

## 5 Transit

### 5.1 WMATA Rail Impacts

No impacts to Washington Metropolitan Transit Authority's (WMATA) rail system are anticipated as a result of NEBT construction. DC Water received an Encroachment Waiver from WMATA on May 7, 2014 for the crossing of the tunnel below the Rhode Island Avenue-Brentwood Metro Station.

### 5.2 WMATA Transit Routes and Bus Stop Impacts

Proposed construction during Phase A and B will temporarily impact various WMATA transit routes and bus stops. However, it is anticipated that work during Phase A will have less transit impacts than Phase B due to the nature of the work (linear, trench-type), shorter duration, and flexibility in phasing the work.

This section assesses the temporary impacts to WMATA's transit operations and provides mitigation measures associated with construction during both phases of the NEBT. Nine bus routes are anticipated to be affected under both Phases A and B. The impacted routes include:

- D3 – Ivy City/DuPont Circle
- D4 – Ivy City/Franklin Square
- D8 – Hospital Center
- G8 – Rhode Island Avenue
- P6 – Anacostia-Eckington
- X3 – Benning Road
- 90 – U Street to Garfield
- 92 – U Street to Garfield
- G2 – P Street /LeDroit Park

Table 5-1 summarizes the bus stops anticipated to be temporarily impacted as a result of construction along with the associated route, location, phase of work and proposed mitigation action. Details of the temporary impacts and proposed mitigation actions are discussed in detail in Sections 5.3 through 5.6.

**Table 5-1: Directly Affected Bus Stops**

Affected Bus Stop (WMATA ID #)	Bus Route	General Location	Construction Phase Causing Impact	Proposed Action
(ID #1001476)	D3 – Ivy City/DuPont Circle D4 – Ivy City/Franklin Square D8 – Hospital Center	Northbound Mt Olivet Road NE between Montello Avenue NE and West Virginia Avenue NE	Phase B	Temporary Relocation
(ID #1001501)	D8 – Hospital Center	Southbound Mt Olivet Road NE west of Capitol Avenue NE	Phase B	Temporary Relocation
(ID #1001790)	G8 - Rhode Island Avenue D8 – Hospital Center P6 - Anacostia-Eckington	Eastbound Rhode Island Avenue NE, west of 8th Place NE	Phase A and Phase B	Temporary Closure
(ID #1001797)	G8 - Rhode Island Avenue D8 – Hospital Center P6 - Anacostia-Eckington	Westbound Rhode Island Avenue NE, west of 8th Place NE	Phase A and Phase B	Temporary Closure

Affected Bus Stop (WMATA ID #)	Bus Route	General Location	Construction Phase Causing Impact	Proposed Action
(ID #1001770)	G8 - Rhode Island Avenue D8 – Hospital Center	Northbound on 4th Street NE approximately 120 feet north of Adams Street NE	Phase A and Phase B	Temporary Closure
(ID #1001833)	D8 – Hospital Center	Northbound on 4th Street NE approximately 100 feet north of Channing Street NE	Phase B	Temporary Closure
(ID #1001752)	D8 – Hospital Center	Southbound on 4th Street NE approximately 20 feet north of Rhode Island Avenue NE	Phase A and Phase B	Temporary Closure
(ID #1001758)	D8 – Hospital Center	Westbound Rhode Island Avenue NE, at 5th Street NE	Phase B	Temporary Closure
(ID #1001778)	D8 – Hospital Center	Westbound Rhode Island Avenue NE, east of 5th Street NE	Phase B	Temporary Closure
(ID #1002964)	81, 82, 83, 86, B9, D8 – Hospital Center, H8, H9	Eastbound Rhode Island Avenue NE, east of 10th Street NE	Phase B	Relocated
(ID # 1001823)	81, 82, 83, 86, B8, B9, D8 – Hospital Center, T14, T15	Eastbound Rhode Island Avenue NE, east of 12th Street NE	Phase B	Service Change
(ID # 1003689)	X3 – Benning Road 90 – U Street to Garfield 92 – U Street to Garfield	Southbound Florida Avenue NW near the Rhode Island Avenue NW intersection	Phase A and Phase B	Temporary Closure
(ID # 1001587)	X3 – Benning Road 90 – U Street to Garfield 92 – U Street to Garfield	Northbound Florida Avenue NW, south of 3rd Street NW	Phase A and Phase B	Temporary Closure
(ID #1001641)	G8 - Rhode Island Avenue	Westbound on Rhode Island Avenue NW west of the First Street NW intersection	Phase A and Phase B	Temporary Closure
(ID #1001601)	G2 – P Street /LeDroit Park <sup>1</sup>	Northbound 3rd Street NW, south of Rhode Island Avenue NW	Phase A and Phase B	Permanently Closed
(ID #1001448)	G2 – P Street /LeDroit Park <sup>1</sup>	P Street eastbound NW between 4th Street NW and 3rd Street NW	Phase A and Phase B	Permanently Closed
(ID #1003073)	G2 – P Street /LeDroit Park <sup>1</sup>	P Street westbound NW between 4th Street NW and 3rd Street NW	Phase A and Phase B	Permanently Closed
(No ID #)	G2 – P Street /LeDroit Park <sup>1</sup>	3rd Street NW northbound, south of Q Street NW	Phase A and Phase B	Permanently Closed

Affected Bus Stop (WMATA ID #)	Bus Route	General Location	Construction Phase Causing Impact	Proposed Action
(ID # 1001510, # 1001519)	G2 – P Street /LeDroit Park <sup>1</sup>	3rd Street NW southbound, north of Q Street NW	Phase A and Phase B	Permanently Closed
(ID # 1001578)	G2 – P Street /LeDroit Park <sup>1</sup>	3rd Street NW northbound, between R Street NW and Florida Avenue NW	Phase A and Phase B	Permanently Closed
(ID # 1001561)	G2 – P Street /LeDroit Park <sup>1</sup>	3rd Street NW southbound, north of R Street NW	Phase A and Phase B	Permanently Closed
(ID # 1001612)	G2 – P Street /LeDroit Park <sup>1</sup>	3rd Street NW southbound, north of Rhode Island Avenue NW	Phase A and Phase B	Permanently Closed
(ID # 1001651)	G2 – P Street /LeDroit Park <sup>1</sup>	Cooper Circle NW northbound, north of T Street NW	Phase A and Phase B	Permanently Closed
(ID # 1001647)	G2 – P Street /LeDroit Park <sup>1</sup>	Cooper Circle NW southbound, north of T Street NW	Phase A and Phase B	Permanently Closed
(No ID #)	G2 – P Street /LeDroit Park <sup>1</sup>	3rd Street NW northbound, south of U Street NW	Phase A and Phase B	Permanently Closed
(ID # 1001682, # 1003074)	G2 – P Street /LeDroit Park <sup>1</sup>	3rd Street NW southbound, north of U Street NW	Phase A and Phase B	Permanently Closed
(ID # 1003422)	G2 – P Street /LeDroit Park <sup>1</sup>	Elm Street NW westbound, west of 3rd Street NW	Phase A and Phase B	Permanently Closed
(ID # 1001698, # 1001700)	G2 – P Street /LeDroit Park <sup>1</sup>	Elm Street NW westbound, east of 4th Street NW	Phase A and Phase B	Permanently Closed
(No ID #)	G2 – P Street /LeDroit Park <sup>1</sup>	Elm Street NW eastbound, east of 4th Street NW	Phase A and Phase B	Permanently Closed
(New Stop)	G2 – P Street /LeDroit Park <sup>1</sup>	4th Street NW northbound, south of T Street NW	Phase A and Phase B	Proposed New
(New Stop)	G2 – P Street /LeDroit Park <sup>1</sup>	4th Street NW northbound, south of Elm Street NW	Phase A and Phase B	Proposed New
(New Stop)	G2 – P Street /LeDroit Park <sup>1</sup>	4th Street NW southbound, north of U Street NW	Phase A and Phase B	Proposed New
(New Stop)	G2 – P Street /LeDroit Park <sup>1</sup>	4th Street NW southbound, north of Florida Avenue NW	Phase A and Phase B	Proposed New
(New Stop)	G2 – P Street /LeDroit Park <sup>1</sup>	New Jersey Avenue NW southbound, north of R Street NW	Phase A and Phase B	Proposed New
(New Stop)	G2 – P Street /LeDroit Park <sup>1</sup>	New Jersey Avenue NW southbound, north of Q Street NW	Phase A and Phase B	Proposed New

