Washington Avenue Patroon Creek Corridor Study

Final Report

Prepared for:

CDTC
Capital District Transportation Committee

By:

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edr

April 2019

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List of Acronyms

AADT	Average Annual Daily Traffic	NHPP	National Highway Performance Program
AASHTO	American Association of State Highway Transportation Officials	NYSDOT	New York State Department of Transportation
ALIS	Accident Location Information System	OGS	Office of General Services
BLOS	Bicycle Level of Service	PIN	Project Identification Number
BRT	Bus Rapid Transit	RTP	Recreational Trails Program
CDRPC	Capital District Regional Planning Commission	SAC	Study Advisory Committee
CDTA	Capital District Transportation Authority	STBG	Surface Transportation Block Grant
CDTC	Capital District Transportation Committee	STEP	Systematic Transportation Planning and Evaluation
CHIPS	Consolidated Local Street and Highway Improvement Program	STP	Surface Transportation Program
CME	Creighton Manning Engineering, LLP	SUNY	State University of New York
EDR	Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services	TA	Transportation Alternatives
ETEC	Emerging Technology and Entrepreneurship Complex	TAC	Technical Advisory Committee
FHWA	Federal Highway Administration	TCQSM	Transit Capacity and Quality of Service Manual
FTA	Federal Transit Administration	TIP	Transportation Improvement Program
HCM	Highway Capacity Manual	TMA	Transportation Management Association
HSIP	Highway Safety Improvement Program	TRB	Transportation Research Board
ITS	Intelligent Transportation System	TWLT	Two-Way Left Turn Lane
LOS	Level of Service	UAlbany	University at Albany
N/A	Not Applicable	USDOT	United Stated Department of Transportation
NACTO	National Association of City Transportation Officials	vpd	Vehicles per Day

Disclaimer

This report was funded in part through a grant from the Federal Highway Administration, U.S. Department of Transportation. The views and opinions of the authors [or agency] expressed herein do not necessarily state or reflect those of the U.S. Department of Transportation. This report was prepared in cooperation with the City of Albany, the Capital District Transportation Committee (CDTC), the University at Albany SUNY, the New York State Office of General Services (OGS), the Capital District Regional Planning Commission (CDRPC), the Capital District Transportation Authority (CDTA), and the New York State Department of Transportation (NYSDOT). The contents do not necessarily reflect the official views or policies of these government agencies. The recommendations are conceptual in nature and are presented to characterize the types of improvements that are desirable, and that may be implemented as part of future land use and transportation improvement projects. All transportation concepts will require further engineering evaluation and review and do not commit the City of Albany, NYSDOT, the University at Albany, or the Office of General Services to the proposed project(s). Undertaking additional engineering or other follow up work will be based upon funding availability. The Washington Avenue/Patroon Creek Corridor Study will have a positive impact on affected Environmental Justice populations, as documented in the Environmental Justice Appendix.

Acknowledgments

This study was conducted by Creighton Manning Engineering, LLP (CME) and subcontractor Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services (EDR) on behalf of the City of Albany and Capital District Transportation Committee, and funded by CDTC's Linkage Program and the City of Albany. A Technical Advisory Committee (TAC) comprised of the City Planning, CDTC and CME staff was also formed to review progress and advance the study.

Thank you to the following:

Washington Avenue/Patroon Creek Corridor Study Advisory Committee:

- Christopher Spencer – City of Albany
- Yasmine Robinson – City of Albany
- Randy Milano – City of Albany
- William Trudeau – City of Albany
- Errol Millington – University at Albany
- Kristen Ellsworth – University at Albany
- Jason Kersch – University at Albany
- Todd Fabozzi – CDRPC
- Brent Irving – CDTA
- Brian Kirch – NYSDOT
- Audrey Burneson – NYSDOT
- Jessica Gabriel – OGS
- Carrie Ward – CDTC
- Jacob Beeman – CDTC
- Mark Sargent – CME
- Jeff Pangburn – CME
- Jesse Vogl – CME

Executive Summary

The Washington Avenue/Patroon Creek Corridor Study is sponsored by the City of Albany and the Capital District Transportation Committee (CDTC) to pursue complete streets improvements and design modifications for Washington Avenue between I-90 Interchange 2 and Brevator Street, consistent with the new 30 mph speed limit and changing land uses in the area.

The purpose of this study is to identify and analyze a range of complete streets design elements along Washington Avenue within the 1.5 mile study area that will enhance the safety and comfort for all users in the corridor while providing reasonable traffic operations for motor vehicles. As the study progressed, it became apparent that the focus of the study was the western segment where changing land uses and redevelopment along the northern side of Washington Avenue, as well as the continued growth of the State University of New York, University at Albany (UAlbany), have led to increased pedestrian crossing demand in the area. The complete streets elements identified in this study are intended to promote safety for all roadway users in a manner that balances the competing needs of different modes and enhances quality of life. While recommendations were evaluated to the extent possible for a planning study, they are conceptual in nature and presented to characterize the types of improvements that are desirable, and that may be implemented as part of future land use and transportation improvement projects. All transportation concepts will require further engineering evaluation and review.

Existing Conditions

Recently, the City of Albany implemented its first zoning code update in almost 50 years. This new code has shifted the zoning for the study area from primarily auto focused to a district that encourages mixed-use development, and design that is pedestrian friendly and at a human scale.

While land uses in the corridor have changed and are continuing to change under the new zoning, the existing roadway remains auto centric. Washington Avenue is straight and wide and consists of a five-lane roadway on the west end, and a four-lane roadway on the east end. Pedestrian crossing distances across Washington Avenue are long (approximately 100 feet) on the west end between UAlbany and the new Block 75 residential building. Marked crosswalks at the existing traffic signals do not align well with the current pedestrian desire lines. While sidewalks are present in portions of the corridor, gaps exist in the pedestrian network. Travel speeds are higher than the 30 mph posted speed limit, averaging 34 to 43 mph depending on the location, and further reduce pedestrian comfort in the corridor.

While pedestrian comfort is a primary project objective, it is important to note that Washington Avenue carries a large amount of traffic during the peak hours. Overall traffic operations are good, with motorists experiencing average vehicle delays during peak times, except at the Washington Avenue/I-90 Interchange 2 intersection. Public input confirmed that users of the corridor feel comfortable and can easily get where they want by driving in the corridor, yet do not feel comfortable and cannot easily get where they want by walking and bicycling in the study area. A fundamental objective of this study was to develop complete streets improvements and design modifications for Washington Avenue that will promote safety for all roadway users in a manner that balances the competing needs of different modes and enhances community quality of life.

The Plan

The plan identifies priority improvements to be pursued immediately in order to calm traffic and improve pedestrian conditions in the west end of the corridor. These priority improvements include a raised median and signalized pedestrian crossing at a new bump out at Block 75 as well as replacement of the eastbound rightmost vehicle lane between Interchange 2 and the Collins Circle intersection with striped hatching. The plan recommends converting the existing Washington Avenue eastbound through/right lane to a right turn only lane. These priority improvements are an initial stage of transforming Washington Avenue into a complete street, and align with the short and long-range recommendations outlined in Chapter 4. Figure ES-1 shows the priority improvements.

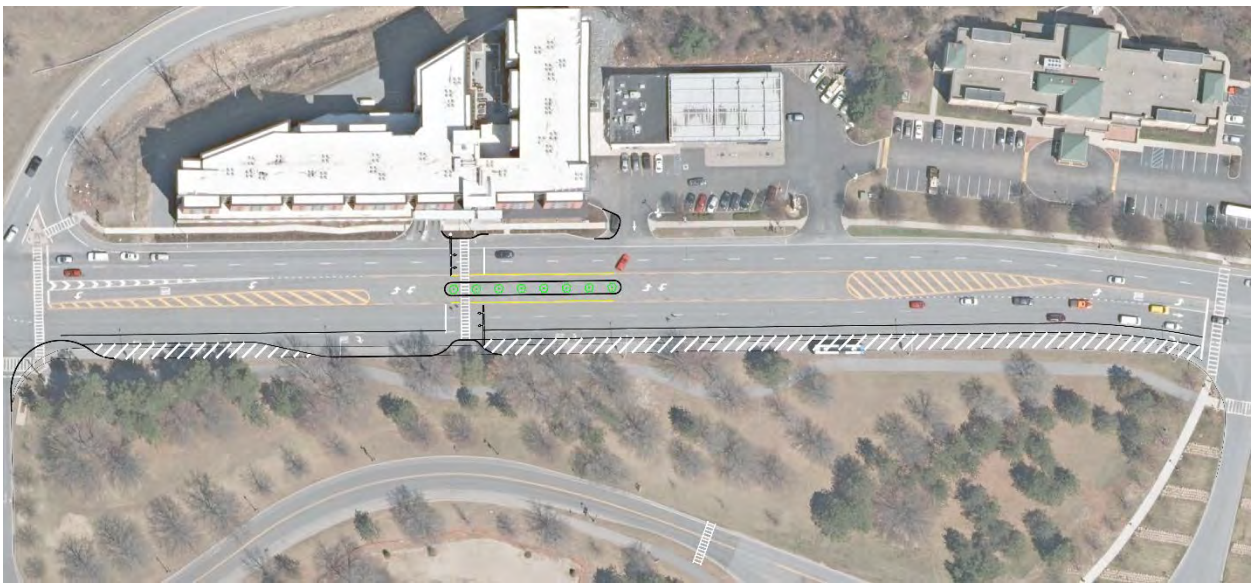


FIGURE ES-1 – PRIORITY IMPROVEMENTS

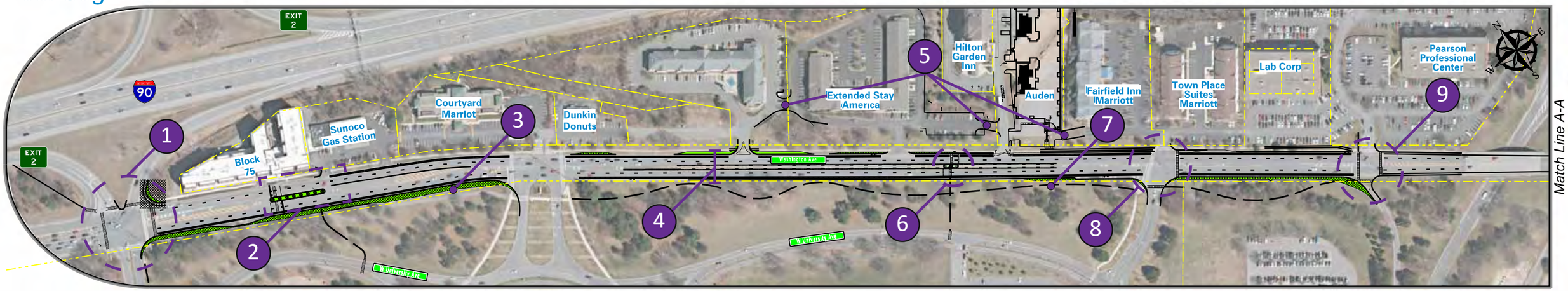
Beyond the priority improvement, the plan proposes to pursue bike lane pavement markings under a pavement preservation project, with sidewalk and path extensions, access management, additional pavement repurposing, and lighting enhancements as feasible. Long term recommendations call for a road narrowing project in the west segment, and additional studies to confirm the feasibility of carrying a lane reduction project further east into the city beyond Brevator Street, particularly at Colvin Avenue.

Although the majority of users in the corridor are motorists, changes in land use have increased pedestrian activity and pedestrian crossing demand in the corridor. The addition of pedestrian facilities including sidewalks along Washington Avenue and enhanced crossings in areas of high pedestrian demand, as well as enhancements such as raised pedestrian refuge islands where appropriate, will accommodate the growing number of pedestrians and make the corridor more attractive and welcoming to non-motorized users. The plan is shown on Figure ES-2.

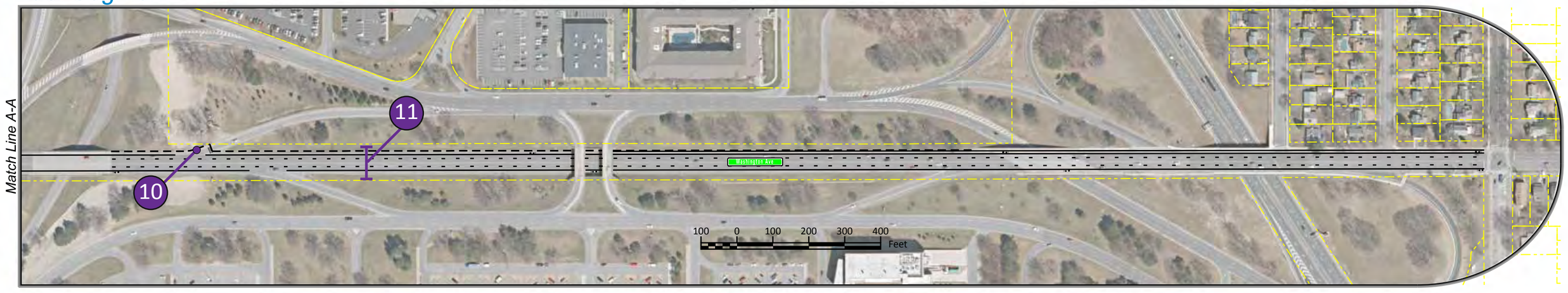
This plan recommends that the City and partners work proactively to identify funding for the priority improvements and future studies, and establish the local match for a larger public project (or projects). The City and partners should also work with CDTC and New York State Department of Transportation (NYSDOT) to get a Washington Avenue/Patroon Creek Corridor Project on the local Transportation Improvement Program (TIP) to fund a pavement preservation project with enhancements.

Completion of the improvements cited in the plan will transform the Washington Avenue corridor into a complete street.

West Segment



East Segment



1. Install crosswalks to “Complete the Box”. Remove the westbound right turn slip ramp. Convert the rightmost eastbound lane to right turn only.
2. Construct enhanced pedestrian crossing at Block 75 including three colored signal or pedestrian hybrid beacon and raised pedestrian refuge island. Make westerly Sunoco driveway one-way out. Add eastbound transit stop.
3. Remove rightmost eastbound lane.
4. West Segment: Maintain five vehicle lanes and stripe buffered bike lane, including shoulder widening on south side. Restripe median to two-way left turn lane. Add pedestrian scale lighting where appropriate.
5. Create cross connections between parcels on north side of Washington Avenue (typ).
6. Confirm mid-block pedestrian crossing demand after full occupancy of Auden and provide enhanced pedestrian crossing if necessary.
7. Extend multi-use path eastward from Collins Circle to 1365 Washington Avenue along UAlbany frontage.
8. Install crosswalks to “Complete the Box”. Maintain eastbound transit stop. Modify westbound transit stop to improve bus re-entry.
9. Remove eastbound right turn slip ramp and bring into signal, adjust signal timing as necessary. Install Crosswalks to “Complete the Box”.
10. Extend sidewalk along north side of Washington Avenue.
11. East Segment: Maintain four lanes. Restripe shoulder to provide bike lane. Add pedestrian scale lighting where appropriate.

Feasible Long Term Recommendations

1. Pursue road narrowing (west segment) with “path” or “separated” bike accommodation on both sides.
2. Extend path on south side to Brevator Street.
3. Confirm feasibility of lane reduction project east of Brevator Street and implement if fesasible.
4. Conduct further study of Harriman Campus multimodal connections in the vicinity of the hourglass bridges.

Washington Avenue Patroon Creek Corridor Study

Suggested Improvements under Option A
Washington Avenue/Patroon Creek Corridor

Creighton Manning

Figure ES-2

Chapter 1 – Introduction

The Washington Avenue/Patroon Creek Corridor Study is sponsored by the City of Albany and the Capital District Transportation Committee (CDTC) to pursue complete streets improvements and design modifications for Washington Avenue between I-90 Interchange 2 and Brevator Street, consistent with the new 30 mph speed limit in the area.

Washington Avenue is a City street but it operates like a major arterial highway as it transitions from Albany neighborhoods in the east through the Harriman State Office Campus, a New York state facility, and University style developments of the 1960's and 70's, to the expressway-like highway west of Fuller Road. This has created the transportation/land use conflict that exists today, which has recently been intensified by extensive additional developments across from the Harriman State Office Campus and State University of New York, University at Albany (UAlbany) Campus.

Although significant land use changes started back in the 1990's with the introduction of medical-health offices, the concentration of apartments, hotels, and the recent construction of dedicated student housing have magnified the conflict of the existing automobile centric Washington Avenue conditions with the land uses. While a majority of the land north of Washington Avenue has already been developed, opportunities exist for redevelopment which could aggravate the situation.

The potentially feasible future street designs and complete streets features identified through this study will promote safety for all roadway users in a manner that balances the competing needs of different modes and enhances community quality of life. This study evaluates existing multi-modal conditions and needs, and a full range of alternatives to recommend the most feasible and context appropriate complete streets design for this corridor. A robust stakeholder and community driven process was used throughout the study and during development of the recommendations.

Study Approach

A Study Advisory Committee (SAC) helped guide the study, and reviewed and gave feedback on interim and final study products. SAC members include staff from the University at Albany, City of Albany, Capital District Transportation Committee (CDTC), Capital District Transportation Authority (CDTA), Capital District Regional Planning Commission (CDRPC), Office of General Services (OGS), and New York State Department of Transportation (NYSDOT) Region 1. A Technical Advisory Committee (TAC) comprised of the City Planning Department and CDTC Project Manager was also formed to review progress and advance the study. Specific SAC and TAC committee members are listed in the project's Public Participation Plan.

The goal of these committees was to share technical information, provide input on public outreach materials, enable informed decision-making, help shape the draft and final study recommendations, and provide overall guidance on the study as it progresses. The good cross section of agencies and interests on these committees, combined with the open public process ensured that diverse views were represented, and that the plan is comprehensive and publicly supported.

The recommendations presented in this study are intended to support the City's Complete Streets efforts and to improve the multi-modal function and appearance of Washington Avenue. While recommendations were evaluated to the extent possible for a planning study, they are conceptual in nature and presented to characterize the types of improvements that are desirable, and that may be implemented as part of future land use and transportation improvement projects. All transportation concepts will require further engineering evaluation and review.

Purpose and Need

At the outset of the study, the SAC, discussed and established the following Purpose and Need Statement for the study, which was then reviewed at the public meetings. The purpose is essentially the problem to be solved, and the need is the evidence that the problem exists. Together, the Purpose and Need Statement establishes the basis for consideration of alternatives, and future expenditures.

Purpose and Need:

- The purpose of this study is to identify and analyze a range of complete streets design elements along Washington Avenue between I-90 Interchange 2 and Brevator Street that will enhance the safety and comfort for all users in the corridor while providing reasonable traffic operations for motor vehicles.

- Due to land use redevelopment and growth along the northern side of Washington Avenue, as well as the continued growth of the University at Albany and Harriman Campus, there is a need to better accommodate all users in the corridor.

STUDY AREA/NETWORK CONTEXT

The primary study area extends along Washington Avenue from I-90 Interchange 2 to Brevator Street including adjacent land and businesses. This 1.54 mile section of Washington Avenue is an important corridor for all modes including regional commuting and travel from points north on I-87 and west along I-90 and Washington Avenue Extension into downtown Albany.

From a connectivity standpoint, the study area is well connected for motorists as it is served directly or indirectly by I-90 Interchanges 2, 3 and 4, NYS Route 85 and ramps to/from the Harriman State Office Campus. Conversely, these highways and associated ramps serve as a barrier to travel by local transit, foot, or bicycle between the University at Albany Campus, Harriman State Office Campus, and housing along Washington Avenue.

FIGURE 1.1 – STUDY AREA

PREVIOUS STUDIES

A number of previous studies pertain to the corridor.

In 2007, CDTC sponsored the Harriman Campus-University at Albany Transportation Linkage Study in response to plans for expansion projects on both campuses. A primary objective of the study was to help facilitate connections and linkages to and between the two campuses. The study resulted in a list of short and long term action items, many of which have been further studied or implemented including a transit spine between the campuses, purple path recommendations, and way finding improvements. Another recommendation was to study the feasibility of forming a Transportation Management Association (TMA), which is an association of employers, institutions, and community groups that work jointly to implement transportation demand management strategies for the benefit of a defined region. Formation of a TMA was subsequently studied by CDTC and determined not to be feasible in 2009.

Action Item	Primary Implementation Responsibility	Order of Magnitude Costs
Immediate Term Steps		
Identify and reserve transit spine Right of Way on Harriman Campus	HRTDC, CDTA; CDTC	Short-term: Low Long-term: High
Reserve Tricentennial Drive Right of Way	University at Albany	Short-term: Low Long-term: High
Fuller Road Rehabilitation	Albany County	Low-Medium
Short Term Strategies		
Establish a Site Area TMA	Study Area Stakeholders	Low
Develop Transportation Spine	UAlbany; CDTC; CDTA, HRTDC (TMA)	Short-term: Low Long-term: High
Reconfigure CDTA transit routes	CDTA; UAlbany; HRTDC (TMA)	Short-term: Medium Long-term: High
Reconfigure Intercampus Shuttles	UAlbany, CDTA (TMA)	Low
Universal Transportation (TDM) Program	CDTA & CDTC; HRTDC, UAlbany; Patroon Creek (TMA)	Medium
Parking Management Strategies	UAlbany, HRTDC, Patroon Creek; CDTC (TMA)	Low
Develop Shuttle Routes for Harriman and Patroon Creek	HRTDC, Patroon Creek (TMA)	Medium
Purple Path Recommendations	UAlbany (TMA)	Medium
Way finding	HRTDC; UAlbany; Patroon Creek (TMA)	Low
Access Management	CDTC; Albany County; local jurisdictions (TMA)	Low
Harriman Ring Roads – Bike Lanes and Turnarounds	HRTDC; CDTC; local jurisdictions (TMA)	Low
Bridge over Washington Avenue	HRTDC, Patroon Creek, CDTC	Medium
Harriman Outer Loop Road and I-90 Exit 3	HRTDC, Patroon Creek, CDTC	Low
Merge Location (Harriman Outer Ring Road just east of Patroon Creek)	HRTDC, Patroon Creek, CDTC; local jurisdictions; (TMA)	Low
UAlbany Ring Road - Northwest Quadrant	UAlbany; local jurisdictions	Medium
Longer Term Strategies		
Outer Ring Road-Route 85 Area	HRTDC; local jurisdictions	High
Harriman Master Plan Road Network	HRTDC; local jurisdictions	High
Harriman Master Plan Roundabouts	HRTDC; local jurisdictions	High
Join UAlbany and Harriman Ring Roads	HRTDC; UAlbany; local jurisdictions	High
Raising Washington Avenue	HRTDC; local jurisdictions	High

Source: Nelson Nygaard Consulting Associates/The Chazen Companies

Simultaneously, the City of Albany completed the 2009 Bicycle Master Plan to identify a network of bicycle routes to improve cycling as a viable mode of transportation throughout the city. In addition to identifying bicycling treatments for specific roadways, the Bicycle Master Plan proposed innovative bikeway design ideas, many of which pre-dated the National Association of City Transportation Officials (NACTO) guidance. The prescribed treatment for Washington Avenue along the University at Albany and Harriman State Office Campus frontages was to reduce lane width to 11.5 ft. and mark the remaining pavement as a bike lane.

In 2012, the University at Albany conducted a Pedestrian Traffic Improvement Study to improve safety for students, public, and staff that use the UAlbany Campus. Of particular concern was pedestrian and vehicular interaction along University Drive and the three public roadways that border the campus. In addition to signage recommendations, the study renewed the recommendations in the Harriman Campus - University at Albany Transportation Linkage Study to create a transportation spine.

Building upon the previous studies, CDTA incorporated the proposed campus transit spine as part of the Washington/Western Bus Rapid Transit (BRT) Simplified Alternatives Analysis which was completed in 2014. This study proposed three potential alignments for enhanced bus service between downtown Albany and Crossgates Mall. It was determined that BRT service would be provided via Western Avenue up until the Harriman State Office Campus at which point service would be provided via a new busway that connected the Harriman State Office and University at Albany campuses. In 2015, CDTA began the design process for implementing the new BRT service, and plans were submitted to the Federal Transit Administration (FTA) for funding. Through the design process, the busway would operate mostly on the existing ring road with two new traffic signals at the Harriman State Office Campus BRT stations. If approved, the BRT project is expected to be completed in 2022.

In 2017, the City of Albany adopted the Complete Streets Policy and Design Manual in order to implement the City of Albany Common Council Ordinance for Complete Streets which requires that the needs of all users be considered in any future street construction, reconstruction, or resurfacing project. The Complete Streets Policy and Design Manual established accessibility, connectivity, safety, and place making as guiding principles used to identify complete streets elements. The manual also identified, based on land use context, modal hierarchy, and other transportation characteristics, six unique land use/street typologies which form the basis for the appropriate complete street treatment.

Also in 2017, the City of Albany completed a multi-year traffic signal and intelligent transportation system (ITS) improvement project along the Washington Avenue, Western Avenue, and New Scotland Avenue corridors. Through this project, traffic signal upgrades were completed at the four City-owned traffic signals in the study area, including the installation of pedestrian signals, curb ramps, and crosswalks, as well as coordinating the signals for vehicle progression.

