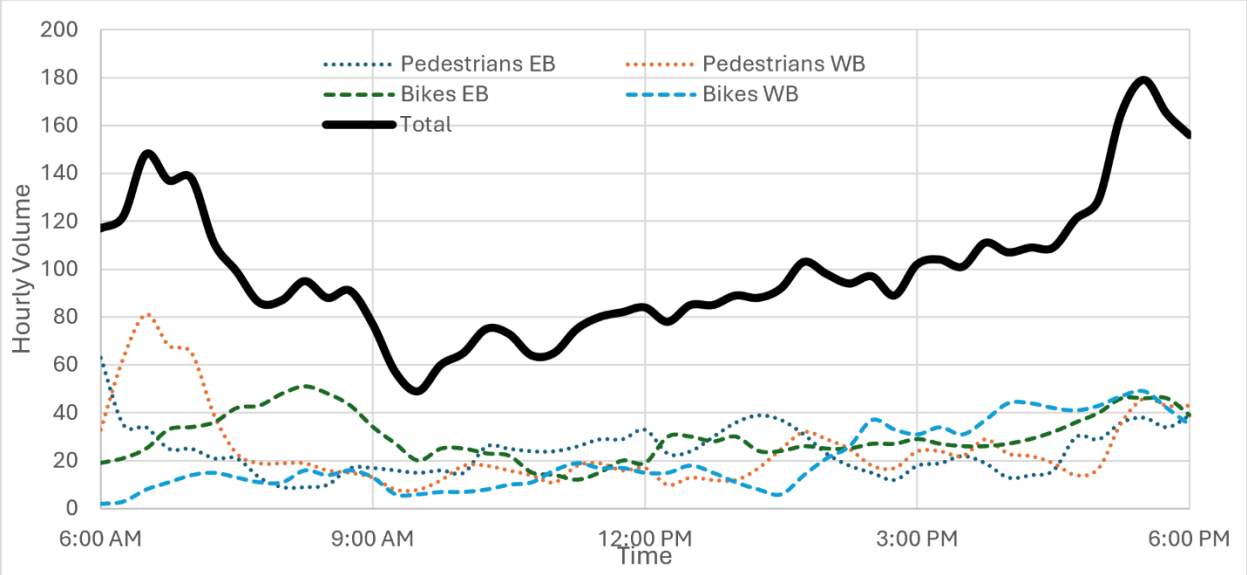
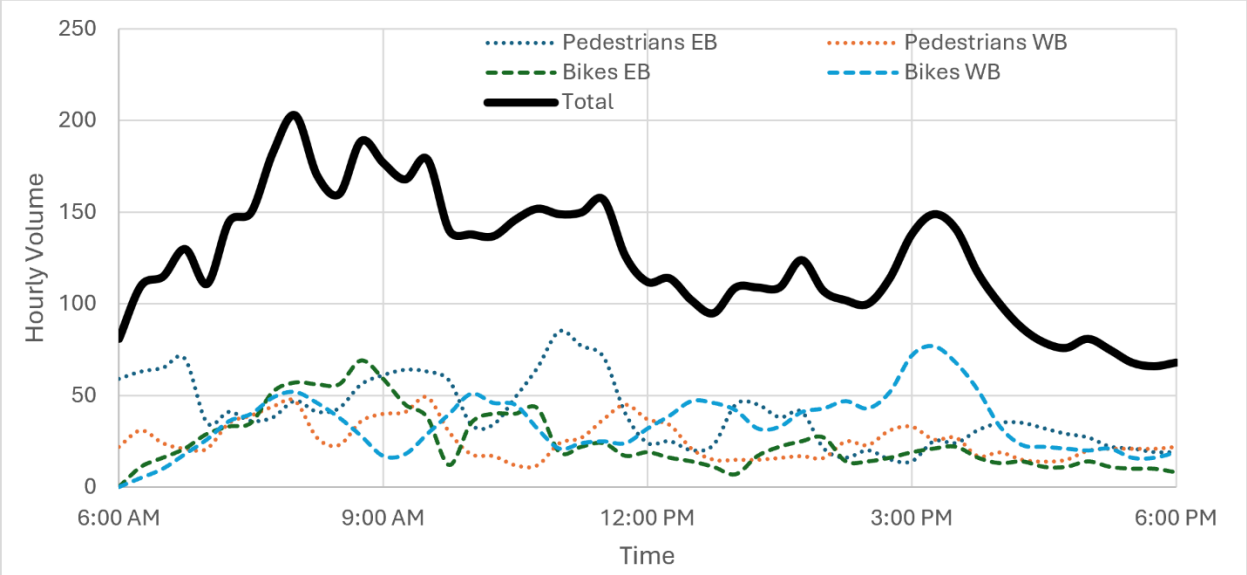


Figure 9: Hourly Pedestrian and Bicycle Volumes at the Arlington Boulevard Crosswalk, Saturday, June 13



3.4 Traffic Signal Warrant: Warrant 4, Pedestrian Volume

The MUTCD pedestrian signal warrant evaluates whether a crossing location experiences enough crossing activity to justify installing a full traffic control signal to allow adequate time for pedestrians to safely cross a street while also managing traffic efficiently. This analysis presents information that even without the Triumphal Arch, the two existing crosswalks across Washington Boulevard and Arlington Boulevard experience enough crossing demand to justify a signalized crossing. The MUTCD establishes two pedestrian warrants, a four-hour volume warrant, and a peak hour volume warrant. The figure from the MUTCD for the Pedestrian Four-Hour Volume and peak Hour Volume Warrants are shown in Figure 10.

Figure 10: MUTCD Warrant 4, Pedestrian Volumes Four-Hour and Peak Hour Volumes

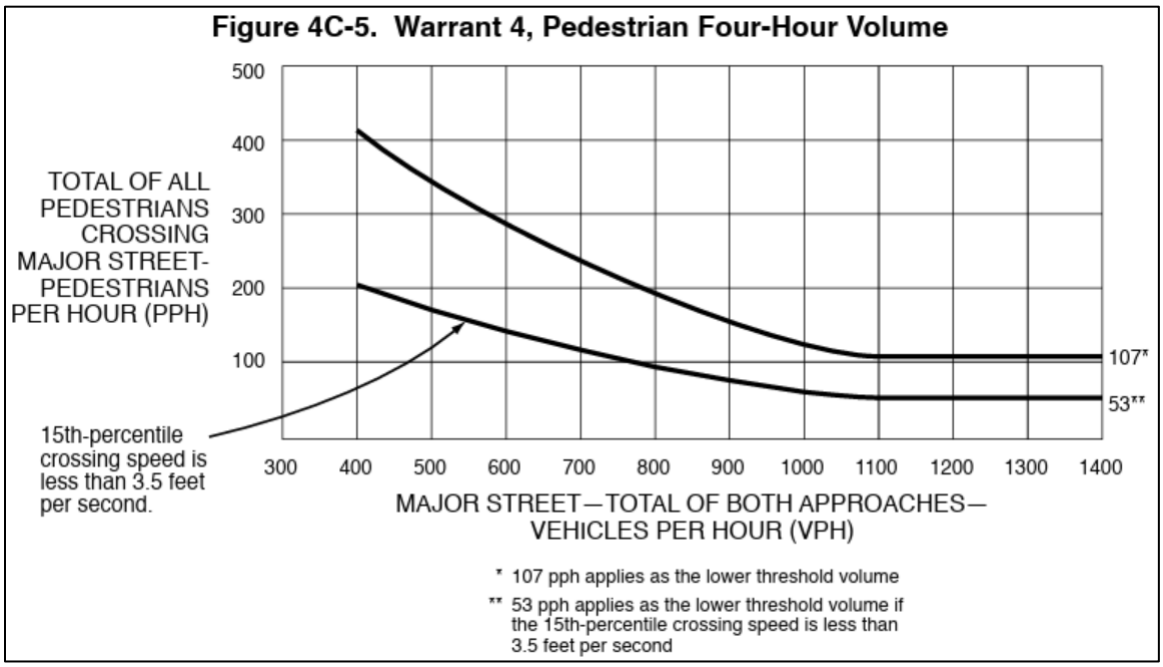


Figure 4C-6. Warrant 4, Pedestrian Peak Hour



* 133 pph applies as the lower threshold volume

** 66 pph applies as the lower threshold volume if the 15th-percentile crossing speed is less than 3.5 feet per second

Table 2: North Crosswalk at Arlington Boulevard – Four-Hour Warrant

Hour	Hourly Crossing Volume	Hourly Vehicle Volume	Warrant Satisfied?
Hour 1 – 11:15 a.m. – 12:15 p.m.	148	1,018	Yes
Hour 2 – 12:00 noon – 1:00 p.m.	113	1,076	Yes
Hour 3 – 1:30 – 2:30 p.m.	124	1,056	Yes
Hour 4 – 3:00 – 4:00 p.m.	138	1,045	Yes

Data from Saturday, June 13, 2026

Table 3: South Crosswalk at Arlington Boulevard – Four-Hour Warrant

Hour	Hourly Crossing Volume	Hourly Vehicle Volume	Warrant Satisfied?
Hour 1: 6:00 – 7:00 a.m.	117	1,442	Yes
Hour 2: 7:00 – 8:00 a.m.	138	2,010	Yes
Hour 3: 3:45 – 4:45 p.m.	111	1,791	Yes
Hour 4: 5:30 – 6:30 p.m.	179	1,636	Yes

Data from Tuesday, June 16, 2026

While Table 2 and Table 3 show the warrant being satisfied during the data collection period, the pedestrian and bicycle volumes sustained along AMB and around AMC throughout most of the year indicate a clear justification for a full signal to be installed.

3.4.1 Projected Increase in Walking and Biking

The proposed Triumphal Arch at AMC could generate increased pedestrian and bicycle traffic around the site. Visitation trends can be roughly estimated by analyzing nearby sites throughout the National Mall and Memorial Parks (NAMA) and the ANC. The months with the highest visitation of these nearby sites are generally in the spring, which can be used to form the basis of the projection. With the ANC located nearby, it is likely that the ANC visitation will also impact the visitation projection at the Triumphal Arch, as visitors destined for the Arch could combine their trip with a visit to ANC. According to the Office of Army Cemeteries, "ANC receives, on average, 4 million visitors a year," which translates to about 16,000 daily visitors during the peak season in the springtime. Based on this information, Table 4 shows a low, medium, and high daily projection of pedestrians and bicyclists during the peak month of comparable NCR park units.

Currently during the peak month, about 700 people walk and 700 people bike through the AMC daily, for a total of 1,400 daily walk and bike trips. Table 4 also shows percent increase in activity compared to the number of visitors that currently walk and/or bike around the AMC. Research of newer memorial sites shows a trend indicating that new memorials maintain a relatively higher visitation for the first few years after opening and then normalize down to slightly lower visitation level.

Table 4: Existing and Projected Multimodal Usage: Low, Medium, High Projections

	Projected Pedestrian and Bicyclist Usage		
	Low	Medium	High
Existing Daily Multimodal Usage	1,400	1,400	1,400
Projected Daily Additional Demand	600	4,400	21,000
Total Estimated Daily Users During Peak Month	**2,000**	**5,800**	**22,400**
Percent Increase in Activity	**40%**	**315%**	**1,500%**

Whether a visitor drives, takes transit, uses ride share, walks, bikes, or takes a tour bus to visit the site, most visitors are expected to walk to the center of the AMC and back as part of their experience.

3.5 Future Traffic Volume Projections

Consistent with standard traffic study methodology, existing traffic volumes were projected to future-year conditions to evaluate and compare anticipated traffic operations without the proposed project (Future Baseline) and with the proposed improvements in place (Future Build). By comparing these two scenarios the traffic model can present a better measure of the impact of the project after it is fully operational. The future year for this project was established as five years, consistent with a typical short-term future traffic forecasting period.