<sup>1</sup>WMATA plans to permanently relocate the G2 Route in 2016

Generally, travel times increase for buses utilizing the temporary detour routes during construction. An approximate range of two (2) to twelve (12) minutes can be expected to be added to the current time for buses traveling through the construction sites. Increases to the travel times for transit and non-transit vehicles may vary based on the level of projected development and growth in the study areas by the time construction takes place.

## 5.2.1 Study Area 1 Transit Impacts

### Mt Olivet Road Site

Travel times are anticipated to increase for transit vehicles and non-transit vehicles along Mount Olivet Road NE during Phases A and B of construction. Based on the analysis, the expected time increase along Mount Olivet Road NE is approximately two (2) to five (5) minutes through the construction area for all vehicles.

#### Phase A

Minor impacts are anticipated to transit routes D3 – Ivy City/DuPont Circle, D4 – Ivy City/Franklin Square and D8 – Hospital Center during Phase A of construction. Lane shifts and lane reductions through the construction zone will be necessary. Eleven foot travel lanes will be maintained to accommodate transit operations. No bus stops are anticipated to be affected during Phase A. Figure 5-1 and Figure 5-2 shows the existing bus stop locations and bus routes within Study Area 1.

#### Phase B

Minor impacts are anticipated to transit routes D3 – Ivy City/DuPont Circle, D4 – Ivy City/Franklin Square and D8 – Hospital Center during Phase B of construction. Bus stop ID #1001476, located along northbound Mount Olivet Road NE between Montello Avenue NE and West Virginia Avenue NE is anticipated to be impacted as a result of the proposed maintenance of traffic plan. This stop is located between two construction sites and is proposed to be relocated approximately 275 feet to the east of its current location throughout Phase B of construction. Bus stop ID #1001501 is an additional stop identified to be located as a result of Phase B of construction. This stop is located along southbound Mt Olivet Road NE just north of Capitol Avenue NE and serves Route D8 – Hospital Drive and is proposed to be relocated approximately 280 feet north of Capitol Street NE at Corcoran Street NE. The reduction to one lane through the construction area will increase bus travel delays during peak traffic hours. Figures 5-1 and 5-2 illustrate the existing bus stop locations and bus routes within Study Area 1. The proposed relocation of bus stop ID #1001476 and bus stop ID #1001501 during Phase B of construction is shown on Figure 5-3 and Figure 5-4. The Design-Builder is required to install a landing pad at the temporary bus stop locations to meet Americans with Disability Act (ADA) requirements. The Design-Builder is also required to submit notification two (2) months in advance of proposed stop closures.



Figure 5-1: Study Area 1 – Existing Routes D3, D4 and Bus Stop Locations (Mt Olivet Road Site)



Figure 5-2: Study Area 1 – Existing Route D8 and Bus Stop Locations (Mt Olivet Road Site)

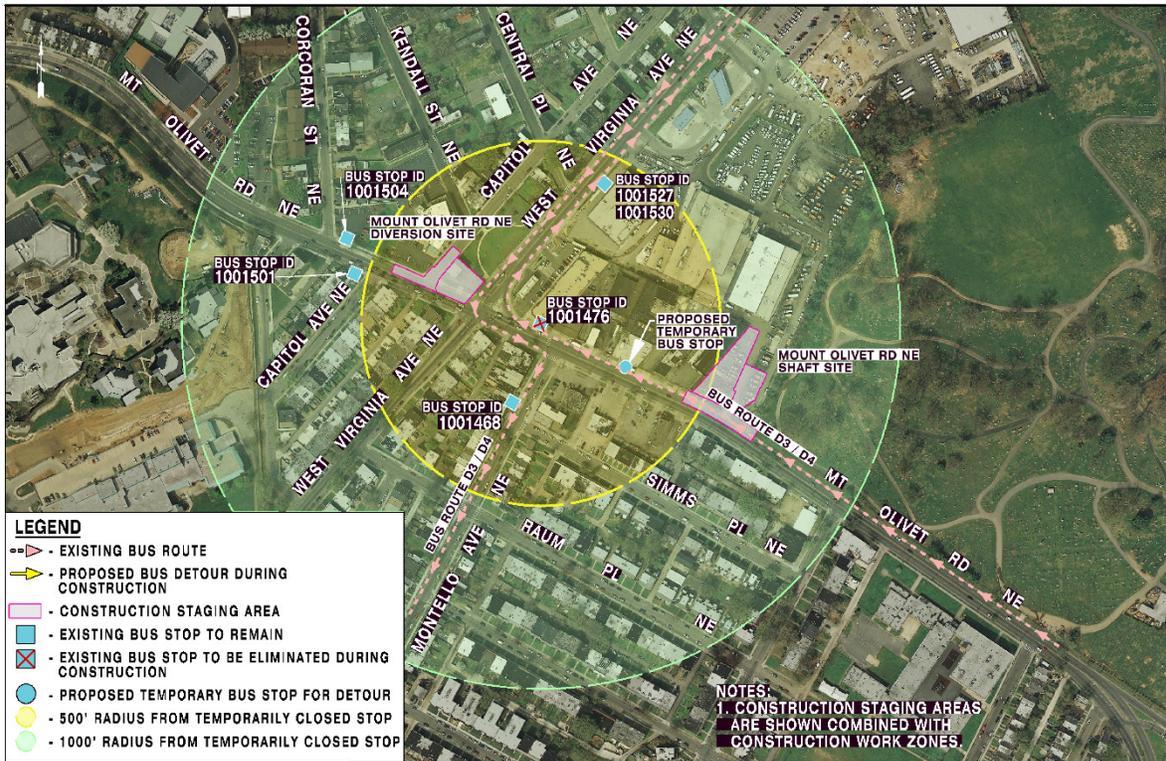


Figure 5-3: Study Area 1 – Existing Routes D3, D4 and Proximity Map to Temporarily Relocated Stop (Mt Olivet Road Site)