In addition to the various corridor and campus-wide studies, several traffic impact studies have been prepared for the construction of additional student housing along Washington Avenue. A 2014 study prepared for 1475 Washington Avenue (formerly ASPEN, now Block 75), identified several off-site improvements including lane striping and signal modifications at the Washington Avenue/I-90 Interchange 2 and Washington Avenue/Collins Circle intersections. These recommendations have since been implemented in order to accommodate the new housing projects. Likewise, a 2016 study for 1385 Washington Avenue (AUDEN) identified education and enforcement measures to enhance pedestrian safety in addition to the implementation of an exclusive pedestrian phase at the Washington Avenue/UAlbany East Entrance intersection.

Following these studies and student housing projects, the City reduced the posted speed limit on this section of Washington Avenue from 45 mph to 30 mph, and implemented exclusive pedestrian signal phasing at the Washington Avenue/Collins Circle intersection, with exclusive pedestrian signal phasing installed at the Washington Avenue/UAlbany East Entrance intersection when the 1385 Washington Avenue residential project was completed.

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Chapter 2 – Existing Conditions

ZONING

Recently, the City of Albany implemented its first zoning code update in almost 50 years. The purpose of the Unified Sustainable Development Ordinance is to positively shape the community by regulating building size (height and width), lot coverage (placement of buildings), density, and land use by type. This new code has shifted the zoning for the study area corridor from primarily auto focused to a district that encourages mixed-use development by providing much more specificity on design that is pedestrian friendly and at a human scale. The study area zoning is shown on Figure 2.1 and is comprised of Mixed-Use Campus/Institutions, Mixed-Use Community Urban, and Residential uses.

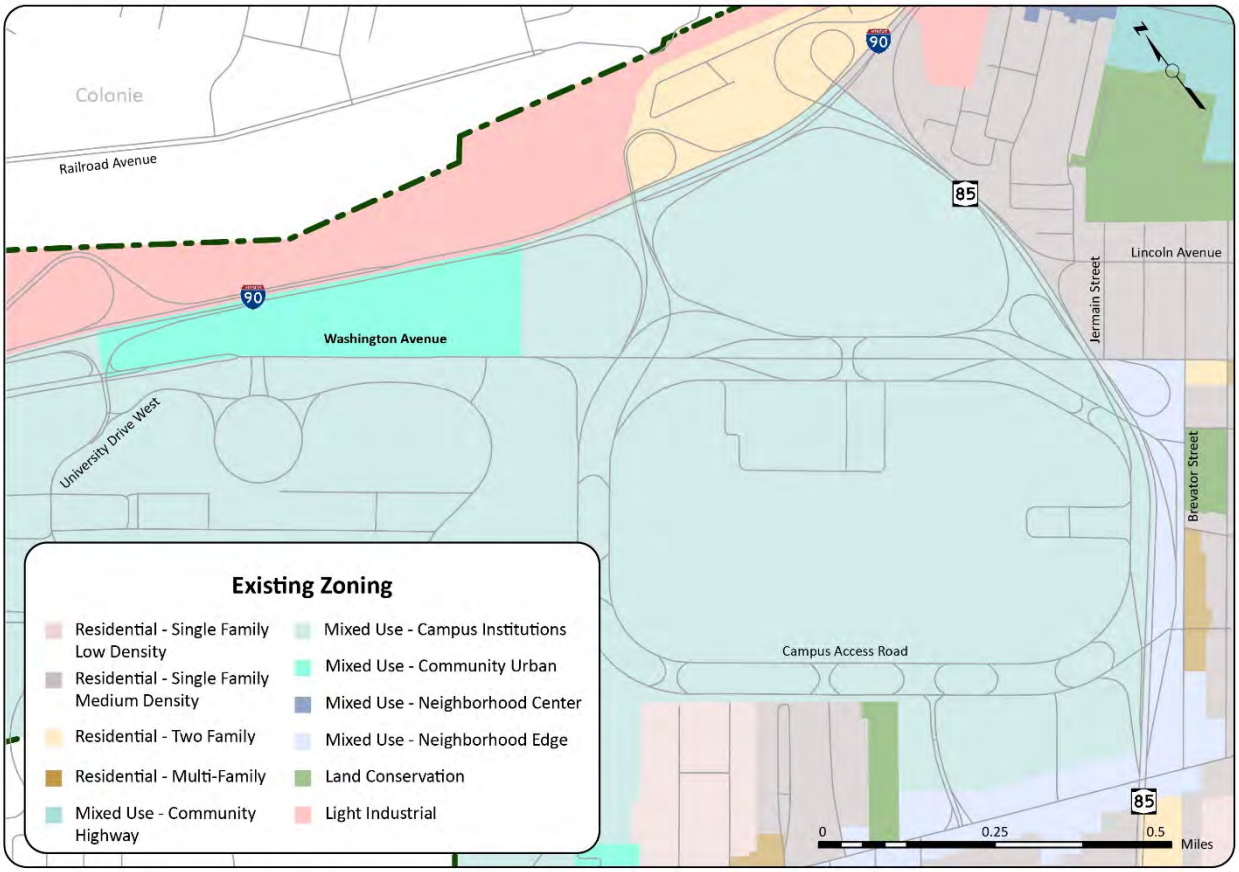


FIGURE 2.1 – EXISTING ZONING

LAND USE

Land uses in the study area differ on the north and south sides of Washington Avenue. The south side consists primarily of the Harriman State Office and University at Albany Campuses, with SUNY Polytechnic Institute located to the west on Fuller Road just outside the study area. Combined, these institutions serve 25,000 to 30,000 students and employees. In contrast to these large institutions, the north side of Washington Avenue is composed of residential apartment buildings as well as several hotels, a gas station and other commercial uses, including a Dunkin Donuts restaurant, and the Patroon Creek medical office buildings.

Figure 2.2 shows the variety of land uses within the corridor. The University at Albany frontage on Washington Avenue consists of open space with dorms set back from the roadway on either side of Collins Circle. Adjacent to the University at Albany campus is the Harriman State Office Campus which consists primarily of office space for state employees. The hotel, gas station with convenience store, restaurant and residential land uses on the north side create pedestrian crossing demands to/from the UAlbany Campus.

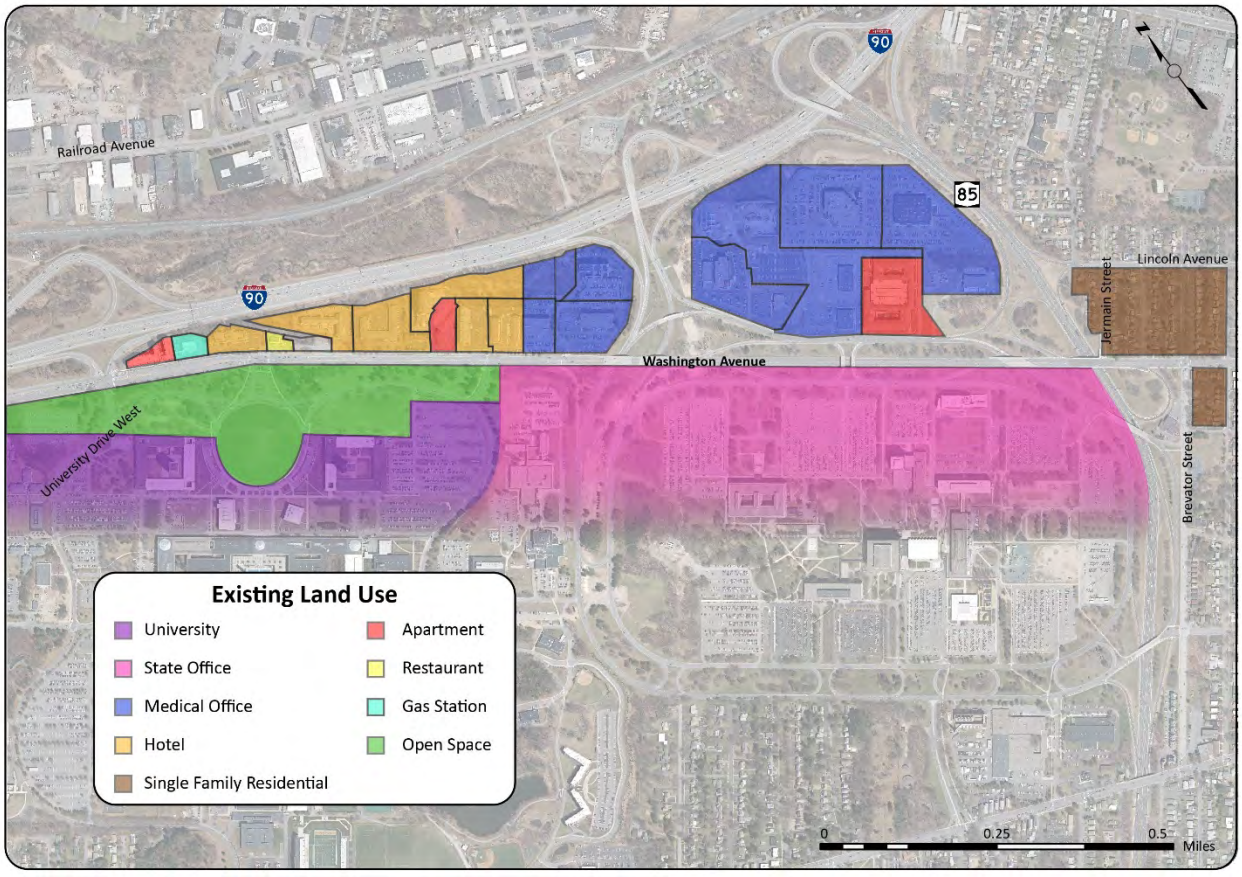


FIGURE 2.2 – EXISTING LAND USE

TRANSPORTATION INFRASTRUCTURE

Washington Avenue is one of several historic streetcar lines in Albany. It radiates from downtown in an east-west direction through the city to the Guilderland border and is classified as an urban principal arterial. In general, Washington Avenue is a four-lane roadway with two 12-foot wide travel lanes in each direction, and 8-foot wide shoulders off-set to the curb. The roadway widens in the western part of the study area along the University at Albany frontage and provides a 5-lane cross section. The right-of-way width is typically 100 feet wide in the four lane areas, and widens to 130 feet in the vicinity of the University at Albany in order to accommodate the additional turning lanes, shoulder widths, and striped medians.

IMAGE 2.1 – TYPICAL VIEW OF WASHINGTON AVENUE NEAR COLLINS CIRCLE

In the west portion of the study area, sidewalks are present along the north side from I-90 Interchange 2 to the Harriman State Office Campus Road overpass, and along the south side between I-90 Interchange 2 and Collins Circle. East of the Harriman State Office Campus Road overpass there are no sidewalks until the NY Route 85 overpass at which point the sidewalk resumes on both sides of Washington Avenue. Sidewalks vary in width from four to five feet wide for most of the corridor, except in front of UAlbany between I-90 Interchange 2 and Collins Circle where a wider 10-foot path is present. Marked crosswalks with pedestrian push buttons are present at the each of the signalized intersections. The Washington Avenue/Collins Circle intersection and the Washington Avenue/Brevator Street intersection provide marked crosswalks on all approaches, while the other three signals have marked crosswalks on at least one approach, as shown on the following figure.

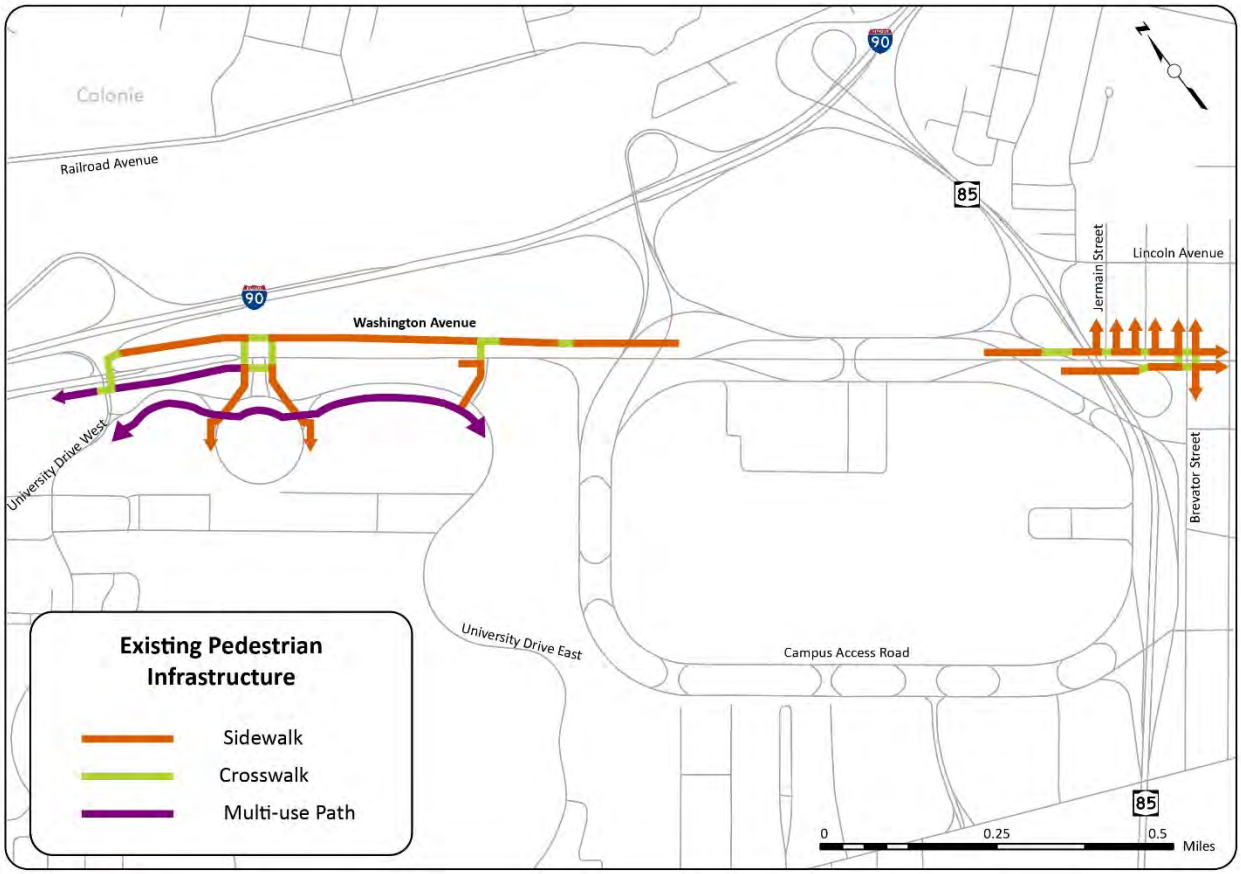


FIGURE 2.3 – EXISTING PEDESTRIAN INFRASTRUCTURE

Data published by Capital District Transportation Committee (CDTC) in the *2017 Pavement Condition of Streets under the Jurisdiction of the City of Albany* indicates that the pavement on Washington Avenue in the study area is in good condition (Rated 6, 7, or 8) with distress beginning to show.

As mentioned previously, the City recently reduced the posted speed limit along Washington Avenue in the study area from 45 mph to 30 mph. Immediately beyond the study area to the west, the posted speed limit was also lowered from 55 mph to 45 mph.

AUTOMOBILE TRAFFIC CHARACTERISTICS (SPEEDS, VOLUMES AND OPERATIONS)

Automatic traffic recorders were installed at two locations along Washington Avenue during the first two weeks in December 2017 while UAlbany was in session to document traffic characteristics including daily traffic volumes, peak travel times, and travel speed information. Intersection turning movement counts and pedestrian counts were also conducted during the morning (AM) and evening (PM) peak periods during December 2017 to facilitate the development of a traffic simulation model. The existing traffic data is summarized in the tables and charts below.

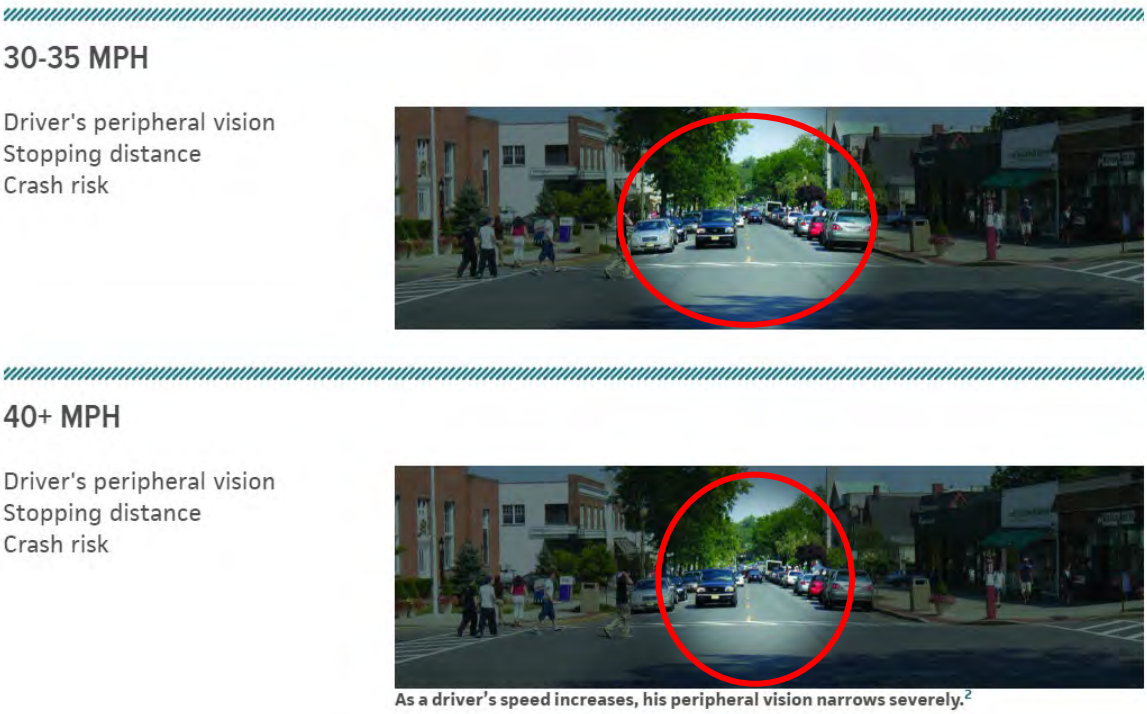
TABLE 2.1 – TRAFFIC VOLUME AND SPEED SUMMARY

	Washington Avenue	
	425 Ft East of Collins Circle	**2400 Ft West of Brevator St (Under Ring Road)**
Volume		
AADT (vpd)	19,500	15,600
Speed (mph)		
Average Eastbound	39.8	42.8
Westbound	34.0	41.1
85th Percentile Eastbound	45.0	49.0
Westbound	41.9	46.9

AADT = Average Annual Daily Traffic; (vpd = vehicles per day)
DHV = Design Hour Volume; (vph – vehicles per hour)

The data shows that the average daily traffic volume on Washington Avenue is approximately 19,500 vehicles per day between Collins Circle and the UAlbany East Entrance, and approximately 15,600 vehicles per day under the Harriman State Office Campus Ring Road bridges. Peak travel times generally occur from 4:00 to 5:00 p.m. on a weekday with peak volumes representing approximately eight to nine percent of the daily traffic volume. Saturday and Sunday volumes are less. The 85th percentile speeds are 42 to 45-mph along the University at Albany frontage, and 47 to 49 mph under the Harriman State Office Campus Ring Road bridges. The 85th percentile speed is the speed at or below which 85 percent of motorists travel and is often used to establish posted speed limits. The data shows that the motorists are traveling over the posted speed limit of 30 mph which will be considered further during the development and evaluation of alternatives. One way of addressing this is through the concept of target speed to improve the safety and comfort for all roadway users. The "Target Speed" is essentially the desired operating speed, which can be achieved by designing the road to include traffic calming and/or alignment features as appropriate so motorists are most comfortable traveling near the target speed. In this case, the "Target Speed" for Washington Avenue through the study area is 30 mph, consistent with the existing posted speed limit.

It is important to note that speed plays an important role in the way motorists perceive their surroundings. Specifically, higher speeds reduce a driver's peripheral vision, as shown in Image 2.2. Further, the distance required for a vehicle to stop is greater at higher speeds. These factors increase crash risks at higher speeds.



As a driver's speed increases, his peripheral vision narrows severely.[2]

IMAGE 2.2 – PERIPHERAL VISION/SPEED RELATIONSHIP

Chart 2.1 shows the two-way traffic volumes for a typical weekday, Saturday, and Sunday, and shows that peak travel times generally occur from 4:00 to 5:00 p.m. on a weekday. Saturday and Sunday volumes are less.

Chart 2.2 shows the directional traffic volumes for a typical weekday and shows that eastbound traffic peaks during the morning as commuters are traveling towards the University at Albany and Harriman State Office Campuses, and westbound traffic peaks during the afternoon. In terms of mainline or corridor level-of service, Washington Avenue maintains a high level of service related to mid-block capacity thresholds that compare the number of travel lanes with the estimated amount of daily traffic as shown on Chart 2.2. Mainline traffic conditions were evaluated by using guidelines reported in CDTC's Congestion Management System for regional and corridor planning work. Mainline highway capacity deficiencies are identified by comparing mid-block traffic demand against estimated mid-block capacities. As shown in Chart 2.2, Washington Avenue in the study area operates well throughout the day with demand below the segment capacity threshold for a five lane roadway indicated by the dashed pink line. With that said, the dashed green line in Chart 2.2 indicates the segment capacity for a three-lane roadway. As can be seen, volumes on Washington Avenue east of Collins Circle are nearing this capacity threshold and therefore reducing Washington Avenue to three lanes would likely result in overcapacity conditions.

