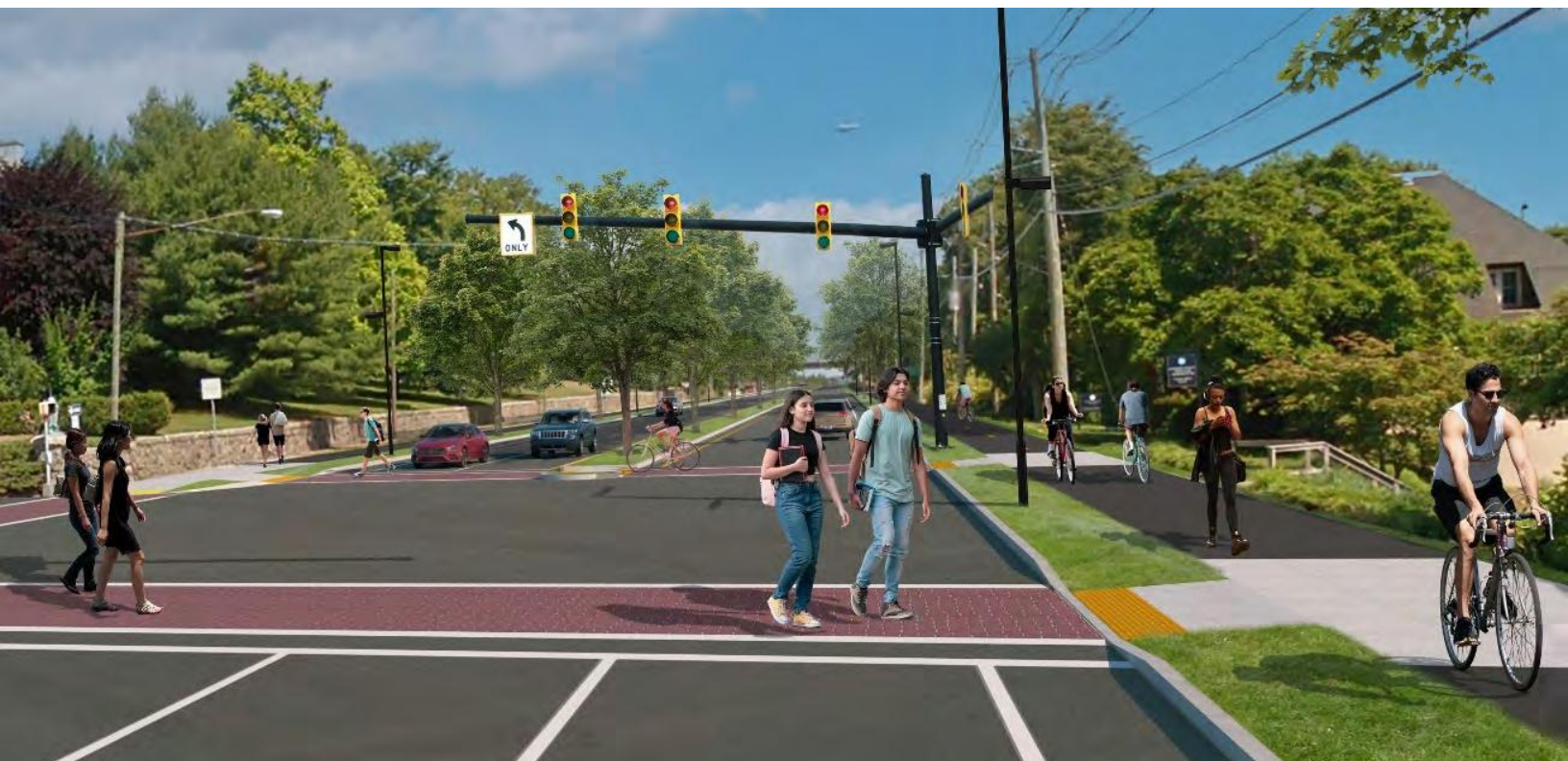


Route 32 Corridor Study New London, Connecticut



Prepared for:
Southeastern Connecticut Council of Governments
July 2023



Route 32 Corridor Study New London, Connecticut Final Report

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1 Executive Summary

Connecticut State Route 32 (Mohegan Avenue Parkway) is a regional connector running through New London that enables vehicles to make high speed connections between I-95 and I-395. Within the study area, Route 32 travels through Connecticut College, adjacent to the Lyman Allyn Museum and the US Coast Guard Academy. The existing highway grade infrastructure, wide shoulders, incomplete and inaccessible sidewalk network, long pedestrian crossings, and lack of cycling infrastructure create an unsafe and unpleasant environment for those who live, work, and visit the area.

Through a robust community engagement effort, a Vision for the future of Route 32 was developed:

Mohegan Avenue Parkway will serve to reduce barriers, create safe connections, and visually enhance the community through which it travels.

Three alternatives that meet the project Vision were assessed on the basis of several criteria, including safety, multimodal accommodation, constructability, and traffic operations.

The preferred alternative reduces the existing lane and shoulder widths, eliminates right turn lanes at intersections, replaces the existing concrete median with a planted median, and provides a shared use path for cyclists and pedestrians on both sides of the roadway.

The shared use path will be separated from the roadway by a landscaped buffer that is six to seven feet wide, which is wide enough to support the planting of trees. A typical cross section of the preferred alternative is depicted in Image 1 below.

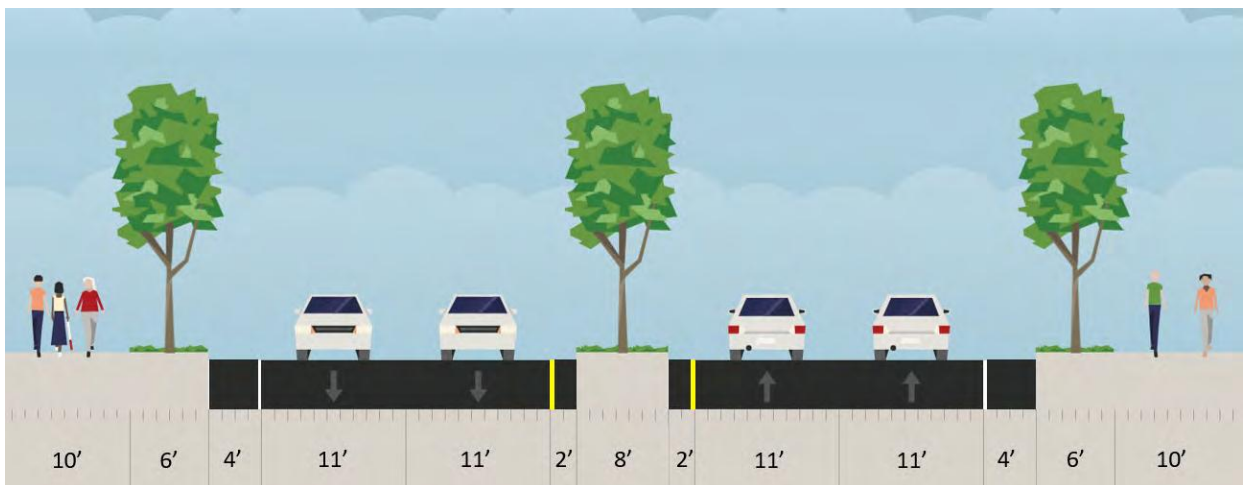


Image 1 – Typical Roadway Cross Section

The proposed concept improves safety for pedestrians by:

- Reducing crossing distances and adding new crosswalks at intersections
- Completing the discontinuous sidewalk network

- Providing a landscaped buffer between the pedestrian facilities and the traveled way
- Installing pedestrian scale lighting to improve nighttime visibility on the sidewalk/shared use path and at crossings.

The preferred concept proposes the following upgrades to existing signal equipment to improve vehicle safety and operations along the corridor:

- Upgrading the existing signal span wires to mast arms
- Installing new signal heads with reflectorized backplates
- Installing video detection.

The existing roadway does not include bicycle facilities; the installation of a shared use path on both sides of Route 32 will enable cyclists to travel along the corridor safely and efficiently. Additionally, the shared use path is proposed to extend to existing bicycle lanes on Williams Street, improving network connectivity.



Image 2 – Perspective view at College Entrance, looking northbound

The preferred concept will reduce vehicle speeds by implementing the following traffic calming measures along Route 32 between the Williams Street bridge and Benham Avenue:

- Planted median and planted buffers on each side of the roadway
- Visual gateway treatments, such as signage and public art
- Reduced lane and shoulder widths.



Image 3 – Perspective view of typical cross section, looking southbound

Additional traffic calming is proposed at the southern end of the corridor at the I-95 Exit 84 Ramp and the USCGA Ramp. Both ramps have been realigned to introduce additional curvature that is designed to reduce speeds for vehicles entering the study area. The two northbound lanes along Route 32 through the interchange are proposed to merge to one lane entering the study area to help slow through traffic.



Image 4 – Perspective view of realigned USCGA on-ramp, looking northbound

The proposed improvements are consistent with State and Federal objectives, which include improving multimodal connectivity and roadway safety, and reconnecting community fabric that has been disrupted by divisive transportation infrastructure. Therefore, a number of State and Federal grants may be available to help fund the design and construction of the preferred concept.

Furthermore, the preferred concept has been developed such that it may be implemented in the near- to medium- term, without substantial changes to the regional roadway network or to the land adjacent to the corridor. The preferred concept is functional for existing traffic volumes and is feasible within existing ROW. Completion of the I-395/I-95 interchange in Waterford would provide a more efficient route to I-395, reducing traffic volumes on Route 32. Should these improvements be realized, further changes could be implemented within the study area such as a road diet to one lane in each direction and single lane roundabouts at intersections.

The proposed concept plan and typical sections are depicted in Image 5 on the following page.

ROUTE 32, NEW LONDON, CT

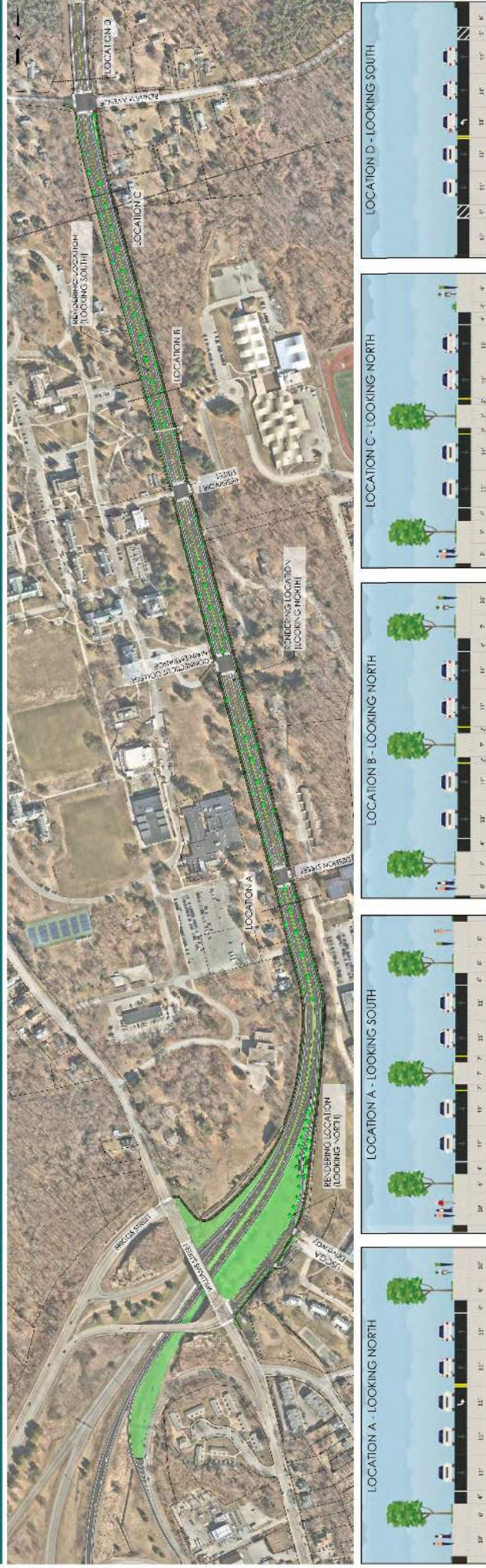


Image 5 – Route 32 Concept Plan

2 Introduction

Connecticut State Route 32 is a regional connector running through New London that enables vehicles to make high speed connections between I-95 and I-395. The four-lane roadway, equipped with highway-grade infrastructure, divides the Connecticut College campus, severing east/west connectivity for pedestrians and cyclists.

A pedestrian fatality near the Connecticut College Main Entrance in 2015 prompted a Road Safety Audit and campus pedestrian safety study. The intention of this corridor study is to refine the mid-term and long-term recommendations outlined in the prior studies, and determine the short-, medium-, and long-term feasibility of potential roadway improvements aimed at improving safety for pedestrians and cyclists. Recommendations of this study will be focused on re-designing Route 32 to fit within the context of the surrounding area, while also considering its current status as a regional connector.



Image 6 – Locus Map

A full inventory of the existing roadway network was completed, including roadway lane configurations, pedestrian sidewalks, crossings, and amenities, and bicycle accommodations. Multimodal traffic volume

data was collected along Route 32 and at each of the study area intersections. The most recent five years of available crash data was reviewed to determine existing crash patterns and frequencies. Additionally, capacity and queue analyses were performed at each of the intersections in order to determine existing traffic operations in the study area depicted in the above Image 6.

3 Existing Conditions

3.1 Historical Context

Route 32 through New London has a long history of serving as a regional connecting roadway, although the roadway has undergone a significant transformation over the past century. Aerial imagery from 1934 shows that the roadway was once much narrower and terminated at Williams Street. By 1951, I-95 had been constructed, and Route 32 north was widened and divided with a landscaped median, as depicted in Image 7 below.



Image 7 - Route 32 with Landscaped Median

By 1986, Route 32 was extended south over I-95, and the I-95/Route 32 interchange resembled its existing condition. Portions of the landscaped median along Route 32 remained through 1990, and the entire landscaped median was replaced with concrete by 1995 depicted in Image 8 and Image 9 below.



Images 8 and 9- Route 32 Before and After the Construction of I-95

The changes to Route 32 over the past 100 years are consistent with changes to roadway infrastructure across the country during this time period. At the time, roadway design best practices favored vehicular mobility over safety, resulting in an infrastructure system that is often unsafe for all roadway users, especially pedestrians and cyclists.

3.2 Adjacent Land Use

The land uses adjacent to the corridor include Connecticut College, The Williams School, the Lyman Allyn Art Museum, and the United States Coast Guard Academy (USCGA). The USCGA is located on the east side of Route 32 at the southern end of the study corridor. The campus includes student residential buildings, academic buildings, and athletic fields.

The Connecticut College campus is located on the eastern and western sides of Route 32. Academic buildings, the campus dining hall, and many student dorm buildings are located on the western side, and the athletic facilities, campus gym, and student apartments are located on the eastern side of Route 32. This means that students must frequently cross Route 32 as part of their daily routines.

The Williams School is a college preparatory school for grades 6-12 that is located on the Connecticut College campus. Direct vehicle access to the school is not provided from Route 32, but the school is accessible via the Connecticut College Main Entrance, located on Route 32.

The Lyman Allyn Art Museum is located on the Connecticut College campus on the west side of Route 32 at the southern end of the study corridor. The museum has plans to repurpose the existing acreage into a public park.

The Hodges Square Historic District is located southeast of the study area along Williams Street, adjacent to the I-95N Exit 84N ramp. This neighborhood was severed from the rest of downtown New London upon the construction of the interstate in the mid-20th century. The neighborhood is accessible from Route 32 by vehicle via Briggs Street and Williams Street, and on foot via Mohegan Avenue Parkway and Williams Street.

3.3 Environmental Context

A review of the study area and adjacent land use was conducted to identify nearby wetlands, aquifers, natural diversity database areas, protected open space, and locations in the flood plain. The nearest protected environmental area is a Natural Diversity Database Area along the Thames River, approximately 950 feet east of Route 32. No other nearby environmental areas of concern were identified near the study area.

3.4 Roadway Inventory

The total length of Route 32 through New London is 2.3 miles. Approximately one mile of road comprises the study corridor, which falls between Benham Avenue and the Williams Street bridge. The roadway is classified as an urban principal arterial, and provides two travel lanes in each direction,

divided by a concrete median, and dedicated turning lanes at intersections. The travel lanes are 11 feet wide, and the shoulder width varies between ten and twelve feet. The corridor includes five signalized intersections.

Five-foot-wide concrete sidewalks are provided on both sides of the roadway for majority of the corridor; however, the sidewalk on the east side ends abruptly approximately 220 feet north of Reservoir Street and on the west side the sidewalk ends abruptly approximately 850 feet north of Reservoir Street. Additionally, a significant portion (approximately 2,800 feet) of sidewalk on the east side is lined with steel guard rail, which shows signs of vehicle contact at some locations. Marked pedestrian crosswalks across Route 32 are provided at each of the signalized intersections, and pedestrians may also cross at a Connecticut College-owned pedestrian bridge, located approximately 220 feet north of Reservoir Street. The pedestrian bridge is not accessible to those with physical disabilities, and the curb ramps located along the corridor are not ADA compliant. Bicycle facilities along the corridor are not provided. An existing roadway typical section is depicted in Image 10 below, followed by an existing conditions plan.

