



Route 66 Transportation Study  
Portland and East Hampton, CT

## Final Report Executive Summary

Prepared For:

**RiverCOG and the Towns of  
Portland & East Hampton**

December 2020

**Tighe&Bond**

# Executive Summary

## Introduction

The Route 66 Corridor Planning Study (Study) was conducted by the Lower Connecticut River Valley Council of Governments (RiverCOG) on behalf of the Towns of Portland and East Hampton (Towns). The project was funded by the Federal Highway Administration, the Connecticut Department of Transportation (CTDOT) and the Towns; and administered by RiverCOG on their behalf.

The purpose of the Study was to develop a comprehensive transportation improvement plan for Route 66, within the study area, and provide a planning document for the Towns, RiverCOG and State to facilitate the identification and programming of funding to support implementation of transportation system improvements to address existing and future needs and deficiencies and support future economic development goals.

The goals and objectives of the plan were formulated by the Study Advisory Committee (SAC) at the beginning of the study process to provide guidance and direction to the study team. The SAC included members from the Towns, RiverCOG, Middletown Area Transit, and CTDOT. The Study goals and objectives were identified at the onset of the Study through meetings and public input and included the following:

### **Goals and Objectives**

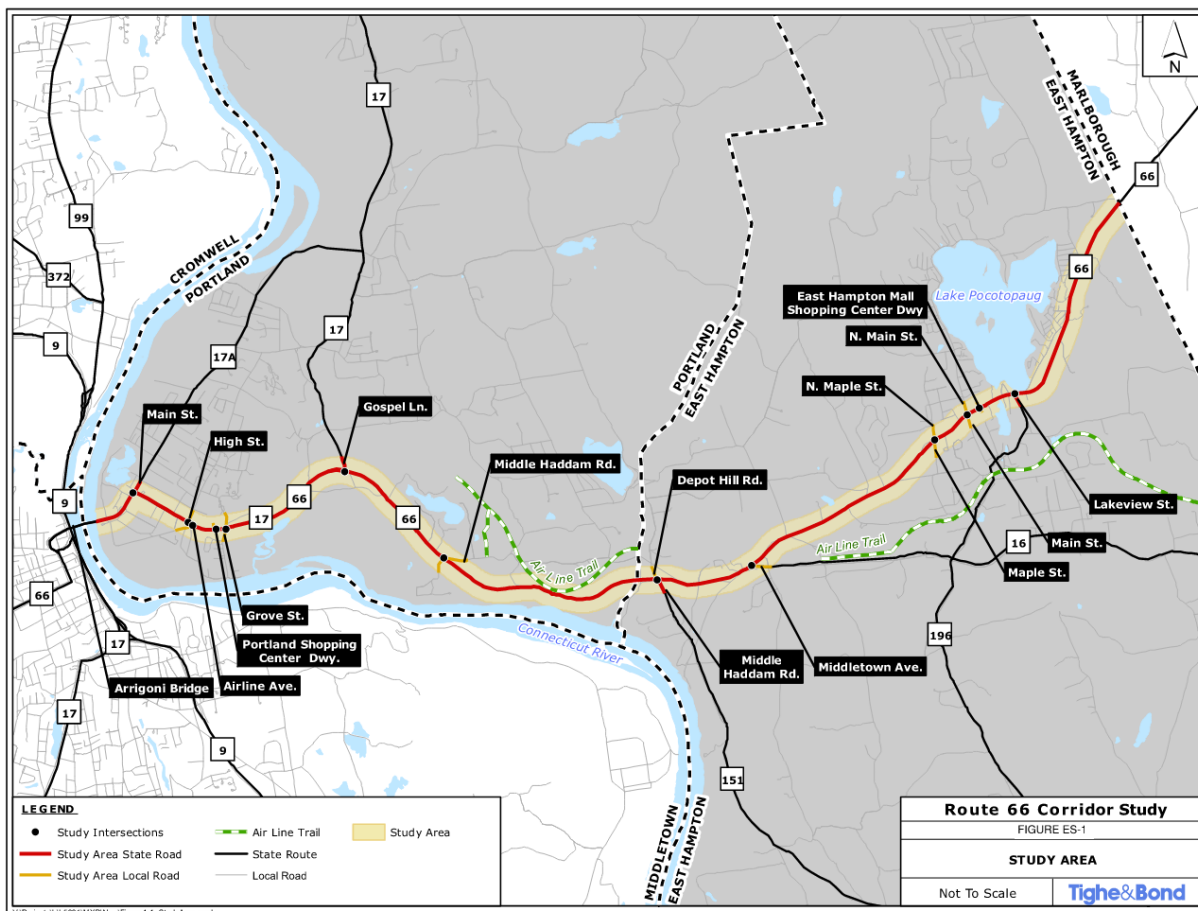
- Develop cost effective physical transportation system solutions that improve operations to mitigate congestion, address identified safety concerns, and provide guidance on access management issues while accommodating future land use expansion opportunities
- Improve transportation system access and mobility for alternative travel modes including sidewalk and bicycle infrastructure; exclusive pedestrian signalization, accessible sidewalk ramps and push-buttons at intersections; enhanced access and connectivity to the Air Line Trail system; and improve transit access and amenities to provide a complete transportation system that serves the needs for all travelers
- Develop a comprehensive transportation improvement plan that prioritizes and defines implementation time frames to enable the programming and funding of improvements