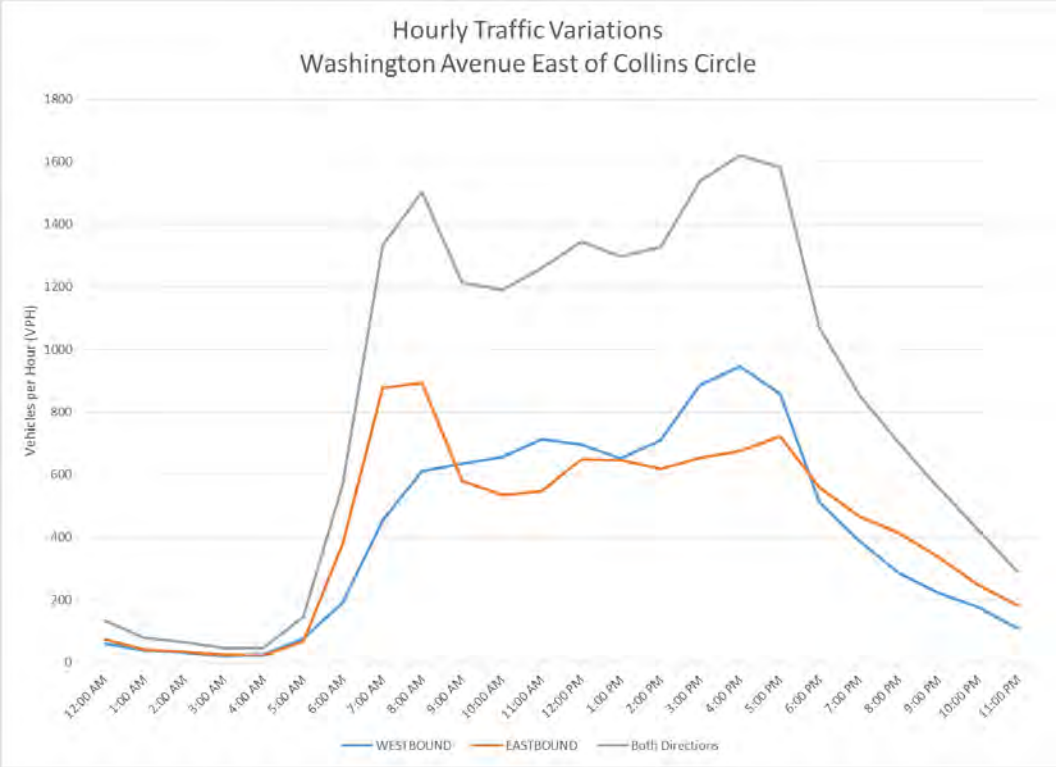


CHART 2.1 – Hourly Traffic Variations by Day

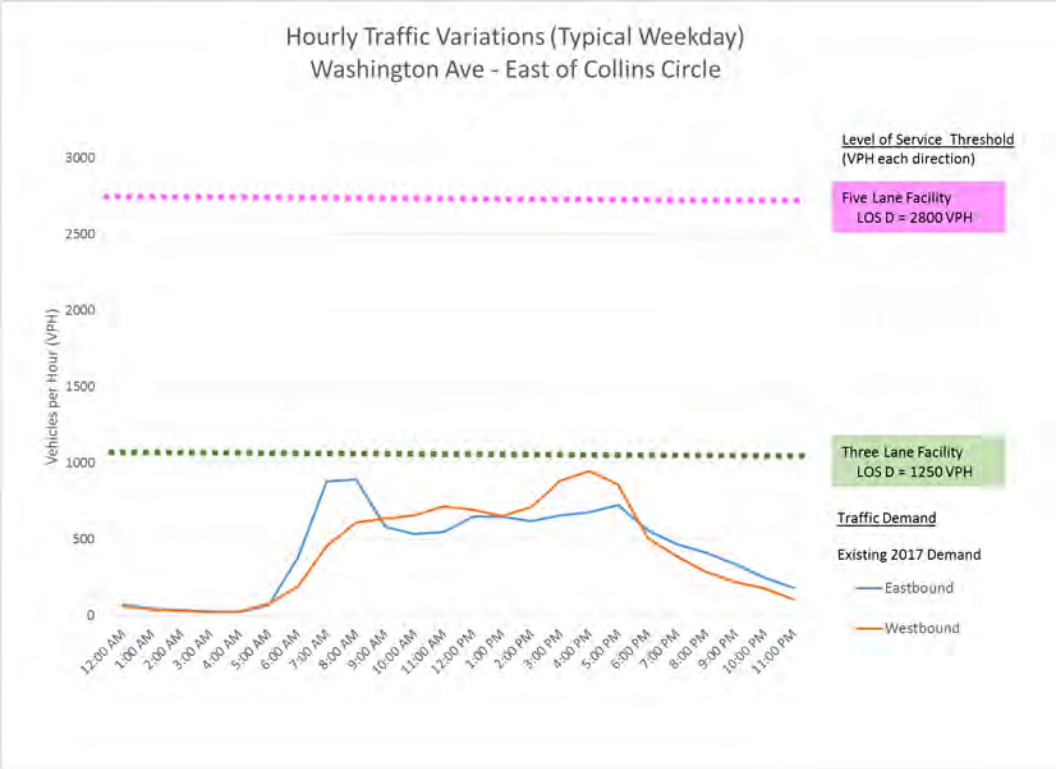


CHART 2.2 – HOURLY TRAFFIC VARIATIONS BY DIRECTION

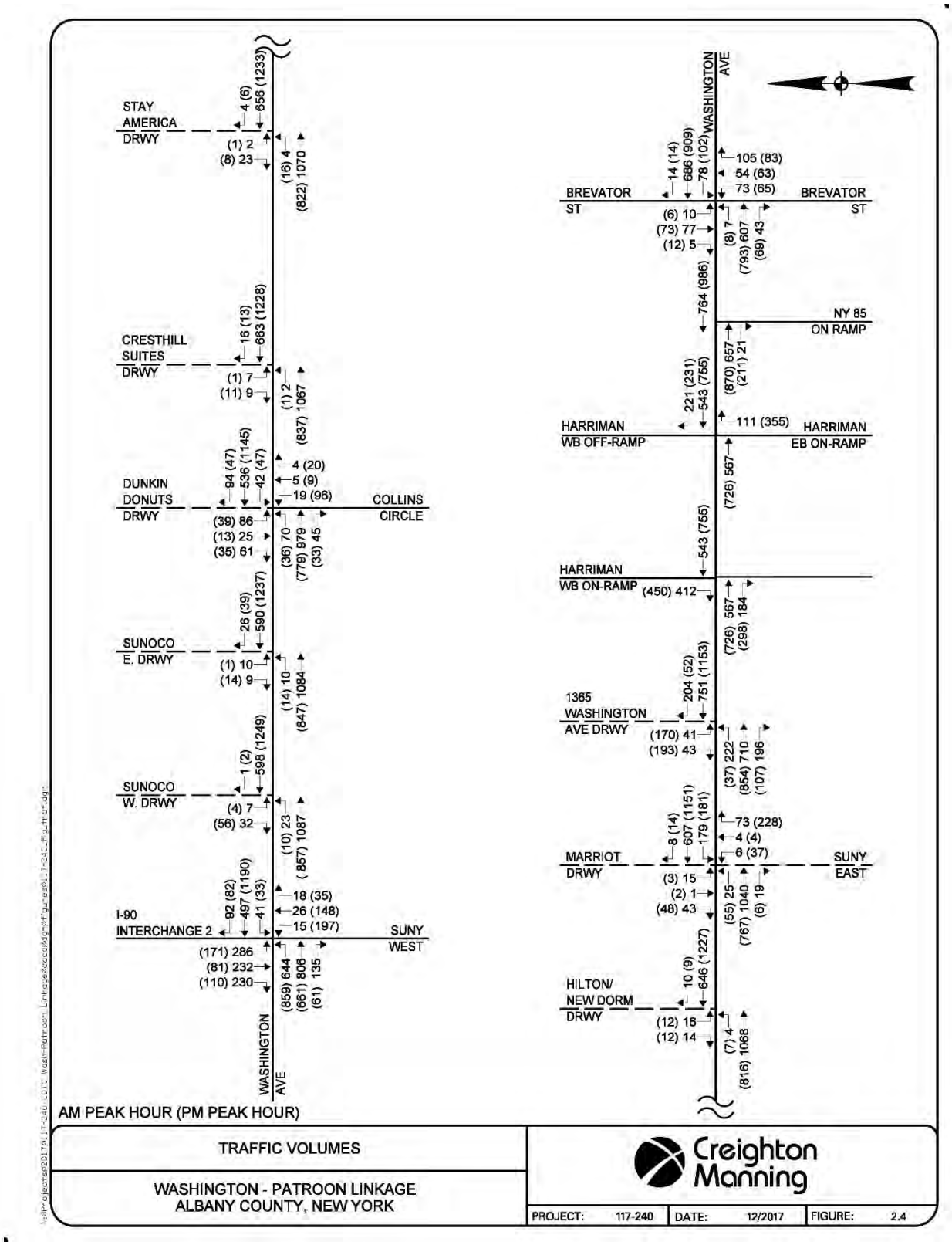


FIGURE 2.4 – EXISTING PEAK HOUR TRAFFIC VOLUMES

Intersection Level of Service (LOS) and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Evaluations of the signalized intersections were made using Synchro10 software which automates the procedures in the Highway Capacity Manual published by the Transportation Research Board (TRB). Levels of service range from A to F, with LOS A conditions considered excellent (less than 10 seconds of delay) while LOS F represents conditions with very long delays (greater than 50 seconds at unsignalized intersections or 80 seconds at signalized intersections). Table 2.2 summarizes the existing LOS results in the study corridor.

TABLE 2.2 – LEVEL OF SERVICE SUMMARY

Intersection Approach		Control	2017 Existing	
			AM Peak Hour	PM Peak Hour
Washington Avenue/I-90 Interchange 2		S		
Washington Avenue EB	L,L		E (63.9)	F (81.0)
	T,T,TR		C (24.4)	C (21.0)
Washington Avenue WB	L		E (72.0)	E (66.7)
	T,T		D (43.9)	F (129.2)
	R		A (5.3)	A (2.9)
UAlbany West Entrance NB	L		E (58.3)	E (68.1)
	LTR		A (1.5)	C (30.2)
I-90 Interchange 2 SB	L		E (68.3)	E (71.2)
	TL		E (65.5)	E (70.6)
	R		A (0.2)	A (0.1)
	Overall		D (41.4)	E (76.3)
Washington Avenue/Sunoco West Driveway		U		
Washington Avenue EB	L		A (9.0)	B (11.9)
Sunoco East Driveway SB	LR		B (12.4)	C (16.9)
Washington Avenue/Sunoco East Driveway		U		
Washington Avenue EB	L		A (9.0)	B (11.9)
Sunoco East Driveway SB	LR		C (17.3)	C (15.8)
Washington Avenue/Collins Circle		S		
Washington Avenue EB	L		B (14.4)	B (15.3)
	T,T		C (23.8)	C (21.8)
	R		A (0.1)	A (0.1)
Washington Avenue WB	L		B (15.5)	B (14.9)
	T,TR		C (21.2)	C (25.2)
Collins Circle NB	L		D (50.3)	D (49.4)
	LTR		D (42.2)	D (39.6)
Dunkin Donuts Driveway SB	L		D (51.6)	D (44.9)
	LTR		C (31.8)	C (25.3)
	Overall		C (23.7)	C (24.7)
Washington Avenue/Crest Hill Suites Driveway		U		
Crest Hill Suites Driveway SB	LR		C (20.4)	C (16.8)
Washington Avenue/Stay America Driveway		U		
Washington Avenue EB	L		A (9.2)	B (12.2)
Stay America Driveway SB	LR		B (12.8)	C (18.2)
Washington Avenue/Hilton Driveway		U		
Washington Avenue EB	L		A (9.1)	B (11.7)
	T		A (0.1)	A (0.1)
Hilton Driveway SB	LR		C (23.8)	E (40.1)

Table 2.2 – Level of Service Summary (Continued)

Intersection Approach		Control	2017 Existing	
			AM Peak Hour	PM Peak Hour
Washington Avenue/UAlbany East Entrance		S		
Washington Avenue EB	L		A (6.4)	A (6.6)
	T,T		B (17.2)	B (12.0)
	R		A (0.7)	A (0.3)
Washington Avenue WB	L		B (13.3)	A (3.9)
	T,TR		A (2.8)	A (6.6)
UAlbany East Entrance NB	LTR		B (15.7)	B (19.3)
Plaza Driveway SB	LTR		B (19.9)	B (14.5)
	Overall		B (12.2)	A (9.6)
Washington Avenue/1365 Washington Avenue Driveway		S		
Washington Avenue EB	L		B (16.6)	A (4.1)
	T,T		A (3.2)	A (3.9)
	R		A (0.1)	A (0.1)
Washington Avenue WB	T,TR		A (9.0)	B (13.0)
1365 Washington Ave Driveway SB	L		E (61.5)	E (68.7)
	R		B (10.2)	C (24.3)
	Overall		A (8.1)	B (13.9)
Washington Avenue/Harriman WB Ramp		U		
Harriman WB Ramp	R		C (18.9)	D (27.2)
Washington Avenue/Harriman EB Ramp		U		
Harriman EB Ramp	R		B (11.4)	C (18.5)
Washington Avenue/Brevator Street		S		
Washington Avenue EB	LT,TR		B (12.0)	B (12.6)
Washington Avenue WB	LT,TR		A (6.0)	A (6.9)
Brevator Street NB	LT		C (33.3)	C (32.2)
	R		B (17.2)	B (16.3)
Brevator Street SB	LTR		C (25.3)	C (23.2)
	Overall		B (11.9)	B (11.7)

S, U = Traffic Signal or Unsignalized controlled intersection
EB, WB, NB, SB = Eastbound, Westbound, Northbound, and Southbound intersection approaches
L, T, R = Left-turn, Through, and/or Right-turn movements
X (Y.Y) = Level of service (Average delay in seconds per vehicle)
NA = Not Available

Table 2.2 shows that overall traffic operations are good, with motorists experiencing average vehicle delays during peak times, except at the Washington Avenue/I-90 Interchange 2 intersection which operates at overall LOS D during the AM peak period and LOS E during the PM peak period. Certain movements at Interchange 2 experience longer delays at LOS E/F. The remaining signals operate at overall LOS C or better during both peak hours. The analysis also shows that average peak hour delays from the unsignalized driveways vary by location and range from LOS B to LOS E.

Operating speeds and travel times were also examined based on five peak travel time runs in each direction during both the AM and PM peak hours and showed that it takes around three and a half to four minutes to travel the corridor from end to end during peak periods. There is some delay at traffic signals, but overall through traffic moves well along Washington Avenue with little delay. Figure 2.5 was developed based on the above travel time runs and shows the average operating speeds throughout the corridor during the peak periods including stopped delay.

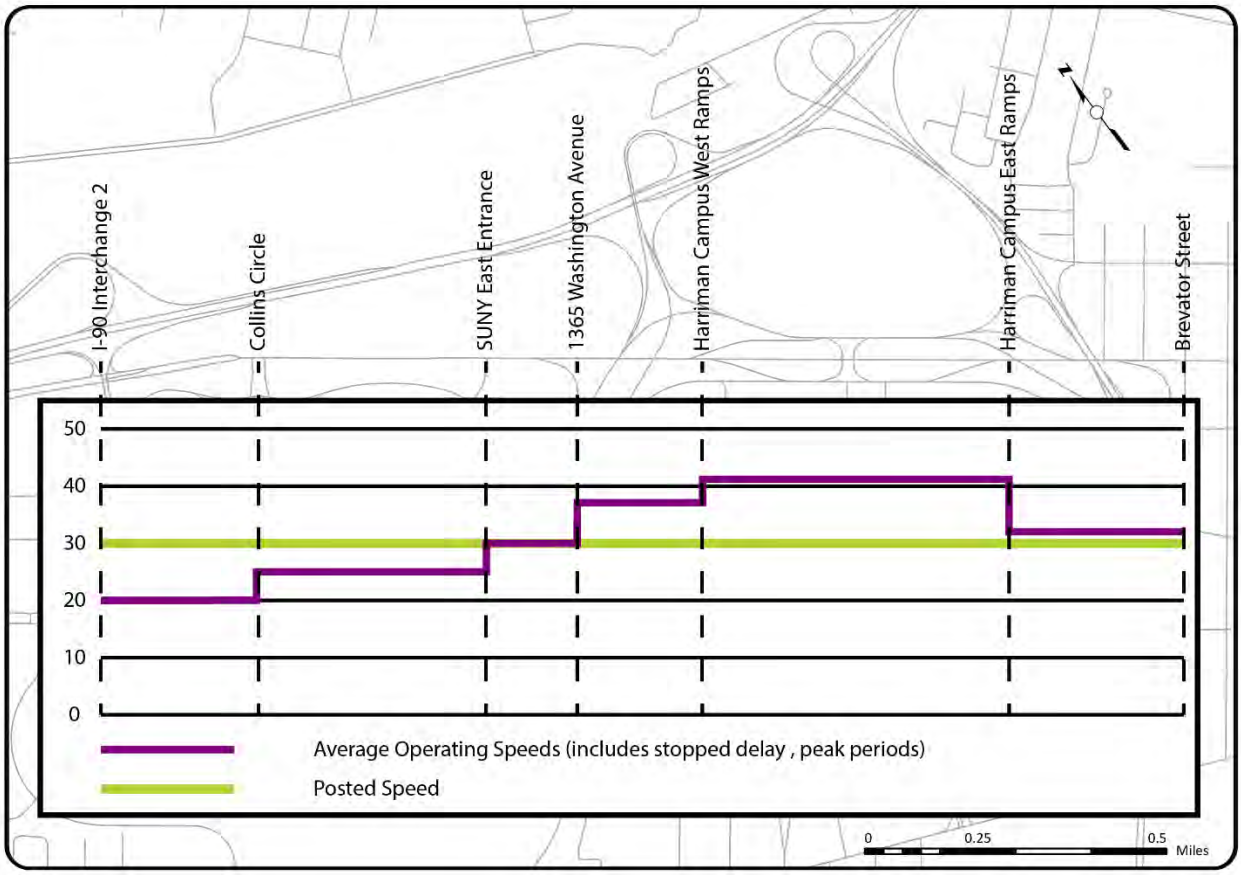


FIGURE 2.5 – SPEED PROFILE

Pedestrian Traffic Characteristics (Volumes, Operations)

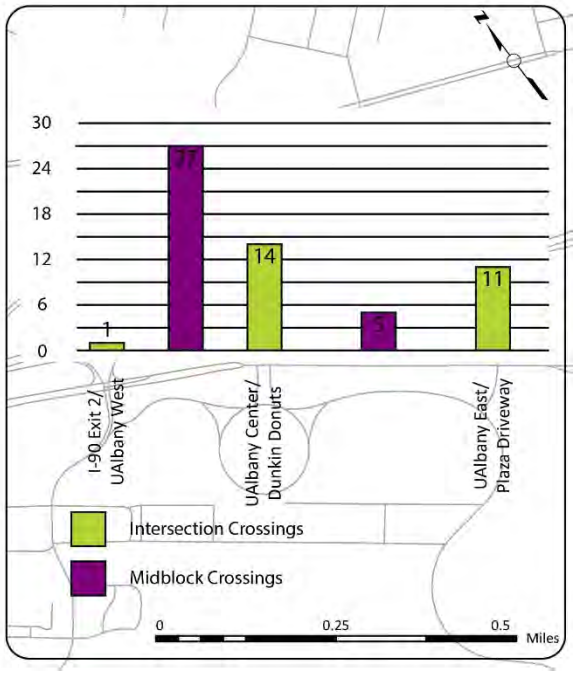
Pedestrian counts were conducted during December 2017 during the typical weekday peak commuter periods from 7:30 to 8:30 a.m. and 4:30 to 5:30 p.m. While this timeframe may not represent the peak pedestrian demand, it provides valuable information on the interaction between pedestrians and automobiles during the overall peak vehicle travel period. Table 2.3 shows the number of pedestrians crossing Washington Avenue at each intersection and mid-block between the traffic signals, during the peak hour traffic counts. It is worth noting that a short-term mid-day count by UAlbany revealed over 83 pedestrians crossing mid-block between Interchange 2 and Collins Circle in a one-hour period.

Table 2.3 – Washington Avenue Pedestrian Crossing Summary

Intersection or *Midblock Location*	AM Peak Hour	PM Peak Hour	Total
Washington Ave/I-90 Interchange 2	0	1	**1**
Washington Ave between I-90 Interchange 2 and Collins Circle	11	16	**27**
Washington Avenue/Collins Circle	11	3	**14**
Washington Ave between Collins Circle and UAlbany East Entrance	5	0	**5**
Washington Avenue/UAlbany East Entrance	7	4	**11**
Washington Ave between UAlbany East Entrance and 1365 Washington Avenue	0	0	**0**
Washington Avenue/1365 Washington Avenue[1]	0	0	**0**
Washington Avenue/Brevator Street	10	6	**16**
Total	**44**	**30**	**74**

[1] No marked crosswalk provided across Washington Avenue

Midblock Location



The data shows a total of 44 pedestrian crossings during the AM peak, and 30 crossings during the PM peak hour. The busiest crossing location is the midblock segment between I-90 Interchange 2 and Collins Circle location with 11 crossings during the AM peak hour and 16 during the PM peak hour, followed by the Washington Avenue/Brevator Street intersection with 10 crossings during the AM peak hour and 6 crossings during the PM peak hour. Of the observed Washington Avenue crossings, approximately 45% occurred at locations without a marked crosswalk. This could be a reflection of the distance between signalized marked crossings within the study area, which is approximately 1/3 mile in the western part of the corridor.

Figure 2.6 – Washington Avenue Western Pedestrian Crossings (AM and PM Peak Hours)

Pedestrian Crossings:

"Based on FHWA research and AASHTO guidance,

1.6 km (*1 mile*) is recognized as the maximum walking distance that most healthy/able- bodied people would be willing to undertake. However, the research also states that the majority of pedestrian trips are 0.4 km (*1/4 mile*) in length. Subject to good engineering judgment, 0.4 km is an appropriate average distance for accommodating "most" pedestrians of all abilities, outside of high-pedestrian traffic zones. In high-pedestrian traffic zones, or central business/walking districts, pedestrian crossings spaced between 100 m and 150 m (*330 ft to 500 ft*) apart would be reasonable and may correspond with the typical block lengths in high- pedestrian traffic zones. Suggested spacing of crossings are as follows:

- Central business/walking districts – from 100 m to 150 m (*330 ft to 500 ft*) apart and based on density.
- Urban or suburban residential/retail areas – based on density/ land use and not to exceed 0.4 km. (*1/4 mile*)
- Low-density rural centers/seasonal use areas – as needed. It is easier to find crossable gaps.

The maximum distance that people with disabilities should reasonably be expected to divert from their intended path would be between 50 m and 75 m. (*165 ft and 250 ft*)"

The pedestrian level of service in the corridor was estimated based on a multimodal LOS model developed by the Transportation Research Board (TRB) as a component of the Transit Capacity and Quality of Service Manual (TCQSM). The model reflects pedestrian perceived safety and comfort with respect to motor vehicle traffic while traveling along a roadway and is useful for evaluating the quality of the pedestrian environment along the street. The model considers inputs such as sidewalk and buffer width, traffic speed and volume, and the presence of on street parking or other vertical barriers between pedestrians and the travel way. The model does not account for pedestrian delay at intersections or midblock crossings. Delays for pedestrians at intersections are discussed on the next page.

Figure 2.7 depicts the resulting segment pedestrian LOS ratings for Washington Avenue, and shows that pedestrians generally experience LOS C/D while walking along the corridor, and that the presence of wide shoulders where there are no sidewalks provides some comfort for pedestrians.

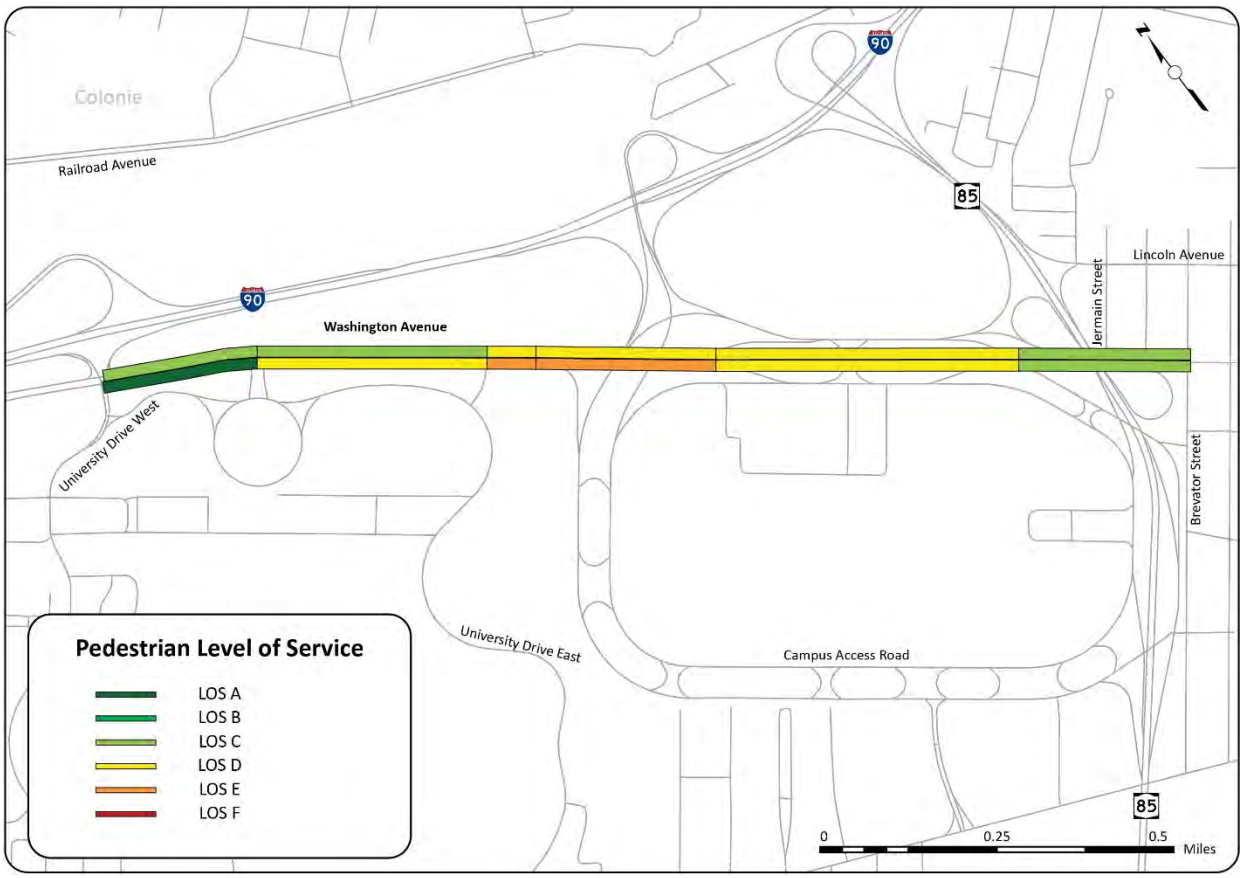


FIGURE 2.7 – PEDESTRIAN LEVEL OF SERVICE

Table 2.4 shows average pedestrian delay at the signalized intersections within the corridor. The delay was calculated based on the average cycle length and pedestrian walk time. The data shows that the Washington Avenue/I-90 Interchange 2 intersection has the greatest average pedestrian delay of 80 seconds while the Brevator Street intersection has the lowest average pedestrian delay of 34 seconds. It should be noted that the pedestrian delay in all instances is greater than the vehicle delay depicted in Table 2.2. In some cases pedestrian delay is greater than four times that which motorists experience at the same intersection.

TABLE 2.4 – AVERAGE PEDESTRIAN DELAY AT SIGNALIZED INTERSECTIONS

Intersection	Average Delay (seconds)	
	AM Peak Hour	PM Peak Hour
Washington Avenue/I-90 Interchange 2	80	80
Washington Avenue/Collins Circle	61.5	56.5
Washington Avenue/UAlbany East Entrance	56.5	56.5
Washington Avenue/1365 Washington Avenue Driveway	56.5	56.5
Washington Avenue/Brevator Street	34	34

BICYCLE TRAFFIC CHARACTERISTICS (VOLUMES, OPERATIONS)

Table 2.5 shows the number of bicyclists observed at each intersection during the peak hour counts. The data shows a total of seven bicyclists during the AM peak hour and one bicyclist during the PM peak hour, indicating that the corridor is not currently heavily used by bicyclists.