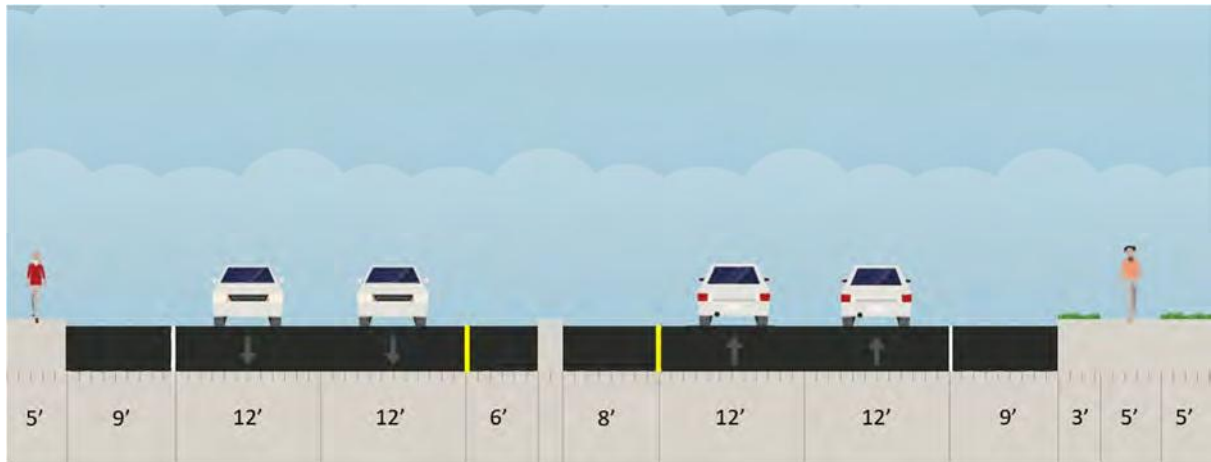
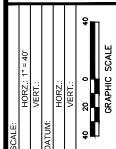


Image 10 – Existing Roadway Section



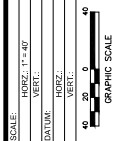
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ROUTE 32 CORRIDOR STUDY

CONNECTICUT

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NEW LONDON
CONNECTICUT

PROJ. No.: 20210942.A10
DATE: APRIL 2022

EXC-103



SCALE:	HORIZ. 1" = 40'
	VERT. 1" = 20'
DATUM:	NAD 83
PROJ.:	UTM
GRAPHIC SCALE:	0 20 40

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NEW LONDON
CONNECTICUT

PROJ. No. 20170942A10
DATE: APRIL 2022
EXC-105

NO.	DATE	DESCRIPTION	DESIGNER	REVIEWER

3.4.1 Study Area Intersections

The following study area intersections were reviewed:

- Route 32 at Benham Avenue
- Route 32 at Reservoir Street and Winchester Road
- Route 32 at Connecticut College Main Entrance
- Route 32 at Deshon Street
- Mohegan Avenue Parkway at the Coast Guard Academy Main Entrance
- Route 32 at Williams Street
- Williams Street at Briggs Street

Route 32 at Benham Avenue

The intersection of Route 32 and Benham Avenue is a four-legged signalized intersection with Route 32 providing the northbound and southbound approaches and Benham Avenue providing the eastbound and westbound approaches. Route 32 provides two travel lanes in each direction, as well as dedicated northbound and southbound left turn lanes. Benham Avenue provides one shared approach lane in each direction. Sidewalks are not provided; however, a marked crosswalk is provided across Route 32 on the southern leg of the intersection. Pedestrian push-buttons are located on both sides of Route 32 at the crosswalk; however, pedestrian signal heads are not provided. Pedestrians may cross Route 32 concurrently with Benham Avenue vehicle traffic. The 85-foot crossing does not provide a pedestrian refuge.

Route 32 at Reservoir Street

The intersection of Route 32 and Reservoir Street is a four-legged signalized intersection, with Route 32 providing the northbound and southbound approaches and Reservoir Street providing the eastbound and westbound approaches. Route 32 provides two travel lanes in each direction, as well as dedicated northbound and southbound left turn lanes, and a northbound right turn lane. Reservoir Street provides one shared approach lane in each direction. The western leg of the intersection is a Connecticut College driveway that is sometimes gated, prohibiting vehicle access and egress. The eastern leg of the intersection provides access to the Connecticut College Athletic Center, athletic fields, and facilities.

Sidewalks are provided on all four corners of the intersections, and a painted crosswalk is provided across Route 32 on the northern leg of the intersection. Pedestrian push buttons and signal heads are provided at the crosswalk; a pedestrian refuge island is not provided. Pedestrians may cross Route 32 during an actuated exclusive pedestrian phase. Curb ramps are provided on each approach that are not ADA compliant.

Route 32 at Connecticut College Main Entrance

The intersection of Route 32 and Connecticut College Main Entrance is a three-legged signalized intersection with Route 32 providing the northbound and southbound approaches, and the Connecticut

College entrance providing the eastbound approach. Route 32 provides two lanes in each direction, as well as a dedicated northbound left turn lane and a dedicated southbound right turn lane. The Connecticut College Main Entrance provides one eastbound approach lane shared between all movements.

Sidewalks are provided on all intersection approaches, and a painted crosswalk is provided across Route 32 on the northern leg of the intersection. Curb ramps are provided at the crosswalk and on the southwest corner of the intersection that are not ADA compliant. No pedestrian refuge is provided. The sidewalk on the east side of Route 32 at this intersection is protected by guard rail.

Route 32 at Deshon Street

The intersection of Route 32 and Deshon Street is a three-legged signalized intersection with Route 32 providing the northbound and southbound approaches, and Deshon Street providing the westbound approach. Route 32 provides two lanes in each direction, as well as a dedicated southbound left turn lane. Deshon Street provides one westbound approach lane shared between all movements. The roadway grade on Deshon Street slopes uphill significantly approaching the intersection. On the western side of the roadway, opposite Deshon Street, two driveways that previously provided vehicle access to Connecticut College are blocked by wooden bollards. Future vehicle access would not be possible at this location without changes to the existing signal infrastructure.

Sidewalks are provided on the eastern and western side of Route 32 and the southern side of Deshon Street. A painted crosswalk is provided across Route 32 on the southern leg of the intersection. Pedestrian push buttons and signal heads are provided at the crosswalk. Pedestrians may cross Route 32 during an actuated exclusive pedestrian phase. Curb ramps are provided at the crosswalk and on the northeast corner of the intersection that are not ADA compliant. A pedestrian refuge island is not provided.

Mohegan Avenue Parkway at the Coast Guard Academy Main Entrance

The intersection of Mohegan Avenue Parkway and the U.S. Coast Guard Academy Main Entrance is a three-legged unsignalized intersection with Mohegan Avenue Parkway providing the northbound approach, and the U.S. Coast Guard Academy Main Entrance providing the westbound stop-controlled approach. Mohegan Avenue Parkway provides one northbound travel lane. The Coast Guard Academy Main Entrance is gated and provides one left turn lane and one right turn lane. Sidewalks are provided on the eastern side of the roadway, connecting to the Coast Guard Academy campus. Crosswalk and curb ramps are not provided across the Coast Guard Academy Main Entrance.

Mohegan Avenue Parkway at Williams Street

The intersection of Mohegan Avenue Parkway and Williams Street is a four-legged signalized intersection with Mohegan Avenue Parkway providing the northbound and southbound approaches and Williams Street providing the eastbound and westbound approaches. The northbound approach is one-way and provides one through lane and one dedicated left turn lane. The southbound approach provides one approach lane shared for right and left turns. The westbound approach provides one through lane

and one dedicated right turn lane. The eastbound approach provides one through lane and one dedicated left turn lane. Dedicated bicycle lanes are provided on Williams Street.

Sidewalks are provided on all four approaches of the intersection. Sidewalks continue north and south of the intersection on the east side of Mohegan Avenue Parkway, east of the intersection on the north side of Williams Street, and west of the intersection on both sides of Williams Street. Painted crosswalks are provided across Mohegan Avenue Parkway on the northern and southern legs of the intersection, and textured pavement crosswalks are provided across Williams Street on the eastern and western legs of the intersection. Pedestrian push buttons and signal heads are provided at each crosswalk and pedestrians may cross all legs of the intersection during an actuated exclusive pedestrian phase. ADA compliant curb ramps are provided at each crosswalk.

Williams Street at Briggs Street

The intersection of Williams Street and Briggs Street is a three-legged unsignalized intersection with Williams Street providing the eastbound and westbound approaches and Briggs Street providing the northbound approach. Each approach is stop-controlled and provides one travel lane in each direction. Bicycle lanes are provided for eastbound and westbound cyclists approaching the intersection. On the western leg of the intersection, the eastbound bicycle lane ends and is replaced with sharrow pavement markings.

Sidewalks are provided along both sides of Williams Street east of the intersection, the south side of Williams Street west of the intersection, and the north side of Briggs Street. A painted crosswalk is provided across Briggs Street on the southern leg of the intersection, and a textured pavement crosswalk is provided across Williams Street on the western leg of the intersection. ADA compliant curb ramps are provided at each crosswalk.

3.4.2 Pedestrian Facilities

Every trip begins and ends on foot, and walking is the least expensive way to get from one place to another. Aside from providing direct access to commercial, civic, recreational, and other destinations, good pedestrian facilities are essential to the success of every other travel mode. These facilities include sidewalks of adequate width, visible crosswalks, accessible ramps, pedestrian signals, and a variety of streetscaping measures that also affect comfort and safety. Appropriate lighting, shading, and resting places are important components of the pedestrian experience. Pedestrian routes should be direct and well maintained to aid in walkability. Walkability is particularly important in the context of the study area, as many students travel around campus on foot, and are often required to cross Route 32

Sidewalks are provided along both sides of Route 32 beginning at the Williams Street Bridge and continuing north until the pedestrian bridge, located approximately 200 feet north of Reservoir Street. At the pedestrian bridge, sidewalks on the east side of Route 32 end. Sidewalks on the west side of Route 32 continue north for another 625 feet and terminate abruptly. On both sides of the roadway, sidewalks are approximately five feet in width. Sidewalks are found to be generally free from obstructions, with various utilities located on the edge of the pedestrian travel way. On the east side of the roadway, vegetation is overgrown onto the sidewalk at some locations, specifically between

Reservoir Street and the Connecticut College Main Entrance. At some locations along the east side of Route 32, guardrail is provided between the sidewalk and the roadway. Sidewalks are depicted in Images 11 and 12 below.



Image 11 - East Side Sidewalk

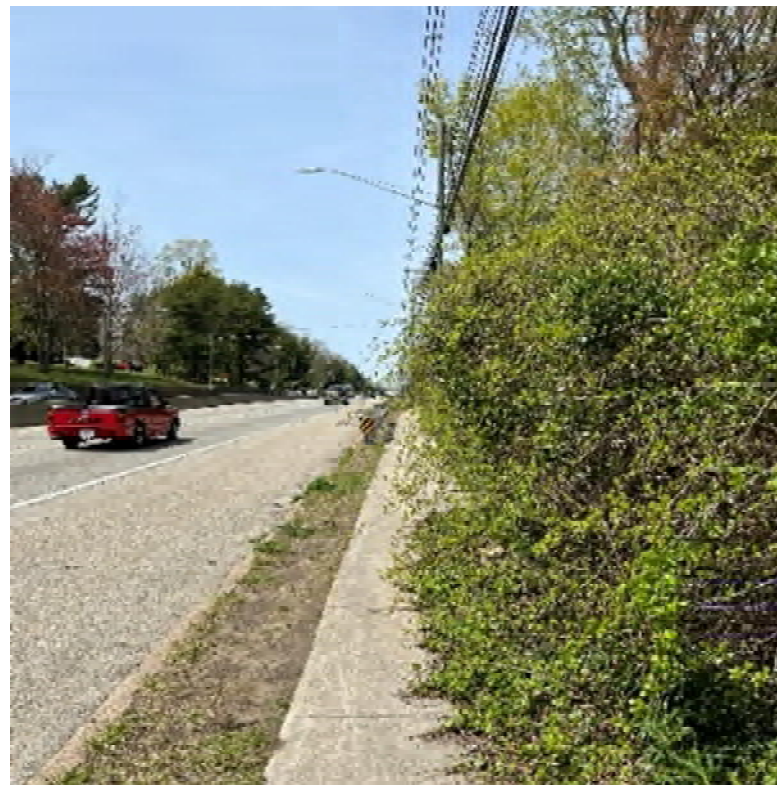


Image 12 - East Side Sidewalk

Pedestrians may cross Route 32 at signalized intersections. Generally, one crosswalk is provided at each intersection and pedestrians may cross during actuated exclusive pedestrian signal phases. Curb ramps at these intersections are not ADA compliant. Existing crosswalks are depicted in Images 13 and 14 below.



Image 13 - Pedestrian Facilities at Connecticut College Main Entrance



Image 14 - Pedestrian Crossing at Connecticut College Main Entrance

The pedestrian bridge is located approximately 200 feet north of Reservoir Street. The bridge is accessible by stairs on the east side of Route 32, with no ADA accessible ramp provided, and on the west side, access to the bridge is at grade. Previous bridge inspections occurring in 2017, 2019, and 2021, mention the pedestrian bridge shows significant signs of concrete cracking, steel reinforcement corrosion and external corrosion to deck and beams from exposure to weather. Connecticut College is currently planning to replace the bridge in the near future. The bridge is depicted in Image 15 below.



Image 15 - Pedestrian Bridge

Pedestrian scale lighting is not provided along Route 32; all streetlights provided are intended to light the roadway. Therefore, the sidewalks are not well illuminated at night.

These aforementioned deficiencies create an uninviting, inaccessible, and unsafe environment for pedestrians.

3.4.3 Bicycle Facilities

Dedicated bicycle facilities are not provided along Route 32. The high vehicle speeds and average daily traffic volumes are prohibitive to the installation of unprotected bicycle facilities, as indicated in Figure 1 on the following page, which comes from the Federal Highway Administration Bikeway Selection Guide.

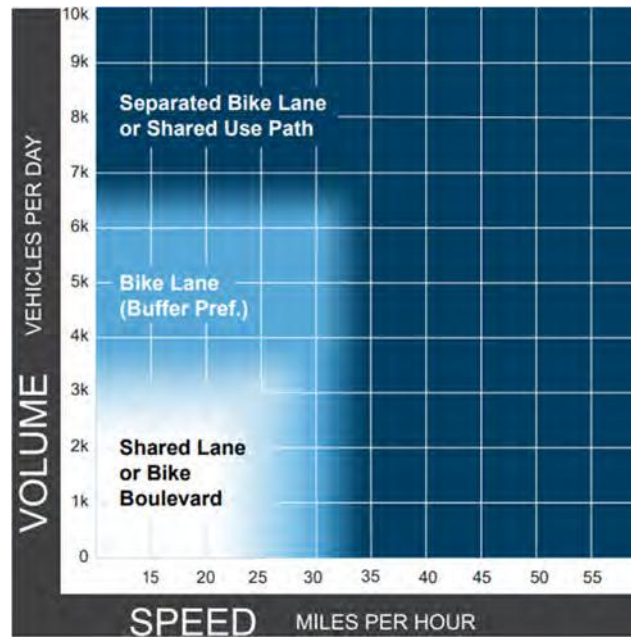


Figure 1- Preferred Bikeway Type

The average daily traffic (ADT) volumes on Route 32 exceed 10,000 vehicles, clearly indicating a need for separated bike facilities. Additionally, existing cyclists on Route 32 were observed using the sidewalk, indicating a lack of comfort riding on the street, as depicted in Image 16 below.



Image 16-Bicyclist on Route 32

3.4.4 Transit Facilities & Service

Southeast Area Transit District (SEAT) operates two bus routes in the vicinity of the study area; however, no bus routes currently run along Route 32. Bus route 1, Norwich/New London via Route 32, travels along Williams Street along the western edge of the Connecticut College campus, and on Route

32 north of the study area. Bus route 14, New London/Crystal Mall, travels along Williams Street and Briggs Street and provides service between Crystal Mall and downtown New London. A bus stop for both of these routes is located at the intersection of Williams Street and Briggs Street. Signage and amenities for the bus stop are not currently provided. Previously, a granite bench to serve people waiting for the bus was installed on the west side of Williams Street across from the Connecticut College back entrance drive.

Previously, bus service was provided along Route 32, with a stop at the intersection of Reservoir Street and Route 32. A bench for riders that is carved into the stone retaining wall remains today.