## Study Area

The study area includes approximately 11 miles of Route 66 in the Towns of Portland and East Hampton. The study area begins at the east end of the Arrigoni Bridge in Portland, continuing north on Main Street before turning east on Route 66 and extending through Portland and East Hampton to the Marlborough town line. The study area includes 13 signalized intersections. In addition, the Study also included an assessment of the Airline Trail corridor, as the study will seek to identify opportunities to extend, improve connectivity and access to the trail system through the two Towns. The study area and the study area roadways are illustrated on ES-1.

**FIGURE ES-1**

Study Area



## Public Involvement

Community involvement and public outreach were important initiatives of the study. A variety of techniques were used to inform the public of study findings and to obtain feedback throughout the study process. Residents and businesses in the study area had many opportunities to monitor the progress of the study and offer input to the study team to help inform the decisions and recommendations of the study. Throughout the study, a comprehensive public outreach program was conducted by the study team in cooperation with the State and Local agencies. The goals of the community involvement and public outreach program included:

- Obtain input from the public and project stakeholders on study area issues, concerns, and help identify and frame the study goals and objectives
- Advise the public of the study findings
- Provide the opportunity for the public to educate the study team with local knowledge
- Involve stakeholders and the public in the development and refinement of recommendations that fit the character and future vision of the Towns
- Facilitate reviews by the Town Councils, Boards and Commissions, businesses, and residents, leading to a Final Improvement Plan that can be endorsed by the Towns and Region to help guide future transportation system improvements and enhancements

The public outreach initiatives were facilitated through a Study Advisory Committee and Community Advisory Committee.

### Study Advisory Committee (SAC)

The SAC provided consistent input and oversight throughout the study process. The committee was composed of representatives from the Towns, RiverCOG, and CTDOT. SAC meetings were conducted at key milestones during the study process to provide an update on the Study and obtain guidance on the results, findings, and recommendations.

### Community Advisory Committee (CAC)

The CAC included key project stakeholders and community members that were directly impacted by operations in the study area. The CAC meetings provided a forum for the CAC members to provide their perspectives on the study goals and objectives and help vet study findings and recommendations. The CAC was supported by key members of the Study Advisory Committee from the Towns as well as RiverCOG in order to facilitate a cohesive public outreach process and local representation.



## Public Information Meetings

In addition to the guidance provided by the SAC and CAC, public information meetings were conducted to meet the public involvement and outreach goals. The public information meetings were held at key junctures in the planning study process: one in the initial project investigation and existing analysis phase, one to review the findings of assessment on existing and future conditions, one following the identification and analysis of improvement alternatives, and one to review the improvement plan before it was finalized.



## Summary of Outreach Activities

The public outreach initiatives were fundamental to the progression of the study from initiation through the meetings with the SAC, CAC, the Towns, and CTDOT as well as with key stakeholders and the public. The following meetings took place during the progression of the Study:

Project Kickoff Meeting	November 3, 2017
SAC Meeting #1	May 31, 2018
Public Info Meeting #1	June 12, 2018
Public Info Meeting #2	June 14, 2018
SAC Meeting #2	March 07, 2019
CAC Meeting #1	May 6, 2019
Public Info Meeting #3	May 14, 2019
SAC Meeting #3	October 17, 2019
Public Info Meeting #4	November 21, 2019
CTDOT Review Meeting	February 18, 2020
East Hampton Town Council Meeting	May 12, 2020
Portland Board of Selectmen Review Meetings	May 20, 2020
RiverCOG Board Meeting:	May 27, 2020