Future traffic volumes were projected using a growth rate of 0.5% per year over five years. This growth rate is consistent with the forecasting of other regional transportation models and is supported by travel demand projections developed by the Metropolitan Washington Council of Governments (MWCOG).

3.5.1 Future Baseline (2031) Traffic Volumes

The future baseline scenario accounts for the 0.5% per year growth rate over the next five years. The Future Baseline (2031) Scenario traffic volumes at the study area intersections are shown in Figure 11, Figure 12, and Figure 13 during the weekday a.m., p.m., and Saturday midday peak hours.

Figure 11: Future Baseline (2031) Vehicular Traffic Volumes, Weekday a.m. Peak Hour

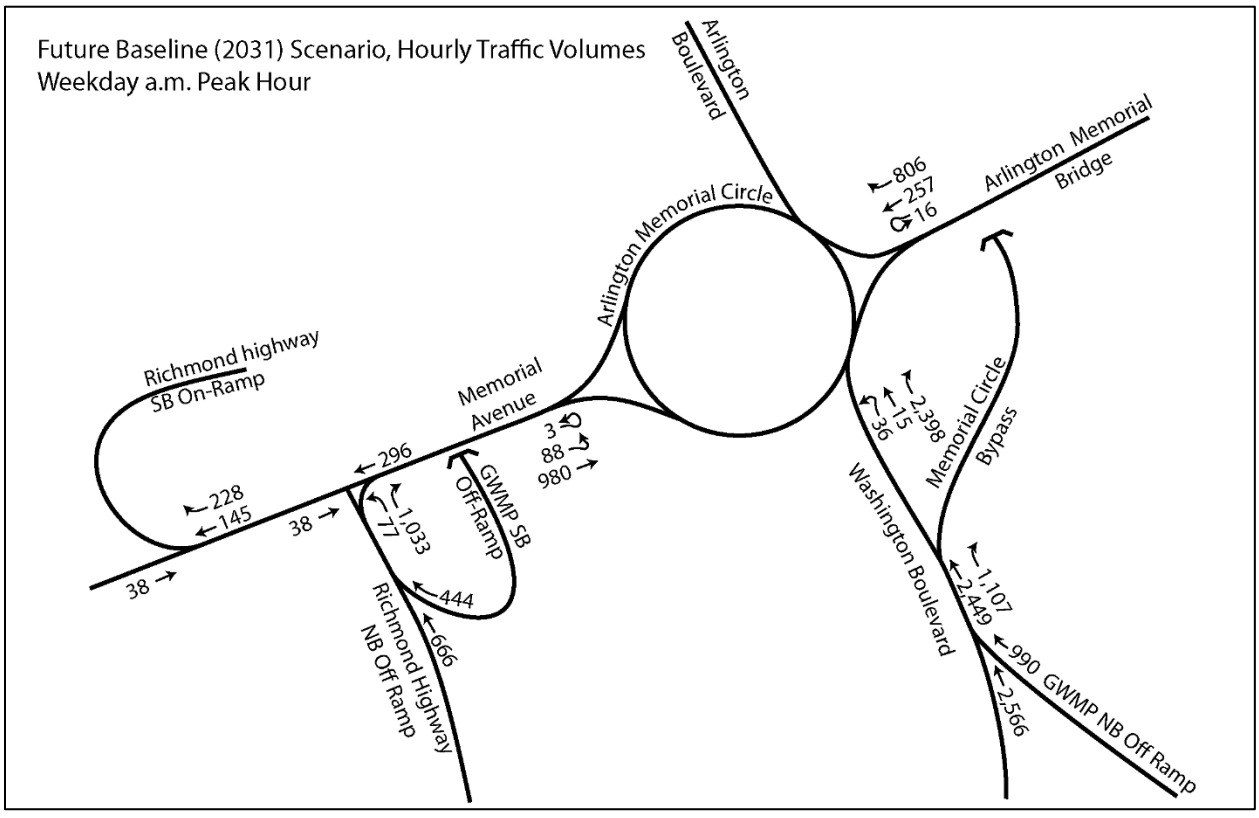


Figure 12: Future Baseline (2031) Vehicular Traffic Volumes, Weekday p.m. Peak Hour

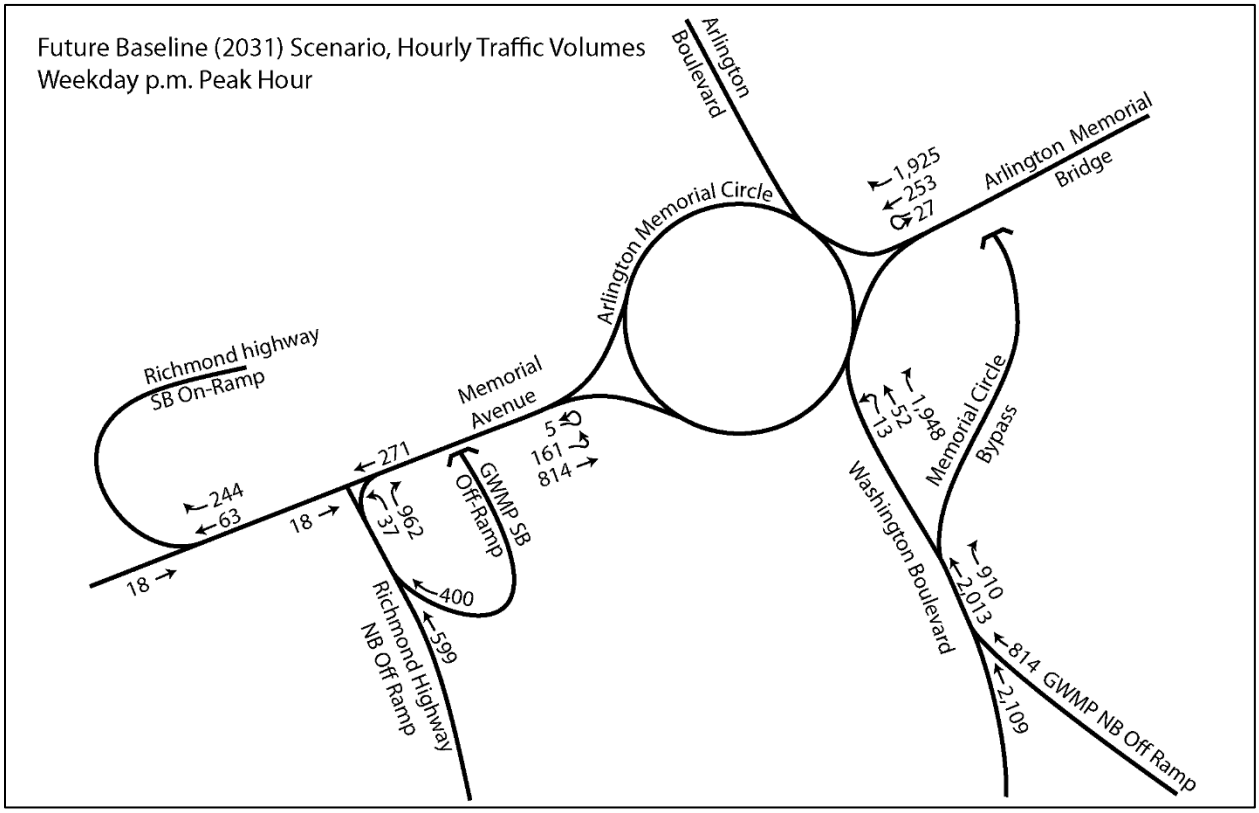
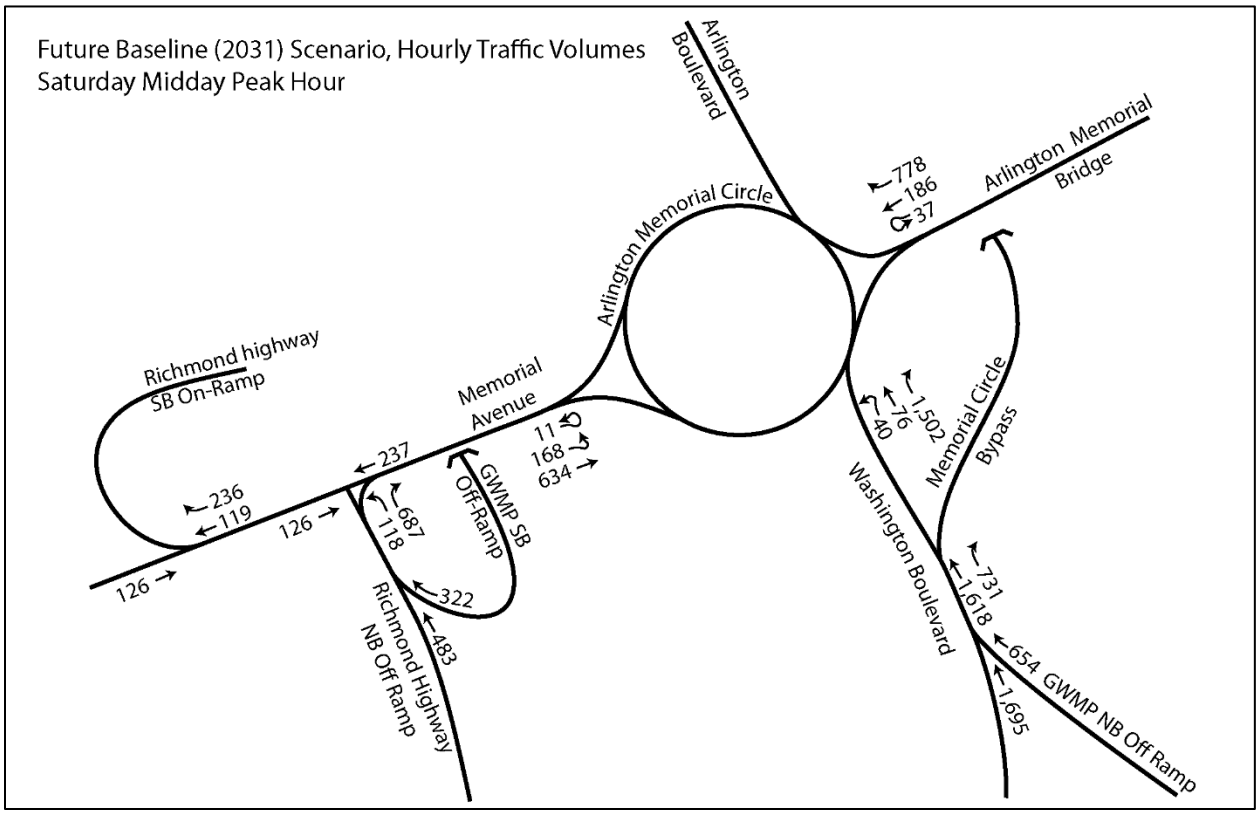


Figure 13: Future Baseline (2031) Vehicular Traffic Volumes, Saturday Midday Peak Hour



3.5.2 Future Build (2031) Traffic Volumes

For new development projects, future project-generated traffic is typically estimated using the Institute of Transportation Engineers (ITE) Trip Generation Manual. Since the Trip Generation Manual does not provide trip generation rates specific to this type of project, project-generated traffic for this study was estimated based on the anticipated operational conditions and associated visitation documented in the Environmental Assessment (EA). As previously mentioned, the highest visitation to the site is expected during weekends and holidays, while other higher visitation periods will likely occur during the weekday summer afternoons and early evenings. To ensure the analysis provides a conservative estimate of future traffic conditions and potential operational impacts, vehicular visitation generated was modeled to reach 80 vehicles during the Saturday Midday, 40 vehicles during the Weekday p.m. Peak Hour, and 0 vehicles during the Weekday a.m. Peak Hour. Since visitation is expected to last under 1 hour, 50% of visitors are expected to be entering and 50% are expected to be exiting during the peak hours. The vehicle trip generation by direction and time period is shown in Table 5.