3.5 Traffic Volumes, Speeds and Counts

Fuss & O'Neill conducted turning movement counts (TMC) on Wednesday, April 27, 2022, between 7:00 am and 9:00 am, and 4:00 pm and 6:00 pm at the following intersections:

- Route 32 at Benham Avenue
- Route 32 at Reservoir Street
- Route 32 at Connecticut Main Entrance
- Route 32 at Deshon Street
- Mohegan Avenue Parkway at the Coast Guard Academy Main Entrance
- Route 32 at Williams Street
- Williams Street at Briggs Street

Weekday morning and afternoon peak hour volumes at each of the study area intersections are depicted in *Figure 1 of Appendix A*.

Pedestrian counts were conducted at Connecticut College's pedestrian bridge on Wednesday, April 27 and Saturday, April 30, 2022, between 8:00 am and 10:00 pm. The weekday count indicated a total of 305 pedestrians using the bridge with a peak of 54 pedestrians between 3:00 and 4:00 pm. The Saturday count indicated a total of 213 pedestrians with a peak of 37 pedestrians crossing between 4:00 and 5:00 pm.

At intersections, peak hour pedestrian volumes were significantly lower than those observed at the pedestrian bridge. The greatest volume of pedestrians crossing Route 32 in one hour was recorded to be nine pedestrians. This occurred at the Connecticut College Main Entrance between 8:00 and 9:00 am. The recorded weekday peak hour pedestrian volume at the bridge is six times greater than at any intersection. This indicates that students feel unsafe crossing Route 32 at grade.

Automatic Traffic Recorder (ATR) counts are typically collected over a multi-day period to capture daily volumes, speeds, and classifications. Speed and volume ATR data was collected at the following locations in April and May 2022:

- Route 32 between Benham Avenue and Reservoir Street
- Route 32 between Deshon Street and the Williams Street bridge

- Route 32 southbound off-ramp
- Route 32 northbound on-ramp

The 85th percentile speed between Benham Avenue and Deshon Street was recorded at 57 miles per hour for northbound vehicles and 54 miles per hour for southbound vehicles. Between Deshon Street and the Williams Street bridge, the 85th percentile speed was recorded at 48 miles per hour for northbound vehicles, and 50 miles per hour for southbound vehicles. These recorded 85th percentile speeds exceed the posted northbound speed limit of 35 miles per hour, and the posted southbound speed limit of 40 miles per hour.

The Average Daily Vehicle Traffic (ADT) on Route 32 was 26,693 vehicles, with 13,268 vehicles traveling northbound and 13,425 vehicles traveling southbound. The morning peak hour occurs at 7:00 am, with 882 northbound vehicles and 1,089 southbound vehicles. The afternoon peak hour occurs at 4:00 pm with 1,214 vehicles traveling northbound and 923 vehicles traveling southbound.

The directional distribution is approximately 50/50 northbound/southbound over the entire day, with a 44/56 northbound/southbound distribution during the morning peak hour, and the reverse during the afternoon peak hour.

Copies of the TMC and ATR traffic data have been included in *Appendix G* of this report.

3.5.1 Background Traffic Growth

Two future year volume conditions were developed for analysis in consultation with the Connecticut Department of Transportation (CTDOT) Trip and Traffic Analysis unit. Volumes were grown to an interim build year of 2032 at an annual growth rate of 0.5 percent per year. This growth rate was established based on examination of historical count data collected in the study area. All historical data used predates the Covid-19 pandemic. Upon application of the growth rate, the anticipated ADT under the 2032 No-Build condition is 28,059, with 13,947 vehicles traveling northbound and 14,112 vehicles traveling southbound. The anticipated morning peak hour volume under the 2032 No Build condition is 2,072 vehicles, and the anticipated afternoon peak hour volume is 2,247 vehicles.

A 2042 volume condition was also established for the corridor that incorporates future regional roadway improvement projects, specifically the reconstruction of the I-95/I-395 interchange in Waterford, which would eliminate a significant portion of regional cut through traffic on Route 32. In order to develop this condition, volumes were first grown at an annual growth rate of 0.5 percent. A reduction of 50 percent was applied to northbound traffic on Route 32 originating from I-95 south, and a reduction of 40 percent was applied to southbound volumes on Route 32 traveling to I-95 north. These reduction factors align with the reported percentages of cut through traffic reported in the I-95/Route 32 Origin-Destination study completed in June of 2017.

Volumes for the 2032 and 2042 background traffic conditions are depicted in *Figures 2 and 3 of Appendix A*.

3.6 Traffic Safety Data

Crash data was gathered from the University of Connecticut Crash Data Repository for the following locations:

- Route 32 at Benham Avenue
- Route 32 from Benham Avenue to Reservoir Street
- Route 32 at Reservoir Street
- Route 32 from Reservoir Street to Deshon Street
- Route 32 at the Connecticut College Main Entrance
- Route 32 at Deshon Street
- Route 32 from Deshon Street to Williams Street Overpass
- Briggs Street at Route 32 Off ramp

The records were gathered for the most recent five years of available data, from January 1, 2017, through May 2, 2022. A summary of the crash data per intersection is provided below in Table 1.

Table 1: 2017-2021 Crash Summary

Criteria	Route 32 at Benham Avenue	Route 32 (Benham Ave to Reservoir Street)	Route 32 at Reservoir Street	Route 32 (Reservoir St to CT College Driveway)	Route 32 at Connecticut College Driveway
<u>YEAR</u>					
2017	6	4	6	4	11
2018	4	7	2	3	4
2019	7	2	4	5	8
2020	6	6	3	6	2
2021	6	0	4	3	5
<u>Total</u>	29	19	19	21	30
<u>Average</u>	5.8	3.8	3.8	4.2	6.0
<u>TYPE</u>					
Angle	6	0	2	0	2
Front to Rear	18	13	16	19	24
Sideswipe	0	4	1	0	3
Fixed Object	0	0	0	0	0
Pedestrian	0	0	0	0	0
Unknown/Other	5	2	0	2	1
<u>SEVERITY</u>					
Property Damage Only	24	16	10	16	24
Possible Injury	5	3	4	5	6
Suspected Minor Injury	0	1	5	0	0
Suspected Serious Injury	0	0	0	0	0
Fatality (Kill)	0	0	0	0	0

Table 1 (Continued): 2017-2021 Crash Summary

	Route 32 (Connecticut College Driveway to Deshon St)	Route 32 at Deshon St	Route 32 (Deshon St to Williams St Overpass)	Briggs Street at Route 32 Offramp
<u>YEAR</u>				
2017	6	3	5	8
2018	5	11	15	9
2019	5	3	8	4
2020	0	3	9	2
2021	2	2	4	6
<u>Total</u>	18	22	41	29
<u>Average</u>	3.6	4.4	8.2	5.8
<u>TYPE</u>				
Angle	0	3	1	4
Front to Rear	16	13	12	18
Sideswipe	1	3	13	6
Fixed Object	0	0	0	0
Pedestrian	0	0	0	0
Unknown/Other	1	3	15	2
<u>SEVERITY</u>				
Property Damage Only	13	15	31	28
Possible Injury	5	4	4	2
Suspected Minor Injury	0	2	6	0
Suspected Serious Injury	0	1	0	0
Fatality (Kill)	0	0	0	0

The most common type of crash was a rear end collision. These types of collisions are common at signalized intersections and can often indicate high vehicle speeds and close following. Throughout our public outreach process, members of the public also speculated that the high number of rear end collisions could be attributed to individuals speeding up to avoid red lights. Sideswipe collisions are also common in the study area, particularly in the vicinity of the Mohegan Avenue Parkway/Route 32 merge. This indicates limited visibility for vehicles on the Mohegan Avenue Parkway ramp, and a limited distance for these vehicles to accelerate to the travel speed from the yield condition. It is important to note that the most recent five-year study period does not include the fatal collision that occurred in 2015, when a pedestrian was struck across from the Connecticut College Main Entrance.

3.7 Traffic Operations Analysis

Capacity analyses for both signalized and unsignalized intersections were conducted using Synchro Professional Software, version 10.0.

In discussing intersection capacity analyses results, two terms are used to describe the operating condition of the road or intersection. These two terms are volume to capacity ratio (v/c) and level of service (LOS).

The v/c ratio is a ratio of the volume of traffic using an intersection to the total capacity of the intersection (the maximum number of vehicles that can utilize the intersection during an hour). The v/c ratio can be used to describe the percentage of capacity utilized by a single intersection movement, a combination of movements, an entire intersection approach, or the intersection as a whole.

LOS is a measure of the delay experienced by stopped vehicles at an intersection. LOS is rated on a scale from A to F, with A describing a condition of very low delay (less than 10 seconds per vehicle), and F describing a condition where delays will exceed 50 seconds per vehicle for unsignalized intersections and 80 seconds per vehicle for signalized intersections. Delay is described as a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Therefore, intersections with longer delay times are less acceptable to most drivers. Intersections with very low delay often indicate excess roadway capacity, which can lead to unsafe driver behaviors and excessive vehicle speeds.

LOS is generally used to describe the operation (based on delay time) of both signalized and unsignalized intersections, while v/c ratio is applied to signalized intersections only. These definitions for v/c ratio and LOS, as well as the methodology for conducting signalized and unsignalized intersection capacity analyses, are taken from the "Highway Capacity Manual 6th Edition" published by the Transportation Research Board.

In discussing two way stop controlled unsignalized intersection capacity analyses, LOS is used to provide a description of the delay and operational characteristics of the turns from the minor street (stop sign controlled) to the major street and turns from the major street to the minor street. Through vehicles are not delayed by the minor street and do not experience delay, therefore they are not rated with a level of service.

In discussing all-way stop controlled intersection capacity analysis, LOS provides a description of the delay for each approach as well as the overall intersection.

Using the above referenced methodologies, the weekday morning and afternoon peak hour existing capacity analyses were conducted at the following intersections:

- Route 32 at Benham Avenue
- Route 32 at Reservoir Street
- Route 32 at Connecticut College Main Entrance
- Route 32 at Deshon Street
- Mohegan Avenue Parkway at the Coast Guard Academy Main Entrance
- Route 32 at Williams Street
- Williams Street at Briggs Street

For analysis purposes, the Route 32 and Briggs Street approaches are referred to as northbound and southbound and the side street approaches are typically referred to as eastbound and westbound approaches.

Under existing conditions, all signalized intersections in the study area operate at LOS B or better during the morning and afternoon peak hours, with the exception of Mohegan Avenue Parkway and Williams Street, which operates at LOS C during the afternoon peak hour. The highest intersection v/c ratio under existing conditions is 0.89 at the intersection of Route 32 and Deshon Street during the afternoon peak hour.

Under the 2032 background condition, all signalized intersections operate at LOS B or better during the morning and afternoon peak hours, with the exception of Mohegan Avenue Parkway at Williams Street and Route 32 at Deshon Street, which operate at LOS C during the afternoon peak hour. The highest intersection v/c ratio under existing conditions is 0.94 at the intersection of Route 32 and Deshon Street during the afternoon peak hour.

Table 2 presents a summary of the levels of service at signalized intersections. The Synchro analysis worksheets are attached as *Appendix E* and *F* for the weekday morning and afternoon hours, respectively.

Table 2: Signalized Intersection V/C Ratio and Level of Service

Signalized Intersections	2022 Existing Conditions Peak Hour		2032 Background Conditions Peak Hour	
	Weekday Morning	Weekday Afternoon	Weekday Morning	Weekday Afternoon
Route 32 at Benham Ave.	0.52/LOS A*	0.62/LOS A	0.55/LOS A	0.66/LOS A
<i>EB Approach (Benham Ave.)</i>	0.01/LOS C	0.25/LOS C	0.01/LOS C	0.28/LOS C
<i>WB Approach (Benham Ave.)</i>	0.01/LOS C	0.06/LOS C	0.01/LOS C	0.08/LOS C
<i>NB Approach Left Turn</i>	0.15/LOS D	0.34/LOS D	0.19/LOS D	0.38/LOS D
<i>NB Approach Through</i>	0.38/LOS A	0.68/LOS A	0.40/LOS A	0.70/LOS A
<i>SB Approach Left Turn</i>	0.09/LOS D	0.14/LOS D	0.12/LOS D	0.17/LOS D
<i>SB Approach Through</i>	0.56/LOS A	0.50/LOS A	0.59/LOS A	0.53/LOS A
Route 32 at Reservoir St.	0.68/LOS A	0.69/LOS B	0.71/LOS A	0.73/LOS B
<i>EB Approach (Reservoir St.)</i>	0.54/LOS E	0.24/LOS C	0.58/LOS E	0.27/LOS C
<i>WB Approach (CT College Main Entrance)</i>	0.17/LOS D	0.44/LOS C	0.31/LOS D	0.44/LOS C
<i>NB Approach Left Turn</i>	0.06/LOS D	0.17/LOS D	0.11/LOS D	0.22/LOS D
<i>NB Approach Through</i>	0.44/LOS A	0.79/LOS B	0.46/LOS A	0.83/LOS B
<i>NB Approach Right Turn</i>	0.00/LOS D	0.00/LOS D	0.00/LOS D	0.00/LOS D
<i>SB Approach Left Turn</i>	0.43/LOS D	0.52/LOS E	0.48/LOS D	0.57/LOS E
<i>SB Approach Through</i>	0.72/LOS A	0.58/LOS B	0.76/LOS B	0.61/LOS B

Table 2 (Continued): Signalized Intersection V/C Ratio and Level of Service

Route 32 at Connecticut College Main Entrance	0.8/LOS B	0.71/LOS B	0.84/LOS B	0.75/LOS B
<i>EB Approach (CT College Main Entrance)</i>	0.46/LOS D	0.40/LOS D	0.34/LOS D	0.42/LOS D
<i>NB Approach Left Turn</i>	0.08/LOS C	0.15/LOS C	0.08/LOS C	0.16/LOS C
<i>NB Approach Through</i>	0.36/LOS A	0.69/LOS A	0.38/LOS A	0.73/LOS A
<i>SB Approach Through</i>	0.88/LOS B	0.81/LOS C	0.94/LOS C	0.86/LOS C
<i>SB Approach Right Turn</i>	0.02/LOS A	0.04/LOS B	0.02/LOS A	0.05/LOS B
Route 32 at Deshon St.	0.64/LOS B	0.89/LOS B	0.67/LOS B	0.94/LOS C
<i>WB Approach (Deshon St.)</i>	0.43/LOS D	0.43/LOS C	0.44/LOS D	0.45/LOS C
<i>NB Approach</i>	0.64/LOS B	0.95/LOS C	0.68/LOS B	1.00/LOS D
<i>SB Approach Left Turn</i>	0.18/LOS C	0.07/LOS C	0.19/LOS C	0.08/LOS C
<i>SB Approach Through</i>	0.64/LOS A	0.52/LOS A	0.68/LOS A	0.54/LOS A
Mohegan Ave. Pkwy. at Williams St.	0.43/LOS B	0.44/LOS C	0.45/LOS B	0.47/LOS C
<i>EB Approach (Williams St.) Left Turn</i>	0.04/LOS A	0.04/LOS C	0.04/LOS B	0.04/LOS C
<i>EB Approach (Williams St.) Through</i>	0.25/LOS A	0.17/LOS A	0.27/LOS A	0.19/LOS B
<i>WB Approach (Williams St.) Through</i>	0.35/LOS B	0.47/LOS C	0.38/LOS B	0.50/LOS C
<i>WB Approach (Williams St.) Right Turn</i>	0.16./LOS B	0.21/LOS B	0.17/LOS B	0.22/LOS B
<i>NB Approach Left Turn</i>	0.24/LOS C	0.20/LOS C	0.24/LOS C	0.20/LOS C
<i>NB Approach Through</i>	0.64/LOS C	0.66/LOS C	0.63/LOS C	0.66/LOS D
<i>SB Approach</i>	0.52/LOS D	0.43/LOS D	0.55/LOS E	0.44/LOS D

Under existing conditions, at the unsignalized intersection of Mohegan Avenue Parkway and the Coast Guard Academy Main Entrance, the entrance operates at LOS B during the morning peak hour and LOS C during the afternoon peak hour. At the intersection of Williams Street and Briggs Street, the westbound

left turn operates at LOS B during the morning peak hour and LOS C during the afternoon peak hour. The Briggs Street approach operates at LOS A during both peak hours.

The 2032 background condition operates the same as existing conditions at the unsignalized intersections in the study area with the exception of the Briggs Street afternoon peak hour approach which operates at LOS B.

Table 3 below presents an LOS summary at unsignalized intersections.

