Asset (Bus Shelter) Improvement Evaluation Study

Final Report

June 2013

Washington Metropolitan Area Transit Authority

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Introduction

During the 1970s, the Washington Metropolitan Area Transit Authority (WMATA) installed Metrobus shelters throughout the Metrobus service area and at Metrorail station bus bays. Since then, additional shelters have been installed at rail stations to serve Kiss & Ride customers. Many of these shelters are in desperate need of repair or replacement due to daily use, exposure to the elements, and vandalism. Issues with rusting, damaged or missing plexiglass panels, cracks in footings and pads, paint chips, and missing or damaged dome rooftops are common. The purpose of the WMATA Bus Shelter Improvement Evaluation Study (hereafter "the study") is to document shelter conditions at 33 rail stations, rate different shelter elements, and then prioritize stations for shelter replacement. In addition, the study examines access, safety, and circulation issues at five key stations and recommends improvements to address these issues. The following section describes the scope of each study task and the contents of this report.

Project Scope

The objective of this study is to provide WMATA with an inventory of existing bus shelters, both on street and at Metrorail stations that need to be replaced with new bus shelters. The study will provide data to support future funding requests for capital improvements projects for replacing bus shelters. The study does not intend to identify the preferred type/design of shelter(s) that Metro would eventually install. This project has five main tasks:

- Task 1 – Project Management
- Task 2 – Identify Bus Shelter Location and Condition
    - This task is comprised of site visits to identify shelter locations, visually inspect the shelters, and rating each shelter based on a previously established standardized rating scale.
- Task 3 – Establish a Phased Implementation Plan for Bus Shelter Replacement
    - This task combines the condition of the shelters at each station with existing data on bus ridership and the number of bus routes at each station to prioritize the replacement of shelters.
- Task 4 – Matching Supply of Shelters to the Demand
    - The purpose of this task is to identify locations where future demand for shelters may exceed the existing supply.
- Task 5 – Assess Current Pedestrian and Traffic Circulation at Metrorail Stations
    - This task includes a field study at five Metrorail stations to assess and document safety hazards, circulation issues, modal conflicts, and recommendations for improvements.

Task 2 - Identify Bus Shelter Locations and Conditions

Immediately following the project kickoff meeting, the consultant visited each of the 33 stations over a two-week period to identify and perform a survey of the shelter conditions at each station. **Table 1** lists the Metrorail stations where shelter condition surveys were conducted in April 2013.

Table 1 - Metrorail Station Shelter Survey Locations

Addison Road-Seat Pleasant	Deanwood	Medical Center	Takoma
Anacostia	East Falls Church	Minnesota Ave	Twinbrook
Ballston-MU	Eisenhower Ave	Naylor Road	Van Dorn Street
Braddock Road	Fort Totten	New Carrollton	West Falls Church-VT/UVA
Branch Ave	Franconia-Springfield	Rhode Island Ave-Brentwood	West Hyattsville
Brookland-CUA	Greenbelt	Rockville	Wheaton
Capitol Heights	Grosvenor-Strathmore	Shady Grove	
College Park-U of MD	Huntington	Southern Ave	
Congress Heights	Landover	Suitland	

Five elements were specifically evaluated at each station shelter:

- Frame
- Panels
- Dome Tops
- Benches
- Pads & Footings

These elements were rated on a scale from 1 to 5, with 5 being excellent condition, 3 being average condition, and 1 being poor condition. Shelters were also given an overall condition score from 1 to 5. The overall score for an individual shelter was generally an average of each element rating, though frame conditions were given extra weight given that they are the most important element of the shelter.

Table 2 describes examples of the possible element conditions and their corresponding scores.

Table 2 - Examples of Shelter Element Conditions & Ratings

	1 (poor)	2	3 (average)	4	5 (excellent)
Frame	Significant rusting, holes	Significant rusting, small chips missing	Moderate rusting or chipped paint	Minimal visible rust, painted-over rust	No rust visible, no paint chips
Panels	Panels missing	Panels cracked or containing holes	Panels smeared, faded or scratched but not cracked	Panels lightly faded or smeared	Panels clear
Dome Tops	Dome tops missing	Dome tops cracked	Dome tops faded, glazed or spotted	Dome tops slightly faded	Dome tops clear
Benches	Benches split, stain gone, missing hardware, unstable	Bench stain gone, missing hardware, unstable	Benches worn or faded but stable	Benches slightly worn	Benches new or newly stained
Pads	Cracks in pads, footings missing	Major cracks in pads or footings	Moderate cracks in pads or footings	Minimal cracks in pads or footings	New concrete, no cracks in pads or footings

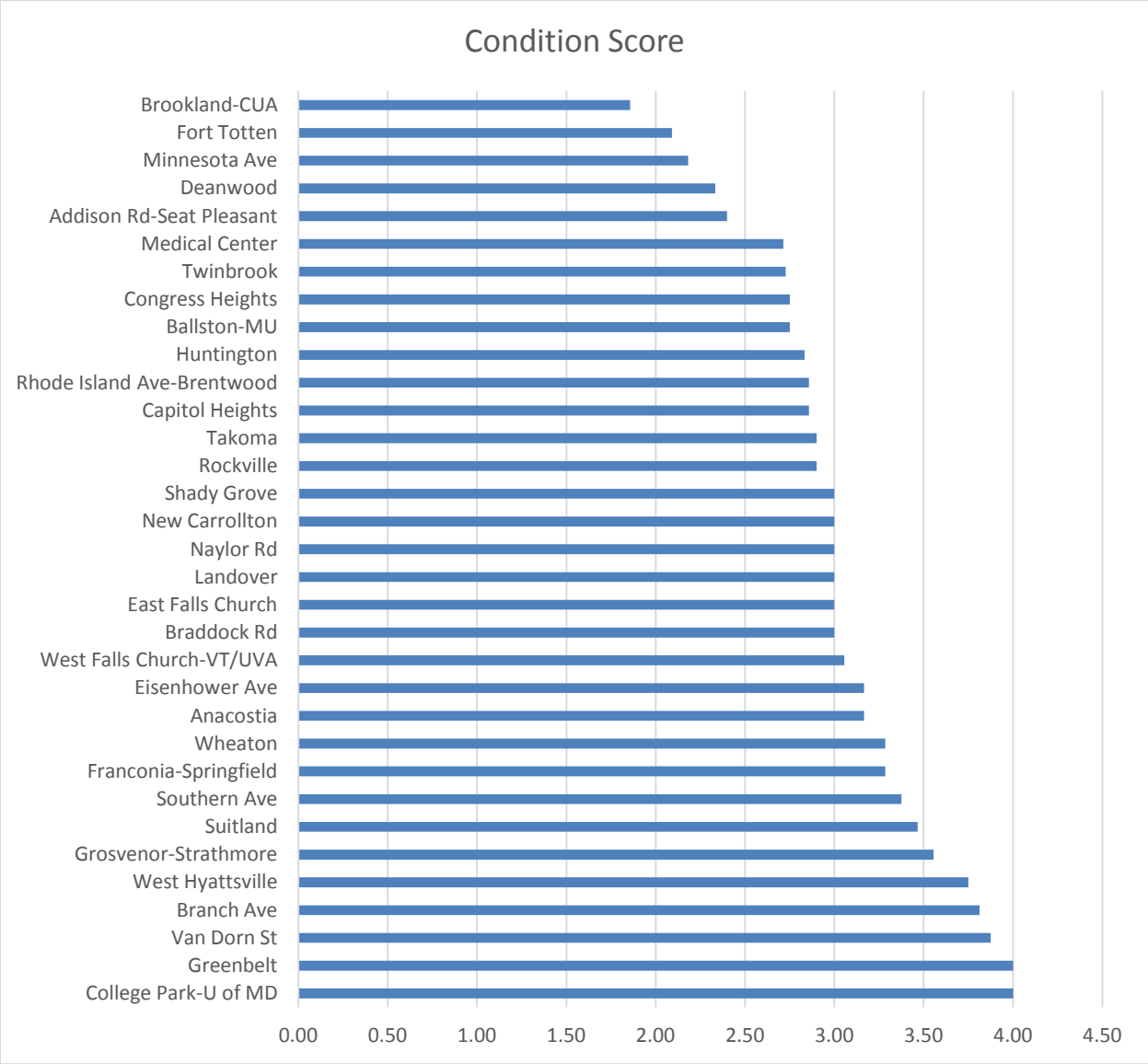
Bus Shelter Evaluation & Results

Once each shelter at a station was evaluated and given a score based on the conditions described in **Table 2**, the shelter scores were averaged by station to give each station a final score from 1 to 5. Station scores ranged from 1.86 at Brookland-CUA to 4.0 at Greenbelt and College Park. **Table 3** lists the overall score for each station. **Figure 1** displays these results graphically.

Table 3 - Overall Station Condition Scores

Station	Condition Score	Station	Condition Score
Brookland-CUA	1.86	**Naylor Rd**	3.00
Fort Totten	2.09	**New Carrollton**	3.00
Minnesota Ave	2.18	**Shady Grove**	3.00
Deanwood	2.33	**West Falls Church-VT/UVA**	3.06
Addison Rd-Seat Pleasant	2.40	**Anacostia**	3.17
Medical Center	2.71	**Eisenhower Ave**	3.17
Twinbrook	2.73	**Franconia-Springfield**	3.29
Ballston-MU	2.75	**Wheaton**	3.29
Congress Heights	2.75	**Southern Ave**	3.38
Huntington	2.83	**Suitland**	3.47
Capitol Heights	2.86	**Grosvenor-Strathmore**	3.56
Rhode Island Ave-Brentwood	2.86	**West Hyattsville**	3.75
Rockville	2.90	**Branch Ave**	3.81
Takoma	2.90	**Van Dorn St**	3.88
Braddock Rd	3.00	**College Park-U of MD**	4.00
East Falls Church	3.00	**Greenbelt**	4.00
Landover	3.00		

Figure 1 - Overall Station Condition Scores



Task 3 – Establish a Phased Implementation Plan for Bus Shelter Replacement

Metrorail stations were ranked using two different methods in order to prioritize shelter replacement: condition score only and condition score combined with existing shelter demand. **Table 4** lists the scores and the corresponding rank for each station based only on shelter condition.

Table 4 - Overall Station Condition Scores & Rank

Station	Condition Score	Rank	Station	Condition Score	Rank
Brookland-CUA	1.86	1	Naylor Rd	3.00	18
Fort Totten	2.09	2	New Carrollton	3.00	19
Minnesota Ave	2.18	3	Shady Grove	3.00	20
Deanwood	2.33	4	West Falls Church-VT/UVA	3.06	21
Addison Rd-Seat Pleasant	2.40	5	Anacostia	3.17	22
Medical Center	2.71	6	Eisenhower Ave	3.17	23
Twinbrook	2.73	7	Franconia-Springfield	3.29	24
Ballston-MU	2.75	8	Wheaton	3.29	25
Congress Heights	2.75	9	Southern Ave	3.38	26
Huntington	2.83	10	Suitland	3.47	27
Capitol Heights	2.86	11	Grosvenor-Strathmore	3.56	28
Rhode Island Ave-Brentwood	2.86	12	West Hyattsville	3.75	29
Rockville	2.90	13	Branch Ave	3.81	30
Takoma	2.90	14	Van Dorn St	3.88	31
Braddock Rd	3.00	15	College Park-U of MD	4.00	32
East Falls Church	3.00	16	Greenbelt	4.00	33
Landover	3.00	17			

Based on the overall condition scores, the top five stations for replacement of shelters are:

- Brookland-CUA,
- Fort Totten,
- Minnesota Ave,
- Deanwood, and
- Addison Road-Seat Pleasant

The stations ranked by overall condition and existing demand yields different results as it gives added weight to stations with high demand. Based on available data, the demand metrics used for each station were 2012 total bus boardings estimates[1] and number of bus routes serving the station. In order to weight these demand metrics with the condition scores, the following factors were used:

Metric	Weight
2012 Estimated Bus Boardings Rank	**1.5**
Number of Bus Routes Rank	**1**
Condition Score Rank	**3**

This weighting system gives the highest weight to the actual condition of the shelters, followed by estimated bus boardings, reflecting the best indicator available for actual shelter use. The number of bus routes is also considered, but given a lower weight, as quantity of bus routes is less indicative of actual shelter use. The formula used to calculate a weighted score was the following:

- **Weighted Score = (Condition Score Rank * 3) + (2012 Estimated Bus Boardings Rank * 1.5) + (Number of Bus Routes Rank * 1)**, where each station's rank from 1 to 33 in each demand metric was used.

Example: Brookland-CUA Station

Condition Score Rank = 1st
Bus Boardings Rank = 5th
Number of Bus Routes Rank = 19th

Weighted Score = (Condition Score Rank * 3) + (2012 Estimated Bus Boardings Rank * 1.5) + (Number of Bus Routes Rank * 1)

Weighted Score = (1 * 3) + (5 * 1.5) + (19 * 1)

Weighted Score = 29.5

In summary, the stations are given three rankings based on three metrics. Those rankings are then weighted based on the formula shown above. With this weighting system, station shelter replacement was re-ranked, with the new ranking based on the weighted score. The results are shown in **Table 5.**

[1] 2012 Metrorail alightings multiplied by 2007 survey rail-to-bus transfer percentage

Table 5 - Rank by Condition Score & Existing Demand

Station	Weighted Score	Rank	Station	Weighted Score	Rank
Fort Totten	23	1	Naylor Rd	95	18
Brookland-CUA	30	2	Franconia-Springfield	100	19
Ballston-MU	44	3	Southern Ave	103	20
Minnesota Ave	50	4	Braddock Rd	104	21
Rhode Island Ave-Brentwood	54	5	East Falls Church	105	22
Addison Rd-Seat Pleasant	56	6	Capitol Heights	106	23
Huntington	59	7	Suitland	122	24
Shady Grove	66	8	Wheaton	125	25
Takoma	69	9	Landover	128	26
New Carrollton	71	10	Greenbelt	132	27
Medical Center	71	11	Van Dorn St	134	28
Anacostia	72	12	College Park-U of MD	138	29
Rockville	72	13	Eisenhower Ave	151	30
West Falls Church-VT/UVA	79	14	Branch Ave	156	31
Twinbrook	84	15	West Hyattsville	157	32
Deanwood	88	16	Grosvenor-Strathmore	160	33
Congress Heights	90	17			

Based on the condition scores and existing demand, the top five stations for shelter replacement are:

- Fort Totten,
- Brookland-CUA,
- Ballston-MU,
- Minnesota Ave, and
- Rhode Island Ave-Brentwood.

Addison Road-Seat Pleasant and Southern Ave currently have federal funding in place for station rehabilitation through a TIGER grant. WMATA may want to consider prioritizing improvements at these two stations as federal funding is available for improvements and will not require any additional funding from WMATA.

For detailed information on individual shelter scores at each station, see **Appendix A**. Summaries of the field review and station shelter inventory are included for each station in **Appendix B**.

Task 4 – Matching Supply of Shelters to the Demand

See technical memorandum.

Task 5 – Assess Current Pedestrian and Traffic Circulation at Metrorail Stations

Over the past several years, WMATA has received a number of complaints regarding access, circulation, and safety at various Metrorail Stations. This study focuses on needs at five stations in particular: Addison Road-Seat Pleasant, Anacostia, Minnesota Ave, New Carrollton, and Takoma. Pedestrian-vehicle interaction, lack of necessary signage and pavement markings, and lack of enforcement were among the chief complaints. This led WMATA to commence an evaluation of existing pedestrian, bus, and traffic circulation at these stations to identify issues and produce recommendations for improving conditions at the stations.

During the spring of 2013, station access, circulation, and safety conditions were observed for multiple modes. Additionally, Metrobus Service Operations Managers (SOMs) were interviewed to document problems and recommend improvements. Recommended improvements ranged from simple signage and pavement striping to the relocation of bus bays and the installation of fencing. Recommendations followed the guidelines in the WMATA *Station Site and Access Planning Manual*, particularly for bus bays and platform dimensions. In addition to on-site internal improvements on station property, recommendations were also made for adjacent intersections and roadways where signage, striping, or other infrastructure improvements would be necessary to improve station access.

Summary of Issues and Recommendations

Table 6 summarizes the major issues documented at each station. Subsequent sections provide detailed recommendations for each station.

Table 6 - Summary of Major Issues at Metrorail Stations

Addison Road-Seat Pleasant	• Lack of vehicle compliance with Central Avenue crosswalk • Lack of proper traffic controls and crosswalks at the Kiss & Ride lot
Anacostia	• Jaywalking between Metrorail station and Bus Bays A-E • Patrons walking in busway from Martin Luther King Jr. Avenue • Intersection blocking/vehicle congestion on Howard Road
Minnesota Ave	• Jaywalking between Bus Bays J-K and L-M and the Metrorail station entrance and across Minnesota Avenue • Lack of wheelchair/stroller access to Bus Bays J-K from north crosswalks • Minimal Kiss & Ride lot use
New Carrollton – East Entrance	• Lack of signage on entrance driveway • Patrons walking in entrance driveway • Kiss & Ride lot congestion conflicts with pedestrian movements • Traffic control markings and signage in busway and Kiss & Ride Lot
New Carrollton – West Entrance	• Fencing placement forcing people into busway • Lack of traffic controls in Kiss & Ride lot • Taxi queue blocking busway • Sidewalk condition at station entrance and on Ellin Road
Takoma	• Jaywalking between Bus Bays G-J and the Metrorail station entrance • Minimal Kiss & Ride lot use • Difficult to access elevator

Additionally, previous studies performed at the New Carrollton and Minnesota Ave Metrorail stations revealed the following issues:

- Minnesota Ave:
  - Inability for buses to circulate within station without using Minnesota Avenue
  - Obscurity of Kiss & Ride Lot
- New Carrollton:
  - Need for four additional bus bays and a bus layover area on West Entrance
  - Need for bus layover area on East Entrance
  - Need for traffic flow improvements in east Kiss & Ride Lot

Based on observations made during the site visits, interviews with SOMs, and previous studies, **Tables 7-12** summarize the recommended improvements at each station.

Table 7 - Summary of Improvement Recommendations for Addison Road-Seat Pleasant Metrorail Station

	Infrastructure	Striping	Signage	Enforcement
Addison Road-Seat Pleasant	• New curb ramp/ detectable warning panels on Kiss & Ride island. • New sidewalk on west side of Addison Road with curb ramp at station entrance. • New sidewalk across southeast corner of Addison Road/Station Driveway intersection. • Fencing on south side of Addison Road entrance driveway and on left-turn bay median on Central Avenue. • Detectable warning panels on all curb ramps.	• New crosswalks at garage entrance on Addison Road entrance driveway. • Stripe a bus layover lane on the Central Avenue driveway southbound. • *Right-turn only* and *stop* lettering in Central Avenue driveway southbound right lane at Addison Road entrance intersection. • *Left-turn/right-turn* pavement marking in the southbound left lane of the Central Avenue entrance driveway at the Addison Road entrance driveway intersection. • Restripe crosswalks with continental or ladder striping.	• *Stop* signs at garage driveway at Addison Road entrance, busway crosswalk and at Kiss & Ride northbound travel lane termini. • Remove yield sign from Kiss & Ride southbound lane terminus. • Pedestrian warning signs at Central Avenue driveway crosswalk. • *State Law Stop for Pedestrians in Crosswalk* sign at Central Avenue crosswalk.	• Pedestrian crosswalk on Central Avenue.

Table 8 - Summary of Improvement Recommendations for Anacostia Metrorail Station

	Infrastructure	Striping	Signage	Enforcement
Anacostia	• Reconfiguration of station bus bays and installation of fencing along the rear of relocated Bus Bays A-E. • Reconfiguration of Martin Luther King Jr. Avenue entrance driveway/ busway intersection with bumpout. • Pedestrian signals at garage driveway on Howard Road. • Detectable warning panels on all curb ramps.	• Stop line on west entrance. • *Buses Only* markings on Howard Road entrances. • *Do Not Block Intersection* markings on Howard Road at station entrances. • Restripe crosswalks with continental or ladder striping.	• *Stop* signs at busway crosswalk at main station entrance. • *Do Not Block Intersection* signs on Howard Road eastbound. • *No Left Turn Except Buses/ No Right Turn Except Buses* signs on Howard Road at west entrance. • *Pedestrians Use Sidewalk* signs at Martin Luther King Jr. Avenue entrance. • *No Bicycles* signs at Martin Luther King Jr. Avenue entrance. • Bicycle parking directional signs on Howard Road. • Kiss & Ride/Park & Ride garage signage on Howard Road.	• No Stopping/No Standing on Howard Road eastbound. • Intersection blocking on Howard Road.

Table 9 - Summary of Improvement Recommendations for Minnesota Ave Metrorail Station

	Infrastructure	Striping	Signage	Enforcement
Minnesota Ave	• Fencing behind Bus Bays J-K and L-M. • Curb ramps on Bus Bays J-K at crosswalks. • Extension of Bus Bays J-K further south. • Fencing on west side of Minnesota Avenue. • Sidewalk reconstruction at Kiss & Ride. • Pedestrian crossing on Minnesota Avenue between school and station (crosswalk, curb ramps and warning signs). • Detectable warning panels on all curb ramps.	• Restripe crosswalks with continental or ladder striping. • *Yield* pavement markings prior to north entrance crosswalk.	• *Use Crosswalk* signage on Minnesota Avenue. • *No Left Turn Except Buses* sign on Minnesota Avenue northbound. • Kiss & Ride Lot signage. • Pedestrian warning sign prior to north entrance crosswalk.	• No Stopping/No Standing on Minnesota Avenue southbound. • Jaywalking and U-turns on Minnesota Avenue.

Table 10 - Summary of Improvement Recommendations for New Carrollton Metrorail Station - West

	Infrastructure	Striping	Signage	Enforcement
New Carrollton - West	• Four additional bus bays. • Sidewalk reconstruction on Ellin Road and in front of Metrorail station entrance. • Shorten fencing north of Bus Bay H. • Detectable warning panels on all curb ramps.	• Bus layover area on Ellin Road. • *Stop* lettering and stop lines at end of Kiss & Ride travel lanes and at aisle junctions in Park & Ride. • Restripe crosswalks with continental or ladder striping.	• *No Left Turn* sign on Ellin Road southbound. • *Stop* signs at end of Kiss & Ride travel lanes. • *No Parking* arrow signs in taxi area.	• Taxi queue length.

Table 11 - Summary of Improvement Recommendations for New Carrollton Metrorail Station - East

	Infrastructure	Striping	Signage	Enforcement
New Carrollton - East	• Detectable warning panels on all curb ramps. • Direct sidewalk on access driveway. • Elimination of security booth on egress driveway. • Removal of Kiss & Ride lot north sidewalk. • New fencing along north side of busway entrance to garage entrance. • New fencing on west corner of Lot 3. • Bumpout on Garden City Drive at Lot 3. • Reconstructed curb ramps on Garden City Drive at Amtrak Lot.	• Examine feasibility of restriping left lane of egress driveway as a shared right-turn/left-turn lane. • Eliminate egress driveway crosswalk at Lot 2 exit. • Yield pavement markings prior to crosswalks in Kiss & Ride, egress driveway and Lot 2. • *Stop* lettering and stop lines prior to crosswalk in taxi lane of Kiss & Ride. • Removal of Lot 3 driveway crosswalk and striping of stop line there. • *Stop* lettering and stop lines at aisle junctions in Lot 3 and Amtrak Lot. • Restripe crosswalks with continental or ladder striping.	• Signage for garage entrance. • Signage for taxi queue area. • *No Stopping to Load/Unload* signs in Kiss & Ride travel lane. • Clarify lane use on entrance driveway prior to Lot 2/Kiss & Ride entrance. • *Yield* sign at Lot 2 exit. • *Stop* sign prior to Kiss & Ride taxi lane crosswalk. • *Stop* sign prior to north busway crosswalk. • Pedestrian warning signs prior to Kiss & Ride crosswalks.	• Kiss & Ride parking limits. • Use of access driveway and busway for layovers.

Table 12 - Summary of Improvement Recommendations for Takoma Metrorail Station

	Infrastructure	Striping	Signage	Enforcement
Takoma	• Relocation of Bus Bays G & H to west side. • Fencing along east side. • Relocation of pathway in park. • Detectable warning panels on all curb ramps. • New sidewalk from Bus Bay D to elevator.	• Yield pavement markings on Cedar Street. • Restripe crosswalks with continental or ladder striping.	• Kiss & Ride entrance signage on Eastern Avenue. • *No Left Turn Except Buses* on Eastern Avenue northbound. • Additional elevator signage.	• *No Stopping/No Standing* on Cedar Street.

Appendix C offers detailed explanations of issues and recommendations at each station along with renderings of proposed improvements.

Appendix A: Station Demand Metrics

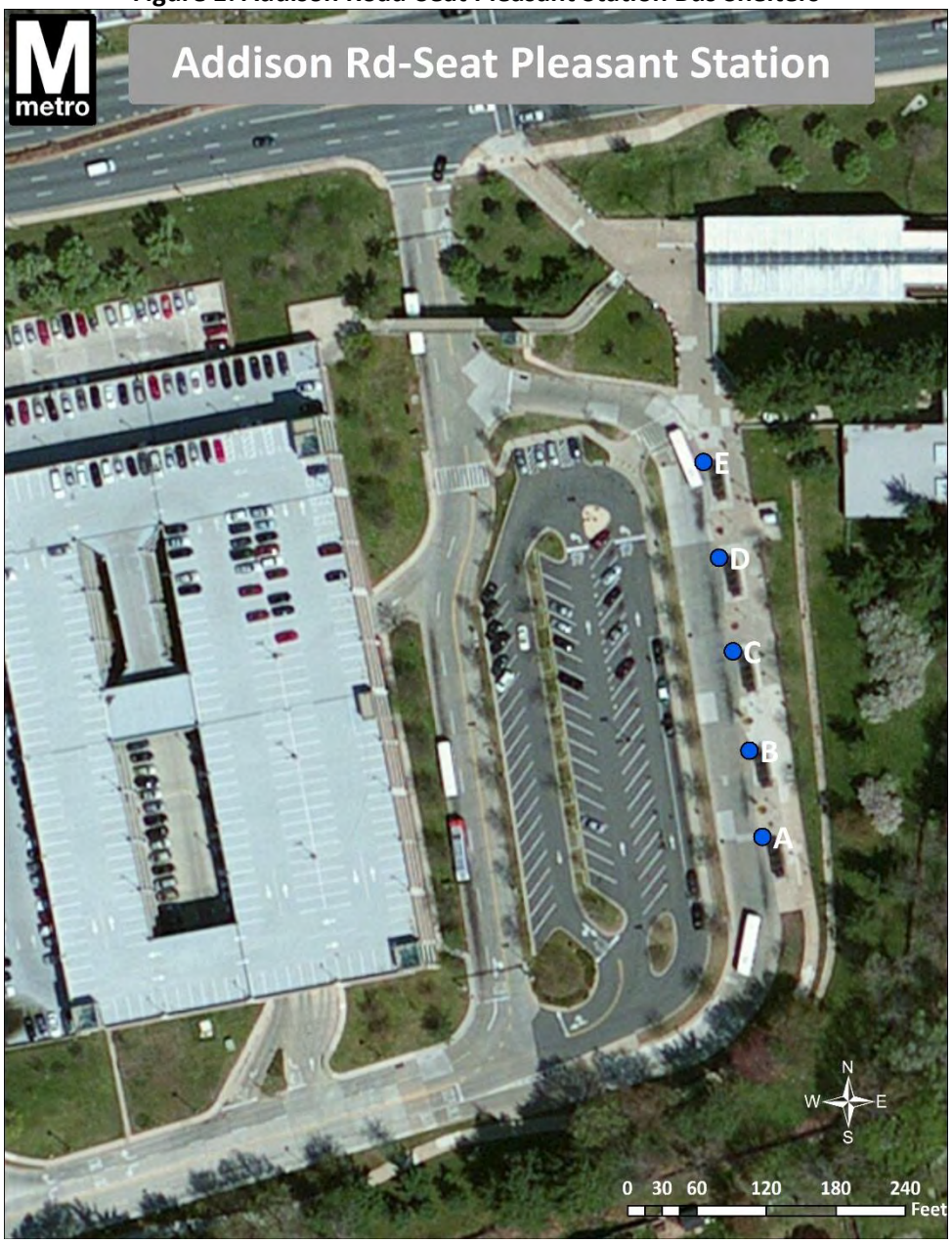
Station	Total # Bus Routes	2012 Bus Boardings
Addison Road-Seat Pleasant	15	1,395
Anacostia	24	5,061
Ballston-MU	22	2,147
Braddock Road	8	1,317
Branch Ave	6	888
Brookland-CUA	10	2,837
Capitol Heights	8	433
College Park-U of MD	13	1,398
Congress Heights	8	806
Deanwood	7	319
East Falls Church	10	1,010
Eisenhower Ave	4	310
Fort Totten	12	4,914
Franconia-Springfield	19	1,798
Greenbelt	17	1,640
Grosvenor-Strathmore	5	519
Huntington	11	2,330
Landover	3	587
Medical Center	10	1,218
Minnesota Ave	12	1,616
Naylor Road	11	1,692
New Carrollton	25	2,477
Rhode Island Ave-Brentwood	14	3,010
Rockville	20	1,429
Shady Grove	28	4,555
Southern Ave	11	2,697
Suitland	9	1,895
Takoma	16	1,937
Twinbrook	9	745
Van Dorn Street	10	1,801
West Falls Church-UT/UVA	25	2,264
West Hyattsville	7	738
Wheaton	18	714

Appendix B: Shelter Inventory Summaries by Station

Addison Road-Seat Pleasant Metrorail Station

The Addison Road-Seat Pleasant Metrorail Station has one set of five bus shelters labeled A through E. All of the shelters at the station are double-framed. There is no Kiss-and-Ride shelter at this station. The station is served by Metrobus routes A11, A12, C21, C22, C29, F14, J11, J12, P12, V12, V14 and V15 and The Bus routes 18, 20 and 23. Figure 1 illustrates each shelter located at this station.

Figure 1: Addison Road-Seat Pleasant Station Bus Shelters



Overall, shelter conditions at the station are poor, with a station condition score of 2.4. Table 1 summarizes conditions for each individual shelter. The shelters, as a whole, scored the lowest in frame

and panel condition, with most shelters showing rust and warped or broken panels. Shelters B and D are in the worst condition, with poor pads and significant rust on their frames. Shelter A is the only shelter without significant rust on its frame. Shelter E has damaged panels, including one popping out of the frame. Dome tops at the station are slightly below average, with fading and cracking present. **Figures 2 through 5** illustrate the different shelter conditions at the station, while **Figure 6** summarizes each shelter's overall condition score.

Table 1: Shelter Conditions at the Addison Road-Seat Pleasant Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	3	3	2	4	2
B	2	2	3	2	2	1
C	3	2	3	2	4	2
D	2	1	3	2	2	3
E	2	2	2	2	3	3
Average	**2.4**	**2**	**2.8**	**2**	**3**	**2.2**

Figure 2: Shelter B Rust on Frame, Damaged Panel

Figure 3: Shelter D Rust and Hole in Frame

Figure 4: Cracked Pad, Shelter B

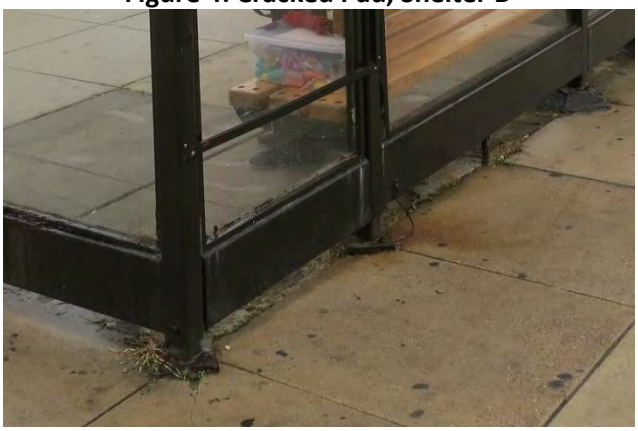
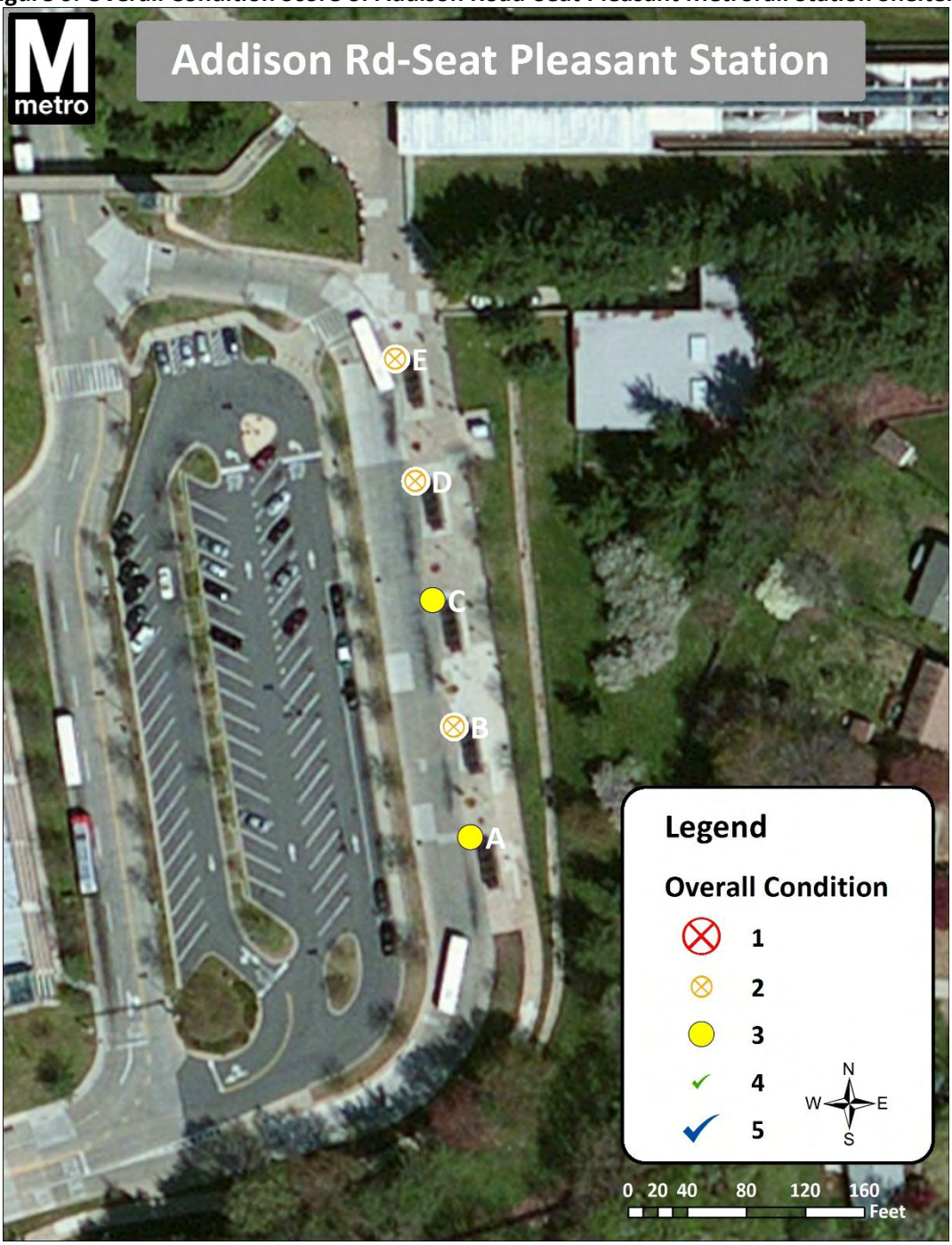


Figure 5: Shelter E Damaged Panel

Figure 6: Overall Condition Score of Addison Road-Seat Pleasant Metrorail Station Shelters



Overall, the station was ranked 7th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 6th for replacement. A federal grant to reconstruct the bus bays and shelters at the station is in place and therefore, this station should be WMATA's top priority for replacement.

Anacostia Metrorail Station

The Anacostia Station has one set of 12 bus shelters labeled A through M plus an additional shelter on Howard Road at the station entrance. The Howard Road shelter is used by the Circulator and has a newer design than the rest of the shelters at the station. This shelter was not included in overall shelter condition scores at the station since it is not owned by WMATA. All of the shelters at the station are double-framed with the exception of the Circulator shelter. There is no Kiss-and-Ride shelter at this station, as the Kiss-and-Ride area is located in a separate parking garage. The station is served by Metrobus routes A2, A4, A5, A6, A7, A8, A42, A46, A48, P1, P2, P6, P18, U2, W2, W3, W4, W6, W8, W14, 90 and 94 and the Potomac Yard-Skyland Circulator route. **Figure 7** illustrates each shelter located at this station.

Figure 7: Anacostia Station Bus Shelters

Overall, shelter conditions at the station are above average, with a station condition score of 3.2. **Table 2** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in panels and dome tops. Shelters B, C, D, E, F, H, J, L and M all had damaged panels with smearing, glossing, and

cracking. Shelters C and L also had some cracking damage to their dome tops. Benches and pads at the station were in above average shape, and frames had minimal rust with the exception of shelters B, C, K, and L.

Figures 8 through 11 illustrate the different shelter conditions at the station, while **Figure 12** summarizes each shelter's overall condition score.

Table 2: Shelter Conditions at the Anacostia Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	4	4	3	3	4	4
B	3	3	3	2	4	4
C	3	3	2	2	3	4
D	3	4	3	2	3	3
E	3	4	3	2	3	4
F	3	4	3	2	4	4
G	4	4	4	3	4	4
H	3	4	3	2	4	4
J	3	4	3	2	3	4
K	3	3	3	4	3	4
L	3	3	2	2	4	4
M	3	4	3	2	3	4
Circulator*	*5*	*5*	*4*	*5*	*5*	*5*
Average	**3.2**	**3.7**	**2.9**	**2.3**	**3.5**	**3.9**

*Scores not included in station average.

Figure 8: Damaged Panel, Shelter B

Figure 9: Damaged Panel, Shelter H

Figure 10: Rusted Frame, Shelter K

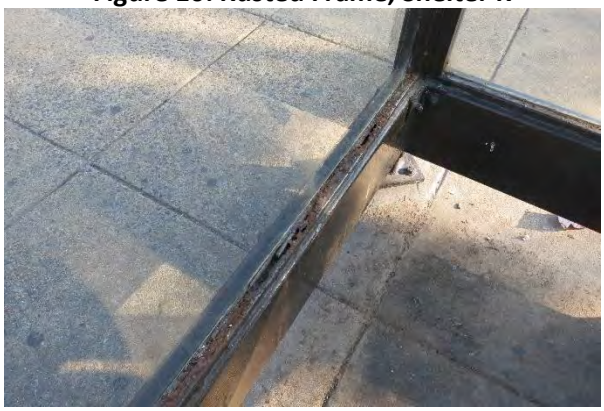


Figure 11: Circulator Shelter

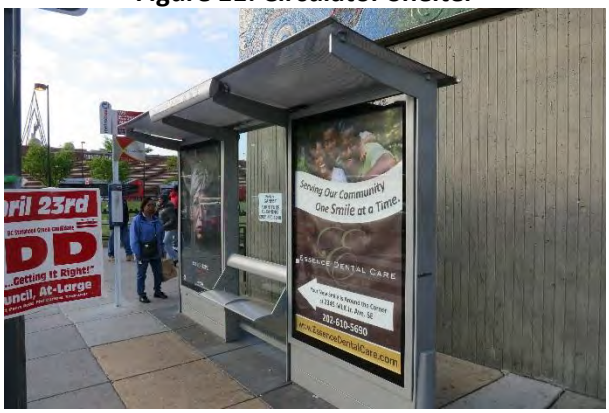
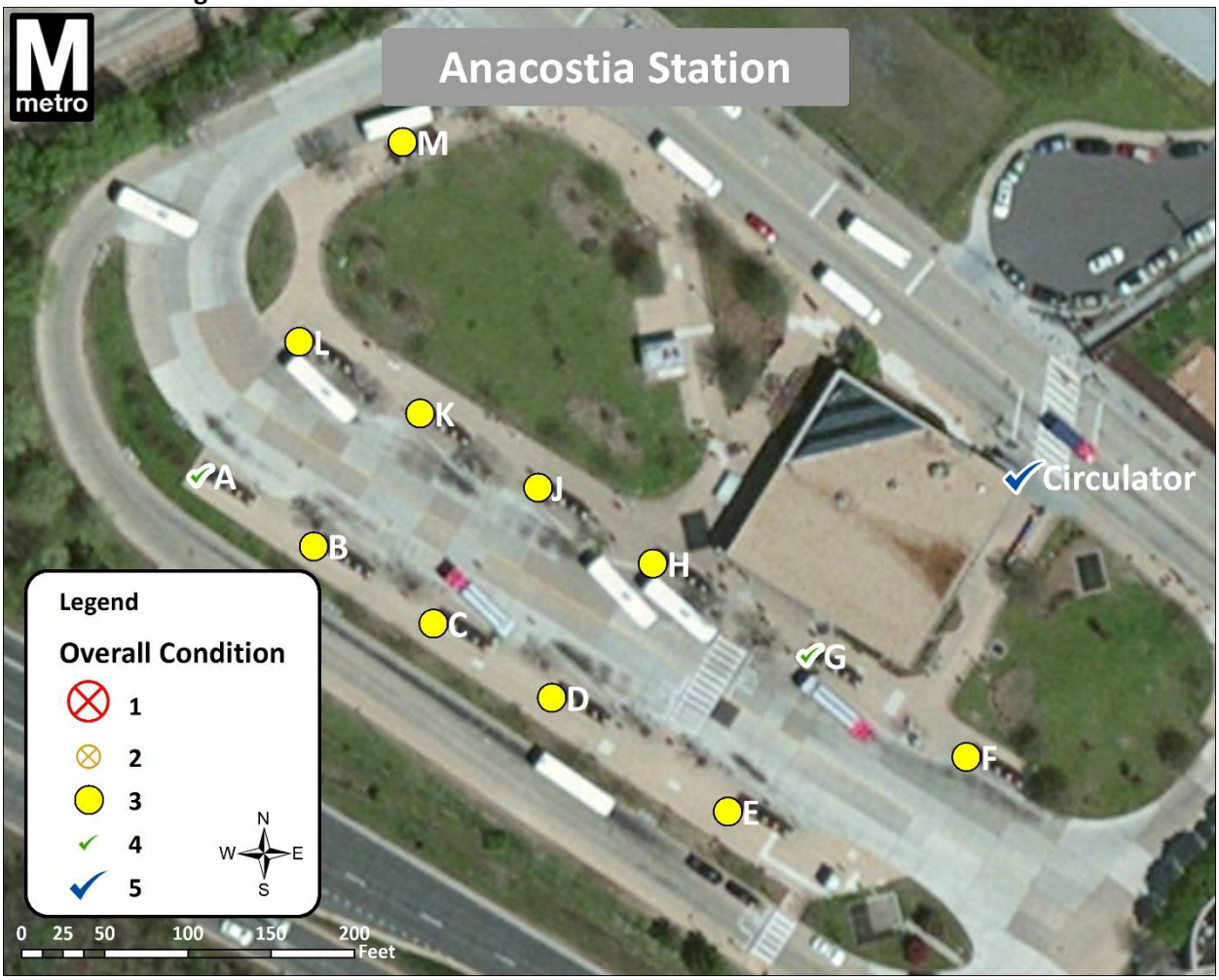


Figure 12: Overall Condition Score of Anacostia Metrorail Station Shelters



Overall, the station was ranked 12th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 22nd for replacement.

Ballston-MU Metrorail Station

The Ballston-MU Station has one set of eight bus shelters labeled A through H. There is no Kiss-and-Ride shelter at this station. The shelters at Ballston-MU are all single-framed, unlike the majority of WMATA metrorail station shelters which are doubled-framed. The station is served by Metrobus routes 1A, 1B, 1E, 1F, 1Z, 2A, 2B, 2C, 2G, 10B, 22A, 23A, 23C, 25A, 25B and 38B and Arlington County Transit (ART) routes 42, 51, 52, 53, 62 and 75. Figure 13 illustrates each shelter located at this station.

Figure 13: Ballston-MU Station Bus Shelters

Overall, shelter conditions at the station are slightly below average, with a station condition score of 2.8. **Table 3** summarizes conditions for each individual shelter. The shelters, as a whole, scored the lowest in panel and dome top condition, with damage to each of these elements present at several shelters. Shelters D and E are in the worst condition, with D missing a panel and E showing above average rust, damaged panels, and a damaged dome top.

Rust on the frames was common among all the shelters at this station with the exception of G, which had the best overall frame condition. Benches at E and H were worn and heavily scratched, while benches at other shelters were in average condition. Pads at the station were in above average condition overall. **Figures 14 through 17** illustrate the different shelter conditions at the station, while **Figure 18** summarizes each shelter's overall condition score.

Table 3: Shelter Conditions at the Ballston-MU Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	3	2	2	3	4
B	3	3	3	3	3	4
C	3	3	4	3	3	4
D	2	3	2	1	4	4
E	2	2	2	3	2	3
F	3	3	3	2	3	4
G	3	4	2	3	3	4
H	3	3	3	3	2	4
Average	**2.8**	**3.0**	**2.6**	**2.5**	**2.9**	**3.9**

Figure 14: Single Frame Shelters

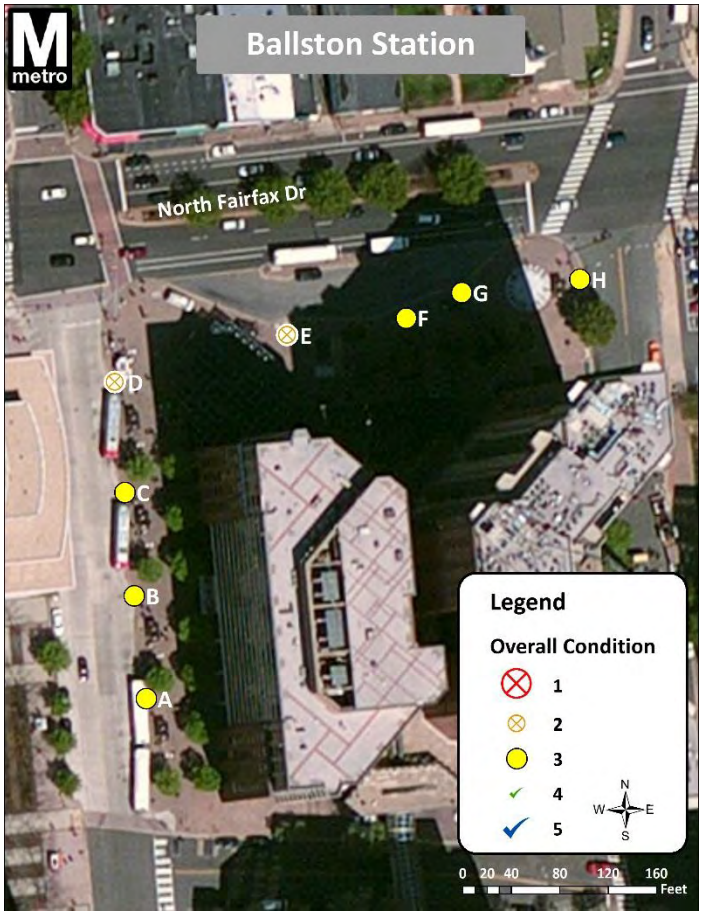
Figure 15: Missing Panel, Shelter D

Figure 16: Rusted Frame, Shelter E

Figure 17: Worn Bench, Shelter H

Overall, the station was ranked 3rd for replacement based on shelter condition and demand, due to high bus and rail ridership at the station. Based on shelter condition only, the station ranked 8th for replacement.

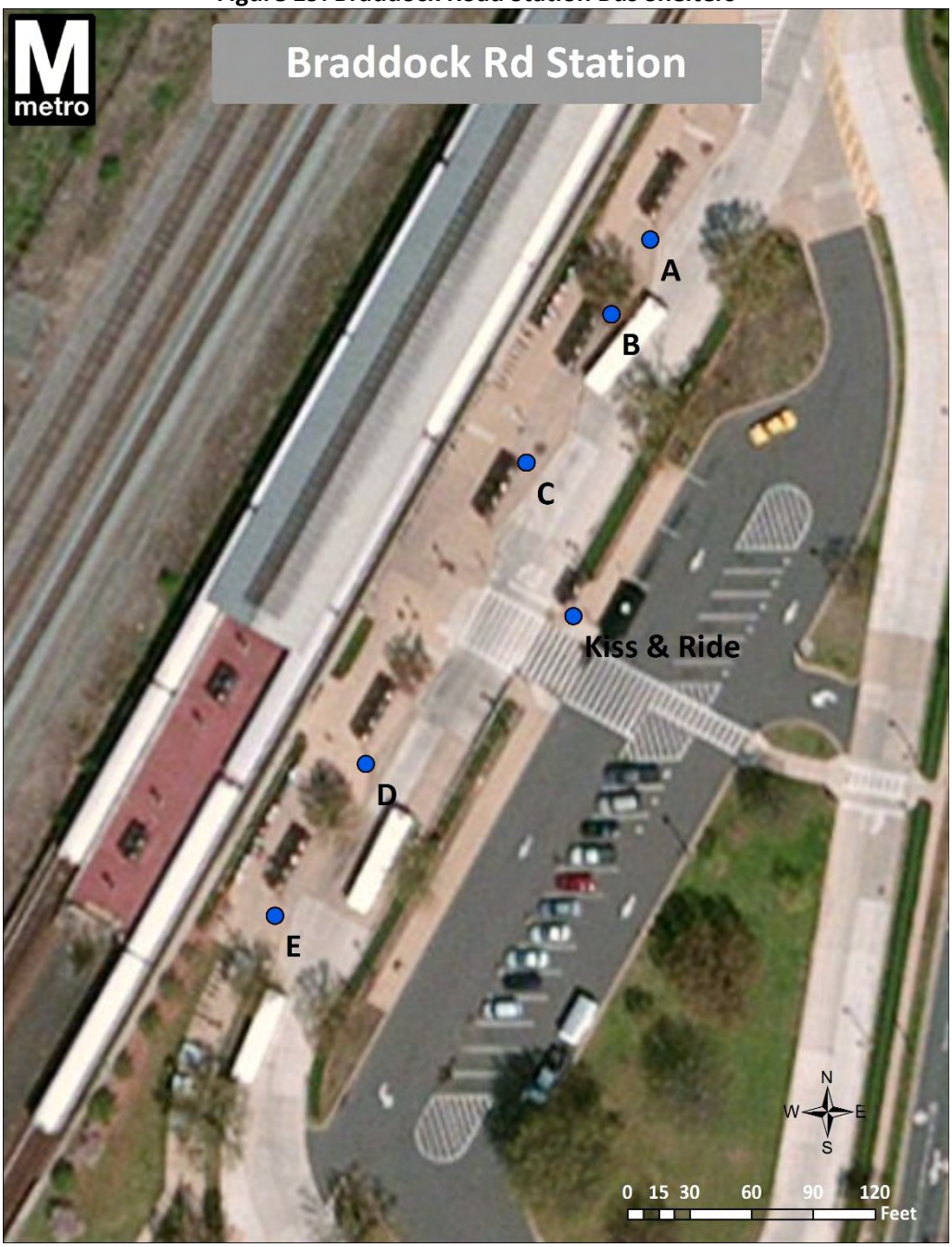
Figure 18: Overall Condition Score of Ballston-MU Metrorail Station Shelters



Braddock Road Metrorail Station

The Braddock Road Station has one set of five bus shelters plus an additional shelter for the Kiss-and-Ride lot. All of the shelters at the station are double-framed with the exception of the Kiss-and-Ride shelter, which is single-framed. The station is served by Metrobus routes 9E, 10A, 10B and 10E, and DASH routes 2, 3, 4, and 5. **Figure 19** illustrates each shelter located at this station.

Figure 19: Braddock Road Station Bus Shelters



Overall, shelter conditions at the station are average, with a station condition score of 3.0. **Table 4** summarizes conditions for each individual shelter. The shelters, as a whole, scored the lowest in pad and frame condition. Shelters B, C, and D all have significant rust on their frames, while A, D, and E all had significant cracking in their pads. Shelter E also had a damaged panel. Dome tops were generally in average condition, while benches were in slightly above average condition.

Figures 20 through 23 illustrate the different shelter conditions at the station, while **Figure 24** summarizes each shelter's overall condition score.

Table 4: Shelter Conditions at the Braddock Road Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	3	3	4	4	2
B	3	2	4	3	4	2
C	3	2	3	3	4	3
D	3	2	3	3	3	2
E	3	3	3	2	3	2
Kiss & Ride	3	4	3	3	3	3
Average	**3.0**	**2.7**	**3.2**	**3.0**	**3.5**	**2.3**

Figure 20: Frame Damage, Shelter B

Figure 21: Rusted Frame, Shelter C

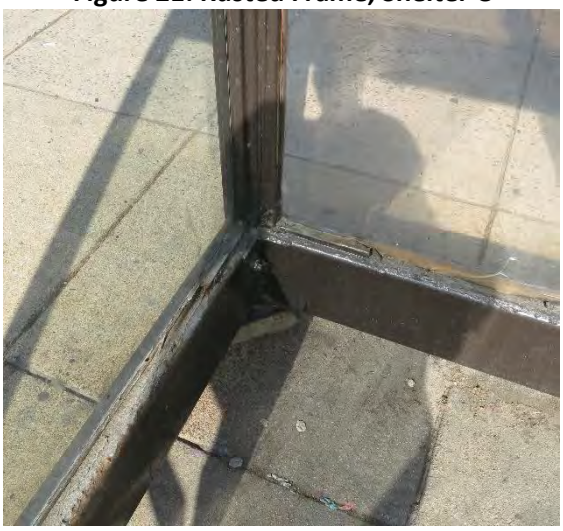


Figure 22: Damaged Panel, Shelter E

Figure 23: Cracked Pads/Footings, Shelter B

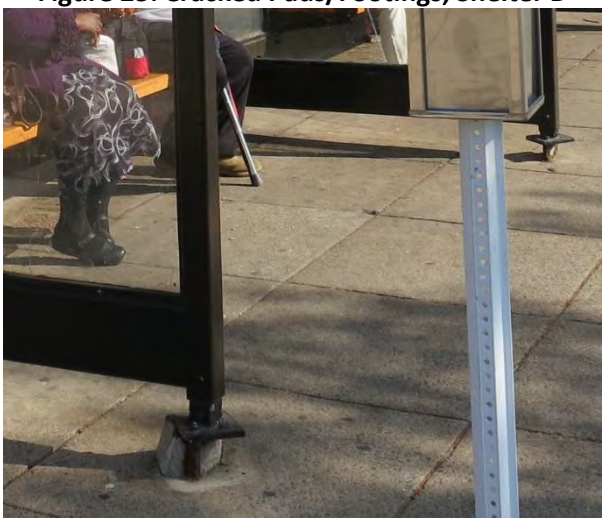
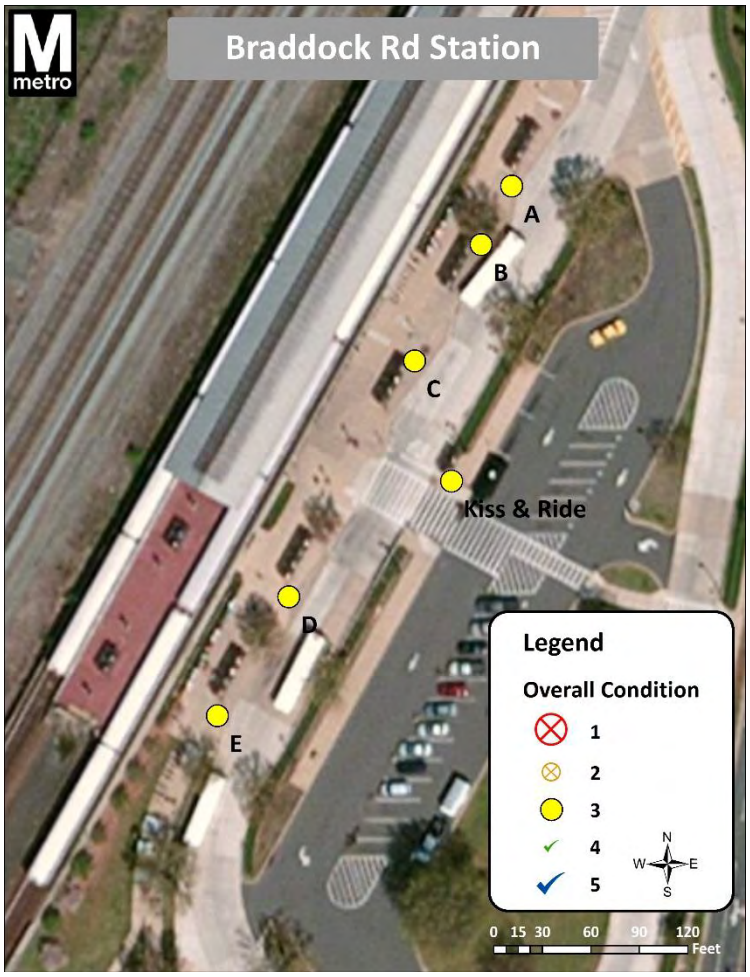


Figure 24: Overall Condition Score of Braddock Road Metrorail Station Shelters



Overall, the station was ranked 21st for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 15th for replacement.

Brookland-CUA Metrorail Station

The Brookland-CUA Station has one set of six bus shelters plus an additional shelter for the Kiss-and-Ride lot. Shelters A through C serve their respective bus bays, however, bus bays F and G, E and H, and D and J each share a shelter. All of the shelters at the station are double-framed with the exception of the Kiss-and-Ride shelter which is single-framed. The station is served by Metrobus routes G8, H1, H2, H3, H4, H6, H8, H9, R4, and 80. **Figure 25** illustrates each shelter located at this station.

Figure 25: Brookland-CUA Station Bus Shelters

Overall, shelter conditions at the Brookland station are poor, with an overall station condition score of 1.9. **Table 5** summarizes conditions for each individual shelter. The shelters, as a whole, scored the lowest in frame and bench condition, though panel and dome top condition were also below average. Shelter A is in particularly bad condition, with an overall condition score of 1. Shelter A had significant rust on its frame, missing panels, a missing dome top and worn/split benches. Shelters B, C ,and D/J also had significant rust on their frames, while shelters E/H and F/G also had missing dome tops. Shelter D/J also had a hole in its frame.

Figures 26 through 29 illustrate the different shelter conditions at the station, while **Figure 30** summarizes each shelter's overall condition score.