Table 5. Vehicle Trip Generation, by Direction and Time Period

Direction	Weekday a.m. Peak Hour	Weekday p.m. Peak Hour	Saturday Midday Peak Hour
Entering	0	20	40
Exiting	0	20	40
Total	0	40	80

The proposed signalized concept also eliminates one approach lane serving two movements through AMC, the Washington Boulevard northbound through movement to Arlington Boulevard and the Washington Boulevard northbound left-turn movement to Memorial Avenue. The traffic volumes can detour to alternative routes as shown in Figure 14 and Figure 15 for the northbound through and left-turn movements, respectively. The figures also show the traffic volume expected to detour during the weekday a.m., p.m., and Saturday midday peak hours and have been incorporated in the traffic volumes and traffic modeling analysis. The Future Build (2031) Scenario traffic volumes at the study area intersections are shown in Figure 16, Figure 17, and Figure 18

Figure 14: Rerouted Trips from Eliminating Washington Boulevard NB Through Movement

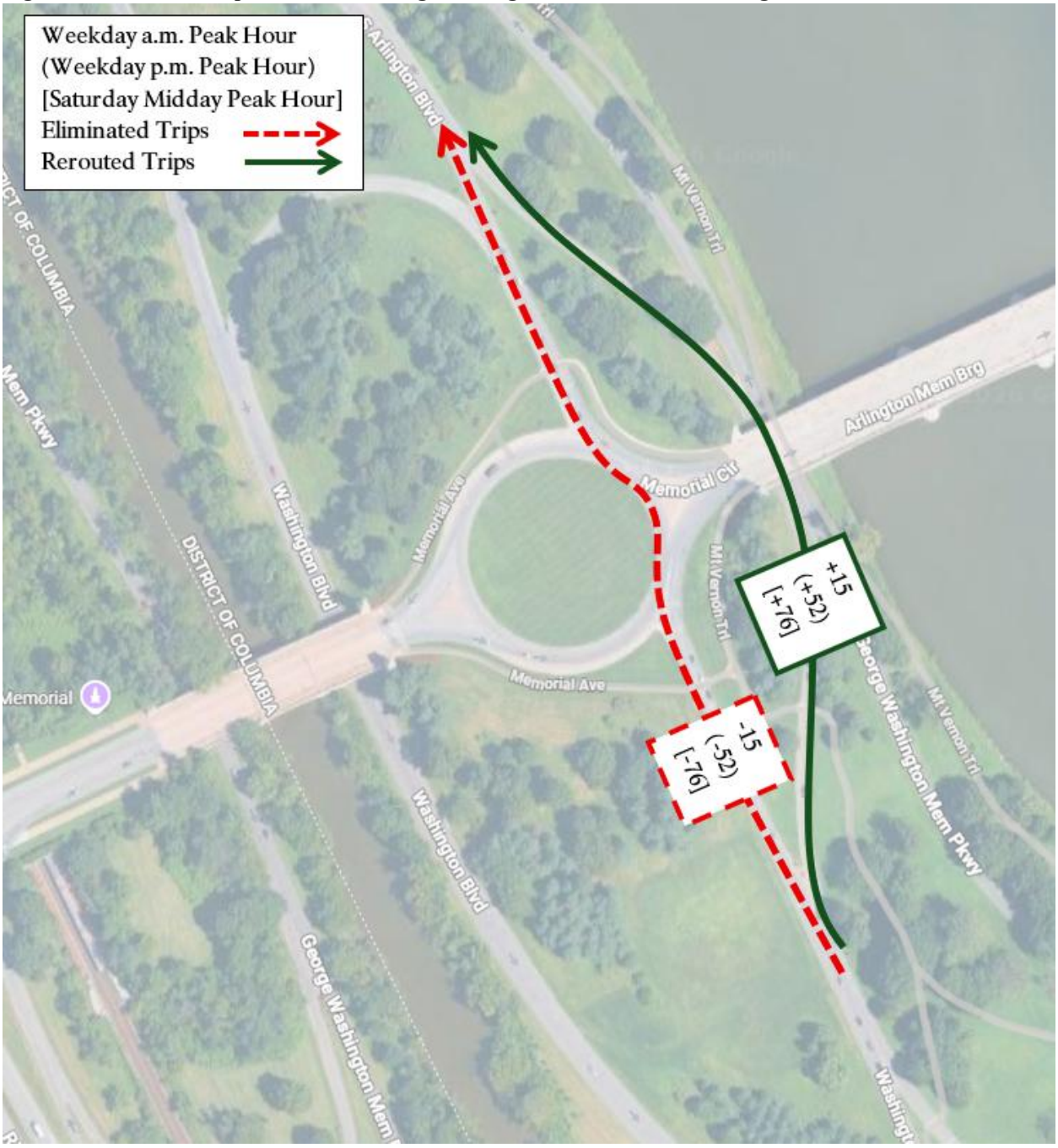


Figure 15: Rerouted Trips from Eliminating Washington Boulevard NB Left-Turn Movement