Table 3: Unsignalized Intersection Level of Service

Unsignalized Intersections	2022 Existing Conditions Peak Hour		2032 Background Conditions Peak Hour	
	Weekday Morning	Weekday Afternoon	Weekday Morning	Weekday Afternoon
Mohegan Ave. Pkwy. at USCGA Main Entrance				
<i>WB Approach (CGA Main Entrance)</i>	LOS B	LOS C	LOS B	LOS C
Williams St. at Briggs St.				
<i>WB Left Approach (Williams St.)</i>	LOS B	LOS C	LOS B	LOS C
<i>NB Approach (Briggs St.)</i>	LOS A	LOS A	LOS A	LOS A

It is important to note that while an LOS D is typically considered acceptable in urban areas by CTDOT, the characteristics of this corridor may lead to driver frustration at LOS C or D. However, the relatively low delay and v/c ratios indicate excess capacity at some intersections, enabling vehicles to travel through the study area at high vehicle speeds. Additionally, the time periods analyzed represent peak traffic periods when the roadway is expected to operate at or near capacity. Low delay during peak periods indicates excessive roadway capacity during off-peak periods, further enabling unsafe driver behavior.

3.7.1 Pedestrian Level of Service

According to the HCM, pedestrian LOS is based on variables related to the pedestrian experience walking along roadways and crossing streets at intersections. Critical controlling factors include separation from traffic, sidewalk width, vehicle volumes and speeds. At crossings, controlling criteria include pedestrian delay times, exposure to conflicting vehicle traffic, and crossing distance.

Pedestrian LOS is improved by a continuous, wide sidewalk network, a great degree of separation from traffic, and reduced delays crossing the street. The study corridor field inventory indicated that the sidewalk ends abruptly on both sides of the roadway, and the traveled way is partially obstructed by overgrown vegetation and roadside utility poles. Additionally, no significant separation is provided between the sidewalk and the roadway.

At the crossings at grade, pedestrians are provided an exclusive pedestrian phase, which significantly reduces pedestrian exposure to vehicle traffic. However, exclusive pedestrian phases also increase delay times for crossing pedestrians. At the Connecticut College Driveway, pedestrian delay time could be as high as 92 seconds depending on when in the cycle the phase is called by the pedestrian. The long crosswalks and high vehicle volumes and speeds further contribute to poor Pedestrian LOS at these intersections.

3.7.2 Queue Analysis

95th percentile queue lengths were reviewed at each intersection in the study area. The 95th percentile vehicle queue lengths represent the maximum queue lengths that can be expected at each of the critical approach lanes of the study area intersections. Queue lengths are examined to determine if vehicle queues extend into adjacent intersections (i.e. exceed available storage length) or are contained within the distance between two intersections. The queue lengths are provided in the Synchro capacity analysis worksheets which are located in *Appendices B and C* for the morning and afternoon peak hours, respectively. Tables 4 and 5 below provide a summary of the queue lengths for the critical lanes at each intersection.

Under existing conditions during the morning peak hour, all 95th percentile queue lengths are contained within the available storage length. During the afternoon peak hour, the northbound queue at the intersection of Route 32 and Reservoir Street exceeds available storage length by 215 feet. Additionally, the southbound queue at the intersection of Route 32 and the Connecticut College Main Entrance exceeds the available storage length by 30 feet. This indicates moderate congestion during the afternoon peak hour heading north between the Connecticut College Main Entrance and Reservoir Street, and light congestion heading south between Reservoir Street and the Connecticut College Main Entrance.

Under 2032 background conditions during the morning peak hour, all 95th percentile queue lengths are contained within the available storage length. During the afternoon peak hour, the northbound queue at the intersection of Route 32 and Reservoir Street exceeds available storage length by 290 feet. Additionally, the southbound queue at the intersection of Route 32 and the Connecticut College Main Entrance exceeds the available storage length by 90 feet.

Table 4: Weekday Morning Peak Hour Queue Length Summary

Intersection	Approach Lane	2022 Existing Queue	2032 Background Queue	Available Storage
Route 32 at Benham Ave.	EB Through	0 Feet	0 Feet	540 Feet
	WB Through	0 Feet	0 Feet	1700 Feet
	NB Left Turn	10 Feet	10 Feet	200 Feet
	NB Through	150 Feet	165 Feet	1670 Feet
	SB Left Turn	10 Feet	10 Feet	200 Feet
	SB Through	270 Feet	300 Feet	1275 Feet
Route 32 at Reservoir St.	EB Through	25 Feet	30 Feet	285 Feet
	WB Through	15 Feet	20 Feet	545 Feet
	NB Left Turn	5 Feet	10 Feet	185 Feet
	NB Through	355 Feet	380 Feet	675 Feet
	NB Right Turn	0 Feet	0 Feet	140 Feet
	SB Left Turn	20 Feet	20 Feet	150 Feet
	SB Through	815 Feet	880 Feet	1600 Feet
Route 32 at Connecticut College Main Entrance	EB Approach	40 Feet	40 Feet	360 Feet
	NB Left Turn	30 Feet	30 Feet	300 Feet
	NB Through	80 Feet	90 Feet	850 Feet
	SB Through	595 Feet	650 Feet	680 Feet
	SB Right Turn	15 Feet	50 Feet	75 Feet
Route 32 at Deshon St.	WB Left Turn	65 Feet	70 Feet	270 Feet
	NB Through	505 Feet	560 Feet	830 Feet
	SB Left Turn	65 Feet	70 Feet	300 Feet
	SB Through	605 Feet	725 Feet	850 Feet

Table 4 (Continued): Weekday Morning Peak Hour Queue Length Summary

Mohegan Ave. Pkwy. at USCGA Main Entrance	WB Approach	5 Feet	5 Feet	100 Feet
	NB Approach	0 Feet	0 Feet	350 Feet
Mohegan Ave. Pkwy. at Williams St.	EB Left Turn	25 Feet	25 Feet	25 Feet
	EB Through	165 Feet	120 Feet	1555 Feet
	WB Through	210 Feet	290 Feet	345 Feet
	WB Right Turn	60 Feet	65 Feet	200 Feet
	NB Left Turn	95 Feet	85 Feet	1550 Feet
	NB Through/Right Turn	235 Feet	250 Feet	1550 Feet
	SB Left/Right Turn	0 Feet	80 Feet	450 Feet
Williams St. at Briggs St.	EB Approach	35 Feet	40 Feet	530 Feet
	WB Approach	60 Feet	65 Feet	455 Feet
	NB Approach	20 Feet	15 Feet	530 Feet

Table 5: Weekday Afternoon Peak Hour Queue Length Summary

Intersection	Approach Lane	2022 Existing Queue	2032 Background Queue	Available Storage
Route 32 at Benham Ave.	EB Through	35 Feet	30 Feet	540 Feet
	WB Through	15 Feet	20 Feet	1700 Feet
	NB Left Turn	20 Feet	20 Feet	200 Feet
	NB Through	375 Feet	420 Feet	1670 Feet
	SB Left Turn	10 Feet	10 Feet	200 Feet
	SB Through	240 Feet	265 Feet	1275 Feet
Route 32 at Reservoir St.	EB Through	60 Feet	65 Feet	285 Feet
	WB Through	85 Feet	90 Feet	545 Feet
	NB Left Turn	10 Feet	15 Feet	185 Feet
	NB Through	<i>890 Feet</i>	<i>965 Feet</i>	<i>675 Feet</i>
	NB Right Turn	0 Feet	0 Feet	140 Feet
	SB Left Turn	25 Feet	30 Feet	150 Feet
	SB Through	535 Feet	590 Feet	1600+ Feet
Route 32 at Connecticut College Main Entrance	EB Approach	100 Feet	110 Feet	360 Feet
	NB Left Turn	75 Feet	75 Feet	300 Feet
	NB Through	700 Feet	845 Feet	850 Feet
	SB Through	<i>710 Feet</i>	<i>770 Feet</i>	<i>680 Feet</i>
	SB Right Turn	40 Feet	40 Feet	75 Feet
Route 32 at Deshon St.	WB Left Turn	65 Feet	70 Feet	270 Feet
	NB Through	585 Feet	640 Feet	830 Feet
	SB Left Turn	25 Feet	30 Feet	300 Feet
	SB Through	145 Feet	160 Feet	850 Feet
Mohegan Ave. Pkwy. at USCGA Main Entrance	WB Approach	40 Feet	48 Feet	100 Feet
	NB Approach	0 Feet	0 Feet	350 Feet

Table 5 (Continued): Weekday Afternoon Peak Hour Queue Length Summary

Mohegan Ave. Pkwy. at Williams St.	EB Left Turn	25 Feet	25 Feet	25 Feet
	EB Through	135 Feet	135 Feet	1555 Feet
	WB Through	315 Feet	315 Feet	345 Feet
	WB Right Turn	70 Feet	70 Feet	200 Feet
	NB Left Turn	90 Feet	90 Feet	1550 Feet
	NB Through/Right Turn	280 Feet	280 Feet	1500 Feet
	SB Left/Right Turn	65 Feet	65 Feet	450 Feet
Williams St. at Briggs St.	EB Approach	40 Feet	40 Feet	530 Feet
	WB Approach	135 Feet	155 Feet	455 Feet
	NB Approach	15 Feet	15 Feet	530 Feet

3.8 Previous Studies and Ongoing Projects

A number of local and regional studies have taken place in and around the study area in recent years. The findings of these studies as they pertain to this project have been reviewed and are summarized below.

Reconnect New London – March 2011

A group of transportation professionals, including researchers at the University of Connecticut, participated when the New London Landmarks group hosted a three-day design charrette to develop recommendations to reconnect downtown New London to the College Hill area. The recommendations included downgrading and simplifying the I-95/Route 32 interchange and constructing a more direct link between Hodges Square and Downtown.

Connecticut College Pedestrian Safety Study – June 2016

In response to a pedestrian fatality across from the Connecticut College Main Entrance, a pedestrian safety study of the Connecticut College campus was conducted by Fuss & O'Neill on behalf of Connecticut College. The study area included Route 32, Williams Street, and the internal campus roadways. The study noted the “highway feel” of Route 32 as a primary deficiency, and cited the incomplete sidewalk network, inaccessible pedestrian crossings, and highway scale infrastructure as specific shortcomings.

Recommendations included ADA compliant ramps and pedestrian push buttons at pedestrian crossings, sidewalk connection to Benham Avenue, curb bump outs, planted green space, and removal of the concrete median barrier.

Regional Bike and Pedestrian Plan – November 2019

The SCCOG Regional Bike and Pedestrian Plan recommends the implementation of traffic calming measures including improved sidewalks, crossings, lighting, and landscaping on Route 32 from Williams Street to Benham Avenue.

Route 32 Road Safety Audit – April 2016

The New London Road Safety Audit (RSA) Report was completed in April 2016 on behalf of the City of New London in coordination with CTDOT. The report indicated that throughout the design of the area an effort was made to orient on-campus pathways to discourage midblock crossings, and channels have been placed to orient pedestrians to the correct crossing locations. The report identified similar deficiencies in the pedestrian network as the pedestrian safety study. Additionally, the report indicated a lack of wayfinding and directional signage to indicate the proximity of Route 32 to a college campus.

Overall, recommendations are focused on improving pedestrian safety and slowing down vehicles through adding pedestrian signal heads, upgrading curb ramps, and trimming overgrown vegetation. Longer term recommendations include narrowing the lane widths, adding and widening sidewalks, adding a second pedestrian bridge, relocating the utilities that obstruct the sidewalk, and evaluating pedestrian lighting.

The I-95/Route 32 O&D License Plate Survey – June 2017

The I-95/Route 32 O&D License Plate Survey was conducted in 2017 as part of the I-95 Branford to Rhode Island Feasibility Study Update to analyze the Origin-Destination (O-D) patterns associated with drivers using Route 32 as a connector between I-95 and I-395. The study reports that between 53 and 57 percent of traffic from I-95 south that travels northbound on Route 32 is traveling to I-395 north, and between 37 and 43 percent of southbound traffic on Route 32 that originates on I-395 south in the is traveling to I-95 north. The results of this study indicate that a substantial portion of peak hour vehicle traffic on Route 32 is utilizing the roadway as a connector between the two freeways.

The I-95 Corridor Branford to Rhode Island Feasibility Study – May 2018

The I-95 Corridor Branford to Rhode Island Feasibility Study Update, published in May 2018, provides an update to the 2004 study that evaluated the feasibility of adding one operating lane in each direction along I-95. Part of this study investigated the possible reconstruction of the I-95 and Route 32 interchange and provided three concept alternatives for improvements along the Route 32 corridor between the interchange and Benham Avenue.

Each of the three alternatives proposes relocating I-95 Exit 34, which currently provides access to Route 32. The relocation of this exit and reconfiguration of the interchange would reduce speeds Route 32 and provide space for pedestrian and bicycle facilities as well as future development. Realization of any of the proposed changes to the interchange would be transformative for the study corridor.

Additionally, all three alternatives propose a planted median on Route 32, with some alternatives proposing roundabouts at each of the intersections in the vicinity of Connecticut College.

The alternative concept plans have been included in *Appendix B*.

The I-95 Eastern Connecticut Planning and Environmental Linkage (PEL) Study

The ongoing PEL Study intends to improve congestion and reduce travel time along I-95 from Branford, Connecticut, to the Rhode Island state line. As part of the study, the project team will be preparing concept plans for several interchanges along the 59 mile study corridor. Redesign of the I-95/Route 32 interchange may be considered as part of the study. Coordination with the project team leading the PEL study will be required to ensure recommendations of this study complement what is proposed in the PEL study. The PEL study is in its early stages and is expected to conclude in Fall of 2023.

The Lyman Allyn Park Master Plan – June 2022 (Construction begins April 2023)

The Lyman Allyn Park Master Plan, published in June 2022, proposes a 12-acre park that celebrates art and honors the Lyman Allyn Art Museum. The park will be located on the current grounds of the Lyman Allyn Art Museum. The plan reports that Route 32 creates a high decibel noise level that is consistent with high vehicle volumes and high vehicles speeds.

Regional Transportation Safety Plan – January 2021

The SCCOG Regional Transportation Safety Plan cites the 2015 pedestrian fatality on Route 32 and indicates that the City of New London has sought Surface Transportation Funding to turn Route 32 into a boulevard.

Intersection Improvements at Route 32 and Old Norwich Road

CTDOT has planned improvements at the signalized intersection of Route 32 and Old Norwich Road in Waterford, approximately two miles north of the study area. The proposed improvements include additional capacity for northbound vehicles entering I-395.

4 Public Engagement

The project utilized a variety of public outreach strategies to ensure a wide range of user groups were engaged throughout the process to help guide decision-making and development of the project Vision and Guiding Principles (discussed page 47). The first phase was designed to understand how the existing corridor operates and determine what the community would like to see in the future, the second phase sought to gather feedback on the draft Vision and developed Alternatives, and the third phase was intended to share the proposed plan and gather final thoughts for refinement of the recommendations.

Three methods were utilized to ensure all perspectives were captured:

1. Project Advisory Committee (PAC) consisting of representatives from CTDOT, City of New London, SEAT, Connecticut College, US Coast Guard Academy, Lyman Allyn Museum, and Bike Groton. Virtual meetings were held throughout the project to share progress and gather input.
2. In-person events such as pop-up booths at Connecticut College and Eat in the Street in New London, as well as Public Meetings at the Lyman Allyn Museum and Winthrop STEM School.
3. Project Website updates and online surveys used to mimic in-person engagement opportunities and allow for feedback to be gathered from those who were not available to attend events in-person.

Feedback received during each phase and through each method is summarized below. Public Engagement Presentations and PAC meeting notes are available in Appendix D.

4.1 Phase 1 – Existing Conditions

The first PAC meeting was held on April 21, 2022 to provide an introduction to the project and gather input on existing issues and opportunities for the corridor. Two in-person pop-up events were held to gather input from the community, first at Connecticut College on May 5, 2022, and secondly at Downtown New London's Eat in the Street event on August 4, 2022. An online survey and comment map complemented this phase of engagement to gather input from a broad cross section of the community. Over 430 comments and responses were gathered during this phase of engagement.

Respondent demographic data was collected for the online survey to evaluate the efficacy of the engagement strategy and ensure that a broad demographic was reached. 56 percent of respondents reported working near the study area, 39 percent regularly travel through the study area, 29 percent attend school nearby, 22 percent live nearby, and 15 percent regularly visit the study area to attend events or see friends/family.

When asked to select all of the modes used to travel along or across Route 32, 87 percent of respondents reported driving through the study area, while 50 percent walk, and less than 10% use ride hail, bike, or bus.

Engagement and discussions during this phase included the following questions regarding issues and ideas for Route 32:

- What do you feel are the issues with Route 32 (Mohegan Avenue Parkway) as it exists today?
- What do you feel are ways Route 32 (Mohegan Avenue Parkway) could be improved?

Over 100 individuals cited high vehicle speeds and inconsistent speed limits as a primary concern, and over 50 individuals cited walkability and pedestrian crossings as primary concerns.

Issues related to walkability included:

- Feeling unsafe/dangerous
- Limited/lack of sidewalks
- Exposure to/lack of protection from vehicles
- Lack of well-maintained sidewalks
- Lack of sidewalk connection to points of interest.