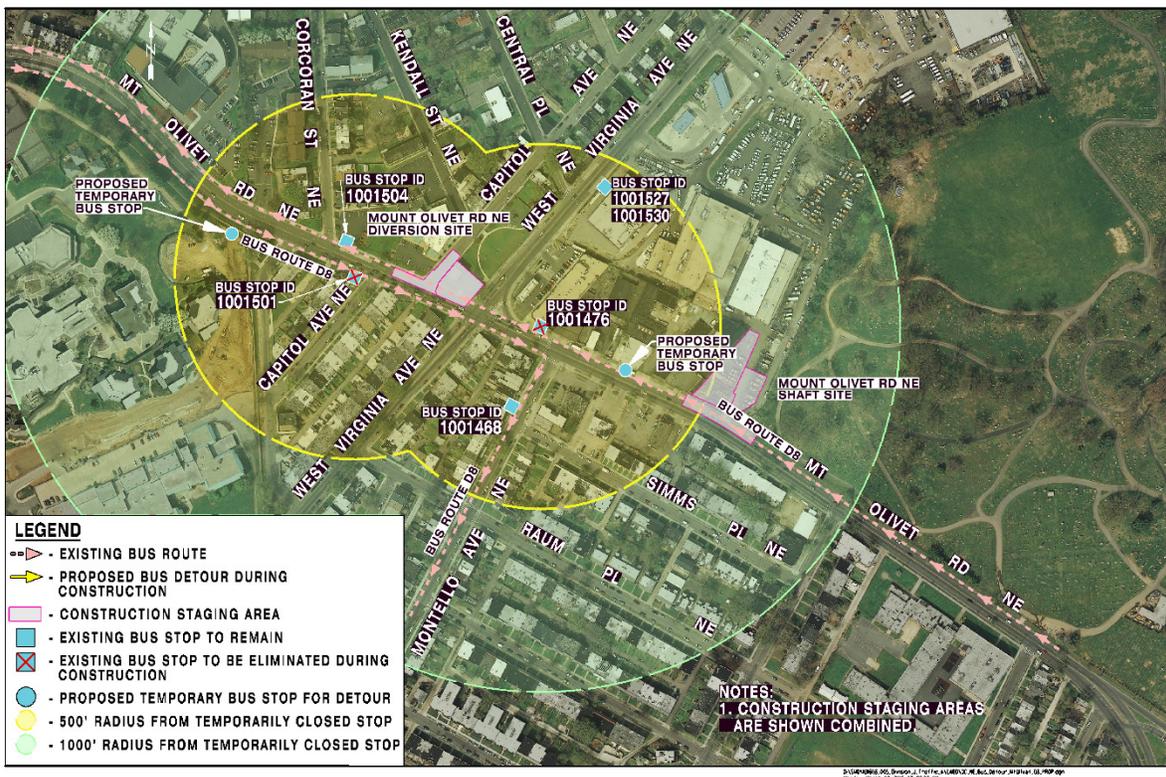


Figure 5-4: Study Area 1 – Existing Route D8 and Proximity Map to Temporarily Relocated Stop (Mt Olivet Road Site)

## 5.2.2 Study Area 2 Transit Impacts

### Rhode Island Avenue Site

#### Phases A and B

Construction at the Rhode Island Avenue site will impact two existing transit routes, D8-Hospital Center and P6-Anacostia-Eckington. The existing D8 and P6 routes are shown in Figures 5-5 and 5-6, respectively, along with the existing bus stops along these routes. Transit route D8-Hospital Center serves the Washington Hospital Center to the north and Union Station to the south. Route P6 serves the Rhode Island Metro Station to the north and the Anacostia Metro Station to the south. Both routes operate along Rhode Island Avenue NE and stop at the Rhode Island Metro Station. Based on the traffic analysis the expected travel time increase through the Rhode Island Avenue construction site will be approximately five (5) to ten (10) minutes along Rhode Island Avenue NE during the AM and PM peak hours.

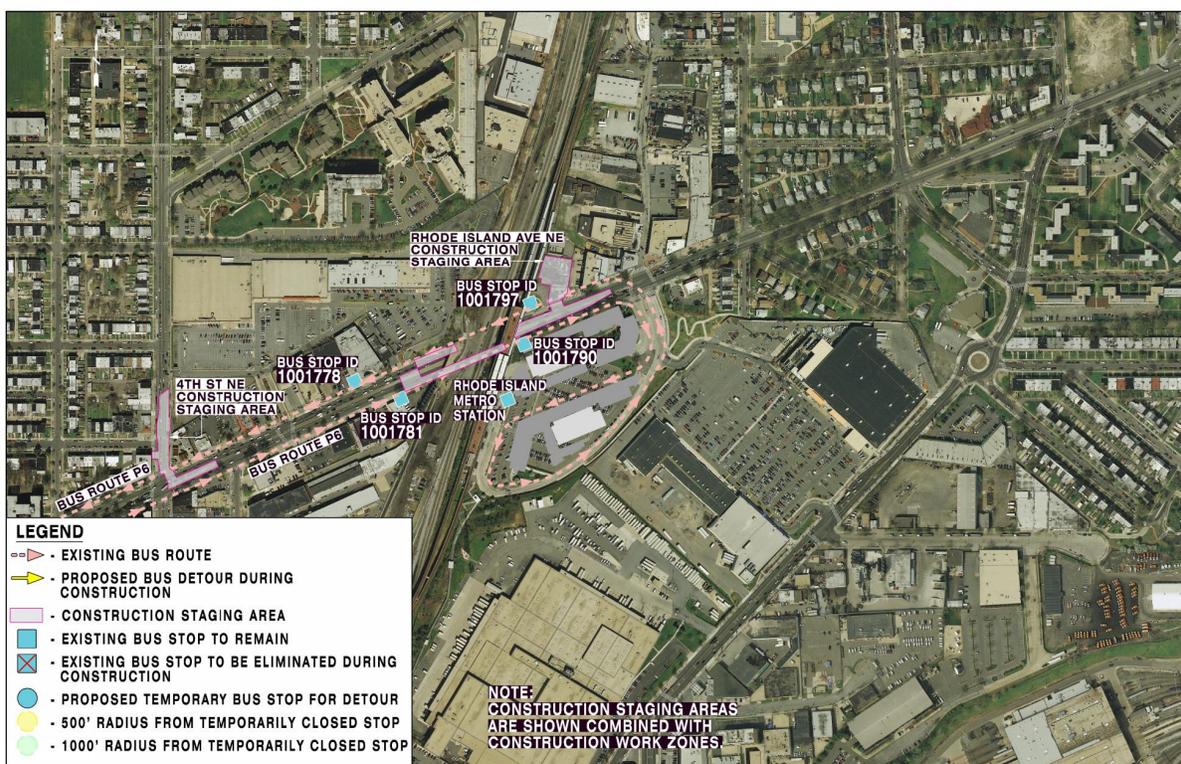


Figure 5-5: Study Area 2 – Existing Route D8 and Bus Stop Locations (Rhode Island Avenue Site)