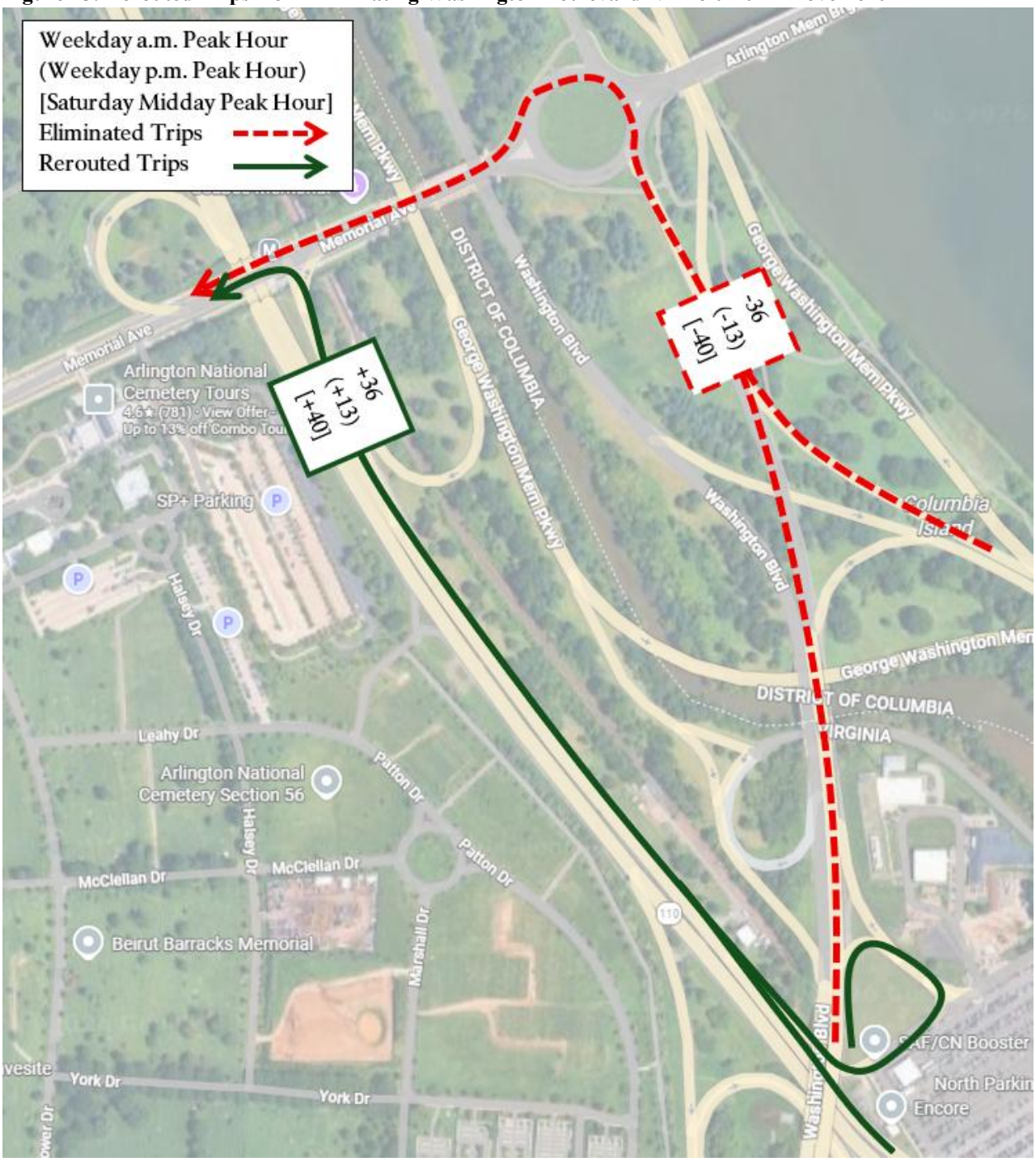


Figure 16: Future Build (2031) Vehicular Traffic Volumes, Weekday a.m. Peak Hour

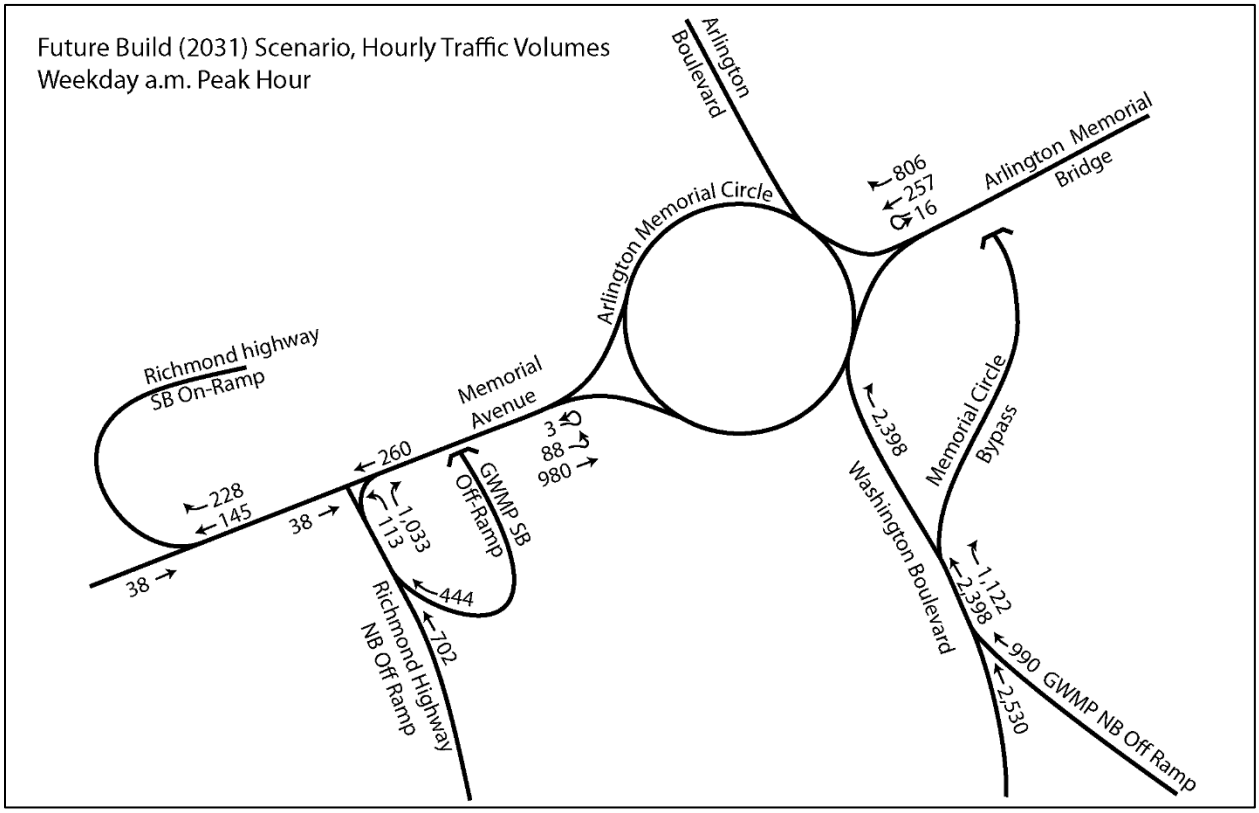


Figure 17: Future Build (2031) Vehicular Traffic Volumes, Weekday p.m. Peak Hour

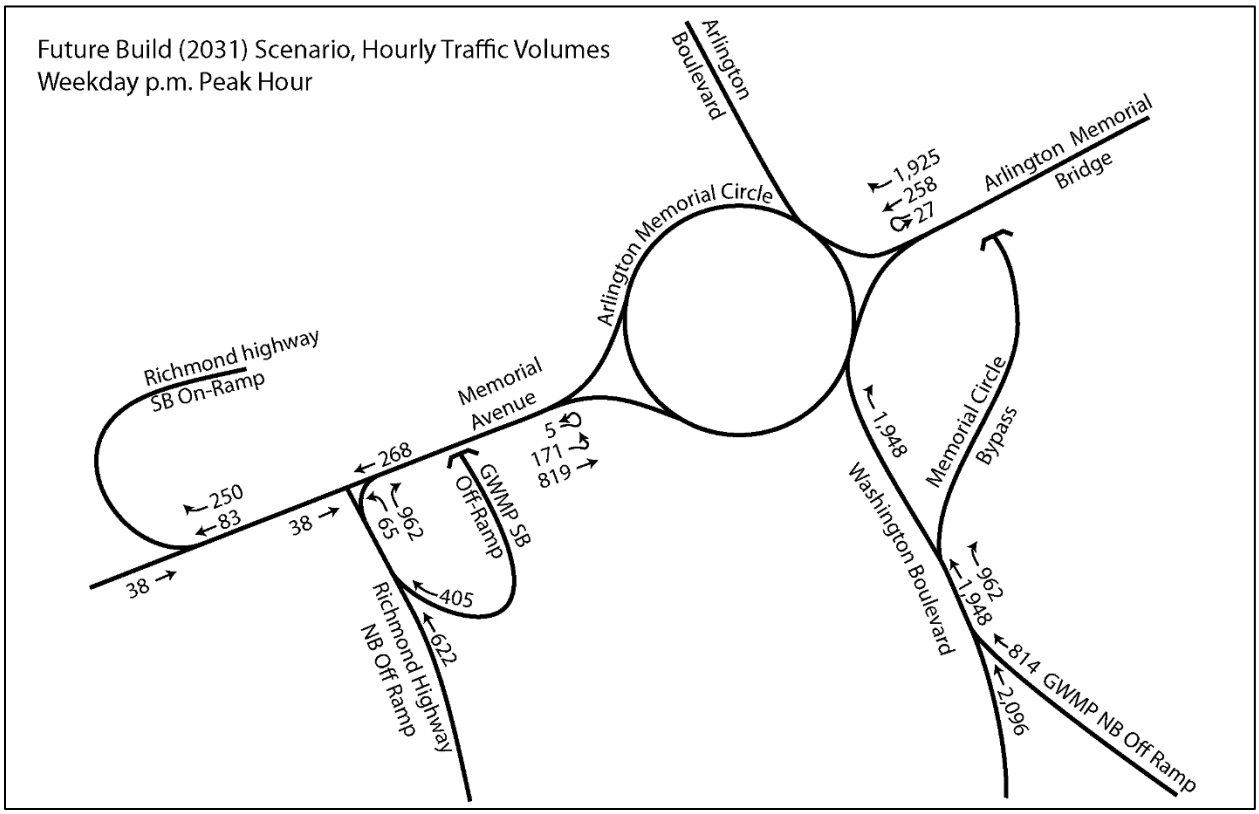
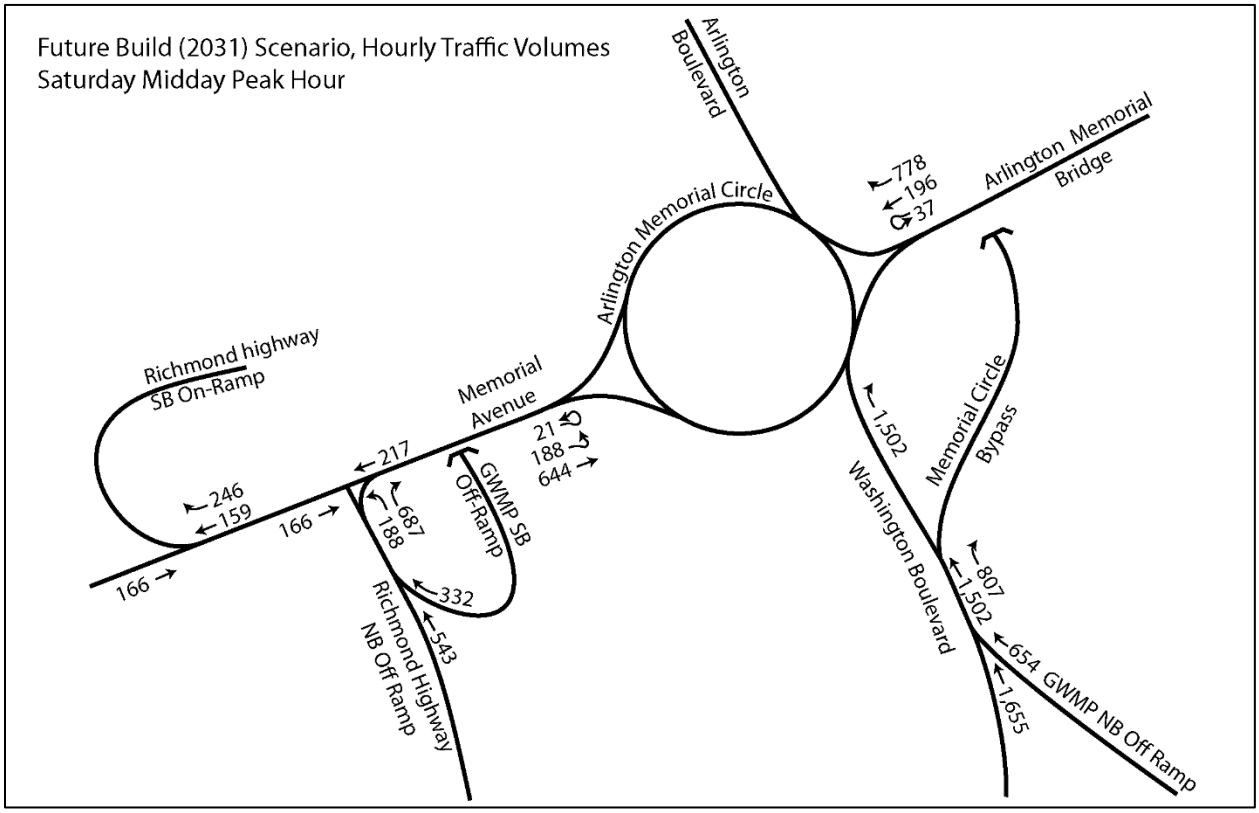


Figure 18: Future Build (2031) Vehicular Traffic Volumes, Saturday Midday Peak Hour



4. Operations Analysis

Preliminary traffic operations, modeled in Synchro and SimTraffic, show the initial traffic impacts of signalizing eight crosswalks around AMC. As previously mentioned, this analysis includes updated traffic volumes and an expanded study area to improve the analysis and evaluate the wider impacts of the project on the surrounding transportation network.

The vehicular traffic operations analysis was conducted in accordance with methodologies established in the most recent edition of the Transportation Research Board's (TRB) *Highway Capacity Manual* (HCM), 7th Edition, published in 2022. The intersection geometry and traffic volumes play critical roles in determining the Level of Service (LOS) and vehicle delay. The vehicular traffic operations analysis relies on model simulation and subsequent calculations. LOS and delay at the signalized and unsignalized intersections were calculated using SimTraffic, which is part of the Synchro Studio V12 developed by Cubic. Table 6 is an excerpt from the HCM with LOS criteria and delay for signalized and unsignalized intersections.

Table 6. Vehicle Level of Service Criteria

Source: 2022 Highway Capacity Manual, Transportation Research Board, 7th Ed.

Level of Service	Average Stopped Delay (seconds/vehicle) at Signalized Intersection	Average Stopped Delay (seconds/vehicle) at Unsignalized Intersection
A	≤10	≤10
B	>10 – ≤20	>10 – ≤15
C	>20 – ≤35	>15 – ≤25
D	>35 – ≤55	>25 – ≤35
E	>55 – ≤80	>35 – ≤50
F	≥80	≥50

While a LOS F is a failing grade, transportation safety, especially for people walking, biking, or accessing transit, is a critical component of the transportation network. Safety is not a factor that is evaluated through the traffic operations analysis. Accordingly, LOS F conditions may be considered acceptable in certain circumstances when evaluated in the context of site-specific conditions and physical constraints, and the need to prioritize safety over vehicular operational performance.

Traffic volumes form the basis of the traffic operations analysis. The traffic volumes used in this study were collected in 2026 and projected to 2031 using a 0.5% annual growth rate, typical of most dense metro regions and supported by the MWCOG long-range projections. The analysis also models the impact of traffic detours for movements to be eliminated and additional traffic from visitation at the Triumphal Arch. Lastly, when proposing new traffic signals, the traffic signal phasing and timing are critical components and impact the overall operations of the traffic. Although the signal phasing and timing will be further refined as the design moves forward, this traffic analysis demonstrates an option for the signal operation that adequately serves all users, safely separates the phases, and presents the maximum number of pedestrian phases called to the signal.

4.1 Intersections within the Traffic Model

AMC is a unique, non-traditional traffic circle and as such, the intersection cannot be modeled as one single intersection, but is instead modeled through a series of smaller intersection within the traffic circle as a whole. This operational analysis also allows for more detailed understanding of how the intersections operate and which approaches and movements to the traffic circle may impact vehicle operations.

As previously mentioned, Figure 1 shows the study area intersections and Figure 19, shows the intersection within AMC (Intersection 1) broken down into five sub-intersections that were modeled in the traffic operations analysis section.

a. Washington Boulevard at AMC eastbound
b. AMB westbound at AMC northbound
c. Washington Boulevard at South Pedestrian Crossing
Note: This intersection was eliminated in the Future Build Scenario since the pedestrian crossing was incorporated into the larger signalized intersection at location 1a.
d. Arlington Boulevard at North Pedestrian Crossing
e. Memorial Avenue at AMC southbound

Figure 19: Traffic Operations Analysis intersections within AMC



4.2 Vehicle Traffic Operations Analysis

The Traffic Operations Analysis Summary Table is shown in Table 7, Table 8, and Table 9 for the weekday a.m., p.m., and Saturday midday peak hours, respectively. The tables show the LOS, Delay (in seconds), and the queue length (in feet). The queue length shown includes the average queue length and the 95th percentile queue length, which will likely only occur for a few minutes during the entire peak hour.

