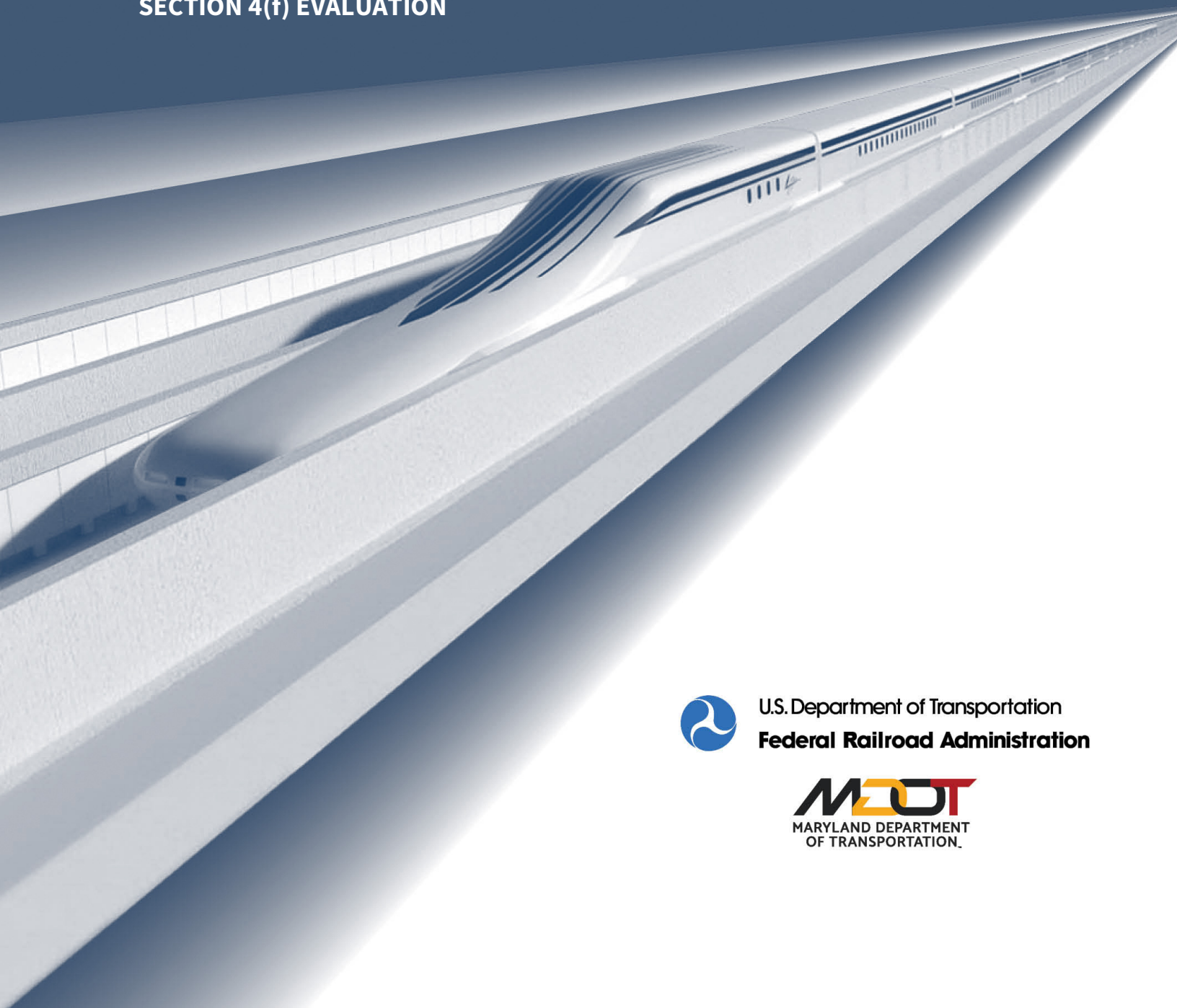
Appendix D.2

Transportation Technical Report

BALTIMORE-WASHINGTON, D.C. SUPERCONDUCTING MAGLEV PROJECT

DRAFT ENVIRONMENTAL IMPACT STATEMENT AND SECTION 4(f) EVALUATION



U.S. Department of Transportation
Federal Railroad Administration

MARYLAND DEPARTMENT OF TRANSPORTATION

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Appendix D.2A Transportation

This technical report covers two areas related to Section 4.2 Transportation. In the first instance the document contains detailed backup data that supports the analysis contained in the DEIS section.

In the second instance the technical report contains more detailed information on the technical analyses completed in support Superconducting Magnetic Levitation Project (SCMAGLEV Project) (DEIS) of the assessment of impacts resulting from the addition of the SCMAGLEV to the SCMAGLEV Project Affected Environment transportation network. Document subsections of this overall section include:

- Project Sponsor ridership forecasting process
- Station Pedestrian and Bike Access Methodology
- Station Drop-Off and Pick-Up Methodology
- Future Traffic Conditions: Build vs. No-Build
- Construction Period Traffic Conditions
- Outlined first is detailed backup supporting Section 4.2 Transportation.

D.2A.1 Transportation Components of Current, Future No-Build, and Future Build Conditions

This Technical Report section provides additional detail on components of each of the Transportation Network Conditions evaluated in the environmental documentation progress and supplements data provided in the body of the Section 4.2 Transportation. The analysis is based on information provided by the Project Sponsor in regard to operations, ridership, and preliminary engineering. Additional detail is provided for each of the following conditions.

- Current Conditions – The current transportation network in the area of the SCMAGLEV Project Affected Environment
- Future No Build Conditions (Opening Year (2030) and Horizon Year (2045))
  - Current Conditions plus the addition of any network improvements that are funded and included in the Constrained Long-Range Plans of the SCMAGLEV Project Affected Environment's two Metropolitan Planning Organizations: the Baltimore Metropolitan Council (BMC) and the Metropolitan Washington Council of Governments (MWCOG).
- Future Build Conditions (Opening Year (2030) and Horizon Year (2045))

– The future Build Network consists of the Future No Build network plus the addition of the SCMAGLEV physical improvements and train operations to the network.

D.2A.2 Transportation Network Component: SCMAGLEV - Future Build Condition

This Technical Report section provides additional detail on SGMAGLEV weekday service frequencies and seat capacity by each hour of the day and by direction. It also provides additional detail on ridership and network characteristic data derived from the Project Sponsor ridership forecasting process.

Service frequency and seating capacity data is outlined in **Table D.2-1.**

Table D.2-1: SCMAGLEV Trains Per Hour and Hourly Capacity, by Direction

Hour of Day	Baltimore To Washington		Washington to Baltimore	
	SCMAGLEV Trains per Hour	Total Capacity per Hour (Number of Seats per Hour)	SCMAGLEV Trains per Hour	Total Capacity per Hour (Number of Seats per Hour)
5 AM – 6 AM	4	3,048	4	3,048
6 AM – 7 AM	6	4,572	6	4,572
7 AM – 8 AM	8	6,096	8	6,096
8 AM – 9 AM	8	6,096	8	6,096
9 AM – 10 AM	8	6,096	8	6,096
10 AM – 11 AM	6	4,572	6	4,572
11 AM – 12 PM	4	3,048	4	3,048
12 PM – 1 PM	4	3,048	4	3,048
1 PM – 2 PM	4	3,048	4	3,048
2 PM – 3 PM	4	3,048	4	3,048
3 PM – 4 PM	6	4,572	6	4,572
4 PM – 5 PM	8	6,096	8	6,096
5 PM – 6 PM	8	6,096	8	6,096
6 PM – 7 PM	8	6,096	8	6,096
7 PM – 8 PM	6	4,572	6	4,572
8 PM – 9 PM	4	3,048	4	3,048
9 PM – 10 PM	4	3,048	4	3,048
10 PM – 11 PM	4	3,048	4	3,048

Source: Baltimore-Washington SCMAGLEV Project Operations Plan, BWRR, 5-6-20

Outlined below is detailed data on SCMAGLEV ridership and Affected Environment ridership market characteristics and supplements impacts analyses contained in the body of the DEIS.

D.2A.2.1 Forecasted Total Daily Boardings by SCMAGLEV Station

The data in **Table D.2-2** shows forecasted daily boardings by SCMAGLEV station by Baltimore Station Scenario, for the horizon year 2045. In all instances, the Washington DC station has the highest daily boardings, followed by the Baltimore Station and then the BWI station.

Table D.2-2: Forecasted Total Daily Boardings by SCMAGLEV Station – Horizon Year 2045

Baltimore Station Alternative	SCMAGLEV Station	Total Daily Boardings
Cherry Hill	Cherry Hill	19,205
	BWI Marshall Airport	17,549
	Washington DC	33,315
	Total	70,069
Camden Yards	Camden Yards	23,271
	BWI Marshall Airport	17,649
	Washington DC	36,844
	Total	77,764

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/2020

D.2A.2.2 Forecasted Changes in Vehicle Miles Traveled within the SCMAGLEV Project Affected Environment

The data in **Table D.2-3** shows forecasted changes in Vehicle Miles Traveled within the SCMAGLEV Project Affected Environment, for the years 2030 and 2045, by Baltimore Station Scenario. This data reflects forecasted changes in the modes used to make trips within the SCMAGLEV Project Affected Environment and shows a decline in VMT based on diversions of trips from motorized modes to SCMAGLEV.

Table D.2-3: Forecasted Changes in Vehicle Miles Traveled within the Affected Environment for the Years 2030 and 2045, by Baltimore Station Alternative (Build vs. No-Build)

Year	Baltimore Station Alternative	Affected Environment VMT – No Build	Affected Environment VMT – Build	Changes in VMT
2030	Cherry Hill	3,259,575,481	2,958,441,538	284,918,509
	Camden Yards	3,259,575,481	2,925,414,644	316,108,014
2045	Cherry Hill	3,775,499,269	3,382,350,267	393,149,002
	Camden Yards	3,775,499,269	3,338,932,945	436,566,324

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/2020

D.2A.2.3 Forecasted Changes in Rail Passenger Miles Traveled within the SCMAGLEV Project Affected Environment (Build vs. No Build)

The data in **Table D.2-4** shows forecasted changes in Rail Passenger Traveled within the SCMAGLEV Project Affected Environment, for the years 2030 and 2045, by Baltimore Station Scenario. This data reflects the forecasted diversion of trips from rail services in the Affected Environment to SCMAGLEV.

Table D.2-4: Forecasted Changes in Rail Passenger Miles Traveled within the Affected Environment for the Years 2030 and 2045, by Baltimore Station Alternative (Build vs. No Build)

Year	Baltimore Station Alternative	Affected Environment Rail PMT – No Build	Affected Environment Rail PMT – Build	Change in Rail PMT
2030	Cherry Hill	165,060,069	83,387,074	81,672,995
	Camden Yards	165,060,069	77,663,595	87,396,474
2045	Cherry Hill	195,220,004	92,883,450	102,336,553
	Camden Yards	195,220,014	85,880,777	109,339,927

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/2020

D.2A.2.4 Forecasted Changes in Bus Passenger Miles Traveled within the SCMAGLEV Project Affected Environment (Build vs. No Build)

The data in **Table D.2-5** shows forecasted changes in Bus Passenger Miles Traveled within the SCMAGLEV Project Affected Environment, for the years 2030 and 2045, by Baltimore Station Scenario. This data reflects the forecasted diversion of trips from bus services in the Affected Environment to SCMAGLEV.

Table D.2-5: Forecasted Changes in Bus Passenger Miles Traveled within the Affected Environment for the Years 2030 and 2045, by Baltimore Station Alternative (Build vs. No Build)

Year	Baltimore Station Alternative	Affected Environment Bus PMT – No Build	Affected Environment Bus PMT – Build	Change in Bus PMT
2030	Cherry Hill	21,238,024	10,362,709	10,875,315
	Camden Yards	21,238,024	9,900,616	11,337,408
2045	Cherry Hill	24,638,267	11,184,884	13,453,383
	Camden Yards	24,638,267	10,657,047	13,991,220

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/202

D.2A.2.5 Forecasted Changes in Aggregate Travel Times within the SCMAGLEV Project Affected Environment (Build vs. No Build)

The data in **Table D.2-6** shows forecasted changes in Aggregate Travel Times within the SCMAGLEV Project Affected Environment, for the years 2030 and 2045, by Baltimore Station Scenario. This data reflects the forecasted diversion of trips from modes that have longer travel times within the Affected Environment to SCMAGLEV, which has faster travel times for select Origin/Destination pairs.

Table D.2-6: Forecasted Aggregate Hours of Travel Time Savings within the Affected Environment for Years 2030 and 2045, by Baltimore Station Scenario (Build vs. No Build)

Year	Baltimore Station Alternatives	
	Cherry Hill	Camden Yards
2030	25,469,422	28,634,545
2045	33,938,062	38,273,018

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/2020

D.2A.3 Transportation Network Component: MARC Commuter Rail Current Condition Service Characteristics

This Technical Report section provides additional detail on MARC Commuter rail service characteristics within the SCMAGLEV Project Affected Environment, for both the Penn Line and the Camden Line.

Provided first is a map showing MARC service alignments within the corridor. This is shown in **Figure D.2-1**. This map also shows the AMTRAK alignment within the corridor, which is the same as the MARC Penn Line.

Additional data is provided for the Penn Line in the following tables. Provided first is approximate weekday service frequency in each direction by time of day on the MARC Penn Line, as outlined in **Table D.2-7**.

Figure D.2-1: MARC Train and Amtrak Service Within the SCMAGLEV Project Affected Environment

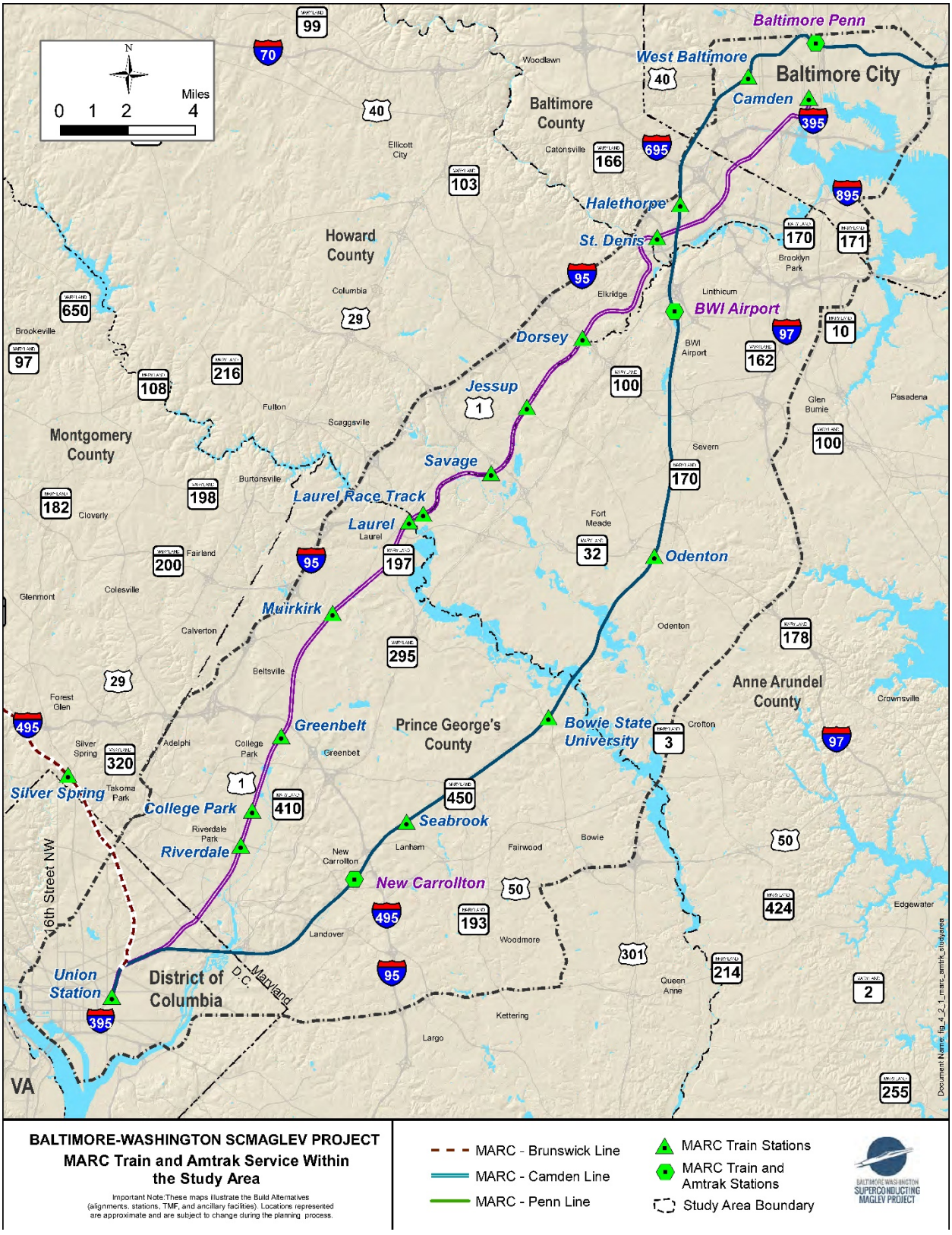


Table D.2-7: MARC Penn Line Service Frequencies by Time of Day and Direction

Time Period	Service Frequency
Train Service to Washington, D.C.	
4:30 AM to 5:30 AM	Train every 30 minutes
5:30 AM to 7:30 AM	Train every 15 minutes
7:30 AM to 9:30 AM	Train every 30 minutes
9:30 AM to 3:30 PM	Train every 60 minutes
3:30 PM to 6:00 PM	Train every 30 minutes
6:00 PM to 9:30 PM	Train every 60 minutes
Train Service to Baltimore	
5:30 AM to 6:30 AM	Train every 60 minutes
6:30 AM to 10:30 AM	Train every 30 minutes
10:30 AM to 4:30 PM	Train every 60 minutes
4:30 PM to 6:30 PM	Train every 15 minutes
6:30 PM to 8:00 PM	Train every 30 minutes
8:00 PM to 11:30 PM	Train every 60 minutes

Source: MDOT Maryland Transit Administration – MARC Public Timetables

Table D.2-8 shows the MARC Penn Line stops within the SCMAGLEV Project Affected Environment.

Table D.2-8: MARC Penn Line Station Stops

Station	Location
Penn Station Baltimore	Baltimore City
West Baltimore	Baltimore City
Halethorpe	Baltimore County
BWI Marshall Airport	Anne Arundel County
Odenton	Anne Arundel County
Bowie State	Prince George's County
Seabrook	Prince George's County
New Carrolton	Prince George's County
Union Station	Washington, D.C.

Source: MDOT Maryland Transit Administration – MARC Public Timetables

The final piece of MARC Penn Line data is trip travel times between Baltimore Penn Station and Washington Union Station, by time of day and direction, as outlined in **Table 1.3-3**.

Table D.2-9: MARC Penn Line Trip Times by Time of Day and Direction: Baltimore Penn Station to Washington Union Station

Time Period	Trip Time Range
Train Service to Washington, D.C.	
AM Peak	55 minutes to 63 minutes
Mid-Day	60 minutes
PM Peak	46 to 60 minutes
Evening	50 to 60 minutes
Train Service to Baltimore	
AM Peak	36 minutes to 58 minutes
Mid-Day	60 minutes
PM Peak	53 minutes to 62 minutes
Evening	60 minutes

Source: MDOT Maryland Transit Administration – MARC Public Timetables

The same set of data provided for the MARC Penn Line service is provided in the following tables for the MARC Camden Line. Provided first in **Table D.2-10** is service frequencies by time of day and direction.

Table D.2-10: MARC Camden Line Service Frequencies by Time of Day and Direction

Time Period	Service Frequency
Train Service to Washington, D.C.	
AM Peak Period	Train every 30 minutes
Mid-day	No service
PM Peak	Train every 60 minutes
Train Service to Baltimore	
AM Peak Period	Train every 30 minutes
Mid-day	No service
PM Peak	Train every 30 minutes

Source: MDOT Maryland Transit Administration – MARC Public Timetables

Outlined in **Table D.2-11** are the station locations along the MARC Camden Line.

Table D.2-11: MARC Camden Line Station Stops

Station	Location
Camden Station	Baltimore City
St. Denis	Howard County
Dorsey	Howard County
Savage	Anne Arundel County
Laurel	Prince George's County
Muirkirk	Prince George's County
Greenbelt	Prince George's County
College Park	Prince George's County
Union Station	Washington, D.C.

Source: MDOT Maryland Transit Administration – MARC Public Timetables

The final piece of Camden Line current condition data is trip travel times between Baltimore Camden Station and Washington Union Station by time of day and direction, as outlined in **Table D.2-12**.

Table D.2-12: ARC Camden Line Trip Times by Time of Day and Direction

Time Period	Trip Time Range
Train Service to Washington, D.C.	
AM Peak	59 to 74 minutes
PM Peak	68 to 70 minutes
Train Service to Baltimore	
AM Peak	68 to 71 minutes
PM Peak	68 to 79 minutes

Source: MDOT Maryland Transit Administration – MARC Public Timetables

D.2A.4 Transportation Network Component: Local Transit Systems within Affected Environment

This Technical Report section provides additional detail on each of the local transit systems within the SCMAGLEV Project Affected Environment.

D.2A.4.1 Baltimore Local Transit System

The Baltimore region is served by four predominant transit modes, local bus service (called LocalLink), Light Rail (called Light RailLink), Metrorail Heavy Rail (MetrorailLink), and Express Bus Service. Detail on the transit network around each SCMAGLEV

station area is provided below. This service is operated by MDOT Maryland Transit Administration (MDOT MTA).

D.2A.4.1.1 Baltimore Local Bus Network (LocalLink) by Station Area

Baltimore Local Bus - Camden Yard Station Alternative

The large majority of the Baltimore local bus network runs through downtown, thus providing access to the SCMAGLEV Camden Yards station alternative. Transit service in the Camden Yards Station area is shown in **Figure D.2-2**.

Baltimore Local Bus - Cherry Hill Station Alternative

There are four LocalLink routes running through the SCMAGLEV Cherry Hill Station area. These are the LocalLink 26, which runs every 15 minutes throughout the day and the LocaLink routes 69, 70 and 71, which typically run every 20 to 60 minutes throughout the day, with more frequent service typically provided during the AM and PM peak periods.

The Cherry Hill Station area transit network is provided in **Figure D.2-3**.

D.2A.4.1.2 Baltimore Heavy Rail System (MetroLink)

Baltimore Metro (known as MetroLink) service runs between Owings Mills Maryland, in the suburbs northwest of Baltimore, to the Johns Hopkins Medical complex in the eastern part of Baltimore City. There are two MetroLink stations in downtown Baltimore that provide pedestrian access to the Camden Yards SCMAGLEV Station Alternative, Lexington Market and Charles Center. There is no MetroLink service to the Cherry Hill Station.

AM and PM peak period Metro service frequencies are eight minutes, mid-day service frequencies are 10 minutes, and evening service frequencies are 11 minutes. Train consists are six cars, with an approximate maximum passenger load of 100 passengers per car. The MetroLink alignment through downtown Baltimore is shown in **Figure D.2-2**.

Figure D.2-2: Camden Yards SCMAGLEV Station Alternative Area Existing Transit Network

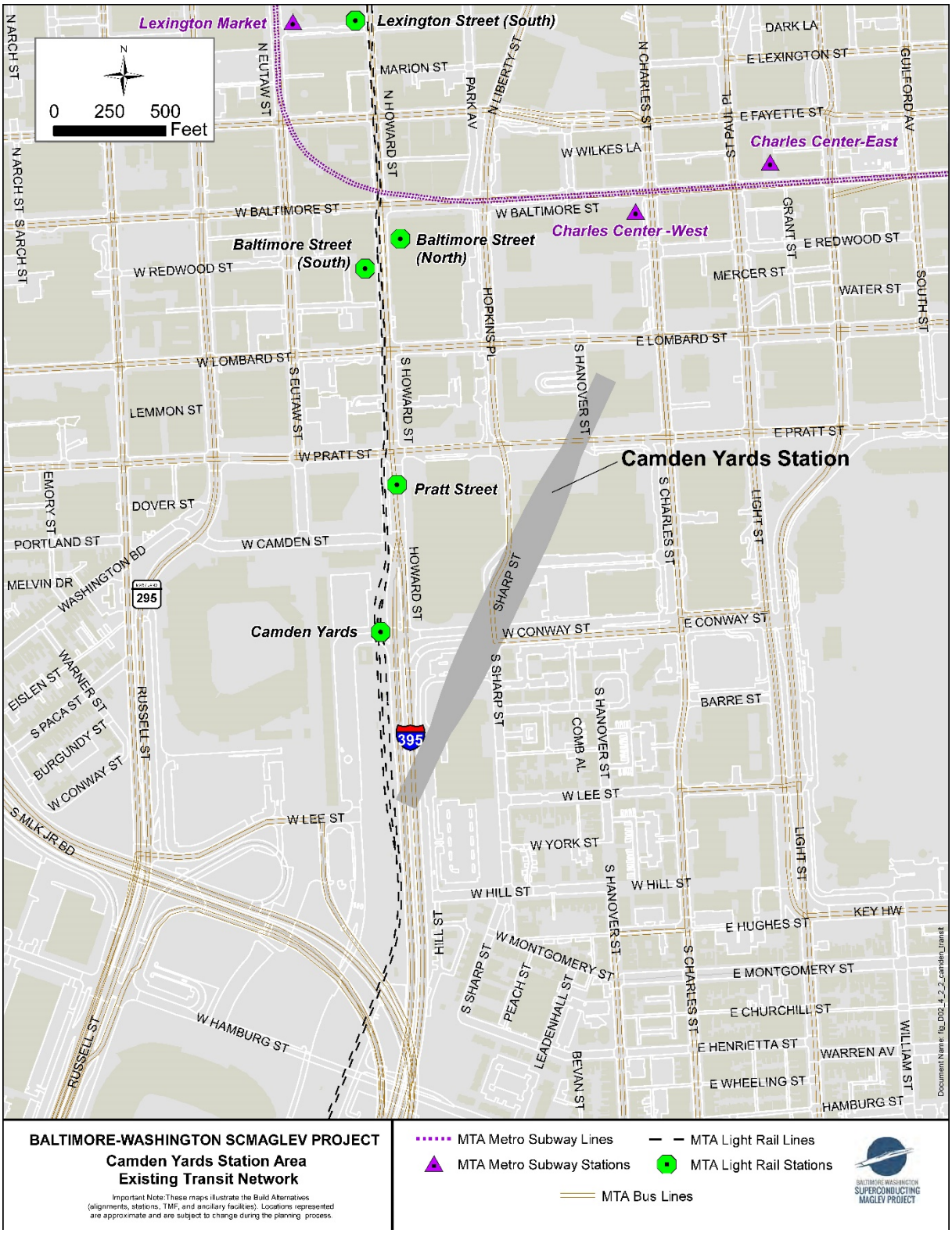
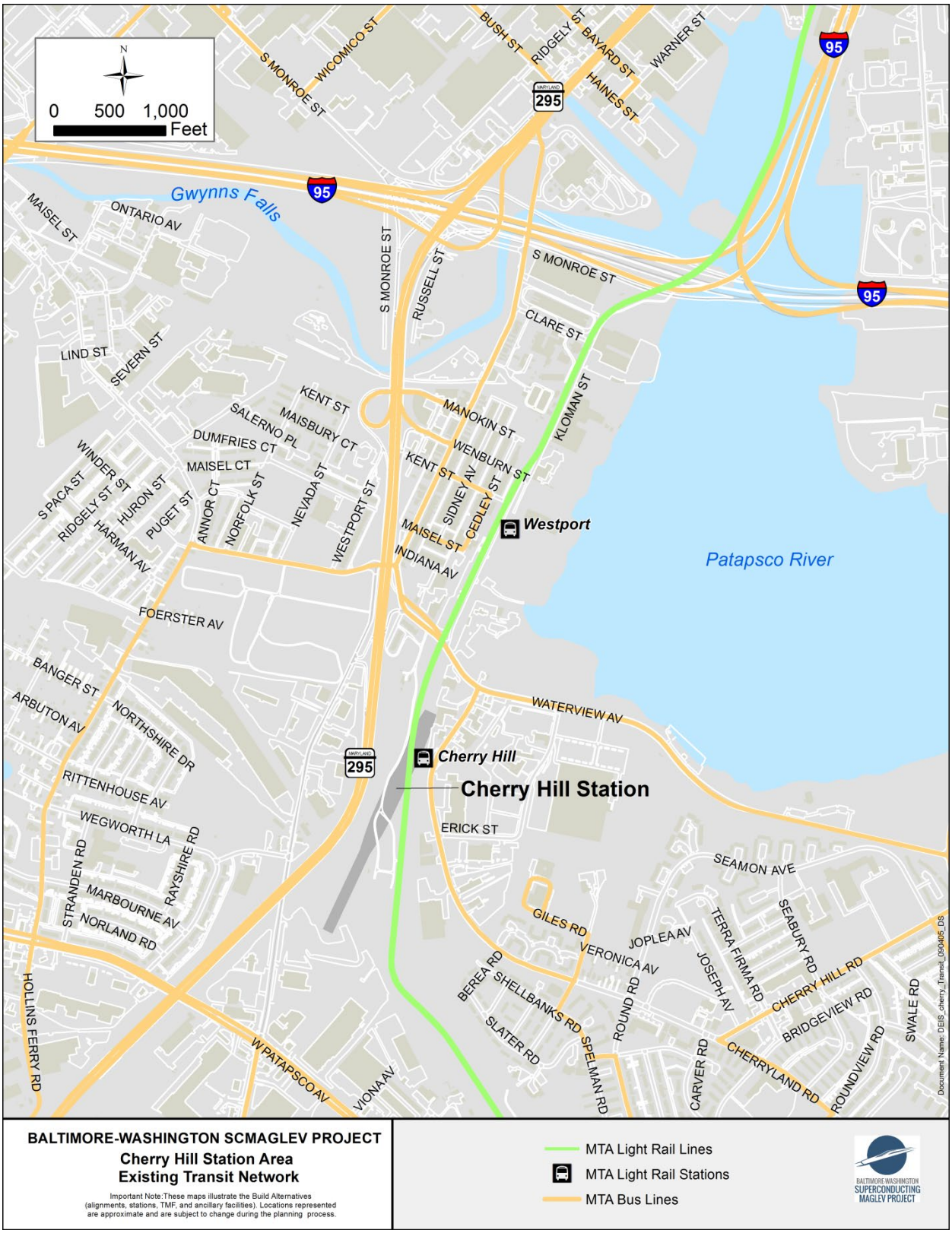


Figure D.2-3: Cherry Hill Station Area Existing Transit Network



D.2A.4.1.3 Baltimore Light Rail (Light RailLink)

Baltimore Light Rail would provide access to both Baltimore SCMAGLEV Station alternatives (Camden Yards and Cherry Hill) and to the BWI Marshall Airport SCMAGLEV Station. Locations of Baltimore Light Rail Stations in the proximity of SCMAGLEV Stations are shown in **Figures D.2-2, D.2-3 and D.2-4**.

Multiple downtown Baltimore Light Rail Stations are within walking distance of the Camden Yards SCMAGLEV Station alternative. The closest Light Rail station to the Camden Yards station is the Pratt Street station (see **Figure D.2-2**).

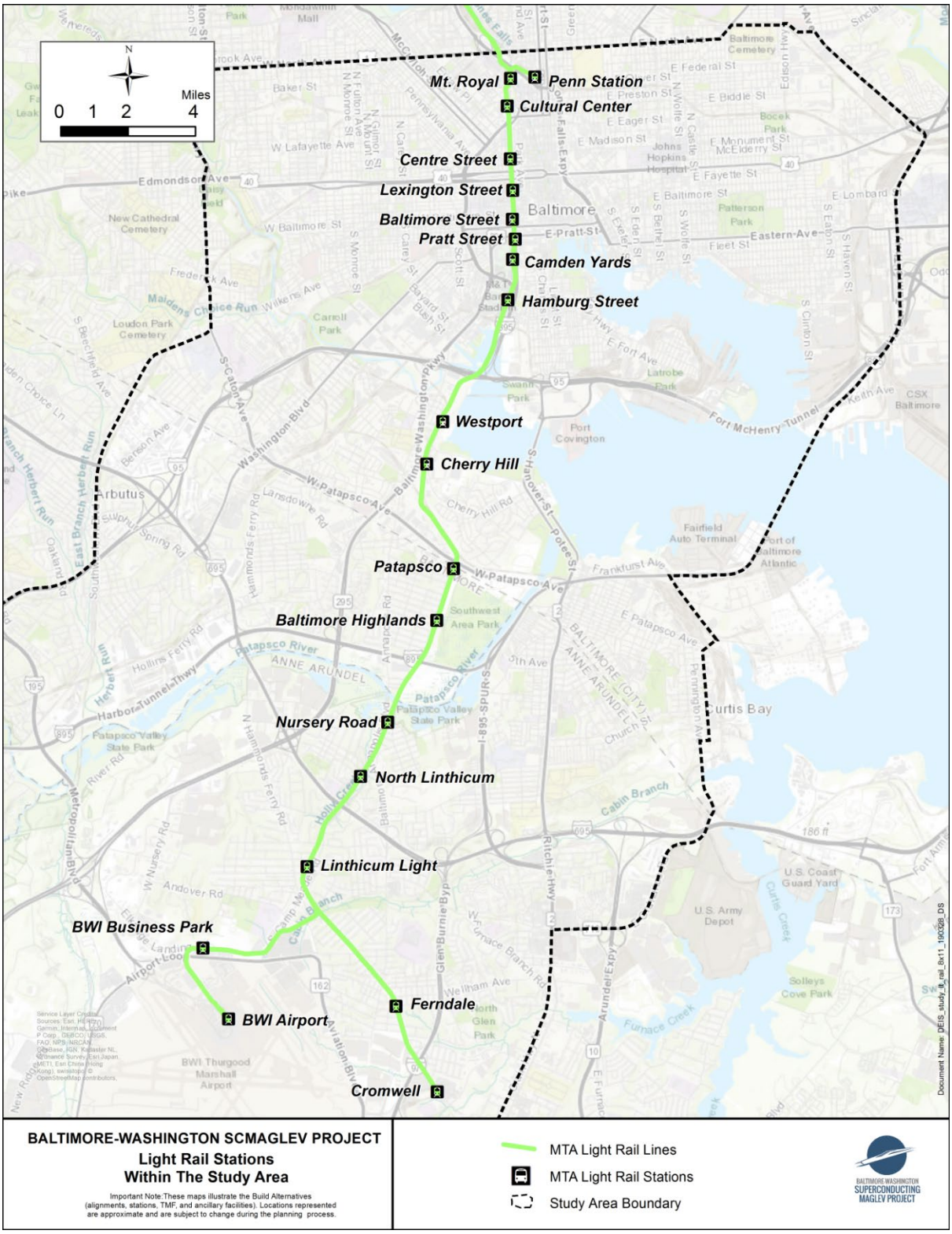
The closest Light Rail station to the Cherry Hill SCMAGLEV station alternative is the Cherry Hill Light Rail Station, with the Westport Light Rail station also in close vicinity (see **Figure D.2-3**).