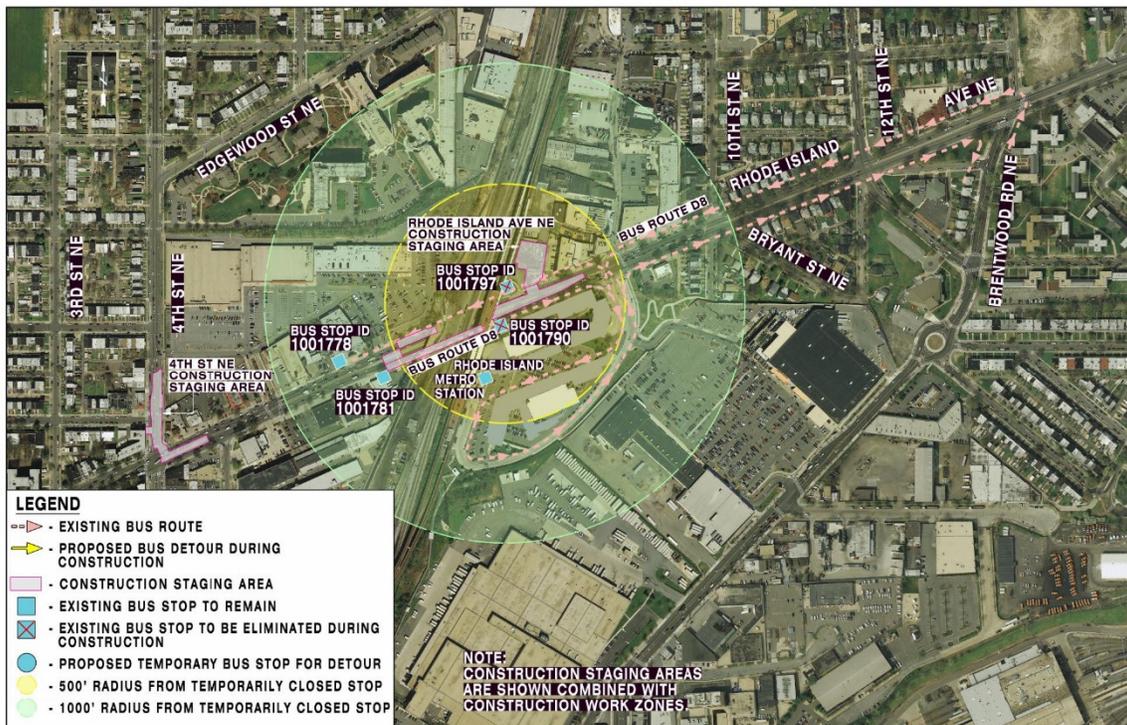


Figure 5-7: Study Area 2 – Existing Route D8 and Proximity Map to Temporarily Closed Stops (Rhode Island Avenue Site)

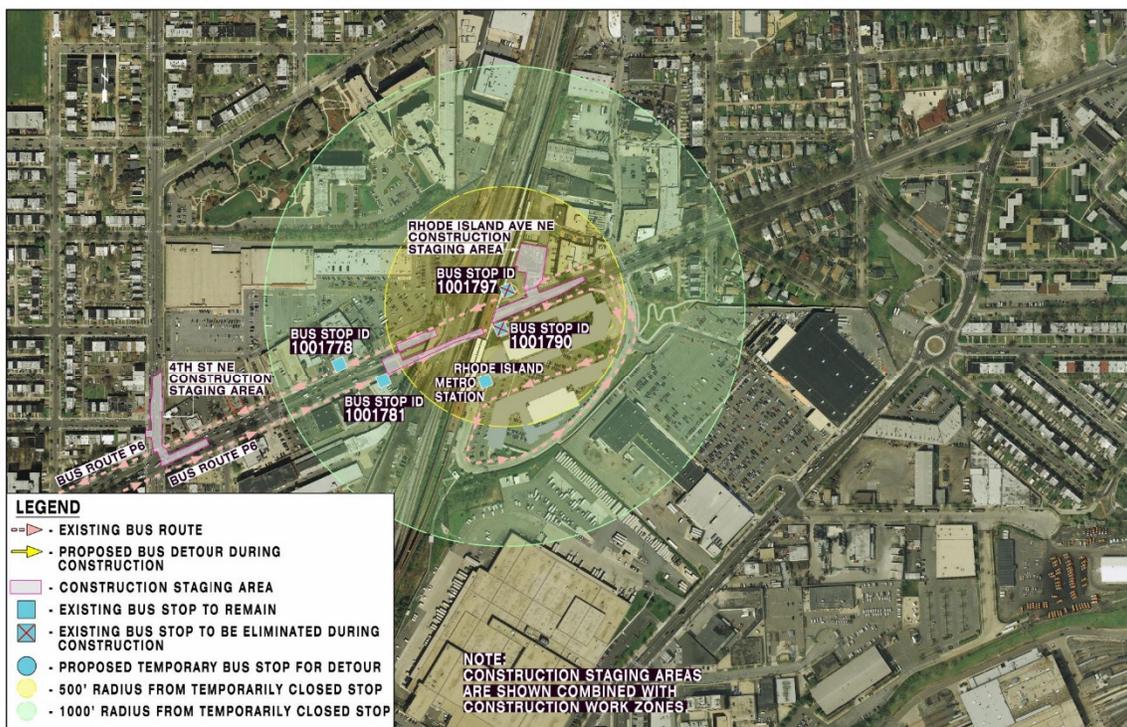


Figure 5-8: Study Area 2 – Existing Route P6 and Proximity Map to Temporarily Closed Stops (Rhode Island Avenue Site)

## 4th Street Site

Construction at the 4th Street site during Phases A and B will impact two existing transit routes: D8-Hospital Center, and G8-Rhode Island Avenue. Route D8 serves the Washington Hospital Center to the north and Union Station to the south. The G8 route serves Avondale to the east and Farragut Square to the west. The impacts to these routes are a result of the proposed northbound lane closure of 4th Street NE between Bryant Street NE and Rhode Island Avenue NE. Figures 5-9 and 5-10 depict the existing routes and bus stops associated with the 4th Street site.

### Phase A

Bus stop ID #1001770 will be temporarily closed during work associated with Phase A at the 4th Street site. Stop ID #1001770 is located along the east side of 4th Street NE, approximately one hundred twenty (120) feet north of Adams Street NE. System users will have the option to temporarily use existing bus stop ID #1001837 in lieu of this stop.

Additionally during Phase A, bus stop ID #1001752, located at the northwest corner the intersection of 4th Street NE and Rhode Island Avenue will be temporarily closed. However, as shown in Figures 5-11 and 5-12, system users have the ability to utilize stop ID #1001793 immediately to the north during the temporary closure.

It is not anticipated to close stops ID #1001770 and ID #1001752 concurrently. Work will be phased in a manner that one stop on either side of 4th Street NE is open at all times during construction.

### Phase B

Phase B of work at the 4th Street site requires the temporary detour of routes D8 and G8 throughout construction due to the temporary closure of northbound 4th Street NE. As a result, the detour will affect six existing bus stops as shown on Figures 5-9 and 5-10 and outlined below.

- Stop ID #1001770 – located along the east side of 4th Street NE, approximately 120 feet north of Adams Street NE. This stop is proposed to be temporarily closed during construction as a result of the D8 and G8 detour.
- Stop ID #1001833 – located along the east side of 4th Street NE, just south of the Edgewood Street NE. This stop is proposed to be temporarily closed during construction as a result of the D8 and G8 detour.
- Stop ID #1001752 – located along the west side of 4th Street NE, just north of the Rhode Island Avenue NE. This stop is proposed to be temporarily closed during construction as a result of the G8 detour.
- Stop ID #1001758 – located on the north side of Rhode Island Avenue NE, east of 5th Street NE. This stop will not provide service to route D8-Hospital Center during construction but will remain open to service other routes.
- Stop ID #1001778 – located on the north side of Rhode Island Avenue NE, east of the Rhode Island Shopping Center entrance/exit intersection. This stop will not provide service to route D8-Hospital Center during construction but will remain open to service other routes.
- Stop ID #1001797 – located on the north side of Rhode Island Avenue NE, west of 8th Place NE. This stop is proposed to be temporarily closed during construction as a result of the D8 detour.



Additionally, during Phase B, bus stop ID #1001752 will be temporarily closed. However, as shown in Figures 5-11 and 5-12, system users have the ability to utilize stop ID #1001793 immediately to the north during the temporary closure.

In order to maintain service for routes D8 and G8 during the closure of the northbound lane along 4th Street NE, a temporary alternate route is proposed during construction. The proposed route will provide continued service for system users along Edgewood Street NE during the closure of 4th Street NE.

Route D8-Hospital Center will traverse from the Rhode Island Avenue NE Metro Station exit roadway to right on Rhode Island Avenue NE eastbound, to left on 12th Street NE northbound, to left on Franklin Street NE westbound, to left on 4th Street NE southbound, to left on Edgewood Street NE northbound, to left on 7th Street NE northbound tying into the existing D8 route along Franklin Street NE westbound.