Table 7. Traffic Operations Analysis Summary, Weekday a.m. Peak Hour

Scenario	Existing	Existing	Existing	Existing	Future Baseline	Future Baseline	Future Baseline	Future Baseline	Future Build	Future Build	Future Build	Future Build
Intersection/Approach	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)
#1a: Washington Blvd at AMC/AMB	A	2.6	-	-	A	2.7	-	-	A	9.2	-	-
AMC EB L/T	A	3.5	2	14	A	4.0	2	15	B	12.8	299	518
Washington Blvd NB T	E	49.4	34	75	E	41.3	29	61				
Washington Blvd NB R	A	1.2	0	0	A	1.4	4	44	A	7.2	243	422
Washington Blvd NB R	A	1.4	0	0	A	1.5	0	0	A	8.0	268	466
#1b: Arlington Blvd at AMC/AMB	A	1.5	-	-	A	1.6	-	-	B	12.6	-	-
AMB WB T	A	4.8	50	80	A	4.8	57	83	B	10.7	98	173
AMB WB R	A	0.5	12	36	A	0.4	6	24	A	9.6	129	221
AMB WB R	A	0.3	2	18	A	0.2	0	0	B	10.9	134	226
AMC NB L/T	A	1.7	4	24	A	1.7	5	23	D	42.1	69	123
#1c: Washington Blvd Crosswalk	A	6.9	-	-	A	8.7	-	-				
Washington Blvd NB T	A	6.7	183	301	A	8.7	210	370				
Washington Blvd NB T	A	7.1	180	320	A	8.6	225	382				
#1d: Arlington Blvd Crosswalk	A	1.5	-	-	A	1.5	-	-	A	0.4	-	-
Arlington Blvd NB T	A	1.4	28	69	A	1.5	36	66	A	0.4	1	10
Arlington Blvd NB T	A	1.6	42	91	A	1.6	38	87	A	0.4	1	10
#1e: Memorial Ave at AMC	A	9.1	-	-	A	9.3	-	-	C	25.9	-	-
Memorial Ave EB R	B	11.1	0	0	B	11.6	0	0	C	32.0	252	837
AMC SB T	D	29.9	0	0	C	23.4	0	0	B	15.5	33	86
AMC SB R	A	0.2	0	0	A	0.2	0	0	A	0.1	31	61
#2: Washington Blvd at GWMP Ramp Merge	F	146.6	-	-	F	111.2	-	-	F	164.2	-	-
Washington Blvd NB T	F	176.2	2,689	4,629	F	129.7	1,967	4,393	F	215.8	3,093	4,673
Washington Blvd NB T	F	233.1	2,717	4,656	F	185.0	1,958	4,333	F	233.0	3,285	4,910
GWMP Ramp NWB R	A	4.1	8	41	A	6.2	39	152	A	4.7	42	133
GWMP Ramp NWB R	A	0.7	4	36	A	0.9	16	109	A	2.5	28	118
#3: Memorial Ave at Richmond Hwy Off-Ramp	A	4.0	-	-	A	3.7	-	-	A	9.0	-	-
Memorial Ave EB T	A	0.0	0	0	A	0.0	0	0	A	0.1	0	0
Memorial Ave WB T	A	1.9	0	0	A	2.0	0	0	A	5.2	0	0
Ramp NB L	C	15.1	89	315	C	17.5	86	318	E	44.5	133	423
Ramp NB R	A	3.8	104	394	A	3.3	85	366	A	6.3	121	443
#4: Memorial Ave at Richmond Hwy On-Ramp	A	0.7	-	-	A	0.8	-	-	A	1.3	-	-
Memorial Ave EB T	A	0.0	0	0	A	0.0	0	0	A	0.1	0	0
Memorial Ave WB T	A	1.9	0	0	A	2.3	0	0	A	3.4	0	0
Memorial Ave WB R	A	0.1	1	10	A	0.1	0	0	A	0.1	0	0
#5: Richmond Hwy Ramp at GWMP Ramp	A	4.1	-	-	A	4.3	-	-	A	3.9	-	-
Richmond Hwy NB T	A	5.2	0	0	A	5.4	0	0	A	5.5	0	0
GWMP Ramp NWB R	A	2.6	0	0	A	2.6	0	0	A	1.1	1	6

Table 8. Traffic Operations Analysis Summary, Weekday p.m. Peak Hour

Scenario	Existing	Existing	Existing	Existing	Future Baseline	Future Baseline	Future Baseline	Future Baseline	Future Build	Future Build	Future Build	Future Build
Intersection/Approach	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)
#1a: Washington Blvd at AMC/AMB	A	2.5	-	-	A	3.0	-	-	A	8.4	-	-
AMC EB L/T	A	3.5	3	19	A	3.5	9	36	B	14.6	348	493
Washington Blvd NB T	D	34.1	32	58	F	50.4	34	75				
Washington Blvd NB R	A	1.1	0	0	A	1.7	17	101	A	5.1	190	276
Washington Blvd NB R	A	1.2	0	0	A	1.3	8	58	A	4.8	203	283
#1b: Arlington Blvd at AMC/AMB	C	21.7	-	-	C	21.1	-	-	B	18.4	-	-
AMB WB T	C	23.3	197	359	C	17.2	136	308	A	9.8	97	170
AMB WB R	D	27.4	250	374	D	28.2	254	370	B	16.9	281	288
AMB WB R	C	20.7	253	359	C	20.4	244	365	B	18.5	282	299
AMC NB L/T	A	1.7	6	29	A	1.9	8	33	D	38.1	116	195
#1c: Washington Blvd Crosswalk	A	4.8	-	-	A	8.1	-	-				
Washington Blvd NB T	A	4.7	136	276	A	8.1	175	342				
Washington Blvd NB T	A	4.9	141	268	A	8.1	176	342				
#1d: Arlington Blvd Crosswalk	A	6.5	-	-	A	8.5	-	-	A	0.7	-	-
Arlington Blvd NB T	A	6.5	168	268	A	8.4	184	299	A	0.8	9	32
Arlington Blvd NB T	A	6.6	162	252	A	8.5	184	280	A	0.6	6	23
#1e: Memorial Ave at AMC	A	7.1	-	-	A	7.0	-	-	C	25.0	-	-
Memorial Ave EB R	A	8.5	0	0	A	8.2	0	0	C	30.0	179	686
AMC SB T	C	21.5	0	0	C	18.2	0	0	B	17.0	28	78
AMC SB R	A	0.2	0	0		0.2	0	0	A	0.1	25	61
#2: Washington Blvd at GWMP Ramp Merge	C	17.7	-	-	C	22.8	-	-	C	16.7	-	-
Washington Blvd NB T	C	23.3	15	103	D	27.6	107	498	C	20.9	65	232
Washington Blvd NB T	C	23.3	53	190	D	32.8	135	502	C	22.8	97	266
GWMP Ramp NWB R	A	2.8	1	14	A	2.6	1	7	A	2.6	10	44
GWMP Ramp NWB R	A	0.8	0	0	A	0.2	0	0	A	0.7	3	27
#3: Memorial Ave at Richmond Hwy Off-Ramp	A	2.4	-	-	A	2.4	-	-	A	5.2	-	-
Memorial Ave EB T	A	0.0	0	0	A	0.0	0	0	A	0.1	0	0
Memorial Ave WB T	A	1.9	0	0	A	2.0	0	0	A	5.6	0	0
Ramp NB L	C	15.7	22	49	C	15.7	22	45	C	18.9	46	183
Ramp NB R	A	2.0	0	0	A	2.1	15	146	A	4.4	51	272
#4: Memorial Ave at Richmond Hwy On-Ramp	A	0.8	-	-	A	0.9	-	-	A	1.0	-	-
Memorial Ave EB T	A	0.0	0	0	A	0.0	0	0	A	0.1	0	0
Memorial Ave WB T	A	3.7	0	0	A	4.2	0	0	A	4.7	0	0
Memorial Ave WB R	A	0.1	1	10	A	0.1	1	10	A	0.1	0	0
#5: Richmond Hwy Ramp at GWMP Ramp	A	3.8	-	-	A	3.6	-	-	A	3.9	-	-
Richmond Hwy NB T	A	5.1	0	0	A	4.7	0	0	A	5.5	0	0
GWMP Ramp NWB R	A	1.9	0	0	A	1.8	0	0	A	1.6	0	0

Table 9. Traffic Operations Analysis Summary, Saturday Midday Peak Hour

Scenario	Existing	Existing	Existing	Existing	Future Baseline	Future Baseline	Future Baseline	Future Baseline	Future Build	Future Build	Future Build	Future Build
Intersection/Approach	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)
#1a: Washington Blvd at AMC/AMB	A	3.7	-	-	A	3.9	-	-	A	6.7	-	-
AMC EB L/T	A	3.7	12	41	A	3.6	12	39	B	12.5	218	420
Washington Blvd NB T	E	37.0	61	105	D	29.3	62	99				
Washington Blvd NB R	A	1.6	19	101	A	2.8	22	113	A	3.3	76	190
Washington Blvd NB R	A	1.0	7	52	A	1.0	16	97	A	3.4	108	224
#1b: Arlington Blvd at AMC/AMB	A	1.5	-	-	A	1.7	-	-	B	16.4	-	-
AMB WB T	A	4.6	44	64	A	5.3	51	81	B	12.5	96	155
AMB WB R	A	0.8	16	45	A	0.9	19	44	B	13.3	146	222
AMB WB R	A	0.3	8	44	A	0.3	4	31	B	16.0	155	241
AMC NB L/T	A	1.8	1	9	A	1.9	7	27	C	29.4	110	178
#1c: Washington Blvd Crosswalk	A	3.4	-	-	A	5.3	-	-				
Washington Blvd NB T	A	3.7	100	168	A	5.7	105	235				
Washington Blvd NB T	A	3.1	92	158	A	4.9	105	229				
#1d: Arlington Blvd Crosswalk	A	2.2	-	-	A	2.8	-	-	A	0.5	-	-
Arlington Blvd NB T	A	2.5	42	97	A	2.8	51	123	A	0.5	3	16
Arlington Blvd NB T	A	1.9	47	102	A	2.7	71	141	A	0.5	1	8
#1e: Memorial Ave at AMC	B	10.1	-	-	A	9.4	-	-	B	18.2	-	-
Memorial Ave EB R	B	12.9	3	26	B	12.1	0	0	C	21.7	130	350
AMC SB T	B	10.5	0	0	A	9.2	0	0	B	19.4	38	115
AMC SB R		0.2	0	0		0.2	0	0	A	0.1	21	55
#2: Washington Blvd at GWMP Ramp Merge	B	13.7	-	-	B	12.8	-	-	B	13.3	-	-
Washington Blvd NB T	C	21.2	5	35	C	21.2	22	147	C	20.5	17	114
Washington Blvd NB T	C	16.1	36	208	B	14.7	24	149	C	15.7	27	122
GWMP Ramp NWB R	A	1.8	0	0	A	1.8	0	0	A	1.8	2	16
GWMP Ramp NWB R	A	0.2	0	0	A	0.3	0	0	A	0.2	0	0
#3: Memorial Ave at Richmond Hwy Off-Ramp	A	3.3	-	-	A	3.1	-	-	A	4.7	-	-
Memorial Ave EB T	A	0.1	0	0	A	0.1	0	0	A	0.1	0	0
Memorial Ave WB T	A	1.8	0	0	A	1.8	0	0	A	5.1	0	0
Ramp NB L	A	8.2	50	162	A	7.9	46	151	B	9.5	61	163
Ramp NB R	A	3.5	52	247	A	3.4	54	257	A	4.5	93	333
#4: Memorial Ave at Richmond Hwy On-Ramp	A	0.6	-	-	A	0.6	-	-	A	0.9	-	-
Memorial Ave EB T	A	0.1	0	0	A	0.1	0	0	A	0.2	0	0
Memorial Ave WB T	A	2.0	0	0	A	2.1	0	0	A	2.7	0	0
Memorial Ave WB R	A	0.1	1	10	A	0.1	0	0	A	0.1	0	0
#5: Richmond Hwy Ramp at GWMP Ramp	A	3.4	-	-	A	3.6	-	-	A	2.8	-	-
Richmond Hwy NB T	A	4.4	0	0	A	4.6	0	0	A	3.9	0	0
GWMP Ramp NWB R	A	2.0	0	0	A	2.2	0	0	A	1.2	0	0

4.3 Vehicle Traffic Operations Summary

Traffic generally operates well through AMC today, and is expected to continue to operate well with the proposed signalized improvements in the future. The weekday morning commuting period is the only time of day that congestion occurs throughout this area and is generally not related to operations at AMC.