The closest Light Rail station to the BWI Marshall Airport SCMAGLEV station is the BWI Marshall Airport station, which is located within the Airport terminal area (See **Figure D.2-4**).

Light Rail service frequencies at the station closest to the two SCMAGLEV Baltimore Station alternatives (Camden Yards and Cherry Hill) are 10 minutes in the peak and 15 minutes in the off-peak. Service frequencies at the BWI Marshall Airport station are 20 minutes in the peak and 30 minutes in the off-peak.

A SCMAGLEV terminal station at Cherry Hill, south of downtown, would require passengers destined for downtown Baltimore to transfer to another mode for the final portion of the trip. Light Rail is one of the modal options for this final piece of the trip. Current Light Rail capacity utilization is below full utilization. Future Light Rail ridership estimates are not available, but if transfers between SCMAGLEV and Light Rail for SCMAGLEV riders making the final trip to downtown Baltimore increase demand on Light Rail, the MDOT MTA has the flexibility to increase capacity through the use of additional Light Rail cars on each Light Rail train. If necessary, Light Rail cars can be modified to accommodate heavy luggage or other requirements specific to SCMAGLEV passengers transferring to Light Rail for the final trip into downtown Baltimore (or vice versa).

Figure D.2-4: Baltimore Light Rail Stations Within the SCMAGLEV Project Affected Environment



D.2A.4.2 Howard County, Anne Arundel County and Prince George's County Local Transit System

There is dense transit network in the portion of the SCMAGLEV Project Affected Environment between the Baltimore and Washington DC SCMAGLEV stations. This transit network is described below.

Local Bus in Anne Arundel and Prince George's County

Local bus service within Anne Arundel County is provided by two operators, the MDOT MTA and the Regional Transit Authority of Central Maryland (RTA). There are a number of MDOT MTA routes in the northern part of County, but only one would directly serve the SCMAGLEV BWI Marshall Station. This route would be the MDOT MTA Route 75, which runs between the Patapsco Light Rail Station and BWI Marshall Airport. Service frequency on the route is 30 minutes in the peak period and 70 minutes in the off-peak.

Two RTA routes, The RTA 201 and the Anne Arundel County Connector directly serve the proposed BWI SCMAGLEV station, which is the only station in Anne Arundel County. The RTA also serves Howard County, but no services in the County would connect to the proposed BWI Marshall Airport SCMAGLEV Station.

Prince George's County is served by a dense local bus network comprised of three operators: Prince George's County TheBus, WMATA Metrobus, and the RTA. There is no SCMAGLEV Station proposed for location within the County. No local bus routes in the County would directly serve any of the SCMAGLEV stations located outside the County.

Express Bus

The MDOT MTA runs five express services from Columbia Maryland to Washington DC and one service between Columbia and downtown Baltimore (Columbia is located west of the Project alignment). Each of these routes are peak period, peak direction services running to Washington, DC or Baltimore in the morning, and to Howard County in the afternoon. Each service is summarized in **Table D.2-13**.

Table D.2-13: MDOT MTA Commuter Bus Service from Howard County

Route	Service Frequency	Destination	Access to Washington, D.C. or Baltimore
MDOT MTA 305	20 minutes	Washington, D.C.	Via U.S. 29 and Silver Spring
MDOT MTA 315	20 minutes	Washington, D.C.	Via U.S. 29 and Silver Spring
MDOT MTA 325	15 minutes	Washington, D.C.	Via U.S. 29 and Silver Spring
MDOT MTA 335	20 minutes	Washington, D.C.	Via I-95
MDOT MTA 345	20 minutes	Washington, D.C.	Via I-95
MDOT MTA 310	20 minutes	Baltimore	Via I-95

Source: MDOT MTA Public Timetables

WMATA Metrorail

Prince George's County has a dense WMATA Metrorail network, which provides access to Washington D.C. as well as other destinations within the Washington Region. There would be no connections between SCMAGLEV and Metrorail within the County, given that no SCMAGLEV station is proposed in the County.

MDOT MTA Light RailLink

The MDOT MTA Light RailLink System has seven stations in Anne Arundel County, including a station at BWI Marshall Airport. This Airport station would be accessible to the proposed SCMAGLEV BWI Station. Light RailLink service to the airport is every 20 minutes in the peak period and every 30 minutes in the off-peak.

D.2A.4.3 Washington DC Local Transit System

D.2A.4.3.1 Mount Vernon Station Area Metrobus Service

This Technical Report section provides greater detail on the WMATA Metrobus network within the vicinity of the Mount Vernon Station in Washington D.C. Route alignment and service frequency is summarized in **Table D.2-14**. The station area Metrobus network is also displayed in **Figure D.2-5**.

Table D.2-14: WMATA Metrobus Local Service in Vicinity of Proposed Mount Vernon East SCMAGLEV Station

Route	Direction	Street Service Runs On Within Station Area	Peak Service Frequency	Off-Peak Service Frequency
70	North – South	7th Street NW	12 minutes	12 minutes
79	North - South	7th Street NW	10 minutes	12 minutes
52/54	North – South	14th Street NW	6 minutes	8 minutes
59	North – South	14th Street NW	15 minutes	No service
G8	North – South	9th St./11th St. NW	6-8 minutes	30 minutes
X2	East - West	H Street NW	10 minutes	12 minutes
X9	East - West	H Street NW	15 minutes	15 minutes
80	East – West	H Street NW	8 – 10 minutes	15 minutes
P6	North – South	5th Street NW	15 minutes	24 minutes

Source: WMATA Public Timetables

D.2A.4.3.2 Mount Vernon Station Area Metrorail Service

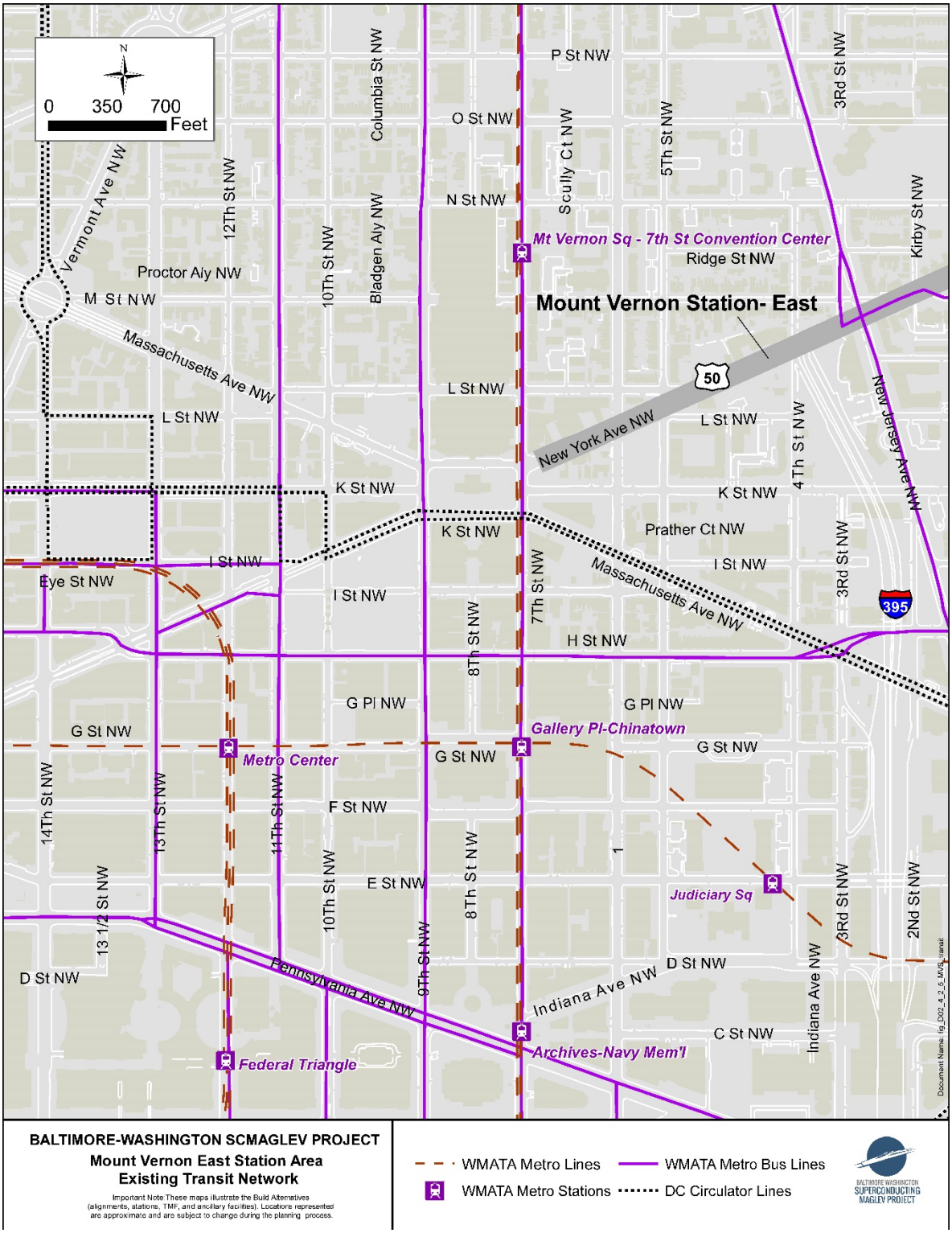
Metrorail peak period service frequency varies by line but ranges between four minutes to six minutes. Service is provided by a mix of six and eight car trains, with a comfortable passenger load on each car of approximately 100 people. Stations on two lines are within walking distance of the SCMAGLEV Mount Vernon East Station, as outlined below.

The first proximate station, Mount Vernon Square on the Green Line, is one block north of the proposed Mount Vernon East SCMAGLEV Station. Gallery Place, on the Green and Red Lines, is approximately four blocks south of the proposed station along 7th Street. Red Line service runs every 4-8 minutes in the peak period and 12 minutes in the off-peak. Green Line service runs every 8 minutes in the peak period and 12 minutes in the off-peak. Metrorail lines and stations in the vicinity of the Mount Vernon SCMAGLEV station are shown in **Figure D.2-5.**

D.2A.5 Transportation Network Component: Project Area Roadway Network

This Technical Report section provides a description of the key roadways within the SCMAGLEV Project Affected Environment Roadway Network.

Figure D.2-5: Existing Local Transit Network in Vicinity of Mount Vernon SCMAGLEV Station



D.2A.5.1 Major North/South Roadways within the SCMAGLE Project Affected Environment

The first set of roadways within the SCMAGLEV Project Affected Environment are those that run north/south through the project area, as shown in **Figure D.2-6** and described after the figure.

Interstate 95 – Interstate 95 (1-95) is a major limited access highway that runs the entire length of the U.S. east coast from Maine to Florida, and also runs the length of the study area (note: a limited access highway is a roadway that is completely grade separated from intersecting roadways. Vehicles have access to the highway via highway on-ramps on a limited number of intersecting roadways). The roadway serves both interstate travelers as well as travelers making trips between origins and destinations within the SCMAGLEV Project Affected Environment. The roadway is four lanes in each direction within the Affected Environment and runs west of the SCMAGLEV alignment.

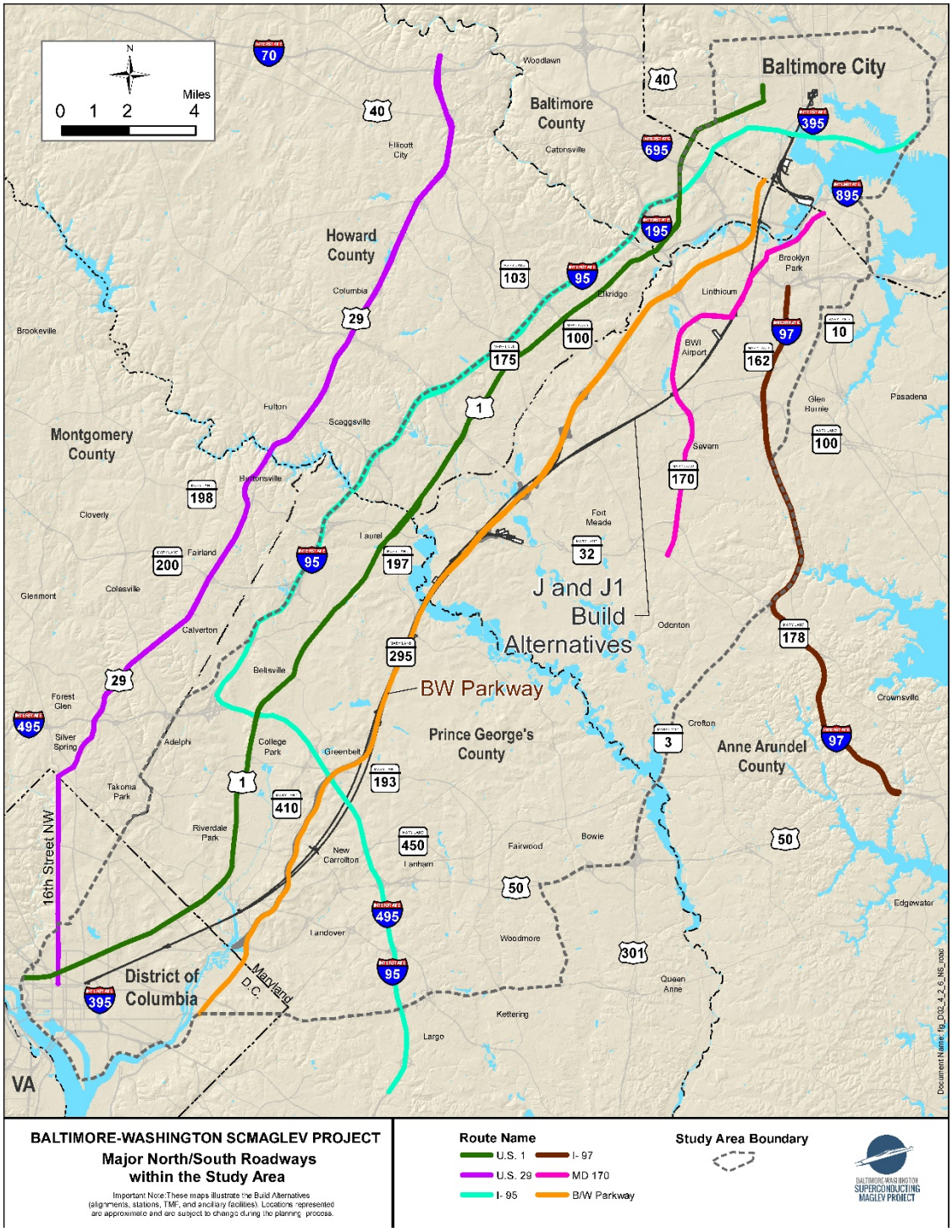
Baltimore-Washington Parkway– the Baltimore-Washington Parkway (BWP) is a National Park Service (NPS) facility that runs between Baltimore, MD and Washington, D.C. The roadway is a limited access highway. At its southern terminal, it ends at the New York Avenue/D.C. 295 split at the Washington, D.C. boundary. At the northern end, the Parkway ends at MD 175. It continues north under the jurisdiction of the MDOT Maryland State Highway Administration (MDOT SHA) until the Baltimore City line. This roadway is generally two lanes in each direction within the study area, but it widens into three lanes in each direction approaching the DC line and in sections maintained by MDOT SHA. The Parkway alignment is also the location of a significant portion of Build Alternatives J (BWP East) and J1 (BWP West).

U.S. 29 – U.S. 29 is located on the western edge of the SCMAGLEV Project Affected Environment and is a major commuter route between the Baltimore suburbs and Washington, D.C., via Montgomery County Maryland. The roadway is a combination of limited access highway and principal arterial (an arterial is a roadway that has direct access from intersecting streets and driveways). The roadway is typically three lanes in each direction. The U.S.29 corridor is also home to a number of express bus services running into Washington, DC from the Baltimore suburbs.

Interstate 97 – Interstate 97 (I-97) is a limited access roadway running between the Baltimore Beltway and its intersection with U.S. 50 in Annapolis Maryland. The roadway serves predominantly local and regional trips. The roadway is three lanes in each direction and is located to the east of the proposed Project alignment.

U.S. 1 – U.S. 1 is a principal arterial that runs the entire length of the study area between Baltimore, MD and Washington D.C. The roadway has a mix of lane capacity but is generally two lanes in each direction and runs to the west of the proposed Project alignment.

Figure D.2-6: Major North/South Roadways Within the Affected Environment



MD 170 – MD 170 is a principal arterial that runs between its intersection with I-895 north of the BWI Marshall Airport and its intersection with MD 32 south of the airport. It is generally two lanes in each direction and runs directly west of the Project alignment.

D.2A.5.2 Major East/West Roadways within the SCMAGLEV Project Affected Environment

The second set of roadways in the project area are those that run east/west through the SCMAGLEV Project Affected Environment and thus run perpendicular to the SCMAGLEV alignment. These are shown in **Figure D.2-7** and described after the figure.

Interstate 195 – Interstate 195 (I-195) is a short, limited access highway interstate route that links I-95 and BWI Marshall Airport. The route is the key access point between the I-95 corridor and the airport. The roadway is two lanes in each direction for the majority of its route.

The closest access to a SCMAGLEV station for trips on I-195 would be at the BWI Marshall Station.

Maryland Route 100 – MD Route 100 is a limited access highway running between U.S. 29 in Howard County and MD Route 117 (Mountain Road) in Anne Arundel County. The roadway is an important access point for activity centers within the study area and is also an important feeder route to each of the different north-south study area routes described above. The roadway is three lanes in each direction for the majority of its length.

The closest access to a SCMAGLEV station for trips on MD Route 100 would be at the BWI Marshall Station.

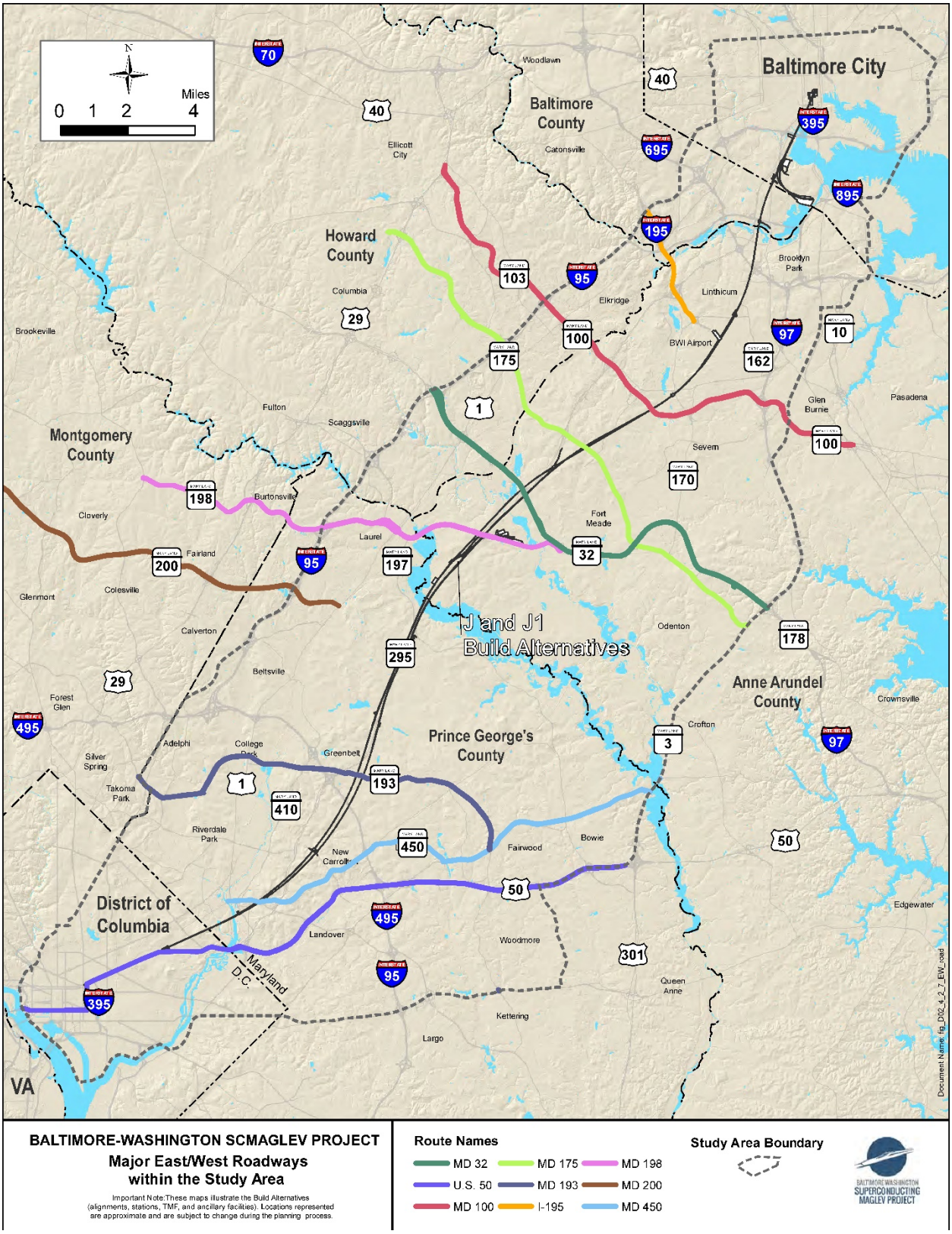
Maryland Route 175 – MD Route 175 is a principal arterial that runs from the Columbia area of Howard County to its termination in the Odenton area of Anne Arundel County. The roadway provides for local trips and also serves as a feeder to all of the major study area north-south routes described above except I-97. The roadway is predominantly two lanes in each direction.

The closest access to a SCMAGLEV station for trips on MD Route 175 would be at the BWI Marshall Station.

Maryland Route 32 –MD Route 32 is a limited access highway within the study area running between central Howard County in the west and Interstate 97 in the east. MD Route 32 plays a comparable role to MD Route 100, providing access to activity centers along its length as well as a feeder to each of the major north-south routes described above. The roadway is generally two lanes in each direction.

The closest access to a SCMAGLEV station for trips on MD Route 32 would be at BWI Marshall Station.

Figure D.2-7: Major East/West Roadways Within the Affected Environment



Maryland Route 198 – MD Route 198 is a principal arterial that runs from the Burtonsville area of Montgomery County to its termination at its intersection with MD Route 32 in the vicinity of Fort Meade. The roadway provides for local trips as well as a feeder to all of the major north-south routes described above except I-97.

The closest access to a SCMAGLEV station for trips on MD Route 198 would be at BWI Marshall Station.

Maryland Route 200 (Inter-County Connector (ICC)) – The ICC is a limited access toll road running between Rockville, MD in Montgomery County and U.S. 1. The roadway feeds trips to U.S. 29, I-95 and U.S. 1 but does not intersect the SCMAGLEV alignment.

Maryland Route 193 – MD Route 193 is a major east-west principal arterial that runs across the northern portion of Prince George's County between Bowie, Maryland and Wheaton, Maryland. The roadway intersects the proposed Project alignment but would not provide direct access to a SCMAGLEV station.

MD Route 450 (Annapolis Road) – MD Route 450 is a major east-west principal arterial that runs across the central portion of Prince George's County between Annapolis, Maryland and Bladensburg, Maryland. The roadway intersects the proposed Project alignment but would not provide direct access to a SCMAGLEV station.

U.S. 50 - U.S. 50 is a limited access highway between the Eastern Shore of Maryland and Washington, D.C., via Annapolis (the roadway continues west beyond the District and actually runs across the country to California). The roadway changes from a limited access highway to a principal arterial as it runs through Washington, D.C. The roadway crosses the Project alignment in Prince George's County but does not provide direct access to a SCMAGLEV Station there (of note is that U.S. 50 also runs in the vicinity of the SCMAGLEV Mount Vernon station in Washington DC).

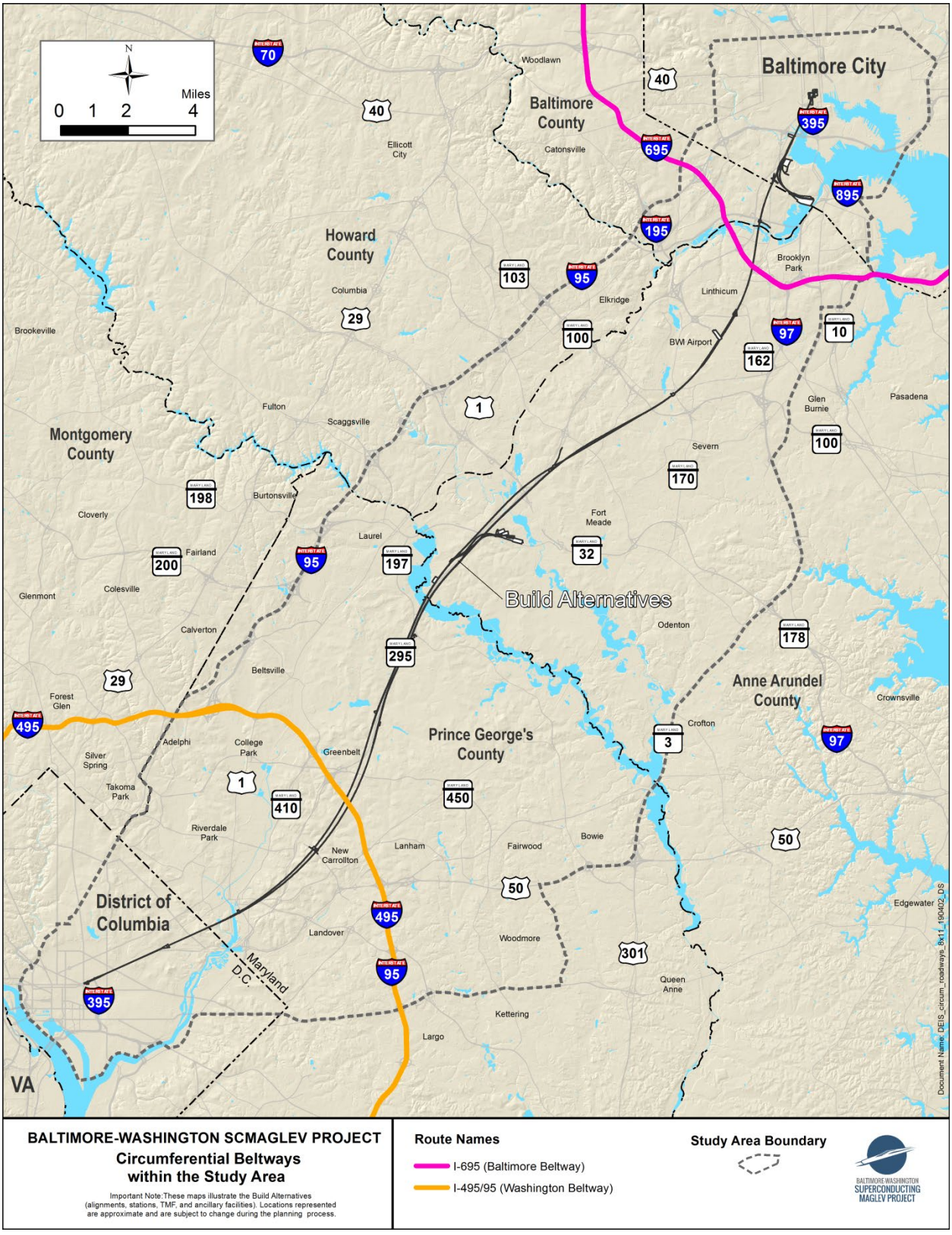
D.2A.5.3 Circumferential Beltways within the Affected Environment

The final Affected environment roadway network component are the two circumferential beltways around Baltimore and Washington respectively. These are shown in **Figure D.2-8**.

In the Baltimore area, the Beltway is identified as I-695, and it completes a full circle around the City and neighboring Counties. The proposed SCMAGLEV alignment crosses under I-695 in a tunnel in the vicinity of Lansdowne, MD, though there is no SCMAGLEV station at this location.

The Washington Beltway is designated as I-495 to the north and west of Washington, D.C. and Interstate I-95/I-495 to the east of the City. The SCMAGLEV alignment crosses I-95/I-495 in the vicinity of Greenbelt, MD, though there is not a SCMAGLEV station at this location.

Figure D.2-8 Circumferential Beltways Within the Study Area



D.2A.5.4 Changes in Roadway Volumes at Key Links within the Regional Roadway Network

This Technical Report section contains data on the changes in traffic volumes on major roadway links within the SCMAGLEV Project Affected Environment regional roadway network. **Table D.2-15** contains data on changes in regional roadway volumes under the Cherry Hill Baltimore station scenario and **Table D.2-16** contains data on changes in volumes under the Camden Yards Baltimore station scenario.

The data in **Tables D.2-15 and D.2-16** show relatively small volume changes on major roadway links between the future No Build and future Build conditions under both Baltimore Station scenarios.

Table D.2-15: Regional Roadway Network Daily Volumes by Key Roadway Link (both directions) – By Alternative and Year – Cherry Hill Baltimore Station Scenario

Roadway Link	Alternative				
	(Current Conditions)	2045 No Build (Horizon Year)	2045 Build (Horizon Year)	Volume Change	Percent Change
I-95 @ MD 100	218,672	227,624	225,705	-1,919	-0.85%
BW Parkway @ MD 198	89,006	97,957	99,741	1,784	1.79%
U.S. 29 @ MD 198	90,992	116,065	119,379	3,314	2.78%
I-97 @ MD 32	103,263	111,577	113,159	1,582	1.40%
MD 170 @ MD 100	24,064	23,249	23,795	546	2.29%
MD 100 @ BW Parkway	97,312	120,057	120,325	268	0.22%
MD 175 @ MD 32	43,434	59,159	61,005	1,846	3.03%
MD 32 @ BW Parkway	82,856	90,747	91,235	488	0.53%
MD 198 @ MD 32	38,078	54,351	55,364	1,013	1.83%
MD 200 @ I-95	20,218	25,584	26,309	725	2.76%
MD 193 @ I-95/I-495	48,783	53,974	54,402	428	0.79%
MD 450 @ I-95/495	31,821	47,126	46,949	-177	-0.38%
U.S. 50 @ I-95/I-495	163,796	177,813	178,283	470	0.26%

I- 695 @ BW Parkway	121,931	131,322	133,444	2,122	1.59%
I-95/I-495 @ I-95	244,524	267,348	265,020	-2,328	-0.88%

Source: MWCOG and BMC Regional Travel Forecasting Models

Table D.2-16: Regional Roadway Network Daily Volumes by Key Roadway Link (both directions) – By Alternative and Year – Camden Yards Baltimore Station Scenario

Roadway Link	Alternative				
	(Current Conditions)	2045 No Build (Horizon Year)	2045 Build (Horizon Year)	Volume Change	Percent Change
I-95 @ MD 100	218,672	227,624	226,817	-807	-0.36%
BW Parkway @ MD 198	89,006	97,957	98,197	240	0.24%
U.S. 29 @ MD 198	90,992	116,065	117,045	980	0.84%
I-97 @ MD 32	103,263	111,577	112,504	927	0.82%
MD 170 @ MD 100	24,064	23,249	23,323	74	0.32%
MD 100 @ BW Parkway	97,312	120,057	119,977	-80	-0.07%
MD 175 @ MD 32	43,434	59,159	59,124	-35	-0.06%
MD 32 @ BW Parkway	82,856	90,747	90,547	-200	-0.22%
MD 198 @ MD 32	38,078	54,351	54,380	29	0.05%
MD 200 @ I-95	20,218	25,584	25,658	74	0.29%
MD 193 @ I-95/I-495	48,783	53,974	53,828	-146	-0.27%
MD 450 @ I-95/495	31,821	47,126	47,264	138	0.29%
U.S. 50 @ I-95/I-495	163,796	177,813	177,640	-173	-0.10%
I- 695 @ BW Parkway	121,931	131,322	131,718	396	0.30%
I-95/I-495 @ I-95	244,524	267,348	265,433	-1,915	-0.72%

Source: MWCOG and BMC Regional Travel Forecasting Models

D.2A.6 Transportation Network Component: Station Area Street Network - Baltimore Camden Yards Alternative

This Technical Report section contains data on the local street network for the Camden Yards Baltimore Station alternative.