Issues related to crossings included:

- Lack of safe pedestrian crossings
- Long crossings with lack of refuge in the middle
- Waiting too long to be able to cross
- Timing for pedestrian signals is too short
- Difficulty crossing with high vehicle volumes and speeds
- Danger in crossing with vehicles running red lights
- Faded crosswalks and low visibility to drivers
- Difficulty in seeing crosswalks at night.

Other top issues reported are depicted in Figure 2 below.

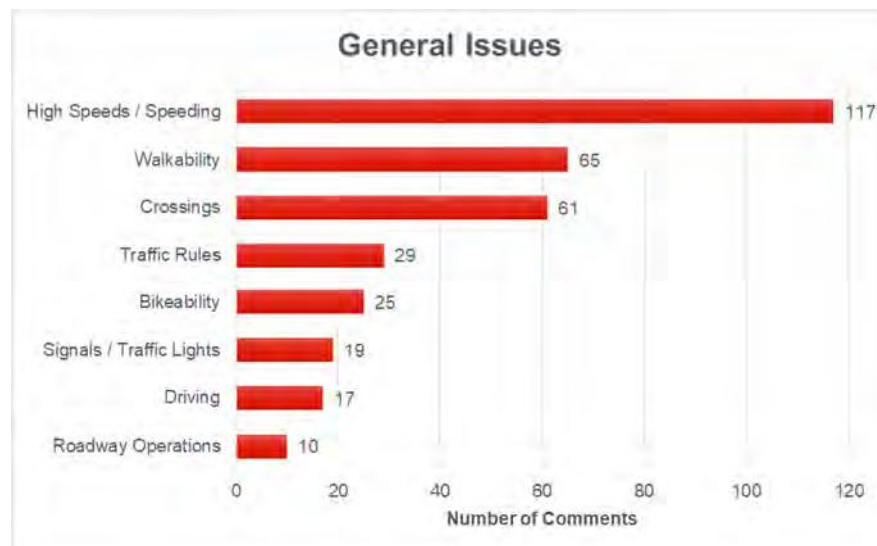


Figure 2 – Response Summary – General Issues

The top three categories of ideas reported were related to crossings, walkability, and speeding – all receiving over 50 comments each (see Figure 3). Many ideas were also shared for bikeability, which received over 40 comments.

Ideas for safer crossings included:

- More opportunities to cross (including more pedestrian bridges or underground crossings)
- Traffic calming measures (including raised crosswalks, flashing beacons)
- Extending the pedestrian signal time
- More visible crosswalks (including better lighting and signage)
- Reducing crossing distances with curb extensions or pedestrian refuge islands.

Ideas for improved walkability included:

- Installing and repairing sidewalks (or a pedestrian lane)
- Widening sidewalks, implementing a road diet to provide more space for walking
- Making sidewalks more comfortable through traffic calming (including speed bumps, additional stop lights, and stop signs)
- Provide distance and buffer from roadway
- Pedestrian-friendly features such as furniture and wayfinding signage.

Several people noted re-routing the traffic on Route 32 to make this section of roadway pedestrian-only or burying Route 32 to make the above-ground section safe for pedestrians.

Ideas for reducing vehicle speeds included:

- Various forms of traffic calming measures, such as speed bumps and tables
- Installing rotaries or roundabouts
- Road diet
- Rumble strips
- More traffic lights
- Reducing the speed limit
- Signage (including speed feedback signs).

Other top categories of ideas are depicted in Figure 3 on the following page.

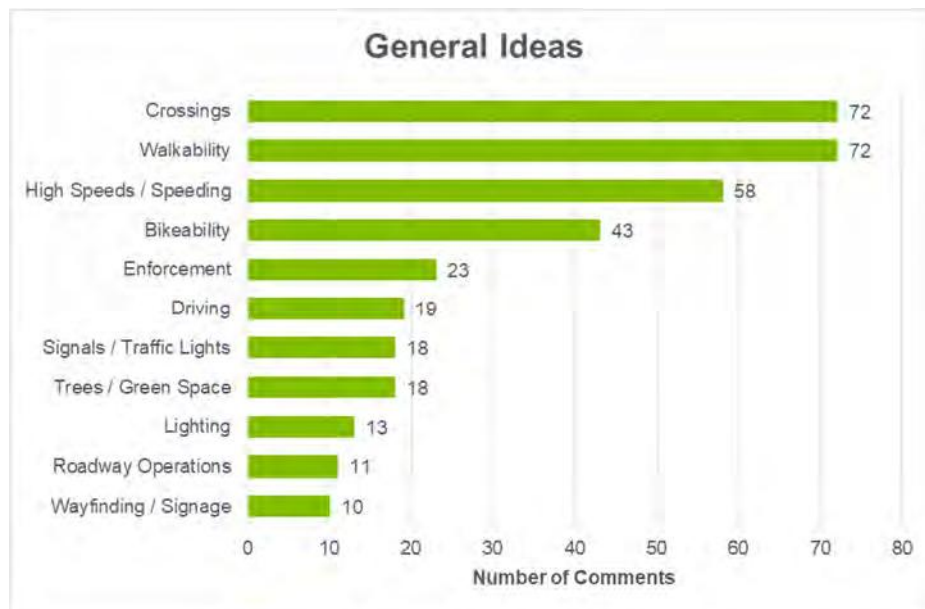


Figure 3 – Response Summary – General Ideas

Several respondents commented regarding improving aesthetics, reducing noise pollution, improving accessibility, increasing climate resilience, and providing transit access.

Ideas for transit access included:

- Shuttles for local traffic
- More bus service between Connecticut College and the rest of New London and to Norwich.
- Dedicated bus lanes for rapid transit service
- Piloting demand response service.

Additionally, several people expressed a desire for better connections between existing destinations, such as:

- Connecticut College and the U.S. Coast Guard Academy
- Connecticut College and New London and Norwich
- The project area and Downtown New London / New London Waterfront
- The project area and the multi-use paths on the Gold Star Bridge.

Location-specific feedback was also gathered through in-person or online comment map activities. The top categories of responses included:

- Safety (27.4%)
- Mobility (24.8%)
- Trees and Greenspace (24.8%)
- Access to nearby destinations (12.4%)
- Public Art (1.8%).

4.2 Phase 2 – Vision & Alternatives

The second PAC meeting was held on September 27, 2022 to share the draft vision and alternatives for the project, developed through the outreach in Phase 1. A public meeting was held on November 2, 2022 at the Lyman Allyn Art Museum, with the presentation materials and survey made available on the website following the meeting. Over 460 comments and responses were gathered during this phase of engagement.

Respondent demographic data was collected for the online survey to evaluate the efficacy of the engagement strategy and ensure that a broad demographic was reached. Forty-four percent of respondents reported working near the study area, 23 percent regularly travel through the study area, 52 percent attend school nearby, 13 percent live nearby, and 6 percent regularly visit the study area to attend events or see friends/family.

When asked how they typically travel along or across Route 32, 84 percent of respondents reported driving through the study area, while 59 percent walk, 15 percent use ride hail services, and less than 10 percent bike or take the bus. Respondents were encouraged to select all applicable modes of transportation, so the total exceeds 100 percent.

Respondents were asked whether the draft Vision and Guiding Principles captured the needs of the community. Seventy-seven percent either agreed or strongly agreed, 13 percent were neutral, and 10 percent either disagreed or strongly disagreed. Some respondents suggested incorporating sustainability and pedestrian safety more directly, and others requested clarity on transportation options referenced.

Alternative A and Alternative B (see Section 5.1) were presented for feedback. Respondents were asked which of the options best met the needs of the community and fit the project vision. Fifty-six percent of respondents preferred Alternative A, 25 percent preferred Alternative B, and 15 percent reported that either option met the project vision. Three percent of respondents felt that neither option met the vision.

Several comments and suggestions were provided to help refine the preferred alternative:

- Design for slower speeds using even narrower lanes (9 or 10'), installing speed humps, enforcement, reducing speed limits and installing roundabouts
- Additional traffic calming and safety measures at intersections, including better lighting, adding new crosswalks and upgrading traffic lights
- An additional pedestrian bridge and enhancements to the existing bridge
- Two-way bike access needs on both sides of the corridor, as well as connectivity to other destinations such as downtown New London
- Protection from speeding vehicles through barriers or medians
- Support for additional trees and plantings, with some concern regarding care and maintenance of the trees as well as sightlines
- Additional measures to improve the aesthetics of the corridor through burying the overhead wires and providing planters and/or hedges
- Wayfinding signage and improved access to local destinations.

Some respondents felt that it was not appropriate to allow access for pedestrians or vehicles from side streets, as Route 32 should serve only as a limited-access highway. Others felt that the proposed designs may not slow vehicles down enough based on existing behaviors. Concerns were also raised about added congestion along Route 32 and the proposed changes having the potential to cause short-cutting along other routes.

4.3 Phase 3 – Proposed Concept Plan

The third and fourth PAC meetings were held on January 17, 2023 and March 28, 2023. The first meeting was held to share the updated design options and alternatives evaluation, and the second was held to share the proposed concept plan. A public meeting was held on April 25, 2023 at the Winthrop STEM School, with the presentation materials and survey made available on the website following the meeting. Over 200 comments and responses were gathered during this phase of engagement. The final PAC meeting was held on June 13, 2023 to summarize the public meeting and survey responses, as well as to present the project cost and possible project funding options.

Respondent demographic data was collected for the online survey to evaluate the effectiveness of the engagement strategy and ensure that a broad demographic was reached. Fifty-seven percent of respondents reported working near the study area, 39 percent regularly travel through the study area, 24 percent attend school nearby, 29 percent live nearby, and 11 percent regularly visit the study area to attend events or see friends/family. When asked how they typically travel along or across Route 32, 90 percent of respondents reported driving through the study area, while 42 percent walk, and less than 10 percent use ridehail services, bike, or bus.

Respondents were asked whether the proposed concept meets the Vision and Guiding Principles and captured the needs of the community. Seventy-six percent either agreed or strongly agreed, 13 percent were neutral, and 10 percent either disagreed or strongly disagreed.

Many comments supported the changes and believed that the beautification of this segment of Route 32 is sorely needed. Suggestions were made to further calm traffic through this area through speed humps, rumble strips, raised crosswalks, speed feedback signs, and increased enforcement.

Others suggested that pedestrian bridges or tunnels would be preferable, and that additional barriers would be needed to separate vehicles from on-coming traffic and/or the shared use paths. Concerns were also raised about added congestion along Route 32 and the proposed changes having the potential to cause short-cutting along other routes. Several comments emphasized the need to make larger transportation network changes to address congestion.

5 Alternatives Analysis

5.1 Geometric Alternatives

Based on community input on existing issues and opportunities for the corridor, a Vision and Guiding Principles were developed for the project:

Vision: Mohegan Avenue Parkway will serve to reduce barriers, create safe connections, and visually enhance the community through which it travels.

Guiding Principles:

- Transform Route 32 into a lower speed community street.
- Improve safety and comfort for all roadway users.
- Enhance connectivity across campus and to local destinations.
- Provide sustainable transportation choices for area residents.
- Establish a visual gateway into the College Hill District through greenery, signage and public art.

Two alternatives were developed as part of this study to meet the project vision, with an additional alternative developed in 2017 included in the alternatives evaluation. Each of the three alternatives maintains two travel lanes in each direction with left turn lanes at intersections. Eliminating travel lanes was found to be infeasible with existing vehicular volumes.

Alternative A includes two travel lanes in each direction separated by a landscaped median, a shared use path on the west side of the roadway, and a concrete sidewalk on the east side of the roadway. Pedestrian facilities are separated from the traveled way with vertical curb and a landscaped buffer that varies in width. The travel lanes are proposed to be 11 feet wide, the turn lanes, 10 feet wide, the median six feet wide, and the shoulders, four feet wide. Alternative A is feasible within the existing right of way and reduces the overall roadway width. A plan view of Alternative A is depicted in Image 17 and a typical roadway section is depicted in Image 18.

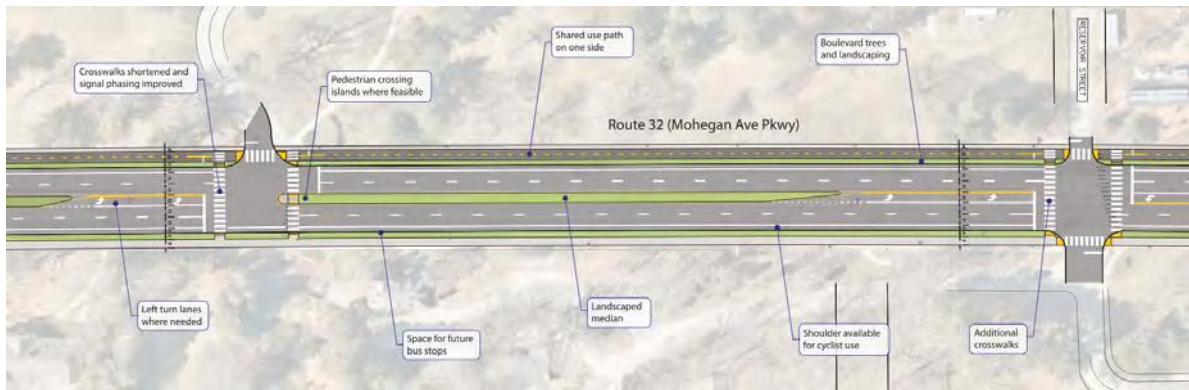


Image 17– Alternative A



Image 18 – Alternative A – Typical Section

Alternative B includes two travel lanes in each direction that are not separated, concrete sidewalk on both sides of the roadway, and separated bicycle lanes on both sides of the roadway. Bicycle and pedestrian facilities are separated from the traveled way with vertical curb and a landscaped barrier that varies in width but is generally wide enough to support street trees. The travel lanes are proposed to be 11 feet wide, the turn lanes, 10 feet wide, the median six feet wide, and the shoulders, four feet wide. Alternative B is feasible within the existing right of way and reduces the overall roadway width. A plan view of Alternative B is depicted in Image 19 and a typical roadway section is depicted in Image 20.

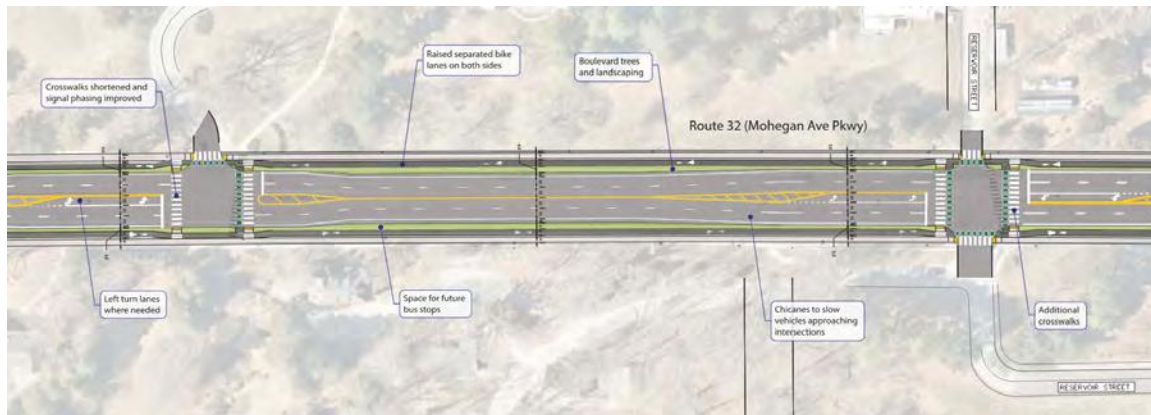


Image 19 – Alternative B

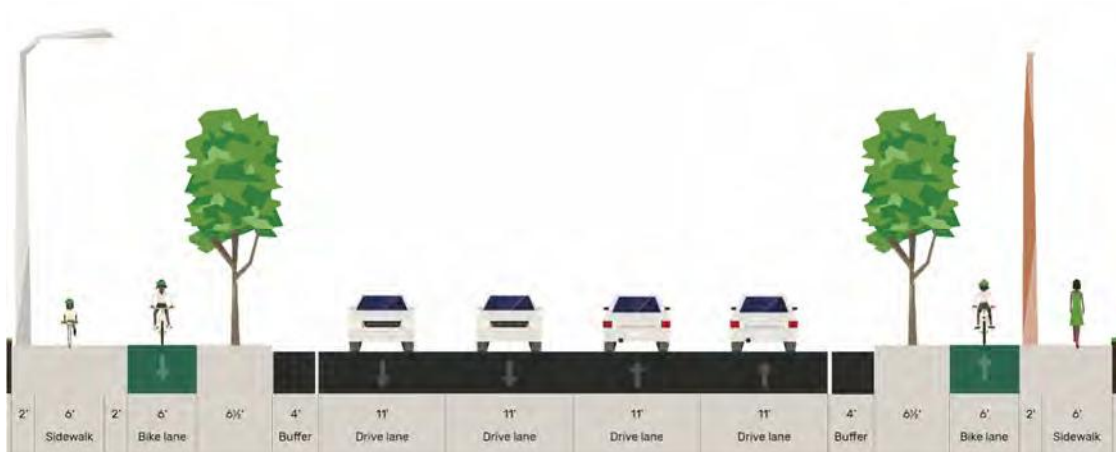


Image 20 – Alternative B – Typical Section

Alternative C was prepared for CTDOT in 2017. The alternative includes two travel lanes in each direction separated by a landscaped median, and proposes multilane roundabouts at each of the study area intersections. Additionally, this alternative includes the reconfiguration of the I-95 interchange to slow traffic and open up land for development. This alternative would require significant land-taking and is not feasible within existing ROW. Alternative C is depicted in Image 21 below.