## Assessment of Existing Conditions

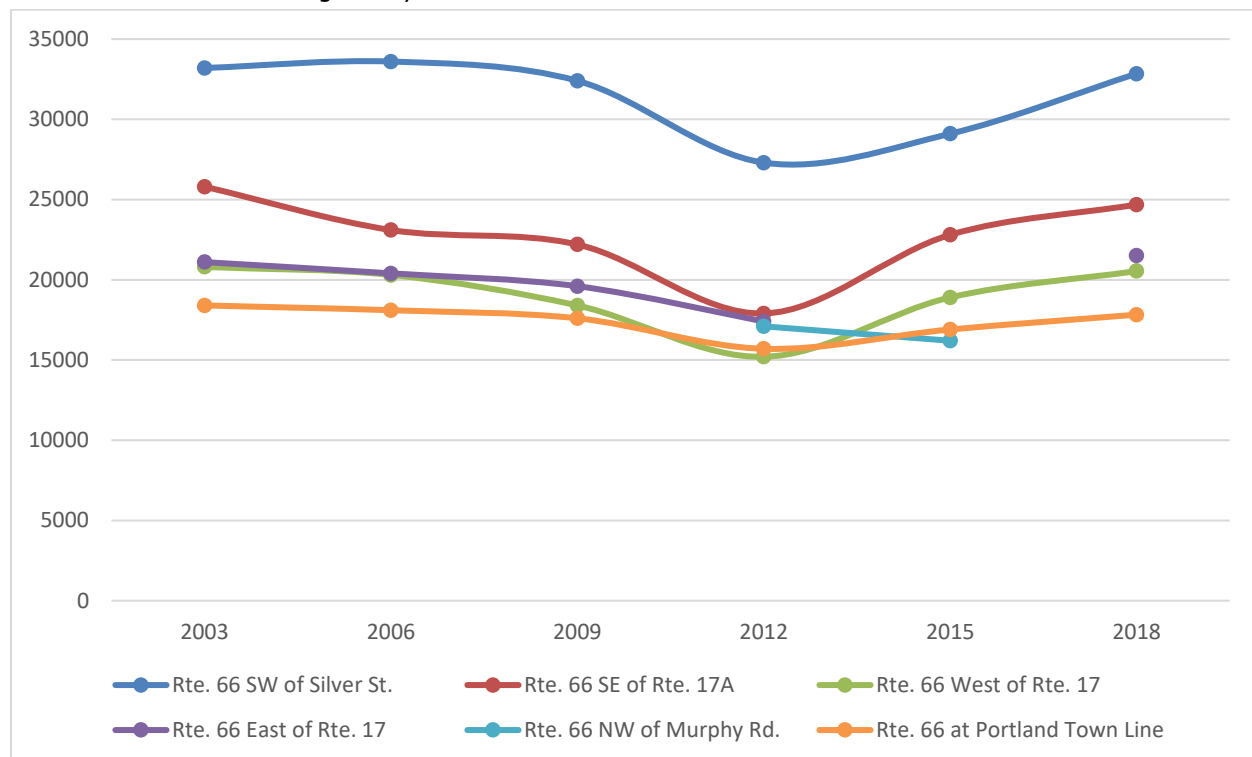
The assessment of existing conditions included extensive data collection to establish the current condition of the transportation system in the study area. The purpose of the existing condition assessment was to discover existing needs and deficiencies and begin the process of identifying opportunities for improvements to the transportation system. This section describes the assessment of the existing study area transportation system.

### Traffic Volumes

Available historical traffic volume data was obtained from CTDOT. In addition, a traffic counting program was conducted to supplement the available data. A review of the historic average daily traffic (ADT) volume data collected indicates daily traffic volumes along Route 66 peaked around 2006 before the economic recession and began to decline. In some cases, this decline was significant. Route 66 started to recover in 2012. Volumes have since returned to their approximate levels prior to the recession. Figures ES-2 and ES-3 show the change in average daily traffic at multiple count locations in the study area. Figure ES-4 illustrates the 2018 Weekday Average Daily Traffic Volumes at count locations throughout the study area.