D.2A.6.1 Current Conditions – Camden Yards Station Area Street Network

Figure D.2-9 shows the Camden Yards Station area street network, which is briefly summarized below.

The Camden Yards Station is centered on Conway Street and is generally bounded by Howard Street to the west, Pratt and Lombard Streets to the north, and Charles Street to the east. In addition, Sharp Street bisects the station area. Pratt, Lombard and Conway Streets are major east-west links within the downtown street network while Howard Street, Sharp Street and Charles Street run north-south. Howard Street and Conway Street are each located at the northern end of I-395, which connects I-95 to downtown Baltimore. As a result, both streets handle significant commuter volumes. Pratt Street handles eastbound volumes of traffic headed to destinations within downtown as well traffic moving through downtown. Lombard Street is the westbound portion of the one-way pair with Pratt Street. Charles Street and Sharp Street carry smaller volumes in the vicinity of the Camden Yards Station.

Current year traffic volumes for key analysis intersections within the Camden Yards Station area are summarized in **Table D.2-17**.

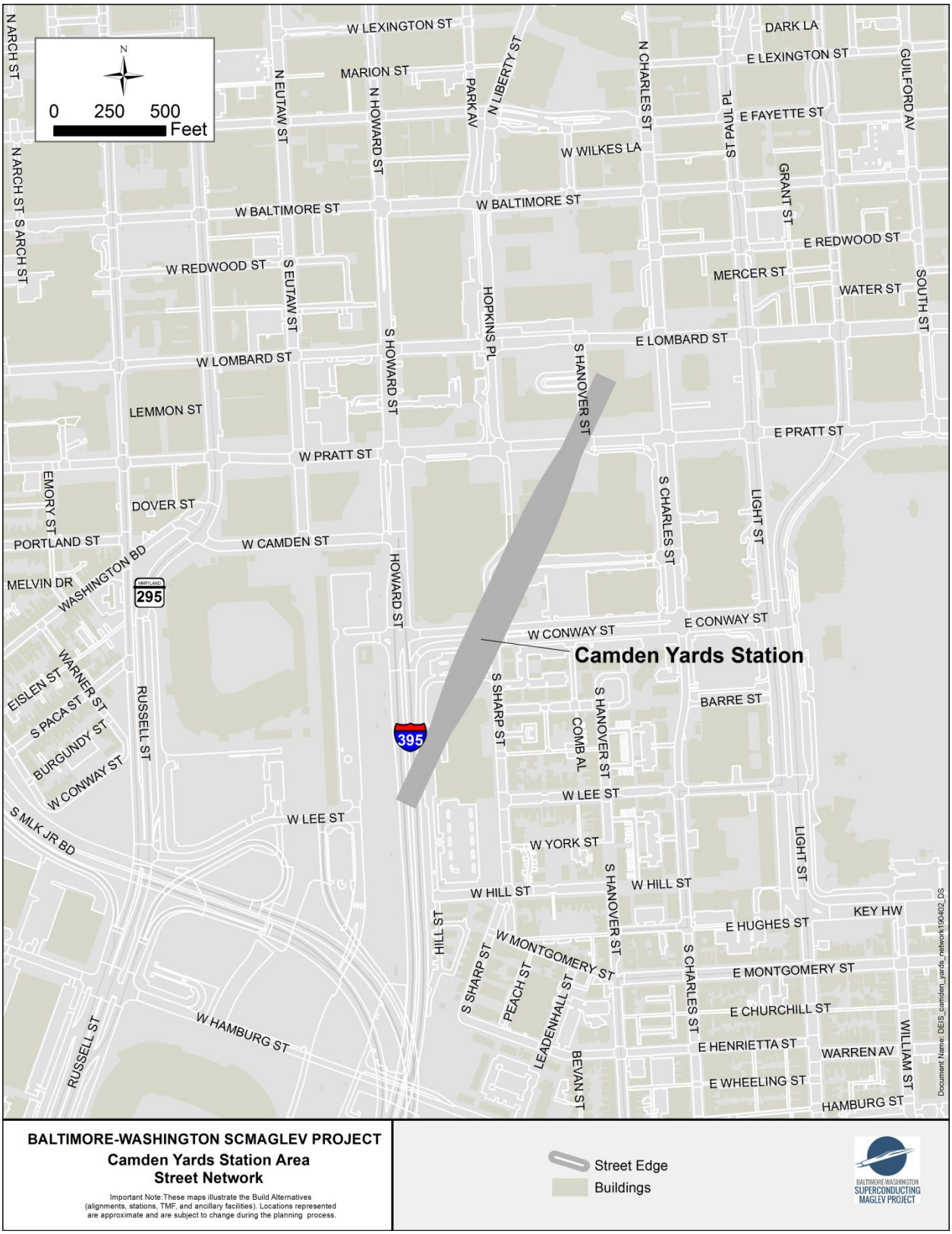
Table D.2-17: Camden Yards Station Area Street Network Weekday Current Conditions Traffic Volumes

Roadway Link	(Current Conditions)
Pratt Street @ Howard Street	19,660
Conway Street @ Howard Street	42,326
Howard Street @ Pratt Street	45,645
Hanover/Charles Street @ Conway Street	8,035
Sharp Street @ Conway Street	11,819

Source: Study Traffic Analysis: Utilizing Current Counts

Current year intersection Level of Service and delay for key analysis intersections around the Camden Yards Station is provided in **Table D.2-18**.

Figure D.2-9: Camden Yards Station Area Street Network



D.2A.6.2 Build Conditions – Camden Yards Station Area Street Network

Table D.2.18 provides data on intersection Level of Service and delay for key analysis intersection for the future 2045 No Build and Build conditions, for the Camden Yards Station scenario. The data in the table shows significant deterioration in traffic operations at the intersection of Conway Street and Sharp Street in the PM Peak, Howard Street and Conway Street in both the AM and PM Peak, and Pratt Street and Howard Street in both the AM and PM peaks between the Build and No Build conditions.

Table D.2-18: Camden Yards Station Area Street Network Intersection LOS and Delay – Camden Yards Station Scenario

Intersection	Current Conditions LOS/Delay (Seconds)	Horizon Year No Build (2045)	Horizon Year Build (2045)
AM Peak			
Conway Street @ Sharp Street	E/71.4	E/71.6	E/61.8
Howard Street @ Conway Street	C/29.7	C/29.1	C/28.8
Pratt Street @ Howard Street	C/22.1	C/23.1	C/22.0
PM Peak			
Conway Street @ Sharp Street	C/34.7	F/85.4	C/29.9
Howard Street @ Conway Street	E/71.0	F/84.1	D/52.8
Pratt Street @ Howard Street	C/21.1	C/24.7	C/22.1

Source: Study Traffic Analysis: Utilizing Current Counts, Forecasted Future No-Build Volumes from BMC Regional Forecast Model and Project Ridership Forecasts. *Additional coordination with Project Sponsor is underway for generation and inclusion of LOS for 2045 Build conditions.

D.2A.7 Transportation Network Component: Station Area Street Network - Baltimore Cherry Hill Alternative

D.2A.7.1 Current Conditions – Cherry Hill Station Area Street Network

Figure D.2-10 shows the Cherry Hill station area street network, which is also briefly summarized below.

The Cherry Hill SCMAGLEV station is a short distance south of downtown Baltimore. The station is situated south of Waterview Avenue, between the BWP and Cherry Hill Road. Direct vehicular access to the station would be via Waterview Avenue and Cherry Hill Road.

Current conditions traffic volumes for key analysis intersections on the street network surrounding the Station area are shown in **Table D.2-19.**

Figure D.2-10: Cherry Hill Station Area Street Network

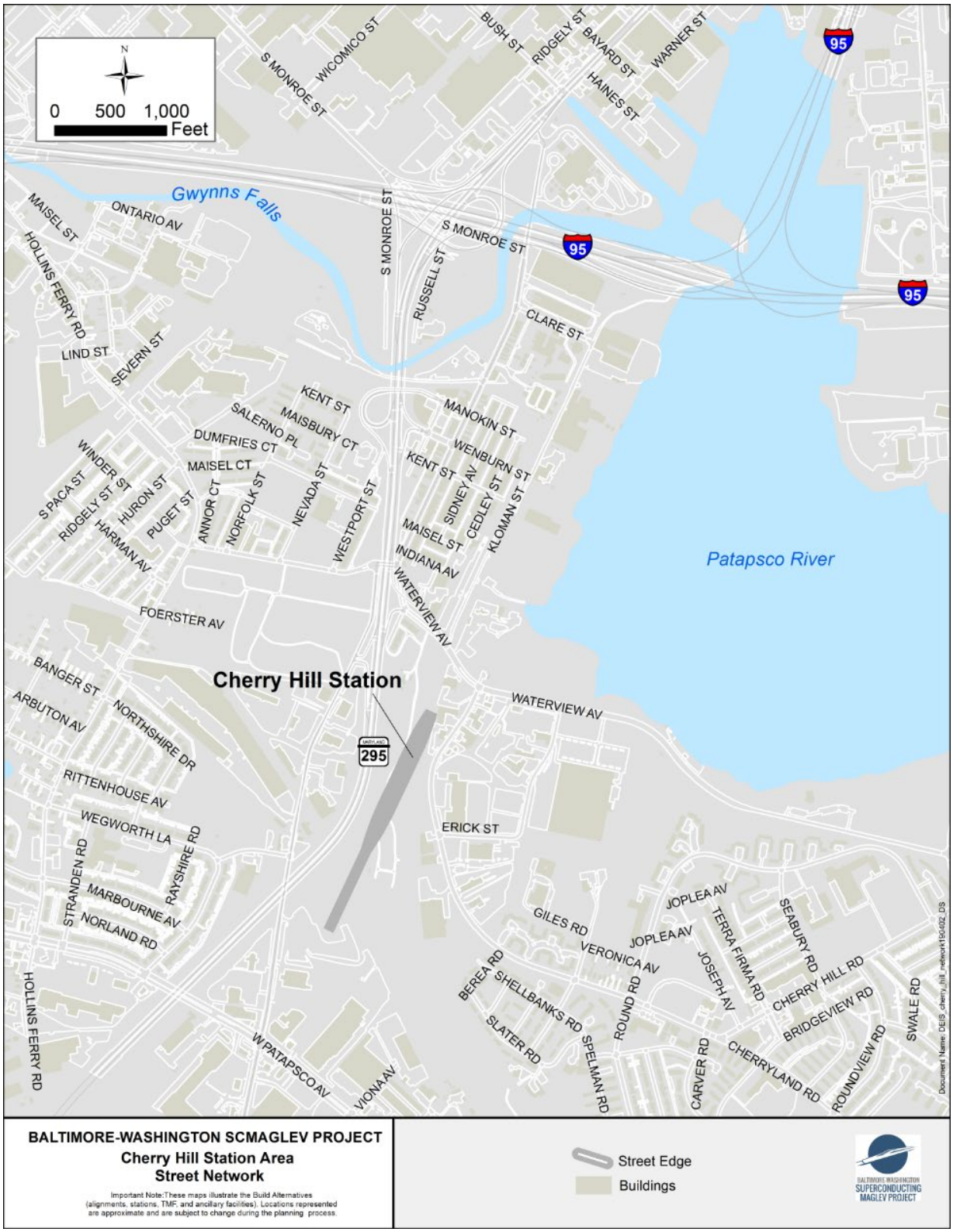


Table D.2-19: Cherry Hill Station Area Street Network Weekday Traffic Volumes – Cherry Hill Station Scenario

Roadway Link	(Current Conditions)
Waterview Avenue @ Cherry Hill Road	13,480
Cherry Hill Road @ Waterview Avenue	48,574
Annapolis Road @Waterview Avenue	13,398
Annapolis Road @BWP Entrance/Exit Ramp	8,414
Waterview Avenue @BWP Exit Ramp	1,903

Source: Study Traffic Analysis: Utilizing Current Counts, Forecasted No Build and Build Future Volumes from BMC Regional Forecast Model and Project Ridership Forecasts.

D.2A.7.2 Build Conditions - Cherry Hill Station Area Street Network

Level of Service and Delay information for the 2045 No-Build and Future Build conditions is provided in **Table D.2-20**.

Table D.2-20: Cherry Hill Station Area Street Network Intersection LOS and Delay

Intersection	Current Conditions LOS/Delay	Horizon Year No Build (2045)	Horizon Year Build (2045)
AM Peak			
Annapolis Road @Patapsco Avenue	D /45.2	E/52.3	E/63.8
SB BW Parkway Ramps @ Annapolis Road	B/19.4	C/33.3	C/21.3
Annapolis Road @ Waterview Avenue (WB)	C/23.5	C/24.5	B/17.6
Annapolis Road @ Monroe Street	B/17.9	C/20.6	B/15.9
Annapolis Road @ Manokin Street	B/15.7	F/134.7	D/37.6
Annapolis Road @ Russell Street	C/19.9	C/25.3	C/20.7
Annapolis Road @ Waterview Avenue (EB)	C/23.0	C/24.1	C/25.2
Waterview Avenue @ Cherry Hill Road	C/25.0	C/25.7	B/19.0
SB Potee Street @ Waterview Avenue	B/11.7	B/12.4	B/12.5
NB Potee Street @ Waterview Avenue	B/12.4	B/16.4	B/12.4
PM Peak			
Annapolis Road @Patapsco Avenue	E/68.8	F/103.6	F/110.9
SB BW Parkway Ramps @ Annapolis Road	C/23.0	D/35.1	D/51.5
Annapolis Road @ Waterview Avenue (WB)	C/23.2	C/22.8	C/20.1
Annapolis Road @ Monroe Street	B/19.6	C/23.5	C/24.5
Annapolis Road @ Manokin Street	B/10.9	B/11.1	B/11.10
Annapolis Road @ Russell Street	C/17.8	D/25.9	C15.8
Annapolis Road @ Waterview Avenue (EB)	C/23.3	C/24.1	C/25.0

Intersection	Current Conditions LOS/Delay	Horizon Year No Build (2045)	Horizon Year Build (2045)
Waterview Avenue @ Cherry Hill Road	C/23.8	C/22.7	B/18.9
SB Potee Street @ Waterview Avenue	B/14.3	B/16.0	B/17.3
NB Potee Street @ Waterview Avenue	B/19.3	C/25.2	D/54.9

Source: Study Traffic Analysis: Utilizing Current Counts, Forecasted Future No-Build Volumes from BMC Regional Forecast Model and Project Ridership Forecasts.
*Additional coordination with Project Sponsor is underway for generation and inclusion of LOS for 2045 Build conditions.

D.2A.8 Transportation Network Component: Mount Vernon East Station Area Street Network

D.2A.8.1 Current Conditions – Mount Vernon East Station Area Street Network

Figure D.2-11 shows the Mount Vernon East station area street network, which is also briefly summarized below.

The Mount Vernon East station would be located under New York Avenue NW between 1st Street and 7th Street NW (see **Figure D.2-11**). Key north/south streets in the surrounding street network include 1st Street NW, New Jersey Avenue NW, 4th Street NW, 5th Street NW, 6th Street NW, 7th Street NW, and 9th Street NW.

Key east/west and diagonal streets in the surrounding network include: New York Avenue NW, Massachusetts Avenue NW, H Street NW, I Street NW, K Street NW and L Street NW.

Current traffic volumes at key analysis intersections within the station area street network are contained in **Table D.2-21**.

Current Conditions LOS are shown in **Table D.2-22**.

Figure D.2-11: Mount Vernon East Station Area Street Network

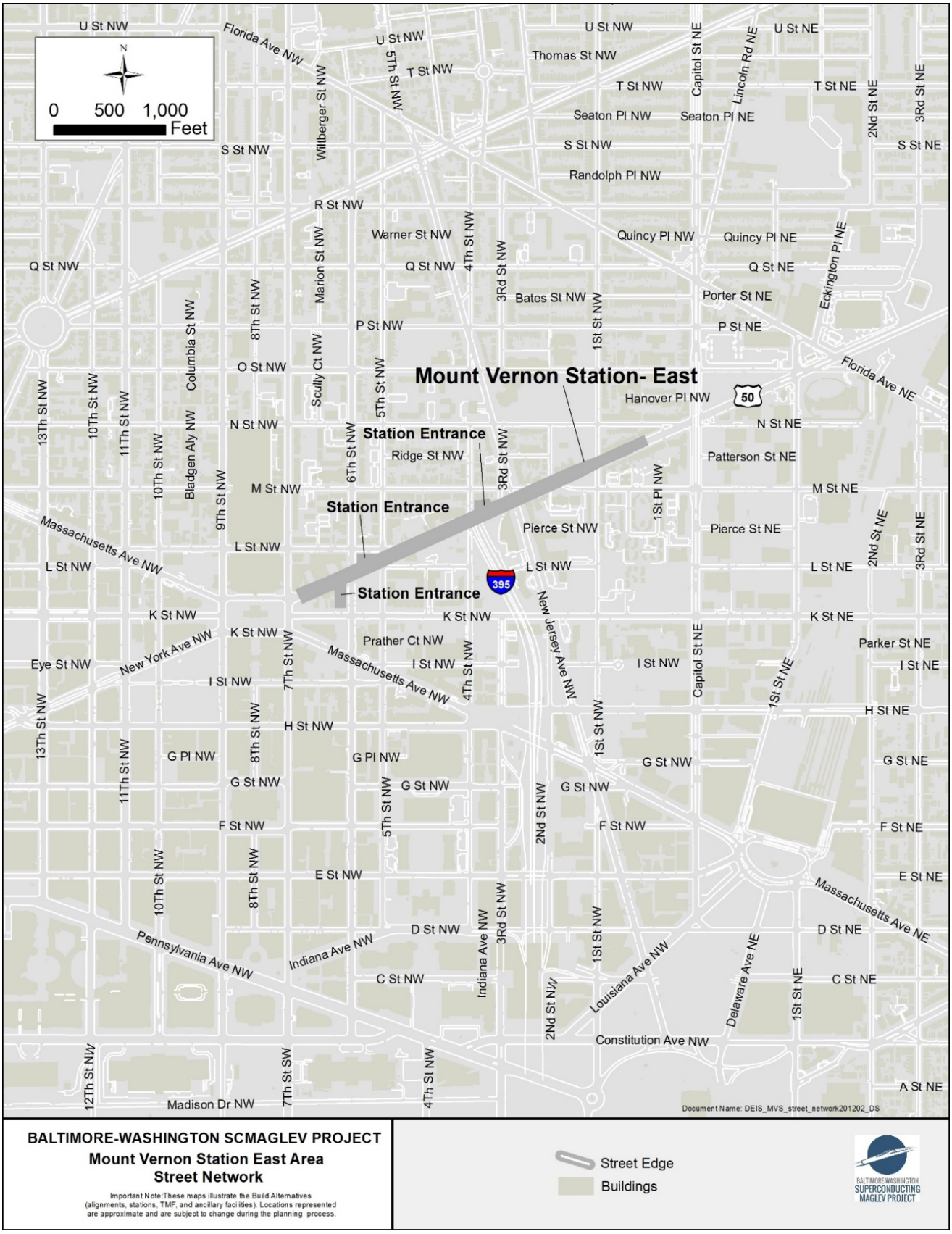


Table D.2-21: Mount Vernon East Station Area Street Network Current Weekday Daily Traffic Volumes

Roadway Link	Current Conditions
1st St. NW @ New York Ave.	741
New Jersey Ave NW @ New York Ave	5,487
4th St. NW @ New York Ave	1,425
6th St. NW @ New York Ave	13,043
7th St. NW @ New York Ave	25,910
9th St. NW @ K St NW	39,378
New York Ave @ 6th St. NW	51,070
Mass Ave @ 6th St NW	25,823
H St. NW @ 6th St NW	10,198
I St @ 7th St NW	10,743
K St NW @7th St NW	11,250
L St NW @7th St NW	115

Source: DDOT Traffic Counts (2019)

D.2A.8.2 Build Conditions - Mount Vernon East Station Area Street Network

Future forecasted Level of Service and delay for the No Build and Build conditions at key analysis intersections around the Mount Vernon East Station are shown in **Tables D.2-22** (Camden Yards Alternative) and **D.2-23** (Cherry Hill Station Alternative).

Table D.2-22: Mount Vernon East Station Area Street Network Analysis Intersection LOS and Delay – Camden Yards Baltimore Station Alternative

Intersection	Current Conditions	Horizon Year No Build (2045)	Horizon Year Build (2045)	Current Conditions	Horizon Year No Build (2045)	Horizon Year Build (2045)
	LOS/Delay			LOS/Delay		
	AM Peak			PM Peak		
New York Ave. NW at 15th St. NW	C /24.2	C/23.8	C/25.9	D/40.2	C/27.2	D/43.9
New York Ave. NW at 14th St. NW	B/11.7	B/12.3	B/12.0	B/12.8	B/12.9	B/11.9
G St. NW at 14th St. NW	C/22.6	C/23.3	C/24.4	B/18.6	C/24.6	C/26.4
New York Ave. NW at H St. NW	C/33.2	D/35.2	D/36.9	C/30.4	C/31.4	C/33.8
New York Ave. NW at 13th St. NW	B/17.8	C/20.1	C/22.0	B/19.8	C/23.4	B/18.0

Intersection	Current Conditions LOS/Delay	Horizon Year No Build (2045)	Horizon Year Build (2045)	Current Conditions LOS/Delay	Horizon Year No Build (2045)	Horizon Year Build (2045)
	AM Peak			PM Peak		
G St. NW at 13th St. NW	B/18.0	B/19.3	C/23.2	C/20.8	C/22.6	D/40.1
I St. NW at 12th St. NW	B/19.6	B/19.7	C/20.2	B/15.3	B/16.8	B/16.2
New York Ave. NW at 12th St. NW	B/16.9	B/17.7	B/17.4	A/8.7	A/9.1	B/19.0
H St. NW at 12th St. NW	C/22.9	C/26.7	C/30.2	C/27.4	D/35.7	C/25.8
K St. NW at 11th St. NW	C/24.0	C/24.9	C/28.9	C/30.3	C/34.8	D/40.5
H St. NW at 11th St. NW	C/20.8	C/24.5	C/27.3	C/28.9	D/35.7	C/32.1
Massachusetts Ave. NW at 10th St. NW	D/38.5	D/47.0	D/44.9	B/18.8	B/17.2	C/20.5
K St. NW at 10th St. NW	B/19.1	B/17.6	C/20.2	B/14.6	B/17.0	C/21.5
New York Ave. NW at 10th St. NW	C/24.5	C/25.7	C/22.0	B/18.2	B/19.6	F/103.9
I St. NW at 10th St. NW (unsignalized)	C/15.9	C/22.0	C/17.5	E/37.7	F/341.4	D/27.1
L St. NW at 9th St. NW	B/19.5	B/20.0	C/20.1	C/22.8	C/23.0	C/23.0
Massachusetts Ave. NW at 9th St. NW	B/19.2	B/18.5	B/18.8	C/24.5	C/24.1	C/22.0
New York Ave. NW at 9th St. NW	C/31.8	D/35.9	D/41.2	C/33.6	C/34.4	F/102.4
I St. NW at 9th St. NW	B/12.5	B/12.7	B/18.8	B/11.8	B/11.6	B/15.5
L St. NW at 7th St. NW	C/22.6	C/23.1	C/22.8	C/21.4	C/23.2	C/21.5
New York Ave. NW at 7th St. NW	D/48.7	D/46.7	D/42.7	F/78.6	F/86.2	E/58.2
Massachusetts Ave. NW at 7th St. NW	B/16.9	C/20.3	C/23.1	C/21.1	C/21.9	D/40.8
I St. NW at 7th St. NW	B/20.0	C/21.1	C/20.5	C/21.4	C/22.9	C/24.3
L St. NW at 6th St. NW	C/23.2	C/22.5	C/25.4	C/20.0	B/19.2	F/>300
New York Ave. NW at 6th St. NW	B/18.4	D/39.5	B/14.8	B/19.6	C/31.3	F/116.0
K St. NW at 6th St. NW	B/16.5	B/16.0	C/22.1	B/13.6	B/14.8	B/15.6
Massachusetts Ave. NW at 6th St. NW	C/34.0	D/36.8	C/32.2	E/65.9	E/79.4	F/124.0
M St. NW at 5th St. NW	B/13.0	B/13.8	B/14.3	B/14.5	B/15.0	C/17.8
L St. NW at 5th St. NW (Southern)	F/112.8	F/125.6	F/122.8	F/106.1	F/117.7	F/103.4
L St. NW at 5th St. NW (Northern)	A/5.5	A/5.6	A/5.6	A/3.9	A/3.9	A/5.2
New York Ave NW @ 5th St NW	C/19.8	C/29.2	C/20.1	C/28.1	C/34.7	D/54.8

Source: Study Traffic Analysis: Utilizing Current Counts, Forecasted Future Volumes from MWCOG Regional Forecast Model and Project Ridership Forecasts

Table D.2-23: Mount Vernon East Station Area Street Network Analysis Intersection LOS and Delay – Cherry Hill Baltimore Station Alternative

Intersection	Current Conditions	Horizon Year No Build (2045)	Horizon Year Build (2045)	Current Conditions	Horizon Year No Build (2045)	Horizon Year Build (2045)
	LOS/Delay			LOS/Delay		
	AM Peak			PM Peak		
New York Ave. NW at 15th St. NW	C /24.2	C/23.8	C/25.4	D/40.2	C/27.2	D/41.4
New York Ave. NW at 14th St. NW	B/11.7	B/12.3	B/11.9	B/12.8	B/12.9	B/12.0
G St. NW at 14th St. NW	C/22.6	C/23.3	C/24.6	B/18.6	C/24.6	C/25.8
New York Ave. NW at H St. NW	C/33.2	D/35.2	D/36.8	C/30.4	C/31.4	C/34.1
New York Ave. NW at 13th St. NW	B/17.8	C/20.1	C/21.7	B/19.8	C/23.4	B/18.2
G St. NW at 13th St. NW	B/18.0	B/19.3	C/23.2	C/20.8	C/22.6	D/40.8
I St. NW at 12th St. NW	B/19.6	B/19.7	C/20.3	B/15.3	B/16.8	B/16.2
New York Ave. NW at 12th St. NW	B/16.9	B/17.7	B/17.3	A/8.7	A/9.1	B/18.9
H St. NW at 12th St. NW	C/22.9	C/26.7	C/29.8	C/27.4	D/35.7	C/25.7
K St. NW at 11th St. NW	C/24.0	C/24.9	C/28.8	C/30.3	C/34.8	D/40.8
H St. NW at 11th St. NW	C/20.8	C/24.5	C/27.2	C/28.9	D/35.7	C/33.2
Massachusetts Ave. NW at 10th St. NW	D/38.5	D/47.0	D/44.1	B/18.8	B/17.2	C/20.3
K St. NW at 10th St. NW	B/19.1	B/17.6	C/20.1	B/14.6	B/17.0	C/21.5
New York Ave. NW at 10th St. NW	C/24.5	C/25.7	C/22.0	B/18.2	B/19.6	F/103.9
I St. NW at 10th St. NW (unsignalized)	C/15.9	C/22.0	C/17.5	E/37.7	F/341.4	D/27.0
L St. NW at 9th St. NW	B/19.5	B/20.0	C/20.1	C/22.8	C/23.0	C/23.0
Massachusetts Ave. NW at 9th St. NW	B/19.2	B/18.5	B/18.8	C/24.5	C/24.1	C/22.0
New York Ave. NW at 9th St. NW	C/31.8	D/35.9	D/41.2	C/33.6	C/34.4	F/102.0
I St. NW at 9th St. NW	B/12.5	B/12.7	B/18.7	B/11.8	B/11.6	B/15.5

Intersection	Current Conditions	Horizon Year No Build (2045)	Horizon Year Build (2045)	Current Conditions	Horizon Year No Build (2045)	Horizon Year Build (2045)
	LOS/Delay			LOS/Delay		
	AM Peak			PM Peak		
L St. NW at 7th St. NW	C/22.6	C/23.1	C/22.8	C/21.4	C/23.2	C/21.5
New York Ave. NW at 7th St. NW	D/48.7	D/46.7	D/43.2	F/78.6	F/86.2	E/57.7
Massachusetts Ave. NW at 7th St. NW	B/16.9	C/20.3	C/23.0	C/21.1	C/21.9	D/41.0
I St. NW at 7th St. NW	B/20.0	C/21.1	C/20.5	C/21.4	C/22.9	C/24.3
L St. NW at 6th St. NW	C/23.2	C/22.5	C/25.5	C/20.0	B/19.2	F/>300
New York Ave. NW at 6th St. NW	B/18.4	D/39.5	B/15.2	B/19.6	C/31.3	F/114.6
K St. NW at 6th St. NW	B/16.5	B/16.0	C/22.0	B/13.6	B/14.8	B/15.4
Massachusetts Ave. NW at 6th St. NW	C/34.0	D/36.8	C/31.7	E/65.9	E/79.4	F/119.3
M St. NW at 5th St. NW	B/13.0	B/13.8	B/14.3	B/14.5	B/15.0	C/17.9
L St. NW at 5th St. NW (Southern)	F/112.8	F/125.6	F/122.8	F/106.1	F/117.7	F/103.4
L St. NW at 5th St. NW (Northern)	A/5.5	A/5.6	A/5.6	A/3.9	A/3.9	A/5.3
New York Ave NW @ 5th St NW	C/19.8	C/29.2	C/20.2	C/28.1	C/34.7	E/55.5

Source: Study Traffic Analysis: Utilizing Current Counts, Forecasted Future Volumes from MWCOG Regional Forecast Model and Project Ridership Forecasts

D.2A.9 Transportation Network Component: Roadway Network around Train Maintenance Facility (TMF) Alternatives

D.2A.9.1 Current Conditions

This Technical Report section outlines the current conditions for the roadway network around each of the three TMF site alternatives.

- **MD 198** - The auto entrance to the MD 198 TMF site alternative would be located off of the current driveway to the Extra Space Storage facility, which in turn is located on the north side of MD 198, just east of the northbound entrance ramp to the

Baltimore – Washington Parkway, in the Anne Arundel County portion of the SCMAGLEV Project Affected Environment.

  - MD 198 is two lanes eastbound and one lane westbound with a center bi-directional turn lane in the vicinity of the storage facility site. This section of MD 198 has driveways to businesses on both sides of MD 198 with direct access to the roadway. Left turns to these businesses are made from the bi-directional middle turn lane. Average daily traffic in this section of MD 198 is approximately 27,000 based on Maryland State Highway Administration traffic counts.

- **BARC West** – The auto entrance to the BARC West TMF site alternative would be located off of Odell Road, south of Odell and just east of the intersection of Odell Road and Ellington Drive, in the Prince George's County portion of the SCMAGLEV Project Affected Environment. The alignment of Odell road in this area would be modified as part of the Build capital improvements. The closest major intersection to the east of the TMF entrance is Muirkirk Road and Odell Road, which is approximately 2 miles from the entrance. The closest major intersection to the west of the entrance is Odell Road and Edmonston Avenue, which is approximately 1.7 miles from the entrance. U.S. Route 1 is approximately .3 miles west of Edmonston Avenue and approximately 2 miles west of the TMF entrance. Odell Road is one lane in each direction in the vicinity of the auto entrance to the BARC West TMF Alternative. No traffic count data for Odell Road is available.
- **BARC Air Strip** – The auto entrance to the BARC Air Strip TMF site alternative would be located off of Springfield Road, east of Springfield Road, in the Prince George's County portion of the SCMAGLEV Project Affected Environment. The alignment of Springfield Road in this area would be modified as part of the Build capital improvements. The closest major intersection to the north of the TMF entrance would be Springfield Road and Powder Mill Road, which is approximately .75 miles from the entrance. The closest major intersection to the south of the entrance would be the intersection of Springfield Road and Good Luck Road, which is approximately 1.8 miles from the entrance. Further south is the intersection of Springfield Road and MD Route 564, which is approximately 2.6 miles from the entrance. Springfield Road is one lane in each direction in the vicinity of the auto entrance to the BARC Air Strip TMF alternative. Average daily traffic on Springfield Road is approximately 1,900 trips per day (count taken near intersection with MD 564).

D.2A.9.2 Future No Build

This Technical Report section outlines the future No-Build roadway network around each of the three TMF site alternatives.