Image 21 – Alternative C

A road diet alternative that eliminates one lane of travel in each direction was also considered early on in the alternatives analysis process but was deemed to be infeasible with existing traffic volumes. It is possible that other changes to the regional roadway network would result in a reduction in traffic volume on Route 32 that would make a road diet feasible. These future options are explored more in Section 8 of this report.

5.2 Alternatives Assessment

In order to develop a preferred concept, each of the three alternatives were assessed based on the following criteria established in coordination with the project advisory committee:

- Safety
- Constructability
- Utility Impacts
- Environmental Impacts
- Environmental Justice
- Speed Control
- Congestion Management
- Traffic Operations
- Bike Accommodation
- Pedestrian Accommodation
- Aesthetics
- Noise Control
- Air Quality
- Emergency Access
- Maintenance

Alternatives were ranked as unfavorable, favorable, and highly favorable for each evaluation criteria. The evaluation matrix has been included on the following page for reference.

	Option A (Median, Shared Use Path)	Option B (No Median, Grade Separated Bike Lanes)	Option C (Multilane Roundabouts)
Safety	Improved safety for pedestrians at crossings, dedicated bike accommodation, reduced vehicle speeds. Signals have higher crash severity than roundabouts	Improved safety for pedestrians at crossings, dedicated bike accommodation, reduced vehicle speeds. Signals have higher crash severity than roundabouts	Dedicated bike accommodation, reduced vehicle speeds. Roundabouts have lower crash severity than signals. Multi-lane roundabouts provide less protection for pedestrians at crossings and may increase potential for side swipe collisions.
Constructability	Concept appears to be feasible within the existing ROW	Concept appears to be feasible within the existing ROW	Large inscribed circle diameter required for a multilane roundabout will not be feasible within existing ROW and steep grades
Utility Impacts	Minor utility impacts/relocations	Minor utility impacts/relocations	More substantial utility impacts at intersections
Environmental Impacts	Maintain similar vehicle idle time, reduction in the existing paved area	Maintain similar vehicle idle time, reduction in the existing paved area	Roundabouts reduce vehicle stop time, increase in overall pavement surface
Environmental Justice	Enhances connectivity across Route 32; improves multimodal connectivity to connect to Hodges Square. Opportunity for transit service	Enhances connectivity across Route 32; improves multimodal connectivity to connect to Hodges Square. Opportunity for transit service	Crossing multilane roundabout legs is less ideal for pedestrians and bikes. Improves multimodal connectivity to Hodges Square. Opportunity for transit service
Speed Control	Narrower roadway and treed median will provide a sense of visual enclosure to slow vehicles down	Narrower roadway and chicanes approaching intersections will help slow vehicles down; potential for large trees on the sides of the roadway	Entrance deflection and roundabout operations will help slow vehicles down. Low conflicting side street volumes may allow for higher mainline speeds
Congestion Management	Maintains the existing roadway capacity, except the removal of right turn lanes	Maintains the existing roadway capacity, except the removal of right turn lanes	Roundabouts reduce vehicle stop time. Side streets may have difficulty finding gaps in major street traffic
Traffic Operations	Opportunity for Leading Pedestrian Intervals (LPIs) and optimized timing; ability to introduce transit priority in the future	Opportunity for Leading Pedestrian Intervals (LPIs) and optimized timing; ability to introduce transit priority in the future	Eliminates need for signals, RRFBs may be required for crossings
Bike Accommodation	Shared use path provides two-way bike accommodations on the west side of the roadway. Cyclists on the east side of Route 32 must cross to access the bike facilities.	Bike lanes provide one-directional access on each side. Cyclists may need to cross Route 32 twice to access destinations upstream of where they start	If bicyclists need to cross, they must cross four lanes of traffic with no dedicated crossing time
Pedestrian Accommodation	Landscaped median provides pedestrian refuge for long crossings where left turn lanes are not required.	Perpendicular crossings will shorten crossing distance; refuge may be provided where left turn lanes are not required	Pedestrians must cross four lanes of traffic with no protected crossing time
Aesthetics	Landscaped median creates a parkway feel, and has a strong potential for gateway treatments, art installations	Potential for enhanced landscaping on the sides of the roadway; less opportunity for median gateway treatments.	Landscaped median/center islands create a parkway feel, and has a strong potential for gateway treatments, art installations
Noise Control	Opportunity for noise walls/attenuation	Opportunity for noise walls/attenuation	Opportunity for noise walls/attenuation
Air Quality	Maintains similar vehicle idle time as exists today	Maintains similar vehicle idle time as exists today	Roundabouts generally reduce vehicle idle time
Emergency Access	Emergency access maintained	Emergency access maintained	Emergency access maintained
Maintenance	Higher maintenance needs for landscaped median. More space for snow storage in shoulders	Lower tree maintenance needs, less shoulder space for snow storage. May need special equipment to clear bike lanes	Higher maintenance needs for center island and median landscaping. More space for snow storage in shoulders

5.2.1 Safety

Alternative A and Alternative B are thought to be highly favorable with regard to improving roadway safety. Each of these two alternatives improves safety for pedestrians by reducing crossing distance and providing crosswalks across each intersection leg. Additionally, Alternative A offers the ability to provide pedestrian refuge islands in the landscaped median. Both Alternative A and Alternative B improve cyclist safety by providing separated bicycle facilities.

Roadway safety is improved for all vehicle users by reducing vehicle speeds. This reduction in speed is accomplished in part by narrowing vehicle travel lanes and roadway shoulders. Additionally, Alternative A and B both propose the removal of highway-grade infrastructure and introducing visual and geometric cues to calm traffic, including narrow lanes and shoulders, landscaped buffers, street trees, and gateway treatments.

Alternative C is thought to be favorable for roadway safety, as roundabouts are an effective intersection safety countermeasure that greatly reduce the likelihood of severe crashes and require vehicles to slow down in order to navigate them. This alternative also introduces separated bicycle facilities.

However, single lane roundabouts are not feasible based on the current roadway volumes, and many of the safety and traffic calming benefits of a single lane roundabout are not fully realized with a multilane roundabout. Additionally, multilane roundabouts provide less protection for pedestrians at crossings.

5.2.2 Constructability

Alternatives A and B are both constructable within the existing ROW, so both are thought to be highly favorable with regard to constructability. The multilane roundabouts depicted in Alternative C would require large inscribed circle diameters that would be infeasible within existing ROW. Additionally, steep grades on both sides of the roadway pose a significant design challenge that may make construction infeasible. Therefore, Alternative C is thought to be unfavorable with regard to constructability.

5.2.3 Utility Impacts

Alternatives A and B are anticipated to have minor utility impacts and some utility pole relocations, and are therefore thought to be highly favorable with regard to utilities. Because of the substantial ROW impacts and constructability constraints associated with Alternative C, more significant utility impacts are anticipated at this intersection. However, this alternative includes landscaped space on both sides of the road that could accommodate relocated utilities. Therefore, this alternative is thought to be favorable.

5.2.4 Environmental Impacts

Alternatives A and B reduce the overall impervious area and are able to be constructed within the existing ROW, therefore, environmental impacts are thought to be minimal and these alternatives are considered highly favorable in this regard. Alternative C increases the impervious area, but roundabouts typically reduce vehicle idle time and have positive air quality impacts over time. Therefore, Alternative C is considered favorable in regard to environmental impacts.

5.2.5 Environmental Justice

Each of the three alternatives enhances multimodal connectivity to the Hodges Square Historic District, a neighborhood that was severed from the rest of downtown New London upon the construction of the interstate in the mid-20th century. Alternatives A and B also improve multimodal connectivity across Route 32, whereas the multilane roundabouts in Alternative C can create a more difficult crossing for cyclists and pedestrians. Therefore, Alternatives A and B are thought to be highly favorable in regard to Environmental Justice, and Alternative C is thought to be favorable.

5.2.6 Speed Control

Alternatives A and B will reduce vehicle speeds through narrower lanes and roadway shoulders and visual cues. Alternative A will feature a median landscaped with street trees that will help create a visual sense of enclosure to slow vehicles down. Alternative B features chicanes approaching intersections to help slow vehicles down and allows for large trees to be planted on the sides of the roadway to help create a visual sense of enclosure. These two alternatives are thought to be highly favorable in regard to speed control. The multilane roundabouts in Alternative C will introduce some deflection, but low side-street volumes may lead to higher speeds on Route 32, as vehicles will be required to yield to side street traffic less frequently. Therefore, Alternative C is thought to be favorable in regard to speed control.

5.2.7 Congestion Management

Alternatives A and B maintain the existing roadway capacity apart from the removal of right turn lanes. Removing the right turn lanes has a negligible impact on traffic operations because the existing right turn volumes are very small compared to the through volumes. Therefore, these alternatives are thought to be highly favorable in regard to congestion management. The multilane roundabouts in Alternative C reduce vehicle stop time for vehicles on Route 32, but without a traffic signal to control vehicular right of way, side street vehicles experience increases in delay time. Therefore, Alternative C is thought to be favorable in regard to congestion management.

5.2.8 Traffic Operations

The recommended improvements include optimizing signal timings and phasing at each signalized intersection, and upgrading existing vehicle detection, which both improve traffic operations. Roadway capacity is maintained except for the removal of right turn lanes. Therefore, intersection operations are substantially similar to the background condition, and improved in some cases.

LOS and v/c ratios are summarized by movement in Tables 6 and 7 below. All intersections operate at LOS C or better during both peak hours. Left turn movements at some intersections continue to operate LOS E under build conditions, however, left turn queues at these locations are contained within available storage.

Table 6: Signalized Intersection V/C Ratio and Level of Service

Signalized Intersections	2032 Build Conditions Peak Hour	
	Weekday Morning	Weekday Afternoon
Route 32 at Benham Ave.	0.55/LOS A	0.65/LOS A
<i>EB Approach (Benham Ave.)</i>	0.01/LOS C	0.28/LOS D
<i>WB Approach (Benham Ave.)</i>	0.01/LOS C	0.08/LOS C
<i>NB Approach Left Turn</i>	0.19/LOS D	0.50/LOS D
<i>NB Approach Through</i>	0.40/LOS A	0.69/LOS A
<i>SB Approach Left Turn</i>	0.12/LOS D	0.21/LOS D
<i>SB Approach Through</i>	0.59/LOS A	0.52/LOS A
Route 32 at Reservoir St.	0.68/LOS B	0.76/LOS B
<i>EB Approach (Reservoir St.)</i>	0.29/LOS D	0.35/LOS C
<i>WB Approach (CT College Main Entrance)</i>	0.15/LOS D	0.57/LOS D
<i>NB Approach Left Turn</i>	0.11/LOS D	0.19/LOS D
<i>NB Approach Through</i>	0.49/LOS A	0.84/LOS B
<i>SB Approach Left Turn</i>	0.45/LOS E	0.55/LOS E
<i>SB Approach Through</i>	0.80/LOS B	0.59/LOS B

Table 6 (Continued): Signalized Intersection V/C Ratio and Level of Service

Route 32 at Connecticut College Main Entrance	0.79/LOS A	0.76/LOS B
<i>EB Approach (CT College Main Entrance)</i>	0.35/LOS D	0.50/LOS D
<i>NB Approach Left Turn</i>	0.16/LOS C	0.17/LOS C
<i>NB Approach Through</i>	0.38/LOS A	0.72/LOS A
<i>SB Approach Through</i>	0.81/LOS B	0.85/LOS C
Route 32 at Deshon St.	0.68/LOS B	0.87/LOS B
<i>WB Approach (Deshon St.)</i>	0.45/LOS D	0.51/LOS D
<i>NB Approach</i>	0.71/LOS B	0.87/LOS B
<i>SB Approach Left Turn</i>	0.17/LOS C	0.13/LOS C
<i>SB Approach Through</i>	0.68/LOS A	0.53/LOS A
Mohegan Ave. Pkwy. at Williams St.	0.45/LOS C	0.47/LOS C
<i>EB Approach (Williams St.) Left Turn</i>	0.05/LOS B	0.05/LOS D
<i>EB Approach (Williams St.) Through</i>	0.29/LOS B	0.20/LOS B
<i>WB Approach (Williams St.) Through</i>	0.40/LOS C	0.53/LOS C
<i>WB Approach (Williams St.) Right Turn</i>	0.17/LOS B	0.22/LOS C
<i>NB Approach Left Turn</i>	0.25/LOS C	0.22/LOS C
<i>NB Approach Through</i>	0.66/LOS D	0.71/LOS D
<i>SB Approach</i>	0.55/LOS E	0.44/LOS D

Table 7: Unsignalized Intersection Level of Service

Unsignalized Intersections	2032 Build Conditions Peak Hour	
	Weekday Morning	Weekday Afternoon
Mohegan Ave. Pkwy. at the USCGA Main Entrance		
<i>WB Approach (CGA Main Entrance)</i>	LOS B	LOS C
Williams St. at Briggs St.		
<i>WB Approach (Williams St.)</i>	LOS B	LOS C
<i>NB Approach (Briggs St.)</i>	LOS A	LOS A

Queue lengths are summarized in Table 8 below. Queues exceed available storage during the afternoon peak hour at the northbound approach to the intersection of Reservoir Street and Route 32, and at the southbound approach to the Connecticut College Main Entrance. Queue lengths at these locations are substantially similar to the queues experienced in the existing and background conditions.

Table 8: Queue Length Summary

Intersection	Approach Lane	2032 Build Conditions Peak Hour		Available Storage
		Weekday Morning	Weekday Afternoon	
Route 32 at Benham Ave.	EB Through	0 Feet	35 Feet	540 Feet
	WB Through	0 Feet	20 Feet	1700 Feet
	NB Left Turn	10 Feet	20 Feet	100 Feet
	NB Through	165 Feet	395 Feet	1670 Feet
	SB Left Turn	10 Feet	10 Feet	100 Feet
	SB Through	295 Feet	245 Feet	1275 Feet
Route 32 at Reservoir St.	EB Through	30 Feet	65 Feet	285 Feet
	WB Through	20 Feet	115 Feet	545 Feet
	NB Left Turn	10 Feet	15 Feet	100 Feet
	NB Through	385 Feet	<i>910 Feet</i>	675 Feet
	SB Left Turn	25 Feet	25 Feet	100 Feet
	SB Through	870 Feet	485 Feet	1600 Feet
Route 32 at Connecticut College Main Entrance	EB Approach	40 Feet	135 Feet	360 Feet
	NB Left Turn	35 Feet	70 Feet	120 Feet
	NB Through	80 Feet	670 Feet	850 Feet
	SB Through	450 Feet	<i>715 Feet</i>	680 Feet
Route 32 at Deshon St.	WB Left Turn	65 Feet	75 Feet	270 Feet
	NB Through	565 Feet	465 Feet	830 Feet
	SB Left Turn	65 Feet	30 Feet	300 Feet
	SB Through	710 Feet	135 Feet	850 Feet

Table 8 (Continued): Queue Length Summary

Intersection	Approach Lane	2032 Build Conditions Peak Hour		Available Storage
		Weekday Morning	Weekday Afternoon	
Mohegan Ave. Pkwy. at the Coast Guard Academy Main Entrance	WB Approach	5 Feet	50 Feet	100 Feet
	NB Approach	0 Feet	0 Feet	350 Feet
Mohegan Ave. Pkwy. at Williams St.	EB Left Turn	30 Feet	25 Feet	25 Feet
	EB Through	210 Feet	145 Feet	1555 Feet
	WB Through	250 Feet	335 Feet	345 Feet
	WB Right Turn	65 Feet	75 Feet	200 Feet
	NB Left Turn	115 Feet	95 Feet	1550 Feet
	NB Through	310 Feet	305 Feet	1550 Feet
	SB Left/Right Turn	30 Feet	40 Feet	450 Feet
Williams St. at Briggs St.	EB Approach	40 Feet	40 Feet	530 Feet
	WB Approach	65 Feet	155 Feet	455 Feet
	NB Approach	15 Feet	15 Feet	530 Feet

5.2.9 Bike Accommodation

Alternatives A and B are considered favorable as they provide infrastructure for cycling where none exist today. However, Alternative A provides two-way bike accommodations on the west side of Route 32, but no bike accommodations on the east side of Route 32. So, cyclists beginning or ending their trip on the east side of Route 32 must cross the street to access the bicycle facilities. Alternative B provides one-way bicycle facilities on both sides of Route 32, so cyclists may need to cross Route 32 to travel in the direction of their destination. Alternative C also provides a facility for cyclists, however it is considered unfavorable as it does not provide dedicated crossing time for cyclists. Cyclists must identify a gap to cross the roundabouts. Additionally, navigation of a multilane roundabout is difficult for cyclists who choose to travel through the roundabout with vehicle traffic. The preferred alternative should consider ways to provide two-way cycling accommodation on both sides to address these issues.