TABLE 2.5 – BICYCLE ACTIVITY SUMMARY

Intersection	AM Peak Hour		PM Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
Washington Ave/I-90 Interchange 2	0	0	0	0
Washington Ave between I-90 Interchange 2 and Collins Circle	2	2	0	1
Washington Avenue/Collins Circle	0	0	0	0
Washington Ave between Collins Circle and UAlbany East Entrance	0	0	0	0
Washington Avenue/UAlbany East Entrance	0	0	0	0
Washington Ave between UAlbany East Entrance and 1365 Washington Avenue	0	0	0	0
Washington Avenue/1365 Washington Avenue	1	0	0	0
Washington Avenue/Brevator Street	0	2	0	0
Total	**3**	**4**	**0**	**1**

The bicycle level of service (BLOS) in the corridor was estimated based on a model developed by Landis1, and consistent with previous CDTC linkage study methodologies. The model reflects bicyclists' perceived safety and comfort with respect to motor vehicle traffic while traveling along a roadway and is useful for evaluating bicycling conditions in a shared roadway environment.

Various roadway characteristics such as travel lane and shoulder widths, motor vehicle speeds and volumes, including the amount of heavy vehicle traffic, and the condition of the pavement are used in the tested traveler-perception model to calculate a Bicycle LOS score. The resulting scores generally range from 0.5 to 6.5 and are broken down into ranges corresponding to LOS A to F, with F representing a roadway with the highest level of discomfort for cyclists.

Figure 2.8 summarizes the resulting BLOS ratings for Washington Avenue, and shows that bicyclists generally experience BLOS A/D while riding in the corridor. Although the street may be perceived as not friendly to bicyclists, the analysis shows good to average bike levels of service afforded by the typically wide shoulders. It is noted that the model does not consider conflict points from ramps, intersecting driveways and roadways, or bus stops. Such locations may be considered difficult for bicyclists to negotiate and increase discomfort within the corridor.

[1] Landis, Bruce W. et. Al. "Real-Time Human Perceptions: Toward a Bicycle Level of Service" Transportation Research Board 1578, Transportation Research Board (TRB), Washington DC, 1997

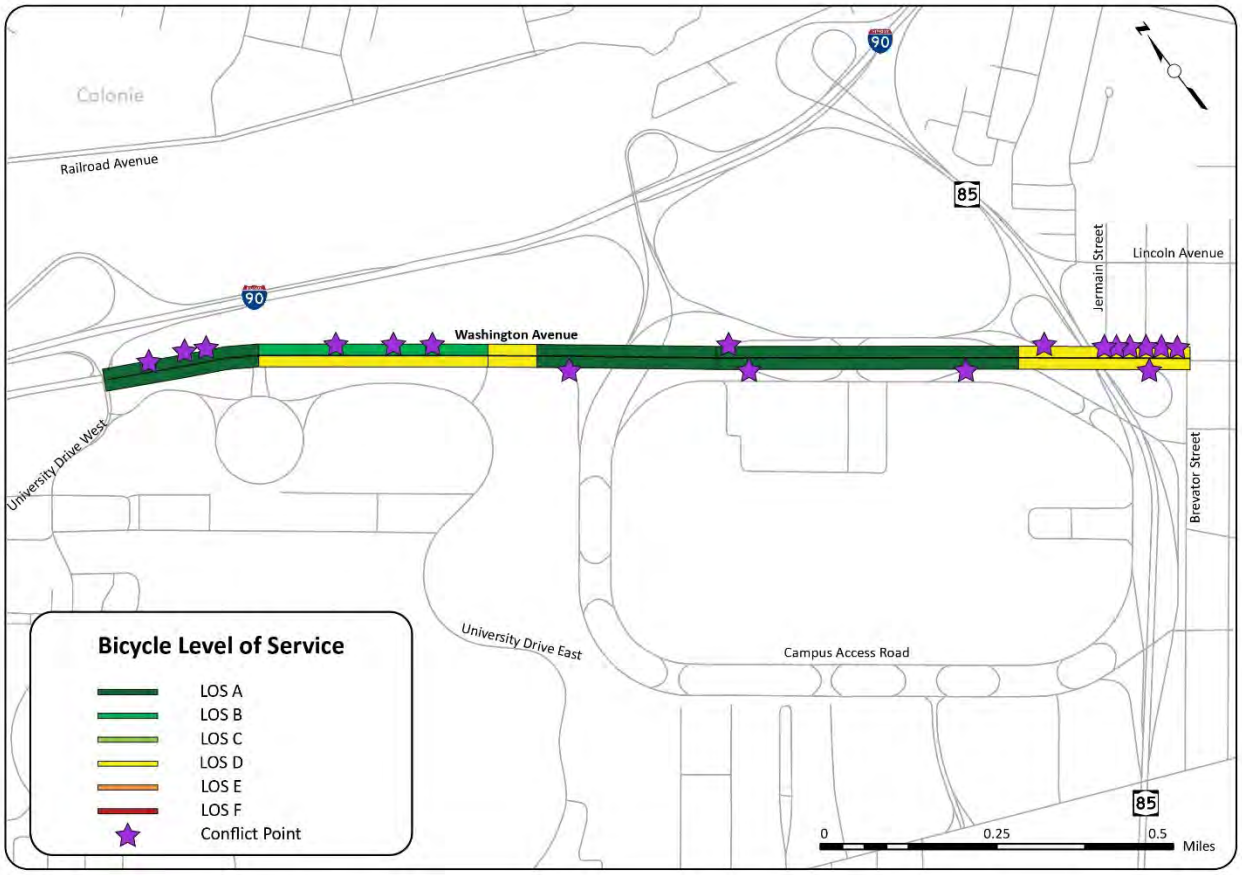


FIGURE 2.8 – BICYCLE LEVEL OF SERVICE

IMAGE 2.3 – BICYCLIST CROSSING YIELD-CONTROLLED MERGE

PUBLIC TRANSIT CHARACTERISTICS (ROUTES, RIDERSHIP)

The Capital District Transportation Authority (CDTA) provides bus service along this section of Washington Avenue. Several routes operate through the corridor including the 12, 114, and 712. It is noted that the University at Albany acts as a node in CDTA's transit network and provides transfer opportunities both at the Collins Circle and UAlbany Campus Center stations.

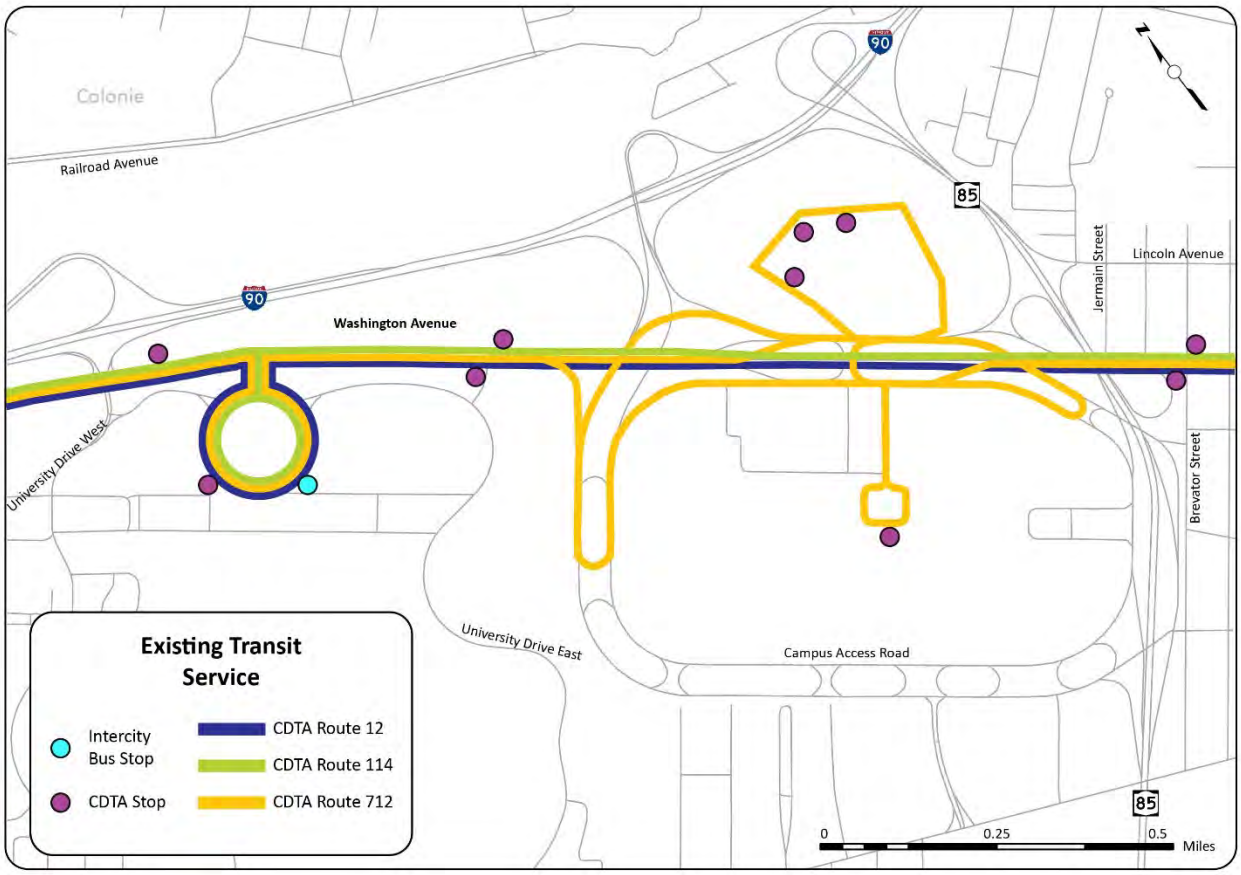


FIGURE 2.9 – CDTA ROUTES AND STOPS

The 12 is classified as a trunk route and operates primarily along Washington Avenue in a radial fashion between downtown Albany and Crossgates Mall. Trunk routes operate seven days a week from early morning to late night with a minimum frequency of every half hour. Beginning at the downtown Albany Bus Terminal, buses travel north on Broadway before turning left on State Street and continue west on Washington Avenue through the study area. The route deviates into the University at Albany campus to serve Collins Circle before continuing west along Washington Avenue Extension and looping through The Crossgates Commons to terminate at the Crossgates Mall. Buses are scheduled to arrive every 15 minutes during the AM peak hour, and every eight minutes during the PM peak hour.

The 114 is classified as a neighborhood route and operates primarily along Madison Avenue and Washington Avenue, providing service between the Rensselaer Amtrak Station and the Crossgates Mall. In general, neighborhood routes operate six to seven days a week from 6:00 a.m. to 9:00 p.m. with a minimum frequency of thirty minutes. Beginning at the Amtrak Station, the 114 crosses the Dunn Memorial Bridge before serving the downtown Albany Bus Terminal. Buses then continue west along Madison Avenue before traversing Allen Street to continue west along Washington Avenue. After

deviating to serve Collins Circle, the 114 continues south along Fuller Road before serving Stuyvesant Plaza and terminating at Crossgates Mall. Buses are scheduled to arrive every half hour on weekdays and every hour on Saturdays.

The 712 is classified as a commuter route and operates primarily along Central Avenue and Washington Avenue between Quail Street and Crossgates Mall. As a commuter route, the 712 only operates during the AM, midday and PM peak periods. Beginning at Quail Street, buses travel west along Central Avenue before turning left onto Colvin Street. Buses then continue west along Washington Avenue with deviations to serve Patroon Creek as well as the Harriman State Office and University at Albany Campuses. The 712 then continues south on Fuller Road serving Stuyvesant Plaza and terminating at the Crossgates Mall.

Within the 1.5 mile long study area, there are 11 bus stops including stations at Collins Circle, UAlbany Campus Center, Harriman State Office Campus, and Patroon Creek. Figure 2.9 illustrates the existing routing and bus stop locations, and shows the inefficient routing as a result of inefficiencies in the transportation network between Harriman and Patroon Creek.

Based on data provided by CDTA, Table 2.6 shows the average daily ridership for each bus stop along the corridor. The table shows that the bus stop located at Collins Circle has the highest ridership with the majority of boardings occurring in the eastbound direction and alightings occurring in the westbound direction indicating that passengers are traveling between the University at Albany and downtown.

TABLE 2.6 – CDTA AVERAGE DAILY RIDERSHIP

Stop Location	Route 12		Route 114		Route 712		Total Stop Activity
	On	Off	On	Off	On	Off	
Eastbound Stops							
SUNY COLLINS CIRCLE (07216)	571	299	158	32	12	10	1083
WASHINGTON AVE & SUNY EXIT RD (10134)	62	7	13	1	3	1	86
STATE CAMPUS BUILDING 8 (10629)	N/A				39	46	85
700 PATROON CREEK BLVD (SEFCU) (10357)					1	6	7
500 PATROON CREEK BLVD (CDPHP) (10358)					10	8	198
PATROON CREEK @ 400 PATROON CREEK (10359)					5	7	12
Washington Ave & Brevator St (03348)	34	24	9	5	3	4	79
Westbound Stops							
WASHINGTON AVE & BREVATOR ST (00976)	20	33	7	11	2	0	74
700 PATROON CREEK BLVD (SEFCU) (10357)	N/A				1	6	7
500 PATROON CREEK BLVD (CDPHP) (10358)					10	8	18
PATROON CREEK @ 400 PATROON CREEK (10359)					5	7	12
STATE CAMPUS BUILDING 8 (10629)					39	46	85
1383 Washington Ave (Fairfield Inn) (03262)	9	60	1	11	0	3	84
SUNY COLLINS CIRCLE (07216)	342	523	45	167	11	8	1096

It is noted that Collins Circle serves as a hub for regional transit services including Adirondack Trailways and Megabus. The University at Albany provides a designated loading zone on the east side of Collins Circle for such services. Likewise, many taxi and ridesharing services including Uber and Lyft use Collins Circle as a popular pick-up and drop-off location.

CRASH DATA

Crash data was provided by CDTC for the most recent four years of available data (January 1, 2013 to December 31, 2016), for the 1.54 mile segment of Washington Avenue from I-90 Interchange 2 to Brevator Street. The source data was a spreadsheet summarizing crash data from the NYSDOT Accident Location Information System (ALIS) supplemented with crash data from the City of Albany after CDTC cross-checked the ALIS data with City records. In total, 249 crashes occurred over the four year period on Washington Avenue from Interchange 2 to Brevator Street. A safety screening was performed on the crash data including calculation of segment crash rates (including intersection crashes) and intersection only crash rates. Tables 2.7 through 2.9 summarize the crash analysis.

TABLE 2.7 – SUMMARY OF CRASHES (JANUARY 1, 2013 TO DECEMBER 31, 2016)

Type	Crashes
Vehicle	246
Pedestrian	3
Bicycle	0
Total	249

TABLE 2.8 – SUMMARY OF CRASH RATES (JANUARY 1, 2013 TO DECEMBER 31, 2016)

Washington Avenue Crash Location		Crash Rate	
	Number of Crashes	Calculated	NYSDOT Average*
Roadway Segment – Including Intersections (Accidents/Million Vehicle Miles)**			
Interchange 2 to Harriman West ramps	127	5.2	3.95
Between Harriman Ramps	34	2.8	3.11
Harriman East Ramps to Brevator Street	88	16.9	5.5
Washington Ave Intersection Crashes Only (Accidents/Million Entering Vehicles)			
Interchange 2	41	0.62	0.25
Collins Circle	20	0.48	0.25
UAlbany East Entrance	8	0.18	0.25
1365 Washington Ave	8	0.17	0.14
Harriman WB On-ramp	15	0.41	0.13
Harriman EB On-ramp	4	0.13	0.13
Brevator Street	45	1.12	0.32

* It is noted that the character of Washington Avenue (a City street) may be different than state highways, therefore the comparison to the statewide average crash rates of state highways may not be directly applicable.
**Note: The segment crash rate includes intersection crashes and was compared to the NYS mainline and juncture accidents average crash rates

From a roadway segment standpoint (including intersections), Table 2.8 shows that the majority of the corridor has a crash rate above the statewide average. From an intersection only standpoint, five of the seven intersections also experienced crash rates above the statewide average for the most recent four year period. It is noted that the character of Washington Avenue (a City Street) may be different than state highways, therefore the comparison to the statewide average crash rates of state highways may not be directly applicable. Table 2.9 summarizes all of the types of crashes in the corridor.

TABLE 2.9 – SUMMARY OF AVAILABLE CRASH DATA (JANUARY 1, 2013 TO DECEMBER 31, 2016)

Intersection or *Segment*	Collision Severity					Collision Type								Total
	Non-Reportable	Property Damage	Injury	Fatality	Blank	Rear-End	Right Angle	Left Turn	Overtaking/Sideswip	Right Turn	Head On	Other	Unknown	
Washington Ave/I-90 Interchange 2	4	4	6	0	27	25	5	3	5	0	0	2	1	**41**
Washington Ave between I-90 Interchange 2 and Collins Circle	2	4	0	0	8	5	3	3	1	0	0	2	0	**14**
Washington Ave/Collins Circle	1	9	2	0	8	10	5	1	1	0	1	2	0	**20**
Washington Ave between Collins Circle and UAlbany East Entrance	1	5	2	0	1	7	1	0	1	0	0	0	0	**9**
Washington Ave/UAlbany East Entrance	2	3	1	0	2	5	1	0	0	0	0	1	1	**8**
Washington Ave between UAlbany East Entrance and 1365 Washington Ave	3	1	1	0	0	2	1	0	2	0	0	0	0	**5**
Washington Ave/1365 Washington Ave	0	2	0	0	6	6	1	1	0	0	0	0	0	**8**
Washington Ave between 1365 Washington Ave and Harriman WB On Ramp	6	10	3	0	3	18	0	1	2	0	0	1	0	**22**
Washington Ave/Harriman WB On Ramp	3	2	2	0	8	13	0	0	1	0	0	1	0	**15**
Washington Ave between Harriman WB On Ramp and Harriman EB On Ramp	9	6	0	0	0	10	0	0	4	0	0	1	0	**15**
Washington Ave/Harriman EB On Ramp	1	0	2	0	1	3	0	0	1	0	0	0	0	**4**
Washington Ave between Harriman EB On Ramp and Brevator Street	15	22	5	0	1	24	3	3	5	0	0	7	1	**43**
Washington Ave/Brevator Street	10	20	11	2	2	12	13	8	6	1	1	4	0	**45**
Washington Avenue Total	**57**	**88**	**35**	**2**	**67**	**140**	**33**	**20**	**29**	**1**	**2**	**21**	**3**	**249**

Review of this crash data shows a number of characteristics summarized below:

- There were two crashes involving fatalities at Brevator Street, one occurred on 1/21/2013 and the other on 5/26/2016. Both of the fatalities occurred around 4:00 p.m. The 5/26/2016 crash was coded as a "left turn (against other car)", while the 1/21/2013 crash was coded as "other". Both crashes occurred during daylight on a dry road surface. Weather at the time of the 5/26/2016 crash was coded as "cloudy" while the weather for the 1/21/2013 crash was coded as "clear".

- The most prevalent type of crash at Brevator Street was rear-end, followed by right angle, and left turn. The segment immediately west of Brevator Street also experienced a high proportion of rear-end crashes contributing to the higher cash rate in this area.

- The most common type of crash at the Washington Avenue Westbound On-Ramp, was rear-end representing 13 out of the 15 accidents. The acute ramp angle and lack of an acceleration lane likely contributes to the higher than average crash rate at the ramp merge area.

- Rear-end crashes were also most common at the Interchange 2 intersection (25 of 41) and at the Collins Circle intersection (10 of 20).

- Overall, the data shows that there were a majority of rear-end crashes 140/249 (56%). This is generally consistent with crash statistics from NYSDOT at signalized intersections and ramp merges.[2] Research conducted by the TRB indicates that an increase in 85th percentile speed is associated with an increase in the frequency of rear-end collisions.[3] This TRB study suggests that speed management upstream of the intersection approach can reduce rear-end collisions at urban signalized intersections. The City of Albany reduced the posted speed limit on this section of Washington Avenue from 45 mph to 30 mph during August 2016. The City also implemented an exclusive pedestrian signal phase at the Washington Ave/Collins Circle intersection during August 2016. Additional speed management measures will be considered later in this study during the development of alternatives.

- There were three pedestrian related and no bicycle related crashes. The three pedestrian crashes occurred in the eastern part of the corridor, with one located at the Washington Avenue/Victor Street intersection and the remaining two located at the Washington Avenue/Brevator Street intersection. Two of the three pedestrian crashes involved injury.

- It should be noted that the City completed the Traffic Signals and ITS project on Washington Avenue (PIN 1756.63) which included new signal heads, detection, signal coordination, pedestrian signals, and new signal timing at Collins Circle, UAlbany East Entrance and the Brevator Street intersection. These improvements were completed during the summer of 2016. Other recent changes in the corridor include lane striping and signal modifications at Interchange 2 for the 1475 Washington Avenue (Block 75) project**,** and an exclusive pedestrian signal phase at Collins Circle and the UAlbany East Entrance. There is limited crash data available after the City's signals projects, speed limit reduction and recent striping changes to draw conclusions about crash trends after completion of these projects. A longer period of post construction crash data will be needed to determine the effect of these projects on crashes.

Figure 2.10 shows the location of crashes throughout the corridor.

[2] Average intersection accident rates for state highways by intersection type. Albany, NY: New York State Department of Transportation, 2015.

[3] Investigating the Speed and Rear-End Collision Relationship at Urban Signalized Intersections, Transportation Research Record: Journal of the Transportation Research Board. Washington D.C., 2016.

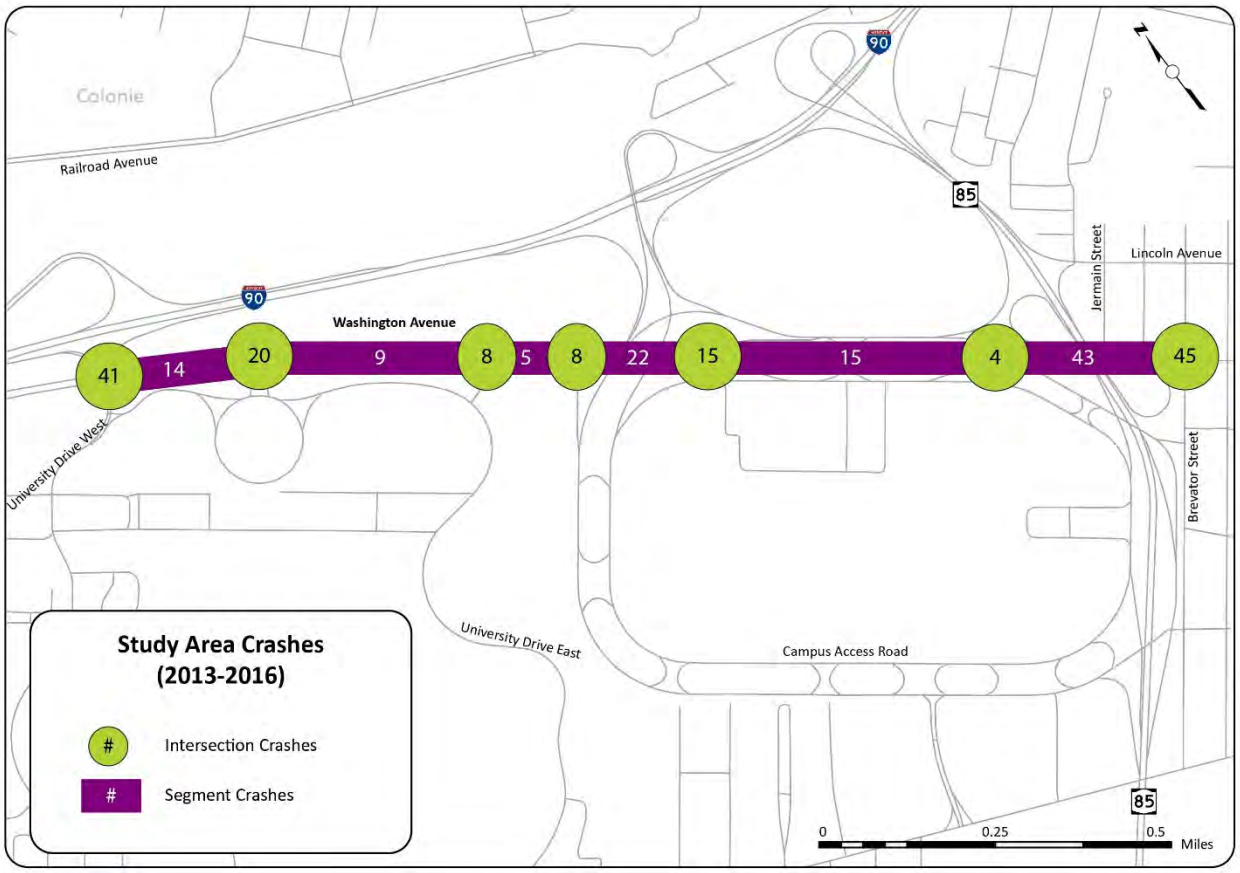
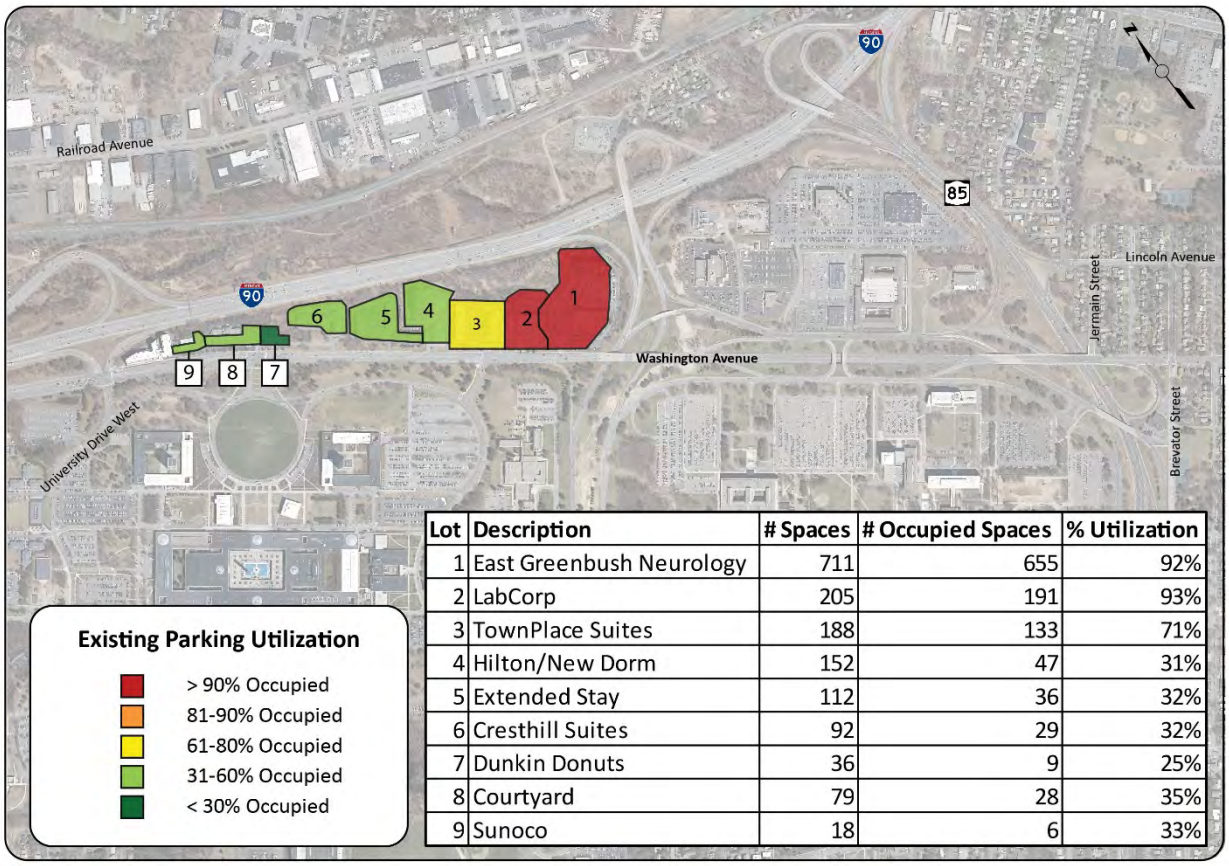


Figure 2.10 – Study Area Crashes

PARKING

There is no on-street parking along Washington Avenue within the study area. It is noted that in the past, cars and buses have been observed parking on the shoulder on the south side of Washington Avenue along the University at Albany frontage. Off-street parking lots on the south side of Washington Avenue provide permit parking for the University at Albany and Harriman State Office Campuses. Parking in these lots is by permit only with the exception of specified visitor lots.