- **MD 198 TMF Alternative** - The Baltimore Metropolitan Council Constrained Long Range Transportation Plan contains one capital project in the project area, with the project limits between the BW Parkway and the intersection of MD 198 and MD 32. The improvement is to widen MD 198 from 2 to 4 lanes and construct a continuous center median, widen the ramp at MD 295 and provide pedestrian/bicycle facilities

within the project limits. The portion of this project in the vicinity of the TMF entrance has already been implemented. Still to be implemented is the portion of the project limits east of Center Drive to the intersection of MD 198 and MD 32.

- **BARC West Alternative** – No capital improvements that would change the roadway network in the vicinity of the BARC West TMF alternative auto entrance are contained in the MWCOG CLRP or in the Prince George's County Transportation Capital Improvement Program.
- **BARC Air Strip Alternative -** No capital improvements that would change the roadway network in the vicinity of the BARC Air Strip TMF alternative auto entrance are contained in the MWCOG CLRP or in the Prince George's County Transportation Capital Improvement Program.

D.2A.9.3 Future Build

This Technical Report section outlines the future Build roadway network around each of the three TMF site alternatives.

- **MD 198 TMF Alternative** - The future Build roadway network in the vicinity of the MD 198 TMF will include the addition of the entrance to the TMF facility on the existing driveway to the storage facility. The driveway itself is accessed from MD 198. The Project Sponsor has not identified any additional changes to the roadway network under the Build condition.
- **BARC West TMF Alternative** – The future Build roadway network in the vicinity of the BARC West TMF will include the addition of the entrance to the TMF facility on Odell Road. It will also include an alignment modification to Odell Road to the east of the entrance. This alignment change is to accommodate the TMF parking facility and will not change the lane configuration or capacity of Odell Road.
- **BARC Air Strip TMF Alternative** – The future Build roadway network in the vicinity of the BARC Air Strip will include the addition of the entrance to the TMF facility on Springfield Road. It will also include an alignment modification to Springfield Road to the north and west of the entrance to accommodate a SCMAGLEV Maintenance of Way facility and substation. This modification will not change the lane configuration or capacity of Springfield Road.

D.2A.9.4 Impacts

The project sponsor has provided preliminary estimates of approximately 400 to 500 vehicle arrivals and departures on a daily basis at each of the TMF Alternatives. These trips would include employees, deliveries and visitors. Based on preliminary project sponsor estimates, there would be a small arrival peak of office-based employees in the AM peak and a departure peak in the PM peak. Visitor and delivery arrivals and departures would occur throughout the day, with little peaking of these trips anticipated. A large arrival peak would occur in the late evening related to maintenance employees arriving for the late- night shift, when the bulk of the maintenance work would be completed on the SCMAGLEV trains. A peak departure time for these employees would

occur before and during the AM peak. An assessment of impacts at each TMF alternative is provided below.

- **MD 198 TMF Alternative –** MD 198 has been improved in this area to handle increases in traffic to Fort Meade resulting from the addition of work sites at the Fort related to Base Realignment and Closure (BRAC) initiatives. This increase in capacity should accommodate the smaller peak arrival and departures times during the AM and PM peaks respectively of office-based workers at the TMF site. Visitor and delivery arrivals and departures over the course of the day should not be a burden on the roadway network since this is an off-peak travel period overall. The largest peak arrival time, for train maintenance workers, in the late evening will occur during an off-peak travel time so impacts to the roadway network will be minimal.
- **BARC West TMF Alternative** – The smaller peak arrival and departure times during the AM and PM peak periods is when the greatest impacts to Odell Road will occur. Though Odell Road is not heavily traveled, the addition of the peak period arrival and departures could result in some intermittent delays for general traffic as well as office-based workers arriving at the TMF. Visitor and delivery arrivals and departures over the course of the day should not be a burden on Odell Road since this is an off-peak travel period overall. The largest peak arrival time, for train maintenance workers, in the late evening will occur during an off-peak travel time so impacts to Odell Road should be minimal.
- **BARC Air Strip TMF Alternative** – The impacts associated with the addition of the TMF entrance to Springfield Road will be comparable to those described for Odell Road under the BARC West TMF Alternative based on comparable roadway characteristics and traffic volumes.

D.2A.10 Transportation Network Component: Required Roadway Realignments (Horizontal and Vertical) Resulting from SCMAGLEV Alignment and Facilities

This Technical Report section provides greater detail on roadways in the SCMAGLEV Project Affected Environment that will require either vertical or horizontal re-alignment.

D.2A.10.1 Current Conditions, Future Build Condition, and Impacts

This section outlines current conditions for each of the roadways that will require realignment.

- **Explorer Road/BW Parkway Interchange (Prince George's County)** – Explorer Road is an internal road within the Goddard Space Flight Center that provides full directional access to the Baltimore/Washington Parkway. There will be a change in the vertical alignment at the interchange to accommodate the portal to the south tunnel under alignment Alternative J. The vertical alignment change will not change the functionality of the interchange and therefore no impacts are anticipated.

- **Springfield Road (Prince George's County) –** Horizontal realignments will be required on Springfield Road at two locations. In the first instance a horizontal re-alignment will be required at the BARC Airport TMF site, south of Powder Mill Road. The realignment is required to accommodate the TMF footprint. The existing roadway configuration of one lane in each direction will not change due to the realignment and there will be no change in roadway functionality.
- In the second instance, there will be a realignment of Springfield Road north of Powder Mill Road to accommodate the MOW facility under the MD 198 TMF alternative. The existing roadway configuration of one lane in each direction will not change due to the realignment and there will be no change in roadway functionality.
- **River Road (Anne Arundel County) –** River Road, located in the vicinity of the MD 198 TMF option, will require a replacement of the bridge over the Little Patuxent River. There will be no change in roadway cross section or functionality.
- **Annapolis Road and Patapsco Avenue (Baltimore City)** – Annapolis Road and Patapsco Avenue in Baltimore City will each have vertical realignments to accommodate the tunnel portal leading to the elevated Cherry Hill Station. In neither instance, will the vertical realignment result in a change to roadway functionality.

D.2A.11 Transportation Network Component: Access Summary to BWI Marshall Airport

This Technical Report section provides more detail on access modes to BWI Marshall Airport.

D.2A.11.1 BWI Marshall Airport Access – Current Conditions

Auto – There are two predominant auto access paths to the Airport. The first is via I-195, which runs between the I-95 corridor and the airport. The second path is MD Route 170, which provides local access from both east and west of the Airport. MD Route 170 provides connections to other regional roadways including MD Route 100, MD Route 175, MD Route 32 and I-97

Transit - The Airport is served by different transit modes including the MDOT MTA Light Rail System, local bus, the Metrobus B30 and MARC Commuter Rail systems and Amtrak intercity rail.

A summary of schedules and service frequency for each of the transit modes is summarized in **Table D.2-24**

Table D.2-24: Transit Modes Serving BWI Marshall Airport

Mode	Weekday Peak Frequency	Weekday Off-Peak Frequency
MDOT MTA Light RailLink	20 minutes	30 minutes
MDOT MTA Bus (75 Route)	30 minutes	70 minutes
MDOT MTA 201 (Commuter service from Montgomery County)	60 minutes	60 minutes
WMATA Bus (Route B30 – from Greenbelt Metro)	60 minutes	60 minutes
MDOT MTA MARC Service	15-30 minutes	60 minutes
Amtrak	15-20 minutes	30 minutes

Source: Public Timetables

D.2A.11.2 Future Conditions - No Build and Build - BWI Marshall Airport Roadway Access

Tables D.2-25 and D.2-26 contain Level of Service and delay information for key analysis intersections in the vicinity of BWI Marshall Airport for the future Build and No Build conditions. **Table D.2-25** contains information for the Camden Yards Station Alternative while **Table D.2-26** contains information for the Cherry Hill Station Alternative.

Table D.2-25: BWI Marshall Station Area Street Network Intersection LOS and Delay – Camden Yards Station Alternative

Intersection	Current Conditions LOS/Delay	Horizon Year No Build (2045)	Horizon Year Build (2045)
AM Peak			
MD-170 at MD-176	F/88.2	F/86.4	F/144.9
MD-162 at MD-176	C/26.1	C/28.3	C/28.1
MD-162 at Cromwell Park Dr.	C/25.7	C/29.4	D/50.1
MD-162 at MD-170	C/21.2	D/51.7	C/23.0
MD-170 at Air Cargo Dr.	B/19.0	C/22.0	C/19.0
MD-170 at Terminal Rd.	C/28.2	F/80.0	F/228.3
Terminal Rd. at Elm Rd.	A/7.7	A/7.1	A/8.0
Terminal Rd. at Scott Dr.	B/17.7	B/19.3	B/18.0
MD-170 at EB-195 Ramps	A/2.9	A/3.6	F/139.3
MD-170 at WB-195 Ramps	A/5.9	A/7.7	A/1.1
PM Peak			
MD-170 at MD-176	E/78.4	F/89.0	F/174.6
MD-162 at MD-176	E/78.6	F/96.6	F/81.4
MD-162 at Cromwell Park Dr.	C/33.5	D/35.6	F/105.2
MD-162 at MD-170	B/14.2	B/18.6	B/19.5
MD-170 at Air Cargo Dr.	D/37.0	D/36.7	D/39.4

Intersection	Current Conditions LOS/Delay	Horizon Year No Build (2045)	Horizon Year Build (2045)
MD-170 at Terminal Rd.	D/43.2	D/42.9	D/48.9
Terminal Rd. at Elm Rd.	B/16.2	B/17.3	B/16.7
Terminal Rd. at Scott Dr.	B/14.5	B/14.3	B/14.8
MD-170 at EB-195 Ramps	A/4.4	A/3.2	F/132.0
MD-170 at WB-195 Ramps	A/7.4	A/7.7	A/1.4

Source: Study Traffic Analysis: Utilizing Current Counts, Forecasted Future Volumes BMC Regional Forecast Model and Project Ridership Forecasts

Table D.2-26: BWI Marshall Station Area Street Network Intersection LOS and Delay – Cherry Hill Station Alternative

Intersection	Current Conditions LOS/Delay	Horizon Year No Build (2045)	Horizon Year Build (2045)
AM Peak			
MD-170 at MD-176	F/88.2	F/86.4	F/147.0
MD-162 at MD-176	C/26.1	C/28.3	C/28.3
MD-162 at Cromwell Park Dr.	C/25.7	C/29.4	D/50.9
MD-162 at MD-170	C/21.2	D/51.7	C/23.4
MD-170 at Air Cargo Dr.	B/19.0	C/22.0	B/19.1
MD-170 at Terminal Rd.	C/28.2	F/80.0	F/238.6
Terminal Rd. at Elm Rd.	A/7.7	A/7.1	B/16.1
Terminal Rd. at Scott Dr.	B/17.7	B/19.3	B/18.0
MD-170 at EB-195 Ramps	A/2.9	A/3.6	F/132.1
MD-170 at WB-195 Ramps	A/5.9	A/7.7	A/1.1
PM Peak			
MD-170 at MD-176	E/78.4	F/89.0	F/186.3
MD-162 at MD-176	E/78.6	F/96.6	F/81.5
MD-162 at Cromwell Park Dr.	C/33.5	D/35.6	F/131.3
MD-162 at MD-170	B/14.2	B/18.6	C/21.4
MD-170 at Air Cargo Dr.	D/37.0	D/36.7	D/39.4
MD-170 at Terminal Rd.	D/43.2	D/42.9	E/55.4
Terminal Rd. at Elm Rd.	B/16.2	B/17.3	B/16.1
Terminal Rd. at Scott Dr.	B/14.5	B/14.3	B/15.2
MD-170 at EB-195 Ramps	A/4.4	A/3.2	F/142.1
MD-170 at WB-195 Ramps	A/7.4	A/7.7	A/1.4

Source: Study Traffic Analysis: Utilizing Current Counts, Forecasted Future Volumes BMC Regional Forecast Model and Project Ridership Forecasts

D.2A.12 Transportation Network Component: Station Area Parking Current and Future Conditions

This Technical Report section contains information on current and future parking capacity conditions in each of the SCMALEV station areas.

D.2A.12.1 Current Conditions

Summarized below is current parking availability in each of the station areas evaluated.

- **Baltimore Camden Yards Station Alternative -** There is significant parking capacity in downtown within walking distance of the Camden Yards Station Alternative to accommodate riders identified in the ridership forecast. A review of the parking reservation site "Spot Hero" shows 40 parking garages of different capacity within ½ mile of the Camden Yards Station.
- **Baltimore Cherry Hill Station Alternative -** There is currently no structured parking in the vicinity of the Cherry Hill Station Alternative. There is a small amount of on-street parking available on Cherry Hill Road.
- **BWI Marshall Airport -** There are currently multiple parking options in the BWI Marshall Airport area including the hourly parking garage adjacent to the terminal, the daily garage located on Airport property but farther from the terminal, and multiple long term lots located off Airport property. While no source to identify the specific number of spaces was available, the two garages on Airport property number in the thousands based on visual inspection.
- **Washington, D.C. Mount Vernon East Station -** No source to provide a specific inventory of parking facilities or parking capacity near the Mount Vernon East Station is available. However, a review of the Spot Hero website shows approximately 30 parking facilities within a 3-block radius of the station. In addition, the Walter E. Washington Convention Center website indicates that there are 3,000 spaces within three blocks of the Convention Center.

D.2A.13 SCMAGLEV Station Area Pedestrian Networks – Current Conditions and Backup Data

This Technical Report section contains information on the sidewalk and pedestrian network around each SCMAGLEV station and the potential impacts on these networks of adding the SCMAGLEV to the SCMAGLEV Project Affected Environment Transportation network.

D.2A.13.1 Current Conditions

Each of the station alternatives in Baltimore (Camden Yards and Cherry Hill) and Washington, D.C. has a full sidewalk network surrounding the station.

The greatest network density occurs in the areas surrounding the Camden Yards SCMAGLEV Station alternative in downtown Baltimore and the Mount Vernon East Station in Washington, D.C. Each of these station areas has a full sidewalk network, with sidewalks on both sides of the street and on each link within the street network. Sidewalk widths vary by street network link.

The street network around the Cherry Hill Station is much less dense than for the other two stations noted above, but each street in the network has a sidewalk on both sides of the street. Sidewalk widths also vary within the Cherry Hill station area.

The proposed BWI SCMAGLEV station will be located on the site of the existing hourly garage. Pedestrian connections to the airport terminal will be part of the station design, which is currently at a conceptual level.

D.2A.13.2 Detailed Pedestrian Access and Egress Data

Table D.2-27 contains data on the estimated AM peak hour volumes of pedestrians that would be added to each sidewalk network link around the Camden Yards SCMAGLEV station because of the addition of the SCMAGLEV to the SCMAGLEV Project Affected Environment transportation network. These additional pedestrian volumes include SCMAGLEV passengers accessing or leaving the station as well as pedestrians and passengers who are transferring to or from another mode (bus or rail) but must use the sidewalk network to access this other mode. Rail modes SCMAGLEV passengers may be transferring to or from include MDOT MTA Light Rail (Light RailLink), Heavy Rail (MetroLink) or MARC commuter rail service.

Table D.2-28 contains AM peak hour volumes of pedestrians that would be added onto the sidewalk network around the Cherry Hill SCMAGLEV station after SCMAGLEV is added to the SCMAGLEV Project Affected Environment transportation network. Transfers to rail or from rail at the SCMAGLEV Cherry Hill station would be to or from MDOT MTA Light Rail, which is the only rail mode serving the station.

Table D.2-29 provides AM peak hour volumes of pedestrians added to the sidewalk network around the Mount Vernon East SCMAGLEV station under the Cherry Hill Baltimore station scenario. Transfers to or from rail for at the Mount Vernon East SCMAGLEV station would be to Washington Metrorail at the Mount Vernon Green Line Station and the Gallery Place Metro, serving both the Green Line and Red Line.

Table D.2-30 contains the AM peak hour volumes of pedestrians added to the sidewalk network around the Mount Vernon East SCMAGLEV station under the Camden Yards Baltimore station scenario.

Table D.2-27: Camden Yards Sidewalk Network Loading

Station Entrance	Sidewalk Network Link - Station Access or Egress	Pedestrian Access to SCMAGLEV Station	Pedestrian Egress from SCMAGLEV Station	Access from Bus to SCMAGLEV Station	Egress from SCMAGLEV Station to Bus	Access to SCMAGLEV Station from Rail	Egress from SCMAGLEV Station to Rail	Total
Sharp Street South of Pratt	Cathedral - n/o Pratt	28	36	22	19	218	170	324
	Pratt - east leg	104	72	108	95	218	170	599
	Pratt - west leg	57	132	87	76	109	85	462
Conway and Sharp	Conway from West	24	31	16	14	437	212	523
	Conway from East	57	72	38	33	109	212	310
Total		**271**	**344**	**271**	**238**	**1,092**	**848**	**2,217**

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/2020; estimates of pedestrian flows based on data in report.

Table D.2-28: Cherry Hill Sidewalk Network Loading

Station Entrance	Sidewalk Network Link - Station Access or Egress	Pedestrian Access to SCMAGLEV Station	Pedestrian Egress from SCMAGLEV Station	Access from Bus to SCMAGLEV Station	Egress from SCMAGLEV Station to Bus	Access to SCMAGLEV Station from Rail	Egress from SCMAGLEV Station to Rail	Total
Cherry Hill Road	Cherry Hill - East	99	122	172	163	769	651	1,977
	Cherry Hill - West	33	41	57	54	256	217	659
Total		**132**	**163**	**230**	**218**	**1,026**	**868**	**2,636**

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/2020; estimates of pedestrian flows based on data in report.

Table D.2-29: Mount Vernon East – Cherry Hill Baltimore Station Alternative - Sidewalk Network Loading

Station Entrance	Sidewalk Network Link - Station Access or Egress	Pedestrian Access to SCMAGLEV Station	Pedestrian Egress from SCMAGLEV Station	Access from Bus to SCMAGLEV Station	Egress from SCMAGLEV Station to Bus	Access to SCMAGLEV Station from Rail	Egress from SCMAGLEV Station to Rail	Total
3rd Street NW	M Street (East Leg)	50	76	14	17	0	0	157
	3rd Street (North Leg)	33	50	10	11	10	8	122
	M Street (West Leg)	33	50	10	11	56	44	203
NY Ave. - Between 5th and 6th - approach from East	New York Avenue and 5th Street (east leg)	39	58	14	16	0	0	127
	5th Street and New York Avenue (north leg)	39	58	14	16	0	0	127
	5th Street and New York Avenue (south leg)	39	58	14	16	0	0	127
NY Ave. - Between 5th and 6th - approach from West	6th Street NW and New York (north leg)	39	58	14	16	164	128	419
	6th Street NW and New York (south leg)	39	58	14	16	0	0	127
	New York Avenue and 6th Street NW (west leg)	39	58	14	16	164	128	419
NY Ave @ 7th	New York Avenue (east leg)	35	53	65	77	0	0	230
	Mass Ave (east leg) + 7th Street (south leg) + NY Ave (west leg)	35	53	65	77	0	0	230
	K Street (west leg) + Mass Ave (west leg)	35	53	65	77	0	0	230
	7th Street NW (north leg)	12	18	22	26	917	717	1,710
Total		**464**	**703**	**334**	**393**	**1,310**	**1,024**	**4,228**

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/2020; estimates of pedestrian flows based on data in report.

Table D.2-30: Mount Vernon East – Camden Yards Baltimore Station Alternative - Sidewalk Network Loading

Station Entrance	Sidewalk Network Link - Station Access or Egress	Pedestrian Access to SCMAGLEV Station	Pedestrian Egress from SCMAGLEV Station	Access from Bus to SCMAGLEV Station	Egress from SCMAGLEV Station to Bus	Access to SCMAGLEV Station from Rail	Egress from SCMAGLEV Station to Rail	Total
3rd Street NW	M Street (East Leg)	55	85	16	19	0	0	175
	3rd Street (North Leg)	37	56	10	13	11	8	135
	M Street (West Leg)	37	56	10	13	62	48	225
NY Ave. - Between 5th and 6th - Approach from East	New York Avenue and 5th Street (east leg)	43	65	16	18	0	0	142
	5th Street and New York Avenue (north leg)	43	65	15	18	0	0	141
	5th Street and New York Avenue (south leg)	43	65	15	18	0	0	141
NY Ave. - Between 5th and 6th - Approach from West	6th Street NW and New York (north leg)	43	65	15	18	181	141	463
	6th Street NW and New York (south leg)	43	65	15	18	0	0	141
	New York Avenue and 6th Street NW (west leg)	43	65	15	18	181	141	463
NY Ave @ 7th	New York Avenue (east leg)	39	59	72	85	0	0	255
	Mass Ave (east leg) + 7th Street (south leg) + NY Ave (west leg)	39	59	72	85	0	0	255
	K Street (west leg) + Mass Ave (west leg)	39	59	72	85	0	0	255
	7th Street NW (north leg)	13	20	24	28	1,015	788	1,888
Total		**514**	**786**	**367**	**438**	**1,450**	**1,126**	**4,681**

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/2020; estimates of pedestrian flows based on data in report.

D.2A.14 SCMAGLEV Station Area Pick Up and Drop Off Operations – Current Conditions and Backup Data

D.2A.14.1 Current Conditions

This section contains a description of current and future conditions at the proposed pick-up and drop-off areas at each SCMAGLEV station.

- **Camden Yards Baltimore Station Alternative** – Pick-up and drop-off for the Camden Yards Station would occur along both Conway (south side of station) and Pratt Street (north side of station) in downtown Baltimore.
  - Conway street is a bi-directional east-west street that runs between Howard Street and Light street just south of the main section of downtown Baltimore. The street is three lanes in each direction with no parking throughout the length of the day. Conway Street is also a primary feeder into downtown from I-395, which connects downtown Baltimore with I-95.
  - Pratt Street is ½ of the primary east-west one-way pair in downtown Baltimore, running eastbound while Lombard Street, the other street in the pair, runs west. Pratt Street has three lanes for general traffic and a dedicated bus lane in the right-most lane.
- **Cherry Hill** – Pick-up and drop-off for the Cherry Hill Station would occur along Cherry Hill Road adjacent to the single entrance to the station. Cherry Hill Road is currently one lane in each direction.
- **BWI Marshall Airport –** The BWI Marshall Airport station will be located at the site of the current hourly garage. The construction of the station will result in a complete reconfiguration of the current roadway layout.
- **Mount Vernon East –** Pick-up and drop-off operations will be spread among multiple streets around the Mount Vernon East station. Current conditions for each are outlined below:
  - Southbound 9th Street NW at Massachusetts Avenue NW – This location would be used for taxi pickups for SCMAGLEV passengers leaving the station. South of Massachusetts Avenue, 9th Street is one direction in the southbound direction with a cross-section of three to five lanes and on-street parking in the off-peak period. North of Massachusetts Avenue 9th Street is bi-directional with two general traffic lanes in each direction and a parking lane. A taxi stand is currently located in the southbound curb lane on 9th Street north of Massachusetts Avenue.
  - Southbound 7th NW Street between M Street NW and Mount Vernon Place – This location would be used for Transportation Network Companies (TNCs) pick-ups for SCMAGLEV passengers leaving the station. 7th Street in this location is bi-directional with parking on both sides of the street during off-peak hours. When parking is in place there is one general traffic lane in the southbound direction and two general traffic lanes in the northbound direction.

- **6th Street NW between New York Avenue and K Street** – This location would be used for all taxi, TNCs, and kiss and ride drop-offs. Kiss and ride pickups would occur inside the underground pick up area that would be part of the garage developed for the project. Access to this underground pickup area would be accessed from this same section of 6th Street.

6th Street in this location is bi-directional with two general traffic lanes in each direction and a parking lane that is available for on-street parking during off-peak hours.

D.2A.14.2 Future Build Conditions

Pickup and drop off operations for people arriving via kiss and ride, taxi, and Transportation Network Companies (TNCs) will be implemented at each of the four proposed SCMAGLEV stations. These are described below:

- **Baltimore Camden Yards Station** – Pickup and drop-off operations would occur for the Kiss and Ride, Taxi, and TNCs modes on both Pratt and Conway Streets, adjacent to the two station entrances. More detail is provided below.

- Westbound Conway Street – pickup and drop-offs would occur throughout the day on westbound Conway Street. The pickup and drop-off operations would be segregated, with pickup operations occurring east of Sharp Street and drop-off operations occurring west of Sharp Street. These designated areas would service the Conway Street SCMAGLEV Station entrance.

- Eastbound Pratt Street – Pickup and drop off operations would occur throughout the day on eastbound Pratt Street. These operations would occur on Pratt Street between Howard Street and Sharp Street, in front of the Baltimore Convention Center. Pickup and drop-off operations would be segregated along this length with drop-off closest to the station entrance at the intersection of Howard and Pratt Streets.

The estimated required combined length of sidewalk frontage for pickup and drop-off operations along Conway Street and Pratt Street together is shown in **Table D.2-31**. The exact allocation of required curb space between Conway and Pratt Streets will be identified as more detailed design moves forward.

The estimation process for these calculations is contained later in the Transportation Technical Report.

Table D.2-31: Pick-Up Drop-Off Zone Requirements – Camden Yards Station (Year 2045 Ridership Estimates)

Vehicles Accessing Station (Drop-Off)			
Access Mode	**Vehicles Arriving during AM Peak Hour**	**Number of 20' Slots Required for Taxi Drop-Off Operations**	**Distance Required (in feet)**
Taxi	209	3	60
TNC	313	4	80
Kiss and Ride	349	4	80
Vehicles Leaving Station (Pick-Up)			
Taxi	266	3	60
TNC	399	5	100
Kiss and Ride	403	5	100

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/2020; estimates of vehicle arrivals and departures based on data in report.

- Mount Vernon East Station – Pickup and drop-off operations for passengers arriving via kiss and ride, taxis or TNCs at the Mount Vernon East station will be spread among streets around the station. Locations are outlined below.
- Southbound 9th Street NW, n/o Massachusetts Avenue NW – This location would be used for taxi pickup operations. An existing taxi stand is currently located here.
- Southbound 7th Street NW between M Street NW and Mount Vernon Place NW – Southbound Direction – This location would be used for TNCs pickups.
- 6th Street NW between New York Avenue and K Street – This location would be used for Taxi, TNC, and Kiss-and-Ride drop-offs.
- Underground Parking Structure – Access from 6th Street NW (south of New York Avenue) – An underground parking structure is proposed by the Project Sponsor to be built as part of the project. This facility, which would be accessible from 6th Street NW, would have a separate location for Kiss-and-Ride pick up activities.

The estimated required combined length of sidewalk frontage for pickup and drop-off operations at each location around the Mount Vernon station is shown in **Table D.2-32**.

Table D.2-32: Pick-Up Drop-Off Zone Requirements – Mount Vernon East Station (Year 2045 Ridership Estimates)

Access Mode	Vehicles Arriving during AM Peak Hour	Number of 20' Slots Required for Taxi Drop-Off Operations	Distance Required (in feet)
Vehicles Accessing Station (Drop-Off)			
Taxi	659	8	160
TNC	988	12	240
Kiss and Ride	933	12	240
Vehicles Leaving Station (Pick-Up)			
Taxi	620	8	160
TNC	930	12	240
Kiss and Ride	1,016	13	260

Source: Baltimore-Washington SCMAGLEV Project: Ridership Data Request, BWRR, 5/6/2020; estimates of vehicle arrivals and departures based on data in report.

Pickup and drop off operations at both the Cherry Hill and BWI Marshall Airport stations would be incorporated into the parking structure to be built as part of the station. A full understanding of these operations would need to await the parking structure final design.

D.2A.15 Construction Period Impacts - Truck Delivery Access and Departure Routes to SCMAGLEV Construction Sites

There will be multiple construction sites along the SCMAGLEV alignment where truck and auto arrivals and departures will impact the local roadway network around the construction site. This section focuses on outlining transportation data related to these construction sites.

D.2A.15.1 Current Conditions – Work Site Access and Egress Routes

The project sponsor has identified multiple work sites that will generate truck trips related to construction materials and equipment deliveries to the site and removal of construction debris and tunnel spoils from the site. They have also identified proposed routes to access and depart these sites (source: BWRR: Baltimore-Washington SCMAGLEV Project – Construction Planning Memorandum – Revision 2: May 14, 2020). The current conditions for the transportation network around each work site is provided in this section. The number of truck and auto arrivals at each work site are outlined in the next Appendix section, "Impacts and Proposed Mitigation". Note: Average Daily Traffic for work sites in Washington DC come from DDOT Traffic Volume Map – 2018 and for work sites in Maryland, Average Daily Traffic data comes from MDOT SHA., current year.

- **Mount Vernon East Station Work Site** – This work site would be located on New York Avenue in Northwest Washington DC, bounded in the west by 7th Street NW and in the east by North Capitol Street. Arrivals and departures at the work site

would be from the east along New York Avenue and south along Interstate 395. New York Avenue has three lanes in each direction and Interstate I-395 has two lanes in each direction as it approaches its terminal point at New York Avenue. Average daily traffic on New York Avenue in this area is approximately 32,000 vehicles and average daily traffic on I-395 is approximately 56,000. Land uses in this area include a mix of office, commercial, and residential. This site will be used under both the Build Alternatives J and J1 alignments. Work completed at this site will include station construction (civil and architectural elements), Fresh Air/Emergency exit shaft construction, and substation construction.

- **Langdon Fresh Air/Emergency Exit Work Site** – This work site would be located on Adams Place, off of Queens Chapel Road in the District of Columbia, adjacent to the CSX rail tracks and north and west of Bladensburg Road. Trucks departing the site will enter and travel southeast on Queens Chapel Road from Adams Place, and then south on Bladensburg Road and then east on New York Avenue (U.S. 50). Arrivals to the site will follow a reverse path.
  - Adams Place has one narrow lane in each direction with on-street parking on both sides of the street. Land use is light industrial and entertainment. Queens Chapel Road is two lanes in each direction in the vicinity of the work site with no on-street parking. Adjacent use is also light industrial. The intersection of Adams Place and Queens Chapel is un-signalized. Average daily traffic on Queens Chapel Road is approximately 5,000 trips per day.
  - Bladensburg Road is three lanes in each direction between Queens Chapel and New York Avenue (MD Route 50). Average daily traffic in this section of Bladensburg Road is 13,000 vehicles. New York Avenue is also three lanes in each direction. Average daily traffic on the segment of New York Avenue east of Bladensburg Road is 73,000 vehicles.
  - This site will be used under both the Build Alternatives J and J1 alignments. Work completed at this site will include Fresh Air/Emergency exit shaft construction, spoil removal from tunnel boring, and substation construction.
- **WSSC Fresh Air/Emergency Exit Work Site** – This work site would be located off of Kenilworth Avenue in the Bladensburg section of Prince George's County, approximately ½ way between the intersection of Kenilworth and Annapolis Road and the location where Kenilworth Avenue runs under the BW Parkway. Trucks departing the site would run south on Kenilworth Avenue and then east on U.S. 50.
  - Kenilworth Avenue is three lanes in each direction north/west of the BW Parkway and two lanes in each direction between the BW Parkway and the entrance to eastbound U.S. 50. Average daily traffic on Kenilworth Avenue in this location is approximately 33,600 vehicles per day. Trucks would run approximately 1.2 miles on Kenilworth Avenue before accessing U.S. 50.
  - This site will be used under both the Build Alternatives J and J1 alignments. Work completed at this site will include the construction of a Fresh Air/Emergency Exit shaft.

- **MD 410 Fresh Air/Emergency Exit Work Site** – This work site is located east of the intersection of Riverdale Road and Veteran's Parkway (MD 410) in Prince George's County. Trucks would access the site via a temporary road that would connect to Riverdale Road. Once on Riverdale Road, trucks would travel a short distance before turning east on Veteran's Parkway and then onto eastbound U.S. Route 50. Trucks accessing the site would follow the reverse path.
  - Riverdale Road is predominantly two lanes in each direction in this location with a short distance of one lane in each direction. Uses along this section of Riverdale Road include single and multi-family residential and commercial. Veteran's Parkway is two lanes in each direction, with the roadway in each direction separated by a center grass median. Uses along this section of Veteran's Parkway include residential, open space and some commercial. Uses are generally accessed from cross streets rather than direct access onto Veteran's Parkway. It should also be noted that Veterans Parkway is part of the alignment of the Purple Line.
  - Average daily traffic volume on Riverdale Road in this location is approximately 14,400 vehicles. Average daily traffic volume on Veteran's Parkway is approximately 25,900 vehicles per day. Trucks would travel approximately .4 miles on Riverdale Road and approximately 1.75 miles on Veteran's Parkway.
  - This site will be used under both the Build Alternatives J and J1 alignments. Work completed at this site will include the construction of a Fresh Air/Emergency Exit shaft and the removal of spoil resulting from tunnel construction.
- **South Tunnel Portal Work Site** – The South Portal work site area consists of a work site on each SCMAGLEV track, both located along the BW Parkway just south of Beaver Dam Road in Prince George's County. Each site would have its own haul route via Beaver Dam Road in order to ultimately access southbound I-95/495 (Capital Beltway).
  - Trucks leaving the work site on the easternmost track (northbound track) would travel east on Beaver Dam Road to south on Soil Conservation Road to south on Good Luck Road to west on Greenbelt Road to I-95/495 southbound. Beaver Dam Road is one lane in each direction, with the primary use being open space associated with the Beltsville Agricultural Research Center. Soil Conservation Road is also one lane in each direction, with the primary use also open space. Good Luck road is two lanes in each direction, with adjacent uses predominantly multi-family garden apartments. Greenbelt Road (MD Route 193) is two lanes in each direction with a mix of office, commercial and residential uses along the haul route.
  - MDOT SHA average daily traffic volumes are not collected for Beaver Dam Road or Soil Conservation Road. Good Luck Road at its intersection with Greenbelt Road has an average daily traffic volume of approximately 13,700 vehicle trips. Greenbelt Road has average daily traffic of approximately 58,600 vehicle trips directly west of Good Luck Road.