The traffic operations analysis demonstrates that during the weekday morning commuter peak period congestion originates along Washington Boulevard at the merge point with the GWMP ramp, south of AMC. The weave condition leads to an average queue length of about 2,700 feet today and is expected to maintain a length of about 3,000 feet in the future. This average queue length does not extend to the interchange with I-395, which is approximately 7,000 feet south of AMC. Figure 20 shows the average queue lengths during the Weekday a.m. peak Hour.

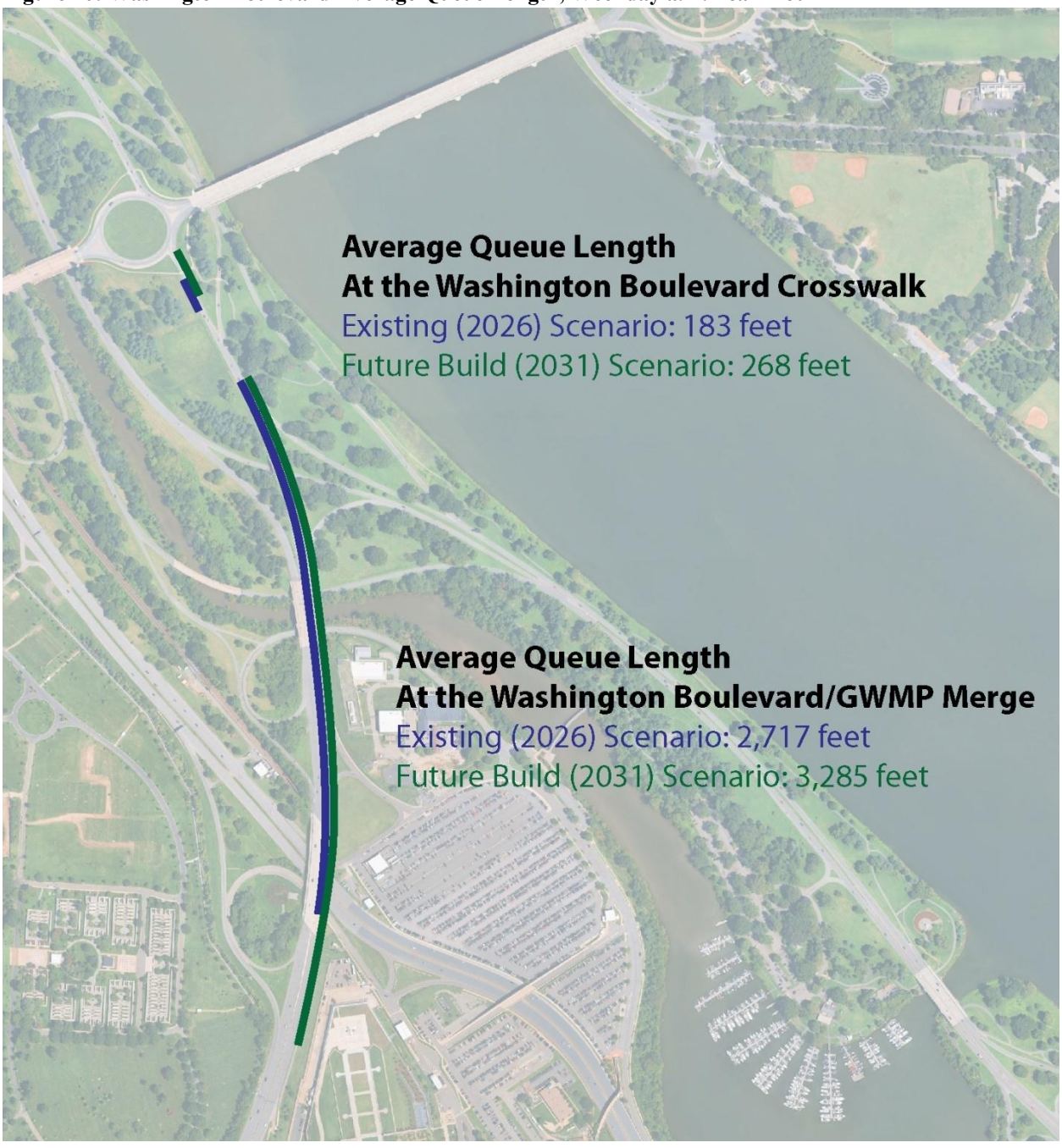
The traffic operations analysis also shows that vehicle queues originating from proposed traffic signal at the Washington Boulevard northbound approach to AMC are expected to extend about 270 to 470 feet and remain short of the Washington Boulevard/GWMP ramps weave area. Therefore, the proposed traffic signals are not expected to exacerbate existing traffic congestion, and the congestion that already occurs today will remain localized without affecting the broader transportation network.

Additionally, the elimination of the Washington Boulevard northbound through and left-turn movements is expected to reduce the traffic volume by about 36 vehicles (about 2% of the approach) during the weekday a.m. peak hour. The elimination will redistribute traffic volume from the most congested intersection to intersections with excess capacity, it will simplify the lane usage, and simplify the signal phasing which allows the intersection to operate more efficiently.

The other movement that is expected to be slightly impacted by the signalization of AMC is the Richmond Highway NB off-ramp northbound left-turn movement to Memorial Avenue, which will decrease from LOS C to LOS E. The queue length will average about 150 feet (6 vehicles). The queue is not expected to impact traffic operations throughout the network.

Traffic operates well during the Weekday p.m. Peak Hour and the Saturday Midday Peak Hour and is expected to continue to operate without any congestion or excessive delays if traffic signals or the Triumphal Arch is constructed.

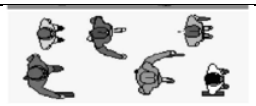
Figure 20: Washington Boulevard Average Queue Length, Weekday a.m. Peak Hour



4.4 Pedestrian Level of Service and Delay Calculations

Similar to the vehicular LOS metrics, the HCM also establishes pedestrian LOS metrics for crowding and signalized pedestrian delay. Thus, pedestrian LOS metrics are based on the amount of space available to queue and subsequently cross a street. Table 10 below elaborates on the different pedestrian LOS metrics and provides illustrations of the amount of space at each level.

Table 10. Pedestrian Space per Person for Random Flow

Space per Pedestrian (sf/ped) Random Flow	Space per Pedestrian Reference Image*	Qualitative Description
>60		Ability to move in desired path, no need to alter movements
>40–60		Occasional need to adjust path to avoid conflicts
>24–40		Frequent need to adjust path to avoid conflicts
>15–24		Speed and ability to pass slower pedestrians restricted
>8–15		Speed restricted, very limited ability to pass slower pedestrians
≤8		Speed severely restricted, frequent contact with other users

Source: HCM, 7th Ed., 2022 Exhibit 18-15: Qualitative Description of pedestrian Space
* Image Source: Fruin's pedestrian levels of service for walkways, Pedestrian planning for the 2006 Commonwealth Games

The pedestrian level of service at the proposed crosswalks will illustrate how well the design meets the potential demand of the crosswalks and median pedestrian islands. Since the demand can only be projected, the calculation has estimated the pedestrian capacity at the median islands to maintain an acceptable level of comfort. Since the pedestrian space calculations do not have traditional LOS grades, the HCM recommends that 25 sf per pedestrian is appropriate for urban areas. With 25 sf per pedestrian, people may need to adjust their path to avoid conflicts and their walking speed and ability to maneuver may be slightly restricted, but this level of space provides adequate room for pedestrians to maneuver through the crosswalks, triangular median refuge islands, and into the center of AMC.

The central median waiting areas have slightly more than 2,000 sf of space for pedestrians to wait while crossing. In order for pedestrians to have less than 25 sf of space, more than 2,400 pedestrians will have to cross per hour, or more than 80 pedestrians per crossing cycle.

The pedestrian delay at the signalized intersections can also be calculated using the HCM method. If the traffic signals operate with a maximum cycle length of 120 seconds and an effective walk time of 12 seconds, the average pedestrian delay is calculated at 48.6 seconds per pedestrian per crosswalk. Further refinements are expected to the traffic signal phasing and timing as the design progresses, which will further reduce pedestrian delays, especially during periods of expected higher visitation and lower traffic demand such as weekends and holidays. On weekends and holidays, when traffic volumes are expected to be lower, the traffic signals can operate on a reduced cycle length of 100 seconds, resulting in a lower pedestrian delay of about 38.7 second of average delay.

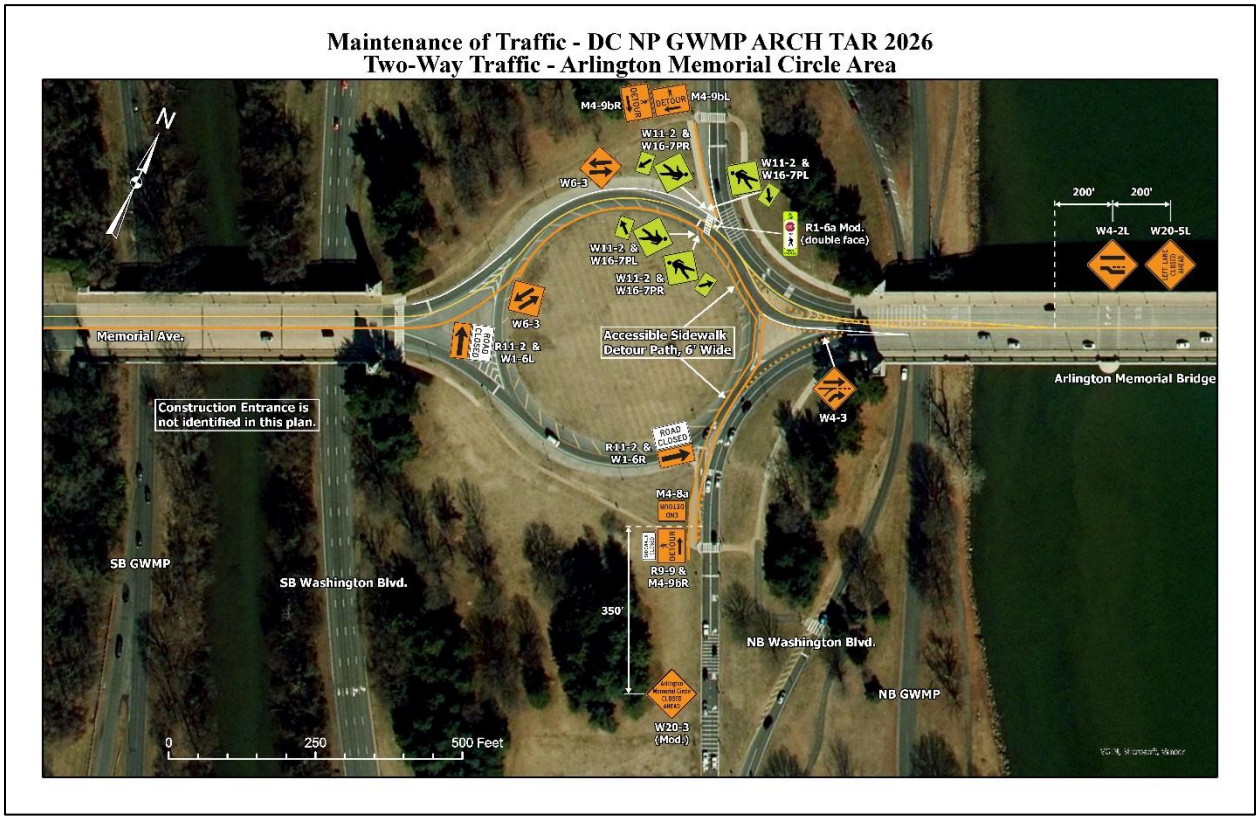
4.5 Construction Period Traffic Operations