There are nine off-street parking lots located on the north side of Washington Avenue between I-90 Interchange 2 and the Harriman Westbound On-Ramp. Parking utilization counts were conducted for these lots on Wednesday January 24, 2018 from 11:00 a.m. to 12:00 p.m. and 1:00 p.m. to 2:00 p.m. in order to determine the typical weekday peak hour occupancy. These time periods were identified based on ITE parking generation data for university, medical/dental office, and government office land uses which are the primary land uses within the study area.



Lot	Description	# Spaces	# Occupied Spaces	% Utilization
1	East Greenbush Neurology	711	655	92%
2	LabCorp	205	191	93%
3	TownPlace Suites	188	133	71%
4	Hilton/New Dorm	152	47	31%
5	Extended Stay	112	36	32%
6	Cresthill Suites	92	29	32%
7	Dunkin Donuts	36	9	25%
8	Courtyard	79	28	35%
9	Sunoco	18	6	33%

FIGURE 2.11 – EXISTING PARKING UTILIZATION

The results of the parking utilization counts are depicted in Figure 2.11. The data shows that although the parking lots in the west end of the corridor have the fewest parking spaces, they are also the least utilized with approximately one in three spaces filled. In contrast, the eastern lots have higher utilization rates ranging from approximately 70% to 90% at peak times.

LIGHTING

Lighting is present along both sides of Washington Avenue with overhead cobra style lighting provided on free standing light poles approximately every 250 feet. There is no pedestrian scale lighting present along Washington Avenue within the study area. It is noted that the University at Albany provides pedestrian scale luminaires mounted between 14 and 16 feet above grade for pedestrian pathways within the UAlbany Campus. Additionally, other lighting fixtures are present on the north side of Washington Avenue, including building mounted wall packs used to light adjacent sidewalks and parking areas. In the long term, any complete streets design or improvement project should include development of a lighting model to confirm the lighting recommendations and the need for any supplemental lighting in the corridor. It is noted that the City is in the process of converting to LED streetlights, which will provide better light quality throughout the corridor.

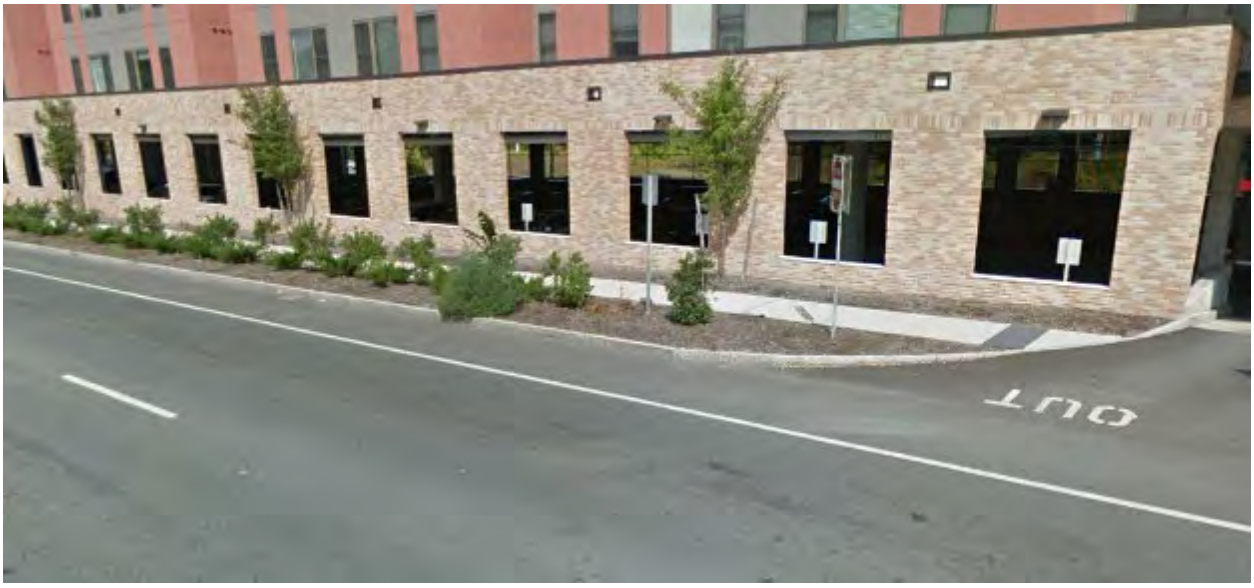


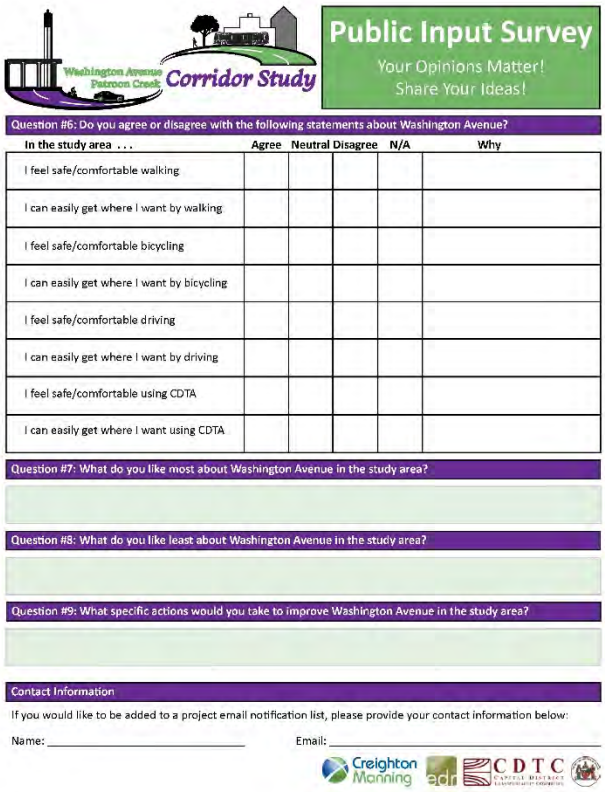
IMAGE 2.4 – BUILDING MOUNTED WALL PACKS LIGHTING SIDEWALK

PUBLIC INPUT ON EXISTING CONDITIONS

To this point, the description of the corridor has been largely data based. While data is a key element in determining existing conditions, it is equally important to elicit input from the public regarding their perceptions of the corridor. Public engagement was conducted in two phases. The first phase solicited feedback on the issues that the public experiences and concerns the public may have with the character of Washington Avenue. The second phase of public engagement presented several roadway options to address these issues, and asked the public for feedback on these options. The first phase of public involvement is summarized below, while the second phase is discussed in Chapter 3.

A public information meeting was held on March 21, 2018, with over 40 residents, stakeholders, and study advisory committee members present. The purpose of the meeting was to inform the public about this transportation planning study, let them know the different methods by which they can provide comments, provide the public with an initial understanding of the existing conditions and needs, and obtain input from the public on Complete Streets issues and ideas (problems and solutions), that should be considered as the study progresses. Meeting attendees had several opportunities to provide input, ask questions, and offer comments. This included a questionnaire with multiple-choice and open ended response questions; an open forum question/comment session; written comment forms and a comment

drop-box; and a station oriented mapping session where facilitators interacted with the public to solicit specific issues, concerns, and ideas for the project corridor.



Washington Avenue Patroon Creek Corridor Study

Public Input Survey

Your Opinions Matter! Share Your Ideas!

Question #6: Do you agree or disagree with the following statements about Washington Avenue?

In the study area . . .	Agree	Neutral	Disagree	N/A	Why
I feel safe/comfortable walking					
I can easily get where I want by walking					
I feel safe/comfortable bicycling					
I can easily get where I want by bicycling					
I feel safe/comfortable driving					
I can easily get where I want by driving					
I feel safe/comfortable using CDTA					
I can easily get where I want using CDTA					

Question #7: What do you like most about Washington Avenue in the study area?

Question #8: What do you like least about Washington Avenue in the study area?

Question #9: What specific actions would you take to improve Washington Avenue in the study area?

Contact Information

If you would like to be added to a project email notification list, please provide your contact information below:

Name: _____ Email: _____

Creighton Manning edr CDTC

The questionnaire responses and completed comment forms indicated that users of the corridor do not feel comfortable and cannot easily get where they want by walking and bicycling in the study area. In contrast, most respondents agreed that they felt comfortable and could easily get where they want by driving in the corridor. These comments, combined with the mapping activity made it apparent that there is a desire for complete streets elements including improved pedestrian and bicycle connectivity and traffic calming in the corridor. The full public meeting summary is included in Appendix A.

In addition to the public information meeting, individual stakeholder meetings were held with OGS, UAlbany, and business and property owners along the Washington Avenue Corridor. Similar to the public meeting, these stakeholder sessions presented an overview of existing conditions and provided stakeholders an opportunity to comment and offer input, with a specific emphasis on how the design and operation of Washington Avenue directly impacts their operations. Complete meeting summaries are included in the Public Involvement Appendix.

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Chapter 3 – Forecasts and Alternatives

FORECASTS

CDTC maintains a travel demand model for the four county region called the STEP Model (Systematic Transportation Planning and Evaluation Model). The STEP Model is based on population, housing and employment data and estimates traffic volumes based on demand. These estimated volumes are compared against actual traffic counts to validate the model. Each trip in the model simulation chooses a path based on the best travel time available, and as congestion increases, trips divert to alternate routes if the alternate route travel time is less. The CDTC STEP Model utilizes Visum software developed by the PTV Group. The model includes 1,000 traffic analysis zones that cover the entire four counties of Albany, Rensselaer, Saratoga and Schenectady. The network includes all federal aid highways in the four counties, as well as selected streets not on the federal aid system. The network consists of over 11,100 directional links and over 4,300 nodes.

Future traffic volume forecasts were prepared for the year 2030 to examine the operational characteristics of the corridor for a 10-year horizon. CDTC's STEP model was used to develop the forecasts, accounting for regional growth and specific nearby pending projects. Table 3.1 shows pending and speculative projects provided by the City, as illustrated on Figure 3.1.

TABLE 3.1 – PROPOSED DEVELOPMENTS AS OF MAY 2018

ID	Development	Size	AM Peak Hour Trip Generation	PM Peak Hour Trip Generation
1	Sandidge Way	252 Units Multifamily Housing	85	108
2	Auden Student Housing	318 Bed Student Housing	30	44
3	Harriman Campus Redevelopment	2,600 Additional Employees	954	977
4	Emerging Technology and Entrepreneurship Complex (ETEC)	83,122 SF Office /Research & Development	140	139
5	GSX Student Housing	327 Bed Student Housing	37	92
6	University at Albany Growth	3,000 Additional Students	510	480
7	SUNY Polytechnic Institute Growth	500 Additional Employees	107	114
8	1421 Washington Ave	5,000 SF Restaurant	50	49
9	Harriman Mixed-use Development	28,000 SF Retail 18,000 SF Restaurant 240,000 SF Medical Office 240,000 SF General Office	950	1045

FIGURE 3.1 – PROPOSED DEVELOPMENTS AS OF 2018

The trips corresponding to proposed developments were incorporated into the STEP Model and traffic assignments were run for 2030. The STEP Model results indicate that without any improvements to Washington Avenue, leaving the roadway as a four to five lane facility, traffic in the corridor is anticipated to increase by approximately 10 percent by 2030.

The resulting traffic forecast design hour volumes are shown Figure 3.2.

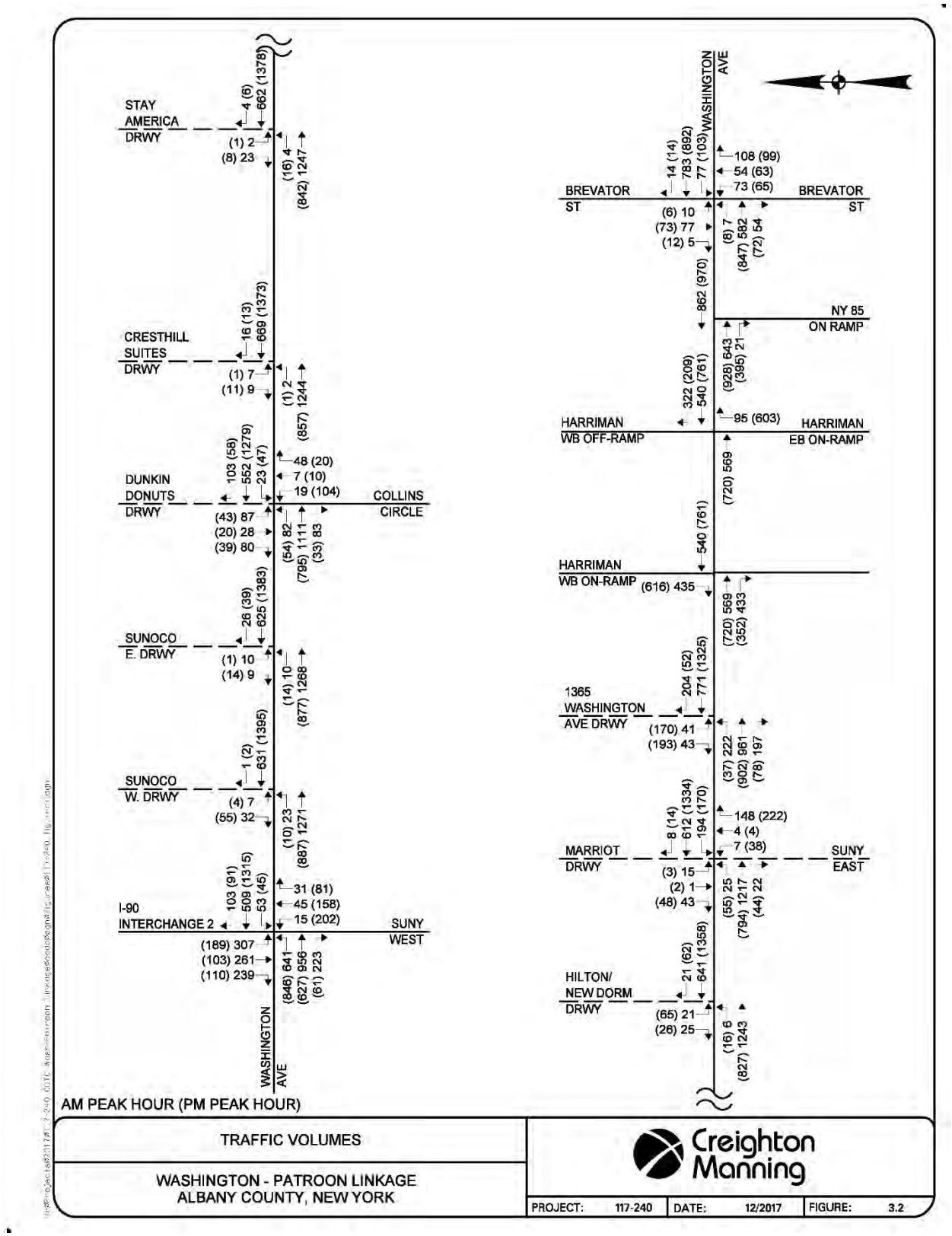


Figure 3.2 – 2030 Traffic Volumes

ALTERNATIVES

Based on stakeholder feedback, input from the Advisory Committee, and the over 75 mapped ideas that were provided by the public, a series of complete streets "elements" were identified and form the basis for three roadway alternatives developed for the corridor. Many of the elements such as signal timing, new crosswalks, certain sidewalk extensions, lane repurposing, access management, etc., should be incorporated into any roadway alternative to make the corridor more of a complete street. For the purpose of this study, these are referred to as common elements that are layered onto each of the major alternatives described later in this section.

In addition to the elements included in the alternatives analysis, other elements were identified by the public, stakeholders, and Advisory Committee as undesirable due to their negative affects on pedestrian and cyclist connectivity. These elements include pedestrian bridges and walls which would prioritize motor vehicles and require pedestrians to deviate from their intended path in order to cross Washington Avenue. Additionally, pedestrian tunnels were identified as undesirable due to perceived safety concerns.

Table 3.2 summarizes the roadway alternatives that were developed and analyzed for this study, followed by a more complete description of each alternative. Plan view concepts for each alternative are included in the Alternatives Appendix.

TABLE 3.2 – ALTERNATIVES

Alternative Name		Description	Common Elements
A	Restriping to Provide Bike Lanes	• On-street Bike Lanes	• Lane Repurposing • Pedestrian Crossings • Sidewalk Extension • Access Management • Median Refuge • Signal Timing • Transit Improvements • Greenspace • Lighting
B	Move Curbs to Narrow Roadway	• Multi-use Path • Consistent Curb	
C	Gateway Option	• Raised Medians • Chicanes • "T"-Up Ramps	

The common elements include signal timing optimization, transit improvements, new crosswalks at traffic signals where they do not currently exist, filling the gap in the sidewalk network on the north side of Washington Avenue generally between 1365 Washington Avenue and Jermain Street, access management, additional greenspace, and street lights as necessary. Installing a new signalized mid-block crosswalk between interchange 2 and Collins Circle is also included in all alternatives. Lane repurposing is another common element in all three roadway options. Figure 3.3 shows what is meant by lane repurposing, which is the removal, partial removal, or conversion of excess pavement width to another use, such as green space, turn lanes or bike accommodations.

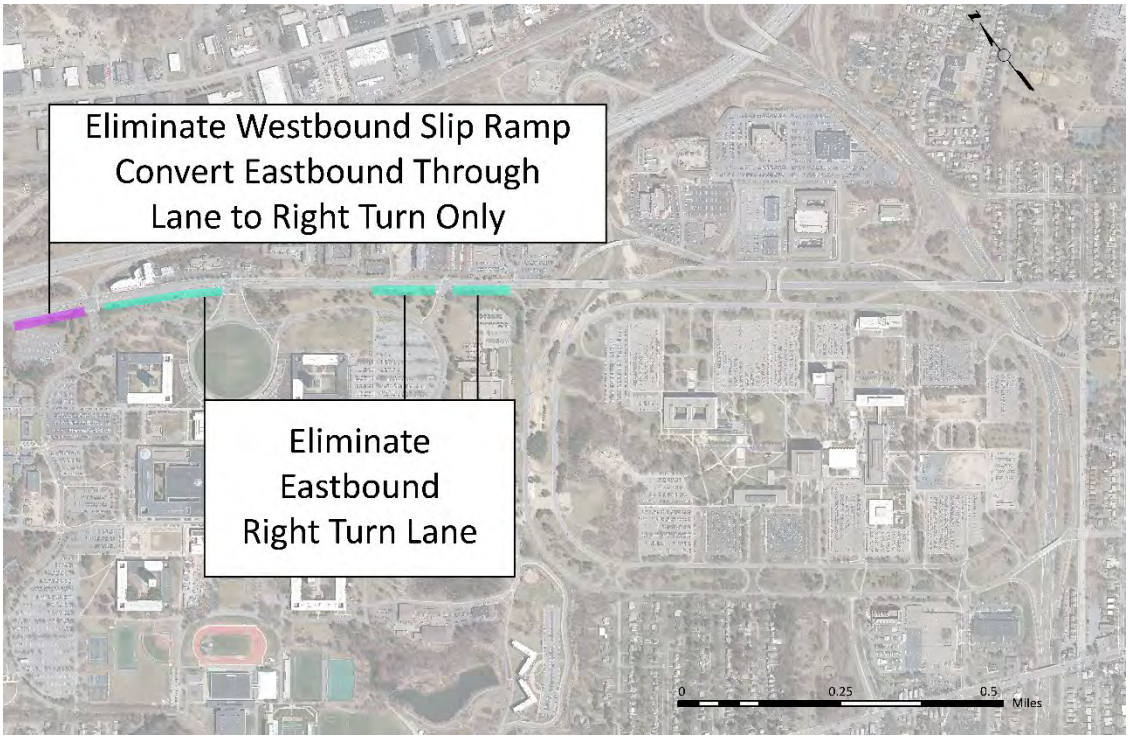


FIGURE 3.3 – LANE REPURPOSING

A fundamental requirement of this study was to identify one alternative that could be implemented during a roadway maintenance project, i.e. implemented primarily through restriping and keeping the majority of the roadway work between existing curbs. This is Option A – Restriping to provide on-street bike lanes. Under this restriping alternative, some limited roadway work is needed in a few constrained areas to fit the bike lanes for the entire corridor. In contrast, Option B moves the curbs in to narrow the roadway, and provide off street bike accommodations. Option C calls for more roadway reconstruction including a curvilinear alignment on the west end of the study area, and reducing the number of travel lanes from 4-lanes to three on the east end of the corridor (subject to further study to carry the 3-lane section beyond the study area east of Brevator Street). The alternatives are described further below. Altogether, Option C has the greatest chance to achieve operating speeds closer to the 30 mph target speed established for Washington Avenue as part of this study.

Null – This is the "do nothing" alternative that would keep the existing roadway as it is, with two lanes in each direction. The potential to calm traffic and incorporate Complete Streets enhancements is small. Figure 3.4 shows the existing multimodal infrastructure that would remain unchanged under this alternative.