  - Trucks on this haul route would travel approximately .5 miles on Beaver Dam Road, approximately 2 miles on Soil Conservation Road, approximately .4 miles on Good Luck Road and approximately 2.9 miles on Greenbelt Road.

- Trucks leaving the work site on the westernmost track (southbound track) would travel west on Beaver Dam Road, north on Research Road to west on Powder Mill Road to south on Edmonston Avenue (MD Route 201), which changes into Kenilworth Avenue south of Cherrywood Lane, to I-95/495 southbound. Beaver Dam Road is one lane in each direction, with the primary use being open space associated with the Beltsville Agricultural Research Center. Research Road does not have lane markings but is of sufficient width to accommodate two automobiles passing each other. Passing in both directions by a truck and automobile will be more difficult. Powder Mill Road is one lane in each direction, with the primary use being open space and some BARC-related buildings. Edmonston Road is one lane in each direction until the intersection with Cherrywood Lane, where the cross section turns to two lanes in each direction and then three lanes in each direction closer to the Capital Beltway. The primary use south of Cherrywood remains open space.
- MDOT SHA average daily traffic volumes are not collected for Beaver Dam Road or Research Road. Powder Mill Road in this location has average daily traffic volumes of approximately 12,000 vehicles per day. Average daily traffic on Edmonston Road north of Cherrywood Lane is approximately 23.500 vehicles per day. South of Cherrywood Lane, Edmonston Road/Kenilworth Avenue carries approximately 38,000 vehicles per day.
- Trucks on this haul route would travel 1.2 miles on Beaver Dam Road, approximately .25 miles on Research Road, 1.3 miles on Powder Mill Road, and approximately 2.4 miles on Edmonston Road/Kenilworth Avenue (MD 201).

  - This site will be used under both the Build Alternatives J and J1 alignments. Work completed at this site will include the construction of the portal to the south tunnel, and the ramps to either the BARC West TMF or BARC Airstrip TMF.

- **Powder Mill Road at Alignment Work Site** – This work site would be just north of the intersection of Powder Mill Road and the alignment along Springfield Road. Trucks arriving at and leaving the site would have two route options. The first would be via eastbound Powder Mill Road and the other would be from northbound Soil Conservation Drive. Access to the work site would be via a temporary road off of Springfield Road, approximately 1/10th of a mile north of Powder Mill Road.

  - Trucks leaving the work site and traveling west would travel south on Springfield Road, west on Powder Mill Road to south on Edmonston Avenue (MD Route 201), which changes into Kenilworth Avenue south of Cherrywood Lane, to I-95/495 southbound. Springfield Road is one lane in each direction, with the adjacent uses being open space associated with the Beltsville Agricultural Research Center. Powder Mill Road is one lane in each direction, with the primary use being open space and some BARC-related buildings. Edmonston Road is one lane in each direction until the intersection with Cherrywood Lane, where the cross section turns to two lanes in each direction and then three lanes

in each direction closer to the Capital Beltway. The primary use south of Cherrywood remains open space.

- MDOT SHA average daily traffic volumes are not collected for Springfield Road. Powder Mill Road in this location has average daily traffic volumes of approximately 12,000 vehicles per day. Average daily traffic on Edmonston Road north of Cherrywood Lane is approximately 23.500 vehicles per day. South of Cherrywood Lane, Edmonston Road/Kenilworth Avenue carries approximately 38,000 vehicles per day.
  - Trucks on this haul route would travel approximately .1 miles on Springfield Road, 2.6 miles on Powder Mill Road, and approximately 2.4 miles on Edmonston Road/Kenilworth Avenue (MD 201).
  - Trucks accessing/departing the site via Soil Conservation Road would travel south on Springfield Road, east on Powder Mill Road, south on Soil Conservation Road to south on Good Luck Road to west on Greenbelt Road to I-95/495 southbound. Springfield Road and Soil Conservation Road is one lane in each direction, with the primary use also open space associated with the Agricultural Research Center. Good Luck road is two lanes in each direction, with adjacent uses predominantly multi-family garden apartments. Greenbelt Road (MD Route 193) is two lanes in each direction with a mix of office, commercial and residential uses along the haul route.
- MDOT SHA average daily traffic volumes are not collected for Springfield Road or Soil Conservation Road. Good Luck Road at its intersection Greenbelt Road has an average daily traffic volume of approximately 13,700 vehicle trips. Greenbelt Road has average daily traffic of approximately 58,600 vehicle trips directly west of Good Luck Road.
  - Trucks on this haul route would travel approximately .1 mile on Springfield Road, .2 miles on Powder Mill, approximately 3.2 miles on Soil Conservation Road, approximately .4 miles on Good Luck Road and approximately 2.9 miles on Greenbelt Road.
  - This site will be used under both the Build Alternatives J and J1 alignments. Work completed at this site will include viaduct construction.
- **198 TMF Option – MOW Facility – Springfield Road** – This work site is slightly north of the Viaduct construction site described in the previous section. Like that site, access would be off of Springfield Road. The roadway network description also applies to this work site. Work at this site will include Build Alternatives J and J1 and will involve construction of the MOW facility under the 198 TMF option.
- **MD 197 at Alignment** – This work site is on the north side of MD 197, which will be accessed via a temporary roadway off of Canadian Way, a driveway directly off of MD 197. Trucks will arrive/depart from the site via MD 197 (given the configuration of the roadway and a wide forested median between the northbound and southbound lanes, trucks will only be able to turn right (northbound) out of the facility.

  - MD 197 is two lanes in each direction, with the two directions separated by a grass median. Average daily traffic at this site based on MDOT SHA traffic counts is approximately 28,700 vehicles per day.
  - This site will include the Build Alternatives J and J1 alignments. Work here will include viaduct construction and the construction of a substation.

- **Maryland City Portal Work Site (Portal to North Tunnel)** – This work site is located off of Brock Bridge Road just west of the Baltimore Washington Parkway. The site is approximately 1 mile north of MD Route 197 and approximately 1.8 miles south of MD Route 198. Trucks would access and depart the site via Brock Bridge Road before accessing MD 198. Trucks would arrive at Brock Bridge traveling westbound on 198.
  - Brock Bridge Road is two lanes in each direction with open space predominating on the southern portion of the route and residential uses farther north, closer to MD 198. MD 198 is three lanes in each direction in the vicinity of Brock Bridge Road. The intersection of Brock Bridge Road and MD 198 is signal controlled. Average daily traffic on Brock Bridge Road in this location is approximately 4,800 vehicle trips per day. Average daily traffic on MD 198 at this location is approximately 42,200 vehicles trips per day. The distance trucks would travel on Brock Bridge Road is approximately 1.8 miles.
  - This site will include just the J1 alignment alternative. Work here will include the construction of the portal to the north tunnel and the construction of a substation.
- **MD 198 at Alignment** – This work site is on the south side of MD 198 adjacent to the BW Parkway, which will be accessed off of a temporary roadway from MD 198. Trucks would access and depart the site via MD 198 and the temporary construction road. MD 198 is two lanes eastbound and one lane westbound with a center bi-directional turn lane in the vicinity of the access to the temporary construction road. This section of MD 198 has driveways to businesses on both sides of MD 198 with direct access to the roadway. Left turns to these businesses are made from the bi-directional middle turn lane. Average daily traffic in this section of MD 198 is approximately 27,000 based on Maryland State Highway Administration traffic counts.
  - This work site will be for just the Build Alternatives J. Work here will include viaduct construction and the ramps to the MD 198 TMF site.
- **River Road – Adjacent to the Alignment** – This work site is located adjacent to River Road north of MD 198. A short temporary roadway will connect River Road to the work site. Trucks would access River Road via Old Portland Road, which in turn would be accessed via MD 198 in the same vicinity as the work site described in the previous section. Roadway network current conditions are comparable to that work site. River Road is one lane in each direction. While lanes are separated with striping, each lane is narrow and there may be difficulty with two trucks traveling in opposite directions to pass one another.

  - This work site will be for just the Build Alternatives J alignments. Work here will include viaduct construction.

- **Colony Seven Road - Anne Arundel County** – This work site is located just north of MD 32 and west of the alignment off of Colony Seven Road. Access to Colony Seven Road would be via MD 32. A short temporary roadway would connect Colony Seven Road to the work site. Colony Seven Road is also the access roadway to the National Cryptologic Museum. The roadway is not separated with striping and may not have enough room as is to allow for two trucks to pass in different directions.
  - Colony Seven Road would access MD 32 at the grade separated interchange that acts as the entrance to the National Security Agency. Average daily traffic in this section of MD 32 is approximately 73,300 based on Maryland State Highway Administration traffic counts.
  - This work site will be for the Build Alternatives J alignments only. Work here will include viaduct construction.
- **South Portal of North Tunnel Work Site (Build Alternatives J)** – This work site is located just east of the Baltimore Washington Parkway approximately 1.5 miles south of MD Route 175 and approximately 1 mile north of MD 32 in Anne Arundel County. In order to provide access to the site, the Project Sponsor would construct a temporary roadway to the north of the site that would connect to Max Blobs Park Road, which in turn would connect to MD 175. Once on MD 175, trucks leaving the site would run west for a very short distance before entering the northbound entrance ramp to the Baltimore Washington Parkway.
  - Max Blobs Park Road is a local street that can accommodate vehicles in two directions, though with trucks this two-way traffic will be more difficult (note: Max Blobs Park Road is currently closed). MD 175 is two lanes in each direction at this location and the intersection of Max Blobs Park Road and MD 175 is signal controlled. Average daily traffic on MD 175 in this location is approximately 37,700 vehicle trips per day. The distance trucks would travel on MD 175 is approximately 270 feet.
  - This work site will be for the Build Alternatives J only. Work here will include construction of the south portal to the north tunnel.
- **Alternative Fresh Air/Emergency Exit – Harmans Road** – This work site is located in the southwest quadrant of the intersection of MD 100 and Harmans Road in Anne Arundel County. Trucks would access this site via MD 176 (Dorsey Road) and Harmans Road and the project sponsor has also proposed temporary direct access onto westbound MD 100.
  - Harmans Road is one lane in each direction and MD 100 is a limited access highway with two lanes in each direction. MD 176 is two lanes in each direction. Average daily traffic on Harmans Road in the vicinity of the work site is approximately 7,500 vehicles per day. Average daily traffic on Dorsey Road is approximately 18,100 vehicles and average daily traffic on MD 100 is approximately 86,400.

  - This work site will be for both the Build Alternatives J and J1. Work here will include Fresh Air/Emergency Exit shaft construction. This is an alternative site for the Fresh Air/Emergency Exit facility in this area.

- **Harmans Fresh Air/Emergency Exit Work Site** – This work site is located on the south side of Dorsey Road (MD 176) adjacent to the intersection of Dorsey Road and Telegraph Road (MD 170) in Anne Arundel County. Construction vehicles would access or depart this work site via Rail Road Avenue, Old Dorsey Road, MD 176 (Dorsey Road) and Telegraph Road, using Telegraph to access MD 100, a limited access highway. The interchange with MD 100 can accommodate movements in all four directions for arriving and departing trucks.
  - Railroad Avenue is a local street providing access to a light industrial area which connects to Old Dorsey Road, which has comparable characteristics. MD 176 is two lanes in each direction and Telegraph Road is two lanes in each direction between the work site and MD 100, with one residential area along this section of roadway. There is no signal at the intersection of Old Dorsey Road and MD 176, where trucks would leave the light industrial area and access the regional roadway network. Average daily traffic on MD 176 is in this area is approximately 18,100 vehicles per day and average daily traffic on Telegraph Road in this roadway section is approximately 24,000 vehicles per day. The distance trucks would travel on MD 176 is less than .1 miles and distance on Telegraph Road is approximately .75 miles.
  - This work site will be for both the Build Alternatives J and J1. Work here will include Fresh Air/Emergency Exit shaft construction and removal of spoil resulting from tunnel construction.
- **Mathison Way @ MD 170 (Aviation Boulevard)** – This work site is located on BWI Marshall Airport property off of Mathison Way, which is an internal circulation road within Airport property and also provides access to the Airport Mid-Field cargo complex. Trucks would enter and exit Mathison Way at MD 170 (Aviation Boulevard). This intersection is signalized.
  - Most truck traffic would exit to the north to access Interstate 195 from MD 170 (Aviation Boulevard). MD 170 is two lanes in each direction in this area. Average daily traffic volume on MD 170 is this area is approximately 22,160 vehicles per day.
  - This work site is for both the Build Alternatives J and J1. Work here will include the construction of the BWI South switchbox.
- **Interstate I-195 @ BWI Marshall Airport** – This work site is located at the existing BWI Marshall Airport terminal. Trucks accessing the site would enter and exit via Interstate I-195. I-195 connects I-95 and the Airport and transitions directly into the Airport circulation roadways. I-195 is a limited access highway with two lanes in each direction. Average daily traffic volume on I-195 in the vicinity of the Airport is approximately 78,000 vehicles per day.

  - This work site is for both the Build Alternatives J and J1. Work here will include construction of the BWI SCMAGLEV station.

- **MD 170 (Camp Meade Road/Aviation Boulevard) @ MD 162 Aviation Boulevard** – This work site is located in the northeast quadrant of the intersection of MD 162 (Aviation Boulevard) and MD 170 (Camp Meade Road/Aviation Boulevard) outside the northeast corner of BWI-Marshall Airport. Trucks will access and exit this site via MD 170 before accessing Interstate 195. MD 162 is labeled Aviation Boulevard to the east of the intersection. Maryland 170 is labeled Camp Meade Road to the north of the intersection and Aviation Boulevard to the west of the intersection. Access to the work site will be from both Camp Meade Road and from MD 162, east of the intersection.

  - Camp Meade Road is one lane in each direction and Aviation Boulevard is two lanes in each direction on each side of the intersection. Average daily traffic volume on Camp Meade Road just north of the intersection is approximately 10,300 vehicles per day. Average daily traffic volume on the MD 162 portion of Aviation Boulevard is approximately 23,000 vehicles per day and average traffic volume on the MD 170 portion of Aviation Boulevard is approximately 26,300 vehicles per day.

  - This work site is on Build Alternatives J and J1. Work to be completed at this work site will include the construction of a Fresh Air/Emergency Exist shaft, removal of spoil resulting the construction of the express tunnel under BWI Airport, removal of spoil resulting from the construction of the outer tunnels under BWI Airport, removal of spoil resulting from the construction of the tunnel toward the Cherry Hill portal, and construction of the BWI north switchbox.

- **I-895 Fresh Air/Emergency Exit Work Site** – Construction vehicles would access or depart the I-895 work site, which is located directly south of I-895 and east of the BW Parkway near the border of Baltimore City and Anne Arundel County, from MD Route 648, Annapolis Road Trucks leaving the site would then travel south on Annapolis Road (which becomes Baltimore Annapolis Boulevard) to the interchange with I-695, the Baltimore Beltway. Trucks accessing the site would follow the reverse path from the Beltway. The interchange with I-695 can accommodate movements in all four directions for arriving and departing trucks.

  - Annapolis Road/Baltimore-Annapolis Boulevard is one lane in each direction between the work site and I-695, with a mixture of commercial, light industrial, residential, and open space uses. Properties are accessed directly via driveways. Average daily traffic on Annapolis Road/Baltimore Annapolis Boulevard in this roadway section is approximately 11,400 vehicles per day. The distance trucks would travel on Annapolis Road/Baltimore Annapolis Boulevard is approximately 1.6 miles.

  - This work site is on Build Alternatives J and J1. Work to be completed here include the construction of a Fresh Air/Emergency Exist shaft and the construction of a substation.

- **Cherry Hill Station and Tunnel Portal Work Site** – The primary access roadway for construction vehicles accessing the two work sites would be Annapolis Road (MD 648), with roadways feeding Annapolis Road including Patapsco Avenue, Waterview Avenue and Cherry Hill Road. Once trucks are on Annapolis Road, they would travel south and then access the Baltimore-Washington Parkway via a ramp connecting Annapolis Road to the Parkway. Trucks accessing the site from the north would leave the Parkway and exit directly onto southbound Annapolis Road. Trucks accessing the site from the south would exit the Parkway at the Waterview Avenue exit and then access Annapolis Road from Waterview Avenue.
  - At the north end of the work site Annapolis Road is one lane in each direction between the work site and the ramps to the BW Parkway, with a mix of commercial and light industrial uses. Properties are accessed directly via driveways. Average daily traffic on Annapolis Road in this roadway section is approximately 11,000 vehicles per day per State Highway Administration traffic count data. The distance trucks would travel on Annapolis Road is approximately .75 miles. Waterview Avenue is two lanes in each direction and Cherry Hill Road is one lane in each direction. Average daily traffic on Waterview Avenue in this section is 5,300 vehicles and average daily traffic on Cherry Hill Road is approximately 8,800 vehicles.
  - In the south, access to Annapolis Road would be via Patapsco Avenue. Patapsco Avenue is three lanes in each direction, with average daily traffic approximately 18,900 vehicles.
- **Camden Yards Alternative – Switch Box, Train Storage and MOW Facility Construction** – Access to this work site on the Camden Yards Station alternative would be via Clare Street and Annapolis Road. Clare Street does not have pavement striping but appears to have sufficient width to handle trucks traveling in both directions. Annapolis Road is one lane in each direction. Adjacent uses on both roadways is industrial. Average daily traffic on Annapolis Road in this area is approximately 6,700 vehicles per day.
- **Camden Yards Alternative – Station Construction** – Access to this work site will be from Interstate 395, Howard Street, Conway Street and Pratt Street, located in the heart of downtown Baltimore. I-395, Howard Street, and Conway Street are major entrances into downtown Baltimore from I-95.
  - Pratt Street is the eastbound part of a one-way pair with Lombard Street and is three general traffic lanes eastbound with a dedicated bus/right turn lane. Average daily traffic in the vicinity of the work site is approximately 21,000 vehicles per day. Conway Street is three lanes in each direction and average daily traffic is approximately 38,800 vehicles per day. I-395/Howard Street is two lanes in each direction, with average daily traffic of approximately 61,600 vehicles per day.
- **BARC West TMF Site** – Access to this work site would be from Powder Mill Road just north of Agricultural Research Road. Trucks would enter from and exit to the west on Powder Mill Road to south on Edmonston Avenue (MD Route 201), which changes into Kenilworth Avenue south of Cherrywood Lane, to I-95/495. Powder Mill

Road is one lane in each direction, with the primary use being open space and some BARC-related buildings. Edmonston Road is one lane in each direction until the intersection with Cherrywood Lane, where the cross section turns to two lanes in each direction and then three lanes in each direction closer to the Capital Beltway. The primary use south of Cherrywood remains open space.

  - Powder Mill Road in this location has average daily traffic volumes of approximately 12,000 vehicles per day. Average daily traffic on Edmonston Road north of Cherrywood Lane is approximately 23.500 vehicles per day. South of Cherrywood Lane, Edmonston Road/Kenilworth Avenue carries approximately 38,000 vehicles per day.
  - Work to be completed at this work site will be TMF construction, substation construction, and construction of the MOW facility for this TMF option.

- **BARC Air Strip TMF Site** – Access to this work site would be located off of Springfield Road, south of Powder Mill Road in Prince George's County. The closest major intersection to the north of the work site entrance would be Springfield Road and Powder Mill Road and the closest major intersection to the south of the work site would be the intersection of Springfield Road and Good Luck Road. Further south is the intersection of Springfield Road and MD Route 564, which is approximately 2.6 miles from the entrance. Springfield Road is one lane in each direction in the vicinity of the work site Average daily traffic on Springfield Road is approximately 1,900 trips per day (count taken near intersection with MD 564).
  - Work at this site would include construction of the TMF, substation construction, and construction of the TMF Maintenance of Way facility.
- **MD 198 TMF Site** - The access to the MD 198 TMF work site would be located off of the current driveway to the Extra Space Storage facility, which in turn is located on the north side of MD 198, just east of the northbound entrance ramp to the Baltimore – Washington Parkway, in Anne Arundel County. This would connect to an extension of Old Portland Road to the south.
  - MD 198 is two lanes eastbound and one lane westbound with a center bi-directional turn lane in the vicinity of the storage facility site. This section of MD 198 has driveways to businesses on both sides of MD 198 with direct access to the roadway. Left turns to these businesses are made from the bi-directional middle turn lane. Average daily traffic in this section of MD 198 is approximately 27,000 based on Maryland State Highway Administration traffic counts.
  - Work at this site would include construction of the TMF and substation construction.

D.2A.15.2 Impacts and Mitigation Strategies – Work Site Access and Egress Routes

Truck and auto arrivals and departures at each work site along the SCMAGLEV alignment is summarized in **Table D.2-33**. The data in the table shows significant daily truck traffic added to the transportation network at a majority of the work sites, which

can result in significant disruption to transportation network operations. Impacts and potential mitigation by work site are outlined below:

- **Mount Vernon East Station Work Site** – At the height of construction activity the Project Sponsor estimates between 350 and 450 truck arrivals per workday and 250 worker vehicle arrivals per day. The 250 worker trips will be small part of total trips in this area and therefore can be absorbed by the existing network without mitigation.

Impacts associated with truck traffic may include:

- General traffic operations degradation for all vehicles along New York Avenue and Interstate-395 associated with long truck queues at intersections along New York Avenue both east and west of intersection with I-395, and slow truck turning and through movements, thus resulting in fewer vehicles clearing an intersection during each signal phase. It is very important to note that impacts from truck arrivals and departures will be in addition to impacts resulting from intersection and lane modifications and closures associated with construction activities.
  - Extended left turn queues on I-395 for trucks accessing the Mount Vernon work site from northbound I-395.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the Mount Vernon site will be 7 am to 4 pm.
  - Optimize signal timing at intersections along New York Avenue to accommodate truck movements to the greatest degree possible without creating an undue burden for other traffic movements through the network.
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible.
  - Assign traffic control flaggers at key intersections along New York Avenue to facilitate truck movements through the intersection and mitigate intersection operations degradation to the greatest degree possible.
  - Maintain New York Avenue in a state of good repair to ensure vehicle movements are as efficient as possible. This may include increasing the pavement vertical section to accommodate increased truck movements and heavier vehicle weights associated with fully loaded trucks.
- **Langdon Fresh Air/Emergency Exit Work Site** – At the height of construction activity there will be 550 to 680 daily truck arrivals and departures at this work site,

which will generally operate 24 hours per day. 550 worker arrivals would also occur over a 24-hour period.

  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks.

Impacts associated with truck traffic may include:

- Significant general traffic operations degradation for vehicles traveling along Queens Chapel Road resulting from trucks entering the roadway from Adams Place, based on the potential for a truck entering Queens Chapel on average every two minutes over a 24-hour period.
- Degradation of general traffic operations along Queens Chapel Road based on slow truck movements along Queens Chapel as well as long truck queues forming at the intersection of Bladensburg Road and Queens Chapel.
- Potential for extended left-turn queues for trucks turning onto eastbound New York Avenue from Bladensburg Road; trucks turning onto Queens Chapel Road from eastbound Bladensburg Road and for trucks turning from Queens Chapel Road into Adams Place. These extended queues would negatively impact general traffic making these left turns. The left from Queens Chapel into Adams Place have the potential to very significantly degrade northbound through traffic on Queens Chapel Road.
- General degradation of general traffic along southbound Bladensburg Road and eastbound New York Avenue due to slow moving truck traffic and extended truck queues resulting in fewer vehicles clearing an intersection during an available green phase.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the Adams Place site will be 24 hours per day.
  - Optimize signal timing at intersections along Bladensburg Road and New York Avenue east of Bladensburg to accommodate truck movements to the greatest degree possible without creating an undue burden for other traffic movements through the network.
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. Evaluation of additional left turn capacity for trucks

turning left from Bladensburg onto Queens Chapel and for trucks turning left from Bladensburg onto eastbound New York Avenue would be especially relevant.

  - Assign traffic control flagger at intersection of Adams Place and Queens Chapel Road 24 hours per day to control truck movements onto and off of Queens Chapel, with a specific focus on maintaining quality general traffic operations along Queens Chapel. Concurrently, provide sufficient space to handle long queues of trucks waiting to enter Queens Chapel Road.
  - Maintain Queens Chapel Road, Bladensburg Road, and New York Avenue in a state of good repair to ensure vehicle movements are as efficient as possible. This will include increasing the pavement vertical section on Queens Chapel Road to accommodate increased truck movements and heavier vehicle weights associated with fully loaded trucks. Evaluate this potential improvement on Bladensburg Road and New York Avenue as well.

- **WSSC Fresh Air/Emergency Exit Work Site** – At the height of construction activity there will be 35 daily truck arrivals and departures at this work site, which will generally operate 24 hours per day. 50 worker arrivals would also occur over a 24-hour period.
  - Given the capacity of Kenilworth Avenue and the relatively small number of truck and worker arrivals, the anticipated impacts at this site are minimal. A traffic impact study is still proposed to identify any unanticipated impacts.
- **MD 410 Fresh Air/Emergency Exit Work Site** – At the height of construction activity there will be 560 to 690 daily truck departures/arrivals at this work site, which will be active 24 hours per day. In addition, there will be an estimated 425 autos carrying workers arriving and departing over the 24-hour period.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks.

Impacts associated with truck traffic may include:

- Significant general traffic operations degradation for vehicles traveling along Riverdale Road resulting from trucks entering the roadway from the temporary roadway connecting Riverdale Road to the work site, based on the potential for a truck entering Riverdale Road on average every two minutes over a 24-hour period.
- Degradation of general traffic operations along Riverdale Road based on slow truck movements along Riverdale Road as well as long truck queues forming on Riverdale to make the left onto eastbound MD 410 (Veterans Parkway). The extended left turn queue has the potential to greatly degrade traffic operations at this intersection and negatively impact general traffic making this left turn as well through traffic impacted by excessive truck queues.
- General degradation of general traffic along eastbound Veterans Parkway due to slow moving truck traffic and extended truck queues resulting in fewer vehicles clearing an intersection during an available green phase.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the Riverdale Road site will be 24 hours per day.
  - Optimize signal timing at intersections along Veterans Parkway to accommodate truck movements to the greatest degree possible without creating an undue burden for other traffic movements through the network.
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. Evaluation of additional left turn capacity for trucks turning left from Riverdale Road onto Veterans Parkway would be especially relevant.
  - Assign traffic control flagger at intersection of Riverdale Road and temporary construction site access roadway 24 hours per day to control truck movements onto and off of Riverdale Road, with a specific focus on maintaining quality general traffic operations along Riverdale Road. Concurrently, provide sufficient space on the construction site to handle long queues of trucks waiting to enter Riverdale Road.
  - Maintain Riverdale Road and Veteran's Parkway in a state of good repair to ensure vehicle movements are as efficient as possible. This will include increasing the pavement vertical section on Riverdale Road to accommodate increased truck movements and heavier vehicle weights associated with fully loaded trucks. Evaluate this potential improvement on Veterans Parkway as well.
- **South Portal Work Site (South Tunnel Portal) -** At the height of construction activity there will be 201 daily truck arrivals/departures at this work site, which will be active 24 hours per day. In addition, there will be an estimated 230 autos carrying workers arriving and departing over the 24-hour period.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations along Beaver Dam Road, Soil Conservation Road, Powder Mill Road, and MD 201 based on slow truck movements along each route. Traffic operations may also be degraded due to trucks entering and exiting the work sites on each side of the alignment. Finally, there may be degradation of general traffic operations based on left turns from Research Road to westbound

Powder Mill Road, westbound Powder Mill Road to southbound MD 201, and eastbound Greenbelt Road to northbound Good Luck Road.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the Beaver Dam Road site will be 24 hours per day.
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. This will be especially relevant along Beaver Dam Road for trucks entering exiting the two work sites.
  - Temporarily widening the cross-section of Research Road to accommodate two passing trucks as well as providing a left turn stacking lane for trucks turning onto westbound Powder Mill Road.
  - Adding temporary left turn capacity at the intersection of Powder Mill Road and MD 201 to minimize the impacts of long truck queues making the left turn onto southbound MD 201.
  - Assign traffic control flagger at the intersection of Beaver Dam Road and construction site access roadways for both work sites between 7 AM and 9 PM to control truck movements onto and off of Beaver Dam Road, with a specific focus on maintaining quality general traffic operations along Beaver Dam Road. Concurrently, provide sufficient space on each construction site to handle long queues of trucks waiting to enter Beaver Dam.
  - Maintain each of the truck routes to these work sites in a state of good repair to ensure vehicle movements are as efficient as possible. This may include increasing the pavement vertical section on Beaver Dam Road, Soil Conservation Road, Research Road and Powder Mill Road.
- **Powder Mill Road at Alignment -** At the height of construction activity there will be 45 daily truck arrivals/departures at this work site, which will be active between 7 AM and 4 PM. In addition, there will be an estimated 90 autos carrying workers arriving and departing during the work period.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks.

Impacts associated with truck traffic may include:

- Some minor degradation of general traffic operations along Springfield Road, Powder Mill Road, Soil Conservation Road and MD 201 based on slow truck movements along each route. Traffic operations may also be slightly degraded due to trucks entering and exiting the work site along Springfield Road. Finally, there may be some degradation of general traffic operations based on left turns from Research Road to westbound Powder Mill Road, westbound Powder Mill Road to southbound MD 201, and eastbound Greenbelt Road to northbound Good Luck Road.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures at this work site. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. This will be especially relevant along Springfield Road for trucks entering exiting the work site.
  - Maintain each of the truck routes to these work sites in a state of good repair to ensure vehicle movements are as efficient as possible.
- **198 TMF Option – MOW Facility** – At the height of construction activity there will be 45 daily truck arrivals/departures at this work site, which will be active between 7 AM and 4 PM. In addition, there will be an estimated 100 autos carrying workers arriving and departing during the work period.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks.
  - No impacts are anticipated from the truck arrivals based on the small number of arrivals per day.
- **MD 197 at Alignment –** At the height of construction activity there will be 51 daily truck arrivals/departures at this work site, which will be active between 7 AM and 4 PM. In addition, there will be an estimated 190 autos carrying workers arriving and departing during the work period.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks. Given the capacity of 197, the anticipated impacts are minimal.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations along MD 197 associated with trucks entering and exiting the work site off of Canadian Way. There may also be some

degradation of general traffic operations associated with slow moving trucks along MD 197 as well as trucks making a U-Turn to travel south on MD 197.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. This will be especially relevant along northbound MD 197 at Canadian way.
  - Temporarily widening the cross-section of Canadian Way to accommodate two passing trucks in order to avoid queues on MD 197 waiting to enter the site.
  - Optimize the signal at the intersection of MD 197 and Muirkirk Road and add additional time for left turning trucks making a U-turn at this intersection. Also add temporary left turn stacking capacity at this turn if feasible.
  - Maintain MD 197 in a state of good repair to ensure vehicle movements are as efficient as possible.
- **Maryland City Portal Work Site –** At the height of construction activity there will be 81 daily truck arrivals/departures at this work site, which will be active 24 hours per day. In addition, there will be an estimated 250 autos carrying workers arriving and departing during the work period.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks. Given the capacity of MD 198 and Brock Bridge Road, the anticipated impacts are minimal.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations along Brock Bridge Road due to slow truck movements and trucks entering and exiting the work site. There may also be some degradation of general traffic along MD 198, though this should be minimal given its capacity.
- There may be some degradation of general traffic operations on MD 198 based on trucks making left turns from westbound MD 198 onto southbound Brock Bridge Road.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet available at this level of

detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:

  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the Brock Bridge Road site will be 24 hours per day.
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. This will be especially relevant along Brock Bridge Road for trucks entering and exiting the work site.
  - Adding temporary left turn capacity at the intersection of westbound MD 198 and Brock Bridge Road to minimize the impacts of long truck queues making the left turn onto southbound Brock Bridge Road.
  - Optimize signal at the intersection of MD 198 and Brock Bridge Road and provide additional time to left turns onto Brock Bridge Road if feasible.
  - Maintain each of the truck routes to this work site in a state of good repair to ensure vehicle movements are as efficient as possible. This may include increasing the pavement vertical section on Brock Bridge Road.
  - Assign traffic control flagger at the intersection of Brock Bridge Road and construction site access roadway between 7 AM and 9 PM to control truck movements onto and off of Brock Bridge Road, with a specific focus on maintaining quality general traffic operations along Brock Bridge Road.