Route G8-Rhode Island Avenue will follow Rhode Island Avenue NE eastbound, to left on 12th Street NE northbound, to left on Franklin Street NE westbound, to left on 4th Street NE southbound, to left on Edgewood Street NE northbound, to left on the existing route along 7th Street NE.

AutoTURN analysis was completed for both the temporary D8 and G8 detours to ensure turning radii are maintained for WMATA vehicles. The major intersection of concern was the left turn from 4th Street NE to Edgewood Street NE. The analysis showed that the proposed detours are acceptable and WMATA vehicles can negotiate the additional turns. The details of the AutoTURN analysis are provided in Appendix D.

Field observations and traffic modeling at the intersection of Rhode Island Avenue NE and Reed Street NE show that significant queues form along Rhode Island Avenue eastbound in the PM peak period. One contributing factor to the queuing downstream of the Reed Street NE intersection, is the existing near side D8 bus stop at 10th Street (stop ID #1002964). Buses stopping at 10th Street impact the right most lane of Rhode Island Avenue NE, while left turning motorists block the left most lane, leaving only the center lane continuously open. Therefore, during construction, it is recommended that the bus stop be temporarily relocated one hundred fifty (150) feet east of Bryant Street NE, to the far side of the intersection. The relocation will impact parking spots along Rhode Island Avenue NE, which are discussed further in Section 7.

Additionally, due to the northbound detour on 12th Street NE associated with work at the 4th Street site, it is also recommended that stop ID # 1001823, located on the south side of Rhode Island Avenue NE, west of 12th Street NE not provide service to route D8-Hospital Center during construction. The proposed detour will not allow buses to utilize the existing stop and make the left turn north onto 12th Street NE. The stop will remain open to service other routes. The D8 will make stops at the temporarily relocated stop ID #1002964, one block away.

Figure 5-11 shows the proposed detours for line D8-Hospital Center and G8-Rhode Island Avenue and the proposed relocation of stop ID #1002964.

Figures 5-11 and 5-12 show the proposed detours for line D8-Hospital Center and G8-Rhode Island Avenue.



### Detoured Route Travel Time Analysis within Study Area 2 during Phase B

An analysis was conducted to determine the difference in travel time for the existing transit routes compared to the proposed detour routes during construction. The analysis included the anticipated impacts for the construction at both the 4th Street and Rhode Island Avenue sites. The existing route for D8 from the Reed Street NE/Metro Station intersection to the 4th Street NE/Edgewood St NE intersection currently takes approximately four (4) to five (5) minutes. Even though the proposed detour route for D8 will not traverse through the construction sites, travel time will increase to approximately seven (7) additional minutes. The existing G8 section impacted as a result of construction is from the Rhode Island Avenue NE/4th Street NE intersection to the 4th Street NE/Edgewood Street NE intersection, which currently takes two (2) to three (3) minutes. Implementation of the bus detour for G8 will lengthen the time it takes for the buses to travel the detour route and through the construction area. The results show travel times will increase by approximately eleven (11) to twelve (12) minutes with the proposed detours.

In addition to the travel time differences, queuing is expected to increase during construction. Queues along southbound 4th Street NE are anticipated to extend through Douglas Street NE in both the AM and PM peak hours due to lane closures associated with the 4th Street site. Lane closures and detours associated with the Rhode Island Avenue site are expected to increase queues along Rhode Island Avenue in the westbound direction during the AM peak hour and in the eastbound direction during the PM peak hour. Additional bus routes west of the Rhode Island Metro Station will experience delays along westbound Rhode Island Avenue NE in the AM peak hour during the Rhode Island Avenue NE site construction. These routes will have an increase of approximately seven (7) minutes added to the current travel time of approximately thirteen (13) minutes. The anticipated increase in travel time due to construction activities is shown Table 5-2.

**Table 5-2: Summary of Anticipated Bus Route Delays within Study Area 2**

Bus Route	2013 Existing Travel Time (min)		2020 Construction with Improvements Travel Times (min)	
	AM	PM	AM	PM
D8 – Hospital Center NB <sup>1</sup>	5	4	12	11
G8 – Rhode Island Avenue NB <sup>1</sup>	2	3	14	14

<sup>1</sup>Travel time does not include transit stops

### 5.2.3 Study Area 3 Transit Impacts

Construction at the Florida Avenue site will affect transit operations along two streets; Florida Avenue NW, 3rd Street NW and Rhode Island Avenue NW.

#### Florida Avenue Site

##### Phases A and B

Along Florida Avenue NW, three transit routes will be impacted: X3-Benning Road, 90-U Street to Garfield and 92-U Street to Garfield. The X3-Benning Road route serves the Minnesota Avenue Metro Station to the east and the Tenleytown Metro Station to the west. Route 90-U Street to Garfield serves Ellington Bridge to the north and Anacostia Metro Station to the south. Route 92-U Street to Garfield serves the Reeves Center to the north, and the Congress Heights Metro Station to the south. The existing routes through the Florida Avenue site are illustrated in Figure 5-13.

Route detours along Florida Avenue NW are not anticipated to be necessary during construction, but two bus stops are proposed to be temporarily closed during Phase A and Phase B:

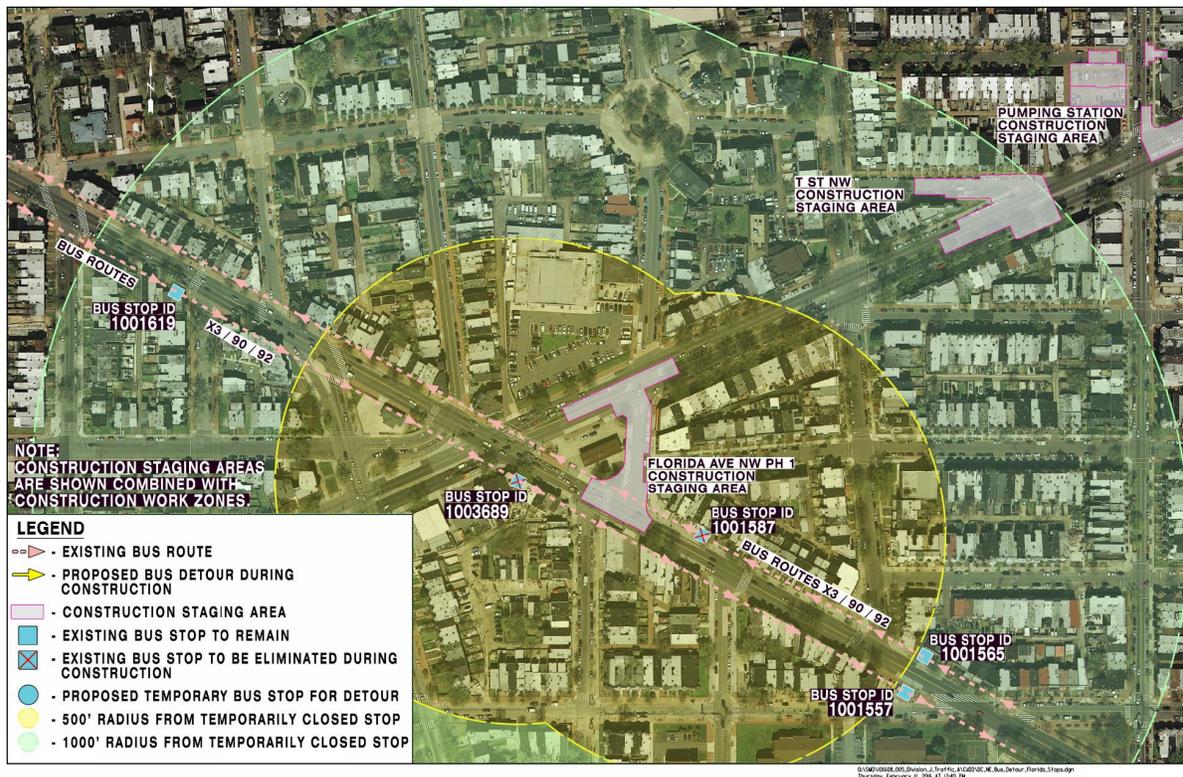
- Stop ID #1003689 – located along the south side of Florida Avenue NW near the Rhode Island Avenue NW intersection. System users will have the option to temporarily use existing bus stops ID #1001619 or ID #1001557 in lieu of this stop.
- Stop ID #1001587 – located along the north side of Florida Avenue NW, just east of 3rd Street NW. System users will have the option to temporarily use existing stop ID #1001565 in lieu of this stop.