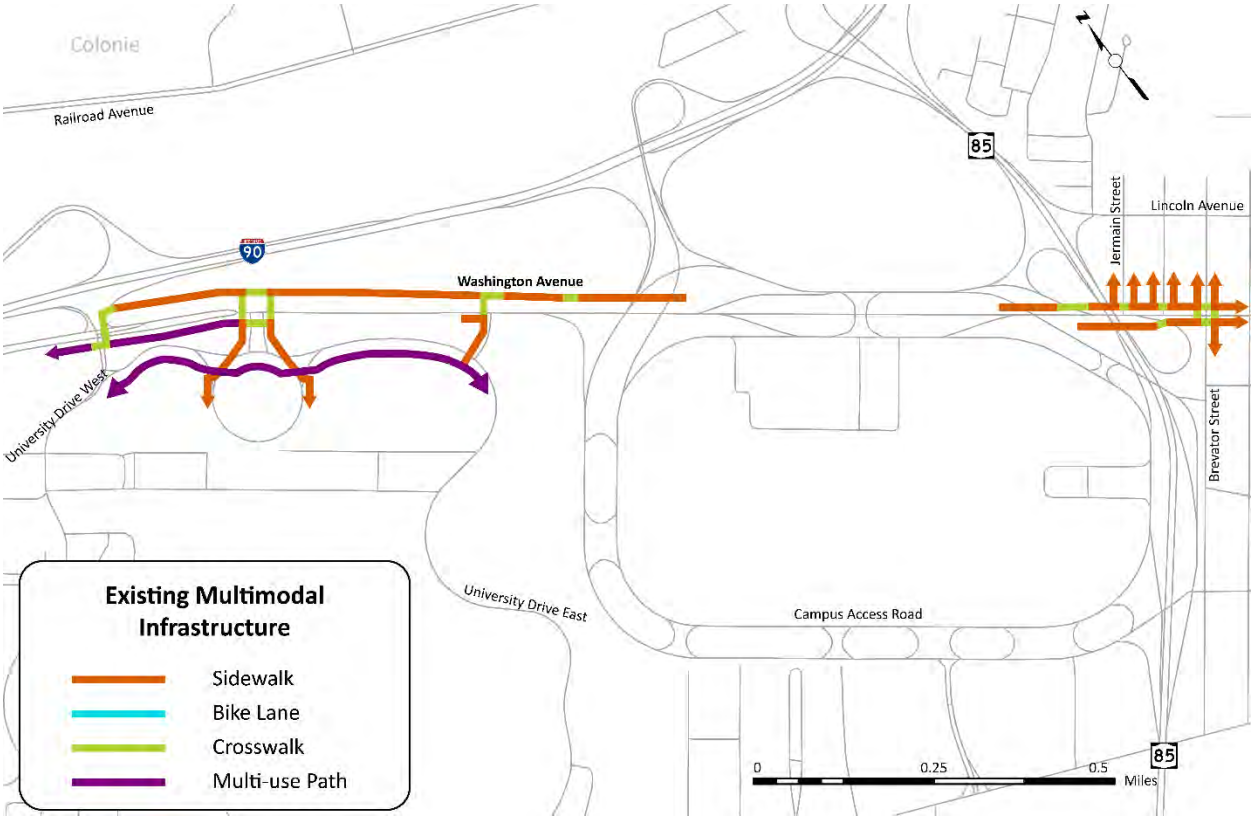


FIGURE 3.4 – EXISTING MULTIMODAL INFRASTRUCTURE

A

Restripe to Provide Bike Lanes – This alternative would utilize the space gained by removing turn lanes from the south side of Washington Avenue in order to provide buffered bike lanes in the west end of the corridor. East of the 1365 Washington Avenue medical offices, this alternative proposes an approximate seven foot striped bike lane. In addition to on-street bike facilities, this alternative would extend the existing multi-use path along the UAlbany frontage eastward and add a sidewalk to the north side of Washington Avenue in the vicinity of the Harriman State Office Campus/Patroon Creek. Figure 3.5 shows the proposed multimodal infrastructure under this alternative.

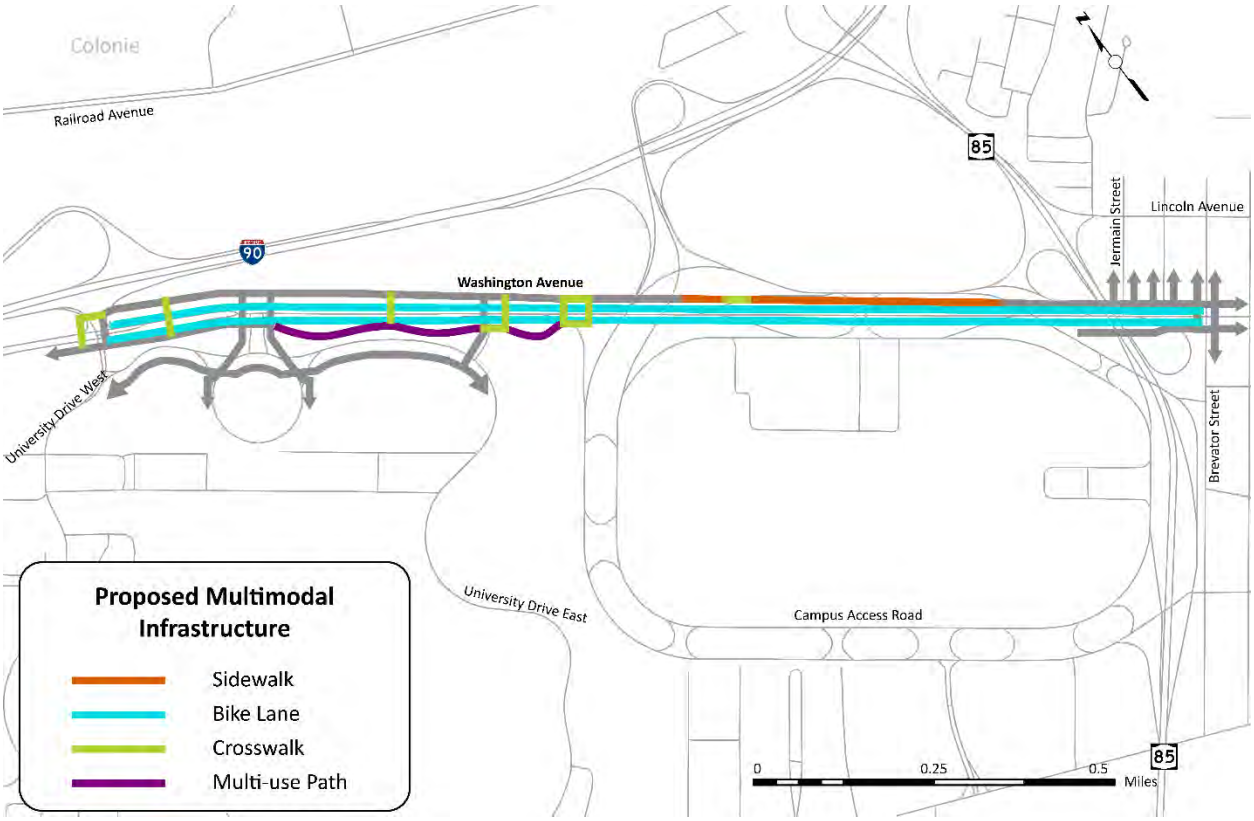


FIGURE 3.5 – PROPOSED MULTIMODAL INFRASTRUCTURE (ALTERNATIVE A)

B

Move Curbs to Narrow Roadway – This alternative would establish a consistent curb line along the western portion of Washington Avenue, narrowing the roadway and providing additional traffic calming. Under this option, the overall pavement width is reduced in order to provide a multi-use path on both sides of Washington Avenue in the west end of the corridor. East of the 1365 Washington Avenue medical offices, the multi-use path on the north side of the roadway would transition to a sidewalk while the multi-use path on the south side extends eastward to Brevator Street. Figure 3.6 shows the proposed multimodal infrastructure under this alternative.

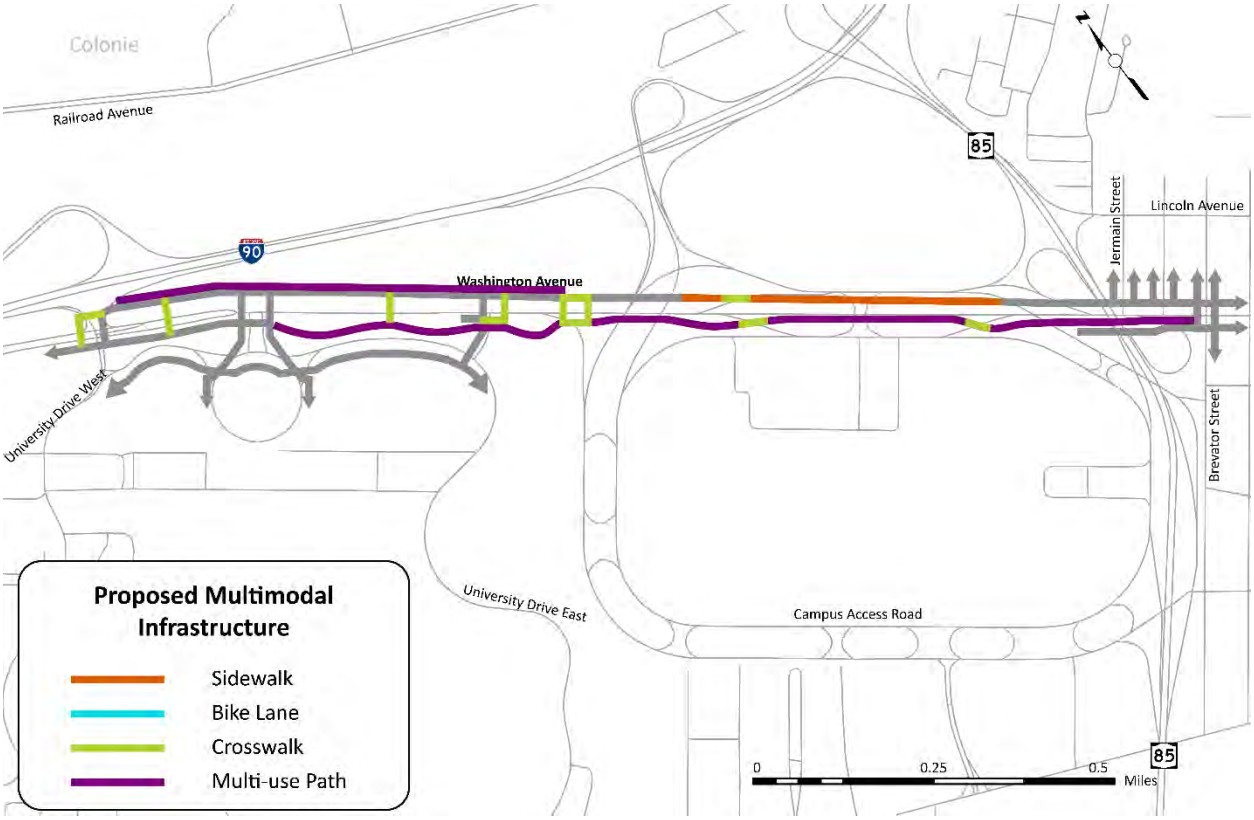


FIGURE 3.6 – PROPOSED MULTIMODAL INFRASTRUCTURE (ALTERNATIVE B)

C

Gateway Option – This alternative proposes to narrow the roadway, provide a raised center median and additional traffic calming by changing the alignment of Washington Avenue between Interchange 2 and Collins Circle to promote actual operating speeds close to the 30 mph target speed established for Washington Avenue. Under this option, multimodal accommodations are similar to Option B, with the key differences being further reduction of pavement width and the curved alignment of Washington Avenue in the vicinity of Block 75, a reduction in the number of travel lanes on the east end of the corridor from four lanes to three (subject to further study to confirm the feasibility of carrying the three-lanes east of Brevator Street), and T-ing up the ramps on the east end of the corridor to/from the OGS ring roads. Figure 3.7 shows the major roadway features for this alternative, along with the existing and proposed multimodal infrastructure.

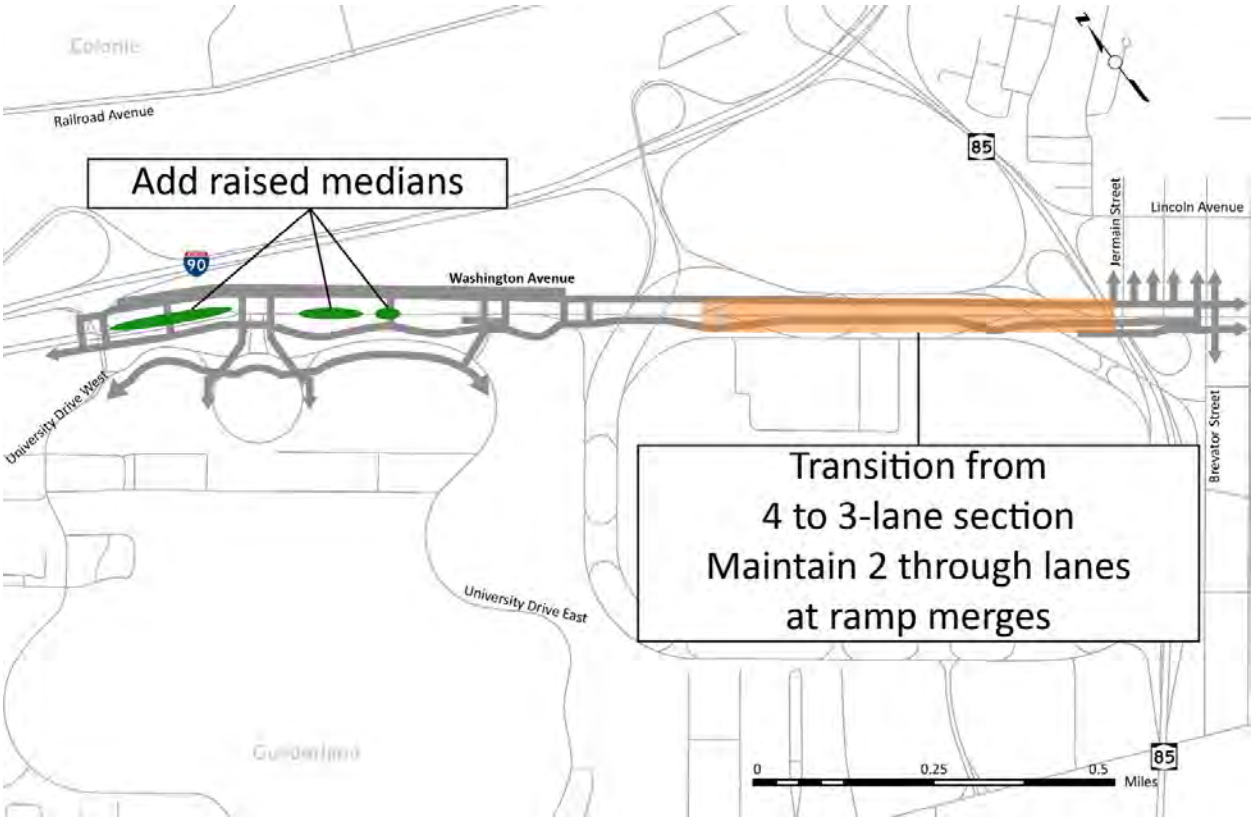


Figure 3.7 – Alternative C Enhancements

MULTIMODAL ANALYSIS

The same procedures that were applied for the existing conditions analysis in Chapter 2 were applied here to assess and compare the estimated future operational effects of the different alternatives.

VEHICLE LOS

Intersection evaluations were conducted using Synchro 10 software which automates the procedures contained in the Highway Capacity Manual 6th Edition (HCM). Tables 3.3 and 3.4 highlight the level of service (LOS) for automobile traffic for the different alternatives; the level of service grades (A through F) are shown followed by the associated estimated seconds of delay in parentheses for each intersection approach or group of turn movements. It is noted that the proposed geometry of Roadway Option A and Roadway Option B are the same from a traffic analysis standpoint, and therefore, are reflected as a single column in the tables. Further, portions of Roadway Option C share the same geometry as Options A and B, which is noted in the tables.

The analysis shows that the average overall intersection delays at the traffic signals will increase under Alternatives A, B, and C as compared to the Null alternative by approximately 5 to 10 seconds depending on the location, time of day, and the specific alternative, and that "lane repurposing" is a valid objective for all alternatives to make the corridor more of a complete street. It should be noted that the analysis accounts for signal optimization, meaning the signal timings were developed to minimize delay to motorists.

Intersection Approach		Control	AM Peak Hour			
			2017	2030		
			Existing	Null	Option A/B	Option C
Washington Avenue/I-90 Interchange 2		S				
Washington Avenue EB	L,L		D (48.6)	E (55.7)	E (58.0)	E (58.0)
	T,T,TR		C (25.6)	C (31.6)	--	--
	[T,T]		--	--	D (35.4)	--
	[R]		--	--	B (11.6)	--
	[T,TR]		--	--	--	D (43.4)
Washington Avenue WB	L		E (72.9)	E (76.8)	E (78.9)	E (78.9)
	T,T		E (55.9)	E (59.7)	--	--
	R		A (10.0)	B (12.7)	--	--
	[T,TR]		--	--	D (53.5)	D (53.5)
UAlbany West Entrance NB	L		E (61.4)	E (63.9)	E (65.8)	E (65.8)
	LTR		A (1.6)	B (11.9)	B (12.1)	B (12.1)
I-90 Interchange 2 SB	L		E (62.3)	E (64.5)	E (66.4)	E (66.4)
	TL		E (60.1)	E (63.2)	E (65.1)	E (65.1)
	R		A (0.2)	A (0.2)	A (0.2)	A (0.2)
Overall			D (39.6)	D (43.4)	D (44.2)	D (48.6)
Washington Avenue/Sunoco West Driveway		U				No Geometric Changes Same LOS As Option A/B
Washington Avenue EB	L		A (9.0)	A (9.2)	A (9.2)	
Sunoco East Driveway SB	LR		B (12.4)	B (12.8)	B (13.2)	
Washington Avenue/Sunoco East Driveway		U				
Washington Avenue EB	L		A (9.0)	A (9.1)	A (9.1)	
Sunoco East Driveway SB	LR		C (17.3)	C (19.2)	D (25.3)	
Washington Avenue/Collins Circle		S				
Washington Avenue EB	L		B (14.4)	B (15.2)	B (15.2)	
	T,T,R		C (23.8)	C (24.2)	--	
	[T,TR]		--	--	C (25.8)	
Washington Avenue WB	L		B (15.5)	B (15.7)	B (16.0)	
	T,TR		C (21.2)	C (22.7)	C (22.7)	
Collins Circle NB	L		D (50.3)	D (50.8)	D (50.8)	
	LTR		D (42.2)	C (22.8)	C (22.8)	
Dunkin Donuts Driveway SB	L		D (51.6)	D (53.3)	D (53.3)	
	LTR		C (31.8)	C (34.3)	C (34.3)	
Overall			C (23.7)	C (24.3)	C (25.9)	
Washington Avenue/Crest Hill Suites Driveway		U				
Crest Hill Suites Driveway SB	LR		C (20.4)	C (22.6)	B (14.9)	
Washington Avenue/Stay America Driveway		U				
Washington Avenue EB	L		A (9.2)	A (9.2)	A (9.2)	
Stay America Driveway SB	LR		B (12.8)	B (13.3)	B (11.8)	
Washington Avenue/Hilton Driveway		U				
Washington Avenue EB	L		A (9.1)	A (9.2)	A (9.2)	
Hilton Driveway SB	LR		C (23.6)	D (26.3)	C (16.0)	
Washington Avenue/UAlbany East Entrance		S				
Washington Avenue EB	L		A (6.4)	A (6.7)	A (6.7)	
	T,T,R		B (17.2)	B (19.9)	--	
	[T,TR]		--	--	C (20.1)	
Washington Avenue WB	L		B (13.3)	C (31.2)	C (33.0)	
	T,TR		A (2.8)	A (2.7)	A (2.7)	
UAlbany East Entrance NB	LTR		B (15.7)	B (14.4)	B (14.4)	
Plaza Driveway SB	LTR		B (19.9)	C (22.8)	C (22.8)	
Overall			B (12.2)	B (15.5)	B (16.0)	
Washington Avenue/1365 Washington Avenue Driveway		S				
Washington Avenue EB	L		B (16.6)	B (16.0)	B (15.8)	
	T,T,R		A (3.2)	A(3.6)	--	
	[T,TR]		--	--	A (4.8)	
Washington Avenue WB	T,TR		A (9.0)	A (9.3)	A (9.3)	
1365 Washington Ave Driveway SB	L		E (61.5)	E (61.5)	E (61.5)	
	R		B (10.2)	B (10.1)	B (10.1)	
Overall			A (8.1)	A (7.8)	A (8.7)	

Intersection Approach		Control	AM Peak Hour			
			2017	2030		
			Existing	Null	Option A/B	Option C
Washington Avenue/Harriman WB Ramp		U			No Geometric Changes Same LOS As Null	
Harriman WB on Ramp	R		A (8.1)	A (8.0)		B (12.0)
Washington Avenue/Harriman EB Ramp		U				
Harriman EB on Ramp	R		A (4.9)	A (4.9)		A (6.1)
Washington Avenue/Brevator Street		S				
Washington Avenue EB	LT,TR		B (15.9)	B (16.9)		--
	[L]		--	--		B (12.4)
	[TR]		--	--		B (19.9)
Washington Avenue WB	LT,TR		A (7.3)	A (7.8)		--
	[L]		--	--		A (6.4)
	[TR]		--	--		B (10.8)
Brevator Street NB	LT		C (20.2)	C (20.0)		C (27.3)
	R		A (8.3)	A (8.2)		B (14.3)
Brevator Street SB	LTR		B (16.5)	B (16.3)		C (23.0)
	Overall		B (12.0)	B (11.9)		B (15.7)

TABLE 3.3 – VEHICLE LEVEL OF SERVICE SUMMARY (AM PEAK HOUR)

The analysis indicates that during the AM peak hour, the signalized intersections will not experience a drop in LOS under any alternative. Further, vehicles exiting businesses on the north side of Washington Avenue typically experience improved operations under the proposed alternatives as a result of the striping of a two-way left turn lane (TWLT). The exception is the Sunoco East Driveway which will experience six additional seconds of delay and operate at LOS D under the proposed alternatives, compared to LOS C under the null condition. It is also noted that under Option C, the westbound Harriman Ramp will operate at LOS B with four additional seconds of delay compared to the null condition which operates at LOS A.

During the PM peak hour, the signalized intersections will operate similarly under each of the proposed alternatives compared to the null condition. The I-90 Interchange 2 intersection is the exception as it is anticipated to change from overall LOS E to LOS F under the proposed alternatives with an average increase in delay of approximately five seconds. It is noted that under the null condition, this intersection is near the LOS E/F threshold (within one second), so the projected LOS degradation from LOS E to LOS F represents a small delay increase. In general, the unsignalized intersections along Washington Avenue will experience improved operations under the proposed alternatives as a result of the striping of a TWLT. The exception is, the westbound Harriman Ramp, which under Option C, will operate at LOS F with 50 additional seconds of delay compared to the null condition which operates at LOS B. The trade-off is an improved pedestrian and bicycle crossing where these modes would cross at a stop sign rather than at a yield sign with merging traffic.

Intersection Approach		Control	PM Peak Hour			
			2017	2030		
			Existing	Null	Option A/B	Option C
Washington Avenue/I-90 Interchange 2		S				
Washington Avenue EB	L,L		F (109)	F (114)	F (114)	F (114)
	T,T,TR		B (18.6)	C (20.8)	--	--
	[T,T]		--	--	C (22.6)	--
	[R]		--	--	A (4.1)	----
	[T,TR]		--	--	--	C (23.0)
Washington Avenue WB	L		F (87.6)	F (91.2)	F (91.2)	F (91.2)
	T,T		E (65.7)	F (98.5)	--	--
	R		A (4.5)	A (6.1)	--	--
	[T,TR]		--	--	F (105)	F (105)
UAlbany West Entrance NB	L		F (90.2)	F (89.1)	F (89.1)	F (89.1)
	LTR		D (45.6)	E (68.2)	E (68.2))	E (68.2)
I-90 Interchange 2 SB	L		F (89.3)	F (90.5)	F (90.5)	F (90.5)
	TL		F (88.6)	F (89.7)	F (89.7)	F (89.7)
	R		A (0.1)	A (0.1)	A (0.1)	A (0.1)
	Overall		E (65.2)	E (79.7)	F (84.2)	F (84.5)
Washington Avenue/Sunoco West Driveway		U				No Geometric Changes Same LOS As Option A/B
Washington Avenue EB	L		B (11.9)	B (12.9)	B (12.9)	
Sunoco East Driveway SB	LR		C (16.9)	C (18.8)	C (18.8)	
Washington Avenue/Sunoco East Driveway		U				
Washington Avenue EB	L		B (11.9)	B (13.0)	B (13.0)	
Sunoco East Driveway SB	LR		C (15.8)	C (17.5)	C (19.1)	
Washington Avenue/Collins Circle		S				
Washington Avenue EB	L		B (15.3)	B (16.1)	B (16.1)	
	T,T,R		C (21.8)	C (21.6)	--	
	[T,TR]		--	--	C (21.9)	
Washington Avenue WB	L		B (14.9)	B (14.7)	B (14.8)	
	T,TR		C (25.2)	C (29.1)	C (29.1)	
Collins Circle NB	L		D (49.4)	D (51.9)	D (51.9)	
	LTR		D (39.6)	D (42.7)	D (42.7)	
Dunkin Donuts Driveway SB	L		D (44.9)	D (45.9)	D (45.9)	
	LTR		C (25.3)	C (27.0)	C (27.0)	
	Overall		C (24.7)	C (26.9)	C (27.3)	
Washington Avenue/Crest Hill Suites Driveway		U				
Crest Hill Suites Driveway SB	LR		C (16.8)	C (18.9)	C (16.1)	
Washington Avenue/Stay America Driveway		U				
Washington Avenue EB	L		B (12.2)	B (13.3)	B (13.3)	
Stay America Driveway SB	LR		C (18.2)	C (20.9)	C (16.6)	
Washington Avenue/Hilton Driveway		U				
Washington Avenue EB	L		B (11.7)	B (13.0)	B (13.0)	
Hilton Driveway SB	LR		E (40.1)	F (299)	F (52.2)	
Washington Avenue/UAlbany East Entrance		S				
Washington Avenue EB	L		A (6.6)	A (7.2)	A (7.2)	
	T,T,R		B (12.0)	B (12.1)	--	
	[T,TR]		--	--	B (12.3)	
Washington Avenue WB	L		A (3.9)	A (3.6)	A (3.8)	
	T,TR		A (6.6)	A (7.1)	A (7.1)	
UAlbany East Entrance NB	LTR		B (19.3)	B (19.9)	B (19.9)	
Plaza Driveway SB	LTR		B (14.5)	B (14.4)	B (14.4)	
	Overall		A (9.6)	A (9.7)	A (9.9)	
Washington Avenue/1365 Washington Avenue Driveway		S				
Washington Avenue EB	L		A (4.1)	A (4.5)	A (4.4)	
	T,T,R		A (3.9)	A (4.0)	--	
	[T,TR]		--	--	A (4.0)	
Washington Avenue WB	T,TR		B (13.0)	B (14.6)	B (14.6)	
1365 Washington Ave Driveway SB	L		E (68.7)	E (68.7)	E (68.7)	
	R		C (24.3)	C (30.1)	C (30.1)	
	Overall		B (13.9)	B (15.0)	B (15.1)	

Intersection Approach		Control	PM Peak Hour			
			2017	2030		
			Existing	Null	Option A/B	Option C
Washington Avenue/Harriman WB Ramp		U			No Geometric Changes Same LOS As Null	
WB on Ramp	R		B (11.5)	B (16.0)		F (77.1)
Washington Ave/Harriman EB Ramp		U				
EB on Ramp	R		A (7.8)	B (11.5)		B (17.5)
Washington Avenue/Brevator Street		S				
Washington Avenue EB	LT,TR		B (16.2)	B (16.2)		--
	[L]		--	--		B (12.2)
	[TR]		--	--		C (26.2)
Washington Avenue WB	LT,TR		A (8.1)	A (7.9)		--
	[L]		--	--		A (8.8)
	[TR]		--	--		B (10.8)
Brevator Street NB	LT		C (21.5)	C (22.2)		C (31.2)
	R		A (9.4)	B (10.3)		B (16.4)
Brevator Street SB	LTR		B (16.9)	B (17.6)		C (24.0)
	Overall		B (12.5)	B (12.6)		B (18.9)

TABLE 3.4 – VEHICLE LEVEL OF SERVICE SUMMARY (PM PEAK HOUR)

PEDESTRIAN LOS

Table 3.5 and Figure 3.8 summarize the level of service for pedestrians walking along Washington Avenue for each alternative and shows some of the positive trade-offs for multi-modal travel that will be gained by the automobile impacts identified in the previous section. The charts show that under the null condition, approximately 60% of the corridor experiences poor pedestrian LOS. The addition of sidewalks and the extension of the multi-use path under Option A fills gaps in the pedestrian network, resulting in greater than 70% of the corridor operating at pedestrian LOS C or better. Under options B and C which extend the path further eastward, greater than 90% of the corridor would experience pedestrian LOS C or better.