- **MD 198 at Alignment-** At the height of construction activity there will be 89 daily truck arrivals/departures at this work site, which will be active from 7 AM to 4 PM. In addition, there will be an estimated 180 autos carrying workers arriving and departing during the work period.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks. This congestion may be exacerbated due to the lack of a traffic signal at the intersection of the temporary construction access and MD 198.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations along MD 198 due to slow truck movements and trucks entering MD 198 from the temporary construction road. There may also be some degradation of general traffic along MD 198, though this should be minimal given its capacity.
- Degradation of general traffic operations on MD 198 based on trucks making left turns from westbound MD 198 onto temporary construction roadway. This could be exacerbated due to lack of a traffic signal at this intersection.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations

during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet available at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:

  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at this work site will be 7 AM to 4 PM.
  - Add a temporary traffic signal at the intersection of MD 198 and the temporary construction road. This would facilitate trucks on westbound 198 making the left turn across eastbound 198 lanes.
  - Add temporary left turn capacity at the intersection of MD 198 and the construction access road to minimize the impacts of long truck queues making the left turn from eastbound 198 to the construction access road.
  - Assign traffic control flagger at the intersection of MD 198 and the temporary construction roadway at time of peak truck arrivals to supplement the temporary traffic signal and facilitate truck movements across eastbound MD 198. Specific focus is to mitigate long queues of trucks waiting to make the left turn into the temporary construction roadway.
  - Maintain each of the truck routes to these work sites in a state of good repair to ensure vehicle movements are as efficient as possible.

- **River Road – Adjacent to the Alignment** -At the height of construction activity there will be 30 daily truck arrivals/departures at this work site, which will be active from 7 AM to 4 PM. In addition, there will be an estimated 60 autos carrying workers arriving and departing during the work period.
  - Given the small number of autos arriving at the work site, anticipated traffic impacts associated with these arrivals will be minimal.

Impact associated with truck traffic may include:

- Some degradation of general traffic operations along MD 198 due to trucks entering and exiting Old Portland Road, including from trucks attempting to cross westbound MD 198 to travel eastbound.
- Some degradation of general traffic operations on MD 198 resulting from trucks making left turns from eastbound westbound MD 198 onto southbound Old Portland Road.
- Degradation of traffic operations on Old Portland Road due to slow truck movements and trucks entering and exiting from MD 198.
- **Colony Seven Road - Anne Arundel County** – At the height of construction activity there will be 15 truck arrivals per day and 30 auto trips associated with construction workers accessing the work site. Given the small number of arrivals and departures and the fact that access to Colony Seven Road is via a grade- separated interchange, no impacts to traffic operations are anticipated at this work site.

- **South Portal of North Tunnel Work Site** – At the height of construction activity there will be 100 truck arrivals per day and 150 auto trips associated with construction workers accessing the work site.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations along MD 175 due to slow truck movements and trucks entering MD 175 from Max Blobs Park Road.
- Degradation of general traffic operations on MD 175 based on trucks making left turns from westbound MD 175 onto southbound Max Blobs Park Road. Long truck queues may result in fewer vehicles clearing an intersection during an available green phase.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet available at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the Max Blob Park Road site will be 24 hours per day.
  - Optimize signal at intersection of MD 175 and Max Blobs Park Road and provide more green time to heavy truck movements if this is feasible without degrading other movements through the intersection.
  - Assign traffic control flagger at the intersection of MD 175 and Max Blobs Park Road at time of peak truck arrivals to facilitate truck movements onto MD 175. Specific focus is to mitigate long queues of trucks waiting to make the left turn into Max Blobs Park Road and the left turn out of Max Blobs Park Road onto westbound MD 175.
  - Adding temporary left turn capacity at the intersection on westbound MD 175 at the intersection with Max Blobs Park Road to minimize the impacts of long truck queues making the left turn onto Max Blobs Park Road.
  - Maintain each of the truck routes to the work site in a state of good repair to ensure vehicle movements are as efficient as possible. Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. This will be especially relevant for vehicles turning right onto Max Blobs Park Road from eastbound MD 175.

- **Alternative Fresh Air/Emergency Exit – Harmans Road -** At the height of construction activity there will be 40 truck arrivals per day and 50 auto trips associated with construction workers accessing the work site.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations along MD Harmans Road and MD 176 due to slow truck movements and trucks entering Harmans Road from the work site and entering MD 176 from Harmans Road.
- Degradation of general traffic operations on MD 176 based on trucks making left turns from westbound MD 176 onto southbound Harmans Road. Truck queues may result in fewer vehicles clearing an intersection during an available green phase.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet available at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the Harmans Road site will be 24 hours per day.
  - Optimize signal at intersection of MD 176 and Harmans Road to provide more green time to heavy truck movements if this is feasible without degrading other movements through the intersection.
  - Assign traffic control flagger at the intersection of Harmans Road and the work site at time of peak truck arrivals to facilitate truck movements onto Harmans Road. Ensure there is enough space on work site to accommodate queues waiting to get onto Harmans Road.
  - Adding temporary left turn capacity at the intersection of westbound MD 176 and Harmans Road to minimize the impacts of long truck queues making the left turn onto Harmans Road.
  - Maintain each of the truck routes to the work site in a state of good repair to ensure vehicle movements are as efficient as possible. Construct temporary truck turning lanes and truck only queue jumps where physically possible, especially on Harmans Road in order to separate truck traffic from general traffic to the greatest degree possible.
- **Harmans Fresh Air/Emergency Exit Work Site -** At the height of construction activity there will be 390 truck arrivals per day and 275 auto trips associated with

construction workers accessing the work site. This work site would operate 24 hours per day.

  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks.

Impacts associated with truck traffic may include:

  - Degradation of general traffic operations along MD 176 (Dorsey Road) and MD 170 (Telegraph Road) due to slow truck movements and trucks entering MD 176 from Old Dorsey Road
  - Degradation of general traffic operations on MD 176 based on trucks making left turns from westbound MD 176 onto southbound Old Dorsey Road and forming long queues.
  - Impacts to vehicles accessing properties on Railroad Avenue.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet available at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the Railroad Avenue work site will be 24 hours per day.
  - Add a temporary signal at the intersection of Old Dorsey Road and MD 176 to facilitate trucks entering and exiting Old Dorsey Road in order to access the work site.
  - Optimize signal at intersection of MD 176 and MD 170 to provide more green time to heavy truck movements if this is feasible without degrading other movements through the intersection. Specific focus is left turns from northbound MD 170 to westbound MD 176.
  - Assign traffic control flagger at the intersection of Old Dorsey Road and MD 176 at time of peak truck arrivals to facilitate truck movements onto MD 176. Ensure there is enough space on work site to accommodate queues waiting to get onto MD 176 from Old Dorsey Road and Railroad Avenue.
  - Add temporary left turn capacity at the intersection of westbound MD 176 and Old Dorsey Road and at the intersection of MD 170 and MD 176 in order to minimize the impacts of long truck queues making left turns. The addition of general traffic bypass lanes at the intersection of MD 176 and Old Dorsey should also be evaluated.
  - Maintain each of the truck routes to the work site in a state of good repair to ensure vehicle movements are as efficient as possible. Construct temporary

truck turning lanes and truck only queue jumps where physically possible, especially on eastbound MD 176 in order to separate truck traffic from general traffic to the greatest degree possible.

- **Mathison Way @ MD 170 (Aviation Boulevard) -** At the height of construction activity there will be 220 truck arrivals per day and 50 auto trips associated with construction workers accessing the work site. This work site would operate 24 hours per day.
  - Impacts associated with the auto traffic will be minimal given the small number of auto arrivals.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations along MD 170 (Aviation Boulevard) due to slow truck movements and trucks entering MD 170 from Mathison Way.
- Degradation of general traffic operations on MD 170 based on trucks making left turns from southbound MD 170 onto Mathison Way and queuing on MD 170.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet available at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the Mathison Way work site will be 24 hours per day.
  - Optimize signal at intersection of MD 170 and Mathison Way to provide more green time to heavy truck movements if this is feasible without degrading other movements through the intersection. Specific focus is left turns from southbound MD 170 to Mathison Way.
  - Assign traffic control flagger at the intersection of Mathison Way and MD 170 at time of peak truck arrivals to facilitate truck movements onto MD 170 and into Mathison Way.
  - Adding temporary left turn capacity at the intersection of southbound MD 170 and Mathison Way in order to minimize the impacts of long truck queues making left turns onto Mathison Way.
  - Construct temporary truck turning lanes where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. This will be especially relevant for right turns into Mathison Way from northbound MD 170.
  - Maintain each of the truck routes to the work site in a state of good repair to ensure vehicle movements are as efficient as possible.

- **Interstate I-195 @ BWI Marshall Airport -** At the height of construction activity there will be 220 truck arrivals per day and 50 auto trips associated with construction workers accessing the work site. This work site would operate 24 hours per day.
  - Impacts associated with the auto traffic will be minimal given the small number of auto arrivals and the capacity of the roadway network in this work site area.

Impacts associated with truck traffic may include:

- Some degradation of traffic on Airport circulation roadways. No impacts to I-195 are anticipated given its capacity and direct access into the Airport.

Mitigation of these impacts will include:

  - Staging of truck arrivals and departures to avoid the highest traffic times of the day at the Airport.
  - Construct temporary truck turning lanes and other truck only lanes on Airport property where physically possible in order to separate truck traffic from general traffic to the greatest degree possible.

- **MD 170 (Camp Meade Road/Aviation Boulevard) @ MD 162 Aviation Boulevard –** At the height of construction activity there will be 1,030 to 1,230 daily truck departures/arrivals at this work site, which will be active 24 hours per day. In addition, there will be an estimated 625 autos carrying workers arriving and departing over the 24-hour period.
  - Impacts associated with the auto traffic will include short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks. Mitigation efforts related to truck arrivals and departures, as outlined below, will also be used to address auto-related impacts.

Impacts associated with truck traffic may include:

- Significant general traffic operations degradation for vehicles traveling on Camp Meade Road and Aviation Boulevard, both east and west of the intersection with Camp Meade Road. This degradation would result from heavy, slow moving truck traffic in the general traffic lanes and a truck on average entering or exiting the work site nearly every minute throughout the 24-hour workday. These truck entrances and exits will be exacerbated by the fact that trucks entering the work site from eastbound Aviation Boulevard will need to make a left turn across westbound Aviation Boulevard and trucks exiting the site onto Camp Meade Road will also have to make a left turn across traffic.
- Degradation will also occur because of required new signals at the entrance of the work site on both Camp Meade Road and MD 162. In addition, slow truck movements through the existing signal at Camp Meade Road and Aviation Boulevard will mean fewer vehicles will clear the signal during each green phase, thus resulting in less efficient use of existing capacity and thus degradation of traffic operations.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the Camp Meade/Aviation Boulevard site will be 24 hours per day.
  - Add temporary signals at the work site entrance/exits on Camp Mead Road and MD 162 to accommodate truck traffic arriving and exiting the work site.
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. New temporary general traffic lanes to bypass left turning trucks at the entrance on MD 162 should be evaluated and implemented if feasible. A truck only right-turn/acceleration lane for trucks turning right onto westbound Aviation Boulevard should also be evaluated and implemented if feasible.
  - Truck only lanes on Aviation Boulevard between Camp Meade Road and the entrance to Interstate 195 should be evaluated and implemented if feasible.
  - The left turn stacking lane on eastbound Aviation Boulevard for the turn onto northbound Camp Meade Road should be extended to remove queuing trucks from general traffic. This left turn stacking lane should be merged with the truck only lane proposed above.
  - Optimize signal timing at intersection of Camp Meade Road and Aviation Boulevard to accommodate truck movements to the greatest degree possible without creating an undue burden for other traffic movements through the network.
  - Assign traffic control flagger at both work site entrances/exits 24 hours per day to control truck movements onto and off of Aviation Boulevard and Camp Meade Road, with a specific focus on maintaining quality general traffic operations along both roadways. Concurrently, provide sufficient space on the construction site to handle long queues of trucks waiting to enter both roadways.
  - Maintain Camp Meade Road and Aviation Boulevard in a state of good repair to ensure vehicle movements are as efficient as possible. This may include increasing the pavement vertical section on both roadways to accommodate increased truck movements and heavier vehicle weights associated with fully loaded trucks.
- **I-895 Fresh Air/Emergency Exit Work Site -** At the height of construction activity there will be 46 daily truck departures/arrivals at this work site, which will be active

24 hours per day. In addition, there will be an estimated 625 autos carrying workers arriving and departing over the 24-hour period.

  - Impacts associated with the auto traffic will include short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks. Major impacts are not anticipated.

Impacts associated with truck traffic may include:

- Some general traffic operations degradation for vehicles traveling on Annapolis Road. This degradation would result from trucks entering and exiting the work site and heavy slow- moving truck traffic in the general traffic lanes.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day at the work site.
  - Assignment of a traffic control flagger to manage exits from the work site onto Annapolis Road.
  - Maintain Annapolis Road in a state of good repair to ensure vehicle movements are as efficient as possible.
- **Cherry Hill Station and Tunnel Portal Work Site -** At the height of construction activity there will be 306 daily truck departures/arrivals at this work site, which will be active 24 hours per day. In addition, there will be an estimated 400 autos carrying workers arriving and departing over the 24-hour period.
  - Impacts associated with the auto traffic will include short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks. Mitigation efforts related to truck arrivals and departures, as outlined below, will also be used to address auto-related impacts.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations for vehicles traveling on Patapsco Avenue, Annapolis Road, and Waterview Avenue resulting from heavy, slow moving truck traffic in the general traffic lanes on each of these roadways.
- Degradation of general traffic operations resulting from trucks entering and exiting the work sites. This will include trucks on eastbound Patapsco Avenue making left turns into the work, thus holding up traffic in the left most lane.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the portal and station sites will be 24 hours per day.
  - Evaluate the potential to add a temporary signal at the entrance/exit on Patapsco Avenue to accommodate truck traffic arriving and exiting the work site.
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. This may include dedicating the left most lane of eastbound Patapsco Avenue to left turns into the work site. In addition, a crossing across the existing grass median will have to be constructed.
  - Optimize signal timing at intersection of Patapsco Avenue and Annapolis Road and Waterview Avenue and Annapolis Road to accommodate truck movements to the greatest degree possible without creating an undue burden for other traffic movements through the intersections.
  - Assign traffic control flagger at both north and south work site entrances during peak truck arrival periods to control truck movements onto and off of Waterview Avenue and Patapsco Avenue, with a specific focus on maintaining quality general traffic operations along both roadways. Concurrently, provide sufficient space on the construction sites to handle long queues of trucks waiting to enter both roadways.
  - Maintain Annapolis Road, Waterview Avenue, and Patapsco Avenue in a state of good repair to ensure vehicle movements are as efficient as possible.
- **Camden Yards Alternative – Switch Box, Train Storage and MOW Facility Construction -** At the height of construction there would be 112 truck arrivals/departures per day at this work site.
  - Impacts associated with the auto traffic may include short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks, though significant impacts are not anticipated given low traffic volumes in the area.

Impacts associated with truck traffic may include:

- Some degradation of general traffic operations for vehicles traveling on Annapolis Road resulting from heavy, slow moving truck traffic in the general traffic lanes and trucks entering Annapolis Road from Clare Street.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations

during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:

  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the work site will be 7 Am to 4 PM.
  - Assign traffic control flagger at the intersection of Clare Street and Annapolis Road to control truck movements onto and off of Clare Street.
  - Maintain Clare Street and Annapolis Road in a state of good repair to ensure vehicle movements are as efficient as possible.

- **Camden Yards Alternative – Camden Yards Station Construction -** At the height of construction activity there will be 300 to 350 daily truck departures/arrivals at this work site, which will be active between 7 AM and 4 PM. In addition, there will be an estimated 250 autos carrying workers arriving and departing over the 9-hour work period.
  - Impacts associated with the auto traffic will be minimal given the capacity of the road network in the work area and the already high traffic volumes.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations for vehicles traveling on Howard Street, Pratt Street and Conway Street from heavy, slow moving truck traffic in the general traffic lanes on each of these roadways.
- Degradation of general traffic operations resulting from left turning trucks entering and exiting the work site from eastbound Conway Street.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at this site will be during the day. This is perhaps the most important and effective mitigation strategy given the dense urban nature of the work site and high peak period traffic volumes.
  - Optimize signal timing at intersections of Howard Street and Conway Street, Howard Street and Pratt Street, Conway Street and Sharp Street, Conway Street and Charles Street, and Pratt Street and Sharp Street to accommodate truck movements to the greatest degree possible without creating an undue burden for other traffic movements through the network.

  - Assign traffic control flagger at work site entrances on Pratt Street and Conway Street to control truck movements onto and off of the work site, with a specific focus on maintaining quality general traffic operations along both roadways. Concurrently, provide sufficient space on the construction sites to handle long queues of trucks waiting to enter both roadways.
  - Maintain all roadways in the work area in a state of good repair to ensure vehicle movements are as efficient as possible.

- **BARC West TMF Site -** At the height of construction activity there will be 112 daily truck arrivals/departures at this work site, which will be active between 7 AM and 4 PM. In addition, there will be an estimated 230 autos carrying workers arriving and departing over the work period.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations along Powder Mill Road and MD 201 based on slow truck movements along each route. Traffic operations may also be degraded due to trucks entering and exiting the work site on Powder Mill Road. Finally, there may be degradation of general traffic operations based on the left turn from westbound Powder Mill Road to southbound MD 201.It should be noted that this haul route will also be used for truck accessing the construction of the portal to the south tunnel and therefore many of the proposed mitigation strategies will apply to both.

Mitigation of these impacts may include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the BARC West TMF site will be 7 AM to 4 PM.
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. This will be especially relevant along Powder Mill Road for trucks making the left turn from eastbound Powder Mill Road into the work site.
  - Adding temporary left turn capacity at the intersection of Powder Mill Road and MD 201 to minimize the impacts of long truck queues making the left turn onto southbound MD 201.

  - Assign traffic control flagger at the intersection of Powder Mill Road and construction site access roadway throughout the workday. Concurrently, provide sufficient space on the construction site to handle long queues of trucks waiting to enter Powder Mill Road.
  - Maintain each of the truck routes to this work site in a state of good repair to ensure vehicle movements are as efficient as possible. This may include increasing the pavement vertical section on Powder Mill Road.

- **BARC Airstrip TMF Site -** At the height of construction activity there will be 112 daily truck arrivals/departures at this work site, which will be active between 7 AM and 4 PM. In addition, there will be an estimated 350 autos carrying workers arriving and departing over the work period.
  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations along Springfield Road, Powder Mill Road MD 201 and MD 564 due to slow truck movements (this assumes trucks will access and depart from the work site both north to Powder Mill Road and south to MD 564). Traffic operations may also be degraded on Springfield Road due to trucks entering and exiting the work site.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the TMF will be 7 AM to 4 PM.
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. This will be especially relevant along Springfield Road for trucks entering and exiting the work site, including for southbound trucks on Springfield Road turning left into the work site.
  - Assign traffic control flagger at the intersection of Springfield Road construction site access roadway for the length of the workday.
  - Maintain each of the truck routes to the work site in a state of good repair to ensure vehicle movements are as efficient as possible. This may include increasing the pavement vertical section on Springfield Road.

- **MD 198 TMF Alternative Work Site -** At the height of construction activity there will be 106 daily truck arrivals/departures at this work site, which will be active between

7 AM and 4 PM. In addition, there will be an estimated 250 autos carrying workers arriving and departing over the work period.

  - Impacts associated with the auto traffic may be short-term congestion associated with a concentrated arrival of workers at shift changes, with the greatest impacts associated with the morning and afternoon peaks. Mitigation of impacts from truck arrivals and departures will also apply to auto arrivals.

Impacts associated with truck traffic may include:

- Degradation of general traffic operations along MD 198 due to slow truck movements and to trucks entering and exiting the work site. Specific impacts may be related to trucks traveling on eastbound MD 198 queuing to make the left turn to enter the site.

Mitigation of these impacts will include:

- Completion of a detailed traffic impact study by the Project Sponsor in order to fully understand the implications of truck arrivals and departures on traffic operations during each phase of construction and during different times of the day. Data used to complete the analysis presented in the DEIS is not yet at this level of detail. Develop detailed mitigation plans based on analysis results. Mitigation strategies may include:
  - Staging of truck arrivals and departures to avoid the highest traffic times of the day. Work hours at the MD 198 TMF will be 7 AM to 4 PM.
  - Construct temporary truck turning lanes and truck only queue jumps where physically possible in order to separate truck traffic from general traffic to the greatest degree possible. This will be especially relevant on eastbound 198, where trucks will be turning left into the construction site.
  - A specific mitigation here will be to Install a left turn stacking lane for eastbound vehicles turning into the site from MD 198. Currently eastbound vehicles on MD 198 would make the turn into the site from the center median turn lane but only a single vehicle can do this at a time based on the roadway configuration. Without the left turn stacking lane, additional trucks waiting to turn left would have to queue in the left general traffic lane, thus disrupting traffic.
  - Assign traffic control flagger at the intersection of MD 198 and the construction roadway accessing the site to control movements into the site with a focus on maintaining traffic operations on MD 198.
  - Maintain each of the truck routes to the work site in a state of good repair to ensure vehicle movements are as efficient as possible. Ensure adequate space on the work site to accommodate queues of trucks waiting to exit onto MD 198.

Table D.2-33: Estimated Truck and Auto Trips by Work Site During SCMAGLEV Construction

Work Site Location	Alignment Alternative	Approx. Alignment Stationing	Work Element	Duration (Months)	Construction Time Period	Workday Length	Roadways Impacted (see current conditions)	Truck Trips per Day	Worker Vehicle Arrivals Per Day
Mount Vernon East Station - Washington DC	J & J1	100+00	Station Civil Construction	48	Years 2 to 7	7AM - 4 PM	New York Avenue, I-395	250-350	150
			Station Architecture Construction	24	Years 2 to 7	7AM - 4 PM	New York Avenue, I-395	100	100
Northeast Washington DC - Adams Place @ Queens Chapel Road	J & J1	104+300	FA/EE Shaft Construction	15	Years 1 to 2	24	Queens Chapel Road, Bladensburg Road, New York Avenue	150	125
			Tunnel Boring Spoil Removal (Adams Place TBM Launch toward MVE - spoil removed at Adams Place)	13.5	Years 2 to 5	24	Queens Chapel Road, Bladensburg Road, New York Avenue	200-265	150
			Tunnel Boring Spoil Removal (Adams Place TBM Launch toward Bladensburg TBM Retrieval - spoil removed at Adams Place)	17	Years 2 to 5	24	Queens Chapel Road, Bladensburg Road, New York Avenue	200-265	150
			Substation Construction @ Adams Place	24	Years 2 to 5	7AM - 4 PM	Queens Chapel Road, Bladensburg Road, New York Avenue	6	100
Bladensburg - Prince George's County	J & J1	108+100	FA/EE Shaft Construction (TBM Retrieval Site)	12	Year 1 to 2	24	Kenilworth Avenue	35	50

Work Site Location	Alignment Alternative	Approx. Alignment Stationing	Work Element	Duration (Months)	Construction Time Period	Workday Length	Roadways Impacted (see current conditions)	Truck Trips per Day	Worker Vehicle Arrivals Per Day
Riverdale Road @ MD 410 - Prince George's County	J & J1	113+100	FA/EE Shaft Construction	18	Years 1 to 2	24	Riverdale Road, MD 410 (Veterans Parkway)	160	125
			Tunnel Boring Spoil Removal (Riverdale Road/MD 410 TBM Launch toward Bladensburg - spoil removed at Riverdale Road/MD 410))	21	Years 2 to 5	24	Riverdale Road, MD 410 (Veterans Parkway)	200-265	150
			Tunnel Boring Spoil Removal (Riverdale Road/MD 410 TBM Launch toward Explorer Road/Goddard Portal - spoil removed at Riverdale Road/MD 410)	23	Years 2 to 5	24	Riverdale Road, MD 410 (Veterans Parkway)	200-265	150
Beaver Dam Road - new access road to access alignment	J, J1	118+500	BARC West TMF Ramps Construction	26-30	Years 2 to 4	7AM - 4 PM	Beaver Dam Road, Soil Conservation Road, Greenbelt Road	56	112
			BARC Airstrip TMF Ramps Construction	33-34	Years 2 to 4	7AM - 4 PM	Beaver Dam Road, Soil Conservation Road, Greenbelt Road	44	90
			Construction of portal to south tunnel	27	Years 2 to 5	24	Beaver Dam Road, Soil Conservation Road, Greenbelt Road	145	150

Work Site Location	Alignment Alternative	Approx. Alignment Stationing	Work Element	Duration (Months)	Construction Time Period	Workday Length	Roadways Impacted (see current conditions)	Truck Trips per Day	Worker Vehicle Arrivals Per Day
Powder Mill Road @ Alignment - Prince George's County	J, J1	121+900	Viaduct Construction (work area stationing - 120+022 to 122+522 (alignment alternative J))	34	Years 2 to 4	7AM - 4 PM	Powder Mill Road, Soil Conservation Road, Greenbelt Road	30	60
			Viaduct Construction (work area stationing - 122+522 to 125+022 (alignment alternative J))	34	Years 2 to 4	7AM - 4 PM	Powder Mill Road, Soil Conservation Road, Greenbelt Road	15	30
MOW Facility - 198 TMF Option - Anne Arundel County	J, J1	122+500	MOW Facility Construction for 198 TMF Option - Access from Springfield Road	24	Years 2 to 6	7AM - 4 PM	Springfield Road, Powder Mill Road, MD 564 (Lanham Severn Road)	6	100
MD 197 @ Alignment - Anne Arundel County	J, J1 (substation Build Alternatives J only)	125+00	Viaduct Construction (work area stationing - 122+522 to 125+022) - New access road to alignment from Canadian Way	34	Years 2 to 4	7AM - 4 PM	MD 197 (Laurie - Bowie Road), Canadian Way	15	30
			Viaduct Construction (work area stationing - 125+022 to 127+522) - New access road to alignment from Canadian Way)	34	Years 2 to 4	7AM - 4 PM	MD 197 (Laurie - Bowie Road), Canadian Way	30	60
			Substation construction @ stationing 124+300	24	Years 2 to 6	7AM - 4 PM	MD 197 (Laurie - Bowie Road), Canadian Way	6	100
Maryland City Portal Site - Brock Bridge	J1	128+800	Portal Construction – South end of North Tunnel	16	Years 2 to 5	24	Brock Bridge Road, MD 198	75	150

Work Site Location	Alignment Alternative	Approx. Alignment Stationing	Work Element	Duration (Months)	Construction Time Period	Workday Length	Roadways Impacted (see current conditions)	Truck Trips per Day	Worker Vehicle Arrivals Per Day
Road @ Alignment			Substation Construction	24	Years 2 to 6	7AM - 4 PM	Brock Bridge Road, MD 198	6	100
MD 198 @ Alignment - Anne Arundel County	J	130+00	Viaduct Construction (work area stationing - 127+522 to 130+022) - New access road to alignment from MD 198)	34	Years 2 to 4	7AM - 4 PM	MD 198 (Laurel Fort Meade Road)	30	60
			Viaduct Construction (work area stationing - 130+022 to 132+522) - New access road to alignment from MD 198)	34	Years 2 to 4	7AM - 4 PM	MD 198 (Laurel Fort Meade Road)	15	30
			198 TMF Ramps construction (new access road to alignment from MD 198)	14-22	Years 2 to 4	7AM - 4 PM	MD 198 (Laurel Fort Meade Road)	44	90
River Road - adjacent to alignment - Anne Arundel County	J	132+500	Viaduct Construction (work area stationing - 130+022 to 132+522) - New access road to alignment from River Road)	34	Years 2 to 4	7AM - 4 PM	River Road, MD 198 (Laurel Fort Meade Road)	15	30
			Viaduct Construction (work area stationing - 132+522 to 134+30) - New access road to alignment from River Road)	34	Years 2 to 4	7AM - 4 PM	River Road, MD 198 (Laurel Fort Meade Road)	15	30
Colony Seven Road - Anne Arundel County	J	133+250	Viaduct Construction (work area stationing - 132+522 to 134+30) - New access road to alignment from Colony Seven Road)	34	Years 2 to 4	7AM - 4 PM	Colony Seven Road, MD 32, MD 198 (Laurel Fort Meade Road)	15	30

Work Site Location	Alignment Alternative	Approx. Alignment Stationing	Work Element	Duration (Months)	Construction Time Period	Workday Length	Roadways Impacted (see current conditions)	Truck Trips per Day	Worker Vehicle Arrivals Per Day
Portal at south end of north tunnel (access from temporary construction road leading to Max Blobs Park Road and then to MD 175) - Anne Arundel County	J	135+175	Portal construction at south end of the north tunnel	16	Years 2 to 5	24	Max Blobs Park Road, MD 175	100	150
Harmans Road @ MD 100 - Anne Arundel County	J, J1	140+280	FA/EE Shaft Construction (Alternative Site)	12	Years 1 to 2	24	Harmans Road, MD 100	40	50
Harmans - Anne Arundel County	J, J1	141+601	FA/EE Shaft Construction	15	Years 1 to 2	24	MD 176 (Dorsey Road), MD 170 (Telegraph Road), MD 100	125	125
			Tunnel Boring Spoil Removal (Harmans TBM Launch toward northbound tunnel entrance portal (north tunnel) - spoil removed at Harmans	28	Years 2 to 5	24	MD 176 (Dorsey Road), MD 170 (Telegraph Road), MD 100	200-265	150
Mathison Way @ MD 170 - Anne Arundel County	J, J1	143+500	South BWI Switchbox Construction	24	Years 2 to 7	24	Mathison Way, MD 170 (Telegraph Way)	220	50
Interstate 195 @ BWI Airport - Anne Arundel County	J, J1	145+100	BWI Station Civil Construction	42	Years 2 to 7	24	Interstate 195	220	150
			BWI Station Architectural Construction	24	Years 2 to 7	24	Interstate 195	50	100

Work Site Location	Alignment Alternative	Approx. Alignment Stationing	Work Element	Duration (Months)	Construction Time Period	Workday Length	Roadways Impacted (see current conditions)	Truck Trips per Day	Worker Vehicle Arrivals Per Day
MD 170 (Camp Meade Road) @ MD 162 (Aviation Boulevard) - Anne Arundel County	J, J1	146+395	Launch - shaft construction	15	Years 1 to 2	24	MD 170 (Camp Meade Road)	160	125
			Tunnel Boring Spoil Removal (MD 170@MD 162 Launch toward Dorsey and Telegraph Road Launch - spoil removed at MD 170@MD 162 - Digging BWI Center Express Tunnel)	19	Years 2 to 5	24	MD 170 (Camp Meade Road)	200-265	150
			Tunnel Boring Spoil Removal (MD 170@MD 162 Launch toward Mathison Way TBM Retrieval site - spoil removed at MD 170@MD 162 - Digging BWI Outer Tunnels)	23	Years 2 to 5	24	MD 170 (Camp Meade Road)	250-320	150
			Tunnel Boring Spoil Removal (MD 170@MD 162 Launch toward Cherry Hill Tunnel Portal - spoil removed at MD 170@MD 162)	27	Years 2 to 5	24	MD 170 (Camp Meade Road)	200-265	150
MD 170 (Camp Meade Road) @ MD 162 (Aviation Boulevard) - Anne Arundel County	J, J1	146+395	BWI North Switchbox Construction	24	Years 2 to 7	24	MD 170 (Camp Meade Road)	220	50
	J, J1	151+097	FA/EE Shaft Construction	12	Years 1 to 2	24	MD 648 (Annapolis Road)	40	50

Work Site Location	Alignment Alternative	Approx. Alignment Stationing	Work Element	Duration (Months)	Construction Time Period	Workday Length	Roadways Impacted (see current conditions)	Truck Trips per Day	Worker Vehicle Arrivals Per Day
S/O I-895 @ MD 648 - Baltimore County			Substation Construction @ Interstate 895	24	Years 2 to 5	7AM - 4 PM	Queens Chapel Road, Bladensburg Road, New York Avenue	6	100
Cherry Hill Station and Portal - Baltimore City	J, J1	153+000	Cherry Hill Station Civil Construction	30	Years 2 to 7	7AM - 4 PM	Cherry Hill Road, Waterview Avenue, MD 648 (Annapolis Road)	150	50
			Cherry Hill Station Civil Construction	24	Years 2 to 7	7AM - 4 PM	Cherry Hill Road, Waterview Avenue, MD 648 (Annapolis Road)	50	100
			Construction of portal at north end of north tunnel	20	Years 2 to 5	7AM - 4 PM	Cherry Hill Road, Waterview Avenue, MD 648 (Annapolis Road)	100	150
Cherry Hill Station and Portal - Baltimore City	J, J1	153+000	MOW Facility Construction	24	Years 2 to 5	7AM - 4 PM	Cherry Hill Road, Waterview Avenue, MD 648 (Annapolis Road)	6	100
Train Storage Facility - Baltimore City	J, J1	155+460	Substation Construction @ Clare Street adjacent to north MOW facility	24	Years 2 to 5	7AM - 4 PM	Clare Street, MD 648 (Annapolis Road)	6	100
Camden Yards Station Switchbox - Baltimore City, MOW Facility Construction	J, J1	204+700	Camden Yards Station Switchbox Construction	18	Years 2 to 7	7AM - 4 PM	MD 648 (Annapolis Road)	100	50
			MOW Facility Construction - Camden Yards Station Alternative	24	Years 2 to 5	7AM - 4 PM	MD 648 (Annapolis Road)	6	100

Work Site Location	Alignment Alternative	Approx. Alignment Stationing	Work Element	Duration (Months)	Construction Time Period	Workday Length	Roadways Impacted (see current conditions)	Truck Trips per Day	Worker Vehicle Arrivals Per Day
Camden Yards Station	J, J1	207+300	Camden Yards Station Civil Construction	48	Years 2 to 7	7AM - 4 PM	Interstate 395, Conway Street, Pratt Street, Howard Street, Lombard Street	200-250	150
			Camden Yards Station Architectural Construction	24	Years 2 to 7	7AM - 4 PM	Interstate 395, Conway Street, Pratt Street, Howard Street, Lombard Street	100	100
BARC West TMF Site (materials delivery from Powder Mill Road in vicinity of Research Road) - Prince George's County	n/a		BARC West TMF Site Construction	78	Years 1 to 7	7AM - 4 PM	Powder Mill Road	100	150
			BARC West TMF Site Substations (2 substations)	24	Years 2 to 6	7AM - 4 PM	Powder Mill Road	6	100
			MOW Facility Construction	24	Years 2 to 6	7AM - 4 PM	Powder Mill Road	6	100
BARC Airstrip TMF Site (materials delivery from Springfield Road) - Prince George's County	n/a		BARC Airstrip TMF Site Construction	78	Years 1 to 7	7AM - 4 PM	Springfield Road	100	150
			BARC Airstrip TMF Site Substations (2 substations)	24	Years 2 to 6	7AM - 4 PM	Springfield Road	6	100
			MOW Facility Construction	24	Years 2 to 6	7AM - 4 PM	Powder Mill Road	6	100
BARC 198 TMF Site (materials delivery from Old Portland Road via MD 198	n/a		MD 198 TMF Site Construction	90	Years 1 to 7	7AM - 4 PM	Old Portland Road Extended	100	150
			BARC Airstrip/MD 198 TMF Site Substations (2 substations)	24	Years 2 to 6	7AM - 4 PM	Old Portland Road Extended	6	100

Source: BWRR Construction Reports

D.2A.16 Construction Period Activity - Impacts to Transit Operations Due to Construction Activity

D.2A.16.1 Current Conditions

Outlined in this section is the transit services that pass through each work site area.