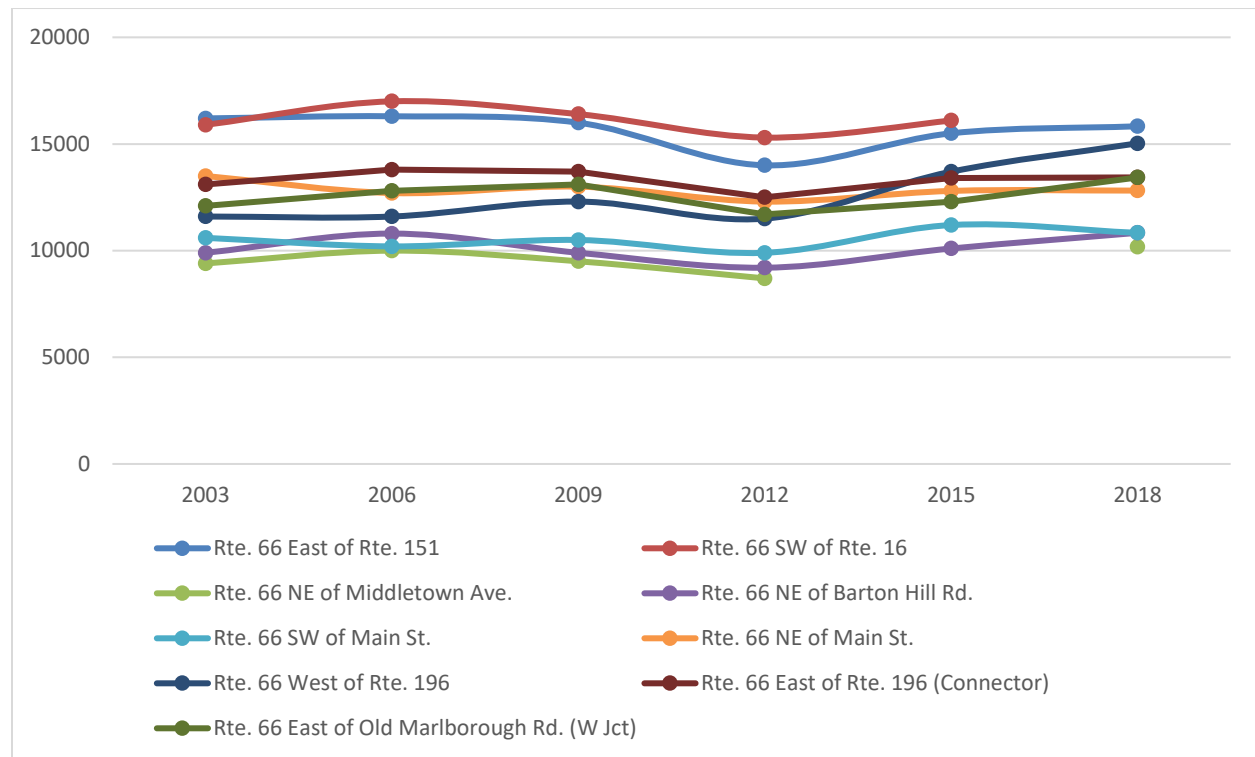
**FIGURE ES-2**

Route 66 Historical Average Daily Traffic – Portland Count Stations



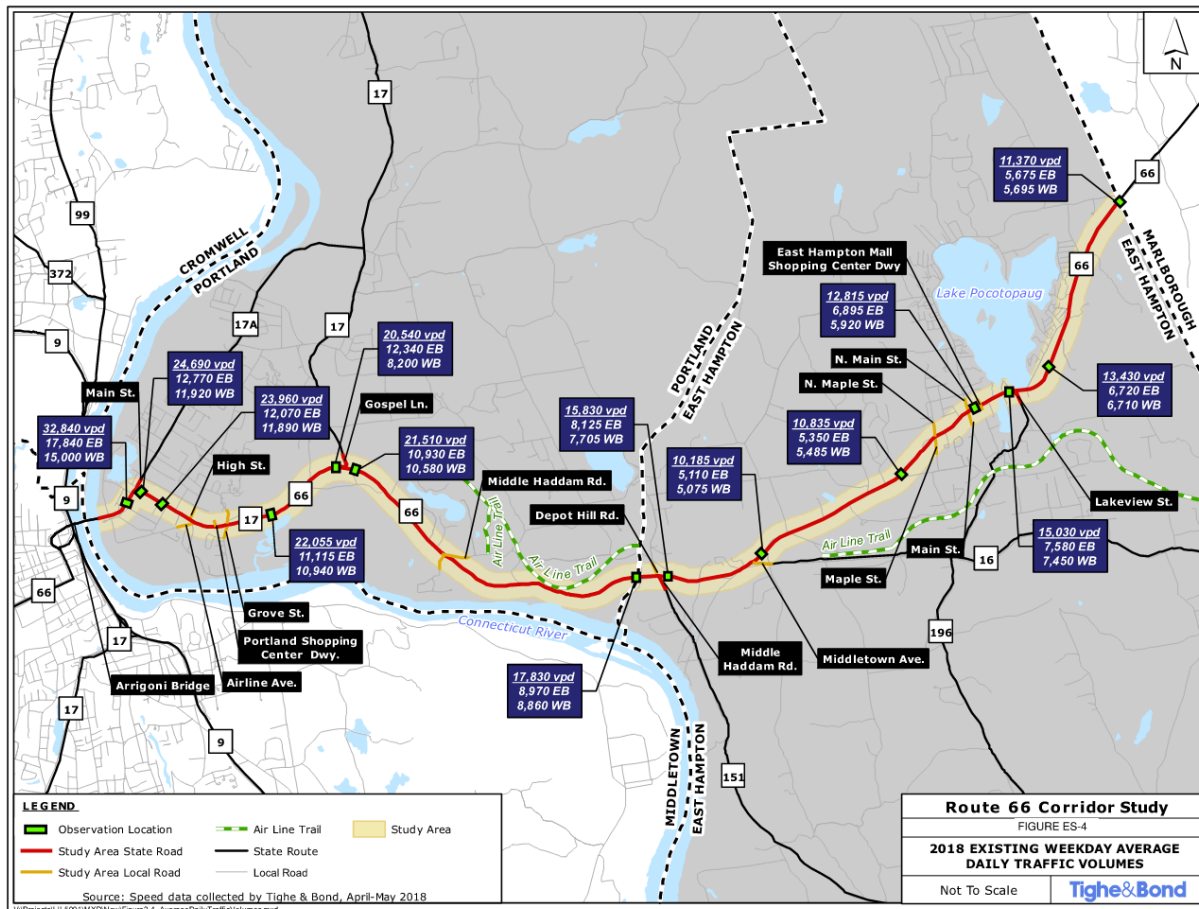
**FIGURE ES-3**

Route 66 Historical Average Daily Traffic – East Hampton Count Stations



**FIGURE ES-4**

Average Daily Traffic Volumes



## Travel Speeds

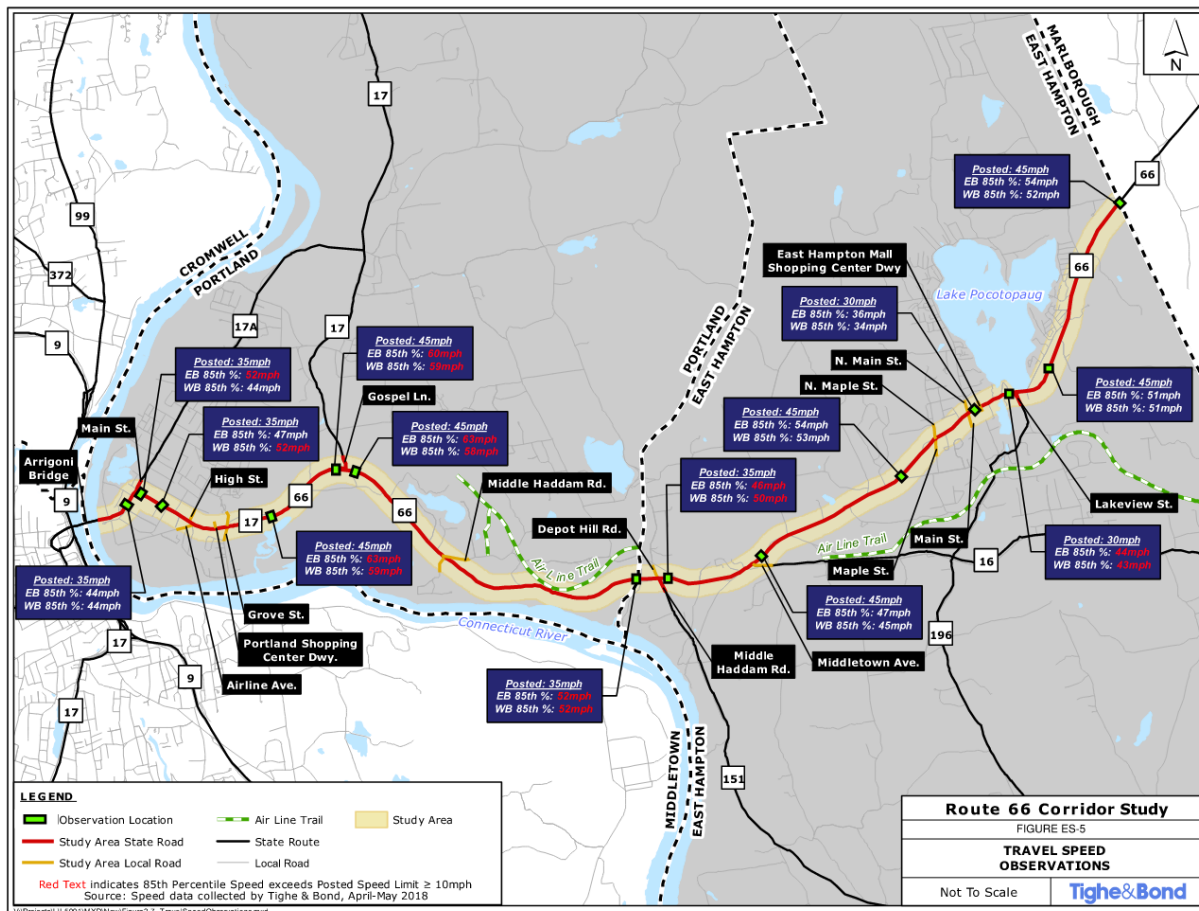
Travel speed data was collected along Route 66 in the study area using Automatic Traffic Recorders (ATRs) during April and May 2018. Figure ES-5 summarizes the results of the speed observations within the study area with average speeds or 85<sup>th</sup> percentile speeds that exceed the posted speed limit by 10 miles per hour or more highlighted in red.