TABLE 3.5 – PEDESTRIAN LEVEL OF SERVICE BY SEGMENT

Segment	Direction of Travel	2017	ETC+10 (2030)		
		Existing	Null	Option A	Options B/C
I-90 Interchange 2 to Collins Circle	Eastbound	A	A	A	A
	Westbound	C	C	C	C
Collins Circle to UAlbany East Driveway	Eastbound	D	D	B	B
	Westbound	C	C	C	C
UAlbany East Driveway to 1365 Washington Avenue	Eastbound	E	E	B	B
	Westbound	D	D	D	D
1365 Washington Avenue to Westbound Harriman On-Ramp	Eastbound	E	E	E	C
	Westbound	D	D	D	D
Westbound Harriman On-Ramp to Eastbound Harriman On-Ramp	Eastbound	D	D	D	B
	Westbound	D	D	C	C
Eastbound Harriman On-Ramp to Brevator Street	Eastbound	C	C	B	B
	Westbound	C	C	C	C

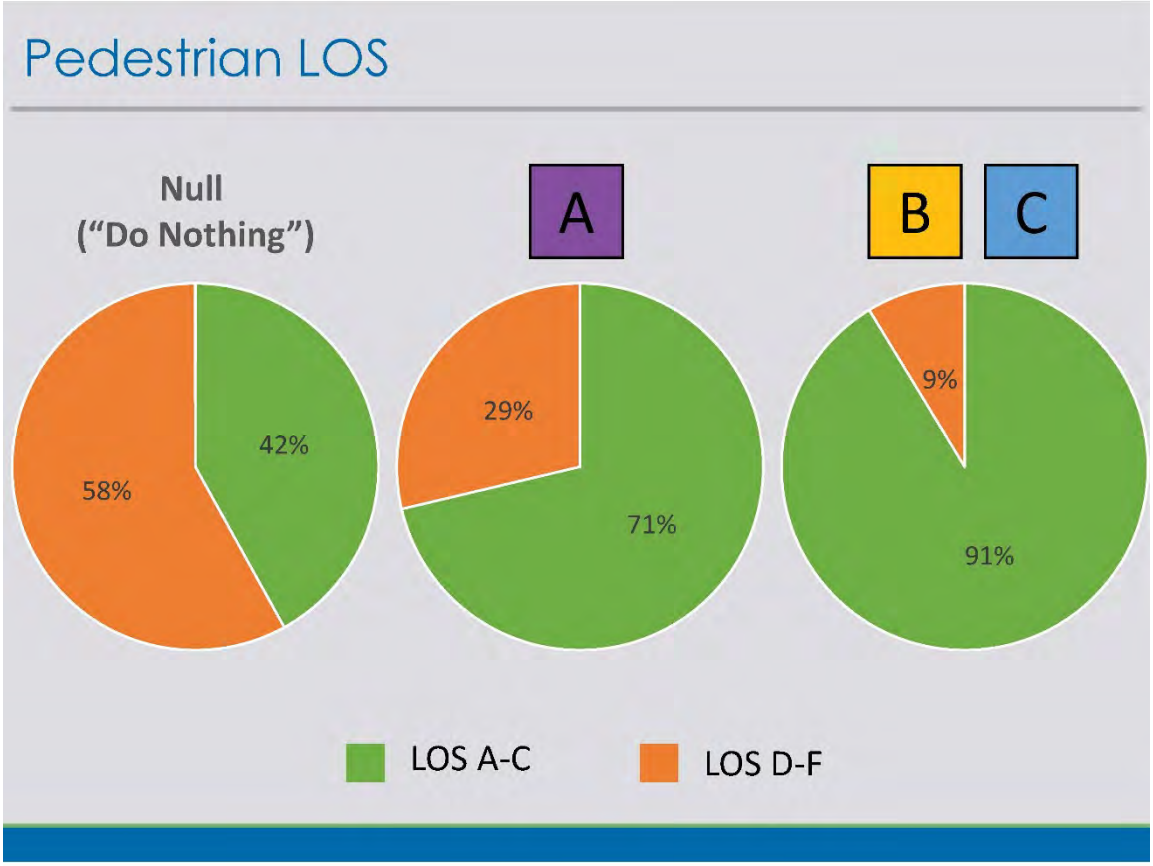


FIGURE 3.8 – PEDESTRIAN LEVEL OF SERVICE SUMMARY

In addition to improving LOS along Washington Avenue, it is important to note that the proposed alternatives include additional crosswalks at signalized intersections, as well as enhanced crossings in the vicinity of Block 75, and potentially near Auden. These crossings are not reflected in the segment LOS analysis above and will provide pedestrians a more direct path between origins and destinations, thus minimizing diversions and resulting in increased pedestrian comfort, and improved crossing opportunities. It is noted that pedestrian delay at the existing intersections is comparable under all of the alternatives, as signal timings are a primary determinant of wait time.

BICYCLE LOS

Under the null condition, the bicycle network remains disjointed along Washington Avenue, with some segments providing cyclists space to ride on the shoulder while other segments lack a shoulder and cause cyclists to share the travel lane. Under Option A, the entire corridor is expected to operate at bicycle LOS A as cyclists will be provided with a buffered bike lane in the west end and approximate seven foot wide bike lane in the east end of the corridor. The bicycle LOS for each of the corridor segments can be found in Table 3.6.

TABLE 3.6 – BICYCLE LEVEL OF SERVICE BY SEGMENT

Segment	Direction of Travel	2017	ETC+10 (2030)		
		Existing	Null	Option A	Options B/C
I-90 Interchange 2 to Collins Circle	Eastbound	A	A	A	Note that Bicycle LOS is only applicable to on-street bicycle accommodations
	Westbound	A	A	A	
Collins Circle to UAlbany East Driveway	Eastbound	A	A	A	
	Westbound	B	B	A	
UAlbany East Driveway to 1365 Washington Avenue	Eastbound	D	D	A	
	Westbound	D	D	A	
1365 Washington Avenue to Westbound Harriman On-Ramp	Eastbound	A	A	A	
	Westbound	A	A	A	
Westbound Harriman On-Ramp to Eastbound Harriman On-Ramp	Eastbound	A	A	A	
	Westbound	A	A	A	
Eastbound Harriman On-Ramp to Brevator Street	Eastbound	D	D	A	
	Westbound	D	D	A	

Under Roadway Options B and C, a multi-use path is provided for cyclists. This type of accommodation provides a high degree of protection for cyclists from vehicular traffic, and as such, has the ability to attract the widest variety of users, including those who may wish to use a bicycle but would otherwise feel uncomfortable riding in mixed traffic. It is noted that although this type of accommodation provides the greatest degree of comfort for cyclists, some more experienced and confident bicyclists may prefer to continue to ride in mixed traffic. Options B and C would need to accommodate on-street bicyclists through an adequate curb side travel lane and usable pavement width. While Chapter 17 (Bicycle Facility Design) of the NYSDOT Highway Design Manual indicates that a 4.2 meter (14 ft) wide curb lane is desired, with 3.6 meters (12 ft) being the minimum acceptable, the City's adopted Complete Streets Policy and Design Manual notes that wide lane widths are not a preferred bicycle accommodation.

The desire to provide wider travel lanes for on-street bike accommodation under Options B and C needs to be balanced with the other study goals of pedestrian safety and traffic calming, afforded by shorter pedestrian crossing distances and narrower lanes. It is important to note that bikes are not the primary user in the corridor. The majority of bicyclists originating or ending at UAlbany traveling to and from the east will likely leave the campus near the east end and not use an on road bike accommodation in the western-most segment. Complete streets are networked based and while the segment of Washington Avenue along UAlbany may not have a bicycle accommodation, off-street paths provide a parallel bicycle accommodation. East of UAlbany, Options B and C generally maintain wider shoulders.

SUMMARY OF ALTERNATIVES

The Study Advisory Committee established five performance measures to assess the trade-offs of the different alternatives as described below. The technical analysis in this chapter supports those performance measures and is summarized graphically in the evaluation matrix below. The essential trade-offs discussed in the chapter can be summarized as increased motor vehicle travel time (estimated one minute of travel time during peak periods) for the benefits of a complete street, which includes traffic calming and increased bicycle and pedestrian comfort and access.

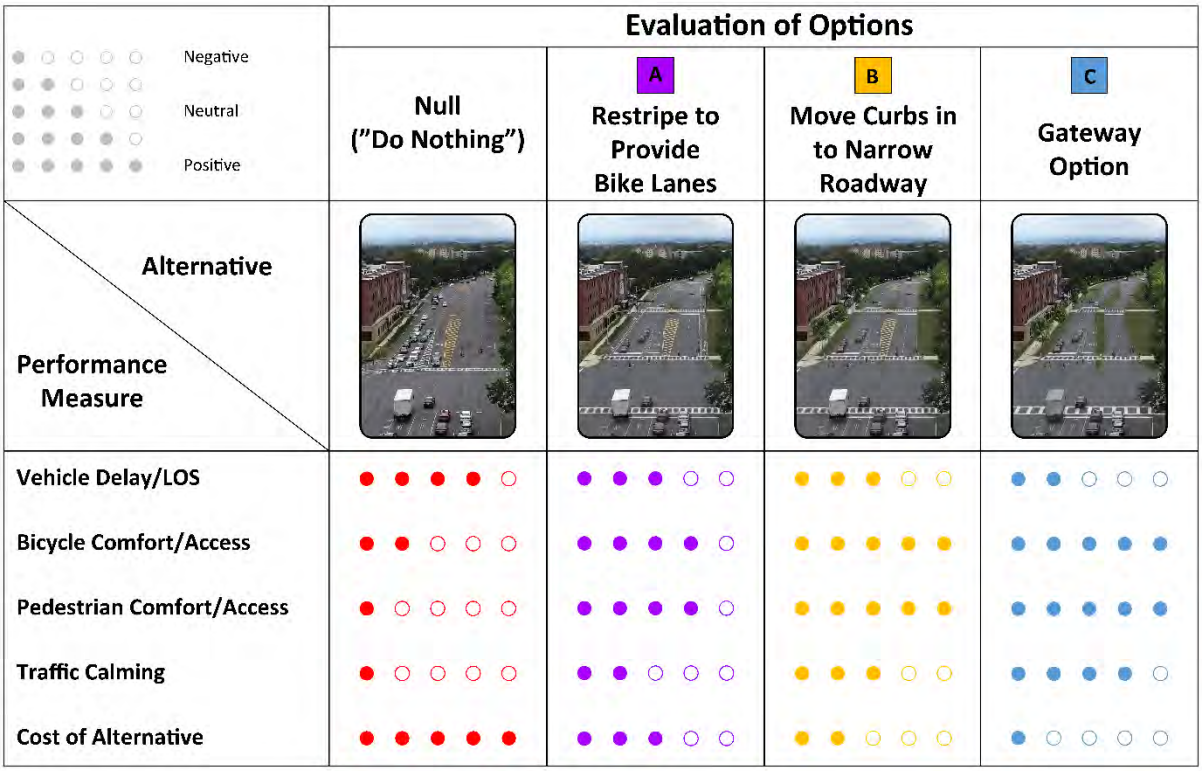


FIGURE 3.9 – SUMMARY OF ALTERNATIVES

PUBLIC INPUT ON ALTERNATIVES

A second public meeting was held on Thursday, November 8, 2018 with over 90 residents, stakeholders, students, and study advisory committee members present. The purpose of the meeting was to present and receive feedback on the three roadway design options. The meeting included a technical presentation, a question and answer period, an alternatives ranking exercise, and other opportunities to provide comment. The full public meeting summary is included in Appendix B.

The results of the ranking exercise are shown on the following bar chart and show that the majority of attendees opposed the null option, reinforcing the need for increased multi-modal accommodations in the corridor. While the public feedback shows that the majority of people supported Option A, Options B and C are also supported.

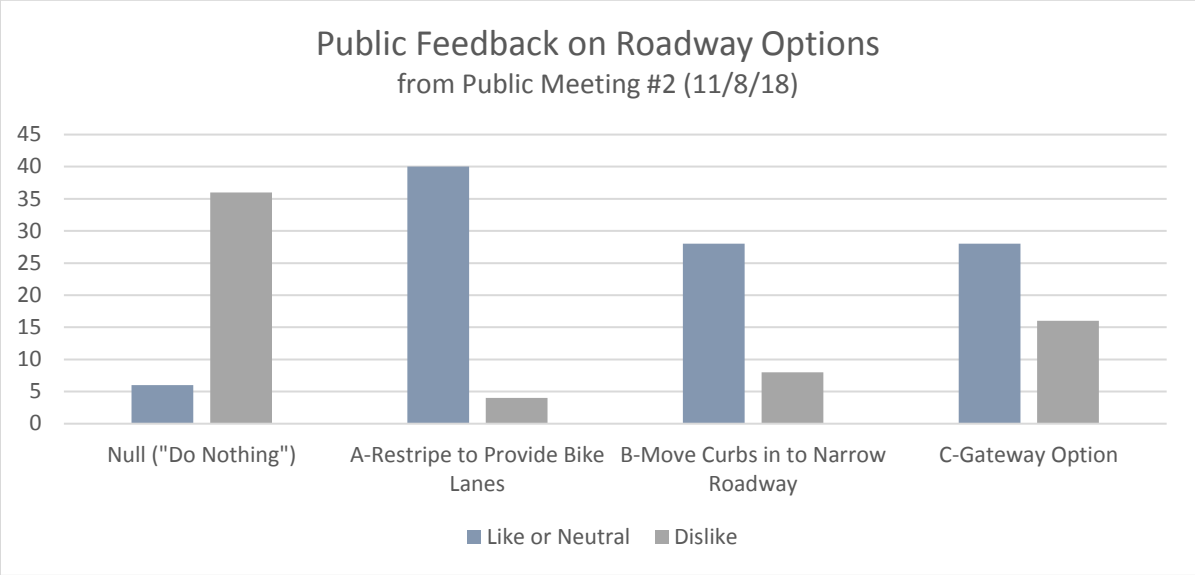


FIGURE 3.10 – PUBLIC FEEDBACK ON ROADWAY OPTIONS

Chapter 4 – Conclusions and Recommendations

A fundamental objective of this study was to develop complete streets improvements and design modifications for Washington Avenue that will promote safety for all roadway users in a manner that balances the competing needs of different modes and enhances community quality of life. The technical studies show that incorporating a number of the proposed recommendations will support the City's efforts to fully develop Washington Avenue into a complete street that balances the needs of all users, not focused solely on automobile traffic. The recommendations are conceptual in nature and are presented to characterize the types of improvements that are desirable and that may be implemented as part of future transportation improvement projects.

In addition to the recommendations detailed below, an effective traffic safety program will incorporate the three "E's" (1) Engineering, (2) Enforcement, and (3) Education. While the following recommendations provide engineering measures to transform Washington Avenue into a complete street and improve safety, comfort, and access for all roadway users, enforcement of the vehicle and traffic law will also improve pedestrian and bicycle safety. Further, educating motorists, pedestrians, and cyclists alike of the rules of the road helps to ensure safety. Education materials can be found through the NYS Governor's Traffic Safety Committee which coordinates traffic safety activities and shares information and resources about traffic safety.

THE PLAN

The plan identifies a priority improvement to be pursued immediately in order to calm traffic and improve pedestrian crossing accommodations between UAlbany and Block 75. The priority improvement includes a raised median and signalized pedestrian crossing at Block 75, striped hatching in place of the eastbound rightmost vehicle lane, and a bump out at the proposed crossing on the south side of Washington Avenue to shorten the pedestrian crossing distance. A new transit stop is also proposed on the south side to facilitate pedestrian crossings at the new signal, and the rightmost eastbound travel lane approaching Interchange 2 will be converted to an exclusive right turn lane. It is important to note that these priority improvements are an initial stage of transforming Washington Avenue into a complete street, and facilitate further improvements under a building block approach to achieve the short and long-range plans as described below. Figure 4.1 shows the priority improvements.

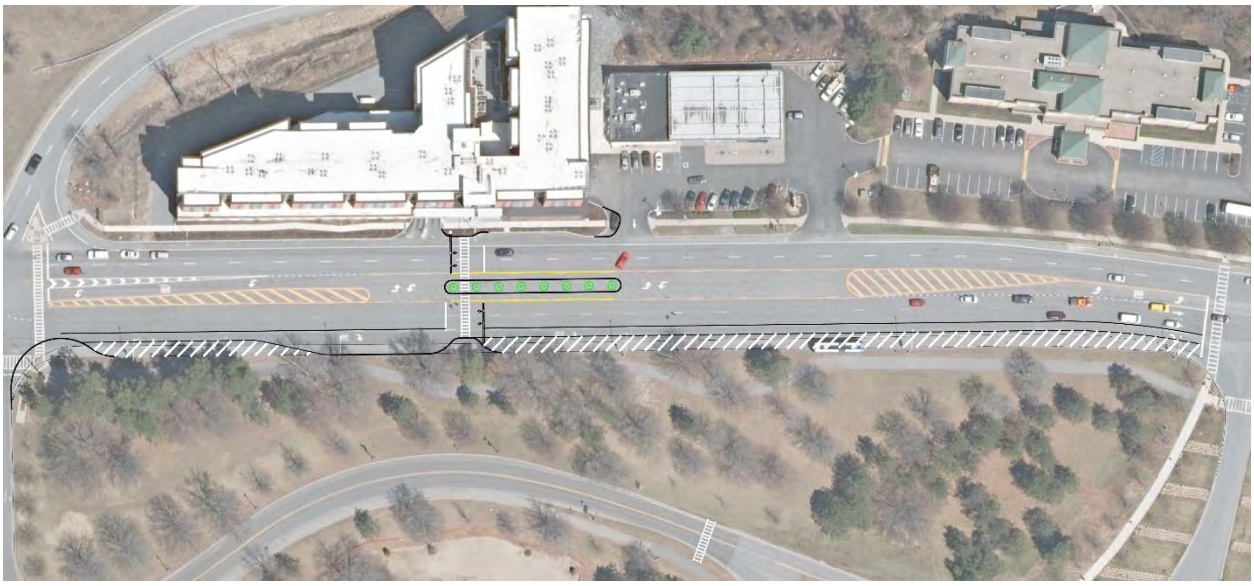
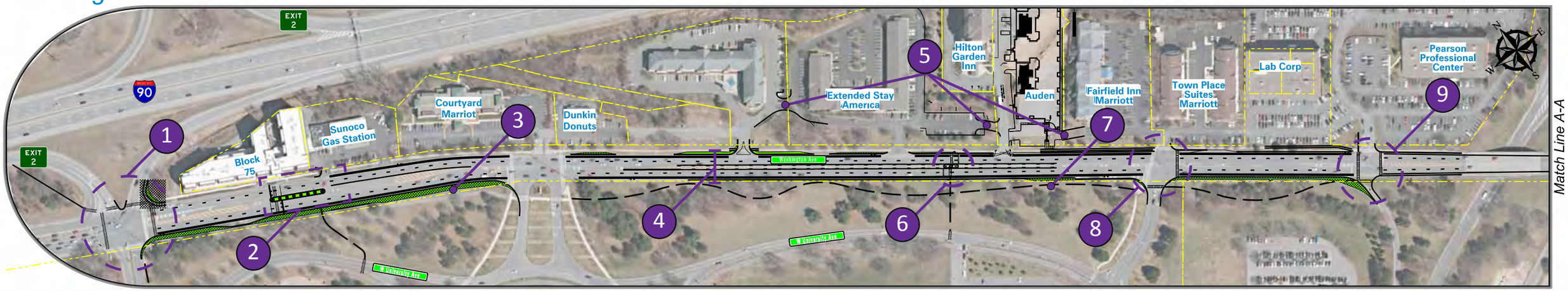


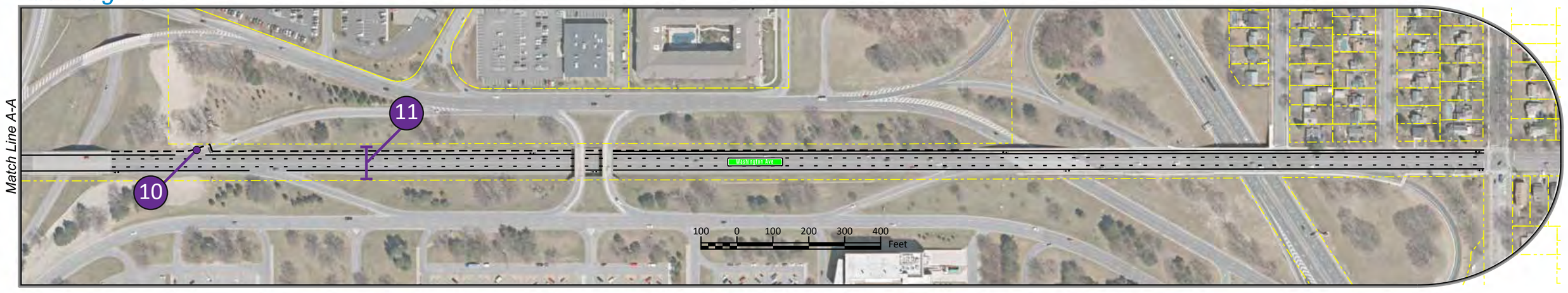
FIGURE 4.1 – PRIORITY IMPROVEMENTS

Beyond the priority improvement, the plan proposes to pursue Option A (restripe for bike lanes) with enhancements including sidewalk and path extensions, additional lane repurposing, access management and lighting. Implementation of Option B or C as described in Chapter 3 is the long term goal, pending the availability of additional funding and the results of additional studies including the feasibility of carrying a lane reduction project further east into the city beyond Brevator Street. Although the majority of users in the corridor are motorists, changes in land use have increased pedestrian activity and pedestrian crossing demand in the corridor. The addition of pedestrian facilities including sidewalks along Washington Avenue and enhanced crossings in areas of high pedestrian demand, as well as enhancements such as raised pedestrian refuge islands where appropriate will accommodate the growing number of pedestrians and make the corridor more attractive and welcoming to non-motorized users. The plan is shown on Figure 4.2 with a breakdown of the details corresponding to the numbered items in the figure as follows:

West Segment



East Segment



1. Install crosswalks to “Complete the Box”. Remove the westbound right turn slip ramp. Convert the rightmost eastbound lane to right turn only.
2. Construct enhanced pedestrian crossing at Block 75 including three colored signal or pedestrian hybrid beacon and raised pedestrian refuge island. Make westerly Sunoco driveway one-way out. Add eastbound transit stop.
3. Remove rightmost eastbound lane.
4. West Segment: Maintain five vehicle lanes and stripe buffered bike lane, including shoulder widening on south side. Restripe median to two-way left turn lane. Add pedestrian scale lighting where appropriate.
5. Create cross connections between parcels on north side of Washington Avenue (typ).
6. Confirm mid-block pedestrian crossing demand after full occupancy of Auden and provide enhanced pedestrian crossing if necessary.
7. Extend multi-use path eastward from Collins Circle to 1365 Washington Avenue along UAlbany frontage.
8. Install crosswalks to “Complete the Box”. Maintain eastbound transit stop. Modify westbound transit stop to improve bus re-entry.
9. Remove eastbound right turn slip ramp and bring into signal, adjust signal timing as necessary. Install Crosswalks to “Complete the Box”.
10. Extend sidewalk along north side of Washington Avenue.
11. East Segment: Maintain four lanes. Restripe shoulder to provide bike lane. Add pedestrian scale lighting where appropriate.