- **Mount Vernon Station Work Site** – The following bus services pass through the Mount Vernon Work Site:
  - Metrobus 70, 79 – travels through work area on 7th Street, west of construction site. Peak period service frequency is 12 minutes, off-peak service frequency is also 12 minutes
  - Metrobus 96 - travels through work area on New Jersey Avenue and crosses New York Avenue in work area. Peak period service frequency is 12 minutes, off-peak service frequency is 24 minutes
  - Metrobus 80 – travels through work area on North Capitol Street and crosses New York Avenue. Peak period service frequency is 8 minutes, off-peak service frequency is 16 minutes.
  - Metrobus P6 – Travels through the work area on North Capitol Street and crosses New York Avenue. Peak period service frequency is 15 minutes and off-peak service frequency is 24 minutes.
- **Queens Chapel Work** Site – One bus service passes by this work area and would be potentially be impacted by truck traffic on Bladensburg Road. This service is the Metrobus B2, which runs by the work area on Bladensburg Road. Peak period service frequency is 10 minutes and off-peak frequency is 16 minutes.
- **Bladensburg Fresh Air/Emergency Exit Work Site –** One bus service passes by this work area. This service is the Metrobus R12, which passes the work site on Kenilworth Avenue. The R12 operates every 30 minutes throughout the day.
- **Riverdale Road/MD 410 Work Site –** One service runs through this work area on Riverdale Road. This service is the Metrobus F4 which passes directly by the entrance to work site off of Riverdale Road. Peak period service frequency on this line is 12 minutes and 20 minutes in the off-peak.
- **Beaver Dam Road Work Site –** Truck traffic leaving this site will travel to the Capital Beltway via MD 193 (Greenbelt Road). Two services run on Greenbelt Road.
- **Prince George's County TheBus 15x –** This service runs along Greenbelt Road between the Greenbelt Metro Station and the Goddard Space Flight Center. Peak period service frequency is 30 minutes and off-peak service frequencies is 60 minutes.
- **Metrobus Route G14 –** This service runs along Greenbelt Road, starting at the Greenbelt Metro station and terminating at Mission Drive, east of the Space Flight Center. Service frequency is 30 minutes throughout the day.

- **Powder Mill Work Site @ Alignment –** A series of transit services run on roadways impacted by truck traffic originating at this site. These services include:
  - Metrobus 87 – The Metrobus 87 travels between the South Laurel Park and Ride Lot and the Greenbelt Metro station and runs on Powder Mill Road for part of the trip. The service is peak period only and runs every 30 to 50 minutes.
  - Metrobus B30 – The Metrobus B30 runs between the Greenbelt Metro Station and BWI Airport and travels on Powder Mill Road for part of the trip. This service runs every 70 minutes throughout the day.
  - Metrobus 89 – The Metrobus 89 runs on Edmonston Avenue and Cherrywood Lane, which would be one of the roadways for trucks accessing the Capital Beltway. The 89 is a peak period service only, running every 40 minutes.
  - Regional Transportation Agency of Central Maryland – Route 302 – The RTA Route 302 runs on Edmonston Avenue and Cherrywood Lane, which is part of the truck route to the Capital Beltway. The RTA 302 runs 60 minutes throughout the day.
- **198 TMF Option – MOW Site –** No transit services run by this work site.
- **MD 197 @ Alignment -** One Regional Transportation Agency of Central Maryland route runs on MD 197 and would pass this work site. The route is the RTA 301 which runs between Laurel and South Laurel. Service frequency on the route is every 60 minutes throughout the day.
- **Maryland City Portal, MD 198@ Alignment, and River Road Work Sites –** Construction period access to each of these work sites would be via MD 198. One RTA route, the RTA 502 runs on MD 198 in the work area. The 502 runs every 60 minutes throughout the day.
- **Colony Seven Road** - No transit services run by this site.
  - South Portal to North Tunnel – Build Alternatives J – no services run by this site.
- **Harmans Road Alternative Fresh Air/Emergency Exit** – The RTA route 201 runs by this site on MD 176. Service frequency is 30 to 45 minutes in the peak and 45 to 60 minutes in the off-peak. The Anne Arundel County Connector also passes this site and runs every 36 minutes throughout the day. Finally, the MDOT MTA 75 passes this site and operates every 35 minutes in the peak and 70 minutes in the off-peak.
- **Harmans Fresh Air/Emergency Exit Site** – The RTA route 201 runs by this site on MD 176. The Anne Arundel County Connector also passes this site and runs every 36 minutes throughout the day. Finally, the MDOT MTA 75 passes this site and operates every 35 minutes in the peak and 70 minutes in the off-peak.
- **Mathison Way –** Two services pass this work site.
  - Anne Arundel County Connector, which runs between Arundel Mills Mall and BWI Airport. Service is every 36 minutes throughout the day.

  - MDOT MTA Route 75 – This route runs between the Patapsco Light Rail Station, BWI Airport and Arundel Mills Mall. The service runs approximately every 35 minutes in the peak and 70 minutes in the off-peak.

- **BWI Airport Station –** Bus service to BWI Airport includes the Anne Arundel County Connector, the RTA Route 201, the Metrobus B30, and the MDOT MTA Route 75. Operating characteristics for each of these routes are outlined in previous work site descriptions.
- **Camp Meade Road and Aviation Boulevard (MD 170 and MD 162) –** The same services that serve BWI Airport also serve the BWI Business Center, which requires crossing Aviation Boulevard, a key truck route for this work site.
- **I-895 @ MD 648 –** No bus services pass this work site.
- **Cherry Hill Station and Portal** – A number of services will pass through the work area for the Cherry Hill Station and Portal, including on Waterview Avenue, Patapsco Avenue and Annapolis Road. These include:
  - MDOT MTA Route 71 – This route runs on Waterview Avenue and Annapolis Road and thus travels on major truck routes associated with this work site. Peak period service runs every 25 minutes while off-peak service runs every 40 minutes.
  - MDOT MTA Route 29 – This route runs along Patapsco Avenue and would pass the work portal work site off of Patapsco. The service runs every 20 minutes in the peak and every 35 minutes in the off-peak
  - MDOT MTA Route 69 - this route runs between Anne Arundel County and the Patapsco Light Rail station and travels on Patapsco Avenue adjacent to the work area. Service frequency throughout the day is approximately 50 to 60 minutes
  - MDOT MTA Route 70 – this route also runs between Anne Arundel County and the Patapsco Light Rail station and travels on Patapsco Avenue through the work area. Service frequency throughout the day is approximately 60 minutes
  - MDOT MTA Route 26 – this route runs past the proposed Cherry Hill Station on Cherry Hill Road, Waterview Avenue and Annapolis Road. Service runs every 15 minutes throughout the day.
- **Camden Yards Station Alternative** – MOW Facility and Train Storage Facility - No bus services run by this work site.
- **Camden Yards Station** – A number of MDOT MTA bus routes pass through the Camden Yard Station work area. These include:
  - MDOT MTA Yellow Route – This route runs along Pratt Street past the station work site. Service runs every 12 minutes during the peak and every 15 minutes in the off-peak.
  - MDOT MTA Brown Route – This route runs along Pratt Street past the station work site. Service runs every 10 minutes during the peak and every 15 minutes in the off-peak.

- MDOT MTA Navy Route – This route runs along Pratt Street past the station work site. Service runs every 10 minutes during the peak and every 15 minutes in the off-peak.
- MDOT MTA Orange Route - This route runs along Pratt Street past the station work site. Service runs every 10 minutes during the peak and every 15 minutes in the off-peak.
- MDOT MTA Green Route - This route runs along Conway Street and Charles Street in the vicinity of the station work site. Service runs every 10 minutes during the peak and every 15 minutes in the off-peak.
- MDOT MTA Silver Route - This route runs along Charles Street in the vicinity of the station work site. Service runs every 12 minutes during the peak and every 15 minutes in the off-peak.

D.2A.17 Construction Period Activity - Impacts to Traffic Operations and Parking Due to Construction Activity

This section outlines impacts to general traffic operations during the construction period resulting from road closures and modifications to accommodate construction activity. Traffic operations impacts due to roadway closures and modifications will occur in the four station areas (Mount Vernon Station, BWI Station, and Cherry Hill or Camden Yards in Baltimore) as well as locations where viaducts cross major roadways in the elevated portion of the SCMAGLEV alignment. Roadways impacted by viaduct construction include Powder Mill Road, MD 197, MD 198 and MD 32. Finally, MD 410 will be impacted by the construction of the Fresh Air/Emergency Exit shaft at the work site off of Riverdale Road.

The project sponsor has developed detailed road closure/modification and Maintenance of Traffic (MOT) plans at each of the locations noted above. The modification and MOT plans for each location are summarized below, with greater detail provided in the Transportation Technical Report.

- **Mount Vernon East Station** - Construction of the Mount Vernon Station will run from 7th Street NW to First Street NW. The proposed work will be constructed using top down construction and will take place over five segments, with different stages of work within each segment. The different stages generally involve work on one side of New York Avenue at a time, with the other side of New York Avenue is open for traffic. The MOT plans generally maintain westbound traffic along New York regardless of which side of the roadway is closed, thus requiring the detour of eastbound traffic. Cross Streets to be closed during different stages of the station construction include First Street NW, New Jersey Avenue, 5th Street NW and 6th Street NW. Required detours for all closures or traffic modifications are identified in the Transportation Technical Report. Parking along New York Avenue and streets adjacent to the construction site will be prohibited at different times during the construction period. Specific closures will depend on the location of the work.

Construction periods for the different segments will vary from 3 months to 11 months, with proposed work hours between 7 AM and 4 PM.

- **BWI Marshall Station** – The SCMAGLEV Station at BWI Marshall Airport will be in a deep underground tunnel but construction will require the demolition of the existing hourly garage at the airport to provide space for construction activity. A new garage will be constructed over the existing surface employee lot. Station construction will have temporary impacts on the airport terminal circulation road but there will be no full closures and construction traffic will be controlled in such a way that construction traffic will not circulate past the terminal entrances.
- **Cherry Hill Station** – The Cherry Hill SCMAGLEV station will be elevated and will require modifications to the local roadway network and also require temporary traffic disruptions during construction.

Annapolis Road will have to be closed in the vicinity of Patapsco Avenue to adjust its to accommodate the installation of the SCMAGLEV transition portal from tunnel to viaduct. The MOT plan contained in the Transportation Technical Report outlines detours to accommodate the required Annapolis Road closure. This work is estimated to take 13 months, with work occurring 24 hours per day.

Waterview Avenue will also be closed between Cherry Hill Road and the MTA Light Rail tracks to allow for the construction of the elevated SCMAGLEV Cherry Hill Maglev Station. Prior to the closure a temporary roadway will be constructed to the north of Waterview Avenue to serve as a bypass road. When the bypass road is no longer feasible due to station construction, a detour will be put in place.

The second stage of construction will require one lane of Waterview to be closed in each direction at the intersections of Sidney Avenue and Erick Street to install a new traffic signal at each location. Access to Sidney Avenue and the off-ramp from northbound MD 295 to Waterview Avenue will be maintained during construction.

In the third and final stage of construction, Cherry Hill Road is to be closed between Waterview Avenue and Jorgensen Road, and Erick Street and Jorgensen Road will be closed entirely for construction of the Cherry Hill Station. Traffic detours are outlined in the Traffic Technical Report.

- **Camden Yards SCMAGLEV Station** - The Camden Yards SCMAGLEV station alternative in Baltimore is an underground station with a depth of up to 46 meters (150 feet) and a width of up to 60 meters (200 feet). Construction will be completed over eight stages, imposing temporary traffic disruptions on Howard Street, MLK Boulevard, Conway Street, and Pratt Street, all major thoroughfares in Baltimore.
  - During the first stage of the eight-stage Camden Station construction, northbound I-395 will be closed between Martin Luther King (MLK) Jr. Boulevard and Howard Street. Northbound I-395 traffic will be detoured via MLK Jr. Boulevard and W. Pratt Street. Southbound I-395 traffic will be maintained.
  - During the second stage of the Camden Station construction, northbound I-395 will remain closed between MLK Jr. Boulevard and Howard Street. During this

state southbound I-395 traffic would need to crossover to the northbound I-395 lanes between MLK Jr. Boulevard and Conway Street. Northbound I-395 traffic will continue to be detoured via MLK Jr. Boulevard and W. Pratt Street.

  - Upon completion of the first two stages of construction, the northbound I-395 detour will end, and construction of the Camden Yards Station under Conway and S. Sharp Streets will proceed. Eastbound Conway Street will be closed between I-395/Howard Street and Charles Street. Eastbound Conway Street traffic will be detoured via northbound Howard Street and eastbound W. Pratt Street. Northbound S. Sharp Street will be closed between W. Pratt and Conway Streets.
  - During Stage 4, westbound Conway Street will be closed between Charles Street and I-395/Howard Street. Eastbound Conway Street traffic will continue to be detoured. Westbound Conway Street traffic will crossover to the eastbound Conway Street lanes at the Charles Street intersection. Greater details on detours from these closures are included in the Transportation Technical Report.
  - During Stage 5, Sharp Street will be closed between W. Pratt Street and Conway Street. During Stage 6, the two south lanes of W. Pratt Street will be closed between Sharp and Light Street. During Stage 7, the work zone shifts to the two north lanes of W. Pratt Street between Sharp and Light Streets. In the final stage of construction, Hanover Street between Lombard Street and W. Pratt Street will be closed. Detours for each of these closures are outlined in the Transportation Technical Report.

- **Veterans Parkway (MD 410)** - Veterans Parkway (MD 410) will be modified to permit easier access to the proposed Fresh Air/Emergency Egress (FA/EE) at the Tunnel Boring Machine TBM Launch Site, adjacent to the roadway. The construction of pavement for the improved access will take place over two stages Stage 1 duration is expected to be 8 weeks while Stage 2 is expected to be 2 weeks.
  - During Phase 1 pavement will be installed along the outside shoulder of MD 410 to construct a deceleration and acceleration lane during work phase 1. During this work, the outside lane of westbound MD 410 will be closed, maintaining one lane of traffic in the westbound direction.
  - During Stage 2, pavement will be installed in the median to create a left turn lane from eastbound MD 410 to the proposed FA/EE access road. The inside lanes of eastbound and westbound traffic will be closed to traffic during this work. In the east and westbound direction two total lanes of traffic will be maintained.
- **MD 197 Crossing -** Eastbound and westbound MD 197 and all on/off ramps at the MD 295/MD 197 interchange will be closed to install four concrete viaduct spans over MD 197 and the existing on/off ramps. Due to the high traffic volume using the MD 197 interchange, the closures are to be performed over weekends. The duration of work is assumed to be two weekends. Proposed detours are included in the Transportation Technical Report.
- **MD 198 Crossing -** At the interchange of MD 295 and MD 198 there are a total of 6 proposed concrete viaduct spans over existing ramps and MD 198 that require ramp

and roadway closures. A total of 6 stages will be required to install 6 concrete viaduct spans.

- During Stage 1, the MD 295 northbound off-ramp to eastbound MD 198 will be closed.
- During Stage 2, the MD 295 northbound on-ramp from eastbound MD 198 will be closed.
- During Stage 3, the MD 295 northbound off-ramp to westbound MD 198 will be closed.
- During Stage 4, the MD 295 northbound on-ramp from westbound MD 198 will be closed.
- During Stage 5, eastbound MD 198 at MD 295 will be closed.
- During Stage 6, westbound MD 198 at MD 295 will be closed.

Proposed detours for each closure are provided in the Transportation Technical Report.

Due to the high traffic volume using the MD 198 interchanges, closure will be performed during the weekend. The duration of work is assumed to be a one weekend day closure per stage. Estimated work hours will be 7 a.m. to 4 p.m. Nighttime work will also be considered to limit traffic impacts along MD 198.

- **MD 32 Crossing -** At the interchange of MD 295 and MD 32, there are a total of 7 proposed concrete viaduct spans over existing interchange ramps and MD 32 that require ramp and roadway closures. Each of these closures will required a detour plan to maintain traffic flow at the interchange. A total of 6 stages are required to install all 7 viaduct spans. The stage are as follows:
  - During Stage 1 the off-ramp from northbound MD 295 to eastbound MD 32 will be closed
  - During Stage 2, the on-ramp from eastbound MD 32 to northbound MD 295 will be closed
  - During Stage 3, the off-ramp from northbound MD 295 to westbound MD 32 will be closed
  - During Stage 4, the on-ramp from westbound MD 32 to northbound MD 295 be closed
  - During Stage 5, Westbound MD 32 and the MD 295 off-ramp toward westbound MD 32 will be closed
  - In Stage 6, eastbound MD 32 and the off-ramp from southbound MD 295 to eastbound MD 32 will be closed. During the high traffic volume using the MD 32 interchange, all closures are to be performed during the weekend.

D.2A.17.1 Estimated Impacts to General Traffic Resulting from Construction Activity

In order to assess the impacts to general traffic operations during construction, a select set of intersections in the work areas around SCMAGLEV stations in Baltimore and Washington DC have been selected for analysis. To assess the impacts, LOS and delay were calculated for the No-Build and Build conditions for the year 2027, which represents the approximate mid-point of the construction period.

The analysis results are summarized in **Table D.2-34**.

D.2A.18 Technical Analysis Methodology Introduction

This Technical Report Section outlines the technical methodology utilized in the various analyses completed to support the assessment of impacts related to the addition of SCMAGLEV to the SCMAGLEV Project Affected Environment transportation network.

Analyses outlined here include:

- Project Sponsor ridership forecasting process
- Station Pedestrian and Bike Access Methodology
- Station Drop-Off and Pick-Up Methodology
- Future Traffic Conditions: Build vs. No-Build
- Construction Period Traffic Conditions

Table D.2-34: Construction Period Impacts to General Traffic Operations

Construction Location/Segment/Stage	Analysis Intersection	No-Build LOS/Delay AM(PM)	Construction LOS/Delay AM(PM)
Mount Vernon Segment 1 (Stage 1)	Roadway capacity of (WB) New York Avenue from M Street to North Capitol Street	F/86.6(D/16.3)	F/42.5(D/12.8)
	M Street at First Street NW	F/276.8(F/1165.5)	D/49.5(F/498.4)
	M Street at North Capitol Street	C/21.3(B/15.8)	F/243.4(F/724.8)
Mount Vernon Segment 1 (Stage 2)	Roadway capacity of (WB) New York Avenue from M Street to North Capitol Street	F/86.6(D/16.3)	F/99.7(C/9.1)
	M Street at First Street NW	F/276.8(F/1165.5)	F/243.4(F/388.9)
	M Street at North Capitol Street	C/21.3(B/15.8)	F/223.2(F/696.9)
Mount Vernon Segment 2 (Stage 1)	Roadway capacity of New York Avenue from M Street to 4th Street NW (Lane reduction)	EB: E/15.9(E/18.5) WB: D/28.4(D/25.6)	EB: F/26.5(F/50.6) WB: F/41.9(F/253.5)
	K Street at North Capitol Street	C/28.4(F/137.2)	E/77.3(F/280.1)
	K Street at First Street NW	C/23.7(D/35.1)	C/24.6(D/44.7)
	NY Avenue at North Capitol Street (east)	F/190.7(F/635.6)	F/337.1(F/970.5)
	NY Avenue at North Capitol Street (west)	F/767.6(F/255.3)	F/770.3(F/256.5)
Mount Vernon Segment 2 (Stage 2)	Roadway capacity of New York Avenue from M Street to 4th Street NW (Lane reduction)	EB: E/15.9(E/18.5) WB: D/28.4(D/25.6)	EB: F/26.5(F/50.6) WB: F/432.2(F/252.3)
	K Street at North Capitol Street	C/28.4(F/137.2)	E/77.3(F/280.1)
	K Street at First Street NW	C/23.7(D/35.1)	C/24.6(D/44.7)
	NY Avenue at North Capitol Street (east)	F/190.7(F/635.6)	F/333.9(F/970.5)
	NY Avenue at North Capitol Street (west)	F/767.6(F/255.3)	F/770.3(F/256.6)
Mount Vernon Segment 3 (Stage 1)	Roadway capacity of New York Avenue at I-395	EB: F/322.4(F/331.9) WB: E/12.5(D/6.4)	EB: D/6.4(D/9.7) WB: F/225.1(F/124.8)
	Temporary signal capacity/delay	N/A	F/209.0(F/103.8)
	6th Street NW at NY Avenue NW	C/31.1(F/101.3)	B/19.3(F/133.5)
	K Street NW at 6th Street NW	C/21.2(C/24.8)	E/70.3(F/126.5)
	K Street NW at New Jersey Avenue NW	F/116.1(F/106.4)	F/123.5(F/337.1)
Mount Vernon Segment 3 (Stage 2)	Roadway capacity of New York Avenue at I-395	EB: F/322.4(F/331.9) WB: E/12.5(D/6.4)	EB: D/5.3(D/9.2) WB: F/93.6(F/39.6)

Construction Location/Segment/Stage	Analysis Intersection	No-Build LOS/Delay AM(PM)	Construction LOS/Delay AM(PM)
	Temporary signal capacity/delay	N/A	F/85.0(D/39.2)
	6th Street NW at NY Avenue NW	C/31.1(F/101.3)	C/31.6(F/148.7)
	K Street NW at 6th Street NW	C/21.2(C/24.8)	F/138.1(F/272.0)
	K Street NW at New Jersey Avenue NW	F/116.1(F/106.4)	F/110.3(F/171.0)
Mount Vernon Segment 4 (Stage 1)	Roadway capacity of New York Avenue from I-395 to 5th Street NW	EB: F/315.0(F/321.4) WB: D/22.5(D/19.8)	EB: N/A WB: D/24.0(D/21.4)
	6th Street NW at NY Avenue NW	C/31.1(F/101.3)	F/109.2(F/182.7)
	K Street NW at 6th Street NW	C/21.2(C/24.8)	F/151.0(F/295.3)
	K Street NW at New Jersey Avenue NW	F/116.1(F/106.4)	F/110.3(F171.0)
Mount Vernon Segment 4 (Stage 2.)	Roadway capacity of New York Avenue from I-395 to 5th Street NW	EB: F/315.0(F/321.4) WB: D/22.5(D/19.8)	EB: N/A WB: D/23.5(D/21.1)
	6th Street NW at NY Avenue NW	C/31.1(F/101.3)	E/76.3(F/202.6)
	K Street NW at 6th Street NW	C/21.2(C/24.8)	F/165.9(F/309.2)
	K Street NW at New Jersey Avenue NW	F/116.1(F/106.4)	F/110.3(F/171.0)
Mount Vernon Segment 5 (Stage 1)	Roadway capacity of New York Avenue from 7th Street NW to 5th Street NW	EB: E/42.1(F/163.8) WB: F/68.7(E/34.7)	EB: N/A WB: F/338.5(F/547.4)
	7th Street NW at NY Avenue NW	D/43.6(D/49.0)	F/320.2(F/380.0)
	K Street NW at 7th Street NW	F/449.8(F/354.3)	F/449.8(F/354.3)
	K Street NW at 5th Street NW	F/166.9(F/158.6)	F/203.1(F/311.5)
Mount Vernon Segment 5 (Stage 2)	Roadway capacity of New York Avenue from 7th Street NW to 5th Street NW	EB: E/42.1(F/163.8) WB: F/68.7(E/34.7)	EB: N/A WB: E/32.7(D/22.4)
	7th Street NW at NY Avenue NW	D/43.6(D/49.0)	F/194.2(F/171.9)
	K Street NW at 7th Street NW	F/449.8(F/354.3)	F/857.1(F/>300)
	K Street NW at 5th Street NW	F/166.9(F/158.6)	F/153.8(F/171.7)
Camden Yards Segment 1 and Segment 4 (Stage 1)	Pratt Street section (from Howard Street to Charles Street)	F/113.8(F/131.2)	F/113.8(F/131.2)
	Pratt Street at Charles Street	D/50.1(F/190.1)	D/48.3(F/190.1)

Construction Location/Segment/Stage	Analysis Intersection	No-Build LOS/Delay AM(PM)	Construction LOS/Delay AM(PM)
	Charles Street at Lombard Street	E/69.1(F/115.0)	E/69.1(F/115.0)
	Lombard Street at Hopkins Pl	D/44.7(F/98.1)	D/44.7(F/168.3)
Camden Yards Segment 1 and Segment 4 (Stage 2 & 3)	Pratt Street section (from Howard Street to Charles Street)	F/113.8(F/131.2)	F/113.8(F/131.2)
	Pratt Street at Charles Street	D/50.1(F/190.1)	F/118.6(F/234.9)
	Charles Street at Lombard Street	E/69.1(F/115.0)	F/136.3(F/111.9)
	Lombard Street at Hopkins Pl	D/44.7(F/98.1)	E/69.7(F/123.5)
Camden Yards Segment 3 (Stage 1) and Segment 4 (Stage 3)	Conway Street at Howard Street	C/32.1(E/70.6)	F/149.5(F/176.0)
	Howard Street at Pratt Street	C/22.0(C/22.2)	F/101.3(E/62.9)
	Pratt Street at Light Street	D/62.9(F/111.1)	F/209.7(F/231.7)
Camden Yards Segment 2 (Stage 1) and Segment 3 (Stage 1)	MLK Blvd section (from I-395 split to W Pratt Street) capacity/delay by adding I-395 traffic	E/98.1(D/74.8)	F/646.3(F/208.2)
	MLK Blvd at W Pratt Street	F/97.4(F/97.8)	F/289.3(F/191.9)
	Conway Street at Howard Street	C/32.1(E/70.6)	C/34.3(F/136.0)
	Howard Street at Pratt Street	C/22.0(C/22.2)	F/293.4(F/204.7)
	Pratt Street at Light Street	D/62.9(F/111.1)	F/212.2(F/233.0)
Camden Yards Segment 2 (Stage 1) and Segment 3 (Stage 2)	MLK Blvd section (from I-395 split to W Pratt Street) capacity/delay by adding I-395 traffic	E/98.1(D/74.8)	F/646.3(F/208.2)
	MLK Blvd at W Pratt Street	F/97.4(F/97.8)	F/289.3(F/191.9)
	Conway Street at Howard Street	C/32.1(E/70.6)	C/34.3(F/136.0)
	Howard Street at Pratt Street	C/22.0(C/22.2)	F/293.4(F/204.7)
	Pratt Street at Light Street	D/62.9(F/111.1)	F/215.9(F/310.2)
Camden Yards Segment 2 (Stage 2) and Segment 3 (Stage 3)	MLK Blvd section (from I-395 split to W Pratt Street) capacity/delay by adding I-395 traffic	E/98.1(D/74.8)	F/646.3(F/208.2)
	MLK Blvd at W Pratt Street	F/97.4(F/97.8)	F/289.3(F/191.9)
	Conway Street at Howard Street	C/32.1(E/70.6)	C/34.3(F/135.8)
	Howard Street at Pratt Street	C/22.0(C/22.2)	F/293.2(F/204.6)
	Pratt Street at Light Street	D/62.9(F/111.1)	F/308.6(F/366.0)
Camden Yards Segment 2 (Stage 2)	MLK Blvd section (from I-395 split to W Pratt Street) capacity/delay by adding I-395 traffic	E/98.1(D/74.8)	F/646.3(F/208.2)

Construction Location/Segment/Stage	Analysis Intersection	No-Build LOS/Delay AM(PM)	Construction LOS/Delay AM(PM)
	MLK Blvd at W Pratt Street	F/97.4(F/97.8)	F/289.3(F/191.9)
Cherry Hill – Annapolis Road (south of Patapsco Ave)	Annapolis Road at Daisy Avenue	C/30.5 (C/25.4)	C/21.3 (C/30.4)
	Annapolis Road at Patapsco Avenue	D/47.5 (F/90.3)	E/58.6 (F/222.9)
Cherry Hill – Annapolis Road (north of Patapsco Ave)	Annapolis Road at Daisy Avenue	C/30.5 (C/25.4)	C/30.5 (C/25.4)
	Annapolis Road at Patapsco Avenue	D/47.5 (F/90.3)	C/33.7 (F/90.9)
Cherry Hill – Erik Street – Jorgenson Street	Cherry Hill Road at Hanover Road (SB MD 2)	C/26.6 (D/44.7)	F/87.8 (F/134.0)
	Waterview Avenue at Hanover Road (SB MD 2)	B/14.5 (C/22.9)	B/14.7 (C/24.7)
Cherry Hill – Waterview Avenue (Stage 1)	Annapolis Road at Waterview Avenue (east)	C/23.9 (C/22.9)	C/23.1 (B/19.7)
	Annapolis Road at Waterview Avenue (west)	C/23.3 (C/23.3)	C/33.7 (D/44.0)
	Annapolis Road at Patapsco Avenue	D/47.5 (F/90.3)	F/284.7 (F/252.2)

Source: Project Traffic Analysis Process; BWRR Maintenance of Traffic Plans

Appendix D.2B Ridership Forecasting – Ridership Forecasting Development Process

The SCMAGLEV Project ridership demand forecasts were developed by the Project Sponsor and were used as an important input into the analysis contained in DEIS Section 4.2 Transportation. The Project Sponsor developed the forecasts according to the best practices for intercity passenger rail as recommended by the Federal Railroad Administration (FRA). Key Project Sponsor work activities in the forecasting process included: (1) extensive primary data collection to understand the willingness of trip makers within the Baltimore-Washington corridor to pay for travel time savings and improved travel time reliability associated with the SCMAGLEV Project; (2) a comprehensive review of existing data sources to establish base year levels of travel demand and origin/destination patterns; and (3) a critical assessment of economic growth projections to establish a reasonable level for the overall increase for travel demand that will occur in the SCMAGLEV Project Affected Environment.

The modeling approach and development consisted of four broad work-flows, outlined below.

D.2B.1 Data Collection

The data collection effort involved three distinct efforts:

- **Socioeconomic and Demographic Data** - The data collected in this effort formed the basis for understanding current trip generation rates and trip productions and attractions as well as growth rates yielding future trip generation.

- **Travel Mode Data** – This data provided an understanding of the full travel market size within the SCMAGLEV Project area.
- **Travel Condition Data** - This data was utilized to assess travel conditions within the project area, with a focus on understanding impacts on mode choice.

D.2B.2 Trip Table Development

Development of the Trip Table was the foundation for understanding the scope of potential ridership. This work consisted of four sub-tasks:

- **Base Year Trip Table** – This work pivots off of the travel mode data collection effort to identify travel volumes between key O/D pairs within the project area.
- **Market Segmentation** - In this step, the trip volumes developed as part of the Base Year Trip Table task were broken out into several categories that would influence mode choice decisions. Categories included trip purpose, time-of-day traveled, and household income.

- **Total Demand Estimation** – In this step total trip demand was estimated based on currently observed correlations between local socioeconomic conditions and patterns of trip generation and distribution.
- **Future Year Trip Table Development** – In this step the future year trip table was developed by utilizing the total demand model to develop future forecasts of overall travel demand market growth by travel market.

D.2B.3 Primary Market Research

This task was a key component of the overall ridership demand forecasting effort and consisted of two key subtasks:

- **Stated P**reference Survey – In this step a survey was completed that collected data on potential travel market information from respondents, including the existing travel patterns and travel characteristics of each respondent. The hypothetical choice tasks presented to the survey respondents were then used as the basis for developing mode choice models through model estimation and calibration procedures.
- Model Estimation Process – In this step, mathematical algorithms were developed that described observed mode choice behavior of hypothetical choice tasks. The resulting market-segmented models of mode choice were used to derive rates of diversion from existing travel modes such as commuter rail.