Table 5: Shelter Conditions at the Brookland-CUA Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	1	1	1	1	1	3
B	2	1	3	2	1	2
C	2	1	3	2	2	2
D/J	2	1	3	3	2	1
E/H	2	2	1	2	2	2
F/G	2	2	1	2	2	2
Kiss & Ride	2	2	3	2	2	3
Average	**1.9**	**1.4**	**2.1**	**2.0**	**1.7**	**2.1**

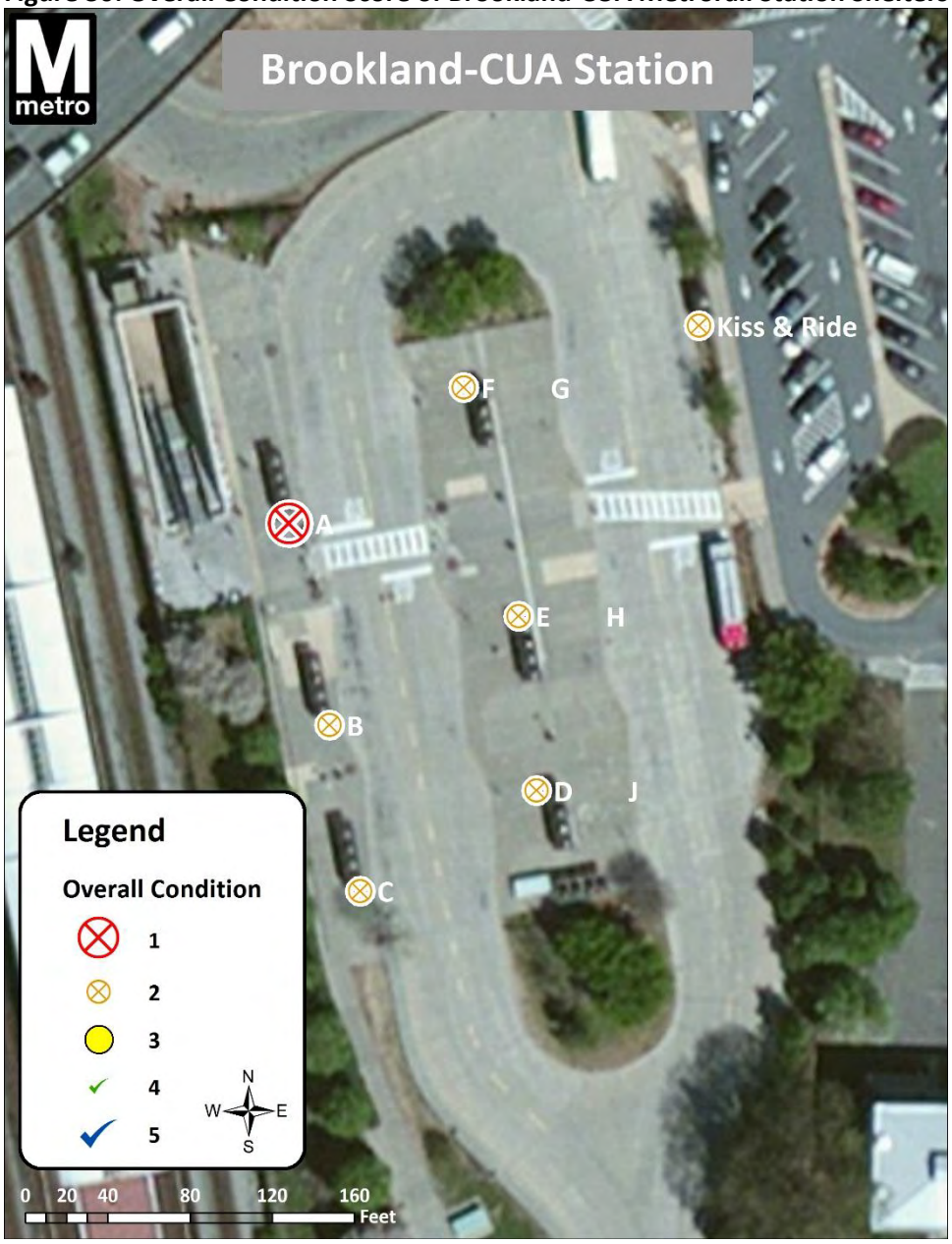
Figure 26: Poor Condition of Shelter A, Missing Panels, Missing Dome Top and Rust

Figure 27: Hole in Frame, Shelter D/J

Figure 28: Weathered Bench, Shelter B

Figure 29: Missing Dome Top, Shelter E/H

Figure 30: Overall Condition Score of Brookland-CUA Metrorail Station Shelters

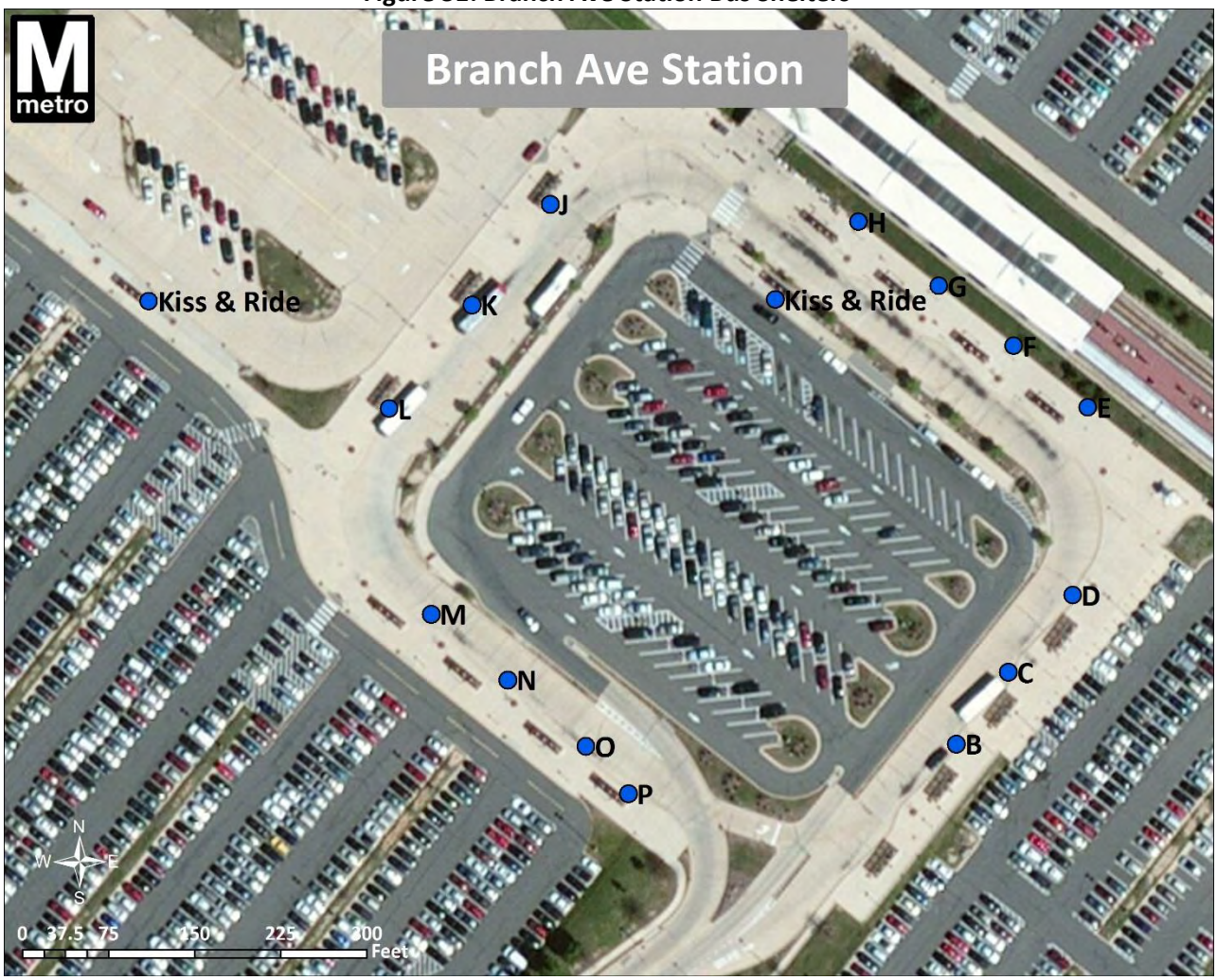


Overall, the station was ranked second for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked first for replacement.

Branch Ave Metrorail Station

The Branch Avenue Station has one set of 14 bus shelters labeled B through P plus two additional Kiss-and-Ride shelters. All of the shelters at the station are double-framed. The station is served by Metrobus routes C11, C12, C13, C14, and K12 and The Bus route 30. Figure 31 illustrates each shelter located at this station. Shelter A, pictured in **Figure 31**, was removed after this aerial was taken.

Figure 31: Branch Ave Station Bus Shelters



Overall, shelter conditions at the station are above average, with a station condition score of 3.8. **Table 6** summarizes conditions for each individual shelter. The shelters had notably good frame conditions and good dome top conditions, particularly shelters B, E, K, O, and P. There was very little visible rust on any of the shelters, though chipped or peeled frame paint was noticed on shelters E, F, and L. Shelters B and P each had a panel missing, though other panels on shelter B were in good condition. The east Kiss-and-Ride shelter had two panels missing and a worn/weathered bench. Of any element at the station, the shelter benches were in the worst condition overall.

Figures 32 through 35 illustrate the different shelter conditions at the station, while **Figure 36** summarizes each shelter's overall condition score.

Table 6: Shelter Conditions at the Branch Ave Station						
	Overall	Frame	Dome Top	Panels	Bench	Pad
B	3	5	4	2	2	4
C	4	4	4	5	3	3
D	4	4	4	4	3	4
E	4	5	4	4	3	4
F	4	4	4	4	3	4
G	4	4	4	4	3	4
H	4	4	4	3	4	4
J	4	4	4	4	3	3
K	4	5	4	4	3	4
L	4	4	4	4	3	3
M	4	4	4	4	3	4
N	4	4	4	5	3	4
O	4	5	4	5	3	4
P	3	5	4	1	2	4
East Kiss & Ride	3	4	4	1	1	4
West Kiss & Ride	4	4	4	4	2	4
Average	**3.8**	**4.3**	**4.0**	**3.6**	**2.8**	**3.8**

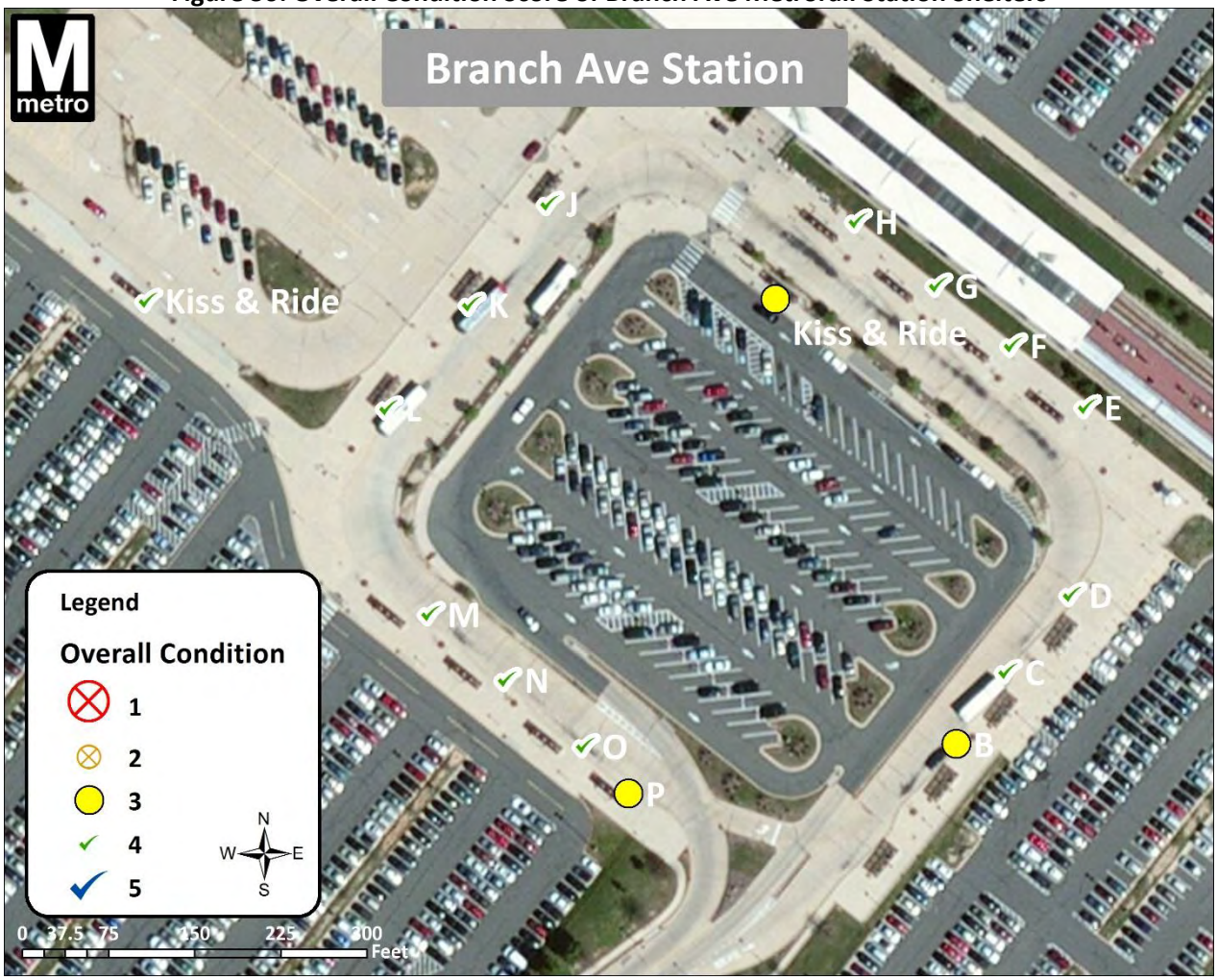
Figure 32: Good Overall Shelter Condition, Shelter K

Figure 33: Missing Panel & Worn Bench, Shelter B

Figure 34: Peeling Paint, Shelter E

Figure 35: One of Two Missing Panels, East Kiss & Ride

Figure 36: Overall Condition Score of Branch Ave Metrorail Station Shelters



Overall, the station was ranked 32st for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 30th for replacement.

Capitol Heights Metrorail Station

The Capitol Heights Station has one set of four bus shelters labeled A through D, one individual shelter labeled 2, a shelter for the Kiss-and-Ride lot and a shelter on Central Avenue. Shelters A through D are double-framed, while shelter 2 and the Central Avenue shelter are single-framed. The station is served by Metrobus routes A12, F14, U8, X9, 96 and 97 and The Bus routes 24 and 25. **Figure 37** illustrates each shelter located at this station.

Figure 37: Capitol Heights Station Bus Shelters

Overall, shelter conditions at the station are slightly below average, with a station condition score of 2.9. **Table 7** summarizes conditions for each individual shelter. The shelters, as a whole, scored the lowest in panel condition and dome top condition. Shelter A is in particularly bad condition, with two missing panels, a cracked dome top and a rusted frame with one leg missing entirely. Shelter D is also in poor condition, with a large hole in its frame. Shelter B and the Central Avenue shelter both have large cracks in their dome tops.

Rust on the frames was present on shelters A, B, D, and 2. Benches at the station were in the best condition of all the shelter elements and appeared to be recently replaced. Panels were generally smeared and faded at each shelter. **Figures 38 through 41** illustrate the different shelter conditions at the station, while **Figure 42** summarizes each shelter's overall condition score.

Table 7: Shelter Conditions at the Capitol Heights Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	1	2	1	1	4	3
B	3	3	2	3	5	2
C	4	4	4	3	4	4
D	2	1	3	3	4	3
2	4	3	2	3	5	5
Central Ave	3	4	2	3	4	4
Kiss & Ride	3	4	3	3	4	3
Average	**2.9**	**3.0**	**2.4**	**2.7**	**4.3**	**3.4**

Figure 38: Missing Panels, Cracked Dome Top and Leg, Shelter A

Figure 39: Hole in Frame, Shelter D

Figure 40: Crack in Dome Top, Shelter B

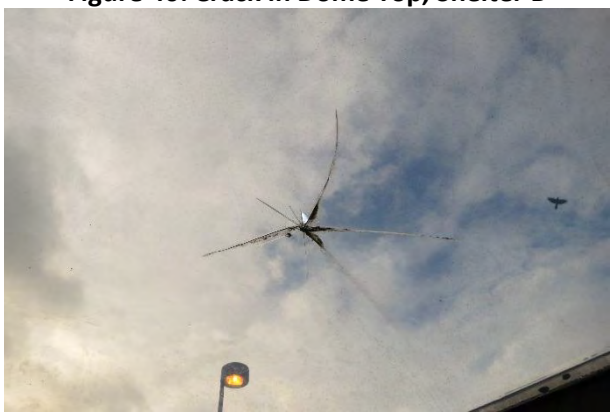


Figure 41: Smeared/Faded Panel, Shelter C

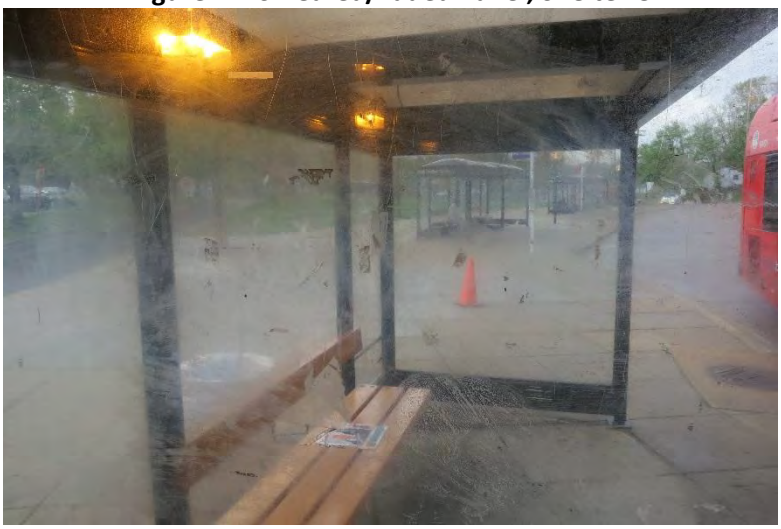
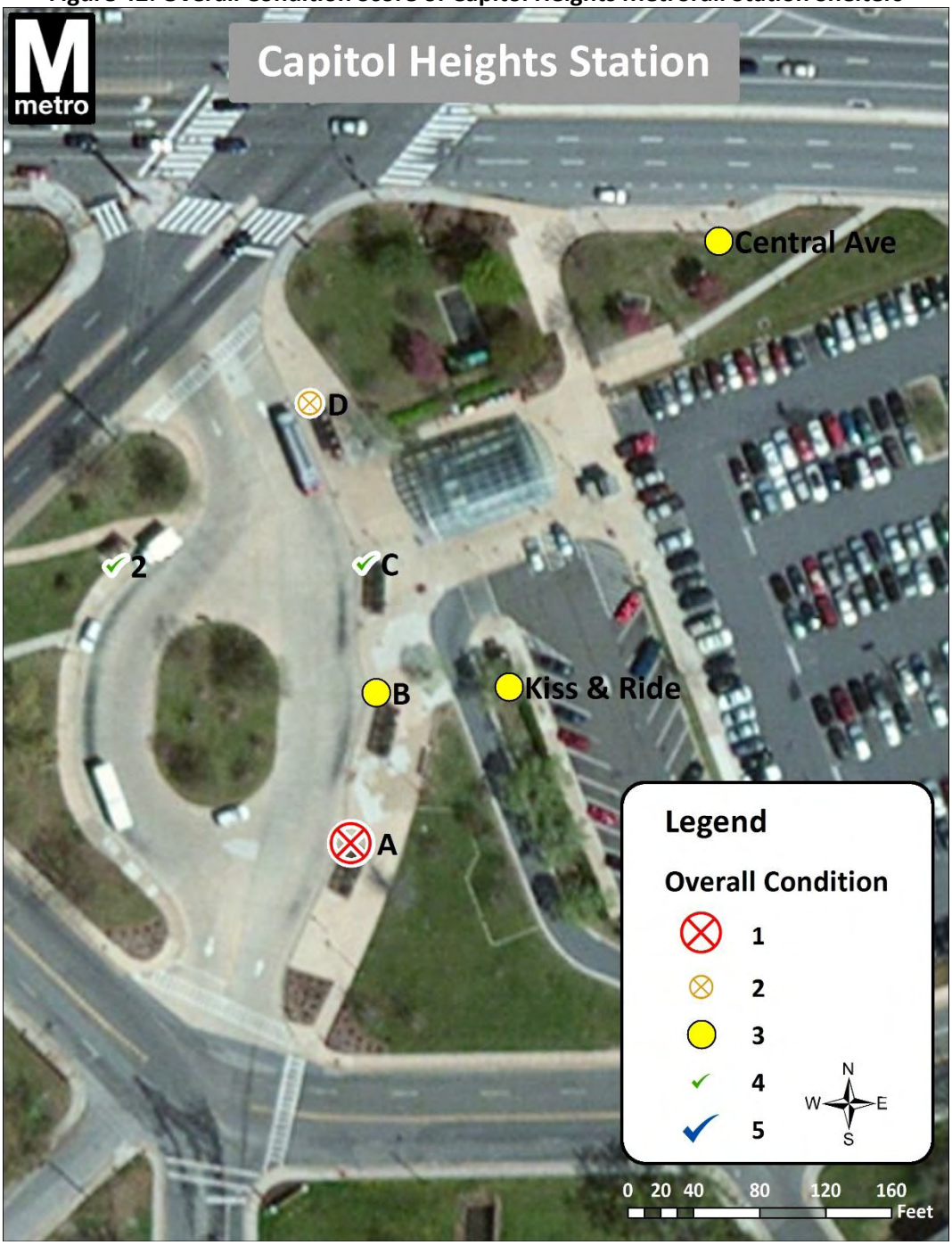


Figure 42: Overall Condition Score of Capitol Heights Metrorail Station Shelters



Overall, the station was ranked 23rd for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 11th for replacement.

College Park-U of MD Metrorail Station

The College Park-U of MD Station has one set of five bus shelters labeled A through E and two shelters for its Kiss-and-Ride lot. Shelters A, B, C, and D are all single-framed, while shelter E and the two Kiss-and-Ride shelters are double-framed. The station is served by Metrobus routes C8, F6, J4, R11, R12, 83, 83X, and 86; The Bus route 14; Connect-A-Ride routes G and H; and the University of Maryland Shuttle. **Figure 43** illustrates each shelter located at this station.

Figure 43: College Park-U of MD Station Bus Shelters

Overall, shelter conditions at the station are above average, with a station condition score of 4.0. **Table 8** summarizes conditions for each individual shelter. The shelters, as a whole, scored the lowest in bench and panel condition, though even these elements were in above average condition. Shelters B, D, and E had some fading, scratching, and smearing of their panels, while shelters A, C, D, and E had some wear on their benches. Pads at the station were in excellent condition and appeared to be fairly new. Frames at the station showed little to no signs of rusting.

Figures 44 through 46 illustrate the different shelter conditions at the station, while **Figure 47** summarizes each shelter's overall condition score.

Table 8: Shelter Conditions at the College Park-U of MD Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	4	4	5	4	3	4
B	4	4	5	3	4	4
C	4	4	3	4	3	5
D	4	4	4	3	3	5
E	4	4	4	3	3	4
South Kiss & Ride	4	4	4	4	4	5
North Kiss & Ride	4	4	4	4	4	5
Average	**4.0**	**4.0**	**4.1**	**3.6**	**3.4**	**4.6**

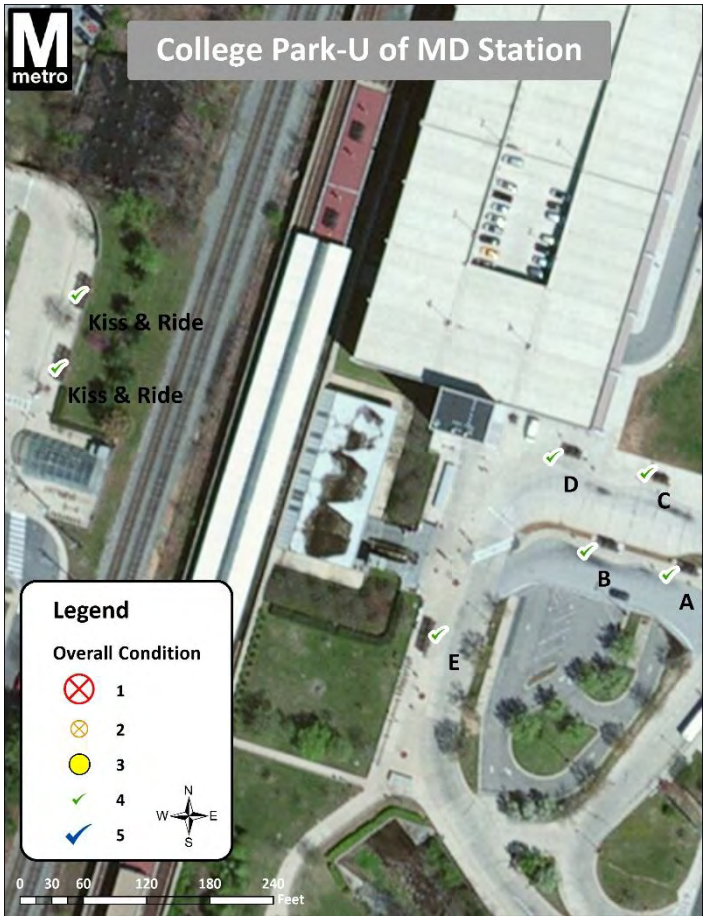
Figure 44: Good Overall Condition, Shelter C

Figure 45: Smeared/Scratched Panel, Shelter E

Figure 46: South Kiss & Ride

Overall, the station was ranked 29th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 32nd for replacement.

Figure 47: Overall Condition Score of College Park-U of MD Metrorail Station Shelters



Congress Heights Metrorail Station

The Congress Heights Station has one set of seven bus shelters labeled A through G and an additional shelter serving the Kiss-and-Ride lot. All of the shelters at this station are double-framed. The station is served by Metrobus routes D51, M8, M9, W2, W3, W4, 92, and 93. **Figure 48** illustrates each shelter located at this station.

Figure 48: Congress Heights Station Bus Shelters

Overall, shelter conditions at the station are below average, with a station condition score of 2.8. Table 9 summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in bench condition and panel condition. Shelters D and G and the Kiss-and-Ride shelter all had missing panels, while shelter G also had a cracked, split, and rotted bench. Frames at the station were in good condition, with little rust visible. Pads were generally in above average condition, with some cracking present at shelters A, B, C, and D. Dome tops were also in above average condition.

Figures 49 through 52 illustrate the different shelter conditions at the station, while **Figure 53** summarizes each shelter's overall condition score.

Table 9: Shelter Conditions at the Congress Heights Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	4	3	3	2	3
B	3	4	3	3	3	3
C	3	4	4	3	2	3
D	2	4	3	1	2	3
E	3	4	3	3	3	4
F	4	4	4	3	2	4
G	2	4	3	1	1	4
Kiss & Ride	2	4	3	1	2	3
Average	**2.8**	**4.0**	**3.3**	**2.3**	**2.1**	**3.4**

Figure 49: Missing Panel, Shelter D

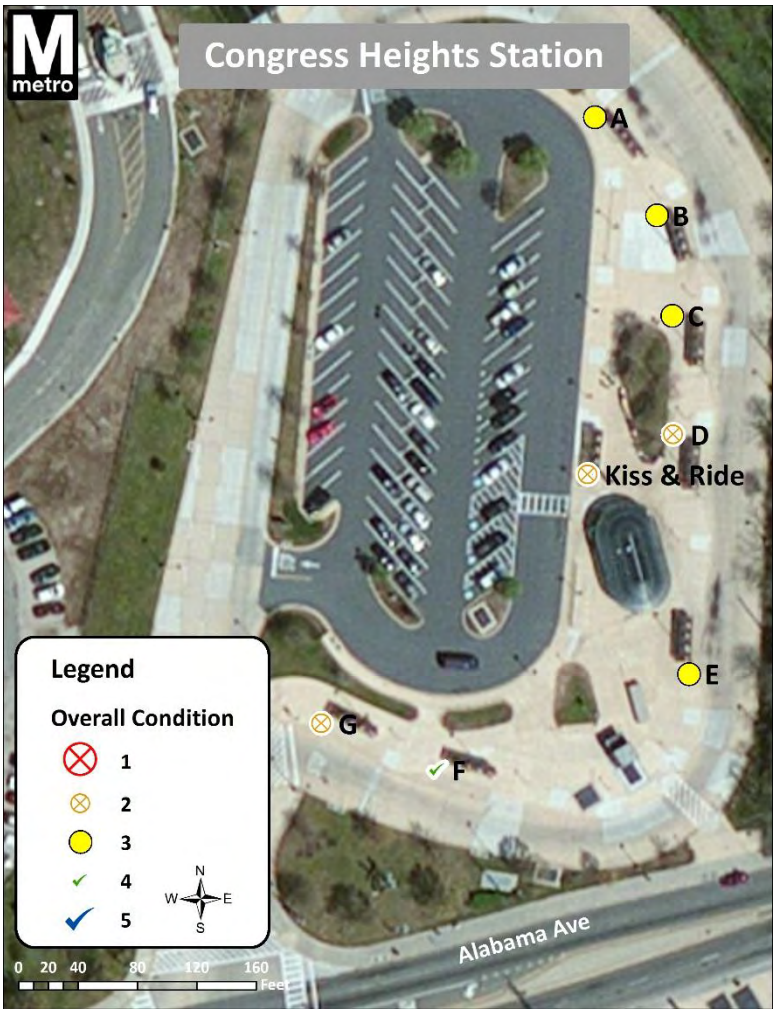
Figure 50: Missing Panel and Rotted Bench, Shelter G

Figure 51: Missing Panel, Kiss & Ride

Figure 52: Smeared Panel, Good Frame Condition, Shelter C

Overall, the station was ranked 17th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 9th for replacement.

Figure 53: Overall Condition Score of Congress Heights Metrorail Station Shelters



Deanwood Metrorail Station

The Deanwood Station has one set of five shelters labeled A through E and an additional shelter for the Kiss-and-Ride lot. Shelters A, B, C, and D are double-framed, while shelter E and the Kiss-and-Ride shelter are single-framed. The station is served by Metrobus routes R11, R12, V7, V8, V14, V15, and W4. **Figure 54** illustrates each shelter located at this station.

Figure 54: Deanwood Station Bus Shelters

Overall, shelter conditions at the station are below average, with a station condition score of 2.3. **Table 10** summarizes conditions for each individual shelter. The shelters, as a whole, scored the lowest in panel condition and frame condition, with smeared, faded or missing panels and significant frame rust on several shelters. Shelters D, C and B all had missing panels, while shelters B, C and D and the Kiss-and-Ride shelter all had significant rust on their frames. Poor bench condition was also noted in shelters B and D and the Kiss-and-Ride shelter. Poor dome top conditions were noteworthy in shelter C and the Kiss-and-Ride shelter as well.

Figures 55 through 58 illustrate the different shelter conditions at the station, while **Figure 59** summarizes each shelter's overall condition score.

Table 10: Shelter Conditions at the Deanwood Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	3	3	2	3	2
B	2	3	3	1	2	3
C	2	2	2	1	3	3
D	2	2	3	1	2	3
E	3	2	3	3	3	4
Kiss & Ride	2	2	2	2	2	3
Average	**2.3**	**2.3**	**2.7**	**1.7**	**2.5**	**3.0**

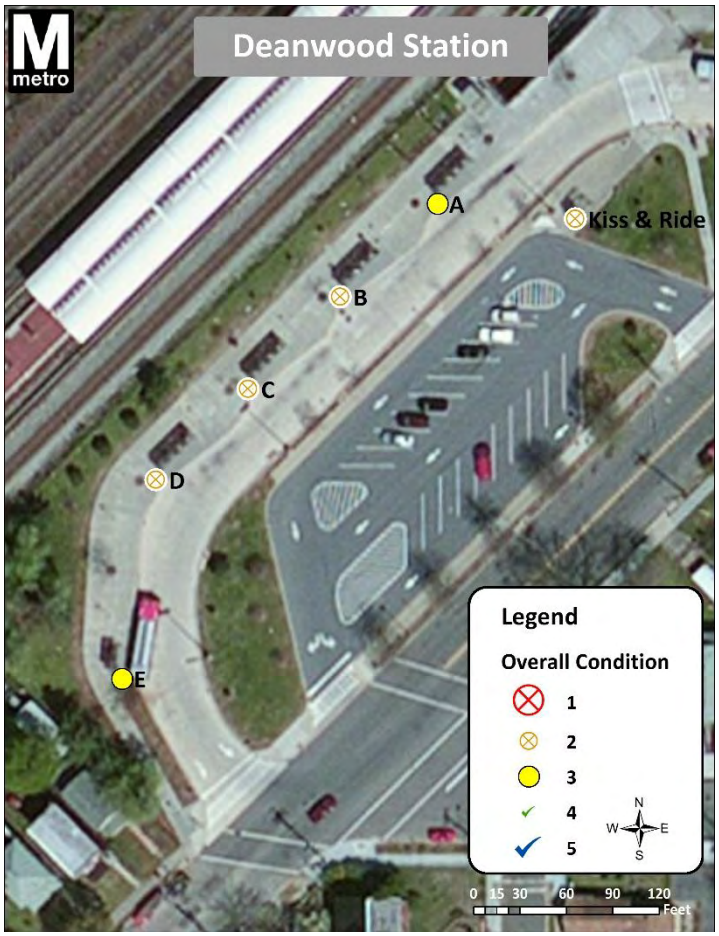
Figure 55: Missing Panel, Shelter B

Figure 56: Frame Rust, Shelter C

Figure 57: Missing Panel and Frame Rust, Shelter D

Figure 58: Frame Rust and Separated Dome Top, Kiss & Ride Shelter

Figure 59: Overall Condition Score of Deanwood Metrorail Station Shelters



Overall, the station was ranked 16th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 4th for replacement.

East Falls Church Metrorail Station

The East Falls Church Station has one set of four bus shelters labeled A through D and an additional shelter for the Kiss-and-Ride lot. All of the shelters at the station are double-framed with the exception of the Kiss-and-Ride shelter, which is single-framed. The station is served by Metrobus routes 2A, 2B, 2C, 2G, 3A, 3B, 3E and 24T; and ART routes 52 and 53. **Figure 60** illustrates each shelter located at this station.

Figure 60: East Falls Church Station Bus Shelters

Overall, shelter conditions at the station are average, with a station condition score of 3.0. **Table 11** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in bench condition. Shelters A and B and the Kiss-and-Ride shelter all had worn benches. Shelter panels at the station were generally in average condition, with some rust stains, fading, and scratching on all of them.

An average amount of rust was found on all the shelter frames with the exception of shelter A, which had little rust but had signs of past rusting on its pad and panels. Shelter C had significant rust on its frame.

Figures 61 through 63 illustrate the different shelter conditions at the station, while figure 64 summarizes each shelter's overall condition score.

Table 11: Shelter Conditions at the East Falls Church Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	4	3	3	2	3
B	3	3	3	3	2	3
C	3	2	3	3	3	4
D	3	3	3	3	3	3
Kiss & Ride	3	3	4	3	2	3
Average	**3.0**	**3.0**	**3.2**	**3.0**	**2.4**	**3.2**

Figure 61: Worn Bench, Shelter B

Figure 62: Frame Rust, Shelter C

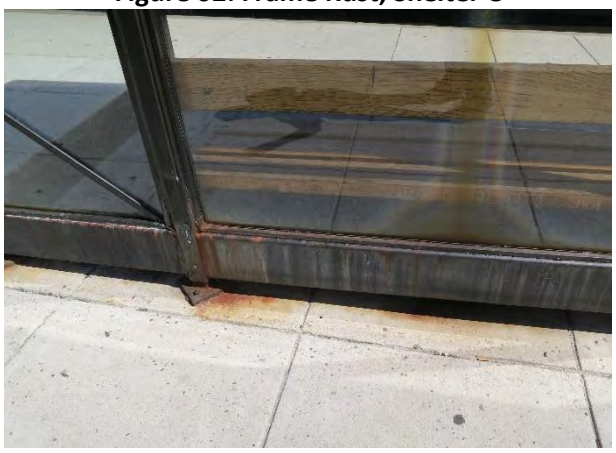
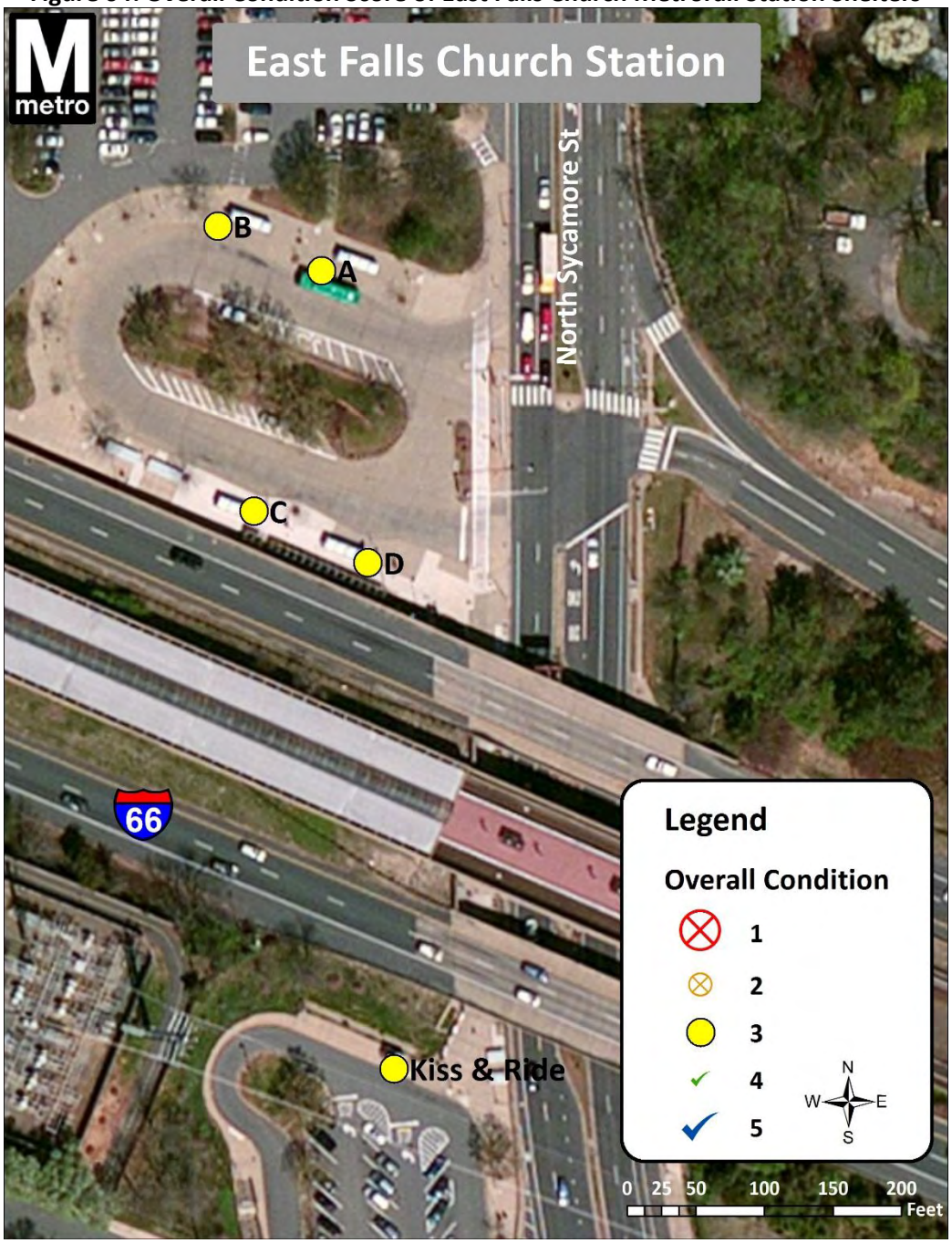


Figure 63: Faded/Scratched Panels, Kiss & Ride Shelter

Figure 64: Overall Condition Score of East Falls Church Metrorail Station Shelters



Overall, the station was ranked 22nd for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 16th for replacement.

Eisenhower Ave Metrorail Station

The Eisenhower Ave Station has two sets of three bus shelters. The east side of the station contains shelters A through C while the west side of the station contains shelters D through E. All of the shelters at the station are double-framed. The station is served by the REX Metrobus route and DASH routes 1, 6 and 7. **Figure 65** illustrates each shelter located at this station.

Figure 65: Eisenhower Ave Station Bus Shelters

Overall, shelter conditions at the station are slightly above average, with a station condition score of 3.3. **Table 12** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in

pad condition and frame condition. Shelters D, E and F all had significant rust on their frames. Shelters A, B and C also had significant frame rust, however they were all being repainted at the time of data collection. Shelters D and F had significant cracking on their pads. Panel condition was overall above average, though some fading exists on shelters C, D and F.

Figures 66 through 69 illustrate the different shelter conditions at the station, while **Figure 70** summarizes each shelter's overall condition score.

Table 12: Shelter Conditions at the Eisenhower Ave Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	4	3	4	4	4	3
B	3	3	3	4	3	3
C	3	3	3	3	3	3
D	3	2	3	3	3	2
E	3	2	3	4	4	3
F	3	2	3	3	4	2
Average	**3.2**	**2.5**	**3.2**	**3.5**	**3.5**	**2.7**

Figure 66: Frame Rust, Shelter F

Figure 67: Frame Painting, Shelter A

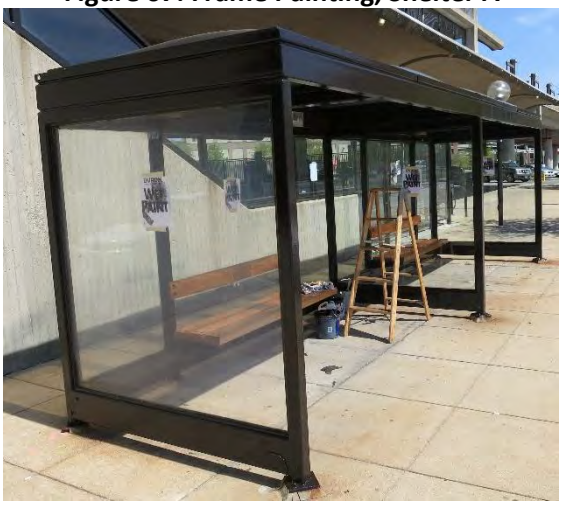


Figure 68: Pad Cracking, Shelter D

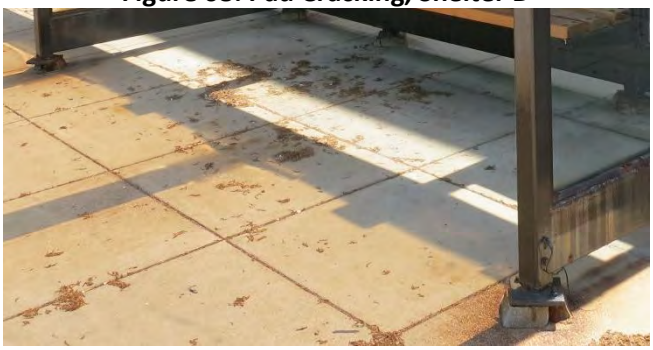
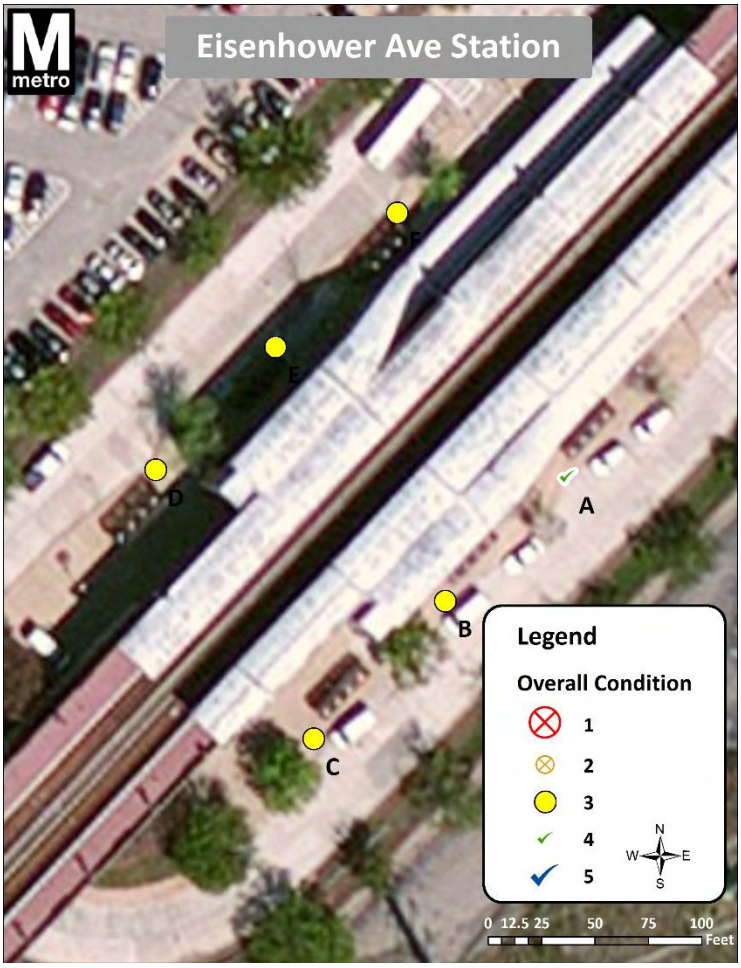


Figure 69: Panel Fading, Shelter D

Overall, the station was ranked 30th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 23rd for replacement.

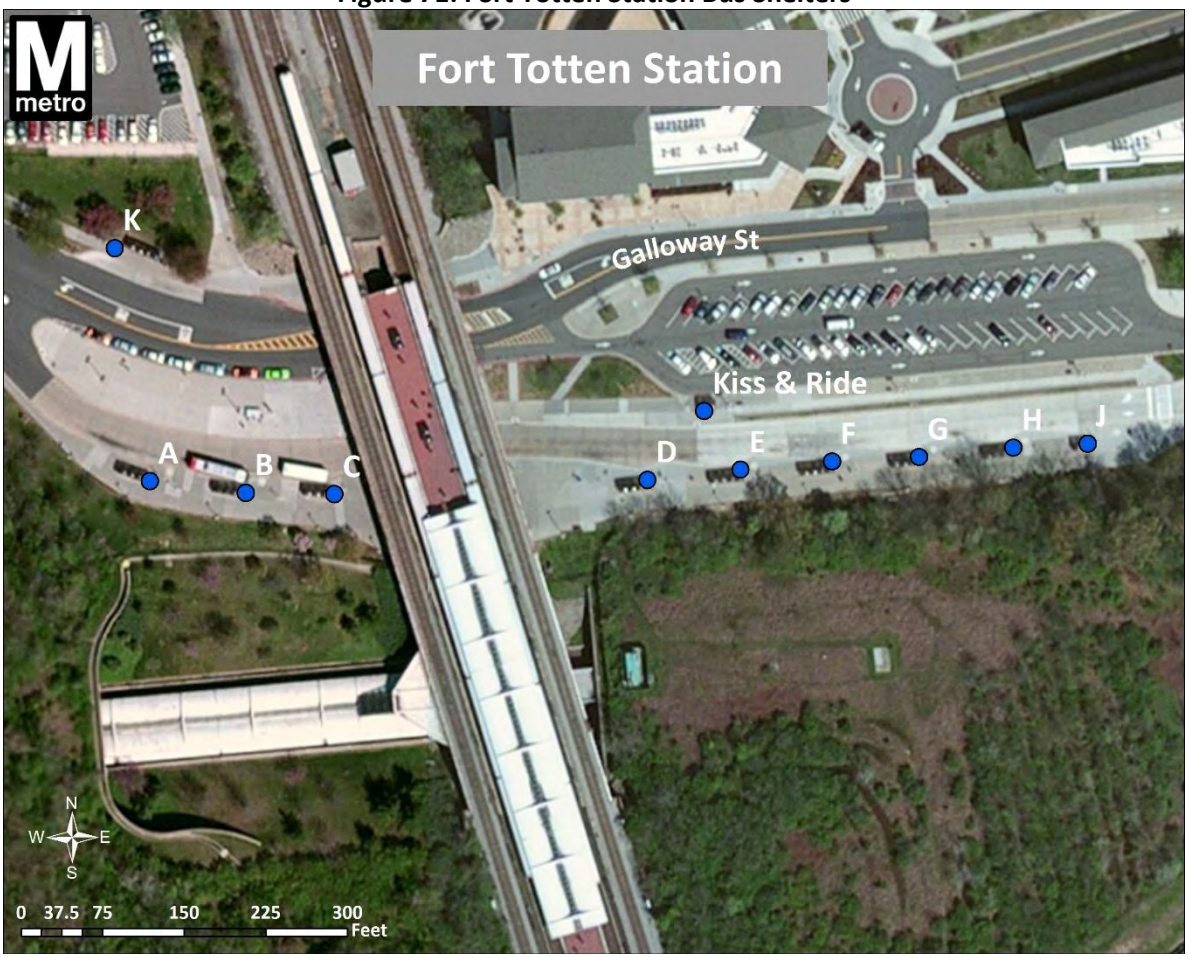
Figure 70: Overall Condition Score of Eisenhower Ave Metrorail Station Shelters



Fort Totten Metrorail Station

The Fort Totten Station has one set of nine bus shelters labeled A through J plus an additional shelter labeled K on the north side of Galloway Street and a shelter at its Kiss-and-Ride lot. All of the shelters at the station are double-framed with the exception of shelter J and the Kiss-and-Ride shelter, which are single-framed. The station is served by Metrobus routes E2, E3, E4, K2, K6, R1, R2, R3, R5, 60, 64, and 80. **Figure 71** illustrates each shelter located at this station.

Figure 71: Fort Totten Station Bus Shelters



Overall, shelter conditions at the station are poor, with a station condition score of 2.1. **Table 13** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in panel condition and frame condition, though the overall condition of every shelter element was below average. Shelter G is in particularly bad condition, with an overall score of 1. It has a missing dome top, missing panels and significant rust on its frame. Shelter D and the Kiss-and-Ride shelter are also missing panels, while shelter H has two severely cracked panels. Shelter C is also missing a dome top. Significant frame rust is present on shelters B, C, E, F, and G, while poor pad conditions exit at shelters A, E, G, and J and the Kiss-and-Ride shelter.

Figures 72 through 76 illustrate the different shelter conditions at the station, while **Figure 77** summarizes each shelter's overall condition score.

Table 13: Shelter Conditions at the Fort Totten Station						
	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	4	3	2	3	2
B	2	2	3	2	3	4
C	2	2	1	3	3	3
D	2	3	4	1	3	4
E	2	2	3	2	3	2
F	2	2	3	2	2	3
G	1	2	1	1	2	2
H	2	3	3	1	3	3
J	2	3	3	2	3	2
K	3	3	3	2	3	3
Kiss & Ride	2	3	3	1	2	2
Average	**2.1**	**2.6**	**2.7**	**1.7**	**2.7**	**2.7**

Figure 72: Poor Condition of Shelter G, Missing Panels, Rust and Missing Dome Top

Figure 73: Cracked Panel, Shelter H

Figure 74: Frame Rust, Shelter E

Figure 75: Poor Pad Condition, Shelter A

Figure 76: Missing Dome Top, Shelter C

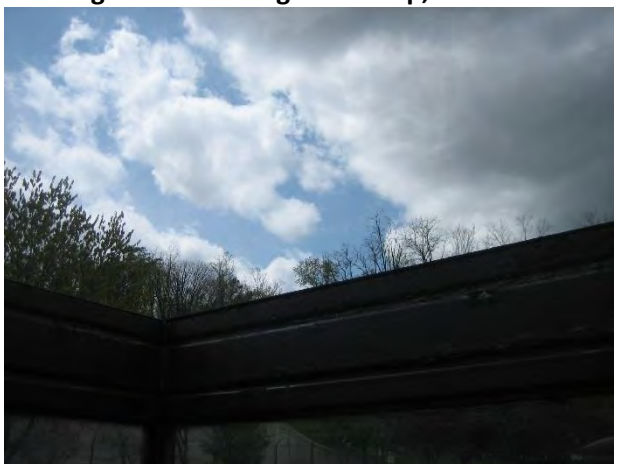
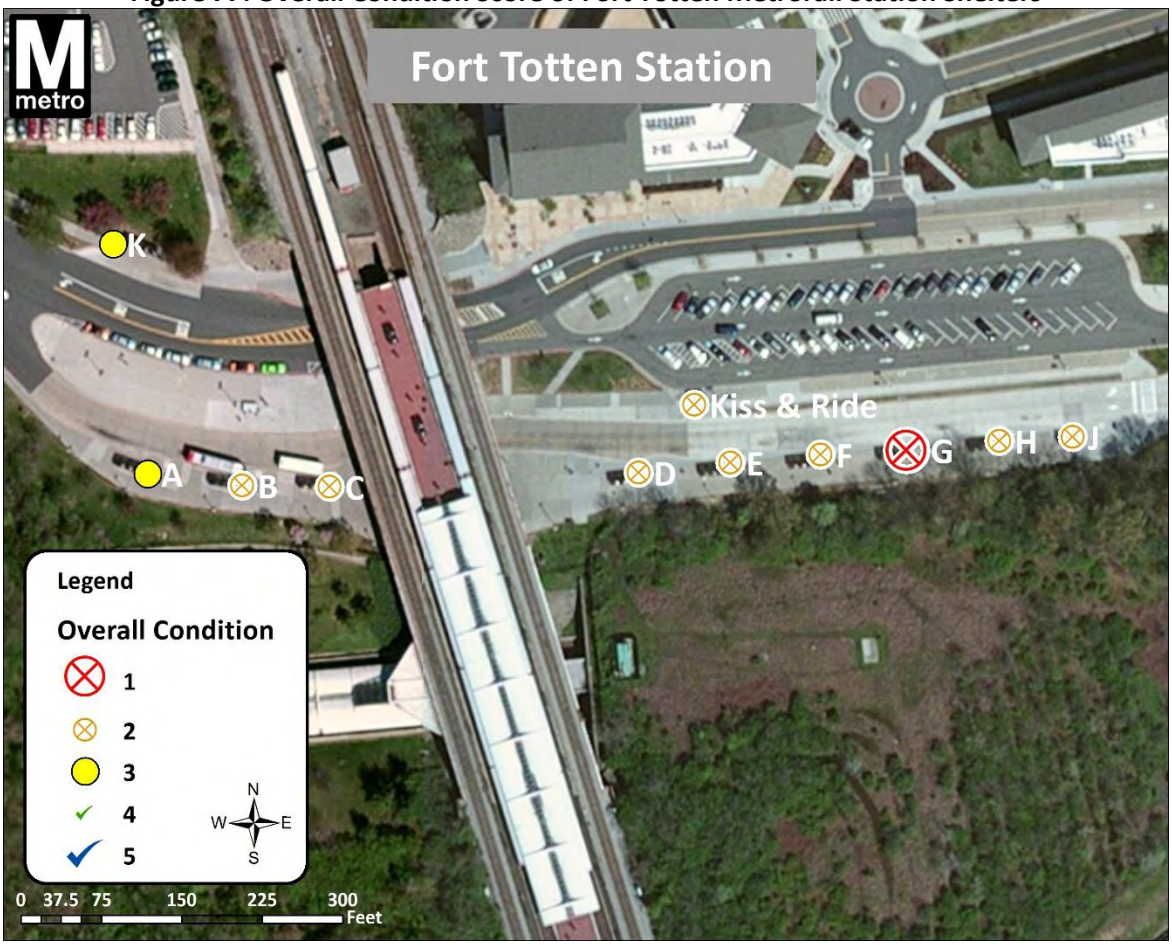


Figure 77: Overall Condition Score of Fort Totten Metrorail Station Shelters



Overall, the station was ranked first for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked second for replacement.

Franconia-Springfield Metrorail Station

The Franconia-Springfield Station has one set of seven bus shelters labeled B through H. All of the shelters at the station are double-framed. The station is served by Metrobus routes 18R, 18S, S80, and S91; Fairfax Connector routes 171, 231, 232, 301, 303, 304, 305, 310, 321, 322, 331, 332, 380, 401; and a Potomac & Rappahannock Transportation Commission route. **Figure 78** illustrates each shelter located at this station.

Figure 78: Franconia-Springfield Station Bus Shelters

Overall, shelter conditions at the station are above average, with a station condition score of 3.4. **Table 14** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in panel condition, with damaged panels present on shelters D, E, and F. Shelters E and F also had significant rust on their frames. Overall bench conditions were average, while pad conditions were above average at each shelter except F and G.

Figures 79 through 81 illustrate the different shelter conditions at the station, while **Figure 82** summarizes each shelter's overall condition score.

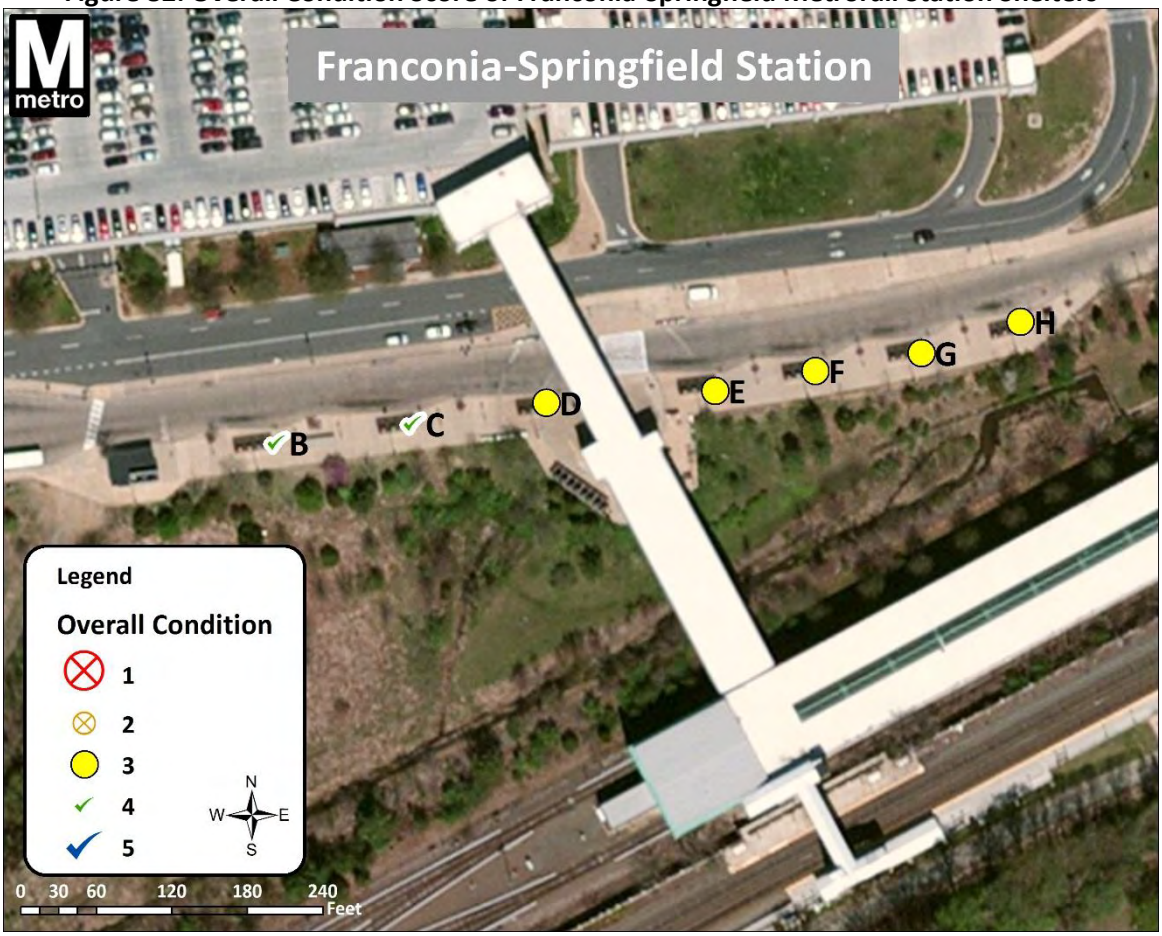
Table 14: Shelter Conditions at the Franconia-Springfield Station						
	Overall	Frame	Dome Top	Panels	Bench	Pad
B	4	4	4	3	3	4
C	4	4	4	3	3	4
D	3	3	3	2	3	4
E	3	2	4	2	3	4
F	3	2	3	2	3	3
G	3	3	4	3	3	3
H	3	3	4	3	3	4
Average	**3.3**	**3.0**	**3.7**	**2.6**	**3.0**	**3.7**

Figure 79: Panel Damage, Shelter F

Figure 80: Frame Rust, Shelter F

Figure 81: Panel Fading and Damage, Shelter D

Figure 82: Overall Condition Score of Franconia-Springfield Metrorail Station Shelters



Overall, the station was ranked 19th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 24th for replacement.