Along Route 66, average travel speeds were higher than the posted speed limit at several observation locations due to the divided nature of the roadway, long spacing between traffic signals, and several steep downgrades along the corridor. In Portland, between Route 17A (Main Street) and High Street, average speeds are greater than 10 miles per hour over the posted speed limit at each observation locations. From Route 17 (Gospel Lane) to the Portland-East Hampton Town Line, average speeds are greater than 10 miles per hour over the posted speed limit at both observation locations within this segment. East of Route 16, travel speeds increase with the increase in posted speed limit but remain within 10 miles per hour of the posted speed limit. Average travel speeds decrease significantly east of Maple Street. Travel speeds are lower along this stretch due to the high density of driveways and closer spacing of signals. The 85<sup>th</sup> percentile speed is over 10 miles per hour of the posted speed at 8 out of the 14 observation locations.

**FIGURE ES-5**

Travel Speed Observations



## Traffic Operations

Traffic operations were evaluated for the study area intersections during the weekday morning and weekday afternoon peak hours. Capacity and queue analyses were conducted using Trafficware's *Synchro plus SimTraffic 10 – Traffic Signal Coordination Software*, based on the *Highway Capacity Manual (HCM)*, 6<sup>th</sup> Edition methodology.

Level of Service	Signalized Intersection Criteria	Unsignalized Intersection Criteria	V/C Ratio >1.00 <sup>a</sup>
	Average Control Delay (Seconds per Vehicle)	Average Control Delay (Seconds per Vehicle)	
A	≤10	≤10	F
B	>10 and ≤20	>10 and ≤15	F
C	>20 and ≤35	>15 and ≤25	F
D	>35 and ≤55	>25 and ≤35	F
E	>55 and ≤80	>35 and ≤50	F
F	>80	>50	F

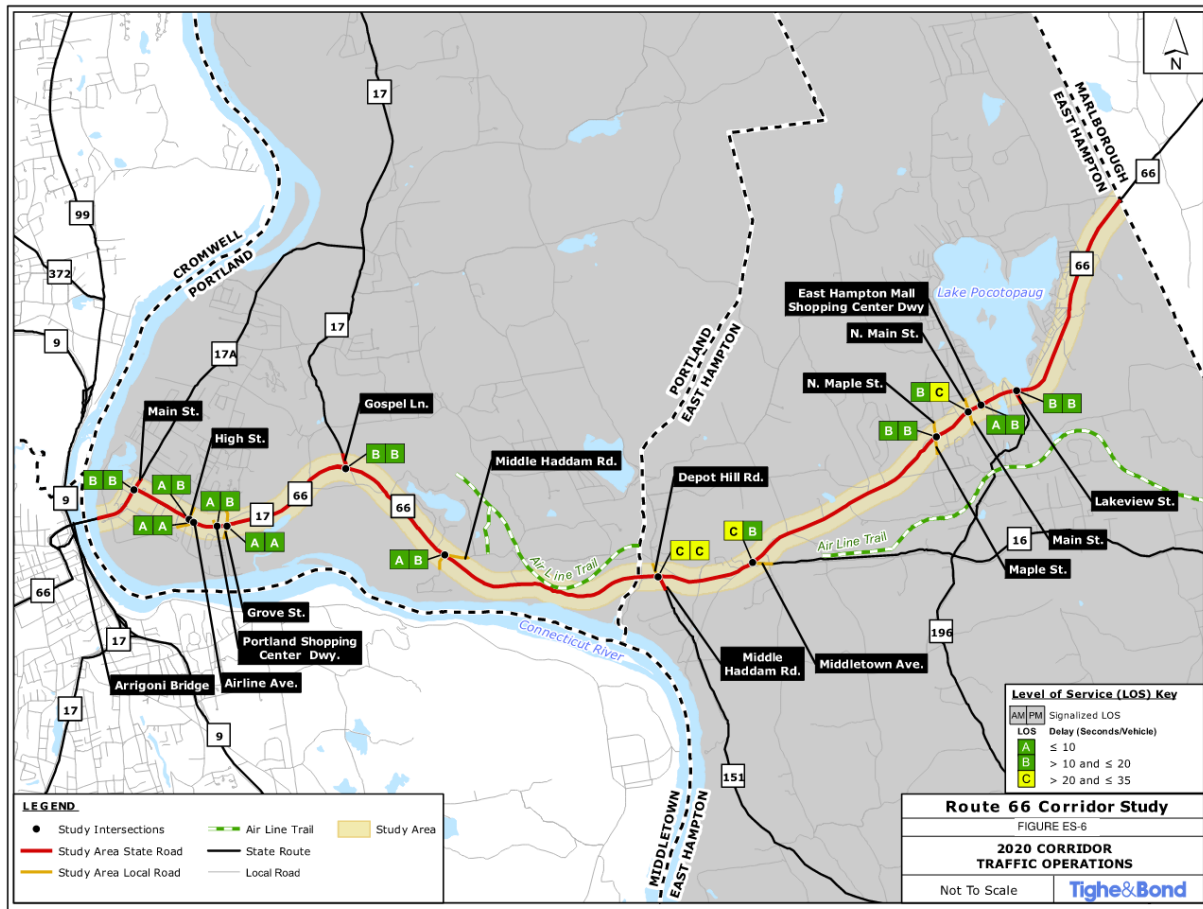
Note: <sup>a</sup>For approach-based and intersection-wide assessments, LOS is defined solely by control delay.