D.2B.4 SCMAGLEV Ridership Forecasts

This work item consisted of three subtasks:

- **Fare Sensitivity Testing** - This work step involved evaluating the various ranges of potential SCMAGLEV fares and the resulting ridership demand responses.
- **SCMAGLEV Base Case Ridership Forecasts** – In this step, two sources of ridership were estimated by pivoting off of the fare sensitivity analysis. These ridership sources were riders diverted from other modes and induced ridership resulting from the addition of the SCMAGLEV to the project area transportation network.
- **Sensitivity Tests** – This step involved sensitivity tests to forecast results uncertainty and areas of forecast risk.

Appendix D.2C Ridership Forecasting – Travel Demand Model

The final work product of the work process described in the previous section was a travel demand model that was used as the basis for the project ridership analysis. The model was based on available regional data that was customized specifically to analyze

intercity trips within the study area. Key features of the travel demand model framework included:

D.2C.1 Time periods

To support the engineering and environmental analysis, the Project Sponsor developed a model of average daily travel for four daily time periods with distinct characteristics for intercity travel: Moring (AM) 6:00 AM to 9:00 AM; Midday (MD) 9:00 AM to 4:00 PM; Evening (PM) 4:00 PM to 7:00 PM; and Overnight (NT) 7:00 PM to 6:00 AM.

D.2C.2 Annual Ridership Estimates

Average daily ridership forecasts were converted to annual forecasts through the application of annualization factors that differed by trip purpose e.g. commuter trips, airport-related trips, business trips, and non-business trips. The different annualization factors took into account the differences in the mix of weekday and weekend travel patterns for each type of trip.

D.2C.3 Project Study Area

To facilitate the collection of travel data, a project study area was set to correspond to the boundaries of the MWCOG and BMC regional planning jurisdictions. To establish reasonable limits for the market area for intercity travel to be served by the SCMAGLEV Project stations, a 25-mile catchment area was established around each of the three stations. Within the Baltimore/Washington region, the 25-mile zone was further refined to reflect what was considered a reasonable catchment area for short distance trips within those respective larger areas.

D.2C.4 Current Level of Intercity Trips

A comprehensive accounting of current intercity trips was developed utilizing MPO surveys and models, transit agency data, airport data, and mobile phone origin/destination data. Based on the catchment area delineation, it was determined that the total market for SCMAGLEV was 117 million person trips on an annual basis.

D.2C.5 Trip Volume Growth

This work involved an analysis, by travel mode, of the growth in the total volume of trips in future years. The analysis relied on MWCOG and BMC demographic and economic forecasts, transit agency data, airport travel data, and third-party economic sources. The overall level of growth in intercity trips within the project area was estimated at .93% compounded average annual growth between a base year of 2017 and a horizon year of 2050.

D.2C.6 Discrete Choice Analysis

This work involved utilizing the results of the Stated Preference Survey, including trip characteristics, traveler characteristics, mode choice preferences, and willingness to pay, to conduct a discrete choice analysis. The analysis was used to estimate mode choice models representing the existing travel market and future travel markets with SCMAGLEV in the project area transportation network. Mode choice models were developed for four income levels representing household income and five trip purposes. Income levels ranged from less than $50,000 to greater than $150,000. Trip purposes evaluated included 1) commute; 2) non-business; 3) business; 4) airport non-business; and 5) airport business.

D.2C.7 Mode Choice Model

The mode choice model was developed with a nested structure representing the choice between auto, Taxi/TNC, and transit modes including rail, bus, and SCMAGLEV.

D.2C.8 Implied Value of Time

The implied value of time resulting from the discrete choice analysis is consistent with USDOT guidelines and the household income profile of the study area.

Appendix D.2D Ridership Forecasting – Data Sources and Results

This section outlines assumptions regarding fares used in the ridership forecasting process as well as a description of how a range of outputs from the modeling process were calculated.

D.2D.1 Fare Assumptions

SCMAGLEV Project Fare Structure and Revenues Analysis – One of the first steps in establishing the SCMAGLEV ridership demand forecast was a sensitivity analysis of a range of potential SCMAGLEV fares. A varied set of fares ranging from $27 to $81 depending on trip purpose and travel distance was used to set a base case ridership demand forecast. The forecast assumed a two-year ramp up to steady state growth. In the first year of the two-year ramp up, ridership would be 40% of the steady state ridership. In the second year, ridership would be 80% of the steady state ridership. Annual ridership estimates are provided in DEIS Section 4.2 (Transportation).

The fare sensitivity analyses were developed based on the recommendation of the independent peer review panel. The purpose of the recommendation was to test the utility and functioning of the ridership forecasting model by replacing input from the stated preference survey and other best practice research with inputs that represent actual possible occurrences.

The fare sensitivity analysis also evaluated other modes of transportation that represent alternatives to the SCMAGLEV. Assumed fare data on these alternative modes is presented here.

Amtrak – Amtrak fares used in the forecasting process were based on Acela Business Class fares on Acela between Baltimore and Washington (Business Class is the basic class of service on Acela trains). Two-week advanced fares were collected over one week and the average of the fares was used for the analysis. Two-week advanced fares during the week of data collection ranged between $44 and $68, with a median price of $52.

Ridesharing Services (Uber and Lyft) – Fares for Uber and Lyft for travel between each of the proposed SCMAGLEV stations was collected for both peak period and off-peak travel. The data was collected during March 2018 and October 2018 from the website of each provider. The data collection results are summarized in **Table D.2-35**.

Table D.2-35: SCMAGLEV Stations Peak and Off-Peak Fare Data Collection

Station-to-Station Pair	Peak Period Fares	Off-Peak Period Fares
Baltimore to Washington	$70-$79	$59-$69
Baltimore to BWI	$28-$29	$22-$24
Washington to BWI	$60-$66	$50-$52
Traditional Private Car Services	**Peak Period Fares**	**Off-Peak Period Fares**
Baltimore to Washington	$100-125	$89-$118
Baltimore to BWI	$58-$60	$32-$54
Washington to BWI	$84-106	$73-$99

Final SCMAGLEV Fare Assumptions – Based on the fares for the modes of transportation evaluated and taking into account the significant anticipated improvements in service and travel times resulting from SCMAGLEV, the SCMAGLEV fare range used in the ridership forecasting effort fell into a range of $40 to $80 depending on time of travel, capacity constraints, and location combinations. The average fares utilized in the ridership forecasting process are also generally consistent with the fares identified by potential users as expressed through the stated preference survey conducted as part of the forecasting process, and which was used to assess potential user's willingness to utilize SCMAGLEV for trip making in the corridor. Consistent with Amtrak's current best practices, the expectation is that a dynamic pricing model would be employed on SCMAGLEV in order to maximize pricing for given daily demand volumes.

D.2D.2 Data Outputs

The ridership forecasting process yielded a range of data outputs that were utilized in the assessment of impacts that are documented in DEIS Section 4.2 Transportation. The first set of outputs, listed here, were derived by subtracting the model results for the Build Alternative from the model results for the No-Build Alternative. Outputs derived from this process include:

- **Travel Time Savings –** This output was calculated by subtracting Build Alternative aggregate travel times generated by the project travel demand model from the No Build Alternative aggregate travel times for all trips between Baltimore and Washington, Washington and BWI, and BWI and Baltimore.
- **Vehicle Miles Traveled** – This output was also calculated by subtracting Build Alternative aggregate Vehicle Miles Traveled as generated by the project travel demand model from No-Build aggregate Vehicle Miles Traveled, for all trips between Baltimore and Washington, Washington and BWI, and BWI and Baltimore.
- **Passenger Miles Traveled** – This output is a companion piece to the Vehicle Miles Traveled data and was calculated in the same manner. This data covers rail passenger miles and bus passenger miles for all trips between Baltimore and Washington, Washington and BWI, and BWI and Baltimore.

Direct data outputs from the travel demand model include the following:

- **Ridership by Service Market** – As noted, this data was a direct output of the travel demand model and includes the following trip purposes: commute, business, non-business, airport business, airport non-business. This data covers trips between Baltimore and Washington, Washington and BWI, and BWI and Baltimore.
- **Diversions by Mode** – This data item is also a direct output of the travel demand model and shows diversions of person trips on an annual basis from other modes in the corridor to SCMAGLEV, for trips between Baltimore and Washington, Washington and BWI, and BWI and Baltimore. Modes from which person trips were diverted include auto, rail, bus, and taxi/rider share.
- **Ridership by Source, Including Diversions by Mode** - This data is a combination of the previous two items discussed, and shows the source of SCMAGLVE total annual ridership. The data shows that the large majority of SCMAGLEV ridership is based on diversions from other modes, with the remaining trips being induced trips that were not made prior to SCMAGLEV's addition to the transportation network. Induced trips make up approximately 17% of total SCMAGLEV trips.
- **Daily Station Access and Egress Trips** – This data item is a direct output of the travel demand model and breaks down daily ridership by mode of access and mode of egress, for each of the SCMAGLEV stations (Washington DC, BWI, and the two Baltimore station alternatives, Camden Yards and Cherry Hill). Access and Egress modes include: Drive and Park, Kiss and Ride, Taxi/Rideshare, Bus, Rail, and Other

(includes bike and pedestrians). This data is daily data while the data described above is presented on an annual basis.

Appendix D.2E Pedestrian Access Methodology

Given the location of proposed SCMAGLEV stations in urban areas in Baltimore and Washington DC, one of the key analyses in DEIS Section 4.2 Transportation was an assessment of the impacts of riders arriving at stations as a pedestrian or via bike on each station area's sidewalk network.

The purpose of this section is to outline the technical methodology that was used to calculate AM peak hour pedestrian volumes at each of the station entrances in order to understand the volumes that would be loaded onto the station area sidewalk network and the impacts of those additional loadings beyond the No-Build on the network.

The process followed to calculate the additional loadings on the sidewalk network due to the SCMAGLEV stations was completed for three different modes of access and three different modes of egress (departure from station) for the Mount Vernon East Station and the two station alternatives in Baltimore (Cherry Hill and Camden Yards). The modes of access and egress evaluated are:

- Walk and bike access to station
- Walk and bike egress from station
- Pedestrian access to station for passengers arriving in station area by bus
- Pedestrian egress from station for passengers transferring to bus after leaving station
- Pedestrian access to station for passengers arriving in station area by rail
- Pedestrian egress from station for passengers transferring to rail after leaving station

Each process step is outlined below, using the Mount Vernon Station East station in Washington DC as an example.

D.2E.1 Process Steps

The access and egress data for each mode of access was provided as a single daily number as derived from the project ridership forecasting model. In order to convert this single daily number into more detailed pedestrian volumes for use in the pedestrian loading analysis, a number of factoring steps was required, each of which is outlined below.

D.2E.1.1 Calculate AM Peak Hour Volumes

The first step in the factoring process was to extract the AM peak period access and egress volumes from the total daily volumes derived from the project demand

forecasting model. This factoring was completed based on the assumption that 33% of the total daily access volumes occur in the AM peak period. This factoring reflects technical team experience on other comparable projects.

The second step in the factoring process was to then extract the peak hour access and egress volumes from the peak period volumes derived from the factoring step described above. This factoring was done based on an assumption that 45% of the total AM peak period volumes would arrive at, or leave, the station in the AM peak hour.

An example of these factoring steps is shown in **Table D.2-36** for the AM Peak period walk and bike access category.

Table D.2-36: Example: Factoring AM Peak Period Walk and Bike Access Volumes to Peak Hour Volumes – Mount Vernon East Station – Camden Yards Station Alternative

Factoring Step	Values
Total Daily Walk and Bike Access	3,466
AM Peak Period Percentage of Total Daily Walk and Bike Access	33%
AM Peak Period Walk and Bike Access	1,144
AM Peak Hour Percentage of AM Peak Period Walk and Bike Access	45%
Total Walk and Bike Access – AM Peak Hour	515

As noted, the factoring to the peak hour was completed for each of the access/egress categories noted above, and is provided in the DEIS Appendix D.2

D.2E.1.2 Assignment of Peak Hour Volumes to Different Station Entrances

The purpose of this factoring step was to distribute the AM peak hour volumes for each access/egress category to the station entrances at each of the three stations evaluated. For the purpose of providing an example of the distribution-to-station entrance process, the process is outlined below for the three station entrances at the Mount Vernon East Station.

There are three entrances at the Mount Vernon East station:

- 3rd Street NW
- New York Avenue between 5th and 6th Street NW
- New York Avenue at 7th Street NW

The breakdown in the assignment of total AM peak hour access volumes to different station entrances was based on a “gravity” assessment of the locations of where people would be accessing the station from based on development density and other station

area characteristics. This assessment was then converted into a percentage of the total AM peak hour walk/bike access volumes at each station entrance.

Table D.2-37 contains an example of the assignment for the walk/bike access category at the Mount Vernon Station under the Camden Yards station alternative.

Table D.2-37: Example: Assignment of Walk/Bike Access Volumes to Different Station Entrances: Mount Vernon East Station; Camden Yards Station Alternative

Station Entrance	Entrance Percentage	Station Entrance Total – Walk Access
Total Walk/Bike Access – AM Peak Hour		515
3rd Street NW	25%	129
New York Ave. – Between 5th and 6th	50%	257
New Yok Ave. – at 7th Street	25%	129

Table D.2-38 contains the percentage assignment of AM peak hour volumes for each access/egress category to each Mount Vernon East station entrance. Comparable information for the Baltimore station alternatives is provided in the DEIS Transportation Appendix D.2.

Table D.2-38: Example: Percentage Assignment of Volumes under Each Access/Egress Category to Different Station Entrances: Mount Vernon East Station, Both Baltimore Station Alternatives

Station	Walk/Bike Access	Walk/Bike Egress	Bus Access	Bus Egress	Rail Access	Rail Egress
3rd Street NW	25%	25%	10%	10%	5%	5%
New York Ave. – Between 5th and 6th	50%	50%	25%	25%	25%	25%
New Yok Ave. – at 7th Street	25%	25%	65%	65%	70%	70%

D.2E.1.2.1 Assign Volumes at Each Station to Different Access Paths

In this factoring step, the AM peak volumes assigned to each station entrance (see Section 2) are further broken out by the access paths to each station entrance. As with the assignment of volumes to individual station entrances, this further breakout to each station entrance access path reflects development characteristics along each access path as well as whether another station entrance would intercept a person before she got to the entrance being evaluated. This data provides an understanding of how pedestrians will be loaded onto the sidewalk network around each station area and the impacts of those loadings in terms of potential crowding and sidewalk operations.

Outlined in **Table D.2-39** are the access paths that were evaluated for each station entrance at the Mount Vernon East Station. Comparable data for the Baltimore station alternatives is provided in the DEIS Appendix D.2.

Table D.2-39: Pedestrian Access Paths to Mount Vernon East Station Entrances

Station Entrance	Approach Paths
3rd Street NW	East Leg of M Street
	North Leg of 3rd Street
	West Leg of M Street
New York Avenue between 5th and 6th NW (Approach to Station from East)	East Leg of New York Avenue Leg to 5th Street
	North Leg of 5th Street NW
	South Leg of 5th Street NW
New York Avenue between 5th and 6th NW (Approach to Station from West)	West Leg of New York Avenue to 6th Street
	North Leg of 6th Street NW
	South Leg of 6th Street NW
New York Avenue and 7th Street	East Leg of New York Avenue
	Massachusetts Avenue (east leg) + 7th Street (south leg) + New York Avenue (west leg) + K Street (east leg) + K Street (west leg)
	Massachusetts Avenue (west leg – via Mount Vernon Place)
	7th Street (north leg)

An example of the process of distributing walk/bike access volumes to different access paths for each Mount Vernon East station entrance, for AM peak hour walk access trips, is outlined in **Table D.2-40**.

Table D.2-40: Example: AM Peak Hour Walk/Bike Access Trips – By Station Entrance Access Path: Mount Vernon East Station, Camden Yards Baltimore Station Alternative

Station Entrance	Access Path	Percentage of Total Station Entrance Volume Assigned to Access Path	Actual Volume by Access Path based on Assignment Process
3rd Street NW	M Street East Leg	43%	55
	3rd Street North Leg	28.5%	37
	M Street West Leg	28.5%	37
		Station Entrance Total	**129**
New York Avenue between 5th and 6th (approach to station from east)	East leg of New York Avenue	16.6%	42
	North Leg of 5th Street	16.7%	43
	South Leg of 5th Street	16.7%	43
		Total	**128**

Station Entrance	Access Path	Percentage of Total Station Entrance Volume Assigned to Access Path	Actual Volume by Access Path based on Assignment Process
New York Avenue between 5th and 6th (approach to station from east)	West leg of New York Avenue	16.6%	43
	North Leg of 6th Street	16.7%	43
	South Leg of 6th Street	16.7%	43
		Total	**129**
		Station Entrance Total	**257**
New York Avenue and 7th Street	East Leg of New York Avenue	30%	39
	Massachusetts Avenue (east leg) + 7th Street (south leg) + New York Avenue (west leg) + K Street (east leg) + K Street (west leg)	30%	39
	Massachusetts Avenue (west leg – via Mount Vernon Avenue)	30%	39
	7th Street (north leg)	10%	13
		Station Entrance Total	**129**
AM Peak Hour – Walk/Bike Access Total			**515**

D.2E.1.3 Curb Length Requirement Calculation Methodology – Pick Up and Drop Off Operations

Curbside space along streets in the vicinity of the Camden Yards SCMAGLEV station in downtown Baltimore and the Mount Vernon East station in Washington DC will be required to accommodate pick up and drop offs for Taxis, Transportation Network Companies (TNC), and Kiss and Ride operations.

The purpose of this section is to outline the process used to calculate the curbside distance that would be required to support the different operations.

The process steps are as follows:

Step 1 – Calculate the number of drop-off or pickup operations that can occur during the AM peak hour in a 20 feet long portion of the sidewalk where operations would occur. A 20’ section of sidewalk is based on the length of an average parking spot (14’ to 16’), extended to 20’ to support quicker weaving in and out to expedite drop-off/pick-up operations.

- Based on an estimated time of 45 seconds per drop-off/pick-up operation for each arriving vehicle, one 20’ slot can handle 80 drop-offs/pick-up operations per hour (3,600 seconds per hour / 45 seconds per operation = 80 operations per hour, per slot)

Step 2 – Calculate the total number of slots required to handle pick up, drop off operations for each access/egress category (Kiss and Ride, Taxi, TNC). This is calculated by dividing the total number of arrivals (access) and departures (egress) in the AM peak hour in each category by 80, the number of operations that can be handled at each slot per hour.

Step 3 – In order to calculate the curbside distance required for each operation, the number of required slots for each operation is multiplied by 20', the assumed distance required for each slot.

The results for the Mount Vernon East Station under the Camden Yards Baltimore Station Alternative is shown below in **Table D.2-41**.

Table D.2-41: Example: AM Peak Hour Curbside Distance Requirements: Pick Up and Drop Off Operations

Vehicles Accessing Station (Drop-Off)			
Access/Egress Mode	**Vehicles Arriving during AM Peak Hour**	**Number of 20' Slots Required for Taxi Drop-Off Operations**	**Distance Required (in feet)**
Taxi	659	8	160
TNC	988	12	240
Kiss and Ride	933	12	240
Vehicles Leaving Station (Pick-Up)			
Taxi	620	8	160
TNC	930	12	240
Kiss and Ride	1,016	13	260

D.2E.2 Future Traffic Conditions: Build vs. No-Build Methodology

The process to calculate future traffic conditions under both the Build and No-Build in order to assess the impacts of the addition of the SCMAGLEV to the SCMAGLEV Project Affected Environment transportation network was a multi-step process. Each process step is summarized below.

Calculate Traffic Volumes at Analysis Intersections Utilizing Regional Forecasting Models – In a traditional project development process, ridership and traffic volume data would be extracted from the project demand forecasting model that utilizes the regional forecasting model as the analysis platform. Given the unique nature of the SCMGALEV as a mode, the Project Sponsor's project ridership forecasting effort did not rely on the two regional forecasting models to complete ridership estimates (it should be noted that inputs from models such as population and employment forecasts and trip tables were utilized as part of the forecasting process). Instead the Project Sponsor used data inputs from the two regional models but developed its own mode choice model to estimate ridership.

As a result of this approach, separate regional model runs were required to provide the required traffic volumes at roadway network approach links leading to the intersections analyzed as part of the traffic impact analysis. The approach to these model runs is outlined below.

- **Project Ridership Forecast** – The Project Sponsor forecasted ridership data in terms of person trips for three stations (Washington D.C., BWI Station, and Baltimore Station alternatives at Cherry Hill or Camden Yards) in 2025 and 2050. These person trips were further disaggregated into the following categories:
  - Station access (by drive & park, drop off, taxi, bus, rail, and walk/bike mode) and egress (by pick up, taxi, bus, rail, and walk/bike mode)
  - Time period (AM Peak, Mid-Day, PM Peak, and Evening)
  - SCMAGLEV rider origin and destinations by Traffic Analysis Zone based on the two regional models (MWCOG and BMC)
- **Calculate Traffic Volumes** - In order to calculate the traffic volumes required as input into the traffic analysis, the ridership data provided by the Project Sponsor was incorporated into the existing MWCOG and BMC regional travel demand models respectively. To accomplish this step, the following activities were undertaken:
  - Obtained the latest MWCOG and BMC modeling data base for various horizontal years
  - Coded the three SCMAGLEV stations to the associated modeling network (i.e., Mount Vernon Station in the MWCOG model and BWI and Baltimore station alternatives into the BMC model):
    - In the MWCOG model, a new TAZ was created for the Mount Vernon East station
    - In the BMC model, a Traffic Analysis Zone was created for the BWI station and a new zone was created for each of the Baltimore station alternatives.
  - Converted the ridership data from the Project Sponsor from ASCII format into Cube format in the MWCOG and BMC TAZ systems (including the newly defined station zones)
  - Modified Cube modeling scripts and highway networks for both MWCOG and BMC models so that Cube based trip tables by time period could be integrated into the current modeling procedure, including deriving vehicle trips based on an average vehicle occupancy assumption of 1.94 as provided by the Project Sponsor.
- **Develop Loaded Highway Networks** The final step in this process was to generate the loaded highway networks (including link-based traffic volumes by time period) to support traffic operational analysis. The following scenarios and years were modeled in order to provide this data.
  - Current Conditions

    - For the MWCOG model, 2017 was used to represent current conditions
    - For the BMC model, 2020 was used to represent current conditions
  - For 2027 Opening Year
    - MWCOG Model – The year 2025 model run was used as the No-Build scenario. For the Build scenario, 2027 Maglev trips were interpolated from original 2025 and 2050 Build scenario forecasts as provided by the Project Sponsor.
    - BMC Model – The year 2030 model run was used as the No-Build scenario. For the Build Scenario, 2027 Maglev trips were interpolated from original 2025 and 2050 Build scenario forecasts as provided by the Project Sponsor.
  - For 2045 Future Year
    - MWCOG Model – The year 2040 model run was used as the No-Build scenario. For the Build scenario, 2045 Maglev trips were interpolated from original 2025 and 2050 Build scenario forecasts.
    - BMC Model = The year 2040 model run was used as the No-Build scenario. For the Build Scenario, 2045 Maglev trips were interpolated from original 2025 and 2050 Build scenario forecasts as provided by the Project Sponsor.

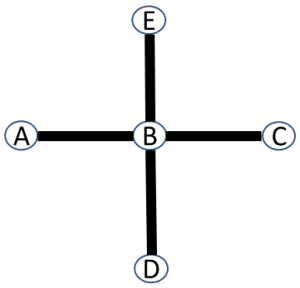
Convert Link Volumes Developed in Previous Step into Turning Movements – The modeling process described in the previous section yielded roadway link volumes on each of the legs of each analysis intersection. In this step the total volumes on each intersection leg were further broken out by movements through the intersection (right turn, left turn, and through). This data is required to model the change in traffic operations between the Build and No-Build scenarios.

The steps taken to convert total link traffic volumes into the movements through the intersection is outlined below.

- Develop Turning Movement Split Percentages
  - For those analysis intersections for which real traffic counts were available, the split percentages were obtained for each intersection approach by dividing each movement through the intersection into the intersection approach's total volume. As an example, one approach to the intersection (e.g. the northbound approach) has 100 vehicles in the AM peak hour. In our example, in the AM peak, 80 vehicles are through vehicles, 15 turn right and 5 turn. The split for our example therefore is 80% through, 15% right and 5% left.

    These split percentages were then applied to future year volumes as derived from the model runs described in the previous sections.

– For those intersections for which traffic counts were not available, the split percentage was derived using O-D trip tables generated by the regional forecasting models. In these models, the roadway network is represented by links and nodes, with trips between nodes generated by the modeling process (as outlined in the previous section). A typical intersection (node B in the example graphic) would be connected to four other nodes (A, C, D, and E).



The model produces the directional O-D trips between any two nodes, such as Trips A to E (left turn through intersection B), A to C (through movement through intersection B) and A to D ((right turn through intersection B). These O/D movements can then be used to calculate the split percentage for each movement on the A to B approach.

- **Project Future Year Turning Movements** – The second step in converting total approach volumes into turning movement counts is to apply a process called the Fratar process to project future year turning movements for each analysis intersection that does not have current counts. Based on the intersection turning movement splits obtained, the Fratar model uses future trip estimates between traffic analysis zones and applies a growth factor between current conditions and future conditions to each turning movement through the intersection in order to calculate future turning movements.

Traffic Modeling – The final step in the development of future Build and No Build traffic conditions is the calculation of intersection Level of Service and delay. This analysis is completed utilizing the traffic modeling package Synchro. The steps to completing the traffic modeling is outlined below.

- **Code Each Intersection in Sychro** – In this first step each analysis intersection was coded in Synchro. Inputs into this coding include intersection configuration (number of lanes, turn only lanes) and signal timing. This data was collected from the departments of transportation in each station jurisdiction, map analysis, and field data collection.
- **Input Turning Movement Counts –** In this step turning movement data as described in the previous step was input into the Synchro model for each analysis intersection and for each analysis year and condition (Current Conditions, No Build opening year and horizon year, and Build opening year and horizon year).
- **Summarize Outputs** – Intersection delay and Level of Service (LOS) data derived from the Synchro model for each analysis intersection was tabulated for use in completing the Build vs. No Build analysis contained in the DEIS Sectopm 4.2 Transportation.

D.2E.3 Construction Period Traffic Impacts

Calculating the traffic impacts associated with construction activity was an important assessment completed as part of the development of DEIS Section 4.2 Transportation. The process followed had many of the same characteristics of assessing the change in traffic operations between the No Build and Build conditions outlined in the previous section. The steps taken to complete this analysis are outlined below.

Select Intersections for Analysis – This step was based on construction plans developed by the Project Sponsor for the two station alternatives in Baltimore as well as the Mount Vernon East station in Washington DC. The construction plans outlined the construction work to be completed by location and phase for each station. The traffic volume data used for the analysis was 2027 data (approximate mid-point of construction) and the analysis compared construction conditions to the No-Build condition.

The intersections selected based on the Project Sponsor construction plans are outlined in **Table D.2-42**.

Table D.2.42: Intersection Evaluated for Construction Period Impacts

Construction Location/Segment/Stage	Analysis Intersection
Mount Vernon Segment 1 (Stage 1)	Roadway capacity of (WB) New York Avenue from M Street to North Capitol Street
	M Street at First Street NW
	M Street at North Capitol Street
Mount Vernon Segment 1 (Stage 2)	Roadway capacity of (WB) New York Avenue from M Street to North Capitol Street
	M Street at First Street NW
	M Street at North Capitol Street
Mount Vernon Segment 2 (Stage 1)	Roadway capacity of New York Avenue from M Street to 4th Street NW (Lane reduction)
	K Street at North Capitol Street
	K Street at First Street NW
	NY Avenue at North Capitol Street (east)
	NY Avenue at North Capitol Street (west)
Mount Vernon Segment 2 (Stage 2)	Roadway capacity of New York Avenue from M Street to 4th Street NW (Lane reduction)
	K Street at North Capitol Street
	K Street at First Street NW
	NY Avenue at North Capitol Street (east)
	NY Avenue at North Capitol Street (west)

Construction Location/Segment/Stage	Analysis Intersection
Mount Vernon Segment 3 (Stage 1)	Roadway capacity of New York Avenue at I-395
	Temporary signal capacity/delay
	6th Street NW at NY Avenue NW
	K Street NW at 6th Street NW
	K Street NW at New Jersey Avenue NW
Mount Vernon Segment 3 (Stage 2)	Roadway capacity of New York Avenue at I-395
	Temporary signal capacity/delay
	6th Street NW at NY Avenue NW
	K Street NW at 6th Street NW
	K Street NW at New Jersey Avenue NW
Mount Vernon Segment 4 (Stage 1)	Roadway capacity of New York Avenue from I-395 to 5th Street NW
	6th Street NW at NY Avenue NW
	K Street NW at 6th Street NW
	K Street NW at New Jersey Avenue NW
Mount Vernon Segment 4 (Stage 2.)	Roadway capacity of New York Avenue from I-395 to 5th Street NW
	6th Street NW at NY Avenue NW
	K Street NW at 6th Street NW
	K Street NW at New Jersey Avenue NW
Mount Vernon Segment 5 (Stage 1)	Roadway capacity of New York Avenue from 7th Street NW to 5th Street NW
	7th Street NW at NY Avenue NW
	K Street NW at 7th Street NW
	K Street NW at 5th Street NW
Mount Vernon Segment 5 (Stage 2)	Roadway capacity of New York Avenue from 7th Street NW to 5th Street NW
	7th Street NW at NY Avenue NW
	K Street NW at 7th Street NW
	K Street NW at 5th Street NW
Camden Yards Segment 1 and Segment 4 (Stage 1)	Pratt Street section (from Howard Street to Charles Street)
	Pratt Street at Charles Street
	Charles Street at Lombard Street
	Lombard Street at Hopkins Pl
Camden Yards Segment 1 and Segment 4 (Stage 2 & 3)	Pratt Street section (from Howard Street to Charles Street)
	Pratt Street at Charles Street

Construction Location/Segment/Stage	Analysis Intersection
	Charles Street at Lombard Street
	Lombard Street at Hopkins Pl
Camden Yards Segment 3 (Stage 1) and Segment 4 (Stage 3)	Conway Street at Howard Street
	Howard Street at Pratt Street
	Pratt Street at Light Street
Camden Yards Segment 2 (Stage 1) and Segment 3 (Stage 1)	MLK Blvd section (from I-395 split to W Pratt Street) capacity/delay by adding I-395 traffic
	MLK Blvd at W Pratt Street
	Conway Street at Howard Street
	Howard Street at Pratt Street
	Pratt Street at Light Street
Camden Yards Segment 2 (Stage 1) and Segment 3 (Stage 2)	MLK Blvd section (from I-395 split to W Pratt Street) capacity/delay by adding I-395 traffic
	MLK Blvd at W Pratt Street
	Conway Street at Howard Street
	Howard Street at Pratt Street
	Pratt Street at Light Street
Camden Yards Segment 2 (Stage 2) and Segment 3 (Stage 3)	MLK Blvd section (from I-395 split to W Pratt Street) capacity/delay by adding I-395 traffic
	MLK Blvd at W Pratt Street
	Conway Street at Howard Street
	Howard Street at Pratt Street
	Pratt Street at Light Street
Camden Yards Segment 2 (Stage 2)	MLK Blvd section (from I-395 split to W Pratt Street) capacity/delay by adding I-395 traffic
	MLK Blvd at W Pratt Street
Cherry Hill – Annapolis Road (south of Patapsco Ave)	Annapolis Road at Daisy Avenue
	Annapolis Road at Patapsco Avenue
Cherry Hill – Annapolis Road (north of Patapsco Ave)	Annapolis Road at Daisy Avenue
	Annapolis Road at Patapsco Avenue
Cherry Hill – Erik Street – Jorgenson Street	Cherry Hill Road at Hanover Road (SB MD 2)
	Waterview Avenue at Hanover Road (SB MD 2)
Cherry Hill – Waterview Avenue (Stage 1)	Annapolis Road at Waterview Avenue (east)
	Annapolis Road at Waterview Avenue (west)
	Annapolis Road at Patapsco Avenue

Code Synchro – In this step the intersection signal timing and configuration were coded in Synchro for the No Build Condition and the construction period configuration. The construction period configuration was based on Maintenance of Traffic and Traffic Control Plans developed by the Project Sponsor. These plans outlined in detail the configuration of impacted intersections during each phase of construction. It was this information that was also used in the selection of the intersections to be evaluated.

Add Turning Movement Counts – Vehicle movements through the intersections evaluated for traffic construction period impacts were developed in the same manner as those developed for the Build vs. No Build analysis. Once the intersections to be evaluated for construction period impacts were coded in Synchro, the turning movement counts for 2027, for each intersection, were incorporated into the Synchro model.

Summarize Model Outputs – As with the Build vs. No Build Analysis, intersection delay and Level of Service (LOS) data derived from the Synchro model for each analysis intersection was tabulated for use in completing the construction period traffic impacts analysis contained in DEIS Section 4.2 Transportation.