Figure 5-14 shows the bus stops to be closed along Florida Avenue NW and their proximity to existing bus stops. Alternate stops are located within one thousand (1,000) feet of the affected stops.

During construction of Phases A and B, an increase of approximately eleven (11) minutes of travel time is anticipated for all vehicles in both directions along Florida Avenue NW during both the AM and PM peak hours based on the traffic analysis.



Figure 5-13: Study Area 3 – Existing Routes X3, 90, 92, and Bus Stops Locations (Florida Avenue Site)



**Figure 5-14: Study Area 3 – Existing Routes X3, 90, 92 and Proximity Map to Temporarily Closed Stops (Florida Avenue Site)**

During construction of Phase A, northbound travel on 3rd Street NW will be temporarily impacted. Phase B of construction will completely close 3rd Street NW for an extended period. Therefore, bus stop ID #1001601 and the G2-LeDroit Park transit route that serves LeDroit Park and Howard University to the east and Georgetown University to the west will be impacted. The existing route and bus stops are depicted in Figure 5-15.

Route G2 is anticipated to be permanently relocated by WMATA in 2016. If the route is not detoured prior to Phase A construction, Stop ID #1001601 would temporarily be closed during construction. Stop ID #1001578 could be utilized by system users during this temporary closure, which is within five hundred (500) feet of the proposed temporary stop closure on 3rd Street NW as illustrated in Figure 5-16.

The proposed WMATA G2 route relocation if needed for Phase A is described as follows and depicted in Figure 5-16:

- *Southbound relocation* – 4th Street NW southbound, to S Street NW westbound, to New Jersey Avenue NW southbound and to P Street NW westbound and tying into the existing route. The southbound route relocation will affect seven existing bus stops along the route. These stops are located along eastbound Elm Street NW, southbound 3rd Street NW and westbound P Street NW. To provide service along the new route, WMATA proposes to install new stops on southbound 4th Street NW and southbound New Jersey Avenue NW. The bus stop proposed on New Jersey Avenue NW just north of Q Street NW was an existing stop that was permanently closed and will be reopened for the new G2 route.
- *Northbound relocation* – P Street NW eastbound to New Jersey Avenue NW northbound, to S Street NW eastbound and continue through to 4th Street NW northbound tying into the existing



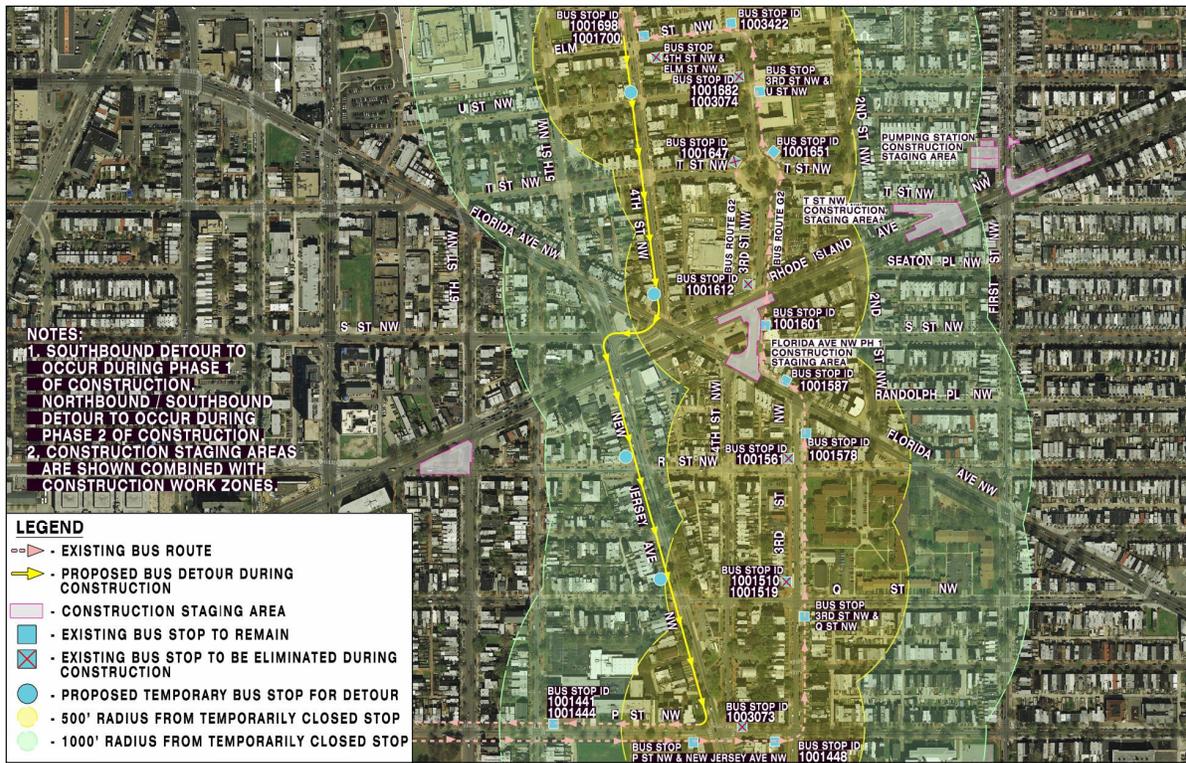


Figure 5-16: Study Area 3 – WMATA Route G2 Southbound Relocation and Proximity Map (Florida Avenue Site)