5.2.10 Pedestrian Accommodation

Alternative A provides a landscaped median that may serve as a pedestrian refuge at intersections, and proposed changes to the lane widths and curb lines shorten the crossing distance for Alternatives A and B. Additionally, both alternatives extend the sidewalk north to Benham Avenue and include ADA upgrades at pedestrian curb ramps. Therefore, both alternatives are thought to be highly favorable in regard to pedestrian accommodation. Alternative C requires pedestrians to cross four lanes of traffic without a dedicated crossing time. Additionally, roundabouts can be difficult to cross for those with visual impairments. Therefore, pedestrian accommodations for this alternative are considered unfavorable.

5.2.11 Aesthetics

Alternatives A and C both include a landscaped median that contributes to a parkway-type appearance and serves as a potential location for artwork and gateway treatments. Therefore, these alternatives are considered highly favorable in regard to aesthetics. Alternative B includes space on the sides of the roadway for enhanced landscaping, as well as an opportunity for a gateway treatment at the USCGA Driveway, but less opportunity for median gateway treatments. This alternative is considered favorable in regard to aesthetics.

5.2.12 Noise Control

CTDOT does not install noise walls except on qualifying Type 1 projects, which typically include projects that add capacity or significantly shift the roadway alignment. Alternatives A and B do not add capacity and are constructed within the existing roadway footprint, so it is unlikely that a noise wall would be installed. Alternative C substantially shifts the alignment of the I-95/Route 32 interchange at the southern end of the corridor, so it is possible that CTDOT would explore the possibility of installing a noise wall.

All three alternatives are designed to slow traffic to a target entry speed of 35 to 40 miles per hour, therefore reducing ambient noise and eliminating the desire for a noise wall. Therefore, all three alternatives are considered highly favorable in this regard.

5.2.13 Air Quality

Alternatives A and B maintain the existing roadway capacity and therefore vehicle idle time is expected to be substantially similar to the existing condition. Furthermore, Alternatives A and B both improve pedestrian facilities and introduce bicycle facilities, which allows for increased travel mode choice for local trips. Therefore, alternatives A and B are thought to be favorable in this regard. Alternative C is expected to reduce vehicle idle time for vehicles on Route 32, so this alternative is considered highly favorable with respect to air quality.

5.2.14 Emergency Access

All three alternatives maintain existing emergency access and are thought to be highly favorable in this regard. It should be noted that the western leg of the intersection of Route 32 and Reservoir Street is not a primary access point for Connecticut College, and the driveway is often gated. It is possible that the College may decide that this access point is no longer necessary. This change would impact all of the alternatives equally with respect to emergency access, and the impact is expected to be negligible because access from Route 32 to the college is provided via the main entrance.

5.2.15 Maintenance

Each of the three alternatives introduces additional landscaped space beyond what is present today that will need to be maintained. Alternative B includes separated bicycle lanes that may require special equipment for snow removal. All three alternatives are considered favorable in regard to maintenance.

Connecticut College may be expected to play a significant role in the maintenance of the landscaped areas, median, and the bicycle and pedestrian facilities, as they are the primary Route 32 abutter. The USCGA is another significant abutter and may be expected to maintain the pedestrian and bicycle facilities along their property frontage. At the northern limit of the study area, north of the Waterford Town Line, three private residential parcels abut Route 32 that may be expected to maintain the pedestrian and bicycle facilities.

6 Preferred Alternative

Upon assessing the presented alternatives, the PAC provided feedback that was used to develop a preferred alternative. The PAC preferred the shared use path to the protected bicycle lanes and noted that the path may be best utilized on the east side of Route 32 where more off-campus student destinations are located.

Therefore, the preferred alternative is a hybrid of Alternatives A and B and includes a ten-foot shared use path on the east and west side of Route 32, allowing cyclists bi-directional access to destinations on

both sides of the roadway. The shared use path is separated from the roadway by a six- to seven- foot landscaped buffer that is wide enough to support the growth of street trees. North of Reservoir Street, the shared use path on the west side transitions to a six-foot concrete sidewalk due to ROW constraints, which continues north to Benham Avenue. The shared use path on the east side is maintained for the entirety of the study area.

At the southern end of the study area, the shared use path connects into existing sidewalk and bicycle facilities on Williams Street. At the northern end of the study area, the shoulders are wide enough to provide buffered bike lanes for vehicles continuing north. In 2023, the Town of Montville is pursuing grant funding for a Route 32 multi-use path from the Waterford town line north to Route 163/Depot Road. Further planning will be necessary to address the 2.9-mile gap between facilities should the Montville shared use path be constructed.

On the roadway, two eleven-foot vehicle travel lanes are proposed in each direction, with ten-foot left turn lanes at intersections. Northbound and southbound lanes are separated by a six- to seven-foot landscaped median that is wide enough to support the growth of street trees. A two-foot inside shoulder is proposed between the median and the inside travel lanes, and a four-foot outside shoulder is proposed between the outside travel lane and the edge of the roadway.

The proposed roadway typical section is depicted in Image 22 below. It should be noted that the typical section varies slightly along the corridor depending on the available ROW. The existing roadway typical section is depicted in Image 23 below for reference, followed by the preferred concept plan.



Image 22 – Proposed Roadway Typical Section between the Connecticut College Main Entrance and Deshon Street

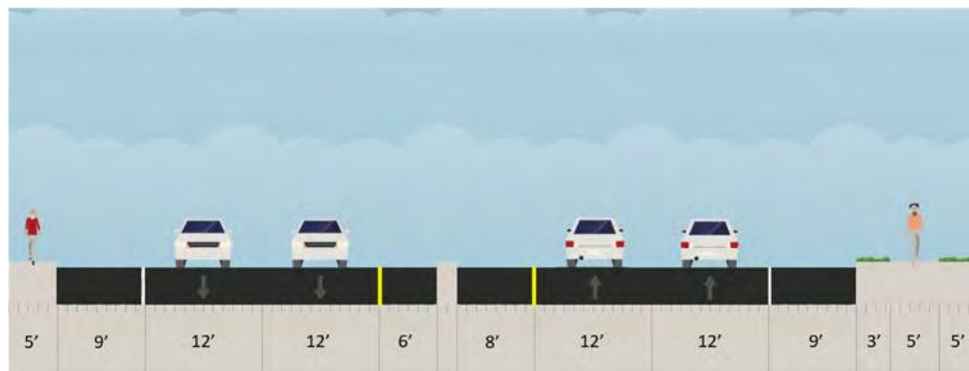


Image 23 – Existing Roadway Typical Section



NOT FOR CONSTRUCTION

PROJ. NO: 2021042A10 DATE: FEBRUARY 2023		SCCOG		CONCEPTUAL DESIGN PLAN ROUTE 32 PREFERRED ALTERNATIVE NEW LONDON CONNECTICUT		CR-101	
FUSSELL & O'NEILL 114 BROAD STREET BOSTON, MA 02110 www.fussell.com		SCALE: HORIZ. 1" = 50' VERT. 1" = 20'		GRAPHIC SCALE 0 20 40		DESIGNER REVIEWER	
NO.		DATE		DESCRIPTION		DESIGNER REVIEWER	

[illegible]

SCALE:

HORIZ.: 1" = 40'

VERT.:

DATUM:

HORIZ.:

VERT.:

40 20 0 40

GRAPHIC SCALE

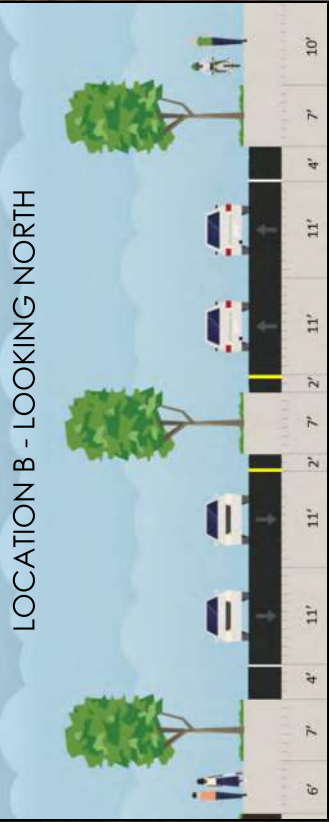


FUSS & O'NEILL
146 HARTFORD ROAD
MANCHESTER, CONNECTICUT 06040
860.646.2469
www.fandfo.com

SCCOG
CONCEPTUAL DESIGN PLAN
ROUTE 32 PREFERRED ALTERNATIVE

PROJ. No.: 20210942.A10
DATE: APRIL 2022

CR-101



6.1 Traffic Calming Measures

Reducing vehicle speeds is a critical component to improving roadway safety and measured 85th percentile speeds on Route 32 exceed the posted speed limit by up to 25 miles per hour in some locations. Therefore, traffic calming was a primary goal of the preferred alternative.

In order to reduce speeds for vehicles traveling north at the southern end of the study area, the preferred concept proposes merging Route 32 south of the Williams Street Bridge to only one lane, so vehicles must reduce speed prior to merging. Additionally, the concept plan depicts realignment of the I-95 off-ramp to introduce a sharper curve which must be navigated at a slower vehicle travel speed shown below in Image 24.



Image 24 - Realigned Exit Ramp

The concept plan also proposes realigning the Mohegan Avenue Parkway ramp that runs along the USCGA campus frontage, depicted in Image 25 on the next page. The proposed change includes a reverse curve that slows vehicle speeds. This will discourage vehicles from accelerating as they proceed to merge onto Route 32. The removal of existing highway infrastructure and planting of trees will also contribute to traffic calming by providing drivers with visual cues indicating that speeds should be reduced. Additionally, installation of gateway treatments, such as college signage or public art will set expectation of driving through a heavily foot-trafficked area.

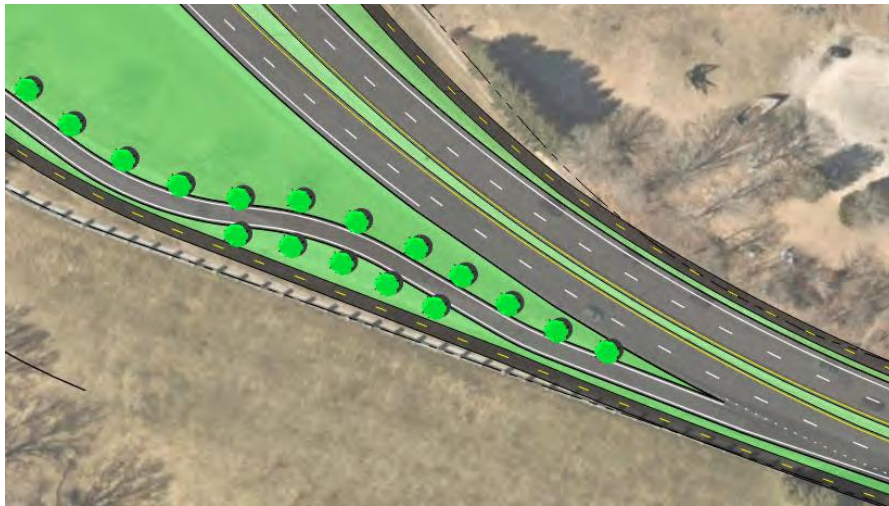


Image 25 - USCGA Ramp

A number of PAC members and other members of the public inquired about the process to change the posted speed limits on Route 32. To change the speed limit on a state road, CTDOT OSTA considers a number of factors in an engineering study, including roadway type, functional classification, geometry, frequency of roadside access points, crash history, existing traffic control devices, sight distances, and measured vehicle speeds.

Many of the existing characteristics of Route 32 are consistent with a higher posted speed limit as evaluated per the OSTA criteria. The roadway is a minor arterial that is generally flat and straight with limited roadside access points, and the 85th percentile speeds exceed the posted speed limit in both directions. The traffic calming measures recommended as part of the preferred concept plan will play an important role in slowing vehicle speeds and potentially lowering the speed limit.

6.2 Signal Equipment Upgrades

The preferred concept also recommends upgrades to the existing signal equipment at intersections. Mast arms are recommended to replace existing span wires, and signal heads should be upgraded to include retroreflective backplates. These improvements will enhance intersection visibility and allow for the implementation of video detection. Video detection will be an improvement over the existing loop detection, which was noted to be faulty/non-functional throughout the public engagement process. Images 26 and 27 below depict the same intersection in Storrs, Connecticut before and after the installation of mast arms. Notably, visibility of the traffic control is significantly improved.



Image 26 - Intersection of Route 195 and North Eagleville Road at UConn in Storrs (2015)



Image 27 - Intersection of Route 195 and North Eagleville Road at UConn in Storrs (2021)

6.3 Pedestrian Infrastructure Improvements

Pedestrian infrastructure is proposed on both sides of the roadway for the entire length of the study area. The preferred alternative includes crosswalks across all legs of each intersection, which is an improvement upon the single crosswalk provided at each intersection in the existing condition. Additionally, the reduction in lane width and shoulder width shortens the crossing distance for pedestrians, and the median island serves as a pedestrian refuge island. Additionally, it is recommended that all curb ramps at intersections be upgraded to ensure ADA compliance.

At the Connecticut College Main Entrance, use of a colored, textured, stamped asphalt crosswalk will improve crosswalk visibility for drivers, and also serve as a visual cue for drivers to slow down. The proposed landscape buffer increases the separation between pedestrians and vehicles, and street trees will provide shade for pedestrians, overall creating a safer and more comfortable walking environment.

Representatives of Connecticut College have requested an evaluation of possible locations for a second pedestrian bridge at the southern end of the corridor, as Connecticut College and USCGA are implementing academic programs that encourage students to take classes at both campuses, and

USCGA utilizes the south parking lot on the Connecticut College campus for event parking. Potential locations were evaluated based on available ROW, proximity to existing signalized intersections, and desired pedestrian routes as outlined by representatives of Connecticut College.

The preferred concept plan depicts two possible locations for a second pedestrian bridge. One potential location is approximately 400 feet north of Deshon Street, and another possible location is approximately 275 feet south of Deshon Street. At the northern location, it would be possible to construct both bridge abutments in Connecticut College ROW, but the bridge could obstruct the view of the intersection of Deshon Street and Route 32. The southern location would not obstruct the intersection but presents a ROW conflict with the USCGA. The potential locations are depicted in Image 28 below.



Image 28 - Potential Pedestrian Bridge Locations

However, the current desire for a pedestrian bridge due to concerns of high vehicle speeds and long crosswalks that create an unsafe environment for pedestrians crossing Route 32 at grade will be alleviated by the proposed improvements outlined within this study. The proposed changes will reduce vehicle speeds and shorten pedestrian crossing distances so that pedestrians may cross safely at the intersection of Deshon Street and Route 32, greatly reducing the need for a second pedestrian bridge.

6.4 Bicycle Infrastructure Improvements

The proposed shared use path on both sides of the roadway offers bi-directional cyclist access to destinations on both sides of Route 32. At the southern end of the study corridor, proposed bicycle facilities connect with existing bicycle lanes on Williams Street, which offer further connectivity to Hodges Square and into the Connecticut College campus. The southbound bicycle lane on Williams Street terminates at Bailey Circle, leaving a gap in the network of approximately 0.6 miles between the Post Hill neighborhood and the proposed improvements.

6.5 Transit Facility Upgrades

The bus stop for SEAT Routes 1 and 14 is located at the intersection of Williams Street and Briggs Street should be upgraded to include signage, benches, and a bus shelter. Benches and a bus shelter would improve the experience for riders and also enhance the visibility of the bus stop.

Currently, SEAT does not operate any bus service along Route 32. The preferred concept would allow for bus operation to be accommodated in the future. Bus stops could be located in the landscaped areas on the sides of the roadway, and buses could stop in the outside travel lanes for boarding and alighting. The existing bench and waiting area at Reservoir Street could be upgraded to provide additional amenities for riders, should bus routes service this location in the future.

6.6 Lighting Upgrades

One of the existing deficiencies on the roadway is the lack of pedestrian scale lighting along the corridor. Additional lighting intended to illuminate the sidewalk is recommended and can be installed in the landscaped areas on the sides of the roadway. Installation of pedestrian scale lighting at intersections should be prioritized to improve visibility at crosswalks.

Additionally, existing lighting fixtures may be upgraded to include black or otherwise decorative poles, consistent with the proposed mast arms.

6.7 Landscaping

Tree planting along Route 32 is proposed to enhance the user experience and help signal to drivers that they have entered a campus area where pedestrian activity should be expected. Proper tree species selection and site requirements are key to ensuring the tree plantings will remain healthy and reach maturity to endure for many years.