This report includes a traffic operation analysis during construction and uses the same analysis method to analyze the construction period. Figure 21 shows the Maintenance of Traffic plan with several eliminated vehicle

movements. All pedestrian and bicycle circulation will be maintained through AMC during construction. The traffic detours for construction include:

- Closure of the southern side of the circle and conversion of the north side to accommodate two-way traffic and the eastbound through movement from Memorial Avenue to the AMB in the inbound direction. The eastbound movement will be accommodated along the north side of the circle and then merge into a designated lane at the east side of the AMC upon entering the AMB.
- Elimination of the Washington Boulevard northbound left-turn movement to Memorial Avenue and through movement to Arlington Boulevard.
- Elimination of the Memorial Avenue eastbound left-turn movement to Arlington Boulevard.
- The AMB westbound approach will be reduced from three lanes to two lanes and the leftmost lane will accommodate the through movement to Memorial Avenue and the right-turn movement to Arlington Boulevard.
- Pedestrian circulation will be modified to the east and northern side of the AMC adjacent to the construction zone and a new crosswalk will provide pedestrian crossing from the center of the circle to the outside of the circle.

Figure 21: Maintenance of Traffic Plan and Intersection Reference Key for Level of Service Tables



The traffic operations analysis during construction are shown in Table 11 for the weekday a.m., weekday p.m., and Saturday midday peak hours, respectively. The traffic operations show similar congestion at the Washington Boulevard/GWMP ramp merge area that occurs today, although slightly reduced vehicle traffic due to the elimination of the turning movements. The operations also shows some queueing and delay at the newly created AMC eastbound through movement to AMB to accommodate the new crosswalk to facilitate pedestrian movements between the inside and outside of the circle. All pedestrians crossing at the Washington Boulevard crossing will have to cross again at this intersection. This queueing does not cause congestion or excessive delays but does cause

vehicle queues for vehicles traveling in the eastbound direction to extend about 150 feet (6 vehicles). The westbound through vehicles also yield to pedestrians in the crosswalk, which spills back to the shared lane. However, according to the traffic model, queueing and delays are negligible.

Table 11. Construction Period Traffic Operations Analysis Summary, Weekday a.m., p.m., and Saturday Midday Peak Hours

Time Period	AM	AM	AM	AM	PM	PM	PM	PM	SAT	SAT	SAT	
Intersection/Approach	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)	LOS	Delay (s)	Average Queue Length (ft)	95th %ile Queue Length (ft)
#1a: Washington Blvd at AMC/AMB	A	1.6	-	-	A	1.2	-	-	A	1.0	-	-
Washington Blvd NB R	A	1.5	0	0	A	1.2	0	0	A	1.0	0	0
Washington Blvd NB R	A	1.7	0	0	A	1.2	0	0	A	1.1	0	0
#1b: Arlington Blvd at AMC/AMB	A	3.2	-	-	A	4.2	-	-	A	2.1	-	-
AMB EB T	A	5.5	144	312	A	6.9	163	350	A	3.9	88	218
AMB WB T/R	A	1.0	20	63	A	2.2	62	190	A	0.8	16	49
AMB WB R	A	0.6	0	0	A	3.5	53	208	A	0.5	0	0
#1c: Washington Blvd Crosswalk	B	10.5	-	-	A	3.7	-	-	A	2.4	-	-
Washington Blvd NB T	A	9.6	241	437	A	3.7	109	218	A	2.6	68	135
Washington Blvd NB T	B	11.5	246	427	A	3.7	113	212	A	2.3	72	119
#1d: Arlington Blvd Crosswalk	A	2.2	-	-	A	5.2	-	-	A	1.2	-	-
Arlington Blvd NB T	A	0.9	21	65	A	4.7	145	239	A	1.0	27	74
Arlington Blvd NB T	A	1.3	39	89	A	5.6	167	263	A	1.3	44	88
#1e: Memorial Ave at AMC	A	8.1	-	-	A	7.8	-	-	B	10.1	-	-
Memorial Ave EB L	A	9.8	31	120	A	9.5	54	222	B	12.3	17	66
AMC SB R	A	0.8	0	0	A	0.9	0	0	A	0.7	0	0
#2: Washington Blvd at GWMP Ramp Merge	F	56.1	-	-	C	17.1	-	-	B	13.2	-	-
Washington Blvd NB T	F	59.7	891	2,135	C	22.4	47	209	C	22.1	11	93
Washington Blvd NB T	F	90.5	909	2,199	C	22.8	121	704	B	14.6	3	22
GWMP Ramp NWB R	A	3.8	11	65	A	2.3	0	0	A	1.4	0	0
GWMP Ramp NWB R	A	1.9	7	51	A	0.2	0	0	A	0.1	0	0
#3: Memorial Ave at Richmond Hwy Off-Ramp	A	3.1	-	-	A	3.3	-	-	A	3.3	-	-
Memorial Ave EB T	A	0.0	0	0	A	0.0	0	0	A	0.1	0	0
Memorial Ave WB T	A	1.9	0	0	A	1.6	0	0	A	1.5	0	0
Ramp NB L	A	9.5	68	235	C	24.9	59	257	A	8.2	105	335
Ramp NB R	A	2.7	63	296	A	2.7	49	267	A	3.3	81	328
#4: Memorial Ave at Richmond Hwy On-Ramp	A	0.8	-	-	A	0.7	-	-	A	0.6	-	-
Memorial Ave EB T	A	0.0	0	0	A	0.0	0	0	A	0.1	0	0
Memorial Ave WB T	A	1.8	0	0	A	3.5	0	0	A	2.2	0	0
Memorial Ave WB R	A	0.1	0	0	A	0.1	1	10	A	0.1	1	10
#5: Richmond Hwy Ramp at GWMP Ramp	A	4.3	-	-	A	4.5	-	-	A	3.5	-	-
Richmond Hwy NB T	A	5.4	0	0	A	5.9	11	79	A	4.5	1	14
GWMP Ramp NWB R	A	2.8	0	0	A	2.5	0	0	A	2.0	0	0

5. Other Design and Operational Elements

5.1 Other Options Considered

Several alternatives were considered to safely accommodate pedestrians through AMC and to provide access to the Triumphal Arch. Ultimately, full signalization on both sides of the site was selected as the preferred option given the high level of current and future pedestrian activity; the visitor experience and anticipated pedestrian demand for safe, direct, and intuitive access from both sides of the site; the familiarity and predictability of conventional traffic signals for all roadway users; and the ability to accommodate existing traffic operations with minimal operational impacts. Other options considered include:

Pedestrian Tunnel: The tunnel option was dismissed due to the length of the required tunnel system, limited access points and associated wayfinding challenges, and a less desirable below-grade visitor experience. The tunnel would require pedestrians to travel farther than an at-grade crossing, adding out-of-direction travel and increasing the time required to reach the Triumphal Arch. Limited tunnel entrances would further constrain pedestrian circulation and could make the intended route less intuitive, particularly for first-time visitors unfamiliar with the site. Collectively, these factors would be inconsistent with anticipated pedestrian desire lines and could result in visitors continuing to cross AMC at grade rather than using the tunnel, introducing uncontrolled pedestrian–vehicle conflicts and reducing the overall safety effectiveness of the improvement. Additionally, a below-grade route would provide a less visually connected visitor experience by temporarily removing pedestrians from the surrounding landscape and limiting views of the Triumphal Arch and other visual landmarks.

Rectangular Rapid Flashing Beacons (RRFBs) and Pedestrian Hybrid Beacons (PHBs): Prior to recommending full traffic signalization, alternative pedestrian traffic control treatments, including RRFBs and PHBs, were evaluated. While both treatments can effectively facilitate pedestrian crossings, they provide less comprehensive control of pedestrian–vehicle conflicts than conventional traffic signals, particularly where pedestrian demand is high and frequent crossing activity is anticipated. Full signalization also provides the ability to manage existing vehicle–vehicle conflicts associated with merging and weaving movements within AMC by providing defined phases and clearer assignment of right-of-way. In addition, RRFBs and PHBs may be less familiar or intuitive to some roadway users. Given the anticipated level of visitation and the likelihood of drivers and pedestrians who are unfamiliar with the site, conventional traffic signals provide a more recognizable and predictable form of traffic control. This familiarity is expected to promote more consistent roadway-user behavior, improve compliance, and provide clearer assignment of right-of-way for both pedestrian and vehicular movements.

West-Side Only Pedestrian Access: An option to provide pedestrian crossings to the Triumphal Arch exclusively from the west side of AMC was considered, where traffic volumes are substantially lower and crossings could be accommodated with comparatively limited traffic control and safety improvements. The ANC parking facilities and Arlington Cemetery Metro Station are also located to the west of the site and are expected to serve as primary arrival points for many visitors. However, visitors approaching from the east would be required to travel substantially out of direction and cross Washington Boulevard or Arlington Boulevard, both of which carry substantial traffic volumes, before reaching the designated crossings. As a result, this alternative would not eliminate pedestrian exposure to high-volume roadways and would largely shift potential pedestrian–vehicle conflicts to other locations. Given the direct sightline to the Triumphal Arch, many visitors may also choose to cross the higher-volume eastern segments of AMC at uncontrolled locations rather than follow the indirect route to the western side. West-side-only access would therefore provide limited safety benefit for visitors approaching from the east and would be less compatible with the intended intuitive circulation and visitor experience of the site.

5.2 Parking, Pick-up/Drop-off, and Loading/Unloading

Memorial Avenue is approximately 60 feet wide, providing sufficient roadway width to accommodate curbside activities while maintaining two-way vehicular operations. Dedicated curbside space will support passenger pick-up and drop-off, staff parking, bus loading and unloading, and other delivery and service activities. Existing parking at ANC provides capacity for personal vehicles, while motorcoach parking and staging will continue to be accommodated primarily at ANC, with Memorial Avenue available to support overflow operations as needed. Coordination with ANC regarding parking, curbside operations, and site access will continue as the project advances. The curb use management plan along Memorial Avenue is shown in Figure 22 below.

Figure 22: Memorial Avenue Curb Use Plan



5.2.1 Visitor Parking

Private vehicles accessing the site are expected to utilize the existing parking facilities at ANC rather than parking directly at the site. ANC has confirmed that its existing parking facilities have additional capacity to accommodate additional visitor demand for private vehicles. Motorcoach parking and staging will also continue to be accommodated primarily at ANC; however, during periods when motorcoach parking reaches capacity, Memorial Avenue currently serves as an overflow area and is expected to continue supporting this function as needed. NPS and ANC will continue to coordinate on visitor parking as the project advances.