Greenbelt Metrorail Station

The Greenbelt Station has one set of eight bus shelters labeled A through H; two shelters for the Kiss-and-Ride lot; one shelter for the taxi area and two shelters for the park-and-ride lot labeled Stop 1 and Stop 6. All of the shelters at the station are double-framed with the exception of the Kiss-and-Ride shelters, the taxi shelter and the park-and-ride shelters which are all single-framed. The station is served by Metrobus routes B30, C2, G12, G13, G14, G16, R3, R11, R12, 81, 87, 89 and 89M; The Bus routes 11, 15X and 16; and the Central Maryland Regional Transit (CMRT) route H. **Figure 83** illustrates each shelter located at this station.

Figure 83: Greenbelt Station Bus Shelters

Overall, shelter conditions at the station are above average, with a station condition score of 4.0. **Table 15** summarizes conditions for each individual shelter. The shelters, as a whole, scored the lowest in dome top and bench condition, although even these elements were in above average condition. There was little to no frame rust and good panel condition on the majority of shelters at the station. Shelter B had a missing panel and some faded panels, while park-and-ride Stop 6 had a missing panel as well. Benches were in good condition with the exception of the two Kiss-and-Ride shelters and the park-and-ride Stop 6 shelter, which some wear. Pad conditions were good as well, with cracking present only at shelter H and the park-and-ride Stop 1 shelter.

Figures 84 through 86 illustrate the different shelter conditions at the station, while **Figure 87** summarizes each shelter's overall condition score.

Table 15: Shelter Conditions at the Greenbelt Station

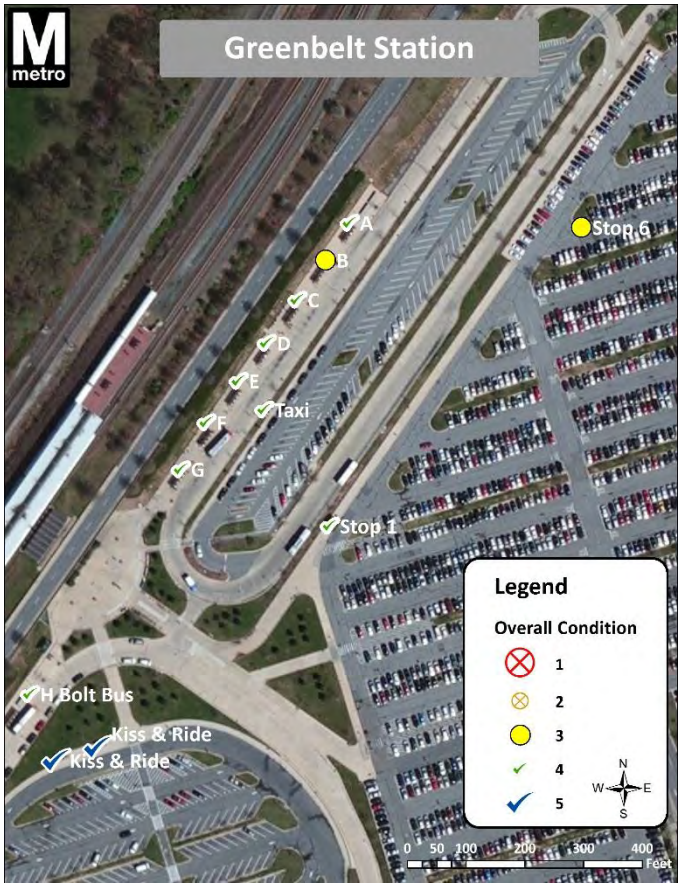
	Overall	Frame	Dome Top	Panels	Bench	Pad
A	4	4	4	4	4	4
B	3	4	4	1	4	4
C	4	4	4	4	5	5
D	4	4	4	4	4	4
E	4	4	4	4	4	3
F	4	4	4	4	4	4
G	4	4	4	5	4	3
H	4	4	4	5	3	4
North Kiss & Ride	5	5	4	5	4	5
South Kiss & Ride	5	5	4	5	3	5
Taxi	4	4	4	4	4	5
Stop 1	4	4	4	5	4	3
Stop 6	3	4	4	2	3	5
Average	**4.0**	**4.2**	**3.8**	**4.0**	**3.8**	**4.2**

Figure 84: Missing Panel, Shelter B

Figure 85: Excellent Shelter Condition, North Kiss & Ride

Figure 86: Missing Panel, Park-and-Ride Stop 6 Shelter

Figure 87: Overall Condition Score of Greenbelt Metrorail Station Shelters

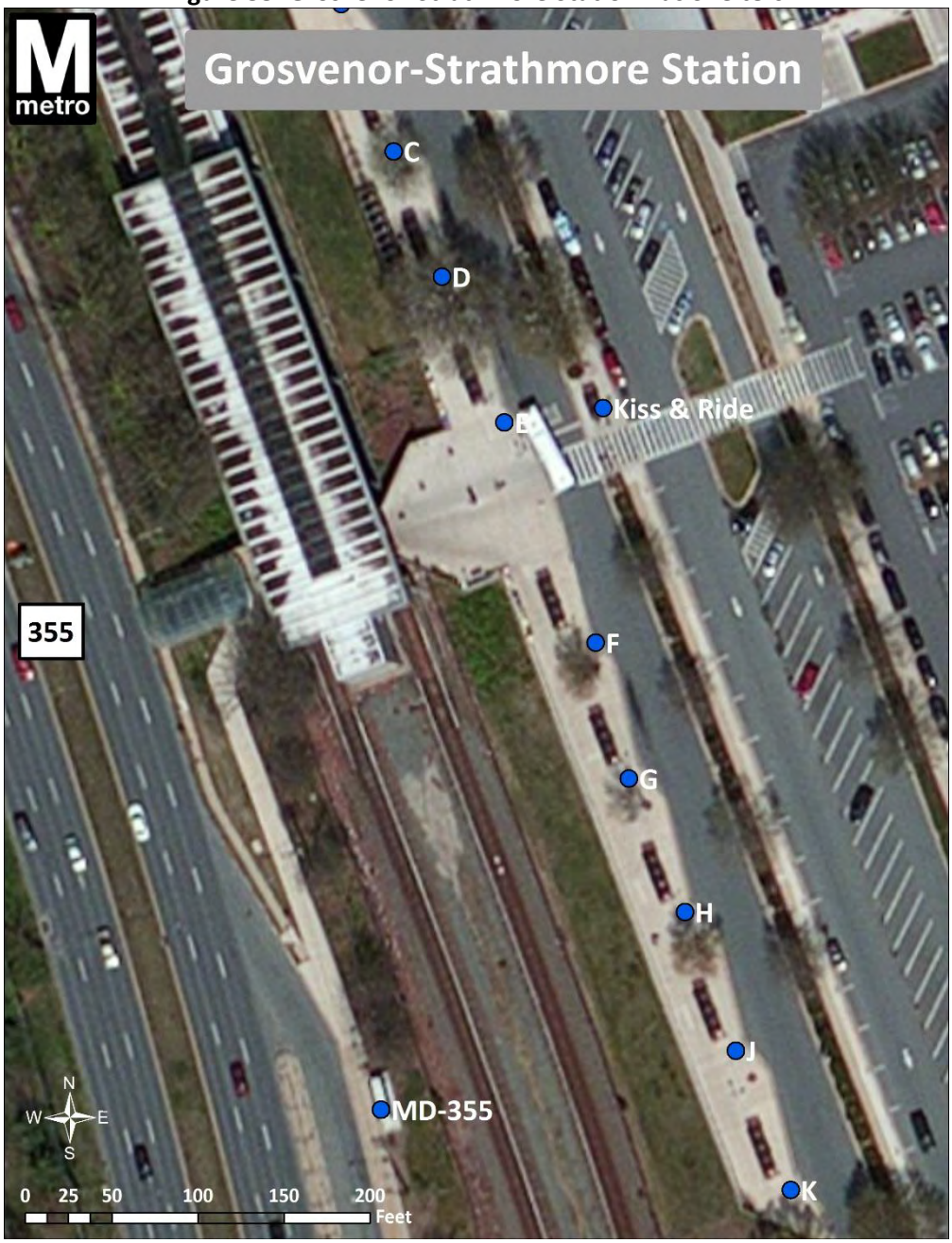


Overall, the station was ranked 27th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 33rd (last) for replacement.

Grosvenor-Strathmore Metrorail Station

The Grosvenor-Strathmore Station has one set of eight bus shelters on the east side of the station labeled C though K. There is also a shelter for the Kiss-and-Ride lot at the station. The west side of the station abuts Maryland Route 355 (MD-355) and has a single shelter just south of the station entrance that serves the J5 Metrobus. This shelter is not owned by WMATA and, therefore, has been excluded from overall shelter condition scores by station. The station is served by the J5 Metrobus and Ride-On routes 6, 37, 46 and 96. **Figure 88** illustrates each shelter located at this station.

Figure 88: Grosvenor-Strathmore Station Bus Shelters



Overall, shelter conditions at the station are above average, with a station condition score of 3.6. **Table 16** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in pad condition. There are no shelters in particularly bad condition, though shelters G, H, J and K have panels, benches and pads in only fair condition. The J5 bus stop on MD-355 is in excellent condition and is a newer design than the rest of the shelters at the station.

Rust on the frames was present on shelters E and F though it was not excessive. All of the shelters (with the exception of the J5 shelter on MD-355) had evidence of previous rusting with stains on the concrete pads below them. Painting of the frames has likely taken place within the past few years. **Figures 89 through 91** illustrate the different shelter conditions at the station, while figure 92 summarizes each shelter's overall condition score.

Table 16: Shelter Conditions at the Grosvenor-Strathmore Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
C	4	4	5	4	4	4
D	4	4	4	4	4	4
E	4	3	4	4	4	3
F	4	3	4	4	4	3
G	3	4	4	3	3	3
H	3	4	4	3	3	3
J	3	4	4	3	3	3
K	3	4	4	3	3	3
Kiss & Ride	4	4	4	5	5	3
MD-355 (J5)*	*5*	*5*	*5*	*5*	*5*	*5*
Average	**3.6**	**3.8**	**4.1**	**3.7**	**3.7**	**3.2**

*Scores not included in overall station average.

Figure 89: J5 Shelter on MD-355

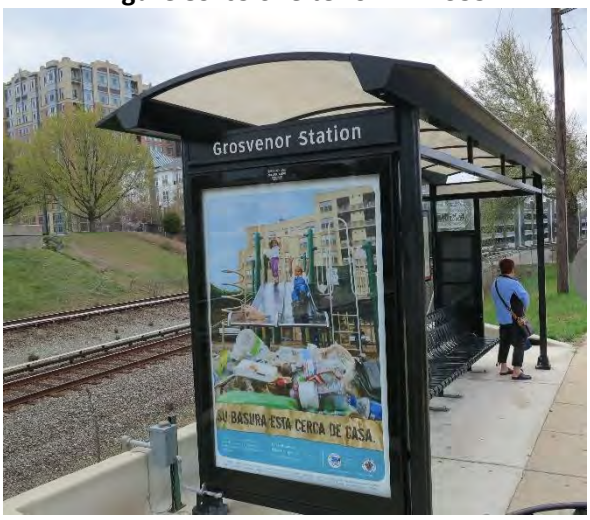
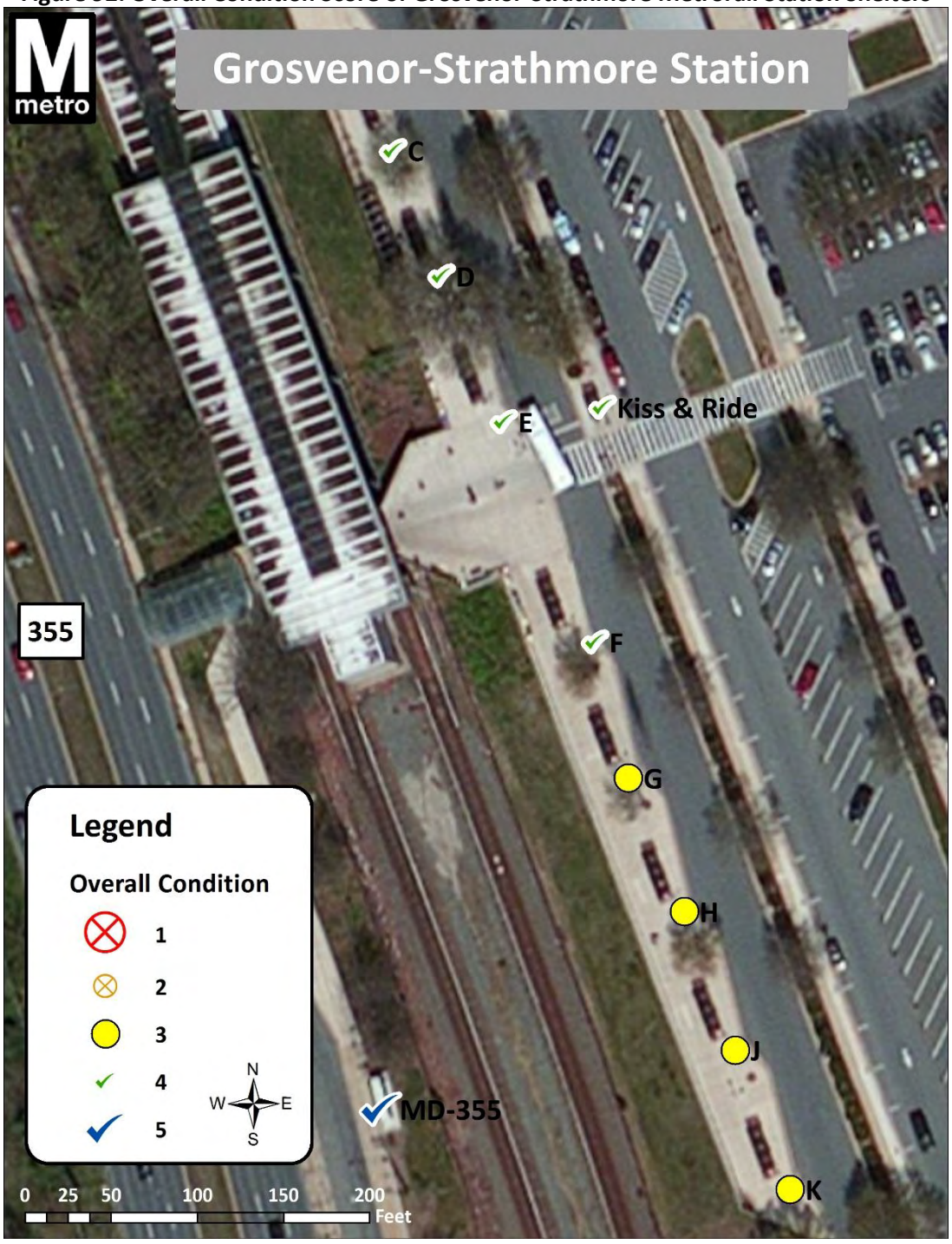


Figure 90: Rust on Frame of Shelter E

Figure 91: Overall Above Average Condition, Shelter D

Figure 92: Overall Condition Score of Grosvenor-Strathmore Metrorail Station Shelters

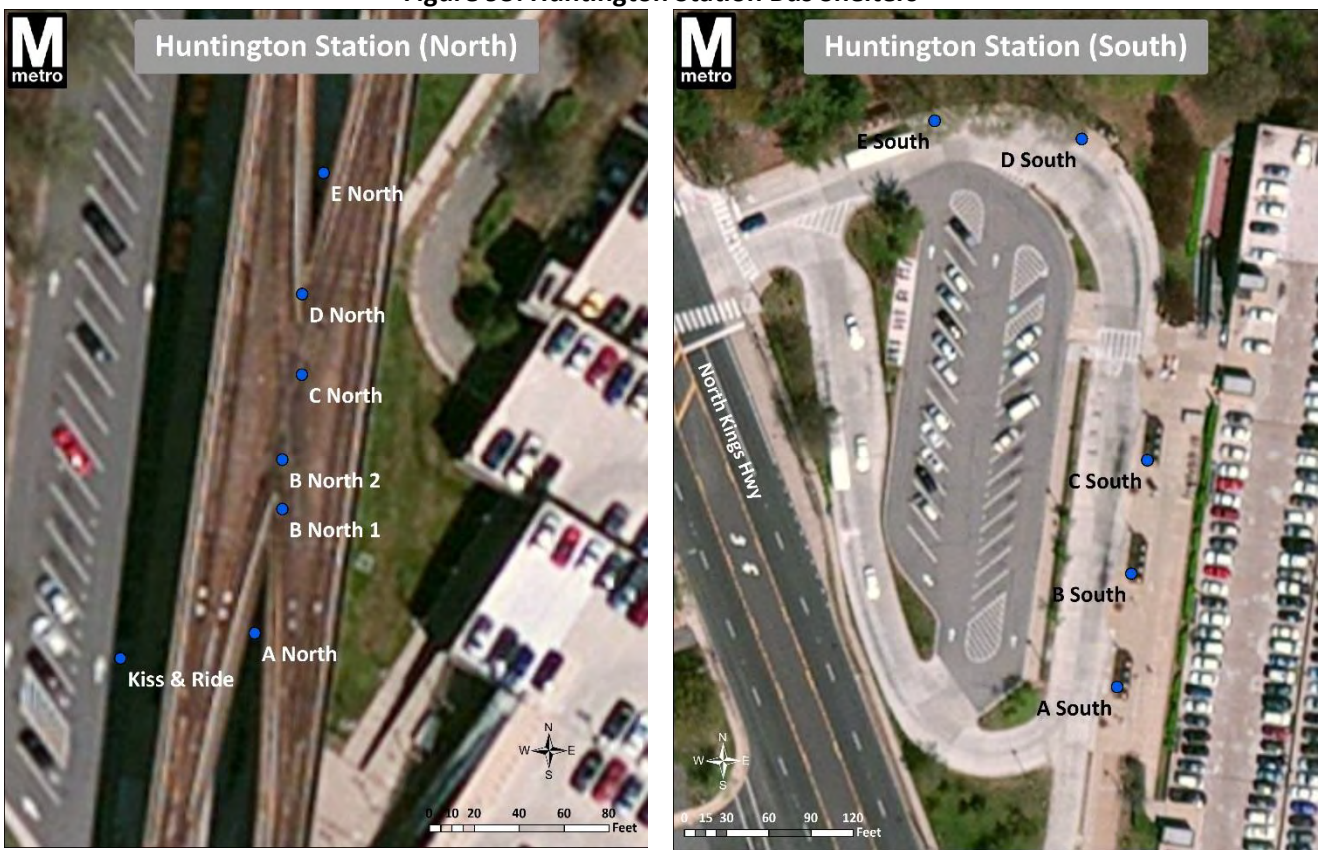


Overall, the station was ranked 33rd (last) for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 28th for replacement.

Huntington Metrorail Station

The Huntington Station has two sets of bus shelters, one on the north side of the station and one on the south side. The north side has six shelters labeled A through E, with two separate shelters labeled B. There is also a shelter at the Kiss-and-Ride lot on the north side. The south side has five shelters labeled A through E. All of the shelters at the station are double-framed with the exception of the two north B shelters, the north E shelter and the Kiss-and-Ride shelter, which are all single-framed. The station is served by Metrobus routes 9A and the REX; and Fairfax Connector routes 101, 109, 151, 152, 161, 162, 171, 301, and 310. **Figure 93** illustrates each shelter located at this station.

Figure 93: Huntington Station Bus Shelters



Overall, shelter conditions at the station are slightly below average, with a station condition score of 2.8. **Table 17** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in frame condition and pad condition, with significant frame rust and pad cracking present. Shelters A North and C South were in the worst condition, both receiving an overall condition score of 2. Both of these shelters had significant rust, damaged panels and a cracked pad, with A North missing a panel as well. C North had rusted to the point of having holes in its frame. All of the shelters at the station had fairly significant frame rust while every shelter except the Kiss-and-Ride shelter and shelter D South had some panel fading, smearing, or other damage.

Figures 94 through 98 illustrate the different shelter conditions at the station, while **Figure 99** summarizes each shelter's overall condition score.

Table 17: Shelter Conditions at the Huntington Station						
	Overall	Frame	Dome Top	Panels	Bench	Pad
A North	2	2	2	2	3	2
B North 1	3	2	3	3	5	2
B North 2	3	2	3	3	4	2
C North	2	1	4	3	4	3
D North	3	2	3	3	4	3
E North	3	2	3	2	4	2
Kiss & Ride	3	3	3	4	3	2
A South	3	2	3	3	4	2
B South	3	2	3	3	3	2
C South	2	2	3	2	3	2
D South	4	2	3	4	4	4
E South	3	2	3	3	3	3
Average	**2.8**	**2.0**	**3.0**	**2.9**	**3.7**	**2.4**

Figure 94: Missing Panel, Cracked Pad and Frame Rust, Shelter A North

Figure 95: Hole in Frame, Shelter C North

Figure 96: Damaged Panel, Shelter C South

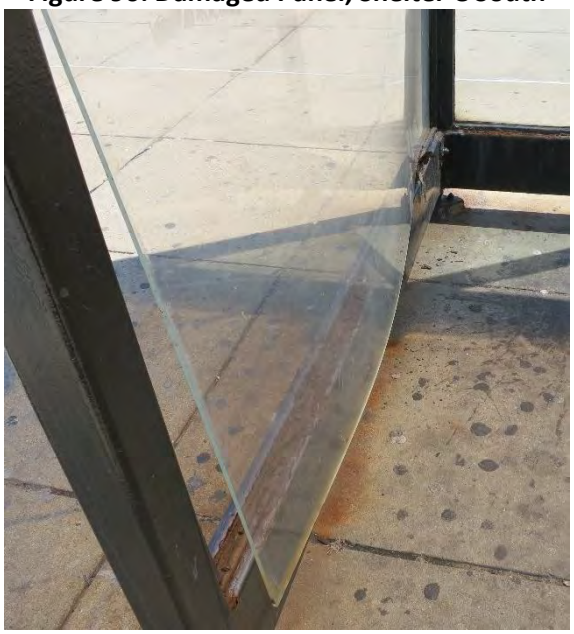


Figure 97: Frame Rust, Shelter D North

Figure 98: Cracked Footing/Pad, Kiss & Ride Shelter

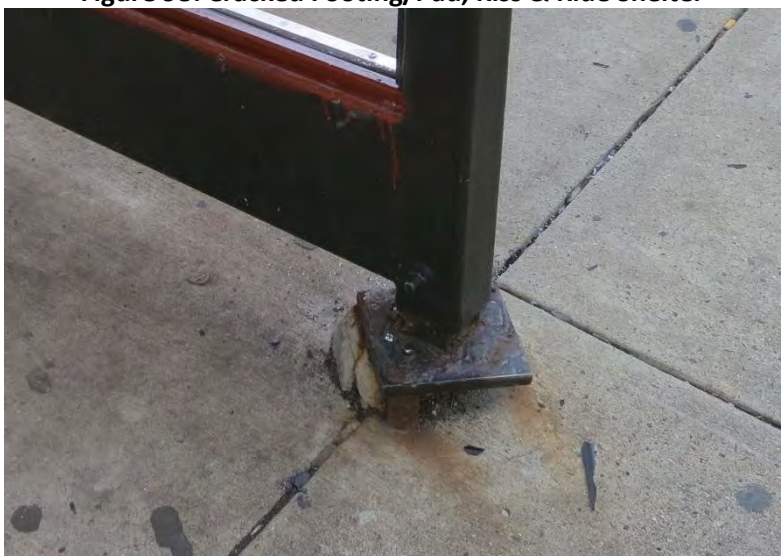
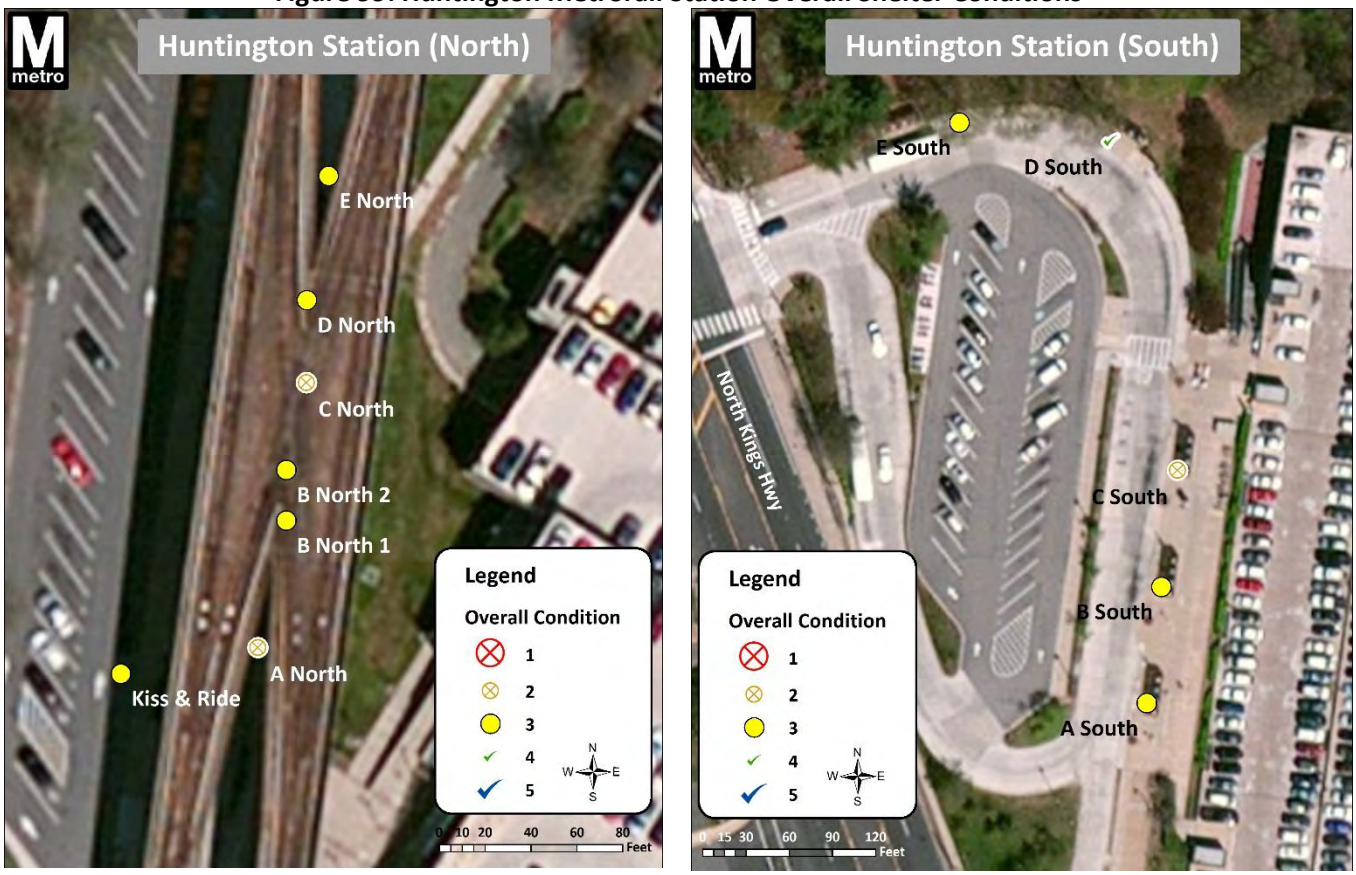


Figure 99: Huntington Metrorail Station Overall Shelter Conditions



Overall, the station was ranked 7th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 10th for replacement.

Landover Metrorail Station

The Landover Station has one set of three shelters labeled B through D and an additional shelter for the Kiss-and-Ride lot at the station. Shelters C and D are double-framed, while shelter B and the Kiss-and-Ride shelter are single-framed. The station is served by Metrobus routes A12 and F12 and The Bus route 27. **Figure 100** illustrates each shelter located at this station.

Figure 100: Landover Station Bus Shelters

Overall, shelter conditions at the station are average, with a station condition score of 3.0. **Table 18** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in panel condition and pad condition. The Kiss-and-Ride shelter was missing a panel while shelter C had cracks in

its pad and footings. Frame rust was present on all the shelters at the station, however it was not significant. Benches overall were in above average condition, as were dome tops.

Figures 101 through 103 illustrate the different shelter conditions at the station, while **Figure 104** summarizes each shelter's overall condition score.

Table 18: Shelter Conditions at the Landover Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
B	3	3	4	3	4	3
C	3	3	3	3	3	2
D	3	3	3	3	4	3
Kiss & Ride	3	3	4	1	5	3
Average	**3.0**	**3.0**	**3.5**	**2.5**	**4.0**	**2.8**

Figure 101: Missing Panel, Kiss & Ride Shelter

Figure 102: Cracked Pad, Shelter C

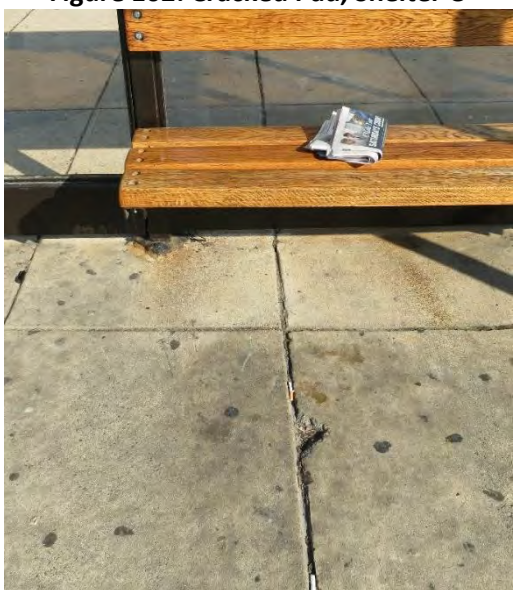
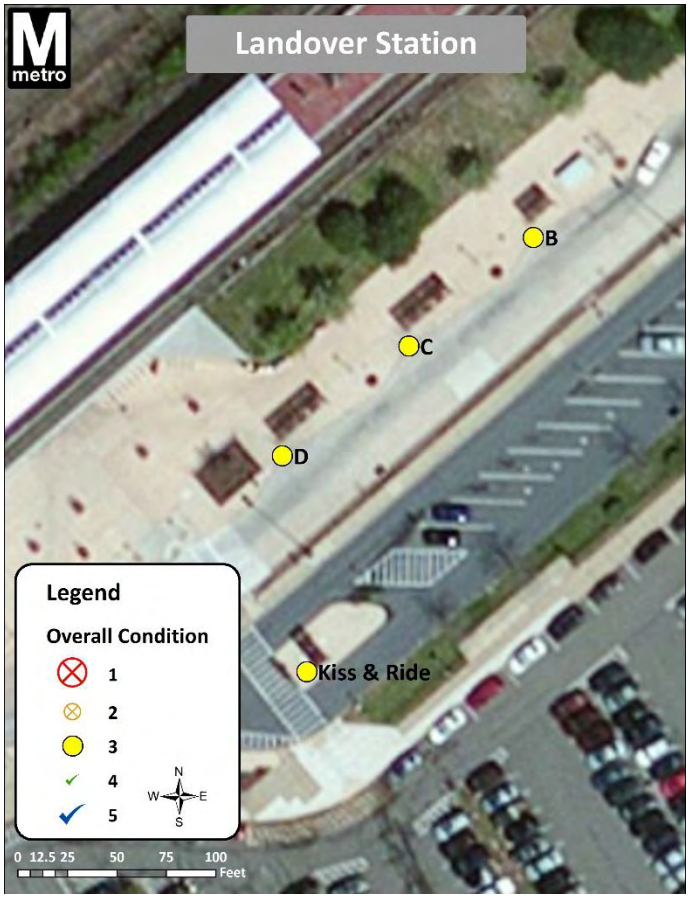


Figure 103: Frame Rust, Shelter D

Figure 104: Overall Condition Score of Landover Metrorail Station Shelters

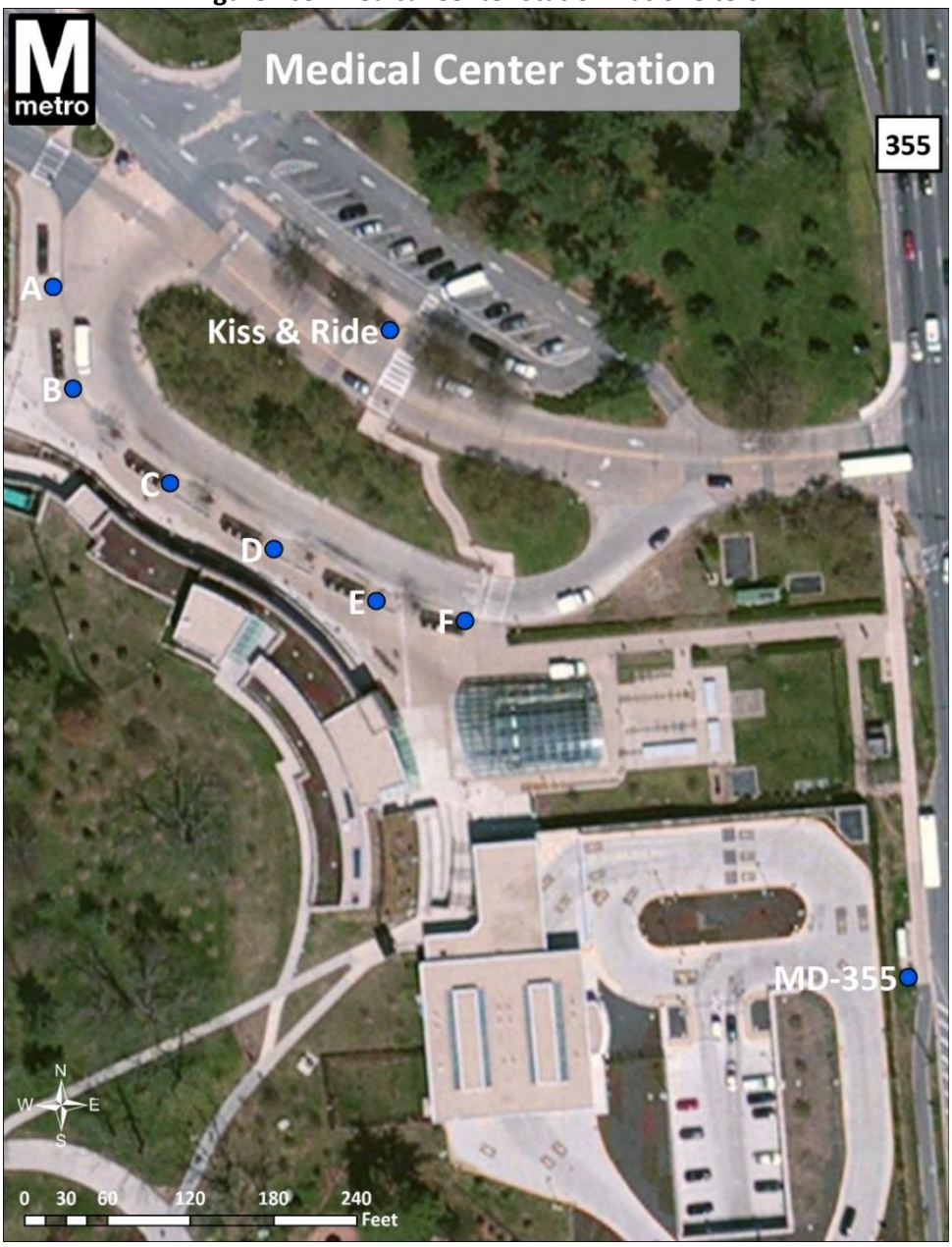


Overall, the station was ranked 26th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 17th for replacement.

Medical Center Metrorail Station

The Medical Center Station has one set of six bus shelters labeled A through F. There is also a shelter for the Kiss-and-Ride parking area and a newer shelter that is not owned by WMATA on the southbound side of MD-355 at the station. All of the shelters at the station are double-framed with the exception of the MD-355 shelter and the Kiss-and-Ride shelter. The station is served by Metrobus routes J1, J2, J3, J7, and J9 and Ride-On routes 30, 33, 34, 46 and 70. **Figure 105** illustrates each shelter located at this station.

Figure 105: Medical Center Station Bus Shelters



Overall, shelter conditions at the station are below average, with a station condition score of 2.7. **Table 19** summarizes conditions for each individual shelter. The shelters as a whole scored the poorest in frame condition and bench condition. Shelters C, D and F are in the worst condition, with overall condition ratings of 2. Shelter D is in particularly bad condition, with holes in its frame.

Rust on the frames was common among all the shelters at this station with the exception of Shelter A and the MD-355 shelter, both of which are different shelter designs than the rest at the station. The MD-355 shelter was not included in the overall shelter condition average for the station since it is not owned by WMATA. **Figures 106 through 109** illustrate the different shelter conditions at the station, while **Figure 110** summarizes each shelter's overall condition score.

Table 19: Shelter Conditions at the Medical Center Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	4	5	3	3	3	5
B	3	2	4	3	3	4
C	2	2	2	3	3	2
D	2	1	3	3	2	3
E	3	2	2	3	3	3
F	2	2	4	2	2	2
Kiss & Ride	3	3	3	3	2	3
MD-355*	*5*	*5*	*5*	*5*	*5*	*5*
Average	**2.7**	**2.4**	**3.0**	**2.9**	**2.6**	**3.1**

*Scores not included in station average.

Figure 106: Poor Frame Condition, Shelter D

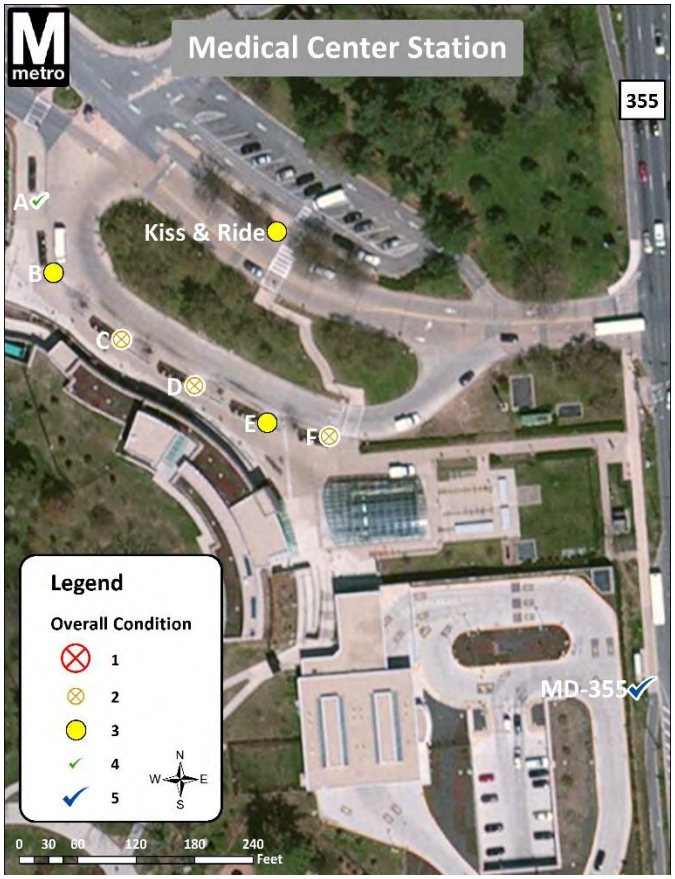
Figure 107: Poor Frame Condition, Shelter F

Figure 108: Shelter A

Figure 109: MD-355 Shelter

Overall, the station was ranked 11th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 6th for replacement.

Figure 110: Overall Condition Score of Medical Center Metrorail Station Shelters



Minnesota Ave Metrorail Station

The Minnesota Ave Station has one set of eleven shelters labeled A through M. All of the shelters at the station are double-framed. The station is served by Metrobus routes U2, U4, U5, U6, U8, V7, V8, V9, X1, X2, X3 and X9. Figure 111 illustrates each shelter located at this station.

Figure 111: Minnesota Ave Station Bus Shelters

Overall, shelter conditions at the station are poor, with a station condition score of 2.2. **Table 20** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in panel condition and bench condition. Shelters B, C, E, G, K and J were all missing panels; D had damaged panels and the remainder of the shelters all had smearing, fading, or cracking of their panels. Shelters D, E, F and G all had significantly worn benches. Frame conditions were below average, with moderate to major rust present on every shelter with the exception of shelter G. Dome tops had damage at shelters B, F, K and J.

Figures 112 through 115 illustrate the different shelter conditions at the station, while **Figure 116** summarizes each shelter's overall condition score.

Table 20: Shelter Conditions at the Minnesota Ave Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	2	2	3	2	3	3
B	2	2	2	1	3	3
C	2	3	3	1	3	3
D	2	3	3	2	2	3
E	2	3	3	1	2	3
F	2	2	2	2	2	3
G	2	4	4	1	2	3
J	2	3	2	1	3	3
K	2	3	2	1	3	3
L	3	3	3	3	3	3
M	3	3	3	3	3	3
Average	**2.2**	**2.8**	**2.7**	**1.6**	**2.6**	**3.0**

Figure 112: Missing Panel, Scratched/Rusted Frame, Shelter C

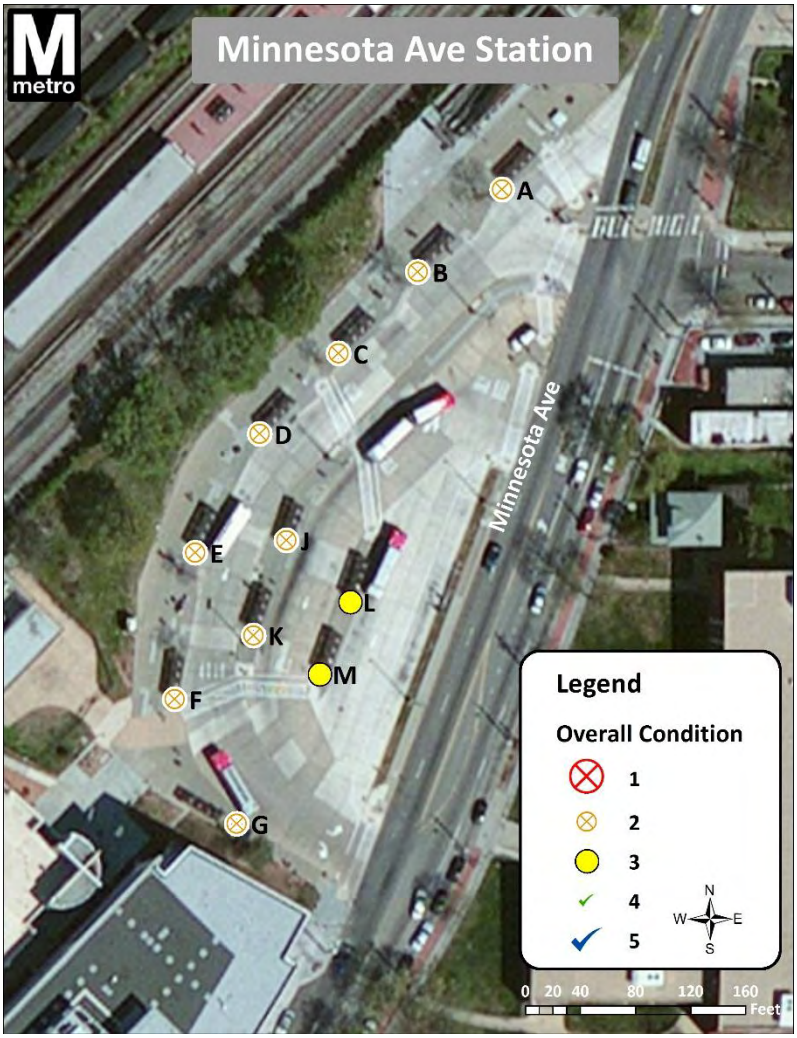
Figure 113: Worn Benches, Shelter G

Figure 114: Frame Rust, Shelter B

Figure 115: Damaged Panel, Shelter D

Overall, the station was ranked 4th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 3rd for replacement.

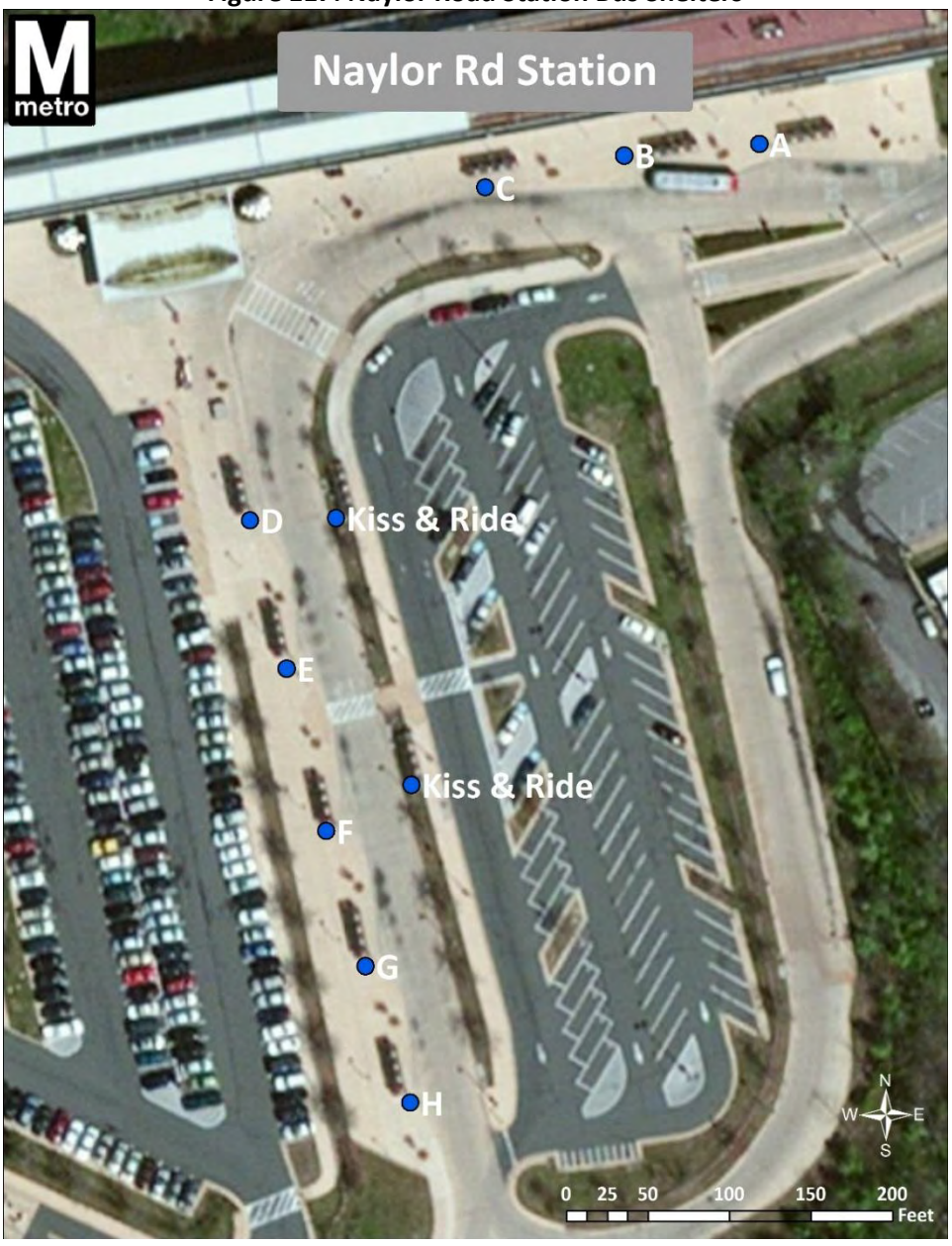
Figure 116: Overall Condition Score of Minnesota Ave Metrorail Station Shelters



Naylor Road Metrorail Station

The Naylor Road Station has one set of eight bus shelters labeled A through H and two Kiss-and-Ride lot shelters. All of the shelters at the station are double-framed. The station is served by Metrobus routes C12, C14, F14, H11, H12, H13, M2, 34, 36 and 39 and The Bus route 32. **Figure 117** illustrates each shelter located at this station.

Figure 117: Naylor Road Station Bus Shelters



Overall, shelter conditions at the station are average, with a station condition score of 3.0. **Table 21** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in panel

condition, with shelter F having a severely damaged panel and shelters G and H and the south Kiss-and-Ride shelter having moderately damaged panels. Frame condition overall was above average, with little rust present on any of the shelters. Bench condition, dome top condition and pad condition were all above average as well.

Figures 118 through 120 illustrate the different shelter conditions at the station, while **Figure 121** summarizes each shelter's overall condition score.

Table 21: Shelter Conditions at the Naylor Road Station

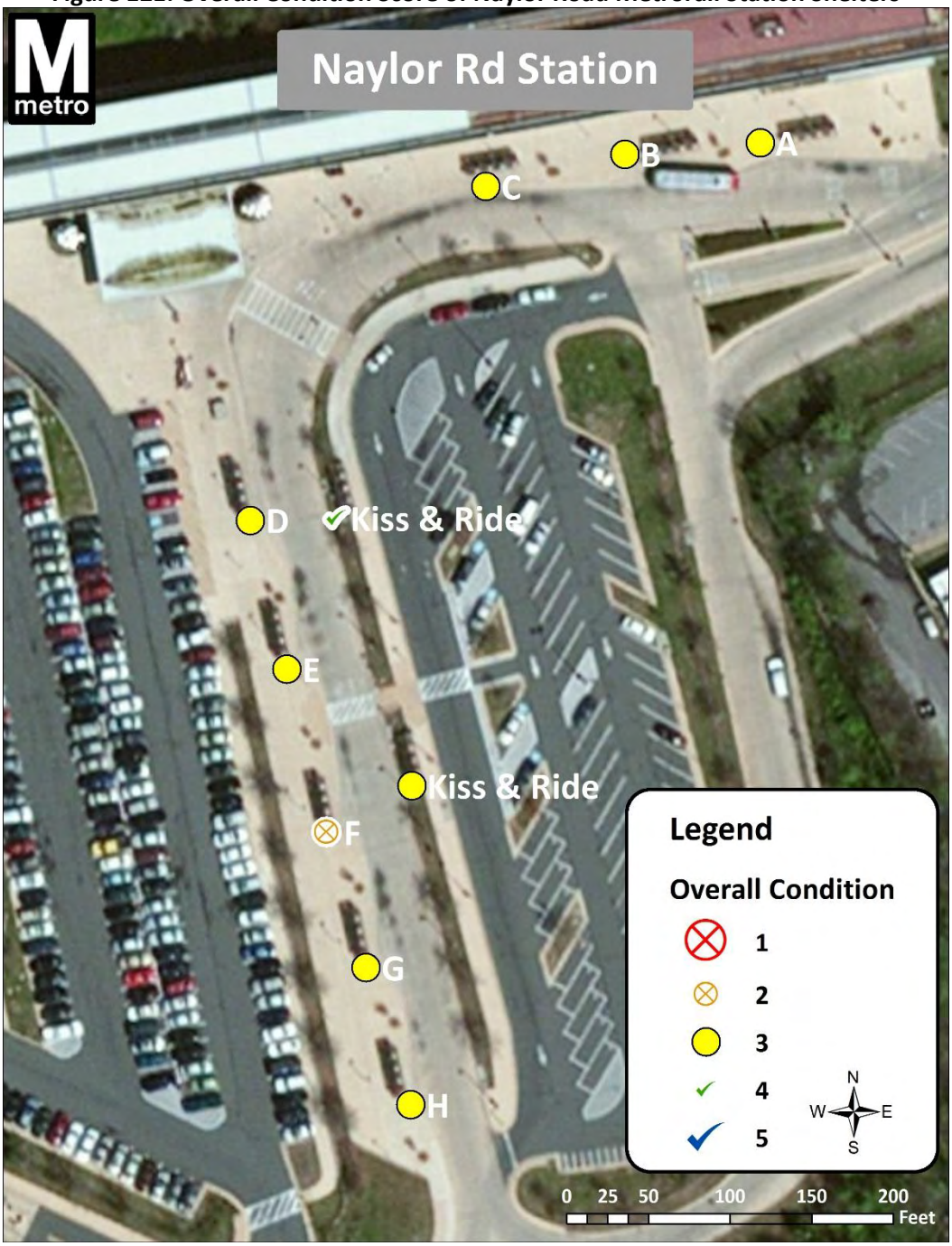
	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	4	3	3	3	4
B	3	4	3	3	3	3
C	3	4	3	3	3	3
D	3	4	3	3	3	4
E	3	4	4	3	3	3
F	2	4	3	1	3	3
G	3	4	3	2	3	3
H	3	4	4	2	3	3
South Kiss & Ride	3	4	4	2	4	3
North Kiss & Ride	4	4	4	4	4	3
Average	**3.0**	**4.0**	**3.4**	**2.6**	**3.2**	**3.2**

Figure 118: Severely Damaged Panel, Shelter F

Figure 119: Cracked Panel, Shelter G

Figure 120: Good Frame Condition, Shelter A

Figure 121: Overall Condition Score of Naylor Road Metrorail Station Shelters

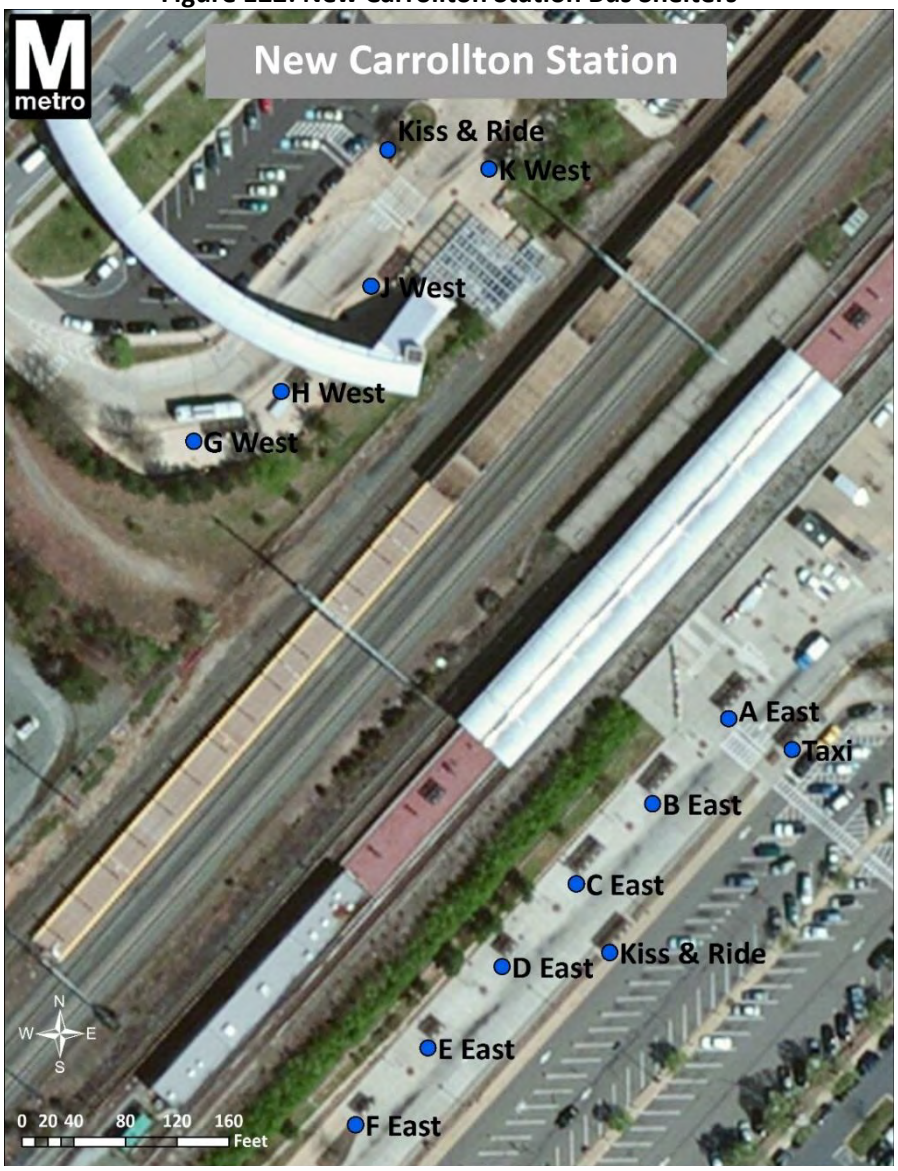


Overall, the station was ranked 18th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 18th for replacement.

New Carrollton Metrorail Station

The New Carrollton Station has two sets of bus shelters, one on the east side of the station and one on the west side. The west side (Ellin Road) has four shelters labeled G through K and a shelter for the Kiss-and-Ride lot. The east side (Garden City Drive) has six shelters labeled A through F; a shelter serving the taxi area and a shelter serving the Kiss-and-Ride lot. Shelters A, B, C, G, H, J, K, the east Kiss-and-Ride shelter and the east taxi shelter are all double-framed, while shelters D, E, F and the west Kiss-and-Ride shelter are all single-framed. The station is served by Metrobus routes B29, B31, B21, B22, C28, F12, F14, 88, 84, B24, B25, B27, F4, F6, G12, G13, G14, G16, F13 and T18; The Bus routes 21, 21x, 15x and 16; and MTA route 921. **Figure 122** illustrates each shelter located at this station.

Figure 122: New Carrollton Station Bus Shelters



Overall, shelter conditions at the station are average, with a station condition score of 3.0. **Table 22** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in panel and frame condition, while bench condition and pad condition were both above average. Shelters A and G both had holes in their frames and shelters B and C both showed significant rust on their frames. Shelters A, F, G and the taxi shelter all had damaged panels, with the taxi shelter also having a cracked dome top. Shelter D also had a cracked dome top.

Figures 123 through 126 illustrate the different shelter conditions at the station, while **Figure 127** summarizes each shelter's overall condition score.

Table 22: Shelter Conditions at the New Carrollton Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A East	2	1	3	2	4	4
B East	3	2	3	3	4	3
C East	3	2	3	3	4	3
D East	3	3	2	3	3	3
E East	3	3	4	3	3	3
F East	3	4	3	2	4	4
G West	2	1	3	2	5	3
H West	4	3	3	3	5	4
J West	4	4	4	3	4	4
K West	3	3	3	3	3	3
West Kiss & Ride	3	3	3	3	4	4
Taxi	3	3	2	2	4	4
East Kiss & Ride	3	3	2	3	4	4
Average	**3.0**	**2.7**	**2.9**	**2.7**	**3.9**	**3.5**

Figure 123: Rust & Hole in Frame, Shelter G

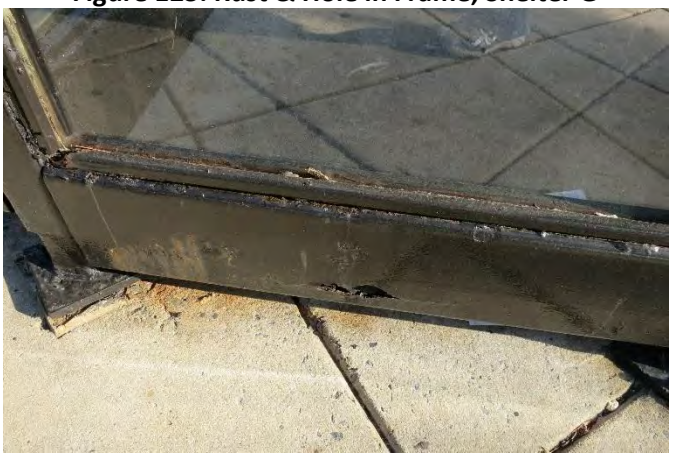


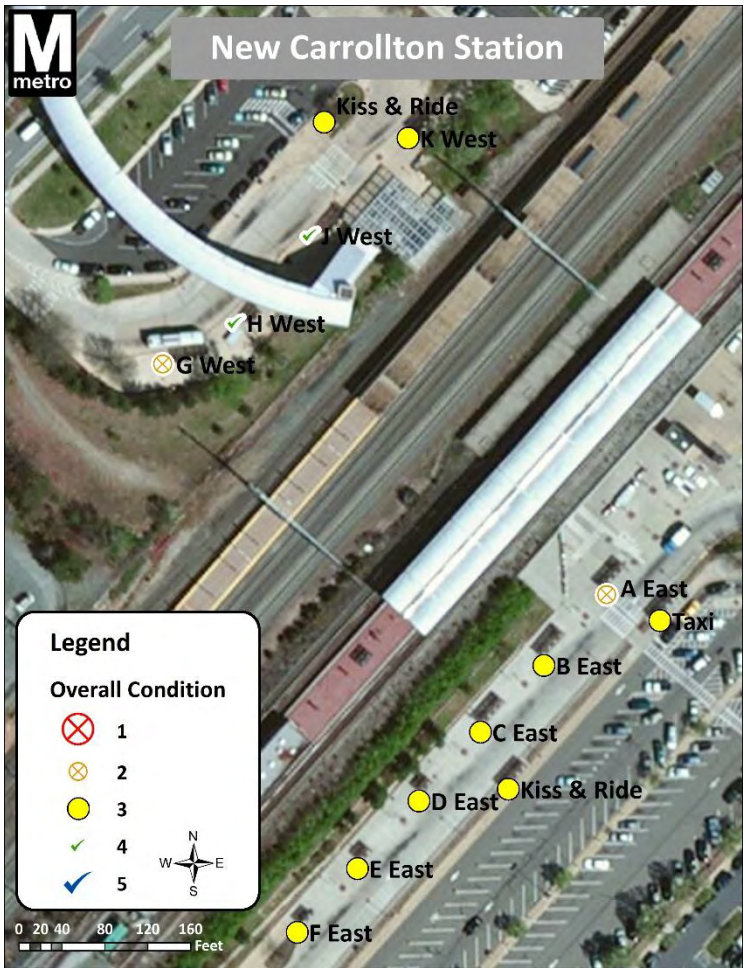
Figure 124: Rusted Frame, Shelter B

Figure 125: Cracked Dome Top, Taxi Shelter

Figure 126: Panel Damage, Shelter A

Overall, the station was ranked 10th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 19th for replacement.

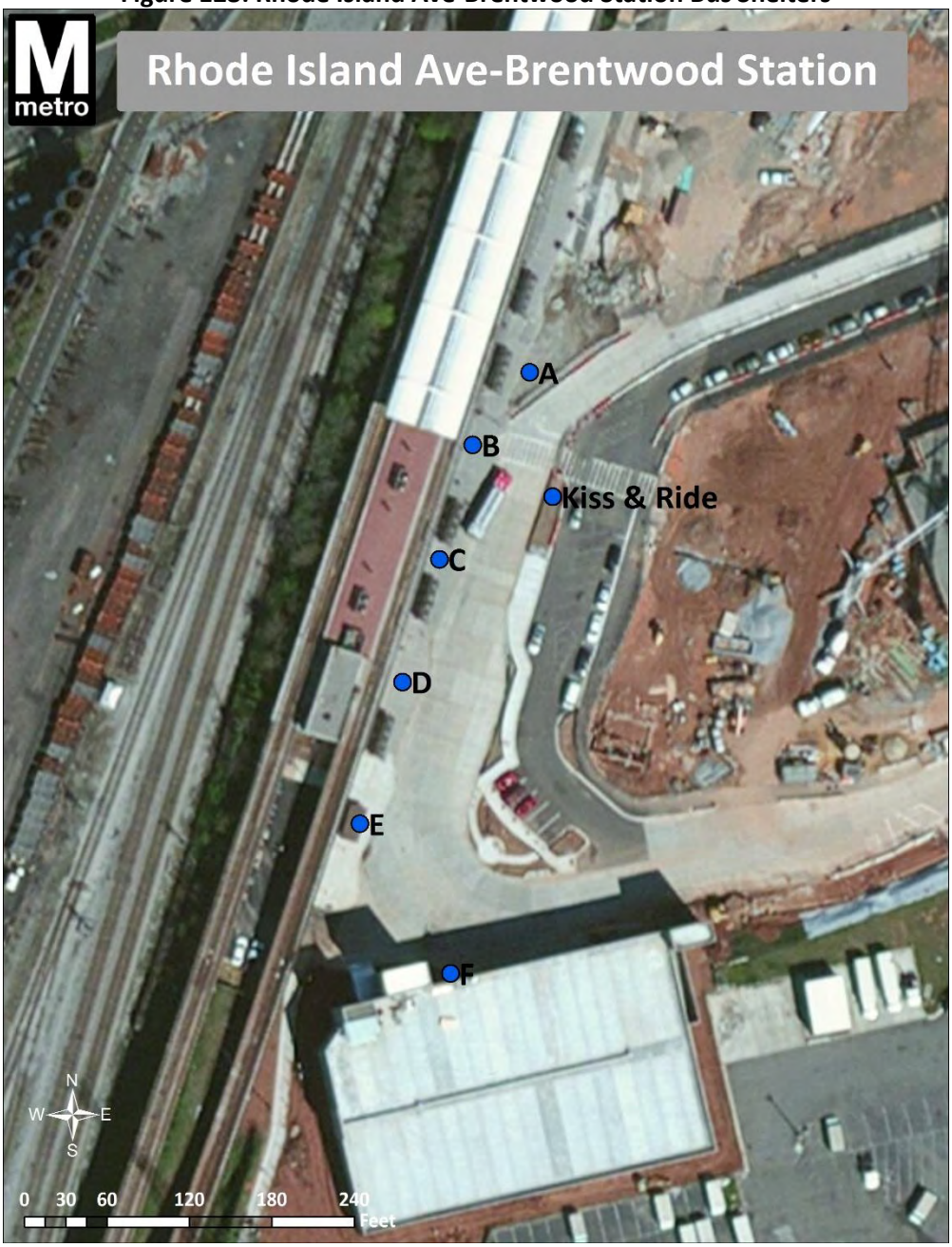
Figure 127: Overall Condition Score of New Carrollton Metrorail Station Shelters



Rhode Island Ave-Brentwood Metrorail Station

The Rhode Island Ave-Brentwood Station has one set of six bus shelters labeled A through F and an additional shelter serving the Kiss-and-Ride lot. All of the shelters at the station are double-framed with the exception of the Kiss-and-Ride shelter which is single-framed. The station is served by Metrobus routes B8, B9, D8, H8, H9, M31, P6, S41, T18, 81, 82, 83, 84 and 86. **Figure 128** illustrates each shelter located at this station.

Figure 128: Rhode Island Ave-Brentwood Station Bus Shelters



Overall, shelter conditions at the station are slightly below average, with a station condition score of 2.9. **Table 23** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in panel condition and dome top condition. Shelter C had a missing dome top while shelters A, D and E had damaged dome tops. Shelters C, D and F had damaged panels. Frames at the station all showed signs of rust with the exception of shelter F. Shelters C and E had a significant amount of rust on their frames, and shelter C even had a hole in its frame. Bench conditions were average at each shelter, while pad conditions were excellent, as the bus bays were recently reconstructed.

Figures 129 through 134 illustrate the different shelter conditions at the station, while **Figure 135** summarizes each shelter's overall condition score.

Table 23: Shelter Conditions at the Rhode Island Ave-Brentwood Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	3	2	3	3	5
B	3	3	3	3	3	5
C	1	1	1	2	3	5
D	3	3	2	2	3	4
E	3	2	2	3	3	5
F	4	4	3	2	3	5
Kiss & Ride	3	3	3	3	3	5
Average	**2.9**	**2.7**	**2.3**	**2.6**	**3.0**	**4.9**

Figure 129: Poor Condition of Shelter C: Damaged Panel, Hole in Frame, Missing Dome Top

Figure 130: Hole in Frame, Shelter C

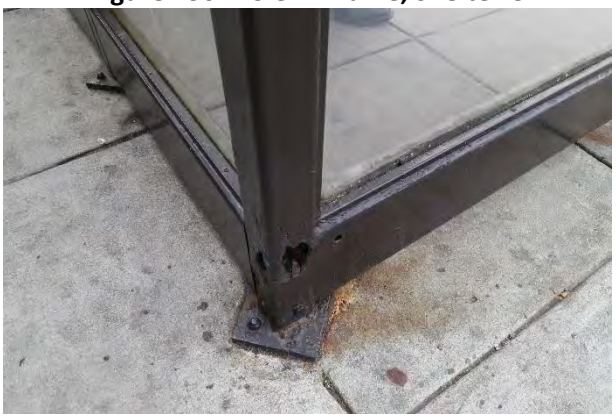


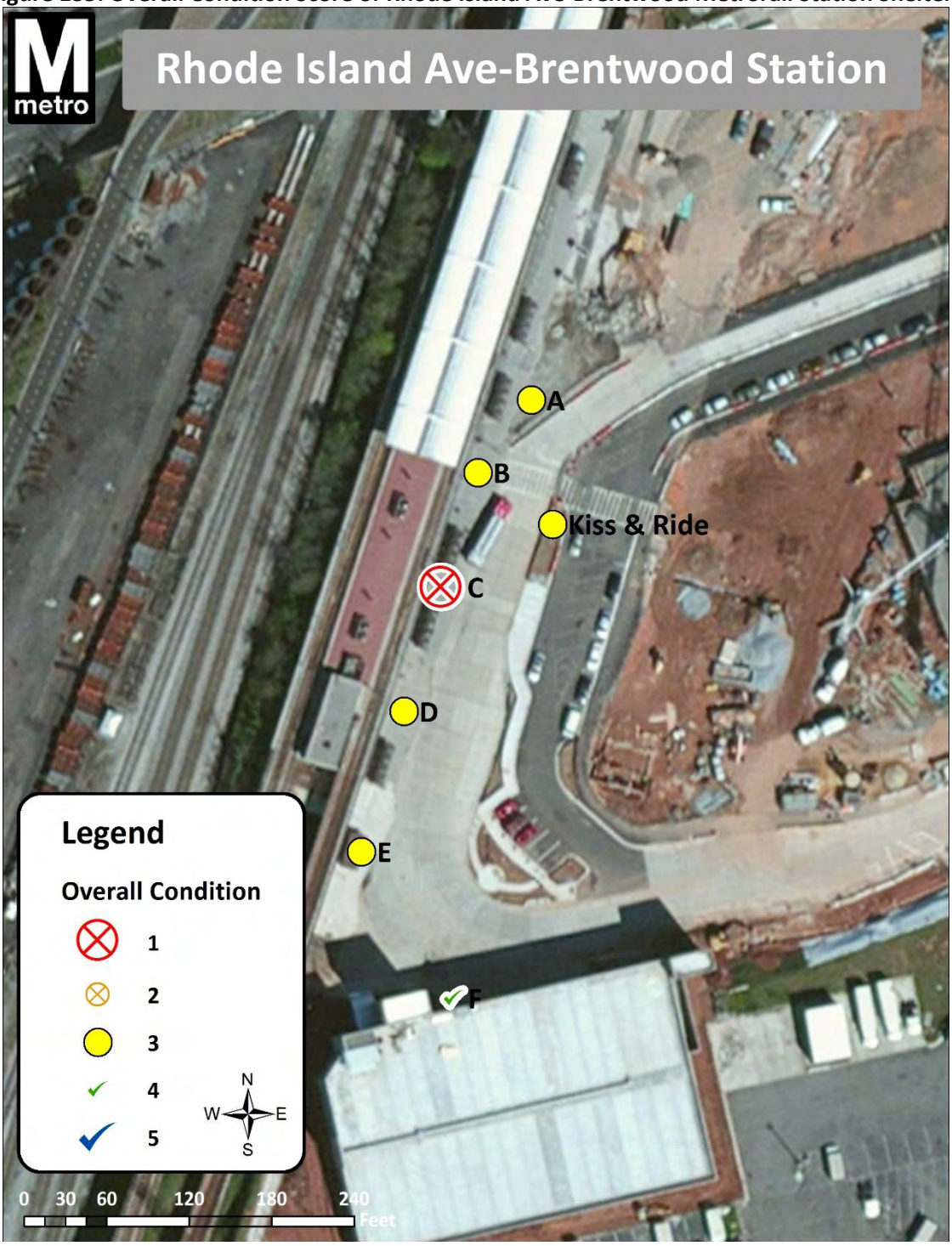
Figure 131: Missing Dome Top & Rust, Shelter C

Figure 132: Damaged Dome Top, Shelter D

Figure 133: Damaged Panel, Shelter D

Figure 134: Good Pad Conditions Typical at Station

Figure 135: Overall Condition Score of Rhode Island Ave-Brentwood Metrorail Station Shelters

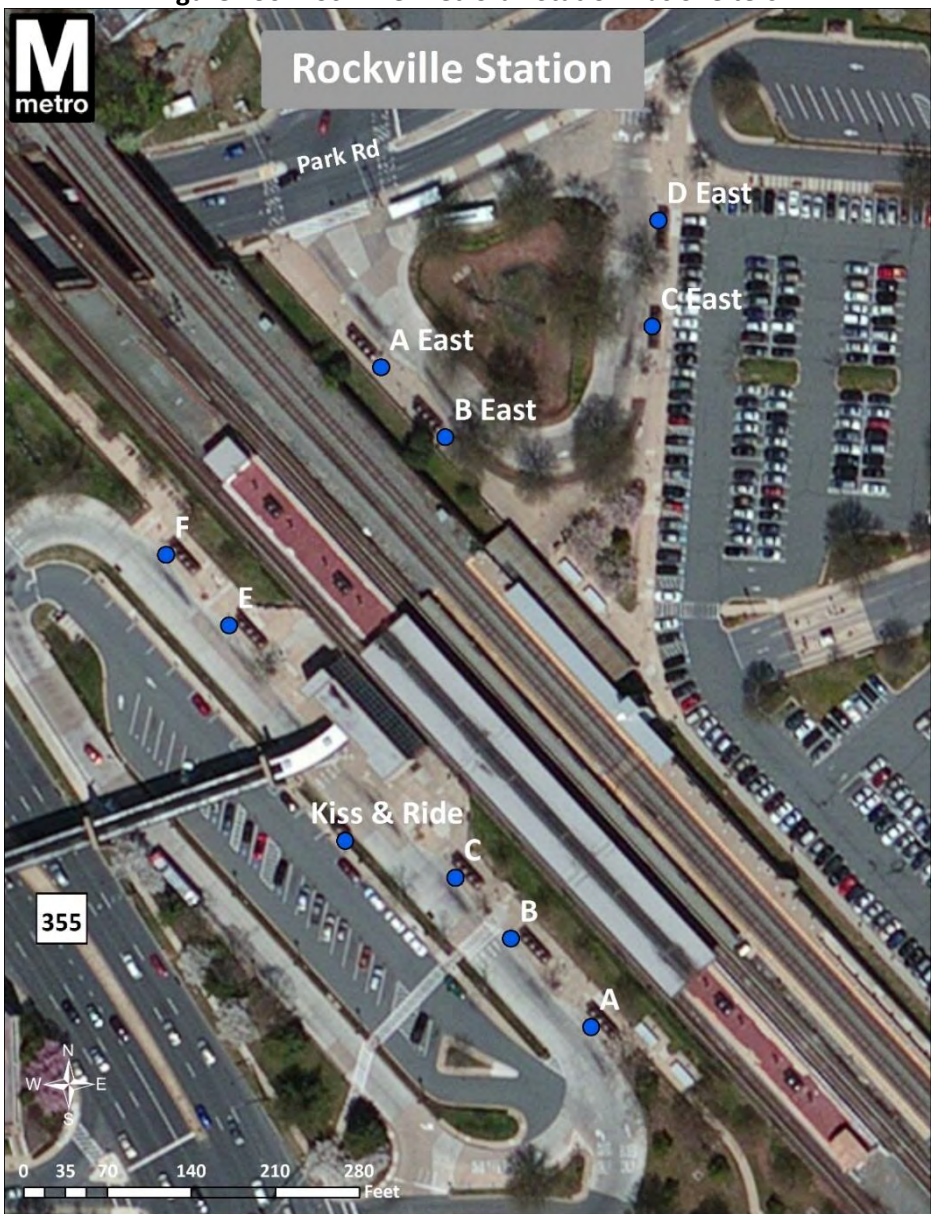


Overall, the station was ranked 5th for replacement based on shelter condition and demand. Based on shelter condition only, the station 12th ranked for replacement.

Rockville Metrorail Station

The Rockville Station has two sets of bus shelters, one on the east side of the station (MARC/AMTRAK side) and one on the west side (downtown Rockville). The west side of the station has five shelters for each bus stop labeled A through F and one shelter for the Kiss-and-Ride parking area. The east side of the station has four shelters for each bus stop labeled A through D. The station is served by Metrobus routes Q1, Q2, Q4, Q5, Q6 and T2, as well as Ride-On routes 44, 45, 46, 47, 48, 49, 52, 54, 55, 56, 59, 63 and 81. **Figure 136** illustrates each shelter located at this station.

Figure 136: Rockville Metrorail Station Bus Shelters



Overall, shelter condition at the Rockville station is slightly below average, with a station condition score of 2.9. **Table 24** summarizes conditions for each individual shelter. The shelters as a whole scored the poorest in panel condition and pad condition. Shelter C East is in particularly bad condition, with a missing panel on its rear side and poor pad condition. This shelter received an overall rating of 2, while the rest of the shelters at the station received an overall rating of 3. The Kiss-and-Ride shelter on the west side of the station also received a poor panel rating due to a missing panel on its north side.

Rust on the frames was common among all the shelters at this station with the exception of Shelter F West and the Kiss-and-Ride shelter. **Figures 137 through 140** illustrate the different shelter conditions at the station while **Figure 141** summarizes the overall conditions of each shelter.

Table 24: Shelter Conditions at the Rockville Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A East	3	3	3	3	4	3
B East	3	3	4	2	4	3
C East	2	3	2	1	3	1
D East	3	3	4	3	4	2
A West	3	3	4	4	4	3
B West	3	2	4	4	3	3
C West	3	2	4	3	4	3
E West	3	2	4	4	3	4
F West	3	3	4	3	3	2
West Kiss N Ride	3	4	4	1	2	4
Average	**2.9**	**2.8**	**3.7**	**2.8**	**3.4**	**2.8**

Figure 137: Shelter C East Missing Panel

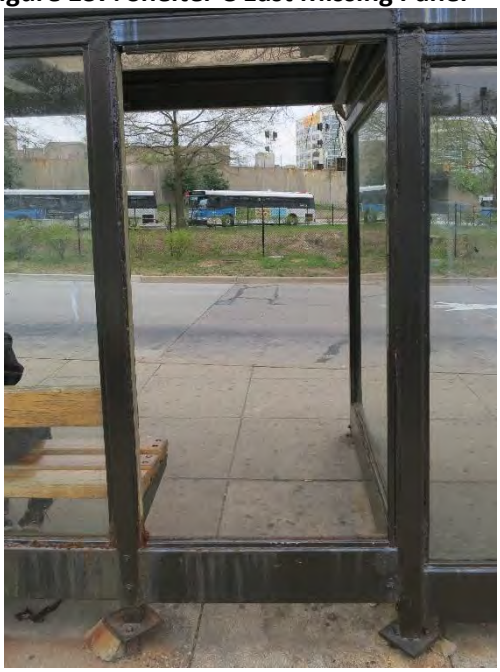
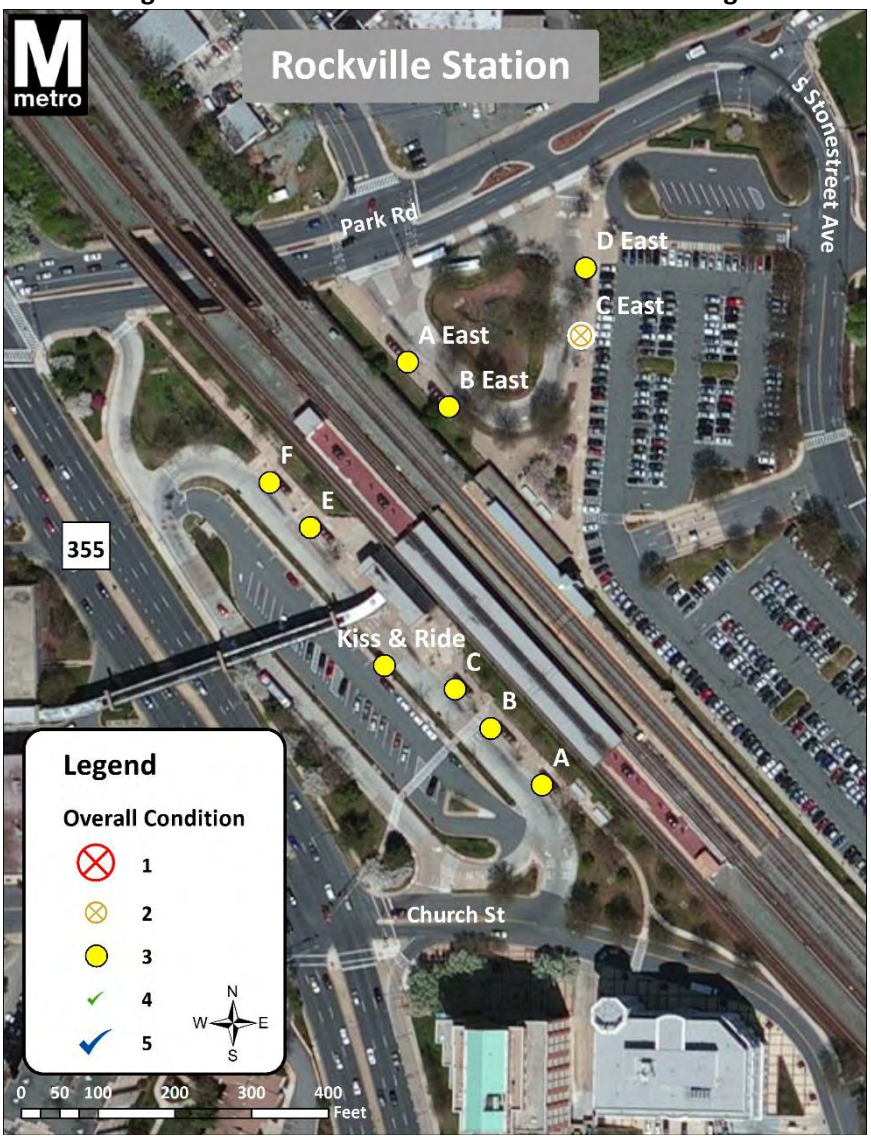


Figure 138: Shelter B West Rust on Frame

Figure 139: Kiss-and-Ride Shelter Missing Panel

Figure 140: Shelter C East Poor Pad Condition

Figure 141: Rockville Station Shelter Overall Ratings



Overall, the Rockville station was ranked 13th for replacement based on shelter condition and total demand. Based on shelter condition only, the station ranked 13th for replacement.

Shady Grove Metrorail Station

The Shady Grove Station has two sets of bus shelters, one on the east side of the station and one on the west side. The west side of the station has three shelters for each bus stop labeled A through C and one shelter for the Kiss-and-Ride parking area. The east side of the station has six shelters for each bus stop labeled A through F plus a shelter for the Kiss-and-Ride parking area and a shelter for MTA buses. All of the shelters at the station are doubled-framed with the exception of the Kiss-and-Ride shelter and the MTA shelter, which are both single-framed. The station is served by Metrobus routes Q1, Q2, Q5, and Q6; Ride-On routes 43, 46, 53, 55, 57, 58, 59, 60, 61, 63, 64, 65, 66, 67, 71, 74, 76, 78, 79, 90 and 100; and MTA routes 201, 202 and 991. **Figure 142** illustrates each shelter located at this station.

Figure 142: Shady Grove Metrorail Station Bus Shelters

Overall, shelter conditions at the Shady Grove station are average, with a station condition score of 3.1. **Table 25** summarizes conditions for each individual shelter. The shelters as a whole scored the poorest in frame condition and panel condition, with persistent rust and missing or damaged panels on several shelters. Shelters C West, A East and C East are in particularly bad condition, all receiving overall scores of 2. C West and C East both have holes in their frames, while A East has extensive rust and cracked/smeared panels.

Rust on the frames was common among all the shelters at this station with the exception of the MTA shelter and the East Kiss-and-Ride shelter. **Figures 143 through 145** illustrate the different shelter conditions at the station while **Figure 146** summarizes the overall conditions of each shelter.

Table 25: Shelter Conditions at the Shady Grove Station

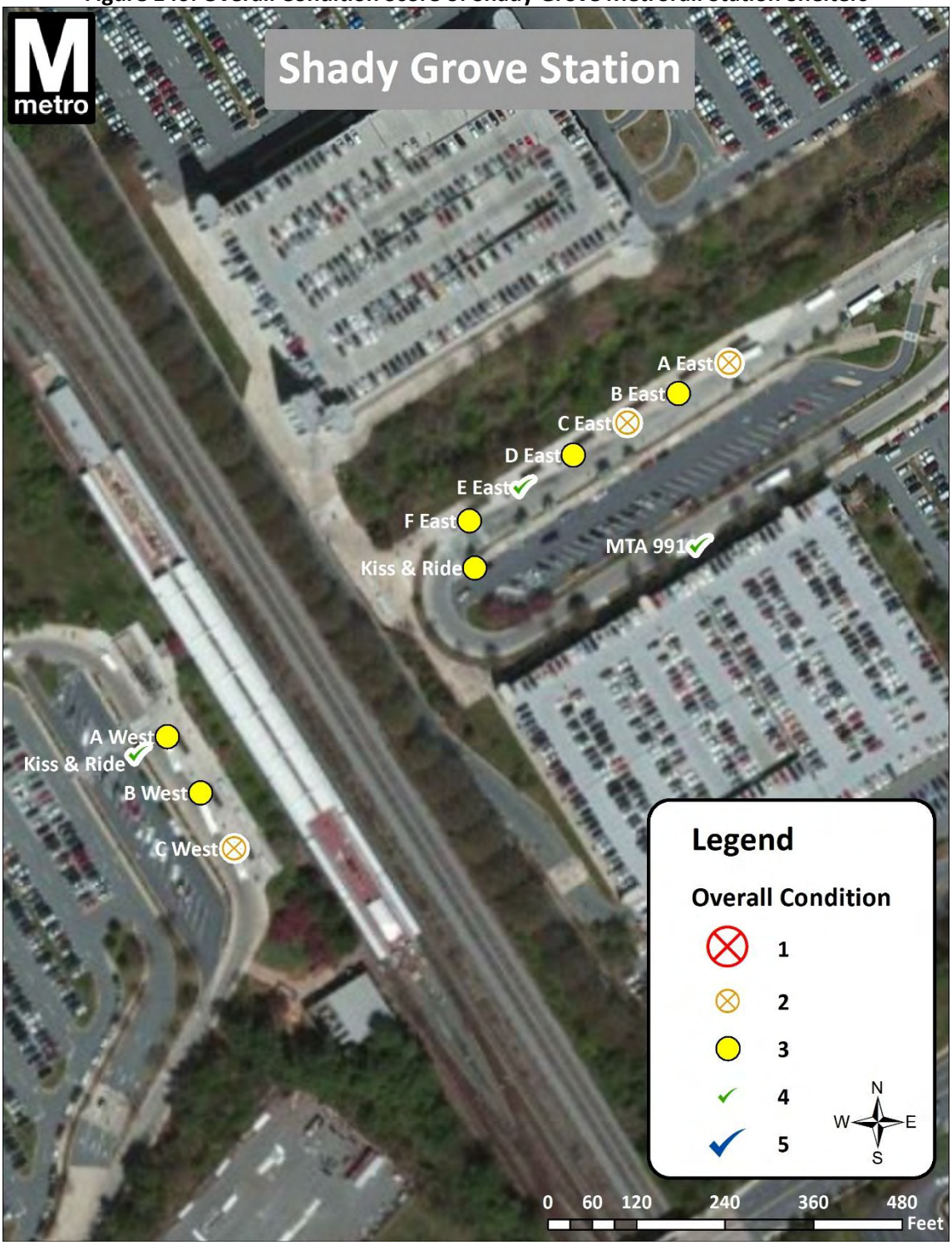
	Overall	Frame	Dome Top	Panels	Bench	Pad
A East	2	2	4	2	2	3
B East	3	2	4	2	3	4
C East	2	1	3	3	3	3
D East	3	2	4	3	2	3
E East	4	2	5	4	3	3
F East	3	3	4	3	5	3
A West	3	3	4	3	3	4
B West	3	2	4	2	4	3
C West	2	1	3	3	3	3
East Kiss N Ride	3	4	4	3	2	2
West Kiss N Ride	4	3	4	4	4	2
MTA 991	4	4	3	4	5	5
Average	**3.0**	**2.4**	**3.8**	**3.0**	**3.3**	**3.2**

Figure 143: Shelter C West Hole in Frame

Figure 144: Shelter C East Hole in Frame

Figure 145: Shelter A East

Figure 146: Overall Condition Score of Shady Grove Metrorail Station Shelters

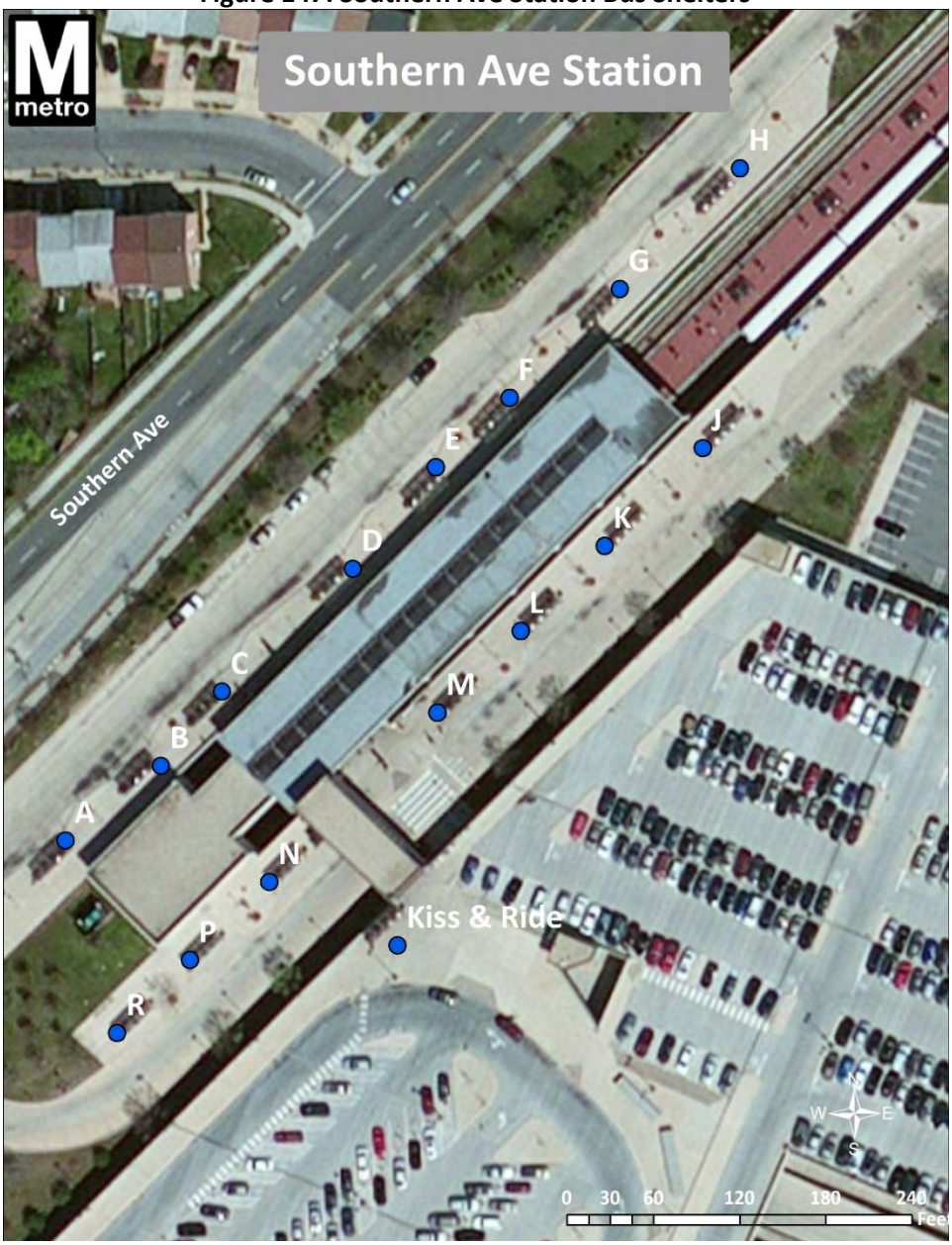


Overall, the Shady Grove station was ranked 8th for replacement based on shelter condition and total demand. Based on shelter condition only, the station ranked 20th for replacement.

Southern Ave Metrorail Station

The Southern Ave Station has two sets of bus shelters, one on the east side of the station and one on the west side. The west side has eight shelters labeled A through H. The east side of the station has seven shelters labeled J through R and a shelter for the Kiss-and-Ride lot. All of the shelters at the station are double-framed. The station is served by Metrobus routes A2, A42, D12, D13, D14, P12, W15 and W19. **Figure 147** illustrates each shelter located at this station.

Figure 147: Southern Ave Station Bus Shelters



Overall, shelter conditions at the station are above average, with a station condition score of 3.4. **Table 26** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in bench condition, with shelters E, H, J, K, L and P having worn benches. Panel conditions were average with some fading and smearing and also damaged panels at shelters B, C and M and a missing panel at shelter H. Frames were in good condition overall, with rust present only on shelters K, L and M. Dome tops and pads were in above average condition overall.

Figures 148 through 151 illustrate the different shelter conditions at the station, while **Figure 152** summarizes each shelter's overall condition score.

Table 26: Shelter Conditions at the Southern Ave Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	4	3	3	3	4
B	3	4	3	2	3	3
C	3	4	3	2	3	3
D	4	4	4	4	3	3
E	4	4	4	4	2	4
F	3	4	2	4	3	4
G	4	4	4	4	3	4
H	3	4	4	2	2	4
J	4	4	4	4	2	3
K	3	3	2	3	1	3
L	3	3	3	3	2	3
M	3	3	3	2	3	4
N	3	4	3	4	3	3
P	3	4	4	3	2	4
R	4	4	4	4	3	3
Kiss & Ride	4	4	4	3	3	4
Average	**3.4**	**3.8**	**3.4**	**3.2**	**2.6**	**3.5**

Figure 148: Worn/Damaged Bench, Shelter K

Figure 149: Missing panel, Shelter H

Figure 150: Damaged Panel, Shelter C

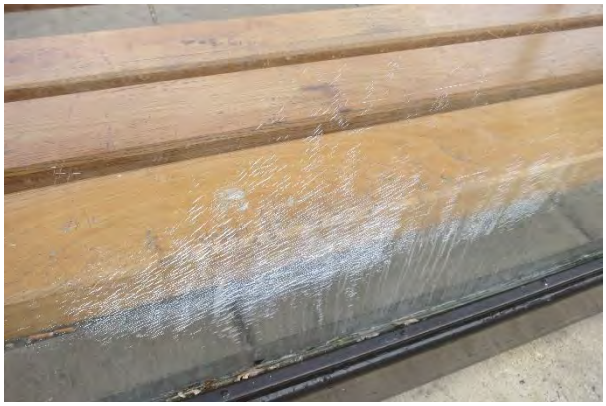
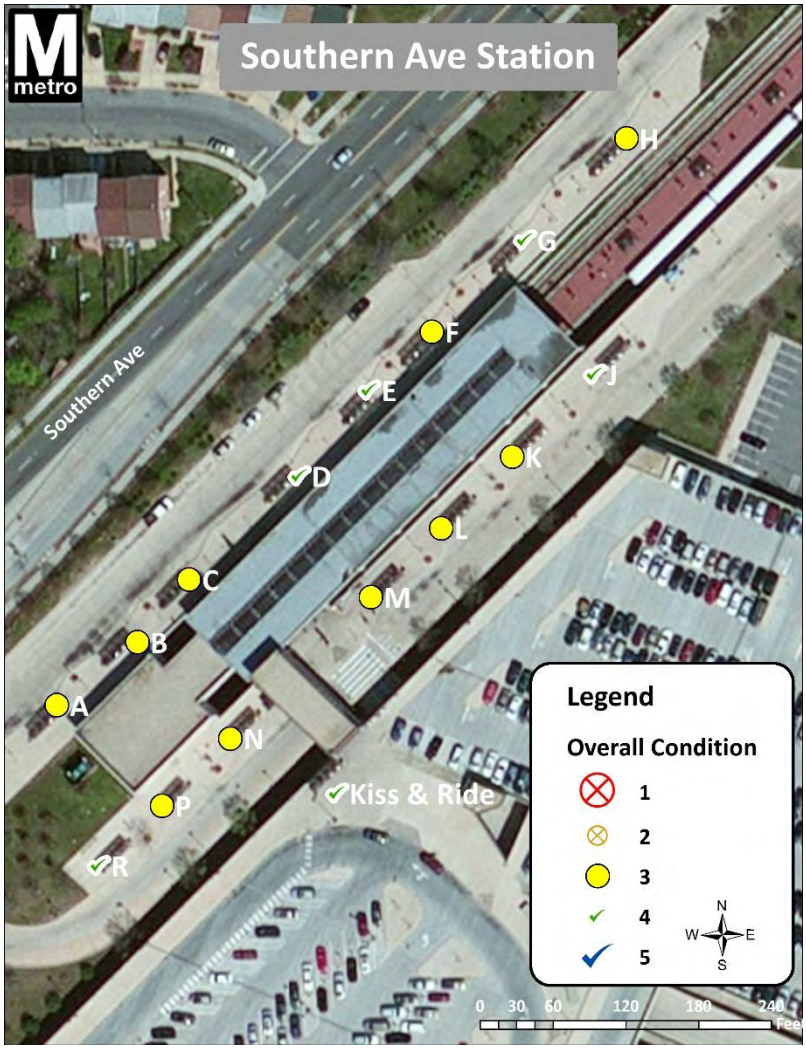


Figure 151: Frame Rust, Damaged Panel, Shelter M

Overall, the station was ranked 20th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 26th for replacement. The station currently has federal funding to replace shelters and reconstruct bus bays and, therefore, should be a priority.

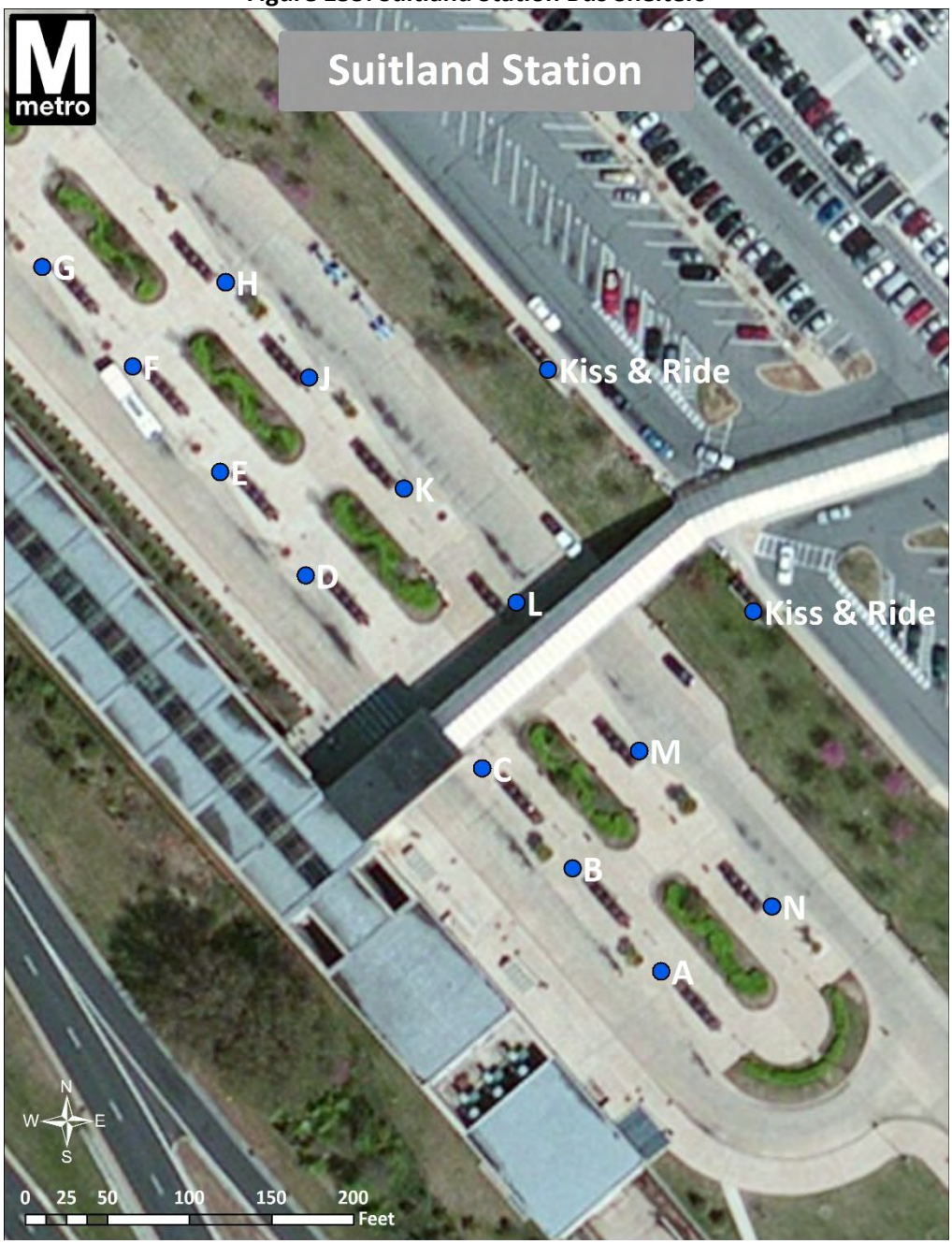
Figure 152: Overall Condition Score of Southern Ave Metrorail Station Shelters



Suitland Metrorail Station

The Suitland Station has one set of thirteen bus shelters labeled A through N and two additional shelters that serve the Kiss-and-Ride lot. All of the shelters at the station are double-framed. The station is served by Metrobus routes D12, D13, D14, K12, K13, P12 and V12; The Bus route 34 and MTA route 903. **Figure 153** illustrates each shelter located at this station.

Figure 153: Suitland Station Bus Shelters



Overall, shelter conditions at the station are above average, with a station condition score of 3.5. **Table 27** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in bench condition, with worn benches at shelters C and L. Frame conditions were very good, with little to no rust on any of the shelters. Dome top conditions were above average, with only shelter C having damage. Panel conditions were also above average, with some smearing, scratching or fading present only at shelters A, J, K, L and the Kiss-and-Ride shelters. Shelter L also had some damage to one of its panels. Pad conditions were average, with some minor cracking at each shelter with the exception of A and K.

Figures 154 through 156 illustrate the different shelter conditions at the station, while **Figure 157** summarizes each shelter's overall condition score.

Table 27: Shelter Conditions at the Suitland Station

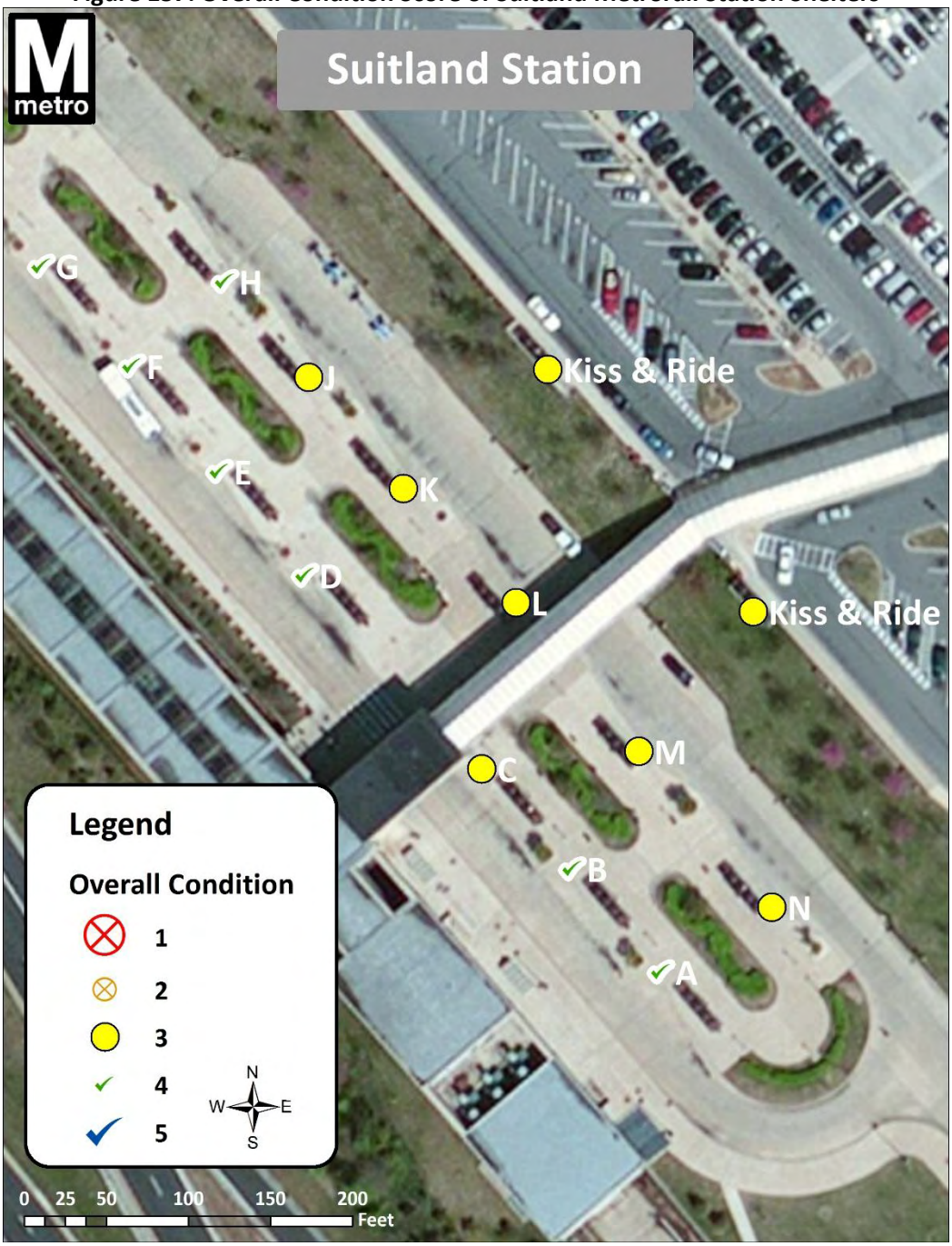
	Overall	Frame	Dome Top	Panels	Bench	Pad
A	4	4	4	3	3	4
B	4	4	4	4	3	3
C	3	4	2	4	2	3
D	4	4	4	4	3	3
E	4	4	4	4	3	3
F	4	4	4	4	3	3
G	4	5	4	5	3	3
H	4	5	4	4	4	3
J	3	4	4	3	3	3
K	3	4	3	3	3	4
L	3	4	4	2	2	3
M	3	4	3	4	3	3
N	3	4	4	3	3	3
North Kiss & Ride	3	4	4	3	3	3
South Kiss & Ride	3	4	4	3	3	3
Average	**3.5**	**4.1**	**3.7**	**3.5**	**2.9**	**3.1**

Figure 154: Excellent Frame Condition, Shelter G

Figure 155: Cracked Dome Top, Shelter C

Figure 156: Worn Bench, Cracked Panel, Shelter L

Figure 157: Overall Condition Score of Suitland Metrorail Station Shelters



Overall, the station was ranked 24th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 27th for replacement.

Takoma Metrorail Station

The Takoma Station has one set of nine shelters labeled A through J and an additional shelter serving the Kiss-and-Ride lot. All of the shelters at the station are double-framed with the exception of shelter A and the Kiss-and-Ride shelter, which are both single-framed. The station is served by Metrobus routes F1, F2, K2, 52, 53, 54, 62 and 63; and Ride-On routes 3, 12, 13, 14, 16, 18, 24, and 25. **Figure 158** illustrates each shelter located at this station.

Figure 158: Takoma Station Bus Shelters

Overall, shelter conditions at the station are slightly below average, with a station condition score of 2.9. Table 28 summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in frame and dome top conditions. Rust was common on all the shelter frames and was particularly bad on shelters B and D. Dome tops were generally worn and faded, with shelters G and H also having some damage to them. Panel conditions were slightly below average with fading, smearing or scratching on all the shelters except A and J. Shelters C, H and the Kiss-and-Ride shelter also had cracks in their panels. Pad conditions were average, with shelters A, B, C, D, H and J showing moderate cracking. Bench conditions were slightly above average, with shelters A, C, D, E, F, J and the Kiss-and-Ride shelter showing some wear.

Figures 159 through 162 illustrate the different shelter conditions at the station, while **Figure 163** summarizes each shelter's overall condition score.

Table 28: Shelter Conditions at the Takoma Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	3	3	4	3	2
B	3	2	3	3	4	2
C	3	3	3	2	3	3
D	2	2	3	3	2	2
E	3	3	3	3	3	4
F	3	3	3	3	3	4
G	3	3	2	3	4	4
H	3	3	2	2	4	2
J	3	3	3	4	3	3
Kiss & Ride	3	3	3	2	3	4
Average	**2.9**	**2.8**	**2.8**	**2.9**	**3.2**	**3**

Figure 159: Frame Rust, Shelter B

Figure 160: Damaged Panel, Shelter H

Figure 161: Cracked Dome Top, Shelter G

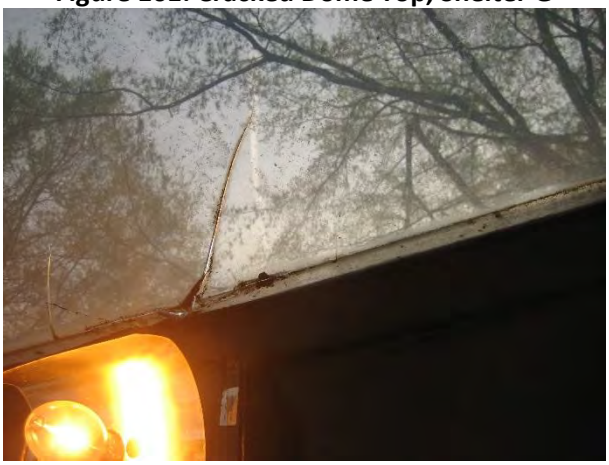
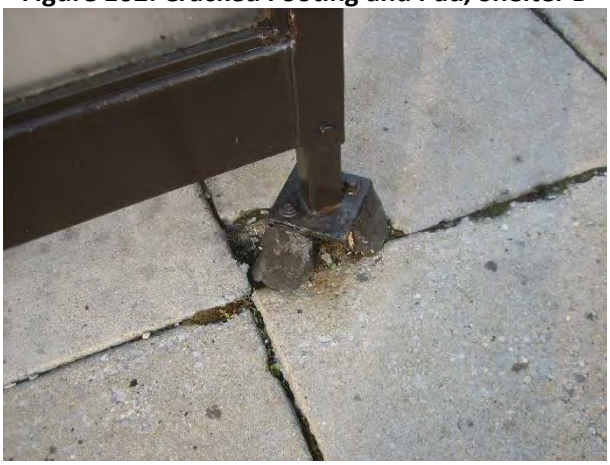
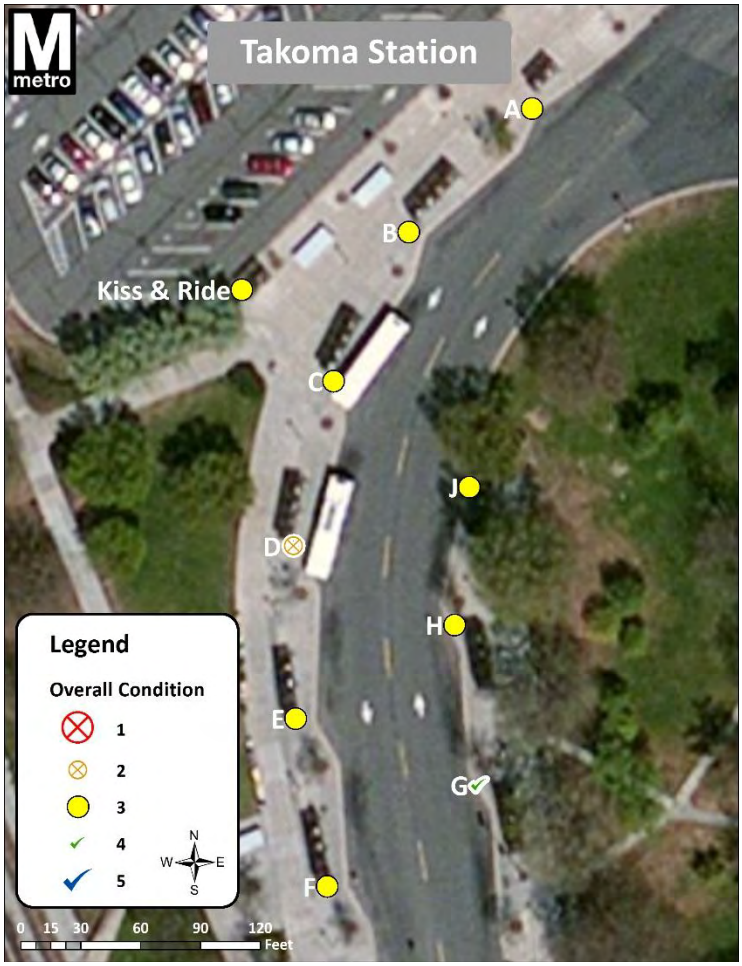


Figure 162: Cracked Footing and Pad, Shelter B



Overall, the station was ranked 9th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 14th for replacement.

Figure 163: Overall Condition Score of Takoma Metrorail Station Shelters



Twinbrook Metrorail Station

The Twinbrook Metorail Station has two sets of bus shelters, one on the east side of the station and one on the west side. The west side of the station has three shelters for each bus stop labeled A through C, one shelter for the Kiss-and-Ride parking area and a new shelter on Chapman Avenue. The Chapman Avenue shelter is a different design than the rest of the shelters at the station and is not owned by WMATA. The east side of the station has six shelters for each bus stop labeled A through F plus a shelter for the Kiss-and-Ride parking area. All of the shelters at the station are double-framed with the exception of the Kiss-and-Ride shelters and the Chapman Avenue shelter, which are single-framed. The station is served by Metrobus routes C4 and J5 and Ride-On routes 5, 10, 26, 44, 45, 46 and 93. **Figure 164** illustrates each shelter located at this station.

Figure 164: Twinbrook Station Bus Shelters

Overall, shelter conditions at the Twinbrook station are below average, with a station condition score of 2.7. **Table 29** summarizes conditions for each individual shelter. The shelters, as a whole, scored the poorest in pad condition and panel condition. Bench conditions were also notably poor. Shelters A East, B East, E East and B West are in the worst condition, all receiving an overall score of 2. A East and B West are both missing panels, while B East has a crumbling pad. Shelter F East had a worn and cracked bench but, otherwise, was in satisfactory condition.

Rust on the frames was common among all the shelters at this station with the exception of the east Kiss-and-Ride and the Chapman Avenue shelter. The Chapman Avenue shelter was not included in the overall shelter condition score for the station since it is not owned by WMATA. **Figures 165 through 168** illustrate the different shelter conditions at the station, while **Figure 169** summarizes each shelter's overall condition score.

Table 29: Shelter Conditions at the Twinbrook Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A East	2	3	3	1	2	2
B East	2	2	3	2	3	1
C East	3	3	4	3	3	2
D East	3	3	4	3	2	2
E East	2	3	4	2	2	2
F East	3	3	4	3	2	2
A West	3	3	4	2	3	2
B West	2	3	4	1	3	2
C West	3	3	4	3	2	2
East Kiss & Ride	4	4	5	4	3	3
West Kiss & Ride	3	3	4	4	3	3
Chapman Ave*	*5*	*4*	*4*	*4*	*5*	*4*
Average	**2.7**	**3.0**	**3.9**	**2.5**	**2.5**	**2.1**

*Scores not included in station average.

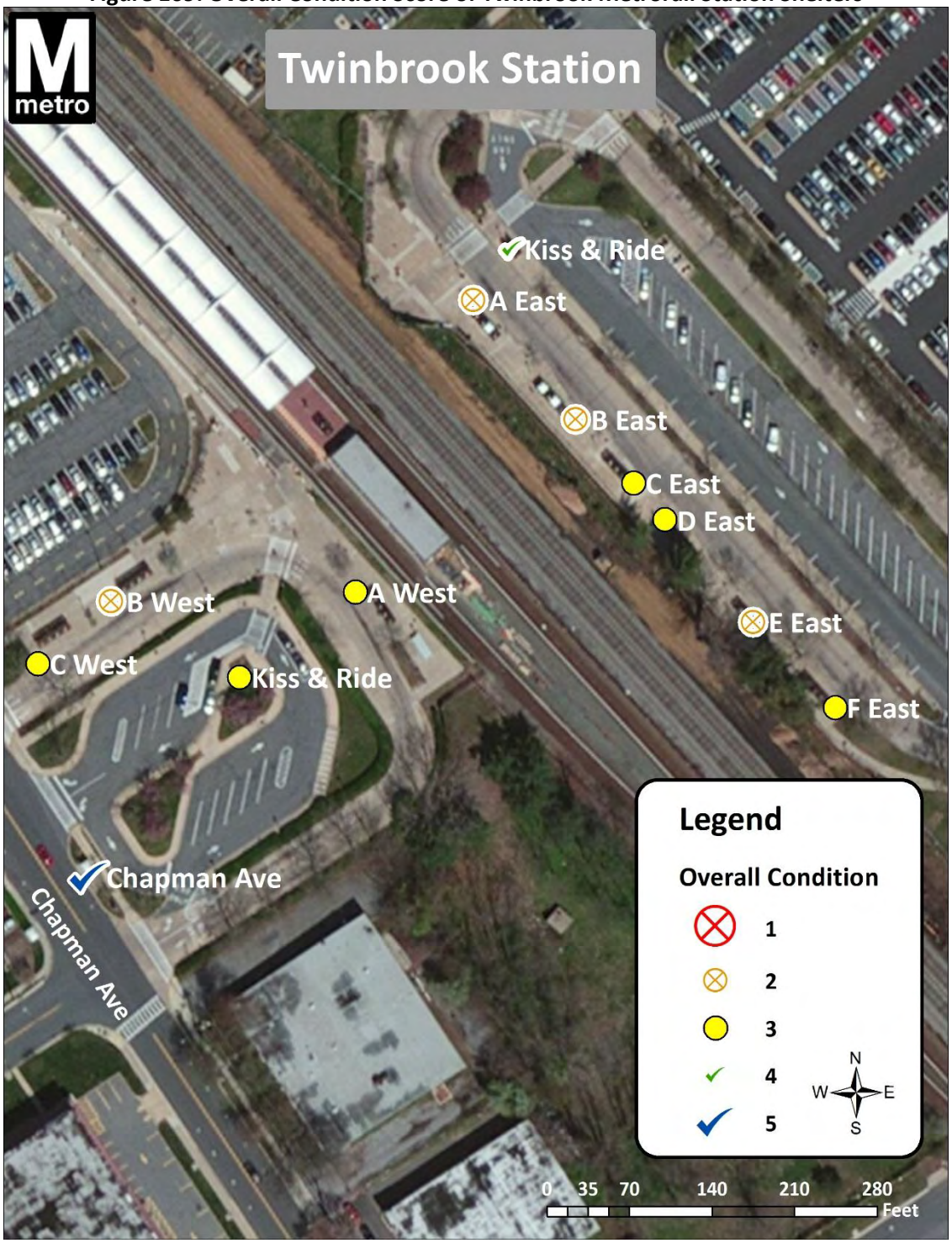
Figure 165: Shelter B West Missing Panel

Figure 166: Shelter A East Missing Panel

Figure 167: Shelter F East Poor Bench Condition

Figure 168: Shelter B East Poor Pad Condition

Figure 169: Overall Condition Score of Twinbrook Metrorail Station Shelters

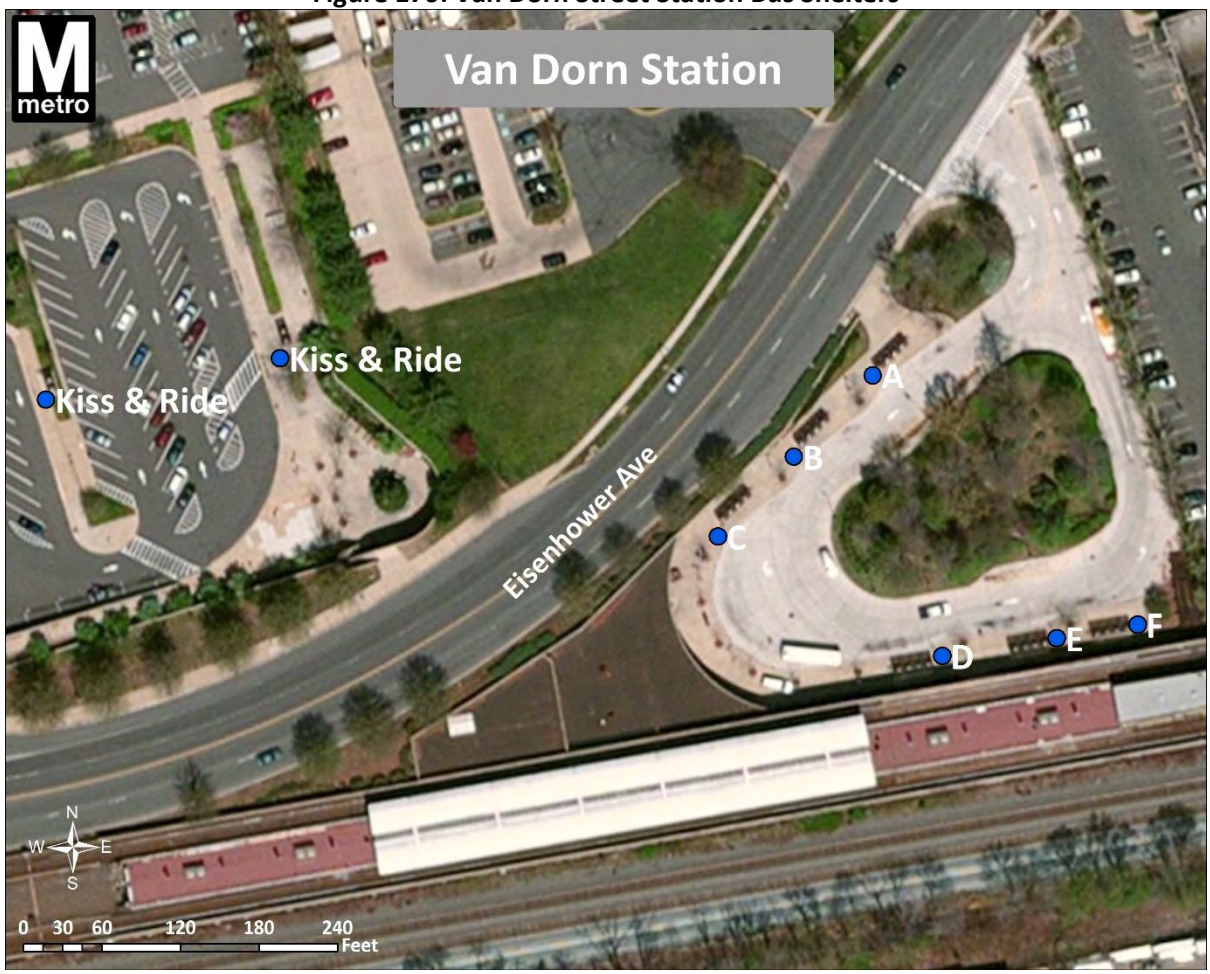


Overall, the station was ranked 15th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 7th for replacement.

Van Dorn Street Metrorail Station

The Van Dorn Street Station has one set of six bus shelters labeled A through F and two additional shelters serving the Kiss-and-Ride lot. All of the shelters at the station are double-framed with the exception of the Kiss-and-Ride shelters, which are single-framed. The station is served by Metrobus route 25B; DASH routes 1, 5, 7 and 8; and Fairfax Connector routes 109, 231, 232, 321 and 322. **Figure 170** illustrates each shelter located at this station.

Figure 170: Van Dorn Street Station Bus Shelters



Overall, shelter conditions at this station are above average, with a station condition score of 3.9. Table 30 summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in dome top conditions, though they were still above average overall. The dome tops on shelters A, B and C showed some signs of fading and wear. Frame conditions were good overall, with little to no signs of rust on any of the shelters and only some minor paint peeling on shelter B and the south Kiss-and-Ride shelter. Panel conditions were above average, with fading, scratching, and smearing present on shelters A, B (minor) and D only. Bench conditions were good, with minimal signs of wear overall. Pad conditions were also good, with minor cracking present only at shelter A and the north Kiss-and-Ride shelter.

Figures 171 through 173 illustrate the different shelter conditions at the station, while **Figure 174** summarizes each shelter's overall condition score.

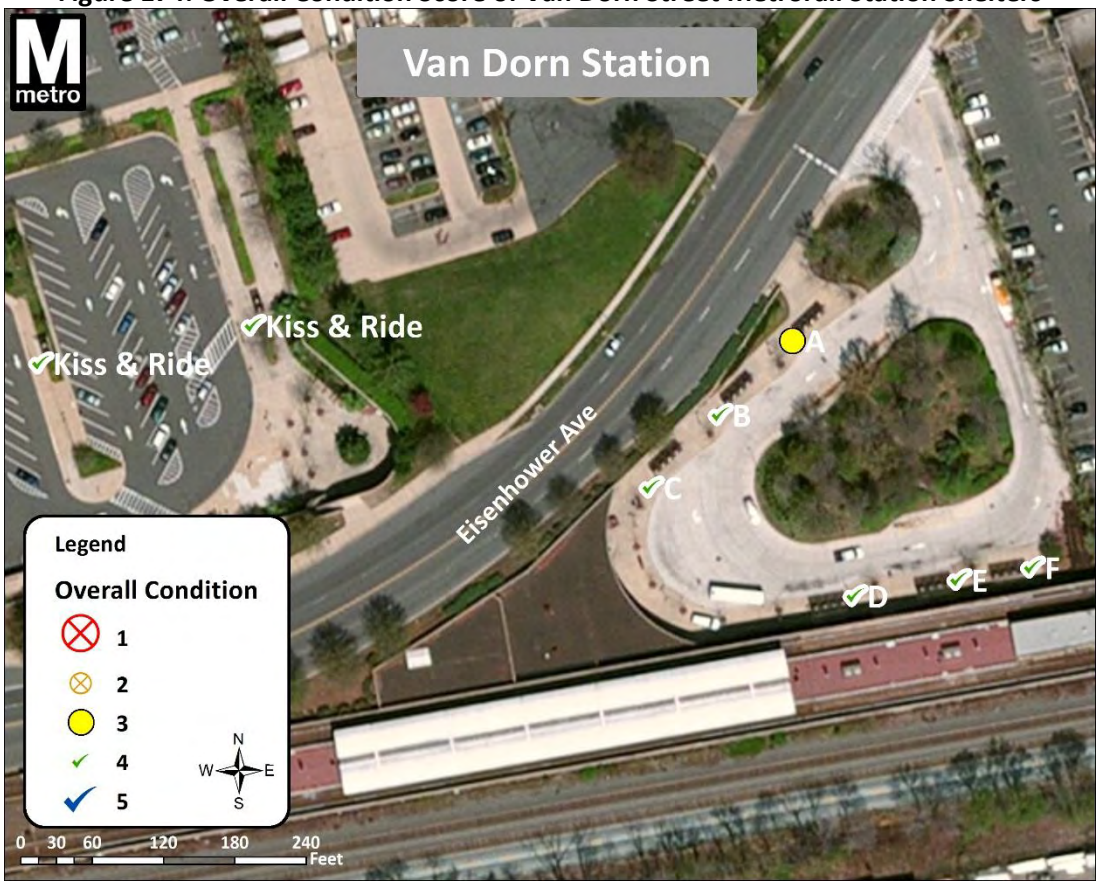
Table 30: Shelter Conditions at the Van Dorn Street Station						
	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	4	3	3	4	3
B	4	4	3	4	4	4
C	4	4	3	4	4	4
D	4	4	4	3	4	4
E	4	4	4	4	4	4
F	4	4	4	4	4	4
North Kiss & Ride	4	4	4	4	4	3
South Kiss & Ride	4	4	4	4	4	5
Average	**3.9**	**4.0**	**3.6**	**3.8**	**4.0**	**3.9**

Figure 171: Faded/Smeared Panel, Shelter A

Figure 172: Good Frame Condition, Minor Paint Peeling, Shelter B

Figure 173: Minor Pad/Footing Cracking, Shelter A

Figure 174: Overall Condition Score of Van Dorn Street Metrorail Station Shelters

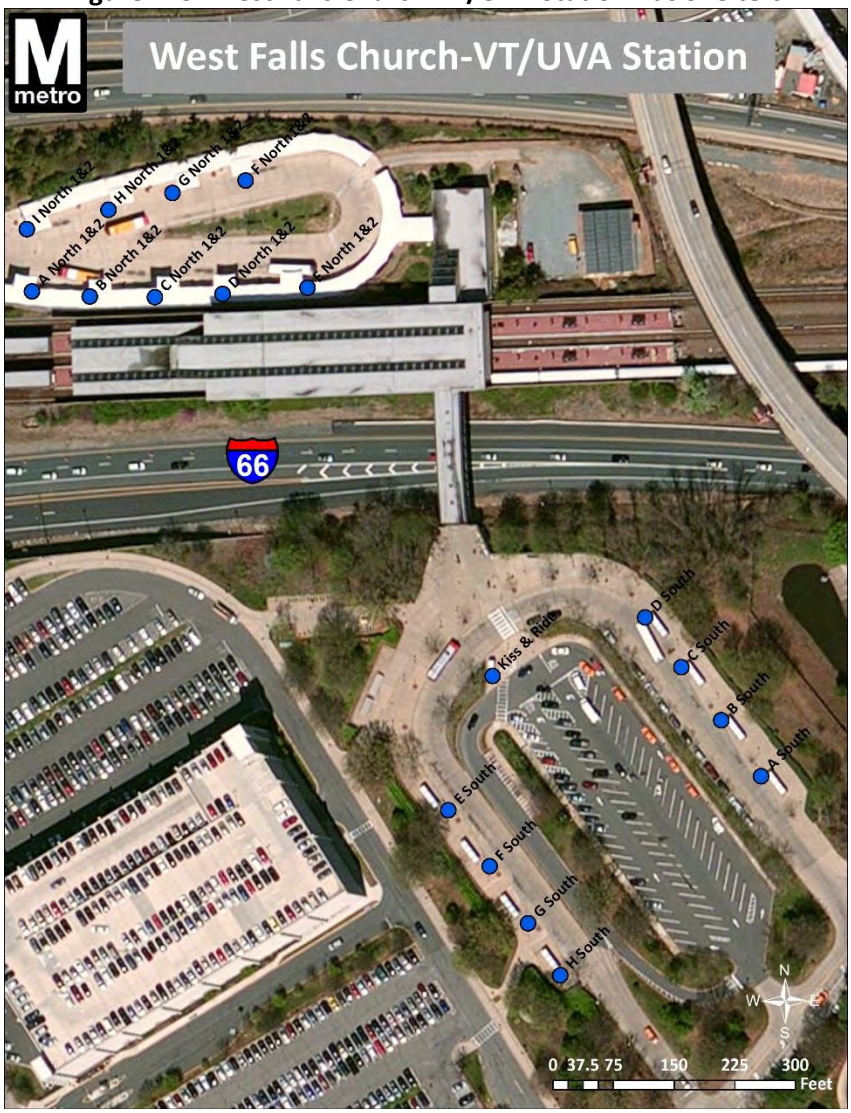


Overall, the station was ranked 28th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 31st for replacement.

West Falls Church-VT/UVA Metrorail Station

The West Falls Church-VT/UVA Station has two sets of bus shelters, one on the north side of the station and one on the south side. The north side has nine sets of two shelters, labeled for bus bays A through I. Shelters A through E are all traditional, single-framed WMATA shelters, however shelters F through I are single-framed shelters with different designs. The south side has eight shelters labeled A through H and an additional shelter for the Kiss-and-Ride lot. The south shelters are all double-framed, with the exception of the Kiss-and-Ride shelter, which is single-framed. The station is served by Metrobus routes 3B, 3T, 26W, 28A, 28B, 28T and 28X; Fairfax Connector routes 45, 427, 505, 551, 552, 553, 554, 557, 585, 950, 951, 952, and 980; three Loudon County Transit routes; one Potomac & Rappahannock Transportation Commission Route; and the Washington Flyer route. **Figure 175** illustrates each shelter located at this station.

Figure 175: West Falls Church-VT/UVA Station Bus Shelters



Overall, shelter conditions at the station are slightly above average, with a station condition score of 3.1. **Table 31** summarizes conditions for each individual shelter. The north side F through I shelters fared better overall than the rest of the shelters at the station and are a different design. The shelters as a whole scored the lowest in bench and frame condition. Benches showed a significant amount of wear at shelters G South, H South, G North, E North, and the Kiss-and-Ride shelter. Frames showed significant rusting at shelters A South, B South, D South, G South, H South, A North and C North, with D South also having a large hole in its frame. Dome tops were in average condition with the exception of shelter G South which had a large hole in its dome top. Panels were also in average condition, with fading and smearing present at all the shelters with the exception of the Kiss-and-Ride shelter, F North, G North, I North and C North. Shelters A South, F South and G South also had cracked panels. Pads were also in average condition, with some cracking present at shelters A South, C South, and D South.

Figures 176 through 181 illustrate the different shelter conditions at the station, while **Figure 182** summarizes each shelter's overall condition score.

Table 31: Shelter Conditions at the West Falls Church-VT/UVA Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A North	3	2	3	3	3	4
B North	3	3	3	3	3	3
C North	3	2	3	4	3	3
D North	3	3	3	3	3	3
E North	3	3	3	3	2	3
F North	4	4	4	4	3	4
G North	4	4	4	4	2	4
H North	4	4	4	3	3	5
I North	4	4	4	4	3	5
A South	2	2	3	2	3	2
B South	3	2	3	3	3	3
C South	3	3	3	3	3	2
D South	2	1	3	3	3	2
E South	3	2	3	3	3	3
F South	3	3	3	2	3	3
G South	2	2	1	2	2	3
H South	3	2	3	3	2	3
Kiss & Ride	3	4	3	4	2	3
Average	**3.1**	**2.8**	**3.1**	**3.1**	**2.7**	**3.2**

Figure 176: Different Shelter Design of F-I North

Figure 177: Worn Bench, Shelter E North

Figure 178: Large Hole in Frame, Shelter D South

Figure 179: Frame Rust, E South

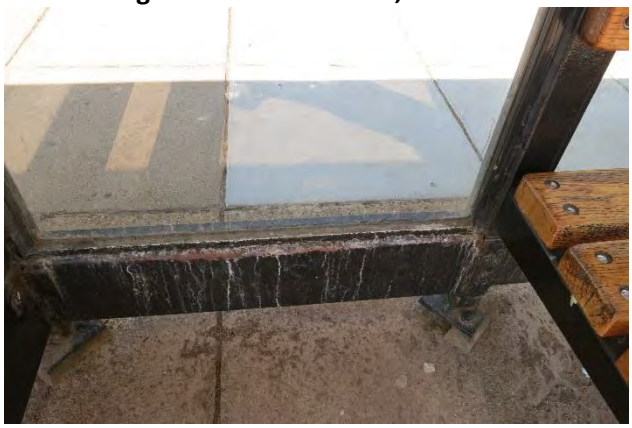


Figure 180: Hole in Dome Top, Shelter G South

Figure 181: Damaged Panel, Shelter A South

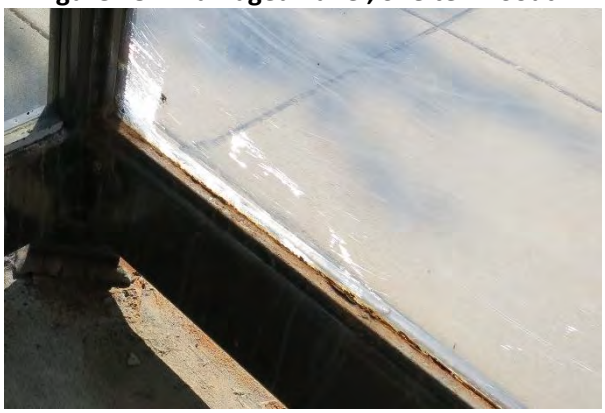
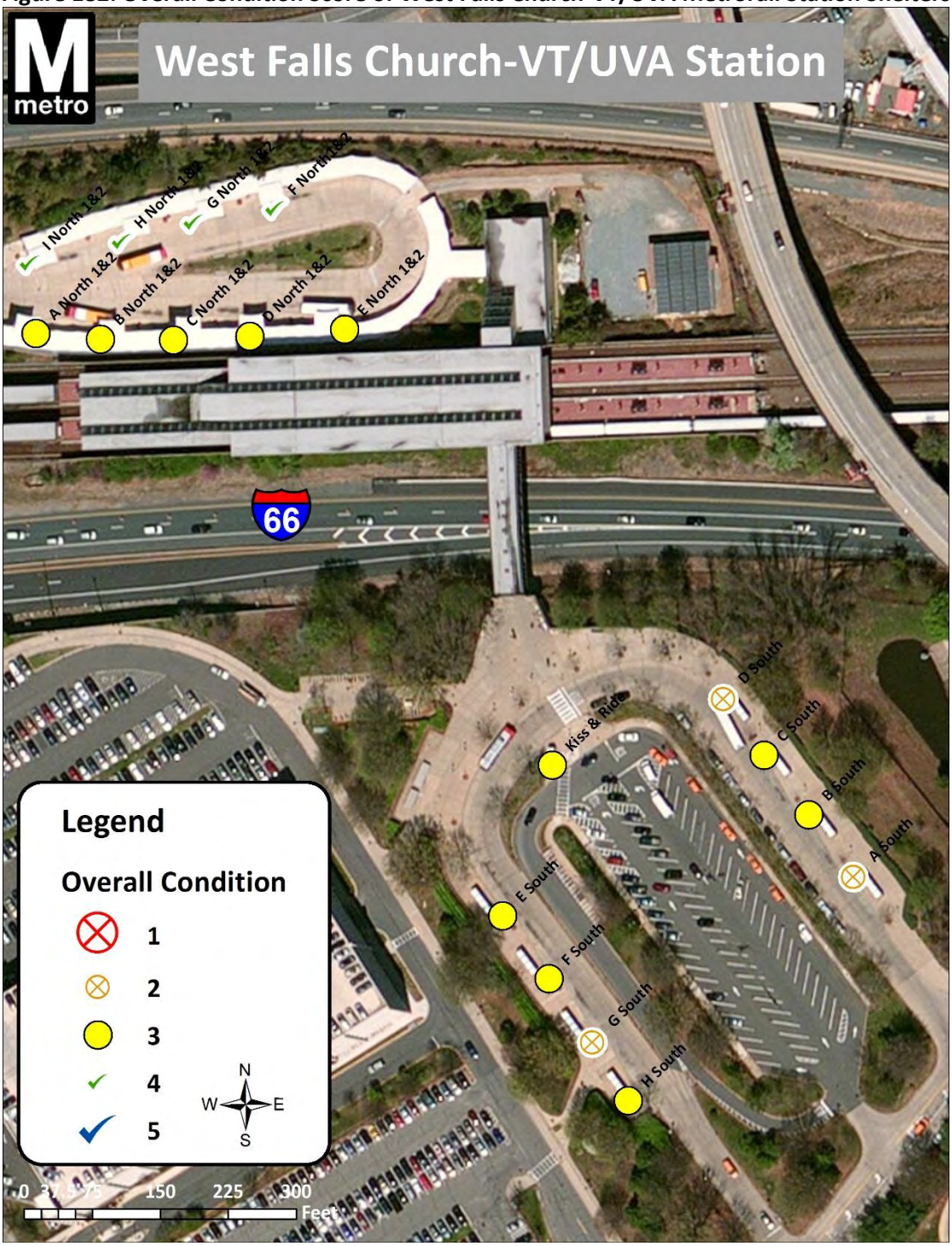


Figure 182: Overall Condition Score of West Falls Church-VT/UVA Metrorail Station Shelters

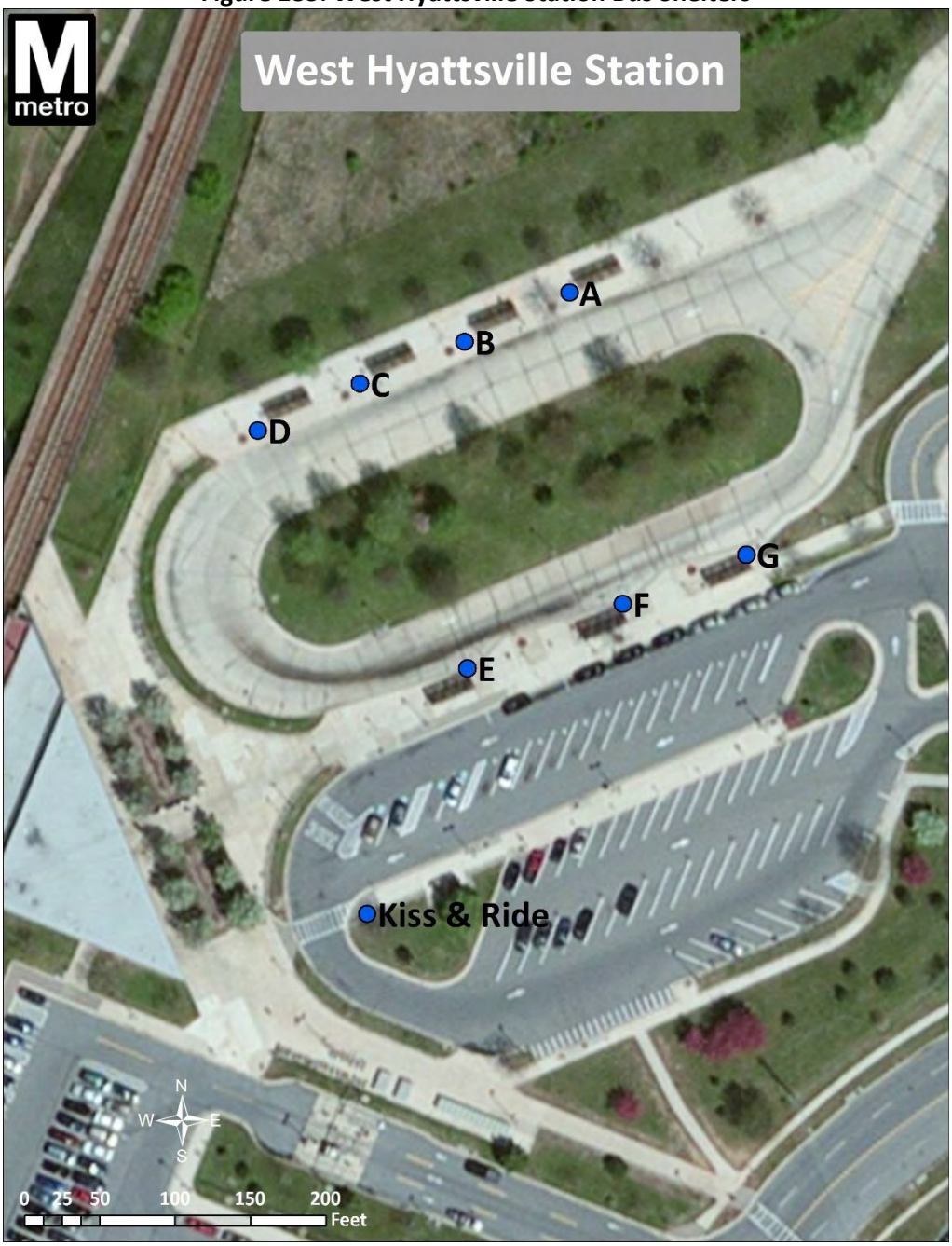


Overall, the station was ranked 14th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 21st for replacement.

West Hyattsville Metrorail Station

The West Hyattsville Station has one set of seven shelters labeled A through G and an additional shelter for the Kiss-and-Ride lot. All of the shelters at the station are double-framed with the exception of the Kiss-and-Ride shelter, which is single-framed. The station is served by Metrobus routes F1, F2, F6, F8, and R4; and The Bus routes 12 and 13. **Figure 183** illustrates each shelter located at this station.

Figure 183: West Hyattsville Station Bus Shelters



Overall, shelter conditions at the station are above average, with a station condition score of 3.8. **Table 32** summarizes conditions for each individual shelter. The shelters, as a whole, scored the lowest in bench condition and panel condition. All of the benches at the station showed some kind of wear, while panels at shelters F and E had damage. Faded and scratched panels were also present at shelter G. Frames at the station were in good condition, with little-to-no rust present. Dome tops were also in good condition. Pad conditions were overall above average, with some cracking and settling noted at shelters C, E and F.

Figures 184 through 187 illustrate the different shelter conditions at the station, while **Figure 188** summarizes each shelter's overall condition score.

Table 32: Shelter Conditions at the West Hyattsville Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	4	4	3	4	3	4
B	4	4	4	4	3	4
C	4	4	4	5	3	3
D	4	4	4	4	3	4
E	3	4	4	2	3	3
F	3	4	3	2	3	3
G	4	4	4	3	3	4
Kiss & Ride	4	4	4	4	3	4
Average	**3.8**	**4.0**	**3.8**	**3.5**	**3.0**	**3.6**

Figure 184: Cracked Pad & Footing, Shelter C

Figure 185: Damaged Panel, Shelter F

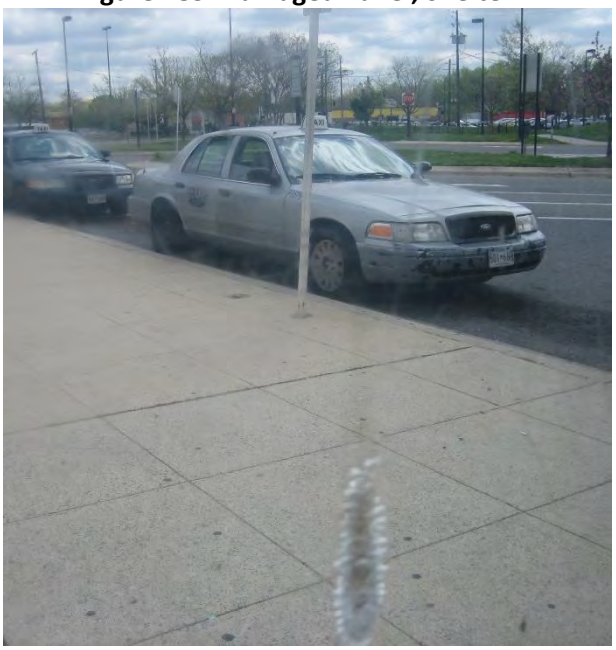
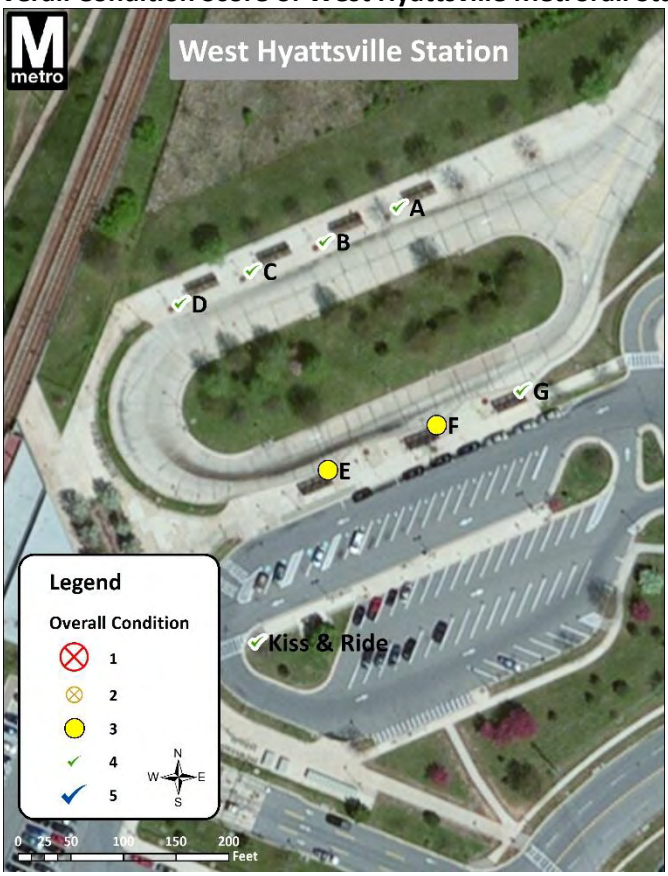


Figure 186: Wear on Bench, Shelter A

Figure 187: Good Frame Condition, Shelter C

Figure 188: Overall Condition Score of West Hyattsville Metrorail Station Shelters

Overall, the station was ranked 32nd for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 29th for replacement.



Wheaton Metrorail Station

The Wheaton Station has one set of fourteen shelters labeled A through P. All of the shelters at the station are double-framed. The station is served by Metrobus routes C2, C4, Q1, Q2, Q4, Q5, Q6, Y5, Y7, Y8 and Y9; and Ride-On routes 7, 8, 9, 31, 34, 37 and 38. **Figure 189** illustrates each shelter located at this station.

Figure 189: Wheaton Station Bus Shelters

Overall, shelter conditions at the station are slightly above average, with a station condition score of 3.3. **Table 33** summarizes conditions for each individual shelter. The shelters as a whole scored the lowest in bench condition and panel condition. Benches at all the shelters showed wear, with those at shelters A, B, G, H, J, K, M and P in the worst condition. Panels generally had smearing or fading at every shelter with the exception of L, N and P. Panels at shelters A, D, E, F and K had other damage, with one panel missing at shelter A. Frame conditions were above average overall, with some rusting at shelters D, F, K, and M only. Dome tops pads were also in above average condition. Average amounts of cracking was present on the pads of shelters B, D, F, G, L, and M only.

Figures 190 through 194 illustrate the different shelter conditions at the station, while **Figure 195** summarizes each shelter's overall condition score.

Table 33: Shelter Conditions at the Wheaton Station

	Overall	Frame	Dome Top	Panels	Bench	Pad
A	3	4	3	2	2	4
B	3	4	4	3	1	3
C	3	4	3	3	3	4
D	3	3	3	2	3	4
E	3	4	3	2	3	3
F	3	3	3	2	3	3
G	3	4	3	3	2	3
H	3	4	4	3	2	5
J	4	4	4	3	2	4
K	3	3	4	2	2	5
L	4	4	4	4	3	3
M	3	3	4	3	2	3
N	4	4	4	4	3	4
P	4	4	4	4	2	4
Average	**3.3**	**3.7**	**3.6**	**2.9**	**2.4**	**3.7**

Figure 190: Missing Panel, Worn Benches, Shelter A

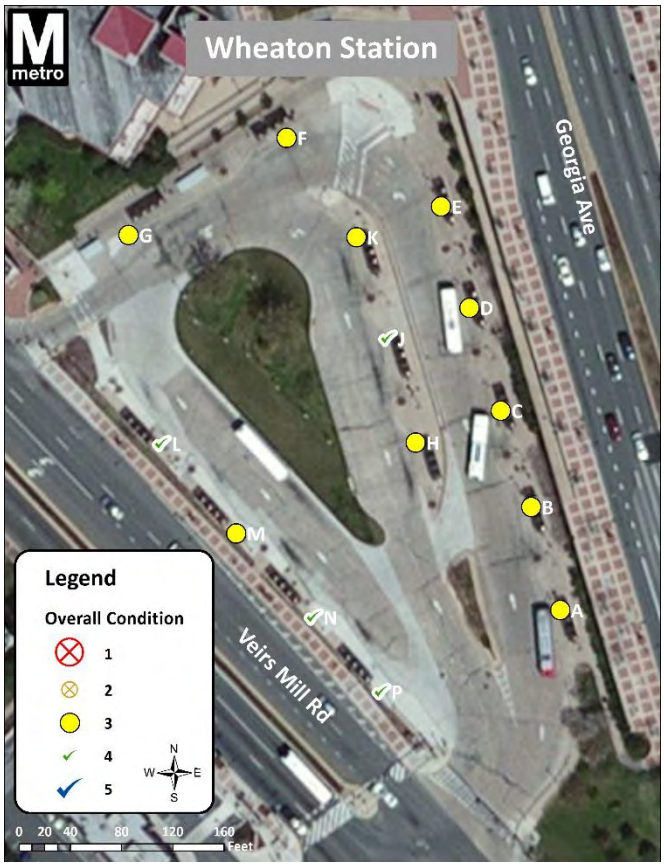
Figure 191: Worn, Cracked Bench, Shelter B

Figure 192: Damaged Panel, Shelter D

Figure 193: Frame Rust, Shelter F

Figure 194: Cracked Pad & Footings, Shelter G

Figure 195: Overall Condition Score of Wheaton Metrorail Station Shelters



Overall, the station was ranked 25th for replacement based on shelter condition and demand. Based on shelter condition only, the station ranked 25th for replacement.

Appendix C: Individual Metrorail Station Assessments, Issues, and Recommendations

Addison Road-Seat Pleasant Metrorail Station
Access, Circulation, and Safety Evaluation and Recommendations

Existing Conditions

The Addison Road-Seat Pleasant Metrorail station is located on the Blue Line in Prince George's County, Maryland. The station can be accessed from both Addison Road and Central Avenue. The station has both a garage Park-and-Ride and a surface Kiss-and-Ride parking lot, along with a one-way bus way serving five bus bays, A through E. **Figure 1** illustrates the layout of this station.

Figure 1: Addison Road-Seat Pleasant Metrorail Station

Central Avenue Driveway

This entrance provides access to the bus bays, parking garage and Kiss-and-Ride. The entrance forms an unsignalized intersection with Central Avenue. Central Avenue has three thru travel lanes in each direction and an exclusive left-turn lane in the westbound direction. The entrance driveway has two lanes in the southbound direction and a single right-turn only northbound lane. Central Avenue also has a median with breaks that allow left turns into the driveway only. There are right-turn only pavement markings on the northbound approach, a "No Left Turn" sign, a "Right Turn Only" sign, and a stop sign with a stop line. There is an east-west crosswalk that traverses the driveway with corresponding curb ramps that lack detectable warning panels. There is a crosswalk that traverses Central Avenue further east in front of the pedestrian-only entrance to the Metrorail station (to be discussed in more detail in subsequent sections). **Figures 2 and 3** picture the driveway intersection with Central Avenue.

Figure 2: Driveway (Northbound) Approach to Central Avenue

Figure 3: Central Avenue Eastbound Approaching Station Entrance

This driveway continues south to the Addison Road entrance driveway with two 12' wide southbound lanes and one 12' wide northbound lane. The right southbound travel lane is used as a layover area by many bus drivers. The driveway provides access to the Park-and-Ride garage to the west via a small slip ramp. There is signage at this point directing vehicles to the Park-and-Ride or the Kiss-and-Ride. The busway that serves the bus bays at the intersection flows into the driveway just north of the Park-and-Ride garage entrance. The busway has a stop line and two stop signs where it meets with the driveway, along with two "Do Not Enter" signs. There is an east-west crosswalk that traverses the driveway just south of the busway intersection. This crosswalk has corresponding curb ramps however they lack detectable warning panels. There are no warnings or traffic controls prior to this crosswalk in either direction. There are sidewalks on each side of the driveway between the busway and the Park-and-Ride garage entrance only. There is a sidewalk directly abutting the garage on its east side, however, it is far removed from the driveway itself and up-grade.

The driveway ends at the Kiss-and-Ride/Addison Road driveway with a stop line, stop lettered pavement markings and a stop sign. A directional sign to the Kiss-and-Ride and to Addison Road can also be found on the driveway approach. The driveway has an unmarked, exclusive right-turn lane and an improperly marked shared left-turn/right-turn lane. The left-turn/right-turn lane is marked as a thru/left-turn lane which is incorrect. Vehicles traveling southbound can either turn right to access Addison Road or turn

hard left to access the Kiss-and-Ride. Buses have the additional option of turning left into the busway. There are sidewalks on each side of the driveway at this intersection, however, there are no curb ramps or crosswalks at this point since a pedestrian crossing is unnecessary. **Figures 4 and 5** picture this driveway.

Figure 4: Central Avenue Driveway Looking South

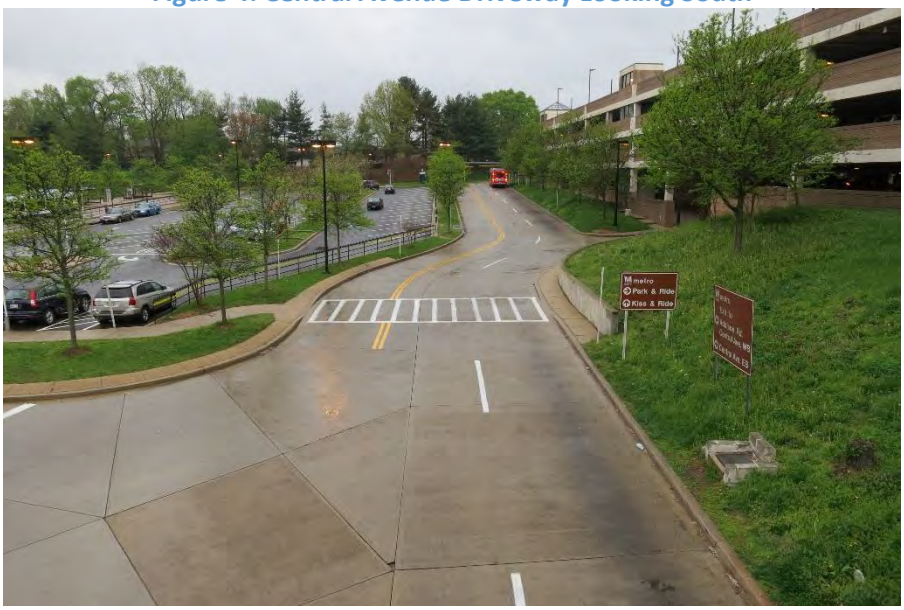
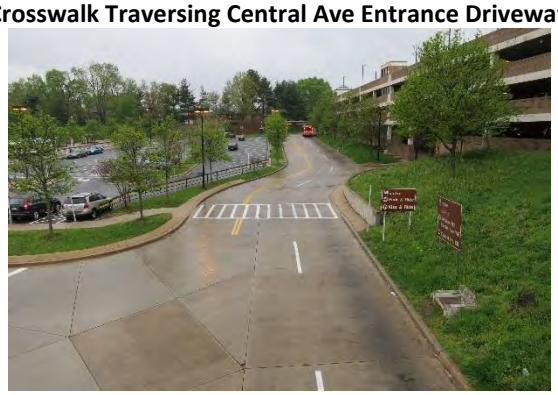
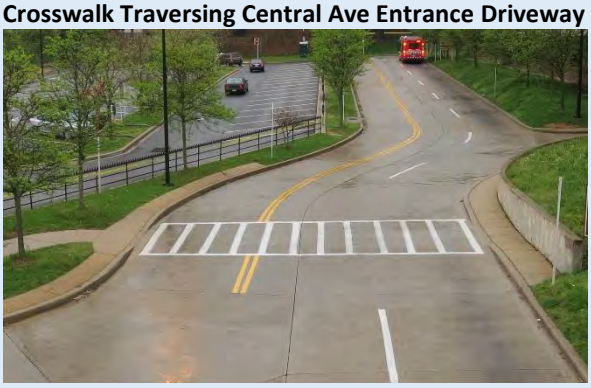
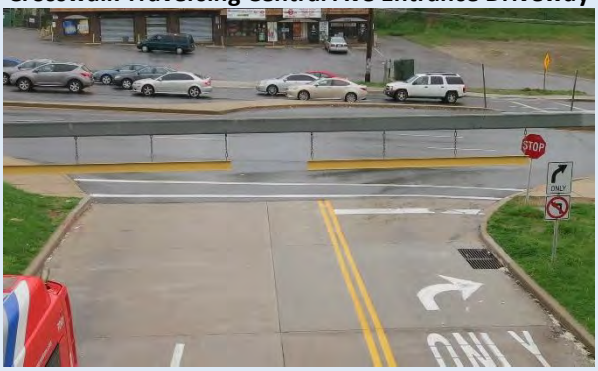


Figure 5: Southern Terminus of Central Avenue Driveway at Kiss-and-Ride/Addison Road Driveway

Central Avenue Driveway Issues and Recommendations:	
Right-Turn Only and stop pavement markings in the southbound right lane of the driveway at Kiss-and-Ride/Busway/Addison Road entrance driveway intersection.	**Southbound Approach** 
Replace left-turn/thru pavement marking with left-turn/right-turn pavement marking in the southbound left lane of the driveway at Kiss-and-Ride/Busway/Addison Road entrance driveway intersection.	**Southbound Approach** 
A formal bus layover area on the driveway between the Addison Road driveway and the Park-and-Ride garage entrance.	**Southbound Right Lane Used as a Layover Lane** 

Pedestrian warning signs and yield pavement markings prior to the driveway crosswalk at the Park-and-Ride garage entrance.	**Crosswalk Traversing Central Ave Entrance Driveway** 
Detectable Warning Panels on the Park-and-Ride Garage Entrance/Driveway curb ramps the Central Avenue/Driveway curb ramps.	**Crosswalk Traversing Central Ave Entrance Driveway**  **Crosswalk Traversing Central Ave Entrance Driveway** 

Addison Road Entrance Driveway

This driveway forms a signalized T intersection with Addison Road. There is an overhead sign marking the driveway as the Metrorail station entrance. There are two thru travel lanes in each direction on Addison Road, along with an exclusive left-turn lane on Addison Road in the southbound direction. The driveway has an exclusive left-turn lane and an exclusive right-turn lane at the intersection. There is a north-south crosswalk that traverses the driveway with corresponding curb ramps and detectable warning panels. There is an east-west crosswalk that traverses the northbound approach of Addison road as well. This crosswalk has a curb ramp with a detectable warning panel on its east side, however, there is no curb ramp on its west side and no sidewalk on the west side of Addison Road. There are

pedestrian signals that serve each crosswalk. A well-defined pedestrian path that "cuts" the southeast corner of the intersection exists. **Figures 6 and 7** picture this intersection.

Figure 6: Addison Road Entrance Looking North

Figure 7: Addison Road Entrance Looking West

The driveway itself travels east-west from Addison Road to an intersection with the busway, the Kiss-and-Ride entrance and the Central Avenue driveway. The driveway has four 12' wide travel lanes and sidewalks along both sides. An entrance to the Park-and-Ride garage exists on the north side of the driveway. The Park-and-Ride driveway approach lacks crosswalks but does have curb ramps and

sidewalks on both sides that lead into the garage. The curb ramps lack detectable warning panels, however. There are no crosswalks that traverse the driveway at all. There is a "Park & Ride Left Lane" sign west of the Park-and-Ride garage entrance, followed by a second directional sign pointing drivers left into the Park-and-Ride garage or straight into the Kiss-and-Ride lot. The eastbound right lane becomes a bus only lane as it approaches the Central Avenue driveway and is marked as such on the pavement. The eastbound center left lane has a stop line and stop lettered pavement markings and provides access to both the Central Avenue driveway (left turn) and the Kiss-and-Ride lot (thru movement). **Figures 8 through 10** show this driveway.

Figure 8: Addison Road Entrance Driveway

Figure 9: Addison Road Entrance Driveway Signage

Figure 10: Addison Road Entrance Driveway Signage

Addison Road Entrance Driveway Issues and Recommendations:	
Sidewalk along the west side of Addison Road with a curb ramp at the station entrance driveway crosswalk.	**Addison Road/Station Entrance Driveway** 
Sidewalk across southeast corner of Addison Road intersection.	**Southeast Corner of Addison Road Intersection Pedestrian Path** 
Crosswalk traversing Park-and-Ride garage driveway and detectable warning panels on curb ramps there.	**Park-and-Ride Garage Driveway** 

Stop signs at the Park-and-Ride garage driveway exit	**Park-and-Ride Garage Driveway** 
Fencing between the sidewalk and the driveway on its south side	**Crosswalk Traversing Central Ave Entrance Driveway** 

Kiss-and-Ride Lot

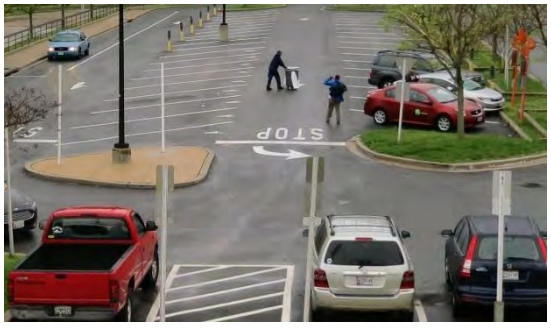
The Kiss-and-Ride lot at the Addison Road-Seat Pleasant Station has a single access/egress point at the intersection of the Addison Road entrance driveway, the Central Avenue entrance driveway and the busway. The access/egress point has a single lane in each direction, with the egress lane marked for right turns or thru movements only. A stop sign with a stop line also exists at this point. There is a sidewalk on the northwest side of the Kiss-and-Ride entrance however it does not have curb ramps or crosswalks.

Within the Kiss-and-Ride there are three travel lanes, including two one-way northbound lanes and a single one-way southbound lane. The east northbound lane has parallel parking for taxicabs and a sidewalk on its east side with fencing to keep people from entering the adjacent busway. There is a stop line, stop lettered pavement markings, right-turn only pavement markings and two pedestrian warning signs at the north end of the lane, however there is no crosswalk or curb ramps located here. The center northbound lane has angled parking on both sides and ends with a stop line, stop lettered pavement markings, right-turn only pavement markings and a yield sign. The yield sign is inappropriate at this location and conflicts with the pavement markings. The west (southbound) lane has angled parking on its west side and ends with a stop line, a stop sign and right-turn/thru pavement markings. Two “Do Not

Enter" signs mark the end of the lane as a one-way. There is also a yield sign beyond the stop sign; however, this conflicts with the stop sign. **Figures 11 and 12** picture the Kiss-and-Ride lot and its travel lanes.

Figure 11: Kiss-and-Ride Lot Looking South

Figure 12: Kiss-and-Ride Lot Entrance

Kiss-and-Ride Lot Issues and Recommendations:	
Crosswalk traversing the east northbound travel lane, a curb ramp with detectable warning panel on the island there and a stop sign.	**East Northbound Lane in Kiss-and-Ride** 
Replace yield sign with a stop sign at the center northbound travel lane terminus.	**Center Northbound Lane in Kiss-and-Ride** 
Remove yield sign from southbound lane terminus.	**Southbound Lane in Kiss-and-Ride** 

Busway

The busway through the station serves the five sawtooth bus bays (A through E) and is one-way primarily in the northbound direction. The entrance to the bus bay is located at the east end of the Addison Road entrance driveway where it meets with the Kiss-and-Ride entrance and the Central Avenue entrance driveway. As previously mentioned, the eastbound right lane on the Addison Road entrance driveway is marked for buses only. A set of hashed white lines connect this lane into the busway. There are also two "Do Not Enter Except Authorized WMATA Vehicles" signs at the entrance.

The busway is approximately 27' wide at its narrowest point through the bus bay area. This is slightly less than the recommended 30' according to the *WMATA Station Site and Access Planning Manual.*

Fencing between the busway and the Kiss-and-Ride lot prevents people from jaywalking across the busway. An east-west crosswalk traverses the north end of the busway closest to the Metrorail station entrance. The crosswalk has a single pedestrian warning sign and curb ramps on each end however they lack detectable warning panels. The crosswalk also has a stop line and stop lettered pavement markings prior to it, but lacks a stop sign. An additional sidewalk with fencing follows the north side of the busway as it curves to the west and provides access to an elevator to the pedestrian bridge connecting the Metrorail station to the Park-and-Ride garage.

The busway ends at the Central Avenue entrance driveway with a stop line and two stop signs. Two "Do Not Enter" signs face the Central Avenue driveway at the stop line and a "No Left Turn" sign on the driveway itself exists on its southbound side north of the busway. Directional signage across from the busway terminus directs bus drivers to Addison Road and Central Ave eastbound or westbound. **Figures 13 through 16** show the busway and its signage and pavement markings.

Figure 13: Busway Entrance

Figure 14: South End of Busway

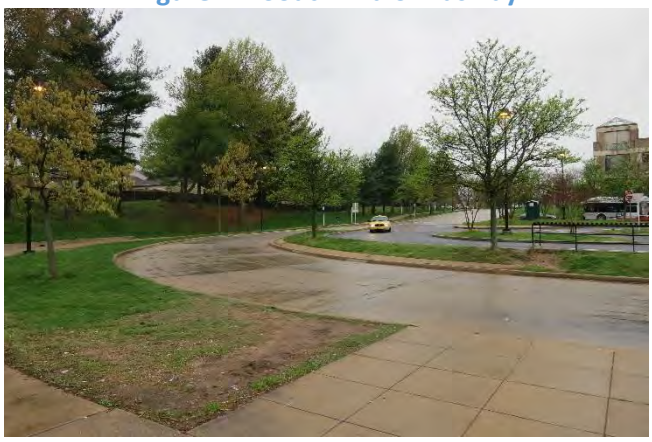


Figure 15: Busway Looking South

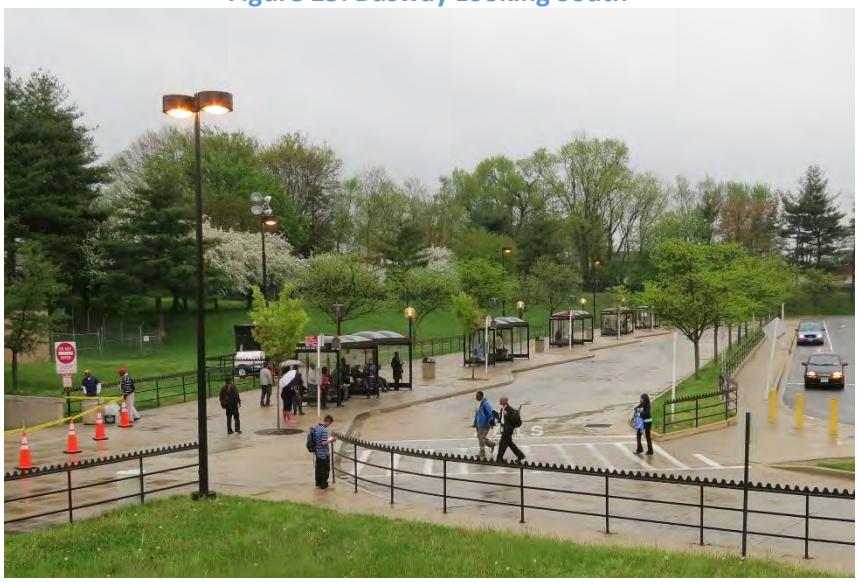
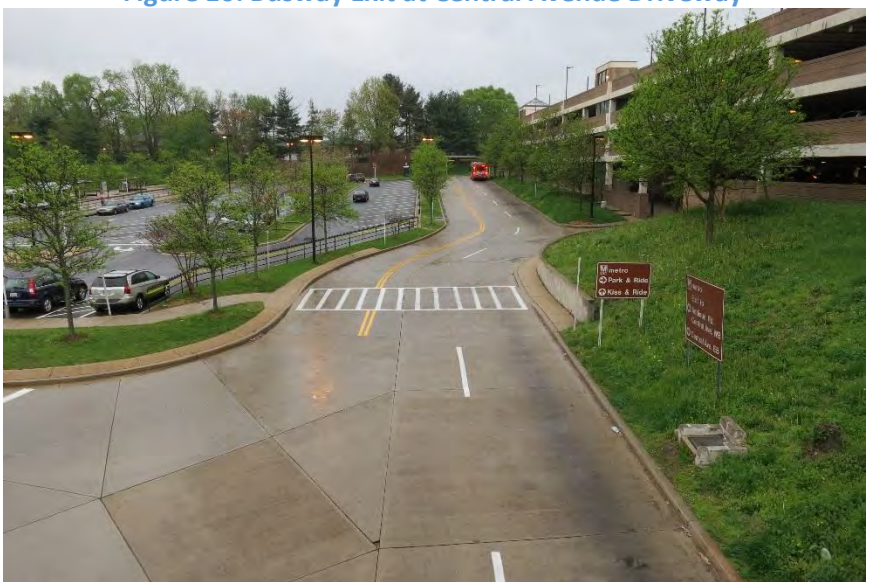
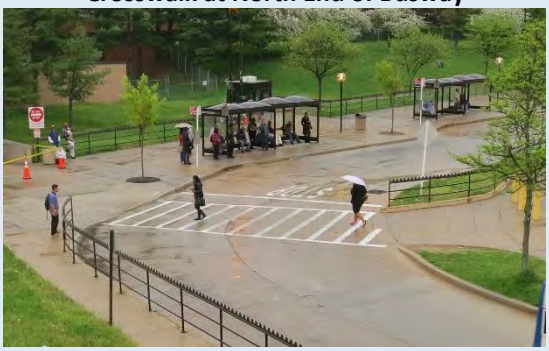


Figure 16: Busway Exit at Central Avenue Driveway



Busway Issues and Recommendations:	
Stop signs prior to the crosswalk that traverses the busway at its north end.	**Crosswalk at North End of Busway** 
Detectable Warning Panels on the curb ramps at the crosswalk that traverses the busway at its north end.	**Curb Ramps at Crosswalk at North End of Busway** 

Park-and-Ride Garage

The station's Park-and-Ride garage has one access-only point and one access/egress point. The access-only point is off the Central Avenue entrance driveway via the short slip ramp, as previously mentioned.

This entrance has a sidewalk along its north side leading into the garage. The access/egress point is off of the Addison Road entrance driveway between Addison Road and the Central Avenue entrance driveway/Kiss-and-Ride intersection. This entrance has sidewalks on both sides with corresponding curb ramps that lack detectable warning panels. There is one access lane and two egress lanes from the garage. The right egress lane is marked for right-turns only and has a stop line and stop lettered pavement markings but no stop sign. It is separated from the left egress lane by a triangular island. The left egress lane is marked for left turns only and also has a stop line and stop lettered pavement markings but no stop sign.

The Park-and-Ride garage also has a pedestrian overpass connecting its northeast corner to the Metrorail station entrance over the Central Avenue entrance driveway. This overpass has a stairwell on its east end and an elevator prior to the stairwell that provides access to the station level. **Figures 17 and 18** illustrate the parking garage and pedestrian overpass.

Figure 17: Pedestrian Overpass from Park-and-Ride Garage Looking East Towards Station Entrance

Figure 18: Stairwell from Pedestrian Overpass Down to Station Level

Park-and-Ride Garage Driveway Issues and Recommendations:	
Crosswalk traversing Park-and-Ride garage driveway and detectable warning panels on curb ramps there.	**Entrance on Addison Road Entrance Driveway** 
Stop signs at the Park-and-Ride garage driveway exit	**Entrance on Addison Road Entrance Driveway** 

Pedestrian-Only Access Points

The station has one primary pedestrian-only access point, located on Central Avenue east of the entrance driveway and directly in front of the Metrorail station entrance. This entrance has fencing along both sides to guide people into the station.

A north-south crosswalk that traverses Central Avenue is located at this entrance, providing access to the neighborhoods and businesses on the north side of Central Avenue. This crosswalk has curb ramps and a median cut-through with detectable warning panels. There are pedestrian warning signs at the crosswalk (two in each direction) and flashing pedestrian warning signs several hundred feet prior to the crosswalks in each direction on Central Avenue. Fencing down the median of Central Avenue prevents jaywalking at this location, though a break in fencing at the center left-turn bays on Central Avenue allows people to jaywalk here. Despite the pedestrian warning signs, the crosswalk has marginal compliance overall, with many vehicles not yielding to pedestrians witnessed during site visits. **Figures 20 through 22** illustrate this access point and crosswalk.

Figure 19: Pedestrian Station Entrance on Central Avenue

Figure 20: Pedestrian Station Entrance on Central Avenue

Figure 21: Crosswalk Traversing Central Avenue at Station Entrance

Figure 22: Pedestrians Using Crosswalk Station Entrance

Central Avenue Pedestrian Entrance Issues and Recommendations:	
"State Law Stop for Pedestrians in Crosswalk" sign and stop lines in each direction on Central Avenue at crosswalk.	**Central Avenue Crosswalk** 
Fencing along the left-turn bay on Central Avenue at the station entrance driveway	**Left-Turn Bay on Central Avenue** 

Pedestrian Movements

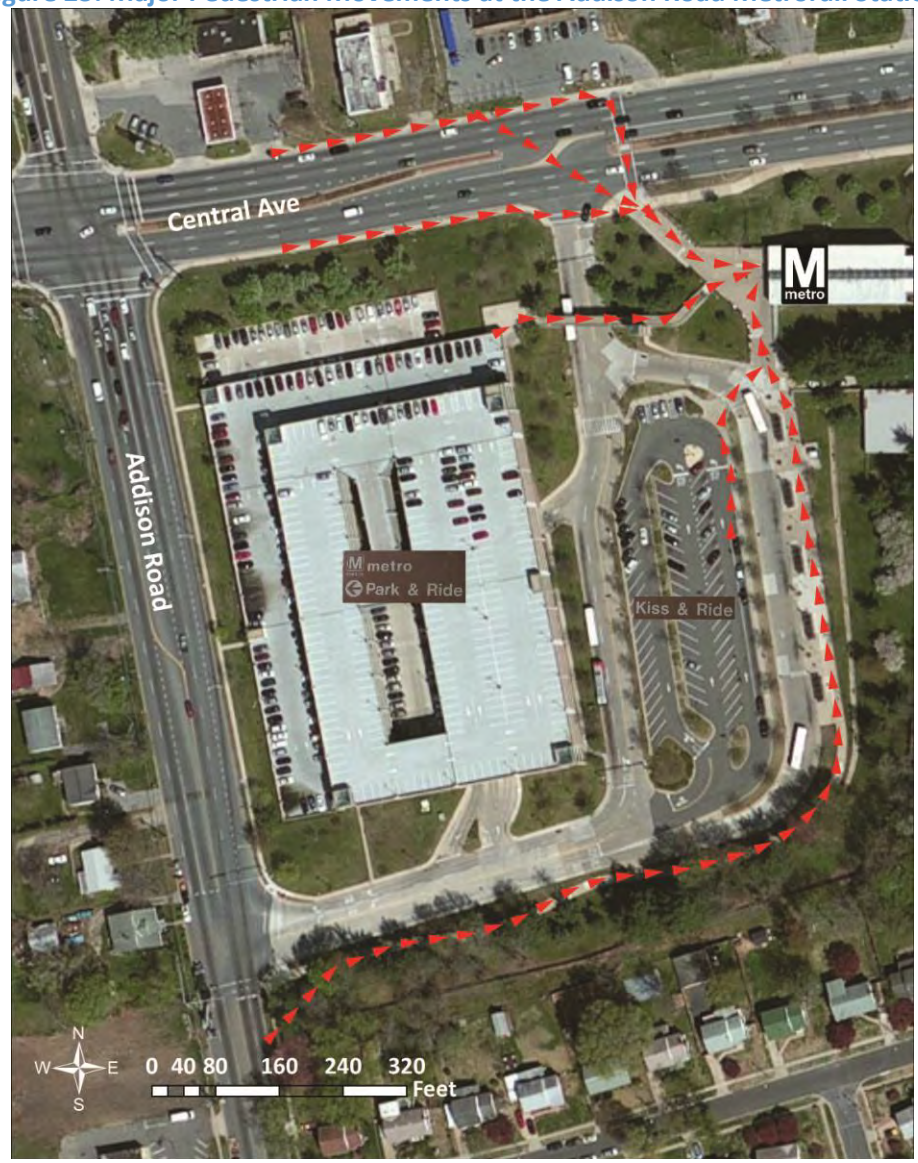
There are several major pedestrian movements at the station between the Metrorail entrance, Central Avenue, Addison Road, the Kiss-and-Ride lot, the Park-and-Ride garage and the bus bays. The majority of these movements take place within the station's well-defined pedestrian sidewalks, overpasses and crosswalks.

Access to the station from Central Avenue is done through the pedestrian-only entrance there, with a significant amount of patrons using the crosswalk that traverses Central Avenue as well. Between the Park-and-Ride garage and the station entrance, the majority of patrons use the pedestrian overpass, while nobody was witnessed using the sidewalks from the garage's vehicle entrances. Between the Kiss-and-Ride lot and the station entrance, the majority of patrons use the crosswalk that traverses the busway due to the fencing that exists along the east side of the Kiss-and-Ride lot.

Between Addison Road and the Metrorail station entrance, patrons use the sidewalk along the entrance driveway and then the bus bay platforms. From the neighborhood south of the Addison Road entrance driveway, most patrons "cut the corner" across a grassy area on the southeast corner of the entrance driveway/Addison Road intersection. Since the bus bays are located on the same side as the Metrorail station entrance, patrons use the platform/sidewalk along the bus bays to enter the station.

Figure 23 illustrates these major movements.

Figure 23: Major Pedestrian Movements at the Addison Road Metrorail Station



Discussion with Station Manager and WMATA Staff

Discussions with the Station Manager and WMATA Staff confirmed several of the needs witnessed during the site visits. Overall, pedestrian, bus and vehicle movements through the station are well guided with extensive signage, fencing and pavement markings. Some additional needs discussed included:

- Stop signs at the crosswalk that traverses the busway;
- Additional crosswalks in Kiss-and-Ride lot.

Recommendations

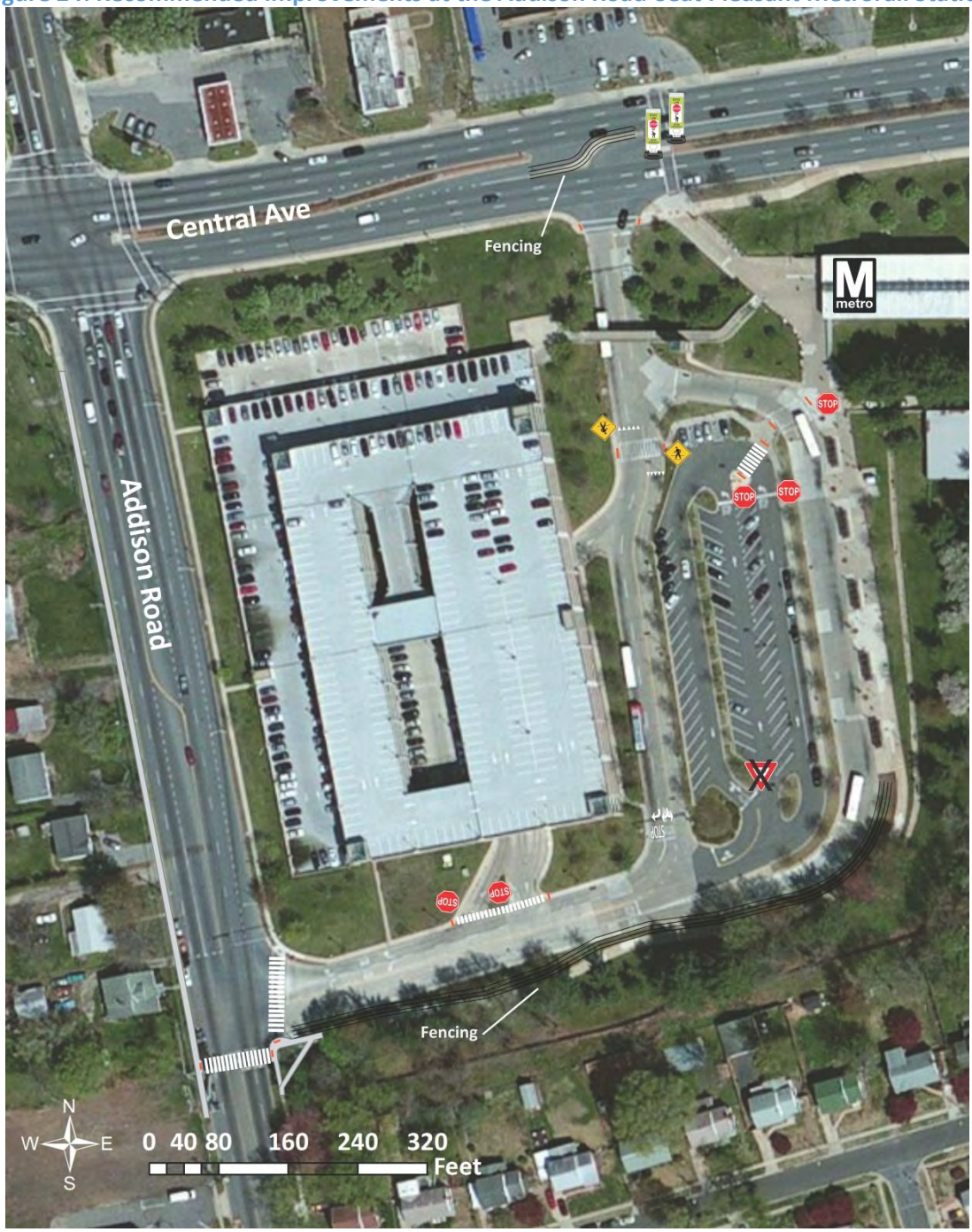
In order to improve safety and circulation and address the previously-mentioned needs at the Addison Road-Seat Pleasant Metrorail Station, the following improvements are recommended:

Table 1: Summary of Recommendations at the Addison Road-Seat Pleasant Station	
Infrastructure	**On or Off Station**
Install detectable warning panels on curb ramps at the following locations: • Park-and-Ride garage driveway at Addison Road entrance driveway • Crosswalk that traverses busway at its north end • Crosswalk that traverses the Central Avenue entrance driveway	On
Construct a new curb ramp with detectable warning panels on the island between the right (east) and left (center) northbound travel lanes in the Kiss-and-Ride lot.	On
Construct a sidewalk on the west side of Addison Road and a curb ramp with detectable warning panels at the east-west crosswalk at the Addison Road entrance driveway.	Off
Construct a sidewalk across southeast corner of Addison Road/Station entrance driveway intersection.	On
Install fencing at the following locations: • On the south side of the Addison Road entrance driveway between the roadway and the sidewalk • On the left-turn bay median on Central Avenue at the station entrance driveway	Driveway On, Central Ave Off
Signage	**On or off Station**
Install stop signs at the following locations: • Park-and-Ride garage driveway (both lanes) exit to Addison Road entrance driveway • Prior to the crosswalk that traverses the busway at its north end • At the Kiss-and-Ride east (right) northbound travel lane terminus • At the Kiss-and-Ride center northbound travel lane terminus to replace the existing yield sign	On
Remove yield sign from the Kiss-and-Ride southbound lane terminus.	On
Install pedestrian warning signs and yield pavement markings prior to the Central Avenue entrance driveway crosswalk at the Park-and-Ride garage entrance.	On
Install “State Law Stop for Pedestrians in Crosswalk” signs and stop lines in each direction on Central Avenue at crosswalk leading to station entrance.	Off
Striping	**On or Off Station**
Stripe a formal bus layover area in the southbound right lane of the Central Avenue driveway between the Addison Road driveway and the Park-and-Ride garage entrance. Reconfigure the southbound right lane as a right-turn only lane into the garage between the busway exit and the garage entrance.	On
Re-striping of all crosswalks with ladder or continental striping.	On and Off
Stripe new crosswalks traversing the following locations: • Park-and-Ride garage driveway at Addison Road entrance driveway • Right (east) northbound travel lane of the Kiss-and-Ride lot at its north	On

end.	
Stripe right-turn only and stop lettered pavement markings in the southbound right lane of the Central Avenue entrance driveway at the Kiss-and-Ride/Busway/Addison Road entrance driveway intersection.	On
Replace left-turn/thru pavement marking with left-turn/right-turn pavement marking in the southbound left lane of the Central Avenue entrance driveway at the Kiss-and-Ride/Busway/Addison Road entrance driveway intersection.	On
Enforcement	**On or Off Station**
Enforcement of pedestrian right-of-way at the Central Avenue pedestrian entrance crosswalk.	Off

Figure 24 illustrates these recommendations.

Figure 24: Recommended Improvements at the Addison Road-Seat Pleasant Metrorail Station



Anacostia Metrorail Station
Access, Circulation and Safety Evaluation and Recommendations

Existing Conditions

The Anacostia Metrorail station is located on the Green Line at Howard Street SE within the District of Columbia. The area surrounding the station is home to three public charter schools and, therefore, a significant amount of children pass through the station daily. **Figure 25** depicts the existing station layout.

Figure 25: Anacostia Station Layout

Overall, there are twelve sawtooth bus bays within the station site along with two bus stops on Howard Road directly in front of the station. The total width of the main bus bay, platforms, busway, and bus

layover area is approximately 150'. There are several major pedestrian points of access, including the three bus access points and two additional sidewalk entrances to the Metrorail station on Howard Avenue. There is also a Park-and-Ride garage and Kiss-and-Ride drop-off area across I-295 connected to the station via an underground tunnel.

Howard Road West Entrance Driveway

The west driveway to the station on Howard Road is unsignalized and forms a T intersection with Howard Road just east of the Firth Sterling Avenue intersection. The driveway contains one access lane and one egress lane, with a sidewalk on the east side of the driveway and on both sides of Howard Road. Howard Road has two travel lanes in each direction at the intersection. There is an east-west crosswalk that traverses the driveway at Howard Road with corresponding curbs ramps and detectable warning panels. There is also a stop sign prior to this crosswalk, but no stop line. There is no crosswalk traversing Howard Road at this driveway. A "No Crossing, Use Crosswalk" sign is posted on the south side of Howard Road just east of the driveway. A single "Do Not Enter Except Authorized Vehicles" Sign is posted at the driveway entrance. A "Do Not Block the Box" sign is posted on Howard Road in the eastbound direction prior to the intersection. Despite this sign, vehicles on Howard Road were routinely witnessed blocking access to the driveway. **Figures 26 through 28** illustrate this driveway.

Figure 26: West Driveway on Howard Road with Crosswalk and Curb Ramps

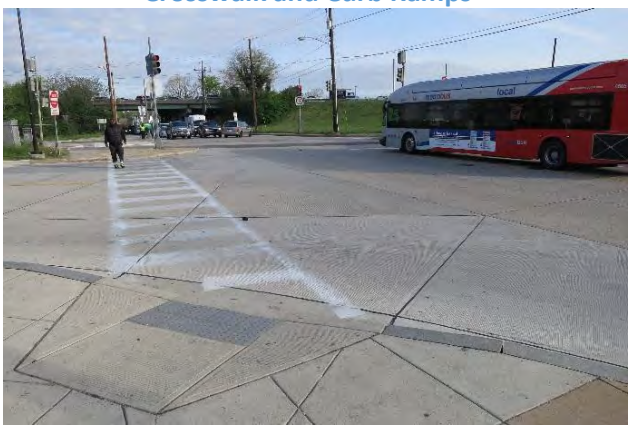


Figure 27: West Driveway on Howard Road Signage

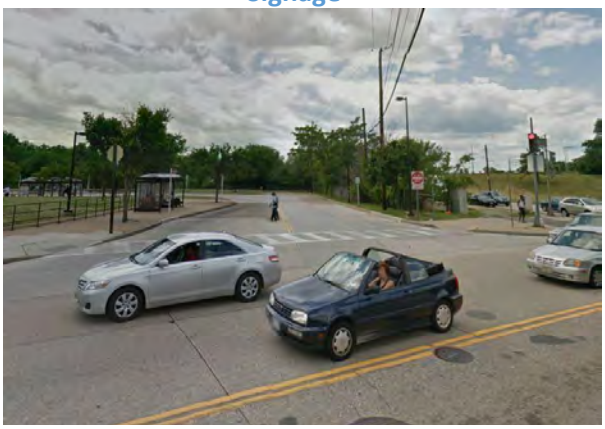
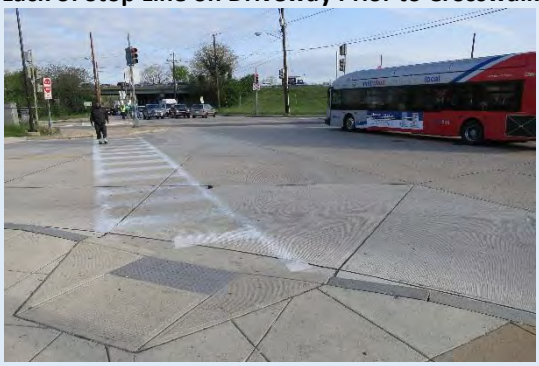
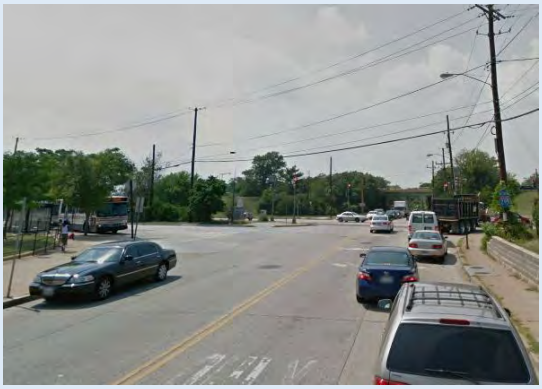


Figure 28: "Do Not Cross Use Crosswalk Sign" on Howard Road

Howard Road West Entrance Issues and Recommendations:	
Stop Line Prior to Crosswalk at Howard Road.	**Lack of Stop Line on Driveway Prior to Crosswalk** 
"Do Not Block Intersection" sign on Howard Road Westbound prior to the west entrance and "Do Not Block Intersection" pavement markings at the intersection.	**Vehicles on Howard Road Blocking West Entrance** 
"No Left Turn Except Buses" sign and "No Right Turn Except Buses" signs on Howard Road prior to the west entrance, coupled with "Buses Only" pavement markings in the left-turn lane on Howard Road westbound and on the entrance.	**Howard Road West Entrance** 

Howard Road East Driveway

The east driveway on Howard Road serves as the main access/egress point for buses at the station. This driveway forms a signalized T intersection with Howard Road and experiences significant congestion during peak periods, with bus queues five to six buses long witnessed. Vehicles on Howard Road routinely block the intersection while vehicles often drop off station patrons in the right travel lane of the eastbound approach to the intersection as well, despite the "No Stopping or Standing" signs located there.

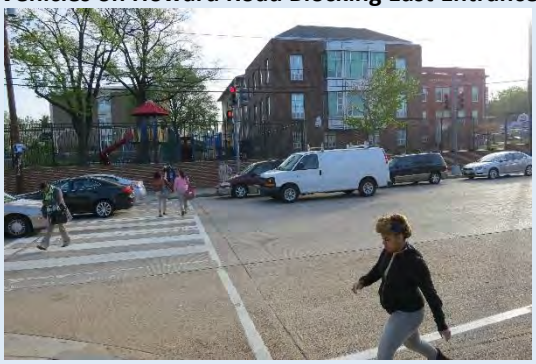
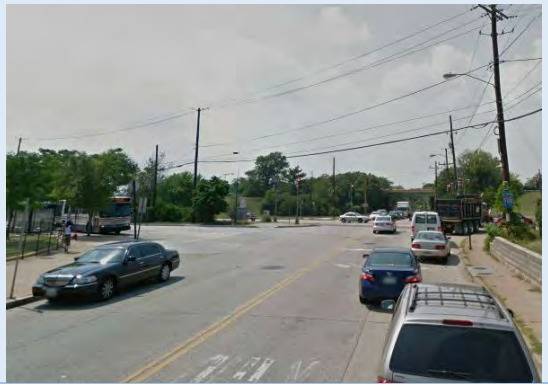
The intersection has a single access lane and a single egress lane on the driveway with a single "Do Not Enter" sign posted. Howard Road has two travel lanes in each direction at the intersection. Sidewalks exist on both sides of the driveway and on both sides of Howard Road. There is a north-south crosswalk that traverses Howard Road on the west side of the intersection as well as a pedestrian signal, pedestrian warning sign in the eastbound direction and curb ramps with detectable warning panels. There is also an east-west crosswalk the traverses the driveway with a pedestrian signal, curb ramps and a detectable warning panel on the west curb ramp but not on the east curb ramp. Finally, there are "No Left Turn Except Buses" and "No Right Turn Except Buses" signs on Howard Road in each respective direction and a "Do Not Block Intersection" sign on Howard Road in the eastbound direction. Figures 29 through 32 illustrate this driveway.

Figure 29: Howard Road Eastbound at Signalized Driveway

Figure 30: East-West Crosswalk Traversing Signalized Driveway at Howard Road

Figure 31: Bus Queue During AM Peak Period from Howard Road/Signalized Driveway Intersection

Figure 32: Howard Road Westbound at Signalized Driveway

Howard Road East Entrance Issues and Recommendations:	
"Do Not Block Intersection" sign on Howard Road Westbound prior to the east entrance and "Do Not Block Intersection" pavement markings at the intersection.	**Vehicles on Howard Road Blocking East Entrance** 
Additional "No Stopping or Standing" signs on Howard Road in the eastbound direction in front of the Metrorail station entrance (prior to the east entrance)	**Howard Road Eastbound Prior to East Entrance** 
"Buses Only" pavement markings on the east entrance.	**Howard Road East Entrance** 
Detectable warning panel on the curb ramp at the southeast corner of the east entrance;	**Curb Ramp On Southeast Corner of East Entrance** 

Martin Luther King Jr. Avenue Driveway

The driveway on Martin Luther King Jr. Avenue is a right-turn in/right-turn out driveway with a single access lane and a single egress lane. There is a large triangular island in the center of the driveway with two crosswalks: one traverses the entrance and one traversing the exit. Both crosswalks have curb ramps on both ends but lack detectable warning panels. The entrance lane has a "Do Not Enter Except Buses and Taxi Cabs" sign while the exit lane has both a stop sign and a "Do Not Enter" sign, but lacks a stop line. There is a sidewalk along both sides of Martin Luther King Jr. Avenue as well as a sidewalk along the south side of the driveway. There is no sidewalk on the north side of the driveway, where people were observed walking in the busway around a blind corner to access the station. A pedestrian wayfinding sign is located on the triangular island at the driveway, and directs people to various destinations around the neighborhood. Additional discussion of this driveway can be found in the following section.

Figures 33 through 35 illustrate this intersection.

Figure 33: Martin Luther King Jr. Avenue Driveway Looking South

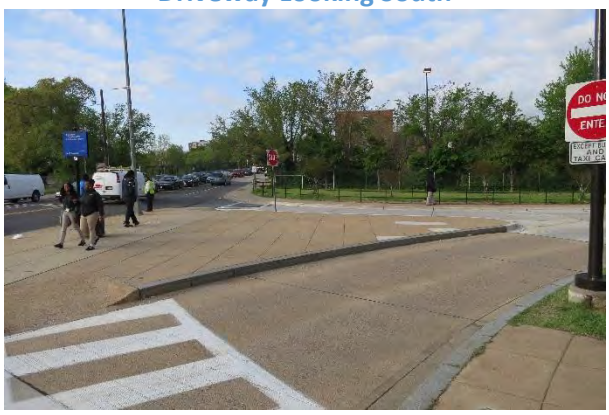
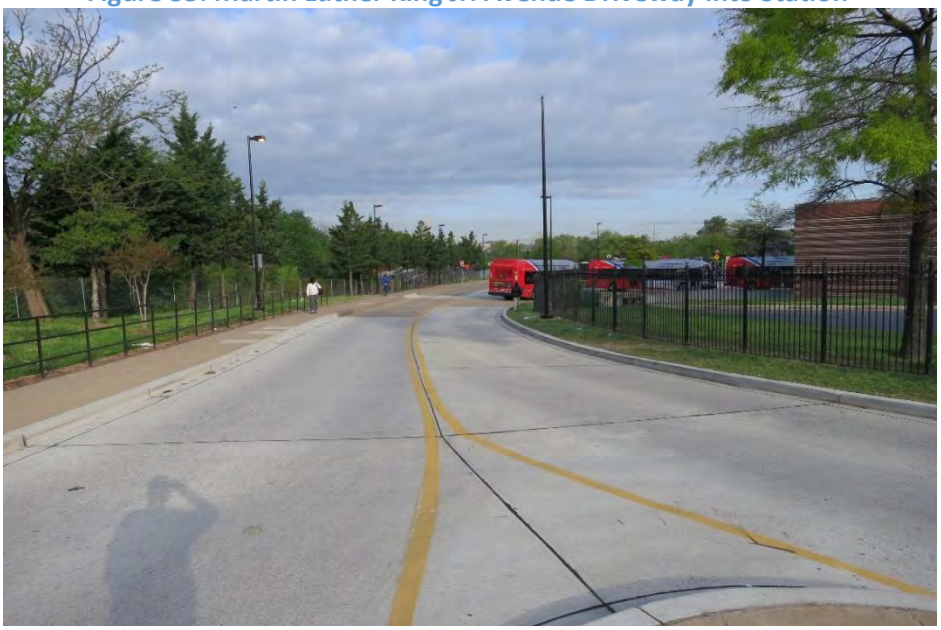


Figure 34: Martin Luther King Jr. Avenue Driveway Looking North

Figure 35: Martin Luther King Jr. Avenue Driveway Into Station



Martin Luther King Jr. Avenue Entrance Issues and Recommendations:	
"Pedestrians Use Sidewalk" signs on the Martin Luther King Jr. Avenue entrance/exit.	**Sidewalk Along Martin Luther Jr Avenue Entrance** 
Detectable warning panels on the four curb ramps at the Martin Luther King Jr. Avenue entrance/exit;	**Curb Ramps at Martin Luther King Jr Avenue Entrance/Exit** 

Busways

There are three major busways through the station site, one of which is used for passenger boarding and alighting. The main busway is a bidirectional loop between the west Howard Road entrance/exit and the east Howard Road signalized entrance/exit. This busway travels between the A-E bus bay platform and the F-M bus bay platform/Metrorail station entrance. This busway is approximately 50' wide through the bus bays; 40-50' wide at its Howard Road west entrance and 36' wide approaching the signalized east Howard Road entrance. There is a crosswalk that traverses this busway between bus bays D and G and leads directly into the Metrorail station entrance. The crosswalk has curb ramps with detectable warning panels, stop lines and stop lettered-pavement markings. There are no stop signs at the crosswalk; however, there was a high rate of compliance noted during the site visit. **Figures 36 and 37** picture the main busway and its crosswalk.

Figure 36: Main Busway and Crosswalk

Figure 37: Main Busway Entrance/Exit to Howard Road

The second busway at the station parallels the main busway to its south and offers access to a bus layover area behind the A-E bus bays. This busway is approximately 25' wide and is one-way from west to east. There is a crosswalk that traverses this busway between bus bay E and the sidewalk along the Martin Luther King Jr. Avenue entrance busway. This crosswalk has curb ramps, a stop line, stop lettered pavement markings and a pedestrian warning sign. There are no detectable warning panels on the curb ramps. This crosswalk is rarely used by station patrons as it does not offer the most direct path from Martin Luther King Jr. Avenue to the Metrorail station entrance. There are hashed pavement markings at the end of this busway that form an island to guide buses into the main busway or out to Martin Luther King Jr. Avenue. **Figures 38 and 39** picture this busway and its crosswalk.

Figure 38: Layover Busway and Crosswalk

Figure 39: Layover Busway Intersection with Main Busway and Martin Luther Jr. Avenue Entrance Busway

The third busway at the station connects the Martin Luther King Jr. Avenue right-turn-in/right-turn-out entrance/exit to the main busway and the layover busway. This busway is approximately 25' wide and is bidirectional. It meets with the main busway and layover busway at the hashed triangular pavement markings, directing buses away from the one-way layover busway. There are no traffic controls along this busway or at its intersection with the other busways; however bus drivers appear to have their own system of determining which busway has the priority right-of-way here. There is a sidewalk along the south side of this busway though it is rarely used. The majority of patrons accessing the station from this busway instead walk along the north side of it in the travel lane, despite the fact that there is a blind curve on the north side as the busway approaches its intersection with the main and layover busways. This creates a major hazard and potential point of conflict between buses and pedestrians. **Figures 40 and 41** picture this busway and its intersection with the main and layover busways.

Figure 40: Martin Luther King Jr. Avenue Busway

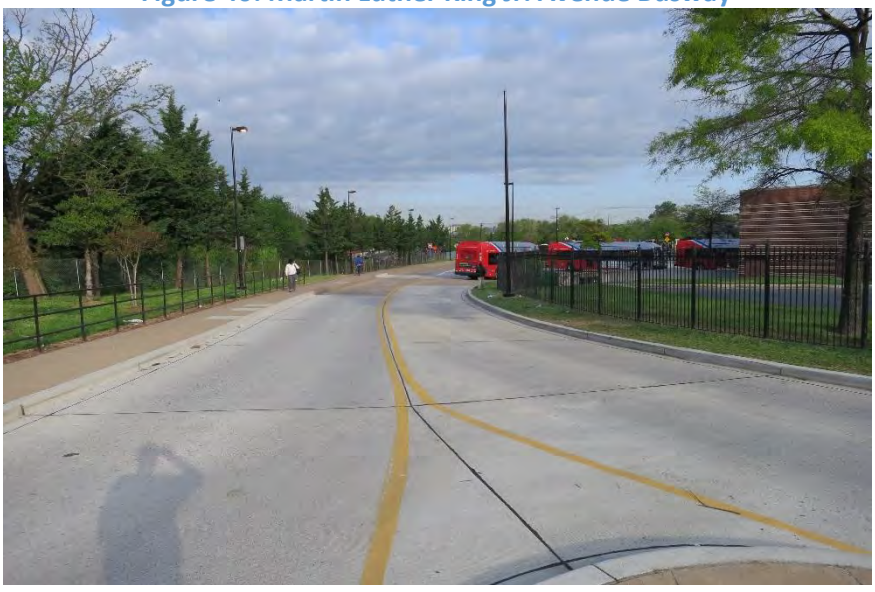


Figure 41: Intersection of the Three Busways at the Station and Pedestrian Walking in Middle of Busway

Busway Issues and Recommendations:	
Reconfiguration with one-way circulation, traffic islands, additional crosswalks and fencing in order to minimize jaywalking between the A-E bus bays and the Metrorail station entrance and walking in the Martin Luther King Jr. Avenue entrance busway.	**Patrons Walking in Busway** 

Stop signs at the crosswalk that traverses the main busway between the A-E bus bays and the Metrorail station entrance.	**Crosswalk Between A-E Bus Bays and Metrorail Station Entrance** 

Kiss-and-Ride/Park-and-Ride Garage

The entrance to this garage is through a driveway off of Howard Road north of I-295. The driveway's intersection with Howard Road is signalized and has an east-west crosswalk that traverses the driveway and curb ramps with detectable warning panels. The crosswalk does not properly line up with the curb ramps, however, and there is no pedestrian signal associated with it. Sidewalks exist on both sides of Howard Road and on the west side of the driveway. There is a "Metro Parking Only" sign on Howard Road in the westbound direction but no sign indicating the parking area in the eastbound direction. The intersection and driveway serve as a bicycle connection to the Anacostia Riverwalk Trail through Anacostia Park. **Figure 42** pictures this intersection.

Figure 42: Kiss-and-Ride/Park-and-Ride Garage Intersection with Howard Road

Kiss-and-Ride/Park-and-Ride Garage Entrance Issues and Recommendations:	
Signage on Howard Road in each direction marking the driveway as the Kiss-and-Ride/Park-and-Ride entrance.	**Kiss-and-Ride/Park-and-Ride Entrance on Howard Road** 
Pedestrian signals at the Howard Road intersection.	**Kiss-and-Ride/Park-and-Ride Entrance on Howard Road** 

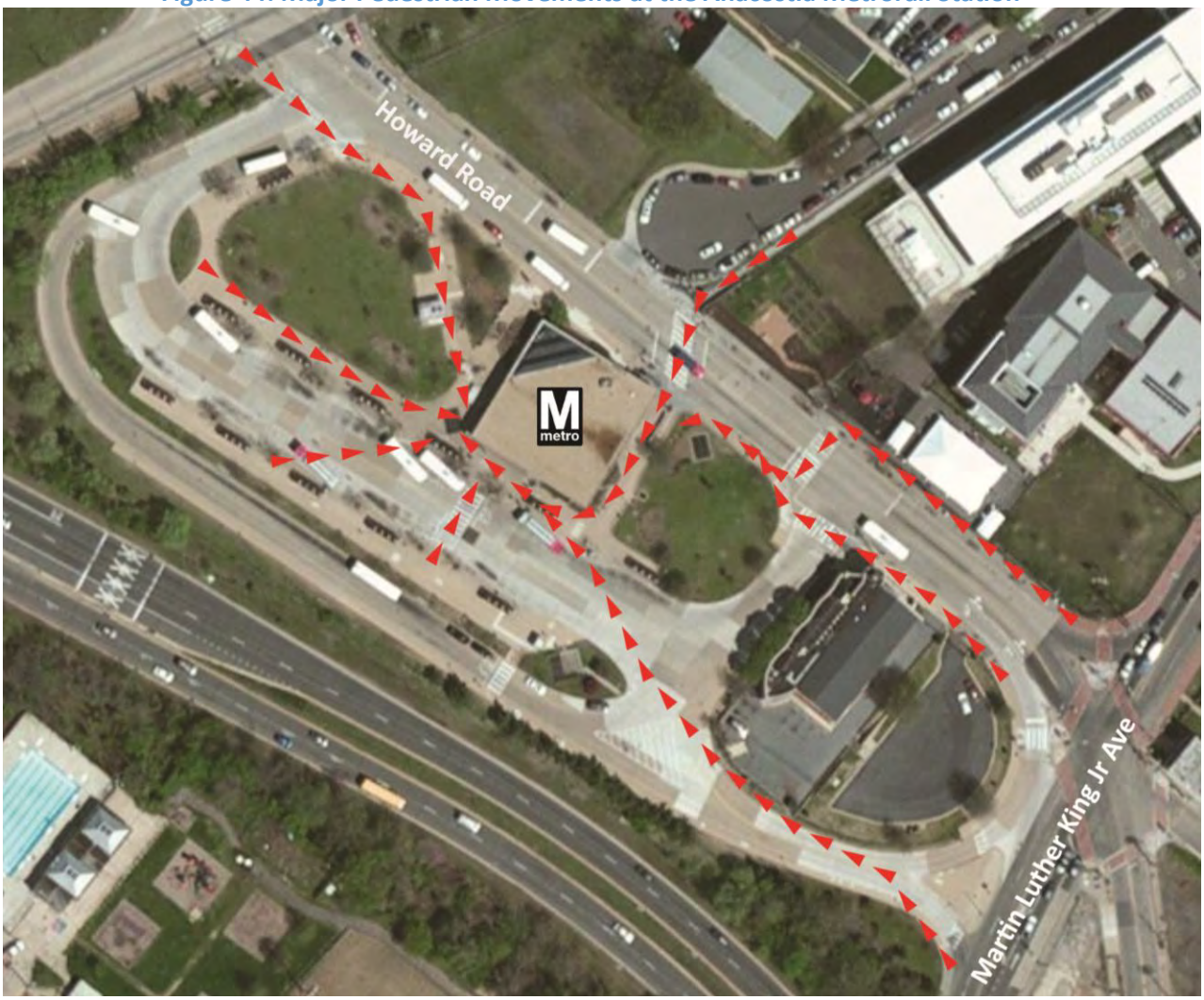
Pedestrian-Only Access Points and Pedestrian Movements

There are two major pedestrian-only access points to the station which facilitate pedestrian movements between the surrounding neighborhood and the Metrorail station entrance. The first is on Howard Road west of the station entrance, and is generally used by patrons walking eastbound on Howard Road from the I-295 area. There are no crosswalks traversing Howard Road in this area and there is "No Crossing Use Crosswalk" sign on the south side of Howard Road that directs pedestrians to use the unsignalized crosswalk detailed in the following paragraph. The second major pedestrian-only access point is slightly east of the Metrorail station entrance, where there is an unsignalized crosswalk that traverses Howard Road. This crosswalk has overhead and pole-mounted pedestrian warning signs, "Stop Here for Pedestrians" signs and overhead flashing lights in both directions on Howard Road. There are also stop lines marked on Howard Road prior to the crosswalk in each direction. Curb ramps with detectable warning panels are also present on both sides of Howard Road. This crossing is heavily used by patrons traveling between the station and the schools and neighborhoods north of Howard Road. It also has a Circulator bus stop on each side. **Figure 43** pictures this location.

Figure 43: Unsignalized Crosswalk Traversing Howard Road

The major pedestrian movements at the station are between the intersections and access points previously detailed and the Metrorail station and bus bays. Given the desire of pedestrians to use the shortest path possible to reach a destination and the lack of fencing and sidewalks in certain areas of the station, jaywalking occurs frequently. As previously mentioned, two areas where this occurs most frequently are between bus bays A-E and bus bays F-L and along the Martin Luther King Jr. Avenue busway and its intersection with the other station busways. The latter is of particular concern considering the blind curve along the Martin Luther King Jr. Avenue entrance/exit busway on its north side and the wide expanse of pavement at its intersection with the other two station busways. **Figure 44** illustrates the major pedestrian movements at the station.

Figure 44: Major Pedestrian Movements at the Anacostia Metrorail Station



Discussion with Station Operations Manager

A discussion with the Station Operations Manager confirmed the major issues that were noted during the station site visit, including:

- People jaywalking across the busways between the A-E platform and the F-M platform instead of using the crosswalk there
- People walking down the center of or along the north side of the Martin Luther King Jr. Avenue entrance busway instead of using the sidewalk and crosswalk there
- Lack of education of children on where to walk safely through the station area
- The need for a “No Bicycles” sign at the three busway entrances to prevent cyclists from using them
- Traffic congestion along Martin Luther Jr. Avenue and Howard Road that prevents buses from efficiently entering and exiting the station busways

Recommendations

In order to improve access, circulation and safety at the Anacostia Station, the following improvements are recommended:

Table 2: Summary of Recommendations at the Anacostia Station

Infrastructure	On or Off Station

Given that the 50' wide main busway lacks the proper width to install a median and fencing down its center to minimize hazardous jaywalking, a reconfiguration of the busways and bus bays at the station would be necessary in order to meet the standards in the WMATA *Station Site and Access Planning Manual* (see figures 45 and 46). Specifically:
• Bus Bays A through E should be relocated to the current layover busway, which would be widened to 42' in width to accommodate the standard 30' bus bay/passing lane and a 12' bus layover area, with bus bays and platform located on the north side. Flow would be one-way in the westbound direction.
• Fencing along the rear of the new A-E platform (north side) should be included, with a break to the existing crosswalk directly opposite the Metrorail station entrance.
• The current main busway should be widened to 45' to accommodate a 15' eastbound lane and a 30' wide westbound bus bay/passing lane.
• The eastern end of the new A-E platform and the intersection with the Howard Road East Entrance and the Martin Luther King Jr. Avenue entrance busways should be reconstructed with a bumpout on the south side of the intersection, a crosswalk traversing the new entrance to the A-E bus bays and fencing along the north side of the bumpout to minimize jaywalking.
• **Overall, the new bus bay/platform area of the station would have the following dimensions:**
  • **30' wide F-L platform**
  • **30' wide westbound bus bay/passing lane serving the F-L bays**
  • **15' wide eastbound bus lane**
  • **28' wide A-E platform**
  • **30' wide westbound bus bay/passing lane serving the A-E bays**
  • **12' wide layover area adjacent to A-E busway**
  • **145' Total Width (150' available)**
	On

Pedestrian signals at the Kiss-and-Ride/Park-and-Ride driveway intersection with Howard Road.	Off
Installation of detectable warning panels at all curb ramps around the station where they are lacking, including: • Four at the Martin Luther King Jr. Avenue Entrance; • One at the southeast corner of the Howard Road East Entrance.	Off
Signage	**On or Off Station**
Installation of stop signs at the crosswalk that traverses the main busway between the A-E platforms and the Metrorail station entrance.	On

Installation of “Do Not Block Intersection” signs on Howard Road westbound prior the east station entrance and the west station entrance.	Off
Installation of additional “No Stopping or Standing” signs on Howard Road in the eastbound direction in front of the Metrorail station entrance.	Off
Installation of “No Left Turn Except Buses” sign and “No Right Turn Except Buses” sign at the Howard Road West Entrance on Howard Road.	Off
Installation of “Pedestrians Use Sidewalk” signage on the Martin Luther King Jr. Avenue entrance busway.	On
Installation of “No Bicycles” signs at the two Howard Road entrances and the Martin Luther King Jr. Avenue Entrance to the busways. Install “Bicycle Parking” directional signs on Howard Road in each direction directing users to the bicycle racks and lockers located at the station.	On
Signage at the Kiss-and-Ride/Park-and-Ride driveway in both directions on Howard Road marking it as such.	On
Striping	**On or Off Station**
Stripe a stop line on the west entrance prior to the crosswalk.	On
Stripe the Howard Road east and west entrances with “Buses Only.”	On
Stripe “do not block intersection” pavement markings at the Howard Road east and west entrances.	Off
Enforcement	**On or Off Station**
Increased enforcement of the “no stopping/no standing” signs on Howard Road in front of the station and of intersection blocking at both Howard Road entrances.	Off

Figure 45: Station Site and Access Planning Manual Guidelines, Sawtooth Bus Bays

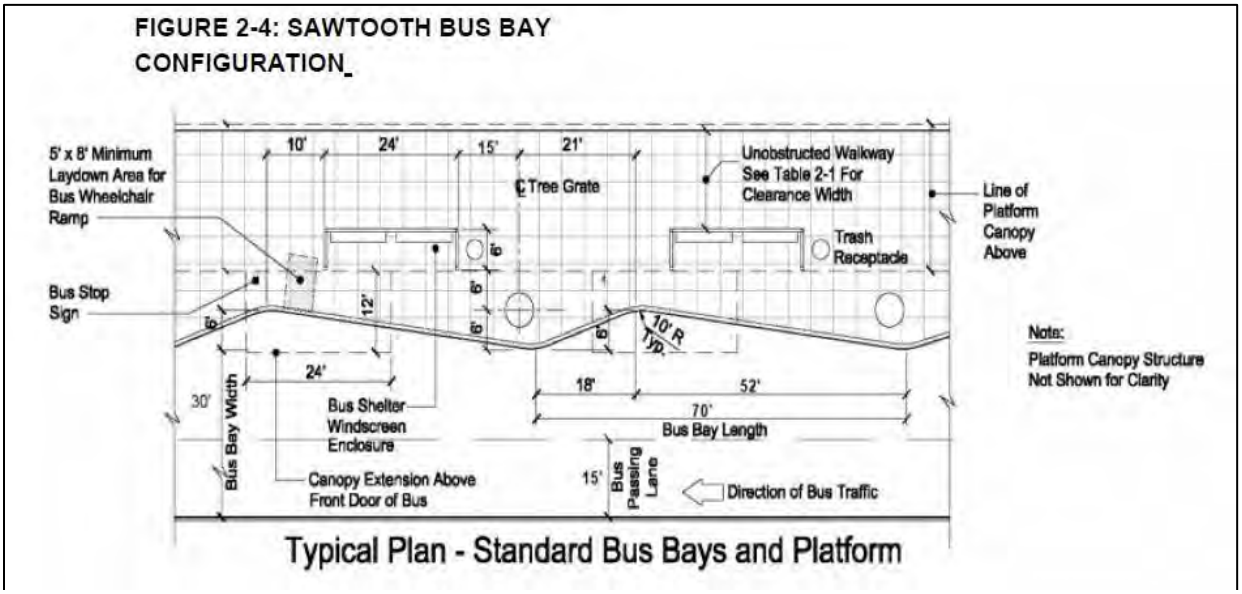


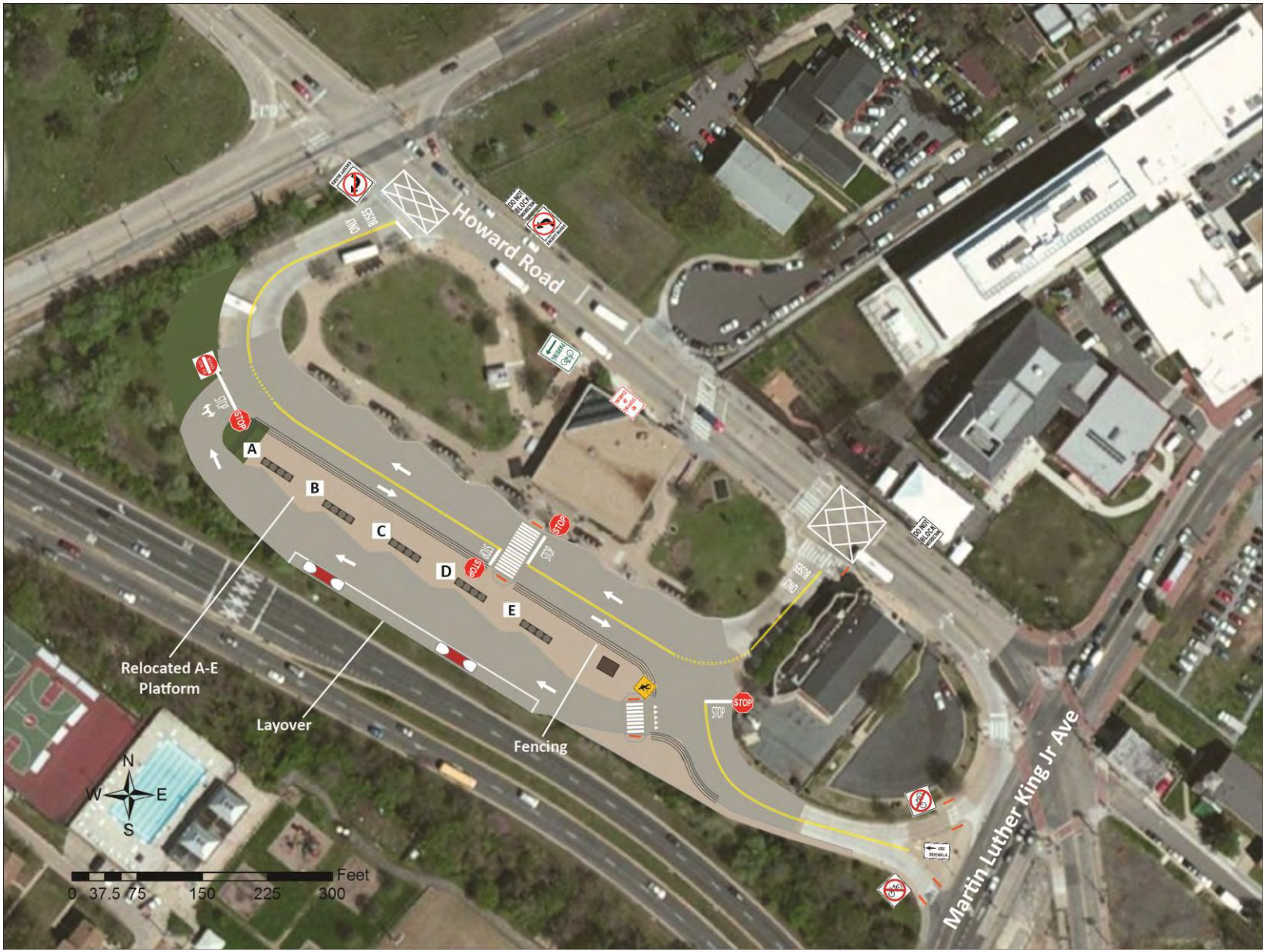
Figure 46: Station Site and Access Planning Manual Platform Walkway Width Guidelines

TABLE2-1: MINIMUM UNOBSTRUCTED WALKWAY WIDTH ALONG BUS PLATFORM

Number of Bays in Array	Minimum Unobstructed Walkway Width (Feet)
1	6
2	6
3	8
4	8
5	10
6	12

Figure 47 depicts the recommended improvements to this Metrorail station.

Figure 47: Anacostia Station Recommendations



Minnesota Ave Metrorail Station
Access, Circulation and Safety Evaluation and Recommendations

Existing Conditions

The Minnesota Ave Metrorail Station is located on the orange line on Minnesota Avenue NE within the District of Columbia. The station is directly opposite a public charter school and adjacent to a newly-constructed District government building. The busways at the station have a one-way semi-circle configuration with a counterclockwise flow, with buses entering from the north and leaving to the south. The station has eleven bus bays in total.

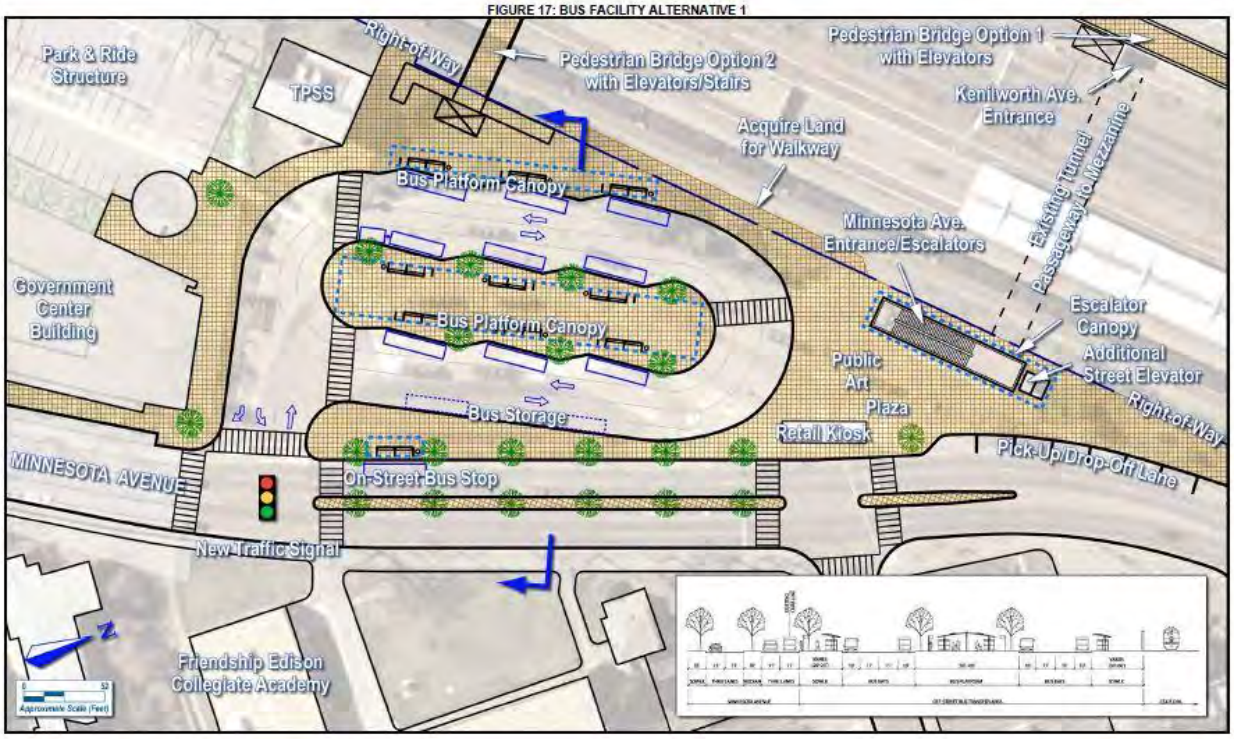
Figure 48: Minnesota Ave Metrorail Station

There are three entrances that buses can utilize when entering the station depending on their direction of travel on Minnesota Avenue and whether they will be accessing bus bays A through G, H through K, or L and M. The north and center entrances merge into a single busway while the south entrance splits into two busways, forming three busways through the station overall. Buses traveling northbound on Minnesota Avenue enter the station through a left-turn lane and can use the center and south entrances, while buses traveling southbound on Minnesota Avenue enter the station through the north and center entrances. To exit the station, all buses use one exit on the south side of the station. **Figure 48** illustrates this layout.

Previous Studies

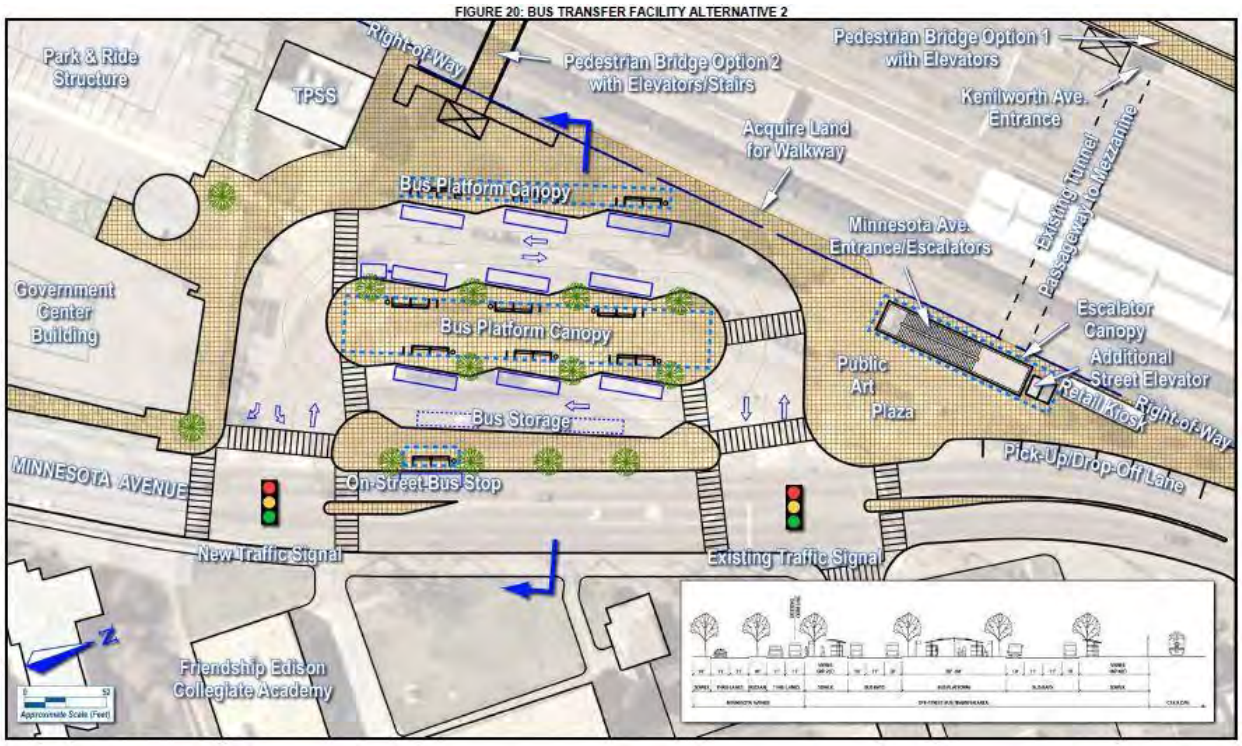
In 2006, WMATA commissioned the *Minnesota Ave Metrorail Station Access Improvement Study*. This study identified exiting access issues at the station and recommended improvements to bicycle, pedestrian, bus and Kiss-and-Ride access to the station while also considering a potential streetcar along Minnesota Avenue. Alternative One in this study called for a signalized, single access/egress driveway at the south end of the station area with a center bus platform and a bi-directional bus flow through the station and nine bus bays. This alternative would also eliminate the existing signal at the Grant Street intersection, install a median on Minnesota Avenue between the new bus driveway and Grant Street and reconfigure the Kiss-and-Ride area to have a curbside pick-up/drop-off parallel parking lane. **Figure 49** illustrates these improvements.

Figure 49: Minnesota Ave Metrorail Station Access Improvement Study, Alternative 1



Alternative Two called for a new signalized access/egress driveway at the south end of the station area while keeping the existing signalized intersection at Grant Street and adding a busway exit lane there. Like alternative one, there would be nine bus bays within the station, however, only the west busway would be bi-directional, with the east busway being one-way in the southbound direction. The reconfiguration of the Kiss-and-Ride area into a curbside pick-up/drop-off lane would be the same as alternative one. **Figure 50** illustrates these improvements.

Figure 50: Minnesota Ave Metrorail Station Access Improvement Study, Alternative 2



Overall, this study contains long-term recommendations that would be coupled with a larger redevelopment of the surrounding area and the potential construction of a streetcar along Minnesota Avenue. It would also reduce the number of bus stops at the station from eleven to ten.

North Entrance

The north entrance serves buses traveling southbound on Minnesota Avenue that will access bus bays A through E. There is a crosswalk across the entrance with curb ramps and detectable warning panels. There is a single "Do Not Enter Except Authorized Vehicles" sign and "Buses" marked on the pavement at this location. **Figure 51** pictures this intersection.

Figure 51: North Entrance for Southbound Minnesota Avenue Buses Accessing Bays A through E

Center Entrance/Grant Street

The center entrance serves buses traveling northbound on Minnesota Avenue that will access bus bays A through E. This entrance is signalized and has a dedicated left-turn lane on Minnesota Avenue in the northbound direction but lacks left-turn protection in the signal system. Grant Street NE is opposite this entrance. There is a single "Do Not Enter Except Authorized Vehicles" sign at this entrance but no pavement markings and no indication in the left-turn lane that this entrance is for buses only.

There is a median, curb ramps, pedestrian signal, and a crosswalk in the east-west direction on the northern side of the intersection. The curb ramps lack detectable warning panels with the exception of the west curb ramp. During school start and end periods, there is a crossing guard at this crosswalk that assists children in crossing Minnesota Avenue. There is a crosswalk and pedestrian signal in the north-south direction on the west side (station side) of the intersection. The north side of this crosswalk has a curb ramp with a detectable warning panel and the south side has a median cut-through with detectable warning panels. The crosswalk does not properly line up with the cut-through, however, and the cut-through does not have a ramp up to the platform so people in wheelchairs can access the J and K bus bays. There is also a crosswalk and curb ramps in the north-south direction on the east side of the intersection (Grant Street), however, the curb ramps lack detectable warning panels. **Figures 52 and 53** picture this entrance.

Figure 52: Crosswalk and Median Across Minnesota Avenue at Second North Entrance

Figure 53: Crosswalk and Median Across Minnesota Avenue at Center Entrance Lacking Ramp onto Median

There is a second center entrance immediately to the south of this entrance that is blocked off with yellow bollards and is primarily used for station employee parking. There is a crosswalk, curb ramps, and detectable warning panels across this old entrance in the north-south direction.

Center Entrance/Grant Street Intersection Issues and Recommendations:	
Re-striping of the crosswalk traversing the center station entrance so it properly lines up with the median cut-through.	**Center Entrance Crosswalk** 

"Buses Only" pavement markings in the left-turn lane and "No Left Turn Except Buses" signage on the Minnesota Avenue northbound approach. "Buses Only" pavement markings on the center entrance itself as well.	**Center Entrance to Station** 
New curb ramp at platform cut-through up to J and K bus bay platform.	**J-K Bus Bay Platform Cut-Through** 
Detectable warning panels on curb ramps at crosswalk traversing Minnesota Avenue.	**Curb Ramps at Minnesota Avenue Crosswalk** 

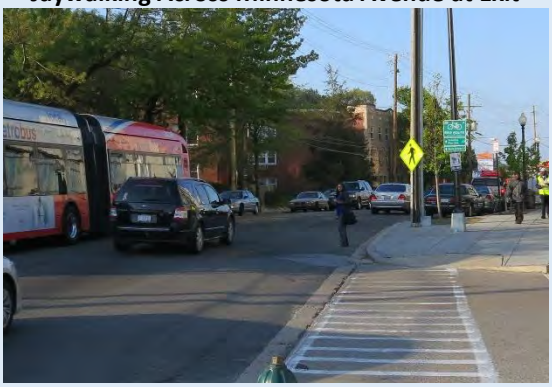
South Entrance

The south entrance serves buses traveling in both directions on Minnesota Avenue that will access bus bays J through M. The same northbound left-turn lane that serves the center entrance also serves this entrance, allowing buses to queue while waiting to enter from the south. There are two "Do Not Enter Except Authorized Vehicles" signs and "Buses Only" pavement markings at this entrance. There is a crosswalk and curb ramps with detectable warning panels across this entrance in the north-south direction.

Exit

The exit for all busways is at the south end of the station. This exit has a left-turn lane and a right-turn lane, along with two stop signs, a stop line and two "Do Not Enter" signs. There is also a crosswalk and curb ramps with detectable warning panels in the north-south direction across the exit. This location is a highly-desirable area for pedestrians to cross Minnesota Avenue as it is directly opposite the school entrance on the east side of Minnesota Avenue. **Figure 54** pictures the exit.

Figure 54: Bus Bay Exit onto Minnesota Avenue

Exit Issues and Recommendations:	
Crosswalk and curb ramps with detectable warning panels traversing Minnesota Avenue between the station exit and the school on the east side of Minnesota Avenue. This crosswalk should have the proper pedestrian warning signs with flashing lights and a "Law: Stop for Pedestrians in Crosswalk" sign either in the center of the roadway or on each side of the crosswalk.	**Jaywalking Across Minnesota Avenue at Exit** 
Detectable warning panels on the south curb ramp at crosswalk traversing exit driveway.	**South Curb Ramp at Exit Driveway** 

Pedestrian-Only Access Points

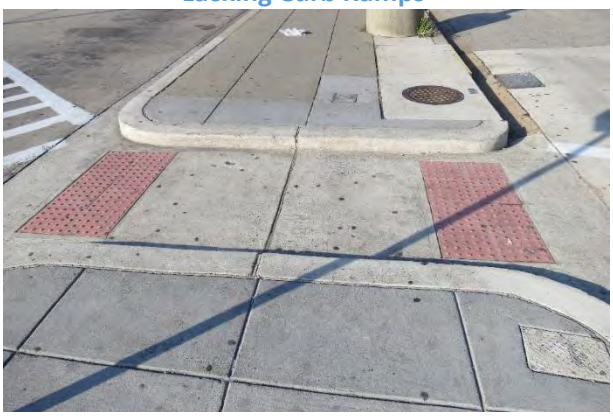
There is one major pedestrian-only access point to the station via a tunnel, sidewalk and pedestrian overpass over Route 295 to Kenilworth Avenue on the west side of the rail tracks. There are pedestrian wayfinding signs within the Metrorail station directing people to use the overpass and sidewalk network to access Kenilworth Avenue.

Busways and Platforms

The station has three busways serving 11 bus bays. The west busway closest to the Metrorail station entrance serves bus bays A through G and is approximately 25' wide at its narrowest points. This bus bay is accessed through the north and center entrances and has two crosswalks traversing it in an east-west direction: one between bus bays C and D and another between bus bays F and G. There are stop lines, stop pavement markings and two stop signs prior to each crosswalk. The north (C-D) crosswalk has a curb ramp on its west (station) side and a platform cut-through on its east side, both of which have detectable warning panels. The cut-through on the east side does not have a ramp up to the platform housing bus bays K and J, presenting an accessibility problem. The south (F-G) crosswalk has a curb ramp on its west (station) side that lacks a detectable warning panel, while the curb ramp on the east side is oriented toward the south, presenting another accessibility problem. The east curb ramp does, however, have a detectable warning panel. **Figure 55** pictures the west busway while **Figure 56** illustrates the J-K bus bay platform accessibility problem.

Figure 55: West Busway From Bus Bay E

Figure 56: J-K Bus Bay Platform Cut-Through, Lacking Curb Ramps

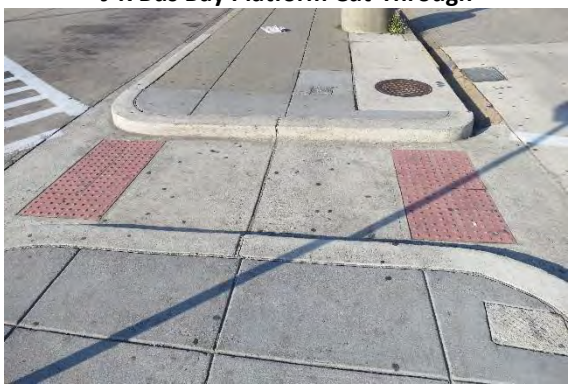


The center busway serves bus bays K and J and is approximately 32’ wide in its narrowest portion adjacent to the east busway. The center busway also has two crosswalks traversing it in and east-west direction: one north of bus bay J and one south of bus bay K that attaches to the south crosswalk traversing the west busway. There are stop lines, stop pavement markings and two stop signs prior to each crosswalk. The north (J) crosswalk has a platform cut-through on its west side and a curb ramp on its east side, both of which have detectable warning panels. The west platform cut-through connects this crosswalk to the north crosswalk traversing the west busway and thus the J-K platform is inaccessible to patrons using wheelchairs at this location. The south (K) crosswalk has curb ramps with detectable warning panels on both sides. The west side curb ramp is the same one serving the south crosswalk that traverses the west busway, however, and thus has the directional issues previously mentioned. **Figure 57** pictures the center busway.

Figure 57: Center Busway Terminus & South Crosswalk

The east busway serves bus bays L and M and is approximately 42’ wide. It does not have any crosswalks traversing it. It also contains a bus layover area with spaces for three buses. This busway splits from the center busway and then rejoins the west and center busways at the station exit. **Figure 58** pictures the east busway.

Figure 58: East Busway & Layover Area

Busway & Platform Issues and Recommendations:	
Fencing behind bus bays K and J and L and M, with breaks at the existing crosswalks serving each platform.	**Busway Between Platforms** 
Curb ramps on the J-K bus bay platform at two locations in order to allow the passage of wheelchairs and strollers onto the platform: • **The cut-through serving the north crosswalks that traverse the west busway and the center busway;** • **The cut-through serving the crosswalk that traverses the center entrance and the crosswalk that traverses the closed center entrance**	**J-K Bus Bay Platform Cut-Through** 
Extension of the J-K bus bay platform to the south and construction of two curb ramps with detectable warning panels to align with the south crosswalks serving this median in order to provide a safer entrance for wheelchair users onto the platform.	**J-K Bus Bay Platform South End** 

Detectable warning panel on the southwest curb ramp serving the south crosswalk on the A-H platform	**Southwest Curb Ramp on A-H Platform** 

Kiss-and-Ride

The station also has a Kiss-and-Ride parking and drop-off area located north of the busways along Minnesota Avenue. The parking area has three driveways: one entrance only to the north, one shared entrance/exit in the center and one exit only to the south. The aisle area has a southbound vehicle flow with angled metered parking. The center entrance/exit driveway does not have stop lines or a stop sign for vehicles exiting at this location. The southern exit driveway has a stop line but not stop sign. There are crosswalks and curb ramps at each driveway; however, there are no detectable warning panels on any of the curb ramps. There is a sidewalk along the entire length of the Kiss-and-Ride; however, they are in poor condition with heaves that would be insurmountable in a wheelchair. **Figures 59 through 62** picture the Kiss-and-Ride parking area.

Figure 59: Kiss-and-Ride North Entrance

Figure 60: Kiss-and-Ride Center Entrance/Exit & Poor Sidewalk Condition/Lack of Stop Controls

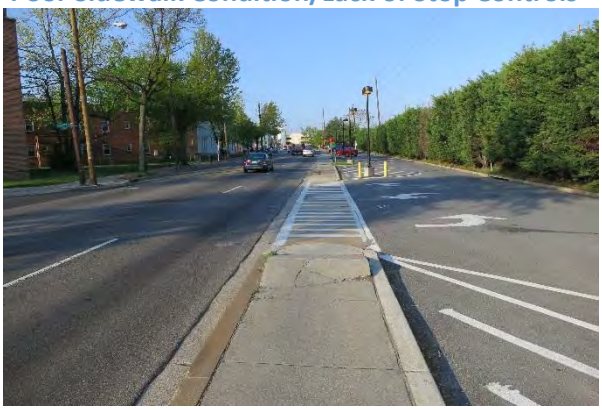
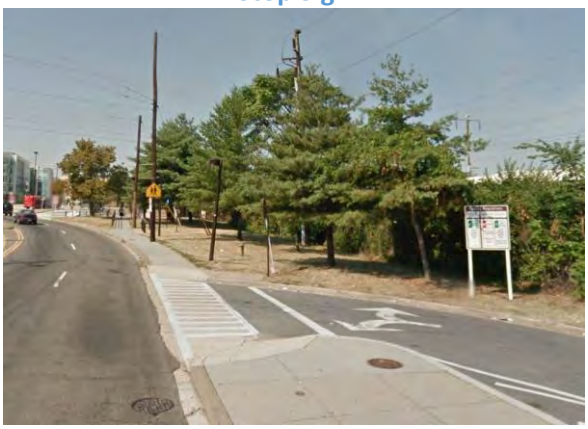


Figure 61: Kiss-and-Ride Looking Toward South Entrance

Figure 62: Kiss-and-Ride South Exit & Lack of Stop Sign



There is no signage identifying the Kiss-and-Ride parking area as such at the northern entrance or the center entrance in either direction on Minnesota Avenue. The Kiss-and-Ride area is under-utilized, primarily because it is not visible from the main Metrorail station entrance and does not allow people to re-circulate through it. Several people were observed dropping off on Minnesota Avenue directly in front of the station instead, despite the no stopping or standing signs located there, as pictured in **Figures 63 and 64**.

Figure 63: Drop-Offs on West Side of Minnesota Ave

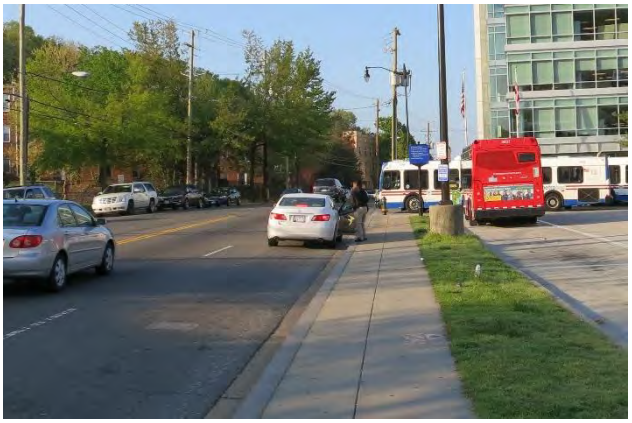


Figure 64: No Stopping/Standing Sign on West Side of Minnesota Ave

Kiss-and-Ride Issues and Recommendations:	
Reconstruction of the adjacent sidewalk, particularly north of the center entrance.	**Sidewalk Adjacent to Kiss-and-Ride** 
Signage indicating the two Kiss-and-Ride lot entrances on Minnesota Avenue in both directions.	**Kiss-and-Ride North Entrance** 
Detectable warning panels on the six curb ramps along the Kiss-and-Ride.	**Curb Ramps at South Kiss-and-Ride Exit** 
Continued enforcement of the "No Stopping No Standing" signs on Minnesota Avenue directly in front of the station to encourage people to use the Kiss-and-Ride lot instead.	**No Stopping/Standing Sign on West Side of Minnesota Ave** 

Park-and-Ride

The station has a new Park-and-Ride garage that is adjacent to the District Government Offices south of the station. The entrance to this garage is south of the station and has signage marking it as such. The driveway entrance has crosswalks, curb ramps with detectable warning panels and a stop sign with stop line prior to the crosswalk. **Figure 65** pictures this entrance.

Figure 65: Park-and-Ride Garage Entrance

Pedestrian Movements

There are several major pedestrian movements that connect the four main destinations at this station, including the Metrorail Station entrance, the charter school on the east side of Minnesota Avenue, the bus bays and the District Government Offices south of the station. **Figure 69** illustrates these major movements. The most problematic movements are those accessing or exiting the school or bus bays J through M. These movements follow desire lines that traverse busways and Minnesota Avenue and result in a large amount of jaywalking in areas that do not and should not have crosswalks. There is no fencing behind bus bays J through K or bus bays L through M, nor is there a median on Minnesota Avenue with fencing between the District Government Offices and the center station entrance. **Figures 66 through 68** illustrate some of these issues.

Figure 66: Jaywalking Across Center Busway

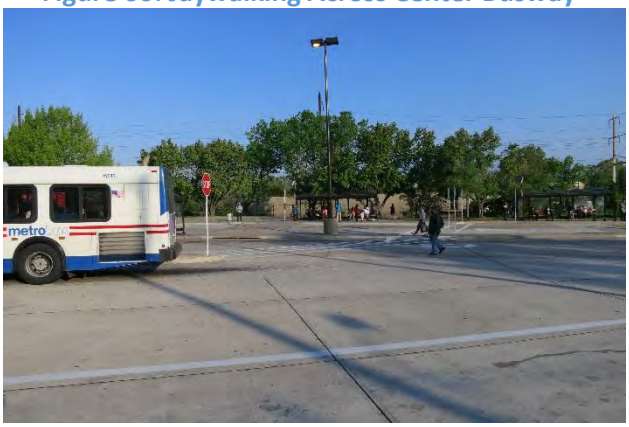


Figure 67: Minnesota Ave Looking South

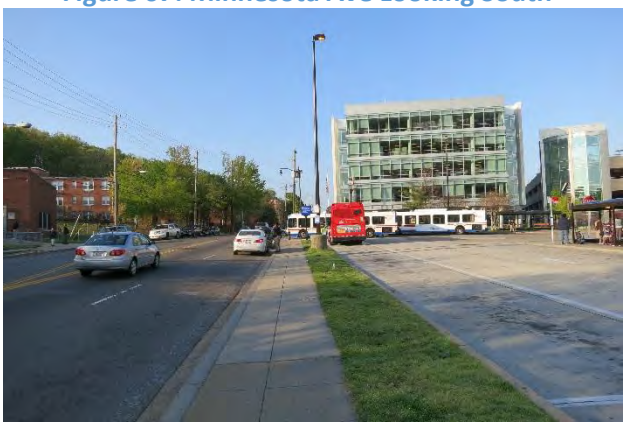
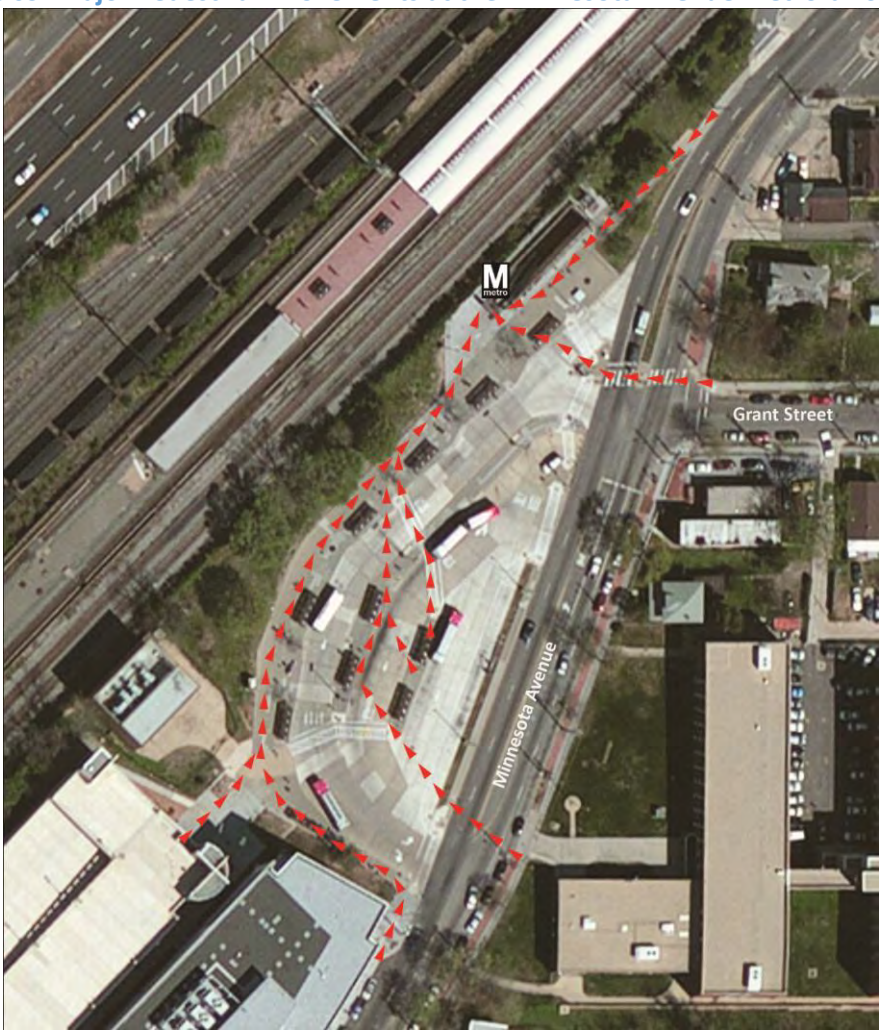


Figure 68: Lack of Fencing Behind Bus Bays

Figure 69: Major Pedestrian Movements at the Minnesota Avenue Metrorail Station



Discussion with Station Operations Manager

Discussion with the Minnesota Ave Station Operations Manager (SOM) confirmed the major access issues noted during field visits. Issues included:

- The need for fencing behind bus bays J through K and L through M to "herd" people into crosswalks
- The prevalence of people (especially school children) jaywalking across Minnesota Avenue from the station to the school entrance, despite a recent education outreach program, enforcement by Metropolitan Police and the presence of a crossing guard at the center entrance/Grant Street intersection
- People standing too close to the edge of bus bays, especially J through K and L through M, which have narrow waiting areas
- Lack of curb ramps at the west busway/center busway north crosswalk platform cut-through presenting difficulties to those in wheelchairs
- Problems with buses passing other buses stopped at bus bays A and B

The SOM also mentioned that the District Department of Transportation (DDOT) plans to install a crosswalk across Minnesota Avenue south of the station bus exit to the school on the east side. This crosswalk is planned to have flashing pedestrian warning signs and a crossing guard as well.

Recommendations

In order to improve circulation and safety at the Minnesota Ave Station, the following improvements are recommended:

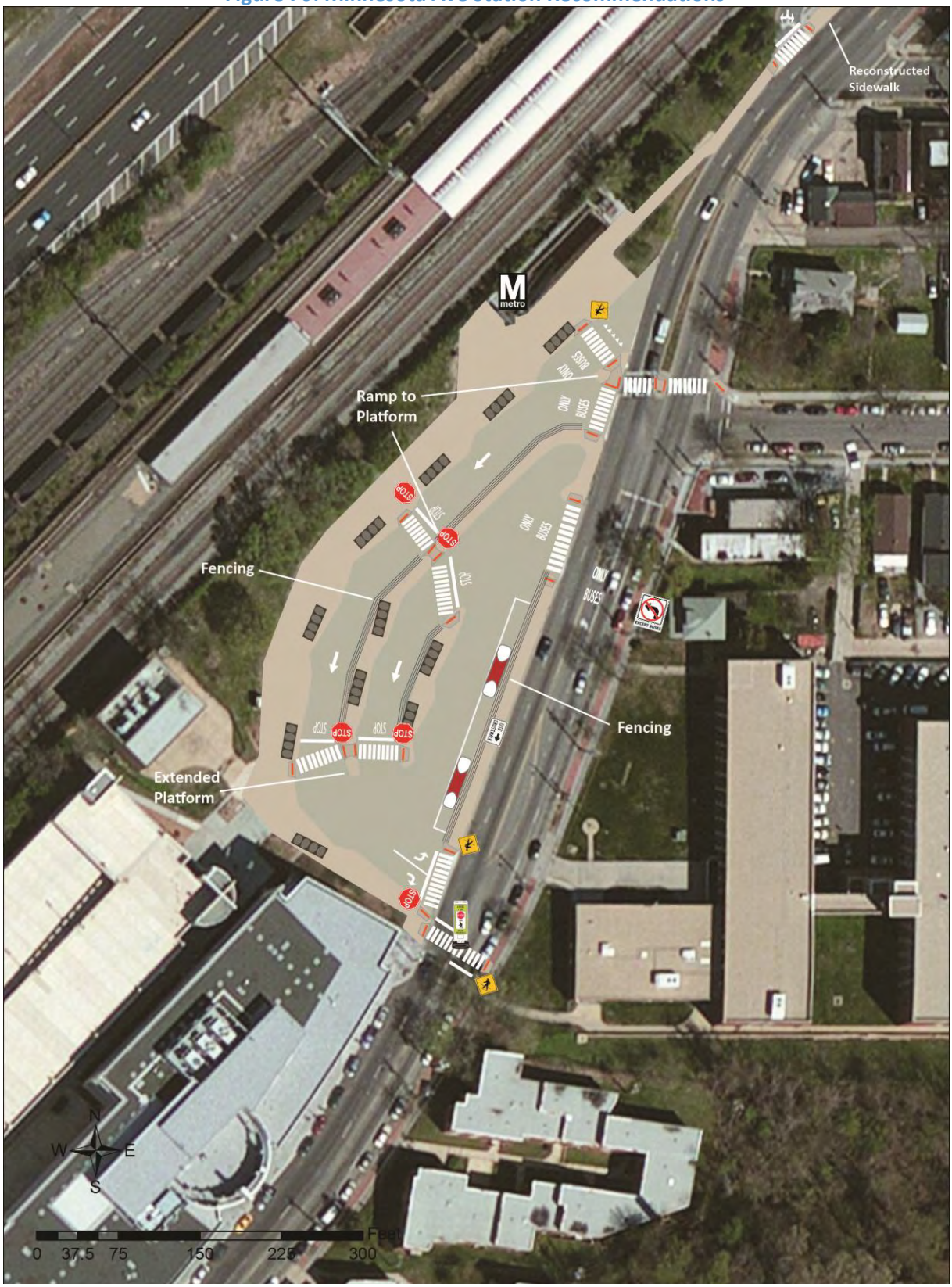
Table 3: Summary of Recommendations at the Minnesota Ave Station

Infrastructure	On or Off Station
Installation of fencing behind bus bays K and J and L and M, with breaks at the existing crosswalks serving each median.	On
Installation of fencing along the sidewalk on the west side of Minnesota Avenue to prevent jaywalking across the layover area/east busway.	Off
Reconstruction of the sidewalk along the west side of Minnesota Avenue adjacent the Kiss-and-Ride area, particularly the section just north of the center entrance/exit.	Off
Construction of curb ramps on the J-K bus bay platform at two locations in order to allow the passage of wheelchairs and strollers onto the platform: • The cut-through serving the north crosswalks that traverse the west busway and the center busway • The cut-through serving the crosswalk that traverses the center entrance and the crosswalk that traverses the closed center entrance	On
Installation of detectable warning panels at all curb ramps around the station where they are lacking, including: • Six at the Kiss-and-Ride area • Five at the center entrance/Grant Street intersection; • One at the south crosswalk traversing the west busway • One at the busway exit	Off, except south crosswalk

Extension of the J-K bus bay platform to the south and construction of two curb ramps with detectable warning panels to align with the south crosswalks serving this platform in order to provide a safer entrance for wheelchair users onto the platform.	On
Installation of a crosswalk and curb ramps with detectable warning panels traversing Minnesota Avenue between the station exit and the school on the east side of Minnesota Avenue. This crosswalk should have the proper pedestrian warning signs with flashing lights and a "Law: Stop for Pedestrians in Crosswalk" sign either in the center of the roadway or on each side of the crosswalk.	Off
Signage	**On or Off Station**
Installation of "pedestrians use crosswalk" signs along the west side of Minnesota Avenue to direct people to use the crosswalk and pedestrian light at the Grant Street intersection and eventually the new crosswalk south of the station.	Off
Installation of a "No Left Turn Except Buses" sign on the Minnesota Avenue northbound approach to the Grant Street/center entrance intersection, coupled with "Buses Only" pavement markings in the left-turn lane.	Off
Installation of signage indicating the two Kiss-and-Ride lot entrances on Minnesota Avenue in both directions.	On
Pedestrian warning sign prior to the north entrance crosswalk.	On
Striping	**On or Off Station**
Re-striping of all crosswalks with ladder or continental striping. The crosswalk traversing the center station entrance should be moved so it properly lines up with the median cut-through.	On and Off
Yield pavement markings prior to the north entrance crosswalk.	On
Enforcement	**On or Off Station**
Increased enforcement of the "no stopping no standing" signs on Minnesota Avenue in front of the station.	Off
Continued enforcement of jaywalking and u-turns on Minnesota Avenue in front of the station.	Off

The long-term recommendations for complete station reconstruction from the *Minnesota Ave Metrorail Station Access Improvement Study* offer solutions to help mitigate some of the other issues present at the station. These recommendations include wider platforms, internal bus circulation and an improved Kiss & Ride area.

Figure 70: Minnesota Ave Station Recommendations



New Carrollton Metrorail Station
Access, Circulation and Safety Evaluation and Recommendations

The New Carrollton Metrorail station is located at the terminus of the Orange Line in Prince George's County, Maryland. The station has two sets of parking areas and bus bays: one on its east side off of Garden City Drive and one on its east side off of Ellin Road. The east side of the station provides direct access to both US-50 and I-495 and thus receives a significantly higher amount of traffic. There is also an Amtrak and MARC station located adjacent to the Metrorail platform. **Figure 71** illustrates the New Carrollton station layout.

Figure 71: New Carrollton Station

New Carrollton Station West Side (Ellin Road)

Existing Conditions

The west side of the New Carrollton Station has a one-way driveway off of Ellin Road that provides access to bus bays G through K, taxis and a Kiss-and-Ride drop off/parking area. It also has a Park-and-Ride area north of the Kiss-and-Ride for all day parking at the station.

Previous Studies

In 2011, WMATA commissioned the *New Carrollton Station Future Bus Facility Needs and Short-Term Access Assessment Study*. This study made recommendations for future bus bay requirements and short-term access improvements. On the west side of the station, the study recommended the following improvements:

- Eliminate bus layover on entrance drive and instead stripe a bus layover area on the northbound side of Ellin Road with a u-turn area for buses traveling southbound
- Continued enforcement of the taxi queue length in the Kiss-and-Ride area
- Study the feasibility of short-term station improvements to reduce pedestrian congestion at the bus bay waiting areas and Metrorail station entrance
- Need for eight bus bays on the west side by 2030 with Purple Line and a full build-out

All of these recommendations are still valid and are supported by observations noted in the site visit. **Figure 72** illustrates the recommendations from this study.

Figure 72: 2011 New Carrollton Station Study Recommendations

Figure 21: Potential Short-Term Reconfiguration on the West Side of the Station

Busway/Kiss-and-Ride Driveway Entrance/Ellin Road Intersection

The Busway/Kiss-and-Ride driveway entrance intersection with Ellin Road is an unsignalized T intersection. Ellin Road has two thru travel lanes and left-turn/u-turn lanes in each direction and a median. The driveway has two lanes that are one-way away from the intersection. The right lane leads into the busway while the left lane leads into the Kiss-and-Ride area. There is an east-west crosswalk that traverses Ellin Road with curb ramps and pedestrian warning signs on each side plus a median cut-through. There is a north-south crosswalk that traverses the driveway with curb ramps that are in poor condition. The entire intersection lacks detectable warning panels. There are sidewalks on both sides of Ellin Road and on the south side of the driveway. **Figures 73 and 74** picture this intersection.

Figure 73: Crosswalk Traversing Ellin Road

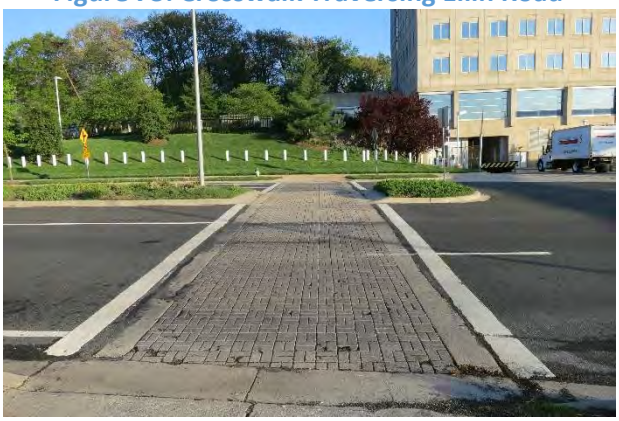
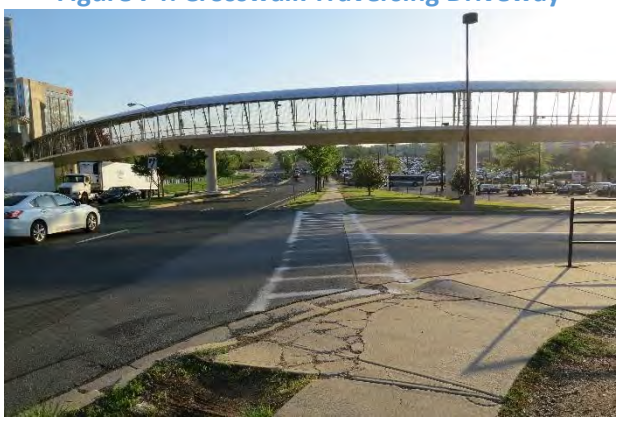


Figure 74: Crosswalk Traversing Driveway



Busway/Kiss-and-Ride Entrance Issues and Recommendations:	
Reconstructed southeast curb ramp.	**Southeast Curb Ramp at Busway/Kiss-and-Ride Entrance** 
Detectable warning panels on the six curb ramps at the intersection.	**Curb Ramps at Busway/Kiss-and-Ride Entrance** 

Busway/Kiss-and-Ride Driveway Exit/Ellin Road Intersection

The Busway/Kiss-and-Ride driveway exit intersection with Ellin Road is also an unsignalized T intersection. Ellin Road has two thru travel lanes and u-turn lanes in each direction. The driveway exit is one-way into the intersection and has a left-turn lane, a right-turn lane and a stop sign with stop line. There is a "No Right Turn" sign in the northbound direction on Ellin Road; however, there is no signage in the southbound direction prohibiting left-turns into the driveway. The driveway does have two "Do Not Enter" signs on each side, however. There is a north-south crosswalk that traverses the driveway with curb ramps that lack detectable warning panels. There are sidewalks along Ellin Road in each direction and a sidewalk (separated from the driveway by a fence) along the south side of the driveway. **Figure 75** illustrates this intersection.

Figure 75: Ellin Road/Busway/Kiss-and-Ride Exit Intersection

Busway/Kiss-and-Ride Exit Issues and Recommendations:	
"No Left Turn" sign on Ellin Road southbound.	**Ellin Road Southbound at Busway/Kiss-and-Ride Exit** 
Detectable warning panels on the two curb ramps at the intersection.	**Curb Ramps at Busway/Kiss-and-Ride Exit** 

Busway

The busway on the west side forms a one-way semi-circle with a south-north flow, serving bus bays G through K. The busway shares its entrance and exit onto Ellin Road with the Kiss-and-Ride. Its entrance has two "Do Not Enter Except Authorized Vehicles" signs as well as "Buses Only" pavement markings just to the east of the Ellin Road intersection. The busway is approximately 36' wide at its narrowest portion through the bus bay area and then narrows further to approximately 23' at the main crosswalk from the Kiss-and-Ride area into the Metrorail station entrance. This crosswalk has a stop line, stop lettered pavement markings and curb ramps with detectable warning panels. A layover area exists on the west side of the busway opposite bus bays H and J, utilizing approximately 12' of the 36' total surface width here.

Fencing along the busway keeps pedestrians from jaywalking across it. Fencing exits between the busway and the Kiss-and-Ride area, between the busway and its sidewalk along the east side and between the busway and the G-K platform areas in between bus bays. **Figures 76 through 78** illustrate the busway.

Figure 76: Busway Entrance

Figure 77: Crosswalk Traversing Busway with Fencing

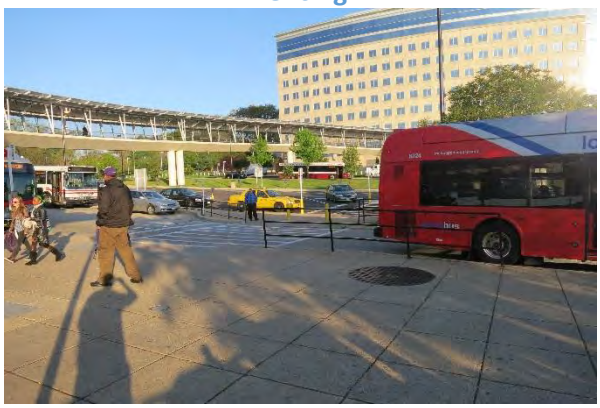
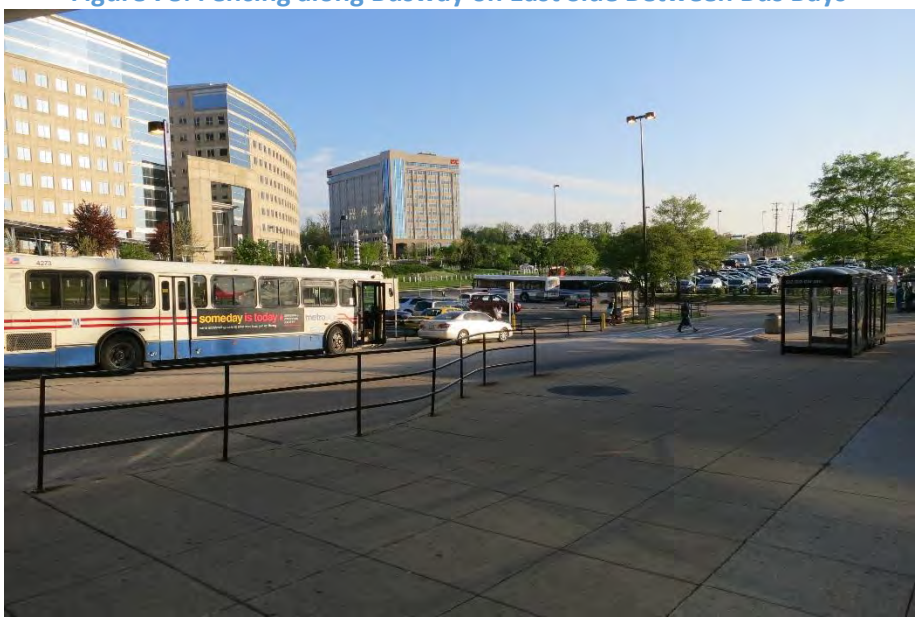


Figure 78: Fencing along Busway on East Side Between Bus Bays

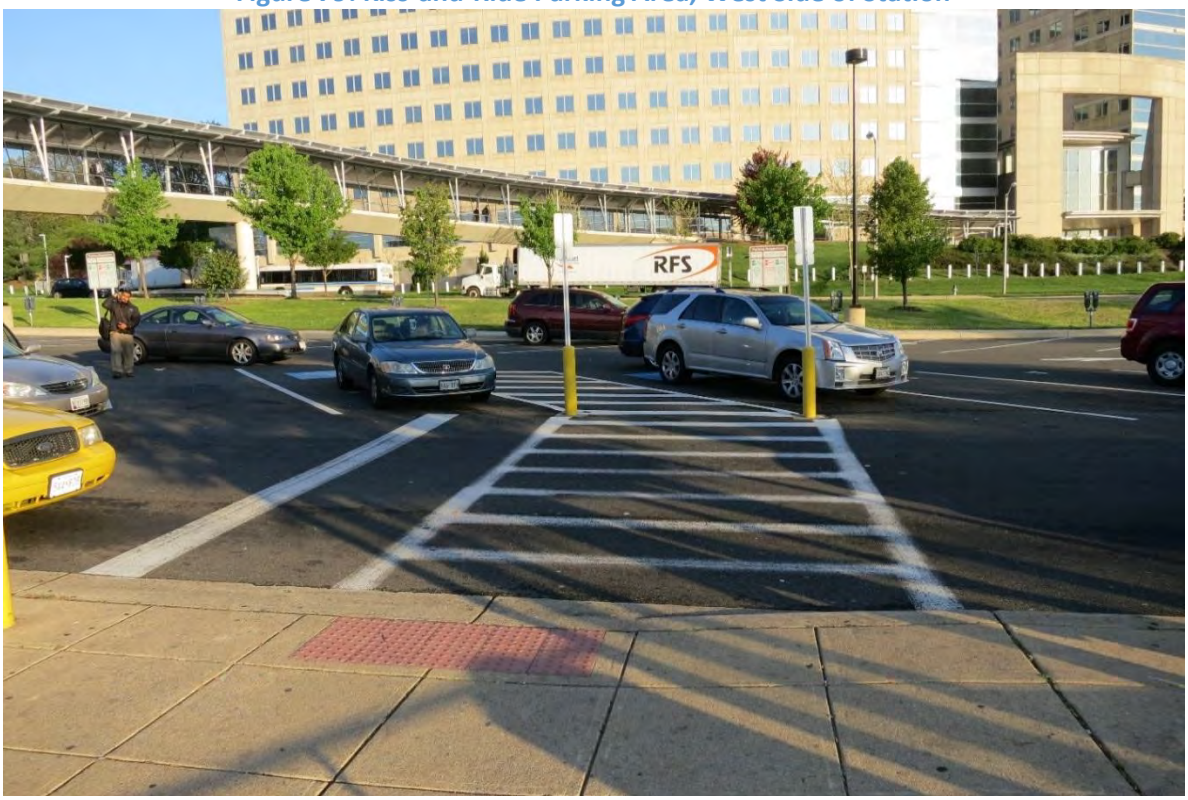


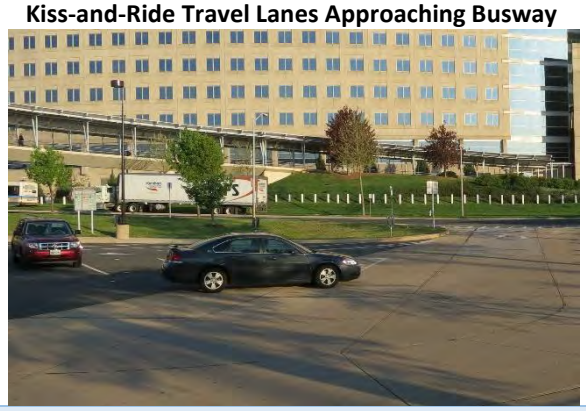
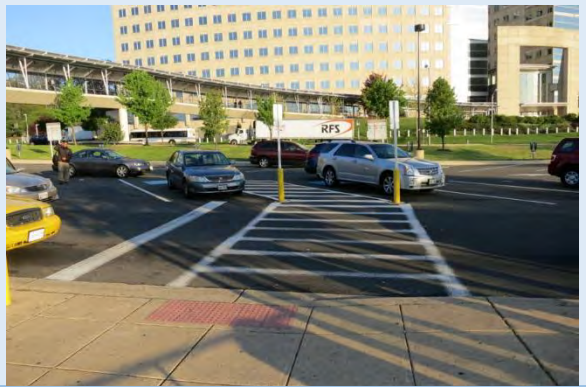
Busway Issues and Recommendations:	
Stop sign at the crosswalk traversing the busway.	**Crosswalk Traversing Busway** 

Kiss-and-Ride Lot

The west side Kiss-and-Ride lot at the station also forms a one-way south-north loop with two travel lanes and two rows of angled parking. There is a crosswalk, stop line and curb ramp with a detectable warning panel from the handicapped spaces of the Kiss-and-Ride that traverses its east lane onto the sidewalk to the east. Its entrance splits off of the busway directly east of Ellin Road. Taxis generally queue up at the beginning of the Kiss-and-Ride area while waiting to pick up patrons. The two travel lanes through the Kiss-and-Ride area merge back into the busway to exit onto Ellin Road. There are no traffic controls at their terminus where they meet the busway, though there is a "No Left Turn" sign posted. **Figure 79** pictures the Kiss-and-Ride area.

Figure 79: Kiss-and-Ride Parking Area, West Side of Station



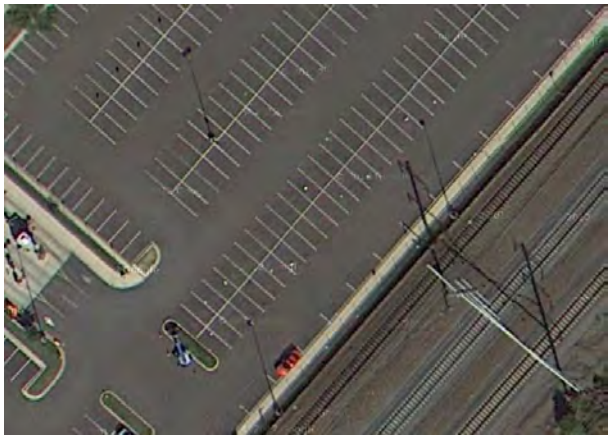
Kiss-and-Ride Lot Issues and Recommendations:	
Signage and striping at end of taxi queue area to ensure it does not block the busway.	**Taxi Queue Area** 
Stop lines, stop signs and left-turn only pavement markings at the end of each travel lane where they rejoin the busway.	**Kiss-and-Ride Travel Lanes Approaching Busway** 
Stop sign and stop lettered pavement markings prior to the crosswalk traversing the east Kiss-and-Ride travel lane.	**Crosswalk in Kiss-and-Ride East Travel Lane** 

Park-and-Ride Lot

The Park-and-Ride lot on the west side of the station is located north of the Kiss-and-Ride area and busways. It has a single access/egress driveway that forms the westbound approach to the Ellin Road/Harkins Road intersection. There are crosswalks that traverse each approach, pedestrian signals, and curb ramps for each crosswalk, however, only the northwest and northeast curb ramps have detectable warning panels. Sidewalks exist on both sides of each approach with the exception of the south side of the lot driveway. An overhead sign identifies the Park-and-Ride entrance as such. **Figure 80** pictures the entrance to the Park-and-Ride lot.

Figure 80: Park-and-Ride Parking Area Entrance on Ellin Road, West Side of Station

The lot itself has bi-directional travel lanes with parallel parking along its east side. There are no traffic controls within the lot itself. There are handicapped parking spaces along the south edge of the lot. There is a sidewalk along the east and south sides of the lot that connect to the Metrorail station entrance.

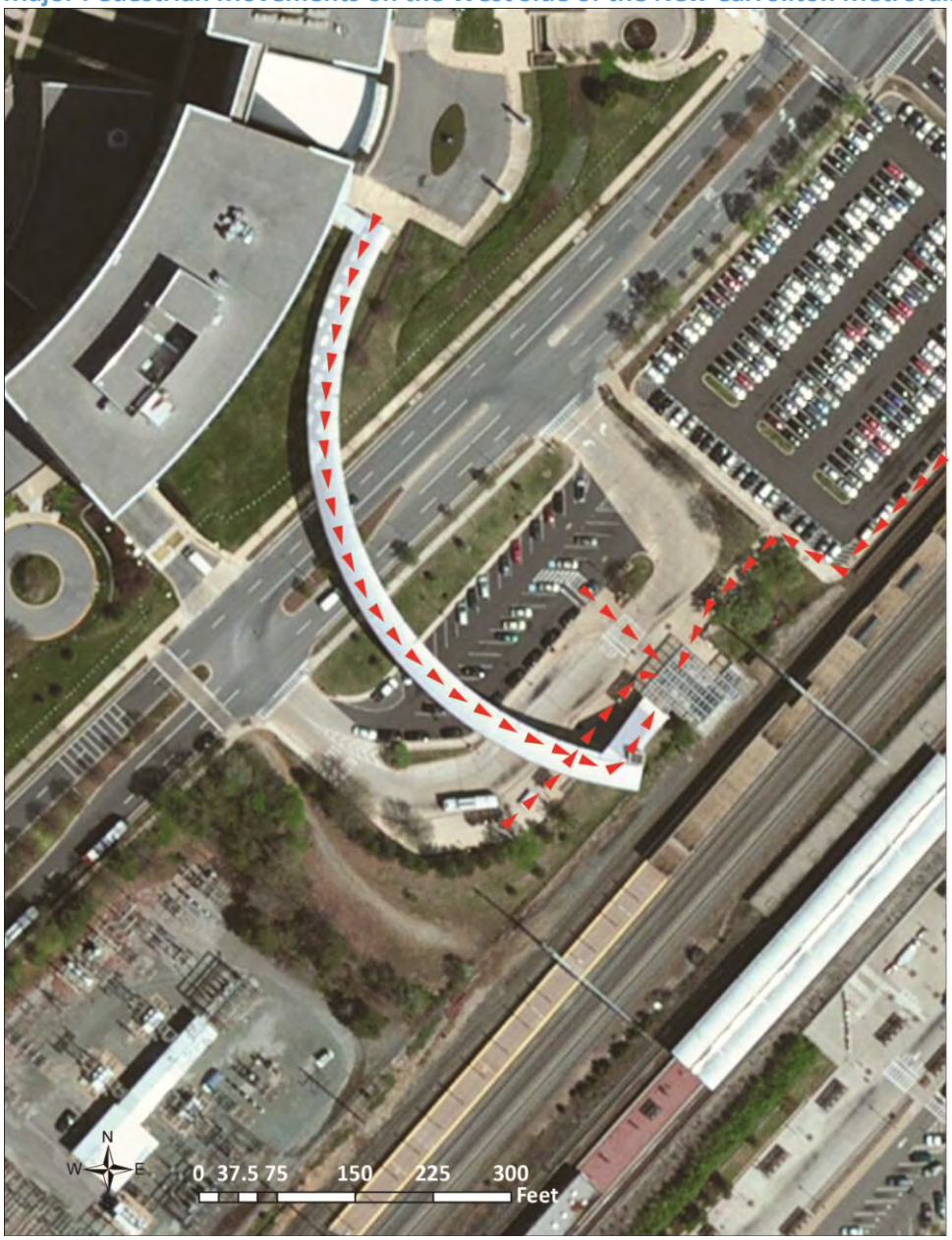
Park-and-Ride Lot Issues and Recommendations:	
Detectable warning panels on the southern northeast corner and southeast corner curb ramps at the entrance/Ellin Road/Harkins Road intersection.	**Curb Ramps at Entrance** 
Stop Lines and stop lettered pavement markings at the ends of each north-south travel lane to help establish right-of-way.	**Travel Lanes Within Park-and-Ride Lot** 

Major Pedestrian Movements

There are several major pedestrian movements on the west side of the New Carrollton Station between the Metrorail entrance and the bus bays, the Kiss-and-Ride area, the Park-and-Ride area and the pedestrian overpass to the federal buildings on the west side of Ellin Road. The majority of them are well contained within pedestrian sidewalks and crosswalks. Between the bus bays and the Metrorail entrance, the majority of patrons utilize the sidewalks and platforms; however, occasionally a bus will have to pull up directly to an area of the platform that is fenced off, forcing people to walk in the busway after alighting. This is primarily due to bus congestion at the west side bus bays.

From the Kiss-and-Ride parking area, the majority of patrons utilize the crosswalk that traverses the busway directly in front of the Metrorail entrance since there is fencing that funnels them into this location. From the Park-and-Ride area, the majority of patrons utilize the sidewalk that follows the east side of it into the Metrorail station entrance. The pedestrian overpass over Ellin Road is heavily used by patrons accessing the federal buildings. There was little to no use of the surface crosswalks traversing Ellin Road during the site visit. **Figure 81** illustrates the major pedestrian movements on the west side of the station.

Figure 81: Major Pedestrian Movements on the West Side of the New Carrollton Metrorail Station



Discussion with Station Operations Manager

Discussion with the Station Operations Manager confirmed the different issues noted during the site visit and outlined additional concerns and needs for the west side of the station. Specifically mentioned were the following:

- Taxicabs queue at the entrance the Kiss-and-Ride area and often block the busway entrance. Some “No Parking Here to Corner” signs are needed
- Buses often have to drop off passengers between bus bays H and J due to congestion and this forces passengers alighting to walk in the busway due to the fencing that exists at this location

- The sidewalk on the east side of the busway crosswalk is uneven and has caused several patrons to trip
- Light maintenance is needed more regularly to keep bus bays safe at night

Figures 82 through 84 illustrate these issues.

Figure 82: Taxicab Area Queue

Figure 83: Uneven Sidewalk on East Side of Busway

Figure 84: Fencing North of Bus Bay H

Recommendations

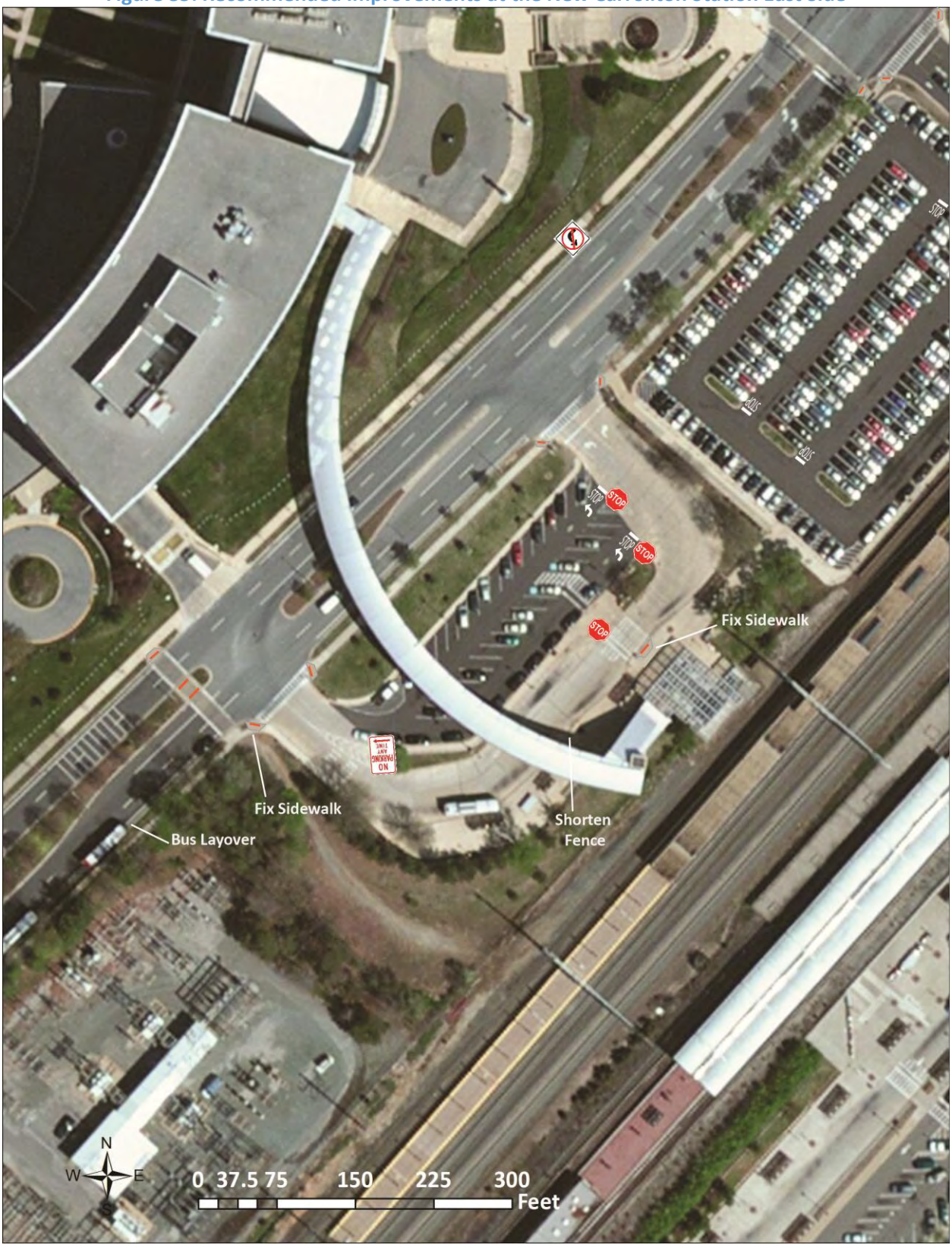
In order to improve safety and circulation at the New Carrollton Metrorail Station West Side, the following improvements are recommended:

Table 4: Summary of Recommendations at the New Carrollton Station (West)	
Infrastructure	**On or Off Station**
Reconstruction of sidewalks between the busway crosswalk and the Metrorail station entrance and at the southeast curb ramp of the Busway Entrance/Ellin Road intersection.	Busway On; Ellin Road Off
Shorten the length of the fencing north of bus bay H so it does not force people to alight into the busway when congestion forces buses to drop off here.	On
Installation of detectable warning panels at all curb ramps around the station where they are lacking, including: • Six at the Busway Entrance/Ellin Road intersection; • Two at the Busway Exit/Ellin Road intersection • Three at the Park-and-Ride/Ellin Road/Harkins Road intersection.	Off
Signage	**On or Off Station**
Installation of a "No Left Turn" sign on Ellin Road approaching the Busway/Kiss-and-Ride Exit in the southbound direction.	Off
Installation of stop signs at the end of each Kiss-and-Ride travel lane where they rejoin the busway.	On
Installation of "No Parking" signs at the Kiss-and-Ride entrance to prohibit taxicabs from parking beyond a certain point and blocking the busway entrance.	On
Striping	**On or Off Station**
Stripe a bus layover area on the northbound side of Ellin Road with a u-turn area for buses traveling southbound (2011 Study).	On
Installation of stop lines, stop lettered pavement markings and left-turn only arrows at the end of each Kiss-and-Ride travel lane where they rejoin the busway.	On
Installation of stop lines and stop lettered pavement markings at the ends of each north-south travel lane within the Park-and-Ride lot to better establish right-of-way.	On
Enforcement	**On or Off Station**
Continued enforcement of the taxicab queue length at the Kiss-and-Ride entrance and the recommended "No Parking" signs there to ensure taxicabs do not block the busway entrance.	On

Figure 85 illustrates these recommended improvements.

The major long-term recommendations of the *New Carrollton Station Future Bus Facility Needs and Short-Term Access Assessment Study* to add an additional four bus bays and extend the Kiss & Ride Lot to the Harkins Road intersection would mitigate the bus and taxi congestion that currently exists at the station.

Figure 85: Recommended Improvements at the New Carrollton Station East Side



New Carrollton Station East Side (Garden City Drive)

Existing Conditions

The east side of the New Carrollton Station is accessed primarily through Garden City Drive, which connects to both US-50 and I-495. This side of the station has five major driveways, including:

- Prince George's County Parking Garage/Metro Parking Garage Exit (opposite Corporate Drive)
- Primary Station Access (to bus bays, Metro Parking Garage Entrance, Metro Surface Park-and-Ride Lot 2 and Kiss-and-Ride)
- Primary Station Egress (from bus bays, Metro Surface Park-and-Ride Lot 2 and Kiss-and-Ride)
- Metro Surface Park-and-Ride Lot 3
- Surface Park-and-Ride Lot East (Amtrak, east side of Garden City Drive)

Previous Studies

In 2011, WMATA commissioned the New Carrollton Station Future Bus Facility Needs and Short-Term Access Assessment Study. This study made recommendations for future bus bay requirements and short-term access improvements. On the east side of the station, the study recommended the following improvements:

- Training and enforcement to restrict bus layovers in the entrance drive and busway
- Remove the security booth from the left lane of the exit drive and designate this area as a temporary layover area
- Training and enforcement to provide better customer service to bus patrons
- Signage on the entrance roadway indicating the entrance to the Metro parking garage
- Examine the feasibility of striping two right-turn lanes at the station exit
- Signage, striping and enforcement to keep taxicab queue from extending into driving lanes at the Kiss-and-Ride
- Removal of the first several Kiss-and-Ride spaces on the west side and installation of "No Stopping to Load/Unload" signage
- Examine different layouts for the Kiss-and-Ride that provide curbside pickup and more pull-thru spaces
- Install sidewalks along the northwest side of the bus bay entrance and remove the fence there
- Repair crumbling sidewalks at Metrorail station entrance
- Install benches and trees near Metrorail station entrance
- To meet 2030 demand with Purple Line implementation, only five bus bays will be needed on the east side of the station

A majority of the recommendations are still valid and were verified by observations made at the site visit. There are a number of trees near the Metrorail station entrance now and sidewalks appear to have been repaired, however, benches are still lacking in this area.

Prince George's County Parking Garage/Metro Parking Garage Exit

The driveway to these garages forms a four-approach signalized intersection with Garden City Drive where Garden City Drive comprise the northbound and southbound approaches, Corporate Drive is the westbound approach and the parking garage driveway is the eastbound approach. The parking garage approach has exclusive right-turn, thru and left-turn lanes. Garden City Drive northbound has a right-turn with bay, thru and shared thru/left-turn lane. Garden City Drive southbound has two general purpose lanes. Corporate Drive westbound has an exclusive left-turn lane, a shared thru/left-turn lane and a right-turn lane.

There are crosswalks that traverse all four approaches and an additional crosswalk that traverses the right-turn bay from Garden City Drive northbound to Corporate Drive eastbound. Each crosswalk has corresponding curb ramps, however, they all lack detectable warning panels. There are pedestrian signals at each approach, and pedestrian warning signs on Garden City Drive in each direction. There is also a sign marking this garage as "No Smart Card Needed" on Garden City Drive northbound. Sidewalks exist on both sides of each approach as well. Opposite the Corporate Drive approach, there are signs for the Metrorail/Amtrak/MARC station and a sign for the Prince George's County Parking Garage. **Figures 86 through 88** picture this intersection.

Figure 86: Prince George's County Parking Garage/Corporate Drive Intersection

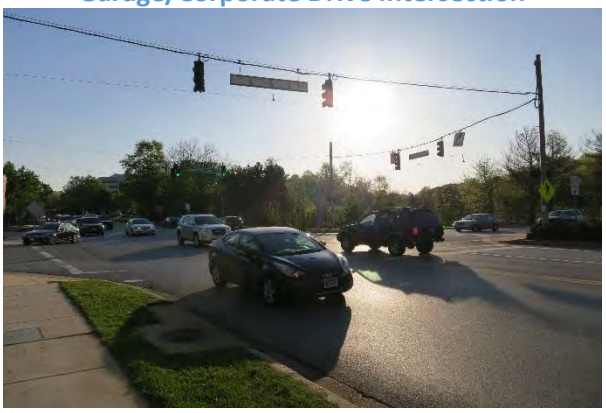


Figure 87: Crosswalks at Prince George's County Parking Garage/Corporate Drive Intersection

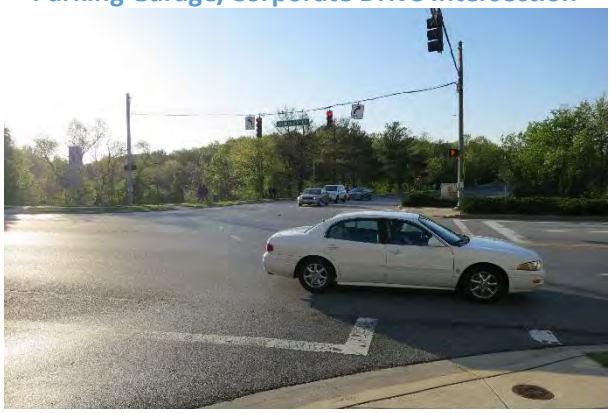
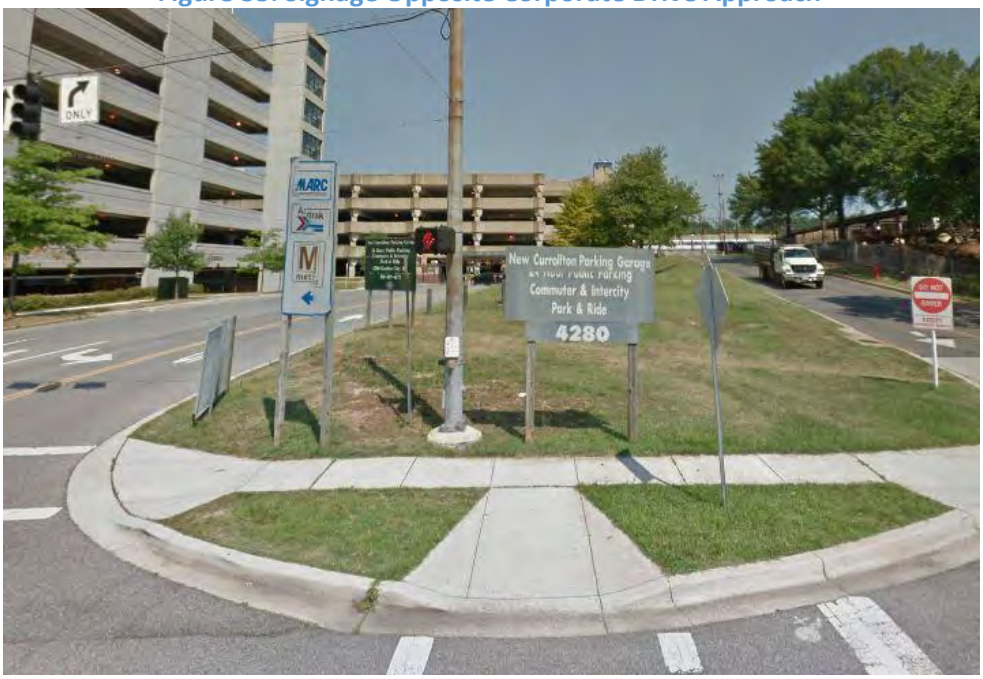
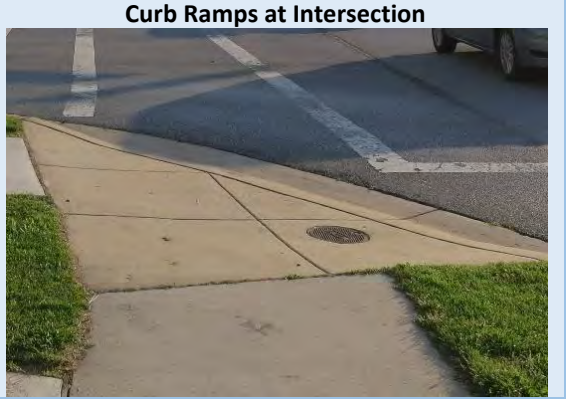


Figure 88: Signage Opposite Corporate Drive Approach



Prince George's County Parking Garage Driveway/Garden City Drive Intersection Issues and Recommendations:	
Detectable warning panels on all curb ramps.	**Curb Ramps at Intersection** 

Primary Station Access Driveway (Park-and-Ride Lot 2, Kiss-and-Ride, Metro Parking Garage Entrance and Bus Bays)

This driveway forms a signalized T-intersection with Garden City Drive with two thru travel lanes on each side of Garden City Drive along with an exclusive left-turn lane in the northbound direction and an exclusive right-turn lane in the southbound direction. There is an overhead sign in each direction on Garden City Drive indicating the driveway as New Carrollton Station as well as a more descriptive sign in each direction indicating the driveway as the Metrorail, MARC and Amtrak station. The standard Metrorail diamond-shaped sign with Metrorail line color is also present. There is one additional sign in the northbound direction on Garden City Drive indicating the driveway as an entrance to Metro Parking Lot 2. The station access driveway is an entrance only and thus is one-way away from the intersection.

It immediately forms three travel lanes: one right-turn lane to access the Metro Parking Garage, one thru lane to access the Kiss-and-Ride area and bus bays and one left-turn lane to access Metro Parking Lot 2.

There are two crosswalks at this intersection: a north-south crosswalk that traverses the station access driveway and an east-west crosswalk that traverses Garden City Drive. Each crosswalk has corresponding curb ramps that all lack detectable warning panels. There is a pedestrian signal to use the east-west crosswalk, however, there is no pedestrian signal to use the north-south crosswalk. There are also pedestrian warning signs in each direction on Garden City Drive prior to the crosswalk. Sidewalks exist on both sides of each approach as well. **Figures 89 through 91** illustrate this intersection and its signage.

Figure 89: Station Access/Garden City Drive Intersection East-West Crosswalk

Figure 90: Station Access/Garden City Drive Intersection North-South Crosswalk

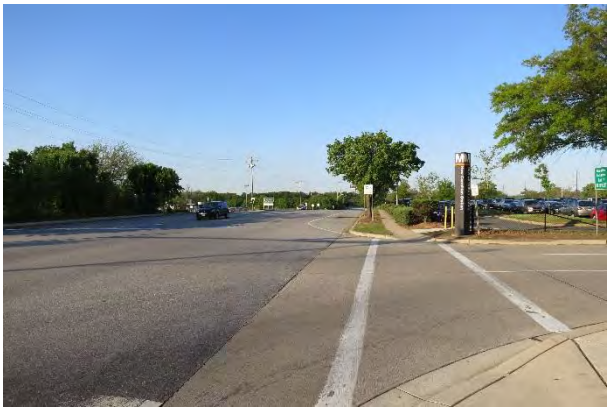


Figure 91: Station Access/Garden City Drive Looking South

The primary station access driveway itself extends from Garden City Drive to the busway/Kiss-and-Ride entrance and offers access to these areas as well as the Metro Parking Garage and Park-and-Ride Lot 2. The driveway is one-way from east to west (towards the Metrorail station entrance) and initially has three 12' wide travel lanes. The right travel lane exits into the two Metro Parking Garage entrances (one for Kiss-and-Ride, one for Park-and-Ride). The left travel lane exits into Park-and-Ride Lot 2.

The center travel lane continues into the Kiss-and-Ride Parking area, though left turns can be made from it into Lot 2 as well. The busway into the east bus bays begins to the right of the center travel lane prior to it entering the Kiss-and-Ride. **Figure 92** illustrates this driveway.

The driveway has a sidewalk along its north side that eventually leads directly into the Metrorail station entrance. It curves to the north to bypass a tree and grass area near the beginning of the busway, however, people were witnessed cutting through this grass area anyway. The north side sidewalk is joined by a sidewalk that extends from the garage stairwell entrance to the garage automobile entrance. There is a sidewalk on the south side of the driveway that curves around Metro Park-and-Ride Lot 2 to the south, separated from the driveway by a fence. No sidewalk exists along the driveway west of Lot 2 and people were witnessed walking in the driveway in this stretch as shown in **Figure 93**. There is an east-west crosswalk that traverses the Metro Parking Garage entrance with curb ramps that lack detectable warning panels.

Figure 92: Station Access Roadway

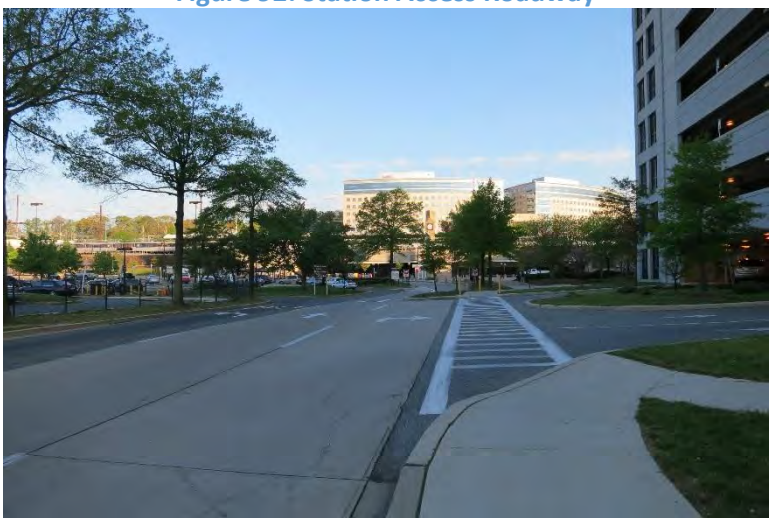


Figure 93: Patron Walking in Station Access Driveway

There is signage on the Metro Parking Garage entrances marking each but they are not visible from the right travel lane. There is a "Kiss-and-Ride Park-and-Ride Lot 2 Keep Left" sign at the beginning of the driveway that can be confusing to unfamiliar motorists who may interpret it to mean they need to be in the left lane in order to enter the Kiss-and-Ride. A second sign at the Lot 2 entrance directs motorists to turn left to enter Lot 2 or continue straight to enter the Kiss-and-Ride. A sign at the Kiss-and-Ride entrance detailing its

parking regulations confirms to motorists that they entering the Kiss-and-Ride. Where the busway begins just after the Kiss-and-Ride, two large "Do Not Enter Except Authorized Vehicles" signs and "Buses Only" lettered pavement markings effectively keep vehicles from entering the busway. **Figures 94 through 96** illustrate the layout and signage of this driveway.

Figure 94: Metro Parking Garage Kiss-and-Ride Entrance

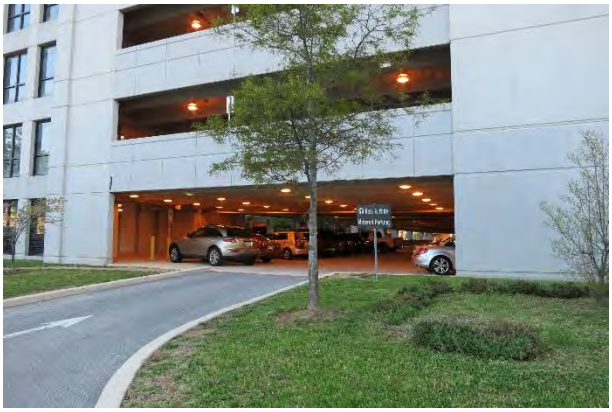
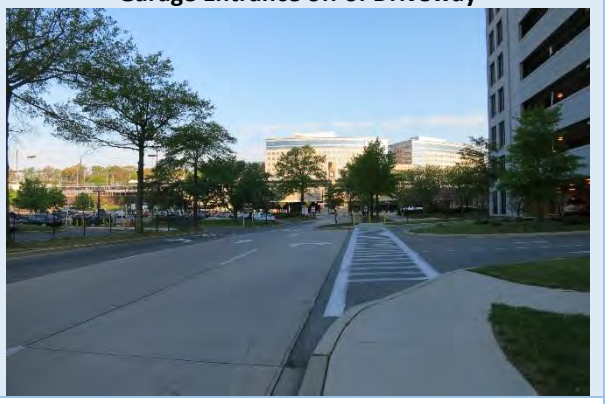


Figure 95: Kiss-and-Ride/Park-and-Ride Lot 2 Keep Left Sign

Figure 96: Kiss-and-Ride Entrance & Signage

Station Access Driveway Issues and Recommendations:	
Signage on the driveway directing people to the Park-and-Ride/Kiss-and-Ride garage.	**Garage Entrance off of Driveway** 
Clearer signage on the driveway directing people to the two left lanes to access the Kiss-and-Ride lot and the Park-and-Ride Lot 2.	**Clarified Message** 
Direct sidewalk along north side of driveway to Metrorail station entrance, removal of fence blocking grass area and replacement of low chain fence along busway entrance with a higher fence.	**Grass Area Traversed by Patrons** 

Detectable warning panels on all curb ramps at Garden City Drive intersection and Metro parking garage entrance.	**Curb Ramps at Garden City Drive Intersection** 

Metro Park-and-Ride Lot 2

This lot, accessed through the left two lanes of the Primary Station Access Driveway, has bidirectional travel lanes and parallel parking along its east and west sides. It has stop lines and stop lettered pavement markings at the ends of each aisle and sidewalks along its north side and the majority of its west side. There are handicapped spaces in the third parking row from the north. A single crosswalk traverses the lot entrance and has corresponding curb ramps with detectable warning panels. Fencing along the north and northwest sides of the lot exists to minimize jaywalking across the primary station access driveway. Fencing also exists along the east and south sides of the lot. There is a gap in fencing on the west corner of the lot, allowing people to jaywalk across the lot's exit.

Metro Park-and-Ride Lot 2 Issues and Recommendations:	
Yield sign and yield pavement markings at the lot exit where it meets with the station egress driveway.	**Lot Exit** 
Additional fencing on the west corner of the lot, connecting to the south side fence to force Lot 2 patrons to use sidewalk west of the payment booths to access the station.	**Lot Exit, South Side Fencing** 

Kiss-and-Ride

This lot, accessed through the center lane of the primary station access driveway, has three one-way (north to south) travel lanes with four rows of angled parking. The three travel lanes merge back into a single lane that exits the lot under yield control (two yield signs) into the primary station egress driveway. The west travel lane begins as a taxicab queuing area with room for five taxis. The entrance to this lane has "Taxis Only" lettered pavement markings and a white dotted line meant to prohibit queues into the center travel lane. Handicapped spaces exist in the west parking row at the north end of the lot. There are sidewalks along the west and north sides of the lot as well as a sidewalk down the center between the middle two rows of parking. The north sidewalk ends at the Kiss-and-Ride entrance and encourages people to jaywalk across it and the busway to the Metrorail station entrance. Fencing exists along the west side of the Kiss-and-Ride lot to minimize jaywalking across the adjacent busway. Two waiting shelters also exist on the west side.

Three crosswalks traverse the Kiss-and-Ride travel lanes: two to the north and one at the south exit. The northeast crosswalk does not have warning signs or traffic control pavement markings prior to it. The northwest crosswalk, which traverses the taxicab queuing lane and the center-west travel lane, has a stop line and a pedestrian warning sign prior to it at the taxicab lane but only a pedestrian warning sign prior to it at the west-center travel lane. The south crosswalk (traversing the exit), has a pedestrian warning sign but no traffic control pavement markings prior to it. All four crosswalks have corresponding curb ramps with detectable warning panels. **Figures 97 through 99** illustrate the Kiss-and-Ride lot.

Figure 97: Kiss-and-Ride Entrance

Figure 98: Kiss-and-Ride Exit Crosswalk

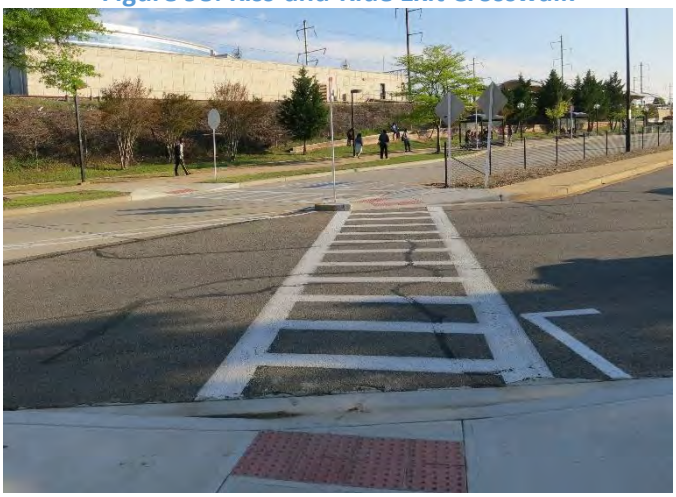


Figure 99: Kiss-and-Ride Northwest Crosswalk

The Kiss-and-Ride entrance often backs up into the primary station access driveway as vehicles stop in the travel lanes to drop off or pick up station patrons. Additionally, the taxicab lane queue also backs up frequently and blocks the Kiss-and-Ride entrance completely.

Kiss-and-Ride Lot Issues and Recommendations:	
Removal of the sidewalk on the north side of the lot to discourage pedestrians from jaywalking across the entrance and across the busway.	**Sidewalk on North Side of Kiss-and-Ride** 
Removal of the first several parking spaces in the west parking aisle and installation of "No Stopping to Load/Unload" signage, allowing vehicles to enter the west driveway and continue south to exit the lot.	**West Aisle of Kiss-and-Ride** 
Signage and enforcement to keep taxicab queue from extending into travel lanes.	**Taxicab Queuing Area** 
Yield pavement markings prior to the crosswalks in the center and east travel lanes and the exit.	**Crosswalk at Kiss-and-Ride Exit** 

Stop lettered pavement markings and stop signs at the stop line in the taxicab queuing area on the west side of the lot.	**Stop Line in Taxicab Queuing Area** 
Enforcement of the 15 minute driver-attended pull-through spaces in the west parking aisle in the lot in order to reduce stopping in travel lanes to load and unload station patrons.	**Kiss-and-Ride Regulations Signage** 

Primary Station Egress Driveway (Park-and-Ride Lot 2, Kiss-and-Ride and Bus Bays)

This driveway forms an unsignalized T-intersection with Garden City Drive two southbound travel lanes and one northbound travel lane on Garden City Drive. Additionally, a two-lane ramp from US-50 eastbound joins Garden City Drive on the east side of the roadway just north of the intersection. On Garden City Drive southbound, there is a “No Left Turn” and two “Do Not Enter” signs that mark the ramp as one-way. The station egress is one-way eastbound into the intersection and has an exclusive right-turn lane and an exclusive left-turn lane. There are two stop signs, a stop line, a “Do Not Enter” sign, Metro Parking Lot 3 directional sign and a US-50/I-95 directional sign at the station egress approach.

There is a north-south crosswalk that traverses the station egress driveway with corresponding curb ramps that lack detectable warning panels. There is a sidewalk on the west side of Garden City Drive north and south of the intersection and on the east side of Garden City Drive north of the US-50 off-ramp. The station egress driveway has a sidewalk on its south side with fencing separating it from the driveway itself. **Figures 100 through 102** illustrate this intersection and its pavement markings and signage.

Figure 100: Station Egress/Garden City Drive Intersection North-South Crosswalk

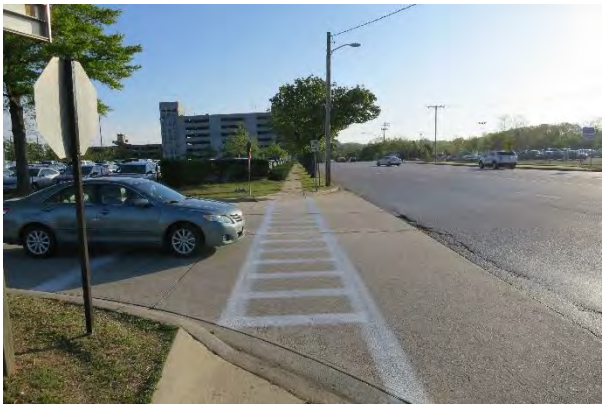


Figure 101: Station Egress/Garden City Drive Intersection Looking North

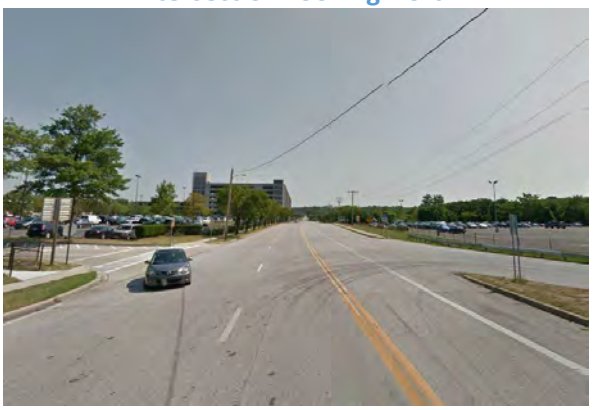
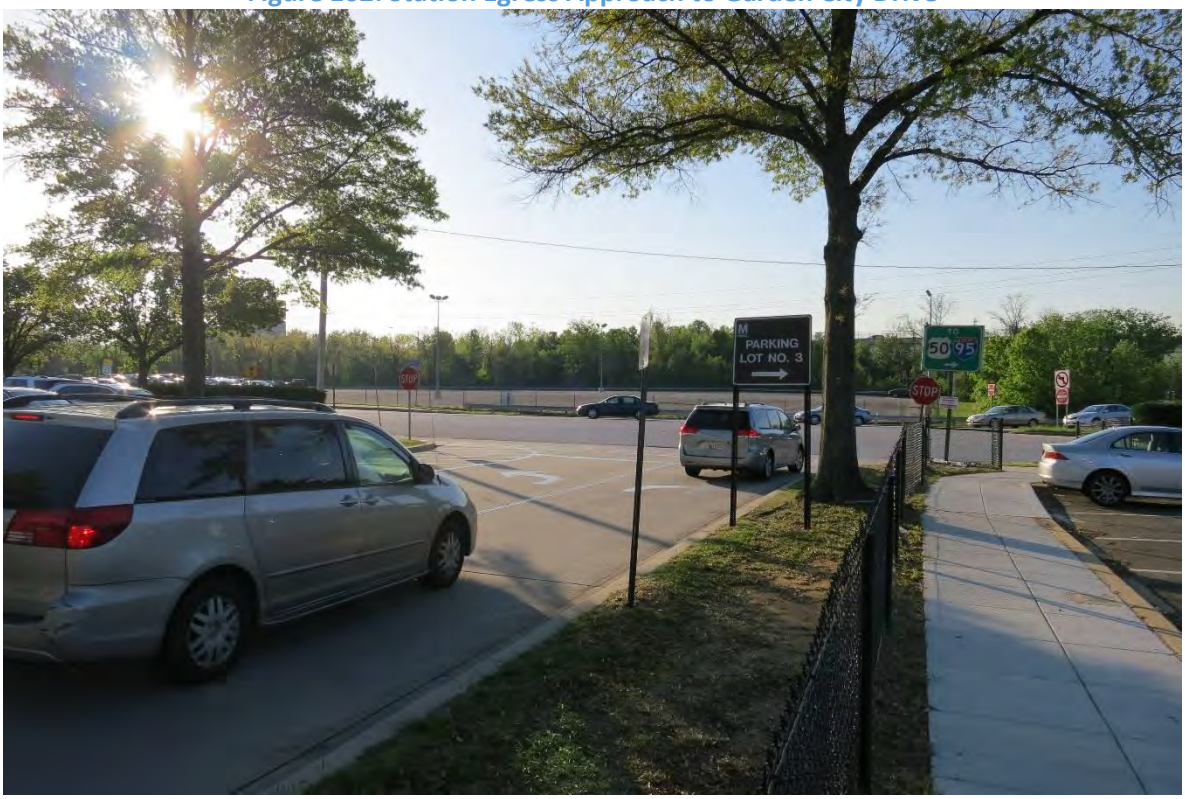


Figure 102: Station Egress Approach to Garden City Drive



The egress driveway itself begins at the intersection of the busway and the Kiss-and-Ride exit and ends at Garden City Drive. For the majority of its length, the egress driveway has two 12' wide travel lanes. The exit for Park-and-Ride Lot 2 enters the driveway east of the busway and has its own dedicated 12' lane on the driveway (resulting in three travel lanes for a stretch) that merges into the driveway prior to Garden City Drive. This third lane is also used for bus layovers.

There are currently two north-south crosswalks that traverse the egress driveway. The first is located at the west end of the driveway between the busway/Kiss-and-Ride exits and the Park-and-Ride Lot 3 exit. It bisects and area of motorcycle parking on the north side of the egress driveway. The second is located at the Lot 3 exit on the east side of the resulting intersection. The first crosswalk has curb ramps with

detectable warning panels and a pedestrian warning sign. The second crosswalk lacks a curb ramp on its south end entirely and is precariously located on the right side of a right-turn only exit. It appears that the first crosswalk was installed to replace the second crosswalk. **Figures 103 and 104** picture the egress driveway.

Figure 103: Egress Driveway Crosswalk at Motorcycle Parking Area

Figure 104: Egress Driveway Looking East

Station Egress Driveway Issues and Recommendations:	
Bus layover area near the driveway exit.	**Potential Layover Area at Exit** 
Additional capacity for right-turns out of the driveway at Garden City Drive, possibly through re-striping the right-turn only lane as a shared right-turn/left-turn lane.	**Egress Driveway at Garden City Drive** 

Elimination of the old crosswalk that traverses the egress driveway at the Park-and-Ride Lot 2 exit.	**Hazardous Crosswalk** 
Yield pavement markings prior to the crosswalk that traverses the driveway at the motorcycle parking area.	**Crosswalk at Motorcycle Parking Area** 

Metro Surface Park-and-Ride Lot 3

The driveway to this lot forms an unsignalized T-intersection with Garden City Drive with two travel lanes on Garden City Drive southbound and no traffic approaching in the northbound direction on Garden City Drive. There are three travel lanes on the driveway, the center lane of which is reversible for differing peak periods. There are no lane pavement markings on the driveway at its terminus at Garden City Drive, though there is enough width for an exclusive left-turn lane and an exclusive right-turn lane during the evening peak period when the center lane is used for egress.

There is a north-south crosswalk that traverses the driveway and an east-west crosswalk that traverses Garden City Drive on the north side of the intersection. The north-south crosswalk has a curb ramps that lacks detectable warning panels at its north end, however, there is no curb ramp or sidewalk at its south end. There is a stop sign prior to the crosswalk but no stop line. The east-west crosswalk is significantly faded and has curb ramps on each end that lack detectable warning panels. There are two pedestrian warning signs and a "State Law Stop for Pedestrians in Crosswalk" sign prior to the crosswalk on Garden City Drive though high speeds on the roadway and proximity to two major limited access driveways make for a potentially dangerous crossing here. There is a sidewalk on the east side of Garden City Drive south of the crosswalk but no sidewalk north of it. There is a sidewalk on the west side of Garden City Drive north of the crosswalk but no sidewalk south of the intersection. There is no sidewalk on the driveway.

In the southbound direction on Garden City Drive, there are two pedestrian warning signs, a "State Law Stop for Pedestrians in Crosswalk Sign", a "No Stopping or Standing" sign, a Metro Park-and-Ride Lot 3 sign and directional signs for US-50 and I-95. The driveway has a stop sign and directional signs to additional parking, US-50 and I-95. **Figures 105 and 106** illustrate this intersection.

Figure 105: Station Lot 3/Garden City Drive Intersection Looking South

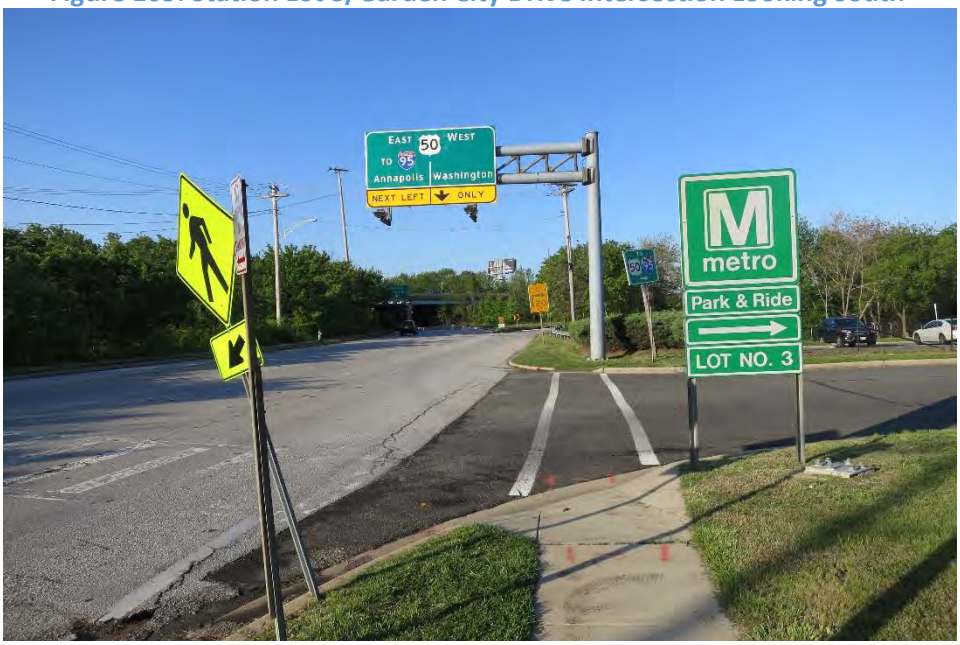
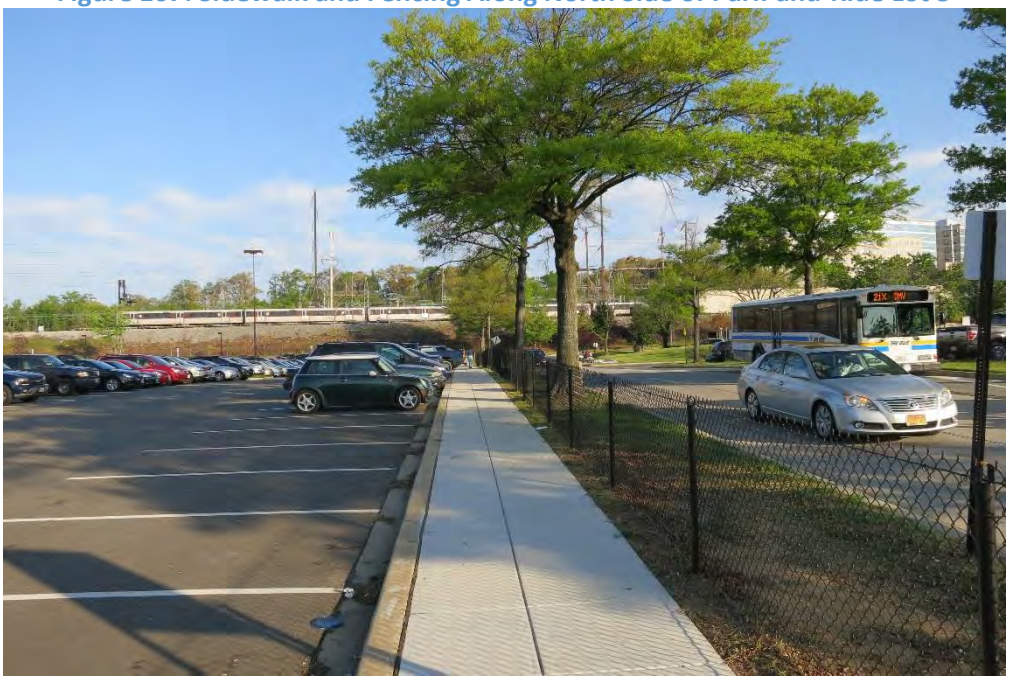
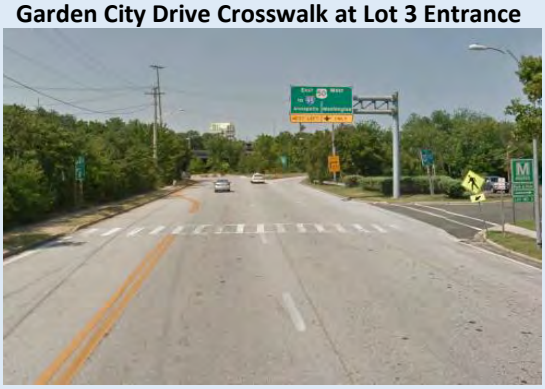
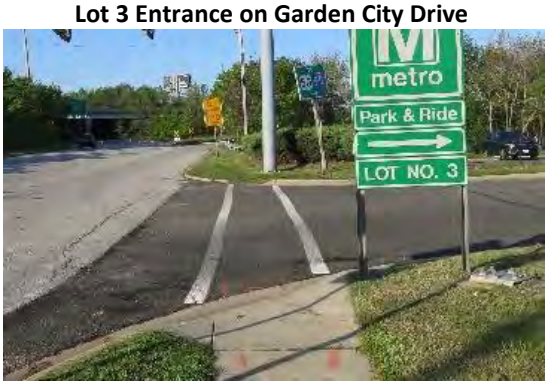


Figure 106: Station Lot 3/Garden City Drive Intersection East-West Crosswalk

The parking lot itself has bidirectional travel lanes and parallel parking spaces along its west, south and east sides. There are no traffic controls within the lot. Sidewalks exist along the north and west sides of the lot. The sidewalk along the north side is separated from the main station egress driveway with a fence. **Figure 107** pictures the north side of Lot 3.

Figure 107: Sidewalk and Fencing Along North Side of Park-and-Ride Lot 3



Park-and-Ride Lot 3 Issues and Recommendations:	
Additional safety measures at the east-west crosswalk traversing Garden City Drive, including a bumpout on the east side of Garden City Drive to narrow the crossing distance.	**Garden City Drive Crosswalk at Lot 3 Entrance** 
Detectable warning panels on the curb ramps at the lot entrance on Garden City Drive.	**Lot 3 Entrance on Garden City Drive** 

Removal of crosswalk traversing lot entrance and striping of a stop line in its place.	**Lot Entrance on Garden City Drive** 
Consider striping stop lines and stop lettered pavement markings at aisle ends to better convey right-of-way, as is currently present in the Park-and-Ride Lot 2.	**Park-and-Ride Lot 3** 

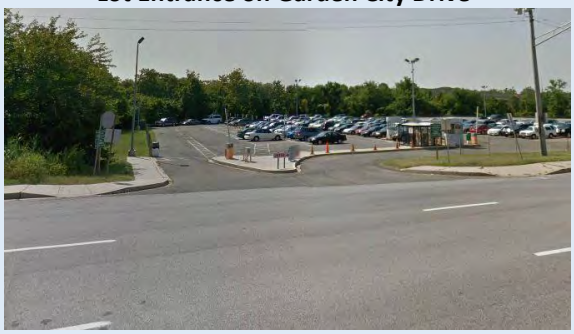
East Park-and-Ride Lot (Amtrak)

The entrance to this lot forms an unsignalized T intersection with Garden City Drive with three thru travel lanes on Garden City Drive northbound and two thru travel lanes on Garden City Drive southbound. The driveway has a single access lane and a single egress lane. There is a north-south crosswalk that traverses the egress lane of the driveway with a single curb ramp that lacks detectable warning panels at its north end. There are sidewalks on both sides of Garden City Drive through this intersection. On the east side of Garden City Drive, there are two curb ramps oriented to the west, however, there are no corresponding crosswalks. In order for these curb ramps to be used by pedestrians traveling north-south on Garden City Drive, they would have to enter the northbound right travel lane, creating a potentially dangerous situation for someone with a disability.

There are Amtrak Parking signs and "$4.00 Public Parking" signs on Garden City Drive in each direction. There is a stop sign and a "No Left Turn 4-6pm Monday-Friday" sign facing the driveway approach. There is no stop line at this approach. **Figure 108** pictures this approach.

Figure 108: East Park-and-Ride (Amtrak)/Garden City Drive Intersection

The internal parking lot circulation is one-way along its west side and then has bidirectional travel lanes around the rest of its perimeter and down each aisle. There are no traffic controls or sidewalks within the lot itself. Handicapped parking spaces exist in the first aisle of parking closest to the entrance and have a crosswalk to the lot entrance.

East Park-and-Ride Lot Issues and Recommendations:	
Reconstruction of the curb ramps at the lot entrance so they are oriented north-south and install detectable warning panels, a crosswalk and stop line prior to it.	**Lot Entrance on Garden City Drive** 
Consider striping stop lines and stop lettered pavement markings at aisle ends to better convey right-of-way, as is currently present in the Park-and-Ride Lot 2.	**East Park-and-Ride Lot** 

Busway

The busway on the east side of the New Carrollton Metrorail Station begins at the primary station access driveway between the Park-and-Ride Lot 2 entrance and the Kiss-and-Ride entrance. This entrance has two large "Do Not Enter Except Authorized Vehicles" signs and a "Buses Only" lettered pavement marking. The busway serves the sawtooth bus bays A through F and is one-way from north to south. The busway reconnects with the Kiss-and-Ride exit and forms the primary station egress driveway that returns to Garden City Drive. The busway is approximately 30' wide at its narrowest portion adjacent to the bus bays, which represents the minimum desired width of a busway with sawtooth bus bays according to WMATA's *Station Site and Access Planning Manual*. Fencing exists along the east side of the busway adjacent to the Kiss-and-Ride lot to minimize jaywalking.

There are two east-west crosswalks that traverse the busway, both of which have corresponding curb ramps with detectable warning panels, pedestrian warning signs and stop lines with stop lettered pavement markings prior to them. The south crosswalk also has a stop sign prior to it. Pedestrians use these crosswalks heavily and generally avoid jaywalking across the bus bays due to the fencing between the various adjacent parking lots.

The bus bay platform connects to the sidewalks serving Park-and-Ride Lots 2 and 3 to the south and the two parking garages to the north. A tunnel connects the platform into the Metrorail station and also to

the Amtrak/MARC platform and the west side of the station. **Figures 109 through 111** picture the busway.

Figure 109: Busway Entrance

Figure 110: Busway Exit

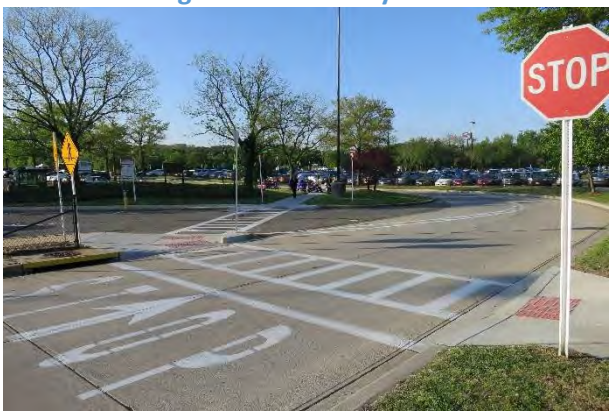


Figure 111: Busway Looking South

Busway Issues and Recommendations:	
Replacement of the low chain fence on the north side of the busway entrance with a higher chain link fence and an extension of the existing chain link fence separating the busway from the Kiss-and-Ride entrance further east to discourage jaywalking across the busway.	**Existing Fencing at Busway Entrance** 
Stop sign at north busway crosswalk.	**North Busway Crosswalk** 
Training and enforcement to restrict bus drivers from using the access driveway and busway for layovers	

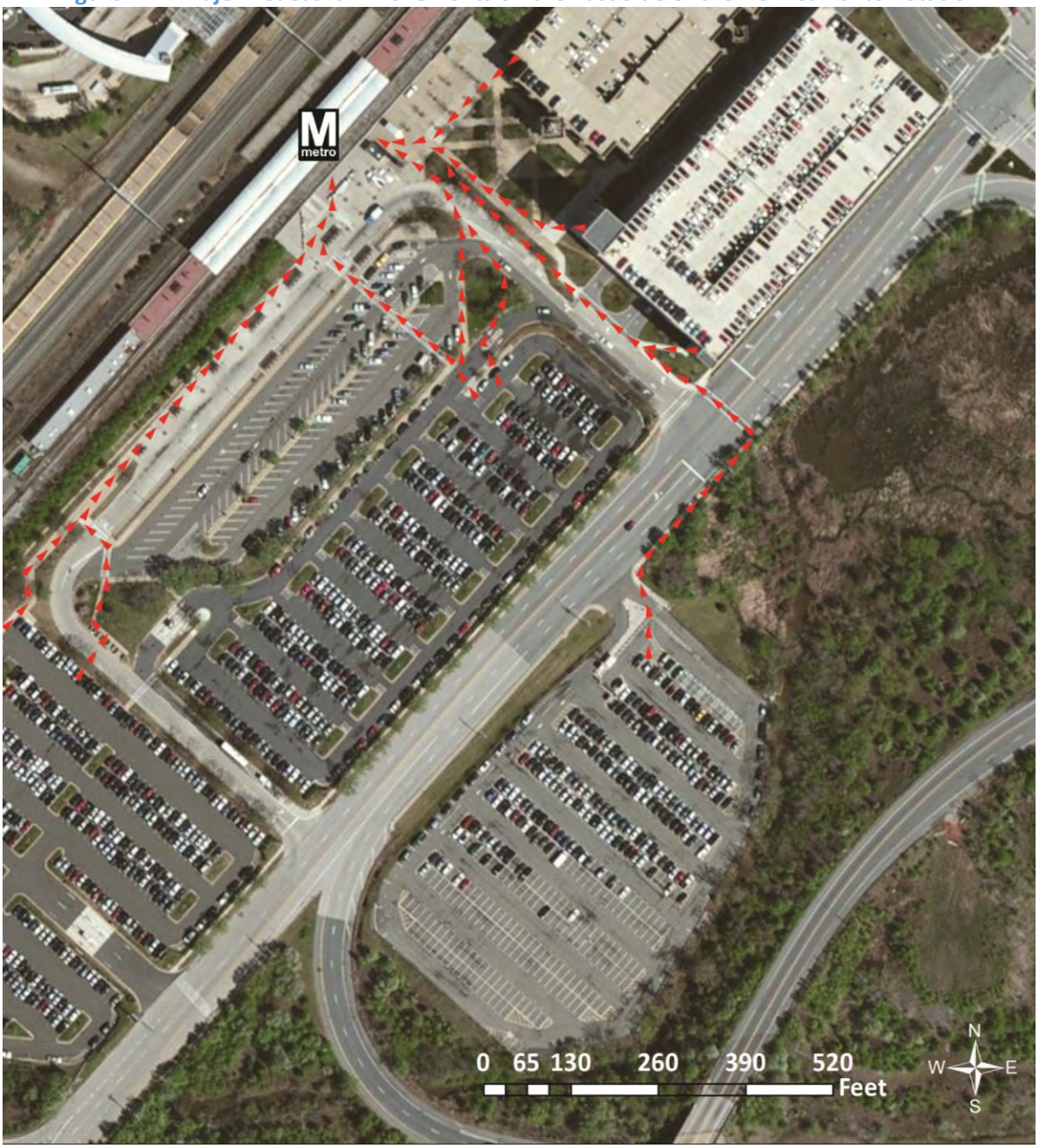
Major Pedestrian Movements

The majority of pedestrian movements on the east side of the station are well contained within the proper sidewalks and crosswalks. Major movements were noted between the Metrorail/MARC/Amtrak entrance and each parking area as well as the bus bays. The station entrance is expansive and has little pedestrian congestion. Each parking area has clearly-defined sidewalks and crosswalks leading the station, with fencing to discourage jaywalking across vehicle paths. A few instances of jaywalking along desire lines were noted, including:

- Across the Kiss-and-Ride/Busway entrance between Park-and-Ride Lot 2 and the station entrance
- Across the Park-and-Ride Lot 2 exit between this lot and the Kiss-and-Ride Lot

Additionally, many pedestrians walk across the grassy area on the north side of the busway entrance as the sidewalk here jobs to the north to bypass a tree. **Figure 112** illustrates the major pedestrian movements on the east side of the station.

Figure 112: Major Pedestrian Movements on the East Side of the New Carrollton Station



Recommendations

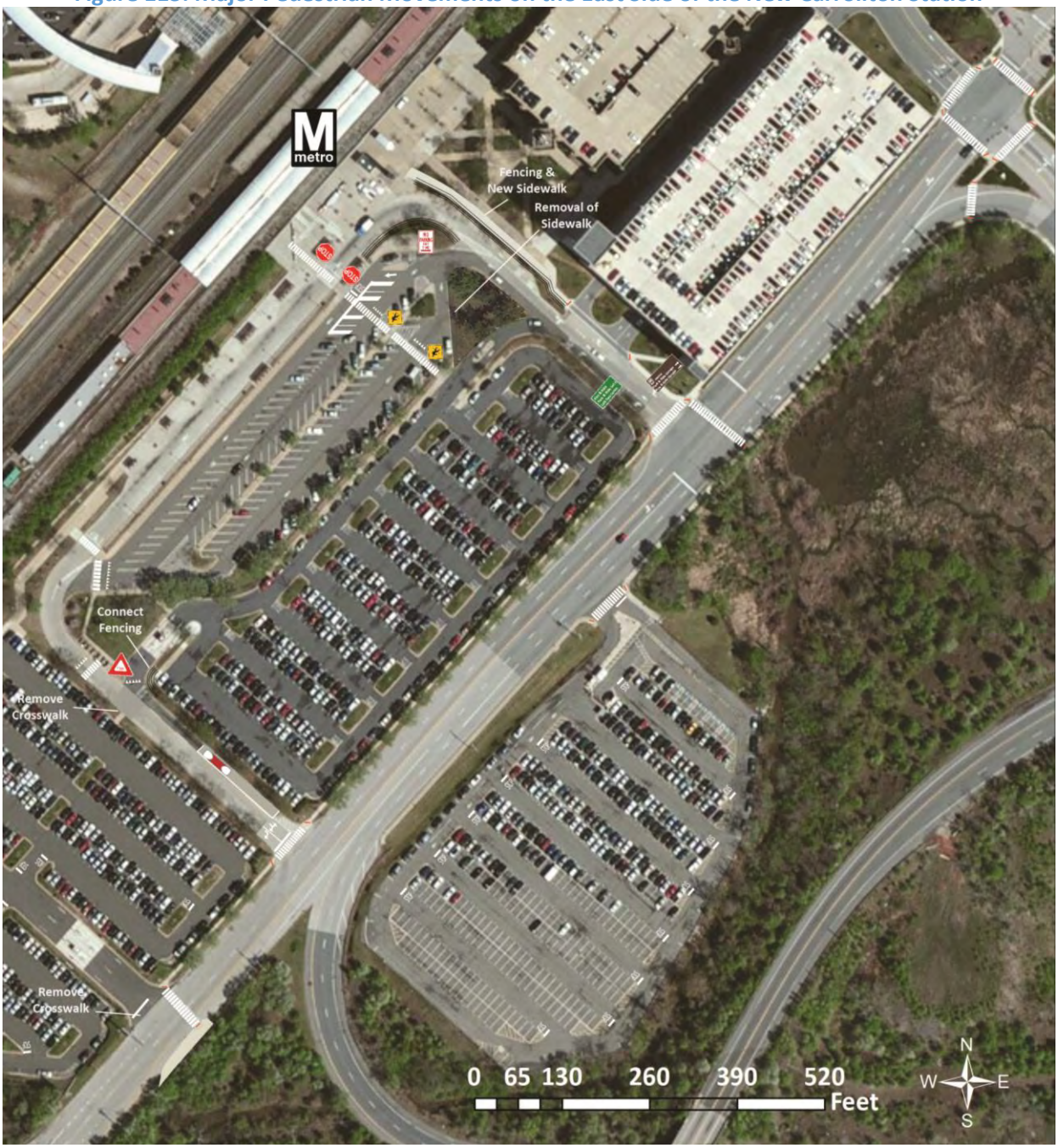
In order to improve safety and circulation on the east side of the New Carrollton Metrorail Station, the following improvements are recommended:

Table 5: Summary of Recommendations at the New Carrollton Station (East)	
Infrastructure	**On or Off Station**
Construct a direct sidewalk from the access driveway north sidewalk to the Metrorail station entrance and remove the fencing from the grass area there.	On
Eliminate the security booth on the egress driveway to allow for a bus layover to be located here (2011 Study).	On
Remove the sidewalk on the north side of the Kiss-and-Ride Lot, as this sidewalk encourages pedestrians to jaywalk across the Kiss-and-Ride Lot and busway entrances.	On
Replace the low chain fence on the north side of the busway entrance with a higher chain link fence and extend it to the Park-and-Ride garage entrance.	On
Extend the existing chain link fence separating the busway from the Kiss-and-Ride entrance further east. This will help discourage jaywalking across the busway.	On
Connect fencing on west corner of Lot 3 to prevent patrons from crossing the Lot 3 exit at that location.	On
Construct a bump out on the east side of Garden City Drive at the Lot 3 Entrance east-west crosswalk to narrow the crossing distance at this location.	Off
Reconstruct the curb ramps at the east Park-and-Ride (Amtrak) Lot entrance so they are oriented north-south and install detectable warning panels, a crosswalk and stop line prior to it.	Off
Install detectable warning panels at all curb ramps around the station, including: Nine at the Garden City Drive/Corporate Drive/Prince George's County Parking Garage Driveway Intersection • Three at the Station Access Driveway/Garden City Drive Intersection • Two at the Metro Parking Garage entrance • Two at the Station Egress Driveway/Garden City Drive Intersection • Two at the Metro Park-and-Ride Lot 3 Driveway/Garden City Drive Intersection	On and Off
Signage	**On or Off Station**
Install Metro Garage Park-and-Ride and Kiss-and-Ride signage on the access driveway directing drivers into the right lane.	On
Signage and enforcement to keep taxicab queue from extending into driving lanes at the Kiss-and-Ride.	On
Remove the first several Kiss-and-Ride spaces on the west side and installation of "No Stopping to Load/Unload" signage (2011 Study). This would allow vehicles to enter the west Kiss-and-Ride driveway and continue south to exit the Kiss-and-Ride.	On
Change the sign on the Station Access Driveway from "Kiss & Ride Park & Ride Lot 2 KEEP LEFT" to "Kiss & Ride Park & Ride Lot 2 TWO LEFT LANES" to reduce motorist confusion at this point.	On
Install a yield sign at the Park-and-Ride Lot 2 exit where it meets with the station egress driveway.	On
Install a stop sign prior to the crosswalk traversing the taxi lane in the Kiss-and-Ride.	On
Install a stop sign prior to the north crosswalk traversing the busway.	On

Install pedestrian warning signs prior to the crosswalks that traverse the middle and east travel lanes in the Kiss-and-Ride.	On
Striping	**On or Off Station**
Examine the feasibility of restriping the egress driveway approach to Garden City Drive with an exclusive right-turn lane and a shared right-turn/left-turn lane (2011 Study).	On
Eliminate the old crosswalk that traverses the egress driveway at the Park-and-Ride Lot 2 exit and fence off its west corner to force Lot 2 patrons to use sidewalk and west of the payment booths to access the station.	On
Stripe yield pavement markings at the following locations: • The Kiss-and-Ride center and east travel lanes prior to the crosswalk • The Kiss-and-Ride exit prior to the crosswalk • The Park-and-Ride Lot 2 exit where it meets with the station egress driveway (and install a yield sign) • The egress driveway prior to the crosswalk at the motorcycle parking area	On
Stripe stop lettered pavement markings prior to the stop line in the taxicab queue area on the west side of the Kiss-and-Ride. Consider installing a corresponding stop sign as well.	On
Remove the crosswalk that traverses the Lot 3 driveway and replace it with a stop line.	On
In parking lots with internal circulation problems, consider striping stop lines and stop lettered pavement markings at aisle ends to better convey right-of-way, as is currently present in the Park-and-Ride Lot 2.	On
Re-striping of all crosswalks with ladder or continental striping.	On and Off
Enforcement	**On or Off Station**
Training and enforcement to restrict bus drivers from using the access driveway and busway for layovers.	On
Enforcement of the 15 minute driver-attended pull-through spaces in the west parking aisle in the Kiss-and-Ride lot in order to reduce stopping in travel lanes to load and unload station patrons.	On

Figure 113 illustrates the recommended improvements at the New Carrollton Station east side.

Figure 113: Major Pedestrian Movements on the East Side of the New Carrollton Station



Takoma Metrorail Station
Access, Circulation and Safety Evaluation and Recommendations

Existing Conditions

The Takoma Metrorail station is located on the Red Line at Cedar Street NW within the District of Columbia. The primary access point to the station for both buses, pedestrians and drop-offs is Cedar Street NW. The busway through the station has a second access point on Eastern Ave NW that is rarely used by buses accessing the station. The station has a Kiss-and-Ride parking area that is accessed through Eastern Avenue NW as well, though this lot is rarely used, with the majority of drop-offs taking place on Cedar Street directly in front of the station. The station has both bicycle racks and bicycle lockers. **Figure 114** illustrates the layout of the Takoma station.

Figure 114: Takoma Station Layout

Busway

The station's bi-directional busway utilizes saw-tooth bus bays on both sides with shelters present at each bay. Bays A through F are on the western side of the busway, while bays G through J are on the eastern side. The majority of buses enter the busway from Cedar Street. Buses entering from Cedar Street that utilize the west side of the busway make u-turns in a turnaround off the busway first. The turnaround has a stop sign at its approach to the busway. The busway itself is approximately 45' wide at its narrowest points between opposite bus bays and 42' wide at its approach to Eastern Avenue. It allows for two-way travel for its entire length, though the overall width is less than the recommended 30' per direction for a sawtooth

bus bay according to WMATA's 2008 *Station Site and Access Planning Manual*. No median or barriers are present in the busway.

Busway Issues and Recommendations:	
Reconfiguration to minimize jaywalking across the busway. A widening of the busway coupled with the installation of a median and fencing down its center or a relocation of the G-J bus bays to the west side of the busway would be needed.	**Jaywalking Across Busway** 
Sidewalk between Bus Bay D and the elevator tunnel entrance, along with signage directing people from the bus bays to the elevator.	**Pedestrian Path to Elevator Tunnel** 
Sidewalk between Eastern Avenue and Bus Bay J or a reconfiguration of the sidewalks through the park east of the station.	**Lack of Sidewalk on East Side of Busway South of Bus Bay J** 

Cedar Street Entrance

The Cedar Street busway entrance is a T-intersection with a stop sign on the busway approach and two pedestrian crosswalks. The east-west crosswalk crosses the busway and the north-south crosswalk crosses Cedar Street on the west side of the intersection. Both crosswalks have recently been re-striped

and have “State Law Stop for Pedestrians” break-away signs on their small medians in the middle of the crosswalk, along with apex curb ramps. There are no detectable warning panels on the curb ramps at this intersection. The crosswalk across the busway is rarely used by bus patrons, unless buses drop off passengers at bus bay G. It is regularly used by patrons entering the station via Cedar Street, however. The crosswalk across Cedar Street is regularly used by station patrons and has good overall compliance with vehicles. This crosswalk also has pedestrian warning signs and crosswalk arrow signs in both directions on Cedar Street. There are two “no Right Turn Except Buses” signs in the westbound direction on Cedar Street as well as one “No Left Turn/U-Turn” sign on Cedar Street in the eastbound direction. There is also a “Do Not Enter” sign on the busway itself. Buses had relatively little difficulty entering and exiting the busway at this intersection due to breaks in traffic along Cedar Street from the signalized intersections to the east and west of the station. **Figures 115 through 117** illustrate signage and overall layout at this intersection.

Figure 115: Cedar Street Westbound

Figure 116: Curb Ramp at Northwest Corner

Figure 117: Busway from Cedar Street

Cedar Street Entrance Issues and Recommendations:	
Yield pavement markings on each side of Cedar Street prior to the crosswalk traversing Cedar Street	**Cedar Street Crosswalk at Busway** 
Detectable warning panels on the curb ramps at the Cedar Street/Busway intersection.	**Curb Ramp at Cedar Street** 
Enforcement of "No Stopping/No Standing" signs on Cedar Street in front of Metrorail station entrance.	**Cedar Street Metrorail Entrance** 

Eastern Avenue Entrance

The Eastern Avenue busway entrance is also a T-intersection with a stop sign on the busway approach and a crosswalk crossing the busway. There are apex curb ramps at this crosswalk but no detectable warning panels on them. There is a "No Right Turn Except Buses" sign on Eastern Avenue in the southbound direction along with two "Do Not Enter Except Buses" signs on the busway itself. There is

no signage on Eastern Avenue in the northbound direction indicating the busway, however. **Figure 118** illustrates signage at this intersection.

Figure 118: Eastern Avenue Southbound Signage at Busway

Eastern Avenue Entrance Issues and Recommendations:	
"No Left Turn Except Buses" sign on the Eastern Avenue northbound approach to the busway intersection.	**Eastern Avenue Northbound Approach** 

Detectable warning panels on the curb ramps at the Eastern Avenue/Busway intersection.	**Curb Ramp at Eastern Avenue** 

Kiss-and-Ride Entrance

The station's Kiss-and-Ride lot entrance is on Eastern Avenue to the north and west of the busway. The lot is not clearly marked from the street and has no entrance signage. There is a stop sign on the lot driveway approach to Eastern Avenue along with a crosswalk and apex curb ramps across it. The curb ramps do not have detectable warning panels though are otherwise ADA-compliant. The lot itself has a crosswalk from the handicapped parking spaces to the sidewalk along the western side of the lot. **Figure 119** pictures the entrance to this lot.

Figure 119: Entrance to Kiss-And-Ride Lot from Eastern Avenue Northbound

Kiss-and-Ride Entrance Issues and Recommendations:	
Signage indicating the Kiss-and-Ride lot entrance on Eastern Avenue in both directions.	**Kiss-and-Ride Entrance on Eastern Avenue** 
Detectable warning panels on the curb ramps at the Eastern Avenue/Kiss-and-Ride entrance intersection.	**Curb Ramp at Kiss-and-Ride Entrance** 

Pedestrian Movements

There are two major pedestrian movements accessing the station: towards the main Metrorail station entrance and towards the station elevator tunnel. As expected, pedestrians use the shortest path possible to access both the elevators and main station entrance. This results in a large amount of hazardous jaywalking across the busway, whether it is from a bus dropping off in bus bays G through J, or walking trips from the neighborhoods to the east of the station through the park adjacent to it. **Figure 120** illustrates these movements. People accessing the elevator tunnel from these locations also jaywalk across the busway and then cut across the grass area behind bus bay D, resulting in a visible desire line path to the tunnel. People accessing the station from Cedar Street generally use the sidewalks along the roadway and the crosswalks at the busway intersection. **Figures 121 through 124** illustrate pedestrian movements to the station.

Figure 120: Major Pedestrian Movements at Takoma Station

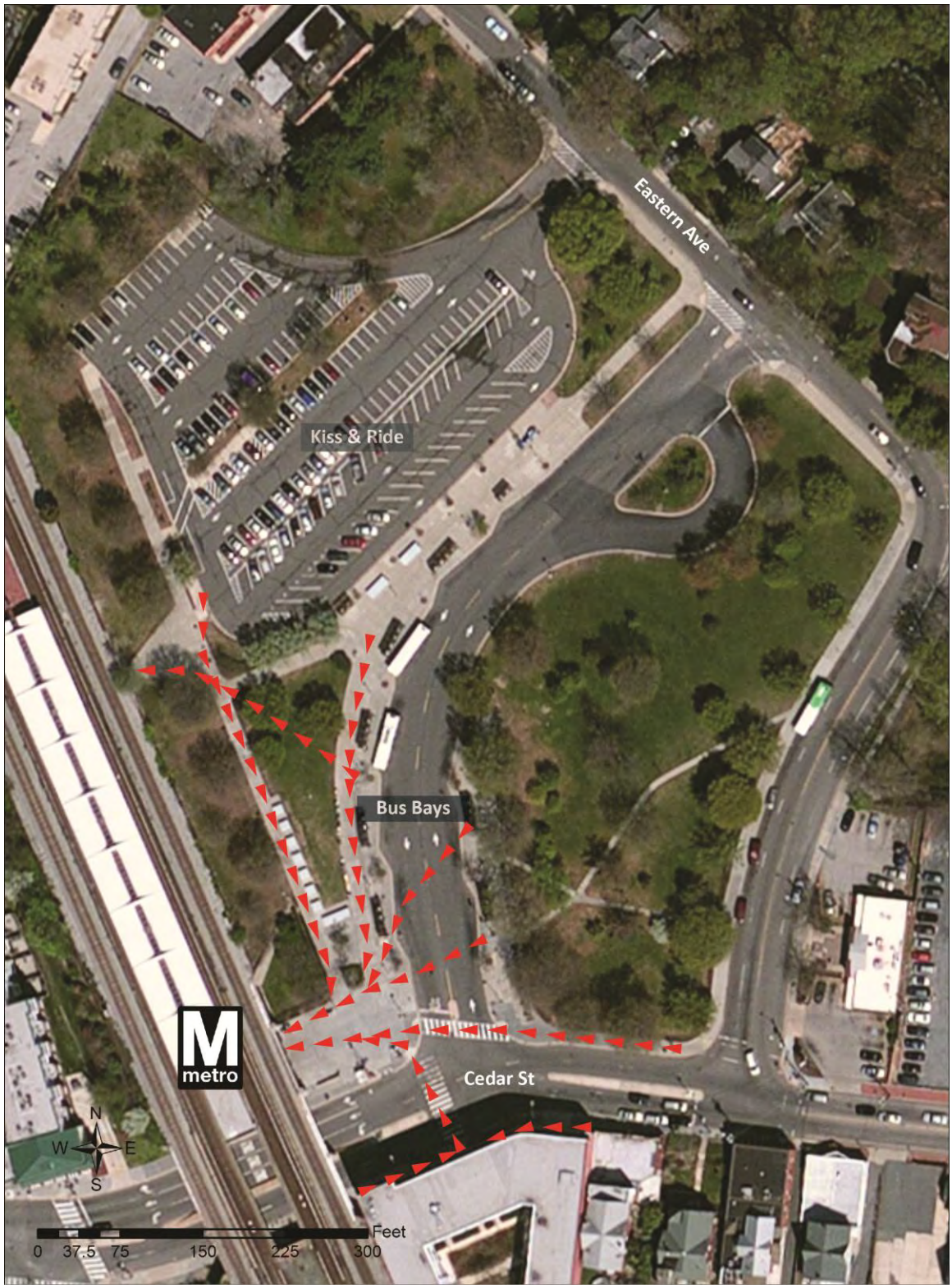


Figure 121: Jaywalking across Busway to Station

Figure 122: Jaywalking across Busway Adjacent to Cedar St Crosswalk

Figure 123: Desire Line from Bus Bays to Elevator Tunnel

Figure 124: Park Walkways to Station

Drop-Offs

Drop-offs at the station typically occur on Cedar Street in the right-turn only lane directly in front of the station, despite the "No Stopping or Standing" signs on Cedar Street and the right-turn only pavement markings. No enforcement of these signs was observed. The Kiss-and-Ride was only utilized by those waiting to pick up patrons for a longer time period.

Discussion with Station Manager

Discussion with the Takoma station manager confirmed the prevalence of jaywalking at the station, though it was noted that "near misses" and crashes between buses and pedestrians were non-existent or at least extremely rare. The need for a few "Pedestrians Use Crosswalk" signs between the G-J bus bays and the A-F busways was mentioned, along with some enforcement. When it came to internal pedestrian circulation at the station, the station manager declined the need for additional signage directing people to buses and the elevator, stating that she thought this was within the job duties of the

station manager to direct people to their final destinations. The majority of questions asked by patrons were about finding landmarks with the District versus finding correct bus bays or neighborhood locations. Regardless, the elevator at this particular station is difficult to find since it far removed from the main station entrance.

Recommendations

The following table summarizes the recommended improvements at the Takoma Metrorail Station:

Table 6: Summary of Recommendations at the Takoma Station

Infrastructure	**On or Off Station**
Reconfigure the busway and bus bay layout to guide people to cross safely at the crosswalk at the Cedar Street intersection. There are two potential options for this improvement: • Option 1: Widen the busway from its current 45' width to a 65' width in order to construct a median and fencing down the center. Widening would allow for enough room for buses to pass one another according to WMATA's Station Site and Access Planning Manual, adopted in 2008 • Option 2: Install fencing along the east side of the busway and relocate bus bays G and H to the western side of the busway and eliminate bus bay J completely. This would allow for a 15' northbound thru bus lane 30' wide (at their narrowest points) sawtooth bus bays. Currently there is approximately 150' between Bus Bay A and Eastern Avenue, which would allow for two additional 70' long bus bays to be constructed. Buses would use the turnaround for all trips into the station from Cedar Street, with the exception of the (new) northernmost bus bay. To access the northernmost bus bay, buses would have to enter from Eastern Avenue as the turnaround is too far north to allow a bus to use it. Buses that previously used Bus Bay J (Ride-On Routes 16, 18 and 25) could use Bus Bay A instead, which is currently unused	On
Re-route sidewalks through the park so that they connect to the crosswalk on Cedar Street.	Off
Installation of detectable warning panels at all curb ramps around the station, including the Eastern Avenue/Busway crosswalk, the Eastern Avenue/Kiss-and-Ride crosswalk, and both Cedar Street crosswalks.	Off
Construct sidewalk from Bus Bay D to elevator.	On
Signage	**On or Off Station**
Installation of a "No Left Turn Except Buses" sign on the Eastern Avenue northbound approach to the busway intersection.	Off
Installation of signage indicating the Kiss-and-Ride lot entrance on Eastern Avenue in both directions.	On
Installation of additional signage at main station entrance indicating the location of the elevator.	On
Striping	**On or Off Station**

Striping of yield pavement markings on Cedar Street in both directions approaching the crosswalk at the busway.	Off
Re-striping of all crosswalks with ladder or continental striping.	Busway-On Cedar St/Eastern Ave-Off
Enforcement	**On or Off Station**
Increased enforcement of the “no stopping no standing” signs on Cedar Street at the station entrance.	Off

Figure 125 illustrates these recommendations.

Figure 125: Recommended improvements at Takoma Station