Planting site selection is a primary consideration for tree longevity. Areas for tree planting shown on the concept plans along the median and roadsides provide a minimum width of six (6) feet of planting area and a continuous planting strip. Providing adequate soil volume for root growth is critical. Depending on expected mature tree size (diameter of trunk and canopy) the recommended soil volume for street trees ranges from approximately 600 cubic feet for smaller trees to 1000 cubic feet for larger species. Planting soil depth should be at least three (3) feet. Soil volume guidelines should be considered when choosing a tree spacing standard. Trees should not be planted within the clear site distance triangle at intersections for safety and visibility of people crossing and other on-coming vehicles. These distances vary depending on the intersection conditions.

Correct tree species selection is also critically important to the survival of trees in urban conditions. Trees must be selected based on several factors including USDA hardiness zone (Zone 6b & 7a for New London), and environmental tolerances. Trees species for roadway planting should be selected based on

salt tolerance and soil conditions such as pH, extreme wet, or dry conditions. Drought tolerance is typically an important trait for plants and trees in roadway conditions unless irrigation is installed.

Depending on adjacent uses tree species selection criteria should also include the form, or shape, of the crown, and branching height for view and head clearance. In addition, selecting trees of varying genus and species should be considered in order to create a polyculture that will help to ward against species die-off if a blight or insect infestation occurs. Invasive species or over-planted species should not be selected. Seasonal interest such as fall leaf color, flowering and evergreen or deciduous will add to the aesthetics and variety of the roadway planting.

7 Implementation and Cost

7.1 Potential Funding Sources

A number of state and federal funding sources have been identified as possible options to cover the design and construction costs associated with the recommended improvements.

7.1.1 Surface Transportation Program (STP)

The surface transportation program provides flexible federal funding that may be used by states for projects that preserve and improve conditions and performance on any federal-aid highway projects on any public road, as well as pedestrian and bicycle infrastructure. A portion of the funds is required to be suballocated to the New London Urbanized area, and another portion of the funds may be used anywhere in the state. The FHWA indicates safety, complete streets, and ADA compliance as strategic priorities for use of the funding, all of which would be improved along Route 32 upon implementation of this project.

7.1.2 Local Transportation Capital Improvement Program (LOTICIP)

LOTICIP is a state funded program to provide funding to municipalities to perform capital infrastructure improvements where federal funding is otherwise not available. Through the LOTICIP program, the applying municipality must cover the project design costs, and CTDOT covers the project construction cost. Projects must have a minimum construction cost of \$300,000 to qualify. SCCOG is allocated approximately \$4,500,000 annually for capital improvement projects regionwide, resulting in a maximum of 15 awards per region.

7.1.3 Community Connectivity Grant Program

The Community Connectivity Grant program is a state funded program to provide funding for the construction of roadway improvements designed to improve access and conditions for active transportation users. These funds can only be used for construction activities, and funding limits fall between \$100,000 and \$800,000. This grant on its own would not be able to fund any one phase of the

project, but it is possible that funds from this grant could be combined with other state funding sources. Alternatively, this funding could be considered to fill gaps in the bicycle network that fall outside of the study area. This grant cannot be combined with other federal funding sources.

7.1.4 Reconnecting Communities Pilot Program

The Reconnecting Communities Pilot Program is a federally funded program dedicated to reconnecting communities previously cut off from economic opportunities by transportation infrastructure. Eligible roadways include highways, roads, streets, or other transportation facilities that create a barrier to community connectivity. The program will award capital construction grants to retrofit projects on eligible facilities. Capital construction grants may also fund the preliminary and detailed design, permitting, and other project development for the capital construction project. An application for a capital construction grant would need to be completed by or endorsed by CTDOT.

Capital construction grant awards are no less than \$5 million per project. It is anticipated that capital construction grants may range from \$5 million and \$100 million. Grants require a minimum 20 percent non-federal match, and construction grants may not exceed 50 percent of the project cost.

7.1.5 Safe Streets and Roads for All Program

The Safe Streets and Roads for All (SS4A) program is a federally funded program dedicated to advancing roadway safety projects and initiatives to prevent roadway deaths and serious injuries. The program awards both planning and implementation grants; the recommendations of this study would best be funded by an implementation grant. Implementation grants may be used to fund projects identified in an action plan, and may also be used to fund planning, design, and development activities for projects and recommendations outlined in an action plan. Eligible applicants include counties, cities, towns, transit agencies, regional planning organizations, and councils of governments. States may not apply for funding.

It is anticipated that the award for an implementation grant would fall between \$2.5 million and \$25 million. The federal award amount may not exceed 80 percent of the eligible activity cost, requiring a non-federal match of at least 20 percent.

7.1.6 RAISE Discretionary Grant Program

The RAISE Discretionary Grant Program is designed to help communities carry out projects with significant local or regional impact. Funding obtained through this grant may be used to fund capital construction projects, or to fund planning, preparation, design, or other pre-construction activities for transportation capital projects. Eligible applicants include States, municipalities, regional planning organizations, and any other public authorities with a transportation function.

The minimum RAISE construction grant award is \$5 million in urban areas; RAISE grants for planning, design, and other pre-construction efforts do not have a minimum award amount. The maximum award

amount is \$25 million. The maximum amount that can be awarded to any one State through this program is \$345 million. RAISE grants may be combined with other federal awards, but the total federal share of the project cost cannot exceed 80 percent, unless the project is located in a rural area, a historically disadvantaged community, or an area of persistent poverty.

7.1.7 Congressionally Directed Spending

Congressionally Directed Spending funds are allocated to a wide range of projects at the discretion of the United States Congress. Senators may request funding in any amount to dedicate to an entity that is advancing a project that is of high political priority for the State. For example, Senators Blumenthal and Murphy requested \$12,000 for CTDOT to partially fund the New Haven Line Track Speed Improvement Phase 1.

This is a possible funding option if project stakeholders, such as CTDOT, SCCOG, The City of New London, Connecticut College, and USCGA are able to effectively work with local leaders to emphasize the importance of the project and build necessary political support.

7.2 Permitting Efforts

Because Route 32 is a state-owned and maintained facility, any roadway design project will need to undergo CTDOT review. It is not anticipated that any other permits will be required because the recommended improvements appear to be feasible within the existing ROW, and do not impact undisturbed soil.

7.3 Potential Project Phasing and Estimated Cost

The intention of this corridor study has been to identify roadway improvements that can be implemented in the near- to medium- term, without substantial changes to the regional roadway network or to the land adjacent to the corridor. The preferred concept is functional for existing traffic volumes and is feasible within existing ROW.

Low-cost, short-term improvements, such as improved signal timings, re-stripped crosswalks, and upgraded curb ramps have already been implemented to some extent as a result of the previously conducted Road Safety Audit. Therefore, these are not recommended outcomes of this study. The full reconstruction of the roadway should be prioritized for the medium term.

The project could be implemented in phases if desired, as outlined below:

Phase 1: Improvements north of the Williams Street Bridge (\$22,000,000 - \$23,000,000)

- Removal of the existing concrete median
- Implementation of a landscaped median
- Addition of the shared use path on both sides of the roadway (and affiliated ramp reconstruction)

- Updated crosswalks.

Phase 1A: Signal Equipment Upgrades (\$4,000,000-\$5,000,000)

- Replacement of the span poles and span wires with mast arms
- Addition of video detection
- Upgraded pedestrian signal heads.

Phase 2: Improvements South of the USCGA (\$5,000,000-\$6,000,000)

- Realignment of the I-95 Exit 84 off-ramp and the USCGA Ramp
- Reducing Route 32 northbound to one lane.

The total cost of all recommended improvements is expected to fall between \$32,000,000 and \$33,000,000. If the realignment of the I-95 Exit 84 off-ramp is not included, the anticipated cost of the corridor improvements is expected to be between \$24,000,000 and \$25,000,000. An itemized conceptual cost estimate has been included on the following page. As the conceptual design for the proposed improvements is advanced through preliminary, semi-final, and final design, the list of identified items in the estimate will grow, and the contingencies and allowances for minor items will shrink.



Order of Magnitude Opinion of Cost

Route 32 Corridor Study

Prepared Date 6/16/2023 by JEP
Checked Date 7/10/2023 by KRO
City: New London, CT
Project Number 20210942.A10

Item	Unit	Quantity by Phase			Unit Price*	Cost by Phase			Total Cost
		Phase 1	Phase 1A	Phase 2		Phase 1	Phase 1A	Phase 2	
Earth Excavation	CY	20844	0	3972	\$ 24.00	\$ 500,266.56	\$ -	\$ 95,333.28	\$ 595,599.84
Multi-Use Path (10' wide - Bituminous Concrete)	SY	10578	0	0	\$ 60.00	\$ 634,666.20	\$ -	\$ -	\$ 634,666.20
Sidewalk (6' wide - Concrete)	SY	16800	0	0	\$ 12.00	\$ 201,600.00	\$ -	\$ -	\$ 201,600.00
Full Depth Roadway Reconstruction (Phase 1)	LS	1	0	0	\$ 1,845,000.00	\$ 1,845,000.00	\$ -	\$ -	\$ 1,845,000.00
Full Depth Roadway Reconstruction (Phase 2)	LS	1	0	1	\$ 375,435.19	\$ -	\$ -	\$ 375,435.19	\$ 375,435.19
Milling of HMA (0" to 4")	SY	14187	0	0	\$ 4.00	\$ 56,746.68	\$ -	\$ -	\$ 56,746.68
HMA	TON	1390	0	0	\$ 150.00	\$ 208,500.00	\$ -	\$ -	\$ 208,500.00
Removal of Bituminous Concrete Curb	LF	2200	0	0	\$ 1.00	\$ 2,200.00	\$ -	\$ -	\$ 2,200.00
Removal of Granite Stone Curb	LF	10125	0	0	\$ 10.00	\$ 101,250.00	\$ -	\$ -	\$ 101,250.00
Granite Curb	LF	24000	0	4000	\$ 65.00	\$ 1,560,000.00	\$ -	\$ 260,000.00	\$ 1,820,000.00
Pavement Stripping	LF	40432	0	5428	\$ 0.40	\$ 16,172.80	\$ -	\$ 2,171.00	\$ 18,343.80
Traffic Signals	EA	0	4	0	\$ 400,000.00	\$ -	\$ 1,600,000.00	\$ -	\$ 1,600,000.00
Removal of Precast Concrete Barrier Curb	LF	5000	0	0	\$ 45.00	\$ 225,000.00	\$ -	\$ -	\$ 225,000.00
Remove Metal Beam Rail	LF	1700	0	0	\$ 6.00	\$ 10,200.00	\$ -	\$ -	\$ 10,200.00
Metal Beam Rail (R-B MASH)	LF	1300	0	0	\$ 32.00	\$ 41,600.00	\$ -	\$ -	\$ 41,600.00
R-B End Anchorage - Type II	EA	3	0	0	\$ 1,850.00	\$ 5,550.00	\$ -	\$ -	\$ 5,550.00
Remove Cable Guide Rail	LF	725	0	0	\$ 6.00	\$ 4,350.00	\$ -	\$ -	\$ 4,350.00
Three-Cable Guide Railing	LF	700	0	0	\$ 28.00	\$ 19,600.00	\$ -	\$ -	\$ 19,600.00
Turf Establishment	SY	115500	0	47200	\$ 2.20	\$ 254,100.00	\$ -	\$ 103,840.00	\$ 357,940.00
Furnishing and Placing Topsoil	SY	115500	0	47200	\$ 7.00	\$ 808,500.00	\$ -	\$ 330,400.00	\$ 1,138,900.00
Street Trees	EA	42	0	0	\$ 800.00	\$ 33,600.00	\$ -	\$ -	\$ 33,600.00
Remove Highway Lighting	EA	7	0	0	\$ 800.00	\$ 5,600.00	\$ -	\$ -	\$ 5,600.00
Highway Light & Pole	EA	7	0	0	\$ 13,000.00	\$ 91,000.00	\$ -	\$ -	\$ 91,000.00
Decorative Light Pole with Single Luminaire	EA	50	0	0	\$ 3,500.00	\$ 175,000.00	\$ -	\$ -	\$ 175,000.00
Utility Pole Relocation	EA	25	0	0	\$ 15,000.00	\$ 375,000.00	\$ -	\$ -	\$ 375,000.00
Removal of Existing Overhead Sign	EA	1	0	1	\$ 75,000.00	\$ 75,000.00	\$ -	\$ 75,000.00	\$ 150,000.00
Overhead Truss Sign Support	EA	1	0	1	\$ 250,000.00	\$ 250,000.00	\$ -	\$ 250,000.00	\$ 500,000.00
Overhead Truss Sign Support Foundation	EA	1	0	1	\$ 72,000.00	\$ 72,000.00	\$ -	\$ 72,000.00	\$ 144,000.00
State Police (Phase 1)	LS	1	0	0	\$ 55,000.00	\$ 55,000.00	\$ -	\$ -	\$ 55,000.00
State Police (Phase 2)	LS	0	1	0	\$ 25,000.00	\$ -	\$ 25,000.00	\$ -	\$ 25,000.00

*Based on 2023 unit pricing

Itemized Subtotal	\$ 7,627,502.24	\$ 1,625,000.00	\$ 1,599,179.47	\$ 10,851,681.71
Minor Items (25%)	\$ 1,906,875.56	\$ 406,250.00	\$ 399,794.87	\$ 2,712,920.43
Clearing and Grubbing (2%)	\$ 190,687.56	\$ -	\$ 39,979.49	\$ 230,667.04
Drainage Costs (20%)	\$ 1,906,875.56	\$ -	\$ 399,794.87	\$ 2,306,670.43
Mobilization (7%)	\$ 667,406.45	\$ 142,187.50	\$ 139,928.20	\$ 949,522.15
Maintenance & Protection of Traffic (3%)	\$ 286,031.33	\$ 60,937.50	\$ 59,969.23	\$ 406,938.06
Construction Staking (1%)	\$ 95,343.78	\$ 20,312.50	\$ 19,989.74	\$ 135,646.02
SUBTOTAL	\$ 12,680,722.47	\$ 2,254,687.50	\$ 2,658,635.87	\$ 17,594,045.84
Contingency (20%)	\$ 2,536,144.49	\$ 450,937.50	\$ 531,727.17	\$ 3,518,809.17
Incidentals (20%)	\$ 2,536,144.49	\$ 450,937.50	\$ 531,727.17	\$ 3,518,809.17
Inflation (5%/year)	\$ 4,904,829.75	\$ 1,285,037.93	\$ 2,052,093.36	\$ 8,241,961.03
Opinion of Probable Construction Costs	\$ 22,657,841.21	\$ 4,441,600.43	\$ 5,774,183.58	\$ 32,873,625.21

*5 years to construction

*7 years to construction

*9 years to construction

8 Long-Term Improvements

CTDOT has considered a number of large-scale infrastructure projects that would greatly change the nature and function of Route 32 if implemented. One such project is the re-construction of the I-95/I-395 interchange in Waterford, which would have the potential to significantly reduce the thru-traffic volumes on Route 32. Currently, Route 32 is a primary regional connector between I-95 and I-395 because the interchange is not complete.

Additionally, it is possible that the ongoing I-95 PEL study may make recommendations related to the I-95/Route 32 interchange that would significantly change the existing interchange geometry and the nature of the Route 32 corridor.

If these large-scale network improvements are realized, and vehicle traffic volumes on Route 32 are significantly reduced, it may be feasible to provide just one vehicular travel lane in each direction. Images 29 and 30 below depict possible ways to reconfigure the proposed cross section to accommodate alternate modes of transportation without adjusting the curb line.



Image 29 – Possible Future Bus Lanes



Image 30 – Possible Future On-Street Bike Lanes

9 Conclusion

The intention of this corridor study has been to identify roadway improvements that can be implemented in the near- to medium- term, without substantial changes to the regional roadway network.

The preferred concept plan reflects the needs of the community and desire for a safe, welcoming environment supportive of the campuses and institutions that surround it. Route 32 within the study area currently acts as a barrier and encourages unsafe driver behavior, as demonstrated through prior studies, public outreach, crash analysis, and an existing conditions assessment.

While the need to maintain capacity through this important regional connection cannot be ignored in the short-term, this segment of Route 32 can be transformed into a lower speed community street, enhancing connectivity to local destinations, and providing sustainable transportation choices for area residents.

Low-cost, short-term improvements, such as improved signal timings, re-stripped crosswalks, and upgraded curb ramps have already been implemented to some extent as a result of the previously conducted Road Safety Audit. Therefore, these are not recommended outcomes of this study. The full reconstruction of the roadway should be prioritized for the medium term.

It is recommended that CTDOT progress the design of these important safety improvements and pursue funding opportunities for implementation, as the proposed improvements are consistent with State and Federal objectives, which include improving multimodal connectivity and roadway safety, and reconnecting community fabric that has been disrupted by divisive transportation infrastructure.