Source: *Highway Capacity Manual, 6<sup>th</sup> Edition: A Guide for Multimodal Mobility Analysis*. Washington, D.C.: Transportation Research Board, 2016. Exhibit 19-8, Pg. 19-16 & Exhibit 21-8, Pg. 21-9.

In general intersections that exhibit Level of Service (LOS) A or B are considered to have excellent to good operating conditions with little congestion or delay. LOS C indicates an intersection with acceptable operations. LOS D indicates an intersection that has tolerable operations with average delays approaching one minute. Intersections with LOS E and F are operating with poor or failing conditions and typically warrant a more thorough review and potential mitigation to improve the operations issues. Improvements can include geometric, lane use, timing modifications, or different form of traffic control to mitigate the operational issues and reduce average delay. In the context of this planning process, during the analysis of both existing and future conditions, intersections exhibiting LOS E and F are identified for further analysis and potential improvements to mitigate poor or failing operations. Figure ES-6 shows the intersection operations in the study area in terms of LOS for the 2020 Corridor Conditions.

**FIGURE ES-6**

2020 Corridor Conditions Traffic Operations

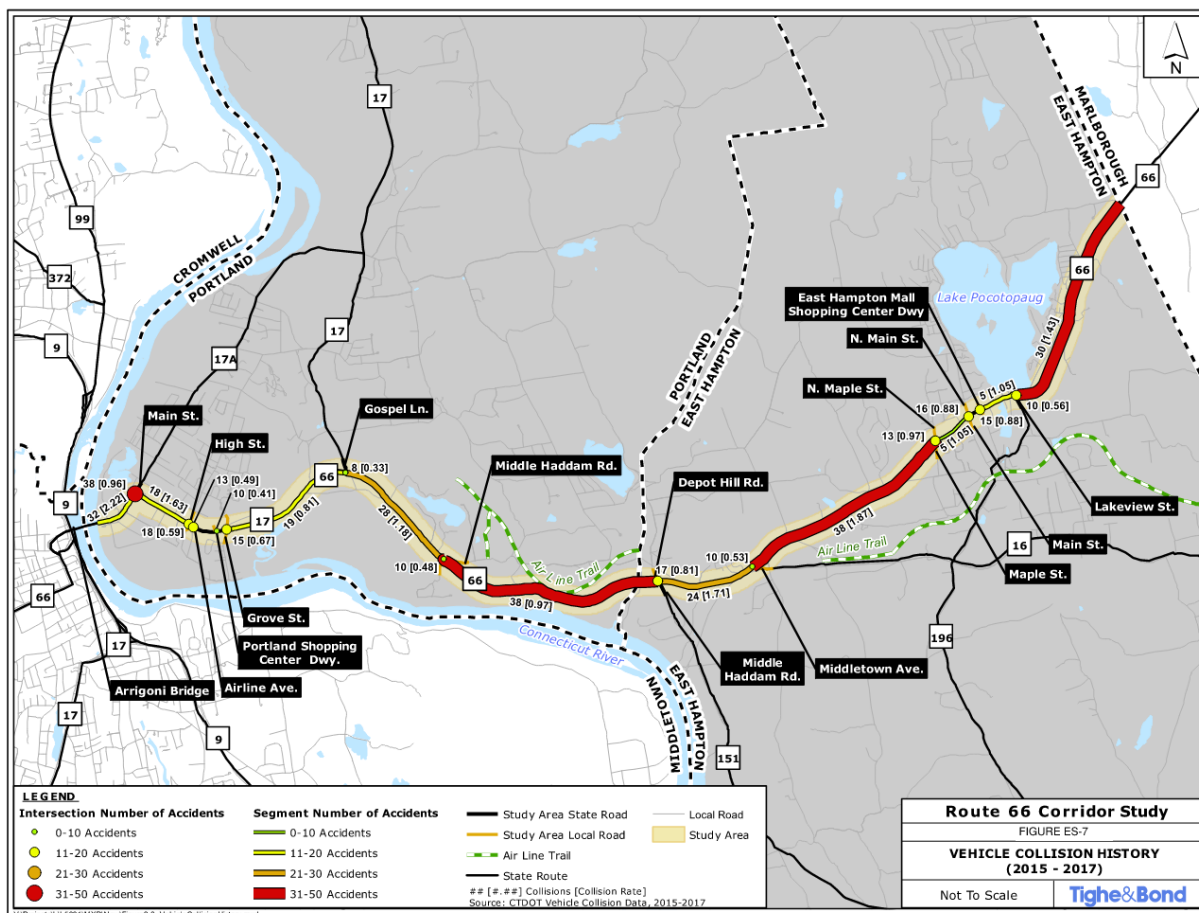


## Traffic Safety

Historical motor vehicle collision data for the study area was collected from University of Connecticut Crash Data Repository for the latest three-year period of available data between January 1, 2015 and December 31, 2017. Figure ES-7 shows a graphical summary of the collisions and collision rates along the corridors and at the study area intersections. During this three-year period, 455 crashes were reported. Rear-end type collisions accounted for just over half of the total number of collisions with 236 crashes (52%) recorded. The second most common type of collision was angle with 78 crashes (17%), fixed object with 60 crashes (13%), and sideswipe, same direction with 26 crashes (6%). The remaining collision types accounted for 5% or less of the total number of crashes. Four fatalities occurred over the three-year collision history. A total of 10 crashes (2%) resulted in an injury, while the remaining 442 collisions (97%) resulted in property damage only. Four collisions caused by or involving pedestrians or bicyclists occurred within the study area over the three-year collision history.