5.2.2 Staff Parking

Staff parking will be accommodated within designated parallel curbside parking zones along Memorial Avenue west of the site. Staffing estimates indicate approximately 14 to 17 personnel per shift, including three United States Park Police (USPP) officers, five to eight contract security officers, and six NPS rangers. Three dedicated USPP parking spaces will be located closest to AMC to minimize response time and provide officers with direct access to the surrounding roadway network when responding to incidents and emergency calls. Other staff parking will be located farther west along Memorial Avenue to preserve the curb space closest to the site for passenger pick-up and drop-off activities. This configuration will maximize the use of curb space adjacent to the sidewalk, reducing the need for passengers to load, unload, or traverse existing grassy areas, and minimize walking distances for arriving and departing visitors.

5.2.3 Pick-Up and Drop-Off

Designated pick-up and drop-off zones will be provided for active loading activities, where drivers generally remain with their vehicles and extended parking or standing is not permitted. These areas will accommodate rideshare vehicles such as Uber and Lyft, tour buses actively loading or unloading passengers, delivery vehicles, and other short-duration loading and unloading activities. During periods when motorcoach parking at ANC reaches capacity,

Memorial Avenue may also continue to accommodate overflow motorcoach parking and staging, consistent with existing operations.

5.3 Traffic Signal Post Placement and Reduction

The preliminary design initially assumed four signal posts at each signalized crosswalk to provide a conservative estimate of the maximum number of posts that could be required prior to completing a detailed evaluation of signal visibility and sight lines. To reduce visual clutter within the landscape and provide a more representative estimate of the infrastructure required, a preliminary analysis was subsequently conducted to evaluate potential sight-distance and visibility constraints for each signal face. Based on this analysis, 15 traffic signal posts were eliminated from the preliminary design. Each signalized crosswalk will retain a minimum of two traffic signal posts and the necessary three-section vehicular signal indications, pedestrian signal indications, and accessible pedestrian push buttons. As the design advances, the number and placement of signal posts will continue to be refined to minimize infrastructure and visual impacts while maintaining compliance with the MUTCD and Public Right-of-Way Accessibility Guidelines (PROWAG), including signal face visibility within the driver's cone of vision and appropriate placement and accessibility of pedestrian signal indications and push buttons. The traffic signal post reduction at each signalized crosswalk is show in Figure 23, Figure 24, Figure 25, and Figure 26.

Figure 23: Traffic Signal Post Elimination, Memorial Avenue at AMC, 1 of 4

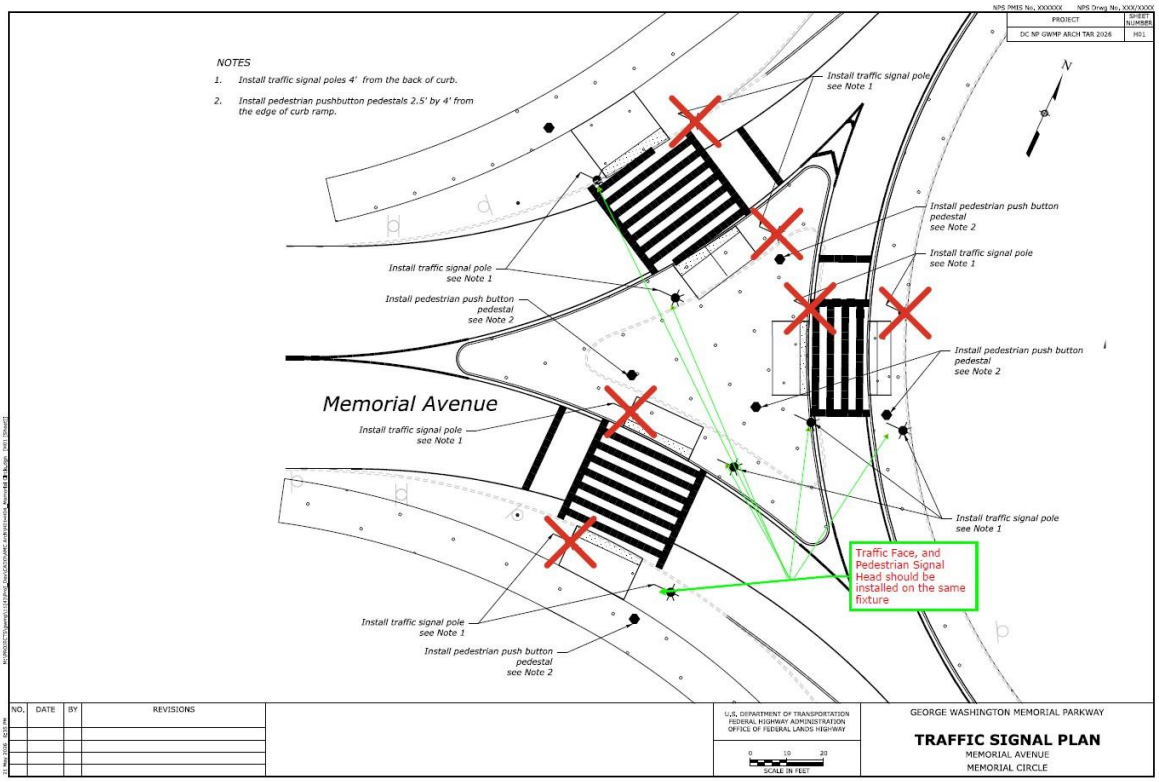


Figure 24: Traffic Signal Post Elimination, AMB at AMC, 2 of 4

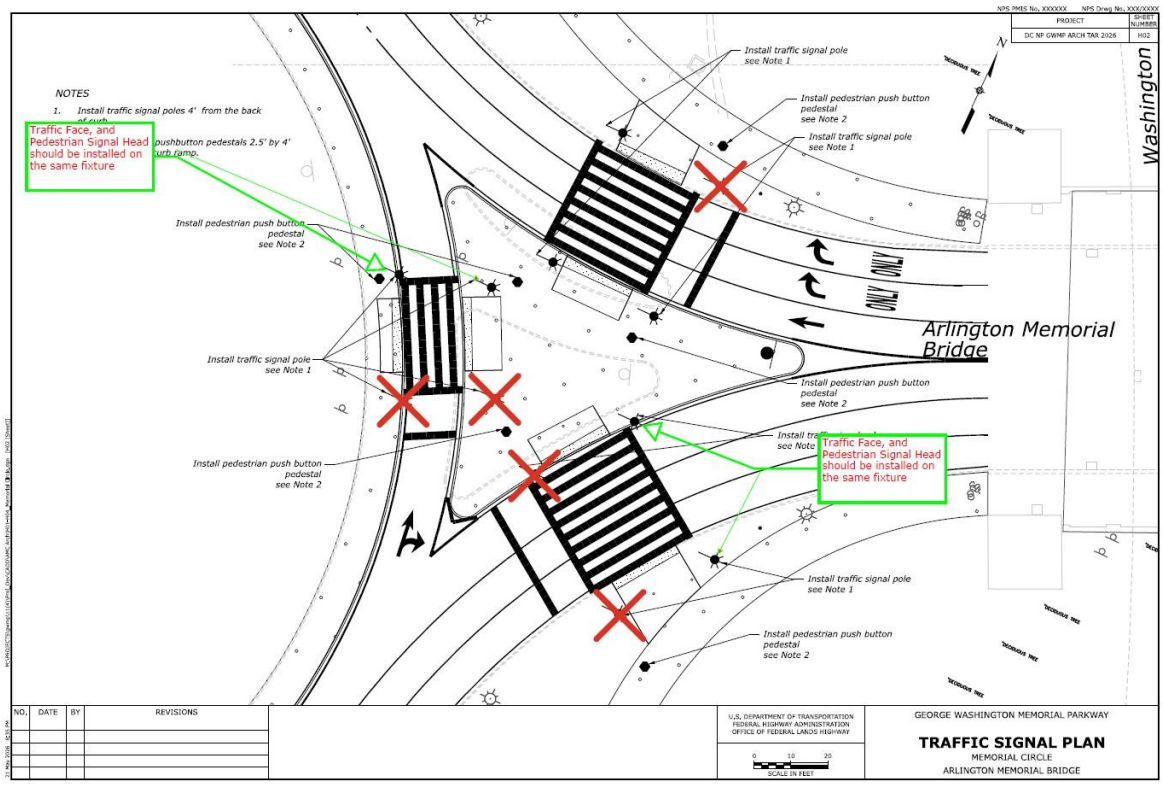


Figure 25: Traffic Signal Post Elimination, Washington boulevard Crosswalk, 3 of 4

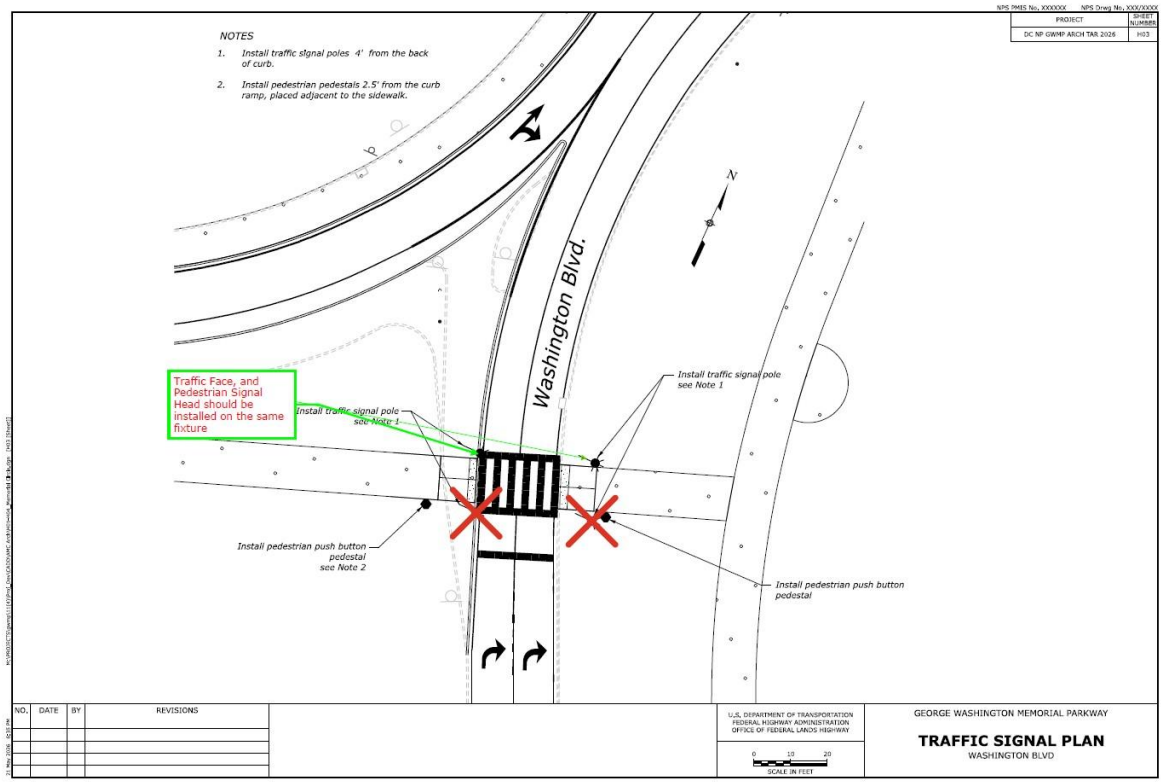


Figure 26: Traffic Signal Post Elimination, Arlington Boulevard Crosswalk, 4 of 4