Feasible Long Term Recommendations

1. Pursue road narrowing (west segment) with “path” or “separated” bike accommodation on both sides.
2. Extend path on south side to Brevator Street.
3. Confirm feasibility of lane reduction project east of Brevator Street and implement if fesasible.
4. Conduct further study of Harriman Campus multimodal connections in the vicinity of the hourglass bridges.

Washington Avenue Patroon Creek Corridor Study

Suggested Improvements under Option A
Washington Avenue/Patroon Creek Corridor

Creighton Manning

Figure 4.2

1 Beginning at the west end of the corridor, modifications to the Washington Avenue/I-90 Interchange 2 intersection will increase pedestrian friendliness by striping additional crosswalks where they are not currently present and removing the westbound right turn slip ramp and reducing the curb radius. Additionally, the eastbound right turn lane will be converted to a right turn only lane to prohibit through movements, in order to align with the new lane arrangement east of the intersection.

2 Continuing east, two through lanes will be maintained in each direction while the right most eastbound lane is removed in order to shorten the pedestrian crossing distance and provide bicycle accommodations on both sides of Washington Avenue. A pedestrian hybrid beacon or full three-colored signal is proposed to accommodate pedestrians crossing Washington Avenue in front of Block 75. Additionally, a raised median is recommended to provide a pedestrian refuge, and with the installation of the raised median, the western most Sunoco Driveway will be converted to an exit only. Likewise, in order to encourage use of the new mid-block crossing, a path connecting Washington Avenue and W. University Drive is proposed on the UAlbany campus. It should be noted that this path connection on UAlbany is only needed when the new crossing is constructed. A conceptual layout of the pedestrian crossing and path connections are shown in Figure 4.3.

3

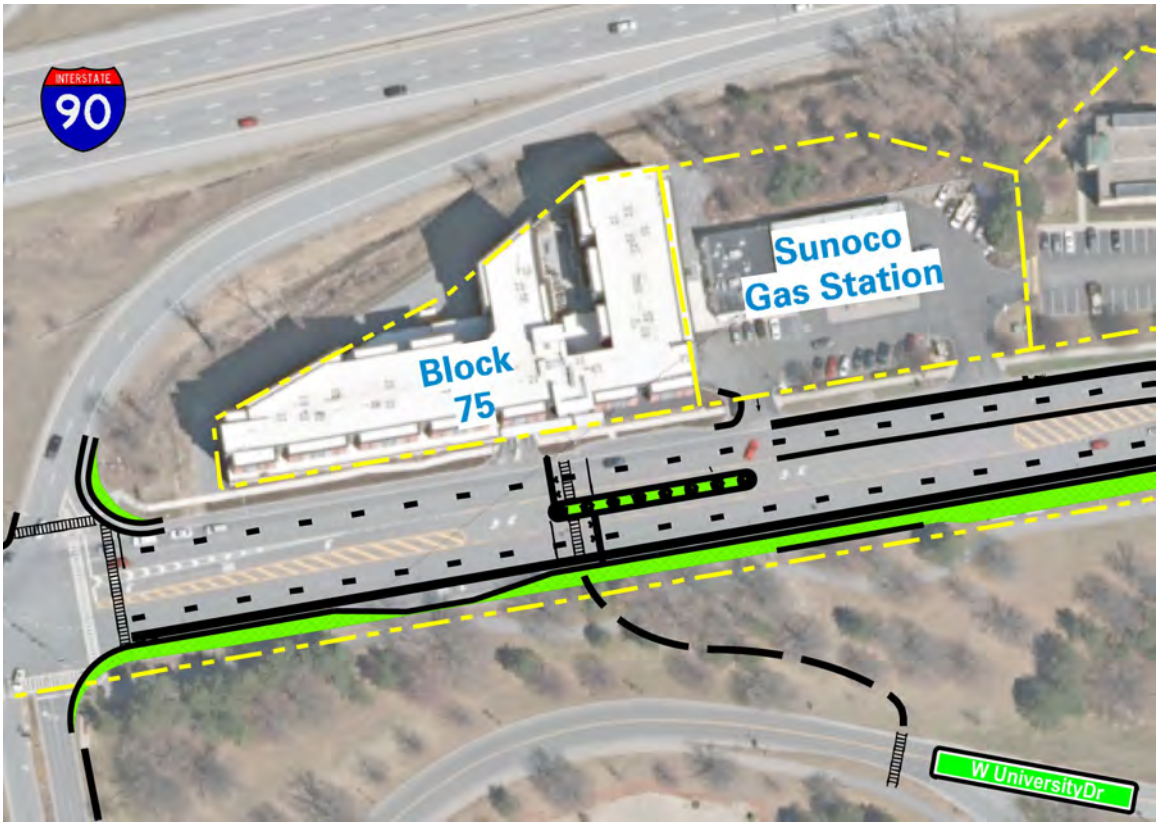


FIGURE 4.3 – CONCEPTUAL PEDESTRIAN CROSSING (BLOCK 75)

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7

East of Collins Circle, the on-street bicycle accommodations would continue, with sections of roadway widening on both sides of Washington Avenue to accommodate the new bike lanes, while a multi-use path is recommended along the UAlbany frontage extending from the existing path at Collins Circle. Two-way left turn lane striping will replace the existing hatched median striping from the CrestHill Suites driveway to the Auden/Hilton Driveway. Additional cross connections between parcels on the north side of Washington Avenue should also be pursued where possible. Similar to the pedestrian crossing at Block 75, a second enhanced pedestrian crossing may be provided midblock between Extended Stay America and Auden. As Auden is not currently fully occupied, the level of pedestrian demand, although anticipated, is uncertain and therefore the specific type of treatment will require further study. At this point, a raised median for pedestrian refuge is anticipated in addition to either a full three-color signal or Rapid Rectangular Flashing Beacon (RRFB), with path extension onto UAlbany.

8
9

East of the Auden/Hilton Driveway, the eastbound right turn lanes approaching the UAlbany East Driveway and 1365 Washington Avenue will be removed to provide space for bicycle accommodations. It is noted that the existing eastbound bus stop at the UAlbany East Driveway will remain, while the westbound bus stop is expanded to provide better re-entry for buses. Additional crosswalks are also proposed at these two intersections in order to improve pedestrian connectivity. The plan also calls for eliminating the existing free flow eastbound right turn slip ramp to OGS at 1365 Washington Avenue, and bringing the right turn movement under signal control. This makes the bicycle and pedestrian crossings at this intersection more comfortable, and functions with negligible traffic impact due to the signal coordination with the UAlbany east driveway.

10
11

East of 1365 Washington Avenue, a new sidewalk is proposed on the north side eastward to create a continuous pedestrian connection to Brevator Street. In this section, the plan maintains the existing 4-lane roadway and designates the existing shoulders as bike lanes by adding bicycle symbol pavement markings, which transition to sharrows east of Brevator Street.

The plan identifies short-term improvements that can be implemented under a pavement preservation project (with isolated widening between Collins Circle and the UAlbany east driveway. Longer term transformative enhancements may be considered as part of a larger capital project. The before/after photo renderings show a progression of what the corridor could look like near Block 75 as funds become available to implement complete streets enhancements.

The images show that it is feasible to implement the enhancements laid out in the plan under a re-striping alternative that will not preclude narrowing the roadway further under a capital improvement project.

FIGURE 4.4 – EXISTING ROADWAY

FIGURE 4.5 – SHORT TERM RESTRIPING TO PROVIDE BIKE LANES

FIGURE 4.6 – CAPITAL IMPROVEMENT ENHANCEMENTS – MOVE CURB OPTION

FIGURE 4.7 – CAPITAL IMPROVEMENT ENHANCEMENTS – GATEWAY OPTION

IDEAS FOR FURTHER STUDY

Two concepts developed as the result of public comments and Study Advisory Committee brainstorming were determined to require further study. These concepts include converting Washington Avenue east of the Harriman State Office Campus ramps to a three-lane section, and converting one of the OGS owned bridges over Washington Avenue to a pedestrian facility. These concepts are unique in that although the proposed changes are physically within the study area, the effects of these changes are anticipated to extend beyond the study area. Further data collection and analysis is required to fully understand the need, impacts and feasibility of these proposed changes. The following sections provide a brief overview of these concepts and the potential implications that require further study.

THREE-LANE SEGMENT EAST OF HARRIMAN RAMPS

The existing conditions analysis showed that traffic volumes on Washington Avenue in the east end of the study area are lower than those west of the Harriman State Office Campus, and therefore a lane reduction was examined. The analysis indicated that it is feasible to reduce the number of lanes on Washington Avenue from four lanes to three, beginning east of the Harriman State Office Campus ramps. Two through lanes are required in each direction on Washington at the Harriman Ramp merges in order to maintain acceptable future traffic operations. Although a three-lane section can accommodate traffic on Washington Avenue through the Brevator Street intersection, it is uncertain if a three-lane section is feasible further east beyond the study area, particularly noting that traffic volumes increase at Colvin Avenue. Due to this uncertainty, the Study Advisory Committee determined that it would be impractical to pursue implementation of a short three-lane section ending at Brevator Street at this time and that additional study is required to determine if a three-lane section can be carried further east into the city, which would make the overall concept of a larger lane reduction project more viable.

CONVERSION TO PEDESTRIAN BRIDGE

The existing conditions assessment as well as comments heard from the public indicated concerns about pedestrian and transit connectivity in the vicinity of the Harriman State Office Campus and Patroon Creek. The Harriman ring road street network requires circuitous bus routing in the area and poses a barrier to pedestrian travel between the Harriman State Office Campus and Patroon Creek. One idea to address these issues is to convert one of the OGS owned bridges over Washington Avenue from a vehicular access to a pedestrian only bridge. The concept was sketched at a high level as shown on Figures 4.6 and 4.7, but not analyzed in detail. These Figures show how a conversion of the east or west bridges could potentially provide a direct connection for pedestrians between the Harriman State Office Campus and Patroon Creek, if proven feasible as part of further study. In addition, Figure 4.8 shows how the concept would facilitate more direct transit routing.

Considerations for further study include the traffic impact and operation of the rerouted traffic caused by closing one of the bridges. The illustration for the East Loop Option shows westbound vehicles on the north ring road rerouted across Washington Avenue at grade to access the Harriman State Office Campus. CDTC should model potential diversions associated with this concept. Although it is assumed that a traffic signal would be required to accommodate these traffic movements, further study is required to determine if this is feasible.

Further pedestrian crossing analysis and design is also needed. While the proposed concept provides a grade separated pedestrian crossing across Washington Avenue, the concept shows that pedestrians would still need to cross at-grade on the Harriman State Office Campus ring roads both north and south of Washington Avenue. An examination of the ring roads in these areas indicates that the pedestrian connection would cross three travel lanes south of Washington Avenue and four or five travel lanes north of Washington Avenue, each with a posted speed-limit of 40 mph. Some type of enhanced crossing treatment and signalization would likely be needed, and requires further study.

In addition, concepts that impact the ring road system may require a larger examination of the ring roads themselves, to make sure that an isolated improvement such as this fits into larger or longer term plans for the area.

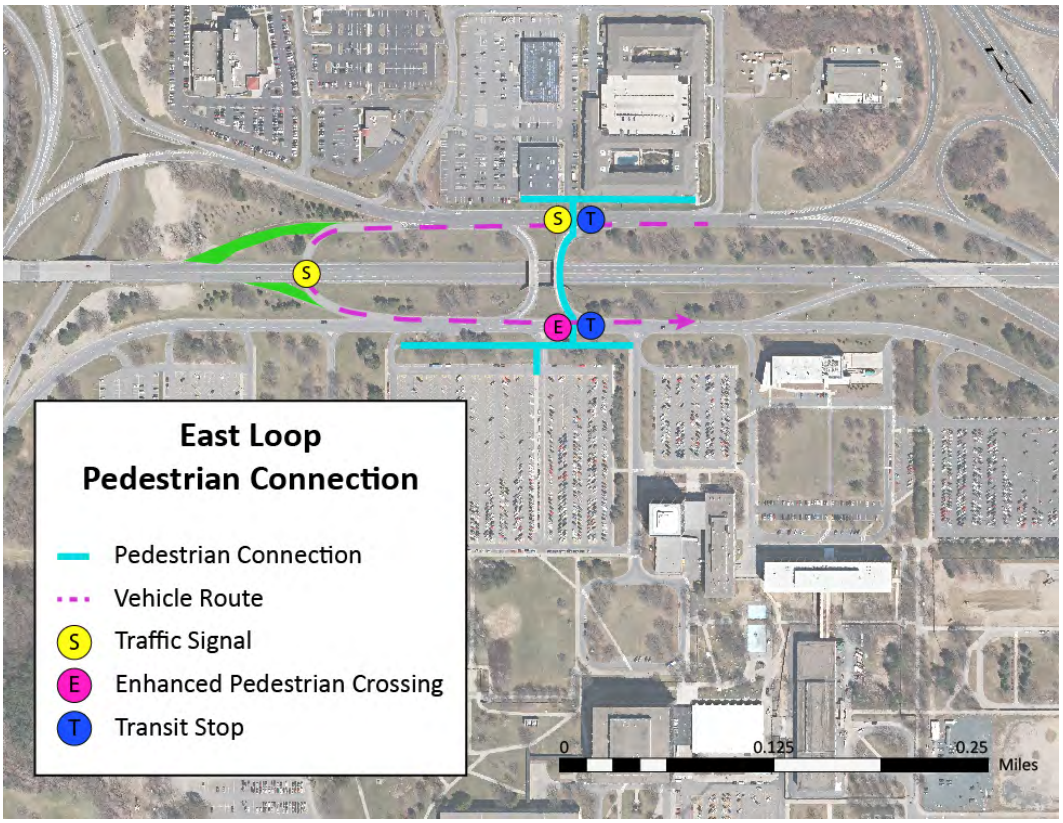

FIGURE 4.8 – EAST LOOP PEDESTRIAN CONNECTION

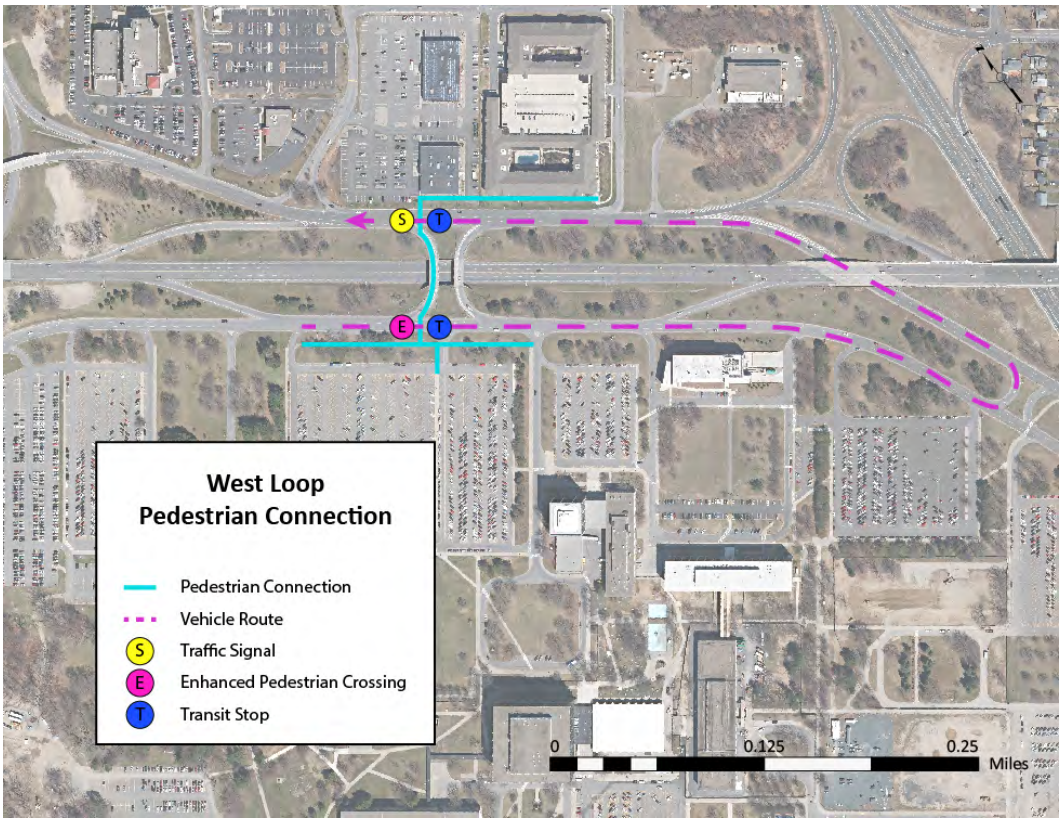

FIGURE 4.9 – WEST LOOP PEDESTRIAN CONNECTION

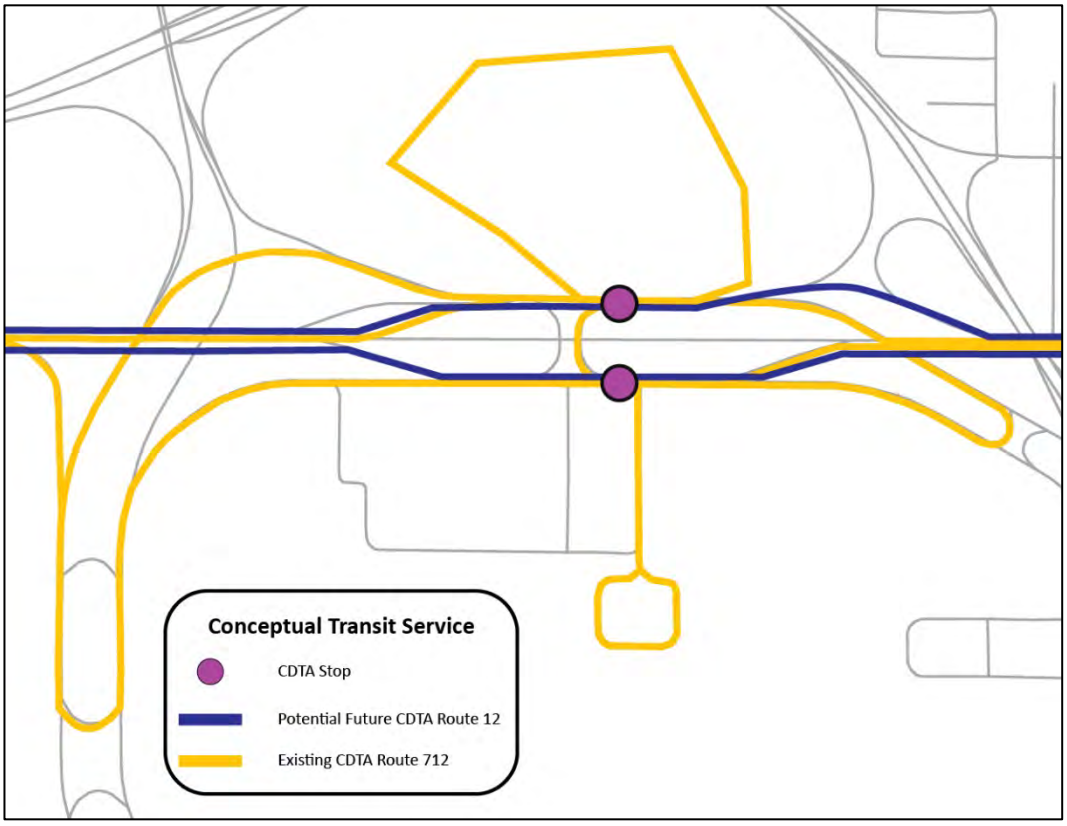

FIGURE 4.10 – CONCEPTUAL TRANSIT SERVICE

Costs and Implementation

Nationally, transportation funding resources are severely constrained, which has influenced state and regional policies about how to program the limited money that is available. The current public funding policy for transportation projects in New York is focused on "preservation first" to keep the existing transportation system and bridges in a state of good repair. Hence, one of the goals of this study was to develop a plan that could be implemented during a roadway maintenance project, i.e. implemented primarily through restriping with enhancements as feasible, while not precluding the ability to implement more comprehensive traffic calming measures as funding becomes available. As of the date of this document, there is no public funding commitment for a pavement preservation project, nor any of the complete streets changes identified in this study, so pursuing funding is a major step in the implementation plan.

This plan recommends that the City and partners work proactively to identify funding to conduct the additional studies, and to fund the design and construction of the immediate priority improvements. The City and partners should also identify local funding sources to establish the local match for a larger public project (or projects), and work with CDTC and NYSDOT to get a Washington Avenue/Patroon Creek Corridor Project on the local Transportation Improvement Program (TIP) to fund the enhancements along with a pavement preservation project. Smaller improvements may be funded and implemented separate from a larger project.

The estimated cost for the priority improvements is $390,000, which includes engineering, construction and inspection. The cost for individual elements of a short term preservation project (including enhancements) are summarized in Table 4.2, so the City and partners can achieve the corridor vision through a building block approach as funding is available. Table 4.3 outlines the costs associated with the long term alternative. Detailed cost estimates can be found in the Cost Estimate Appendix.

Table 4.1 – Cost Estimate – Priority Improvements

Description	Cost Category	West Segment	East Segment	Estimated Cost (Millions)
Priority Improvements Block 75 Pedestrian Crossing, Striped Hatching, I-90 Interchange 2 Modifications	Construction Subtotal	$0.31M	N/A	$0.31M
	Design and Construction InspectionI	$0.08M	N/A	$0.08M
	Project Total	$0.39M	N/A	$0.39M

TABLE 4.2 – COST ESTIMATE – PAVEMENT PRESERVATION WITH ENHANCEMENTS

Description	Cost Category	West Segment	East Segment	Estimated Cost (Millions)
Pavement Preservation with Enhancements	Roadwork, Traffic Signal, and Pedestrian Improvements	$1.29M	$0.50M	$1.79M
	Access Management	$0.05M	N/A	$0.05M
	Lighting	$0.50M	$0.32M	$0.82M
	Work Zone, Mobilization, Contingency	$0.72M	$0.32M	$1.04M
	Design and Construction Inspection	$0.64	$0.29	$0.93
	Project Total	$3.20M	$1.43M	$4.63M

TABLE 4.3 – COST ESTIMATE – LONG TERM ALTERNATIVE

Description	Cost Category	West Segment	East Segment	Estimated Cost (Millions)
Long-Term (Move Curbs In to Narrow Roadway)	Construction Subtotal	$3.66M to $4.96M	$1.88M	$5.54M to $6.84M
Extend Multi-Use Path to Brevator Street, Potential Additional Medians and Gateway	Design and Construction Inspection	$0.92M to $1.24M	$0.47M	$1.39M to $1.71M
	Project Total	$4.58M to$6.20M	$2.35M	$6.93M to $8.55M

The tables show that the estimated cost of a preservation project with the identified enhancements will cost approximately $4,630,000. Further, long-term plans to narrow Washington Avenue will cost approximately $6,930,000 to $8,550,000 depending on the extent of roadway modification and enhancements pursued.

Below is a description of the available Federal, State and Local funding sources.

Federal

TIP – The Transportation Improvement Program (TIP) is a five-year capital improvement program that allocates federal highway funds to surface transportation projects that have been selected through CDTC's planning process. CDTC updates the TIP every two years to maintain a current list of projects. Below are several federal funding sources typically found on the TIP:

- TA – Transportation Alternatives funding is a set-aside of funds under the Surface Transportation Block Grant (STGB) Program for on and off road pedestrian and bicycle facilities, non-driver access to public transportation, and safe routes to schools. States have flexibility in how the TA program is administered and the New York State program is run through the state level TAP office.
- HSIP – Highway Safety Improvement Program funding is for projects designed to achieve significant reductions in traffic fatalities and serious injuries. CDTC is developing a Reginal Safety Action Plan which may identify project types eligible for HSIP funding.
- NHPP – National Highway Performance Program funding for projects that support progress toward achievement of national performance goals for improving infrastructure condition, safety, mobility.
- STP – Surface Transportation Program funding provides flexible funding that may be used by states and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects.
- RTP – Recreational Trails Program provides funds to develop, construct, and maintain recreational trails.

State

- State Dedicated Funds – Programmed at the discretion of the NYSDOT.
- CHIPS – The Consolidated Local Street and Highway Improvement Program provides State funds to municipalities to support the construction and repair of highways on the State highway system. In order to be eligible for CHIPS funding, the project must be undertaken by a municipality (i.e. City of Albany), be for a highway-related purpose, and have a service life of 10 years or more.

Local

- Federal transportation programs typically require a 20% local match. The City should plan to cover a portion of the project's cost through their general fund or bonding. Further, other non-City sources and partners such as UAlbany or property owners in the corridor could provide financial support or matching funds.

The City may formally acknowledge the findings of this planning study as a first step to pursue funding and ultimately to implement the recommendations of this study.