**FIGURE ES-7**

Vehicle Collision History – Study Area Summary



## Alternative Travel Modes

Route 66, from west to east within the study area, features a suburban commercial area from the Arrigoni Bridge to Portland Shopping Center Plaza in Portland, a rural setting traversing to the east within the Towns of Portland and East Hampton, including the area of the corridor referred to as the 'Ledges', a suburban commercial area from Maple Street to Old Marlborough Road in East Hampton, and another rural area traveling east to the Marlborough Town Line.

Pedestrian facilities are present at the cohesive village centers within the Towns of Portland and East Hampton. Sidewalks, crosswalks, pedestrian signals, and sidewalk ramps are provided in these areas. However, sidewalk gaps still exist resulting in a disconnected sidewalk network. Pedestrian facilities and amenities are non-existent in the rural areas along the corridor.

On-street bicycle facilities are not available along the corridor. The primary bicycle facility within the study area is the Air Line Trail, a non-motorized recreational facility connecting Portland and East Hampton to Thompson, CT. In Portland, a newly opened segment of the Air Line Trail currently runs from the YMCA Camp Ingersoll to the Portland-East Hampton Town Line. The Airline Trail runs from Aldens Crossing east through East Hampton and into Colchester and points east. Air Line Trail extension to connect the Towns of Portland and East Hampton has been proposed and the property negotiation and purchase is underway.

Bus transit service in the study area is provided by Middletown Area Transit (MAT) Route 586 (formerly Route F). Bus stops or waiting areas are not designated along the bus route. Rather, the bus driver will stop and service passengers waiting along the route. Bus schedule information is not easily accessible. The lack of bus stop amenities within the study area acts to discourage, rather than encourage bus transit usage in the area.



## Access Management

Access management is the process of overseeing access to land development while simultaneously preserving the flow of traffic on the surrounding roadway