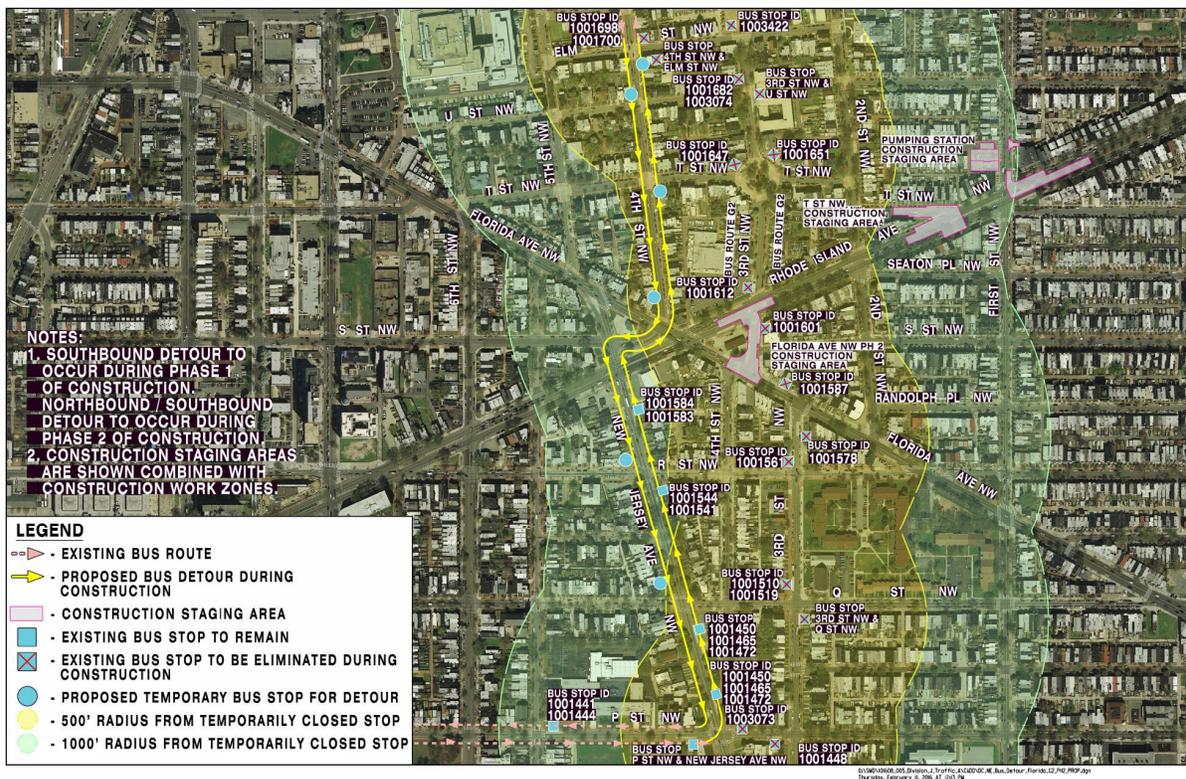


Figure 5-17: Study Area 3 – WMATA Route G2 Relocation and Proximity Map (Florida Avenue Site)



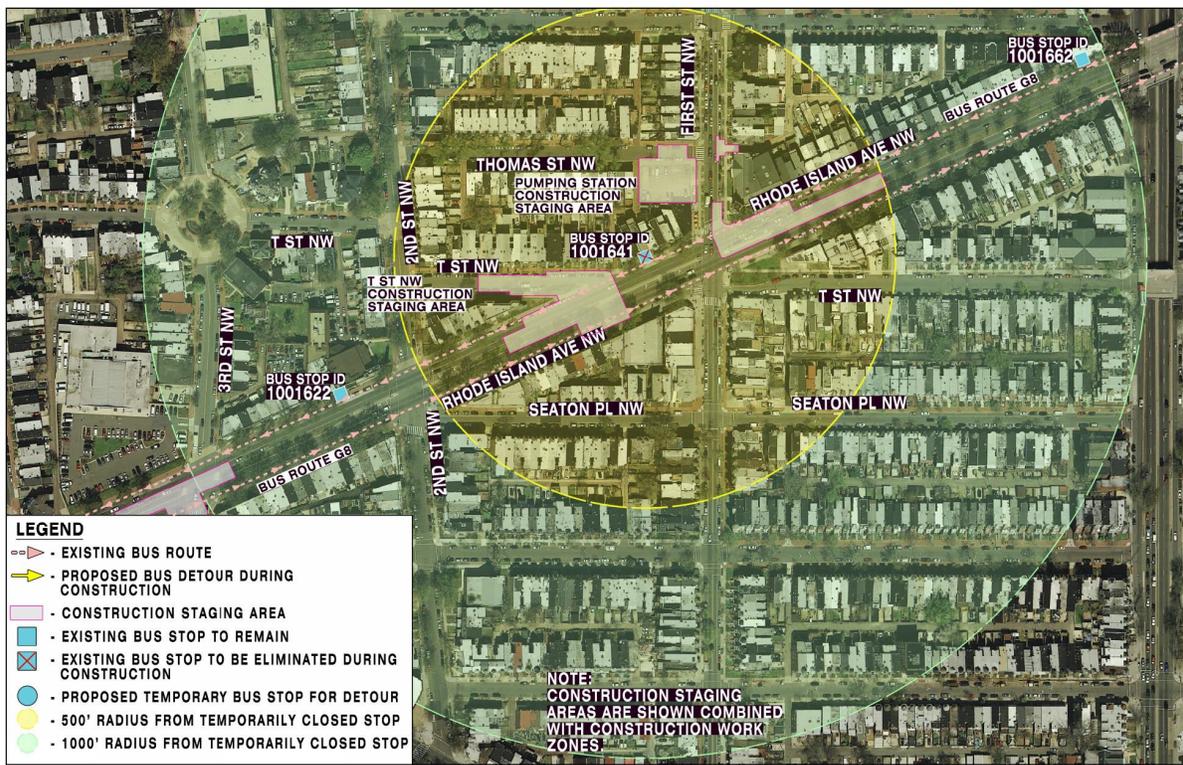


Figure 5-19: Study Area 3 – Existing Route G8 and Proximity Map to Temporarily Closed Stops (T Street Site)

**R Street Site**

Phases A and B

No transit impacts are anticipated due to construction at the R Street site during either Phase A or Phase B. Lane reductions are proposed west of the bus stop along Rhode Island Avenue NW just east of 7th Street NW. Travel times through the R Street Site in the eastbound direction along Rhode Island Avenue NW are anticipated to increase by approximately twelve (12) minutes during the PM peak hour based on the traffic analysis. Along 6th Street NW lane reductions and shifts are proposed but no buses travel this roadway. The existing G8 transit route through the R Street site is shown on Figure 5-20.



Figure 5-20: Study Area 3 – Existing Route G8 and Bus Stops (R Street Site)

Currently, there is a bus pad located along Rhode Island Avenue NW eastbound between R Street NW and 6th Street NW. This location was not analyzed, since no bus stop signage exists at this location and published WMATA bus routes do not include this location.

**Relocated Route Travel Time Analysis within Study Area 3 during Phase B**

An analysis was conducted to determine travel time differences between the route G2 relocation and the existing route. The results of the analysis show that existing buses traveling to and from LeDroit Park to the intersection of 3rd and P Streets NW during the AM and PM peak hours currently take approximately three (3) to six (6) minutes. Travel times between these two points are expected to increase to approximately three (3) to nine (9) minutes during the AM and PM peak hours as a result of the route relocation. Table 5-3 shows the results of the analysis.

**Table 5-3: Summary of Anticipated Bus Route Delays within Study Area 3**

Bus Route	2013 Existing Travel Time (min)		2020 Relocation with Improvements Travel Times (min)	
	AM	PM	AM	PM
G2 – LeDroit NB <sup>1</sup>	4	6	7	10
G2 – LeDroit SB <sup>1</sup>	4	4	7	13 <sup>2</sup>

<sup>1</sup>Travel time does not include transit stops

<sup>2</sup>Approximately 9 minutes of increased travel time is expected to occur during the PM peak hour only

### 5.3 Conclusion

Construction under both phases of the NEBT Project will have temporary impacts to WMATA bus operations. Two transit routes are proposed to be temporarily detoured, one transit route is proposed to be permanently relocated by WMATA and several bus stops are proposed to be temporarily closed or relocated. As a result, DC Water is proposing several mitigation measures to reduce impacts to existing transit operations. Tables 5-4 and 5-5 summarize the impacts to each study area; including transit routes, bus stops and proposed mitigation measures.

DC Water completed a review of the anticipated transit impacts and suggested mitigation measures with WMATA from July 2014 through April 2015. The coordination efforts with WMATA resulted in a No Conflict Notice (dated April 21, 2015) for the impacts outlined herein, which is included in Appendix H. DC Water is committed to continued coordination with WMATA as the project moves into construction.

Table 5-4: Summary of Transit Impacts during Phase A Construction

Study Area	Bus Routes Studied	Impacts to Routes	Impacts to Stops	Mitigation Measures
1	D3: Ivy City-Dupont Circle	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 2 to 5 minutes through work zone</li> </ul>	None	N/A
	D4: Ivy City-Franklin Square			
	D8: Hospital Center			
2	D8 Hospital Center	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 7 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1001770</b> (East side of 4th Street NE 120 feet north of Adams Street)</li> <li><b>ID #1001752</b> (Intersection of 4th Street NE and Rhode Island Avenue NE)</li> </ul> Relocation of stop <b>ID #1002964</b> to far side stop (approximately 150 feet north of the 10th Street NE and Rhode Island Avenue NE intersection) Stop <b>ID #1001823</b> (South side of Rhode Island Avenue NE at 12th Street NE) will not provide D8 service	<ul style="list-style-type: none"> <li>Utilize existing bus stops within 1,000 feet of closed stops</li> <li>Do not concurrently impact stop ID's #1001770 and #1001752</li> </ul>
	G8: Rhode Island Avenue	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 10 to 11 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1001770</b> (East side of 4th Street NE 120 feet north of Adams Street NE)</li> <li><b>ID #1001752</b> (Intersection of 4th Street NE and Rhode Island Avenue NE)</li> <li><b>ID #1001797</b> (North side of Rhode Island Avenue NE west of 8th Place NE)</li> <li><b>ID #1001790</b> (South side of Rhode Island Avenue NE West of 8th Place NE)</li> </ul>	
	P6: Anacostia-Eckington	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 5 to 10 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1001797</b> (North side of Rhode Island Avenue NE west of 8th Place NE)</li> <li><b>ID #1001790</b> (South side of Rhode Island Avenue NE West of 8th Place NE)</li> </ul>	
3	G2: P Street-LeDroit Park	<ul style="list-style-type: none"> <li>WMATA permanent relocation of bus route G2 Between P Street NW and Elm Street NW</li> <li>Travel times increase 3 to 9 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1001601</b> (East side of 3rd Street NW at the intersection of Rhode Island Avenue NW)</li> </ul>	<ul style="list-style-type: none"> <li>Route G2 permanent relocation</li> </ul>

Study Area	Bus Routes Studied	Impacts to Routes	Impacts to Stops	Mitigation Measures
	G8: Rhode Island Avenue	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 3 to 10 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1001641</b> (North side of Rhode Island Avenue NW East of 1st Street NW)</li> </ul>	<ul style="list-style-type: none"> <li>Utilize existing bus stops within 1,000 feet of closed stops</li> </ul>
	X3: Benning Road 90: U Street-Garfield 92: U Street-Garfield	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 11 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1003689</b> (South side of Florida Avenue NW near the Rhode Island Avenue NW intersection)</li> <li><b>ID #1001587</b> (North side Florida Avenue NW, south of 3rd Street NW)</li> </ul>	<ul style="list-style-type: none"> <li>Utilize existing bus stops within 1,000 feet of closed stops</li> </ul>

**Table 5-5: Summary of Transit Impacts during Phase B Construction**

Study Area	Bus Routes Studied	Impacts to Routes	Impacts to Stops	Mitigation Measures
1	D3: Ivy City-Dupont Circle	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 2 to 5 minutes through work zone</li> </ul>	<ul style="list-style-type: none"> <li>Temporary closure of stop <b>ID #1001476</b> (North side of Mt Olivet Road NE between Montello Avenue NE and West Virginia Avenue NE)</li> <li>Relocation of stop <b>ID #1001476</b> approximately 300 feet south of existing location along Mt Olivet Road NE</li> <li>Relocation of stop ID#1001501 approximately 280 feet north of existing location along Mt Olivet Road NE</li> </ul>	<ul style="list-style-type: none"> <li>Utilize relocated stop ID #1001476</li> <li>Utilize relocated stop ID#1001501</li> </ul>
	D4: Ivy City-Franklin Square			
	D8: Hospital Center			
2	D8 Hospital Center	<ul style="list-style-type: none"> <li>Detour route northbound to 12th Street NE and Franklin Street NE</li> <li>Lane closures and shifts</li> <li>Travel times increase 7 to 10 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1001770</b> (East side of 4th Street NE 120 feet north of Adams Street)</li> <li><b>ID #1001752</b> (Intersection of 4th Street NE and Rhode Island Avenue NE)</li> <li><b>ID #1001833</b> (North side of 4th Street NE approximately 100 feet north of Channing Street NE)</li> <li><b>ID #1001758</b> (North side of Rhode Island Avenue NE at 5th Street NE)</li> <li><b>ID #1001778</b> (North side of Rhode Island Avenue NE east of 5th Street NE)</li> <li><b>ID #1002964</b> (South side of Rhode Island Avenue NE west of 10th Street NE)</li> </ul> Relocation of stop <b>ID #10022964</b> to far side stop (approximately 150 feet north of the 10th Street NE and Rhode Island Avenue NE intersection)  Stop <b>ID #1001823</b> (South side of Rhode Island Avenue NE at 12th Street NE) will not provide D8 service	<ul style="list-style-type: none"> <li>Route D8 detour</li> <li>Utilize existing bus stops within 1,000 feet of closed stops</li> <li>Do not concurrently impact stop ID's #1001770 and #1001752</li> </ul>

Study Area	Bus Routes Studied	Impacts to Routes	Impacts to Stops	Mitigation Measures
	G8: Rhode Island Avenue	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 10 to 11 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1001770</b> (East side of 4th Street NE 120 feet north of Adams Street)</li> <li><b>ID #1001752</b> (Intersection of 4th Street NE and Rhode Island Avenue NE)</li> <li><b>ID #1001797</b> (North side of Rhode Island Avenue NE west of 8th Place NE)</li> <li><b>ID #1001790</b> (South side of Rhode Island Avenue NE West of 8th Place NE)</li> </ul>	<ul style="list-style-type: none"> <li>Utilize existing bus stops within 1,000 feet of closed stops</li> <li>Do not concurrently impact stop ID's #1001770 and #1001752</li> </ul>
	P6: Anacostia-Eckington	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 5 to 10 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1001797</b> (North side of Rhode Island Avenue NE west of 8th Place NE)</li> <li><b>ID #1001790</b> (South side of Rhode Island Avenue NE West of 8th Place NE)</li> </ul>	
3	G2: P Street-LeDroit Park	<ul style="list-style-type: none"> <li>WMATA permanent relocation of bus route G2 Between P Street NW and Elm Street NW</li> <li>Lane closures and shifts</li> <li>Travel times increase 3 to 9 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1001601</b> (East side of 3rd Street NW at the intersection of Rhode Island Avenue NW)</li> </ul>	<ul style="list-style-type: none"> <li>Route G2 permanent relocation</li> </ul>
	G8: Rhode Island Avenue	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 3 to 10 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1001641</b> (North side of Rhode Island Avenue NW East of 1st Street NW)</li> </ul>	<ul style="list-style-type: none"> <li>Utilize existing bus stops within 1,000 feet of closed stops</li> </ul>
	X3: Benning Road 90: U Street-Garfield 92: U Street-Garfield	<ul style="list-style-type: none"> <li>Lane closures and shifts</li> <li>Travel times increase 11 minutes through work zone</li> </ul>	Temporary closure of stops: <ul style="list-style-type: none"> <li><b>ID #1003689</b> (South side of Florida Avenue NW near the Rhode Island Avenue NW intersection)</li> <li><b>ID #1001587</b> (North side Florida Avenue NW, south of 3rd Street NW)</li> </ul>	<ul style="list-style-type: none"> <li>Utilize existing bus stops within 1,000 feet of closed stops</li> </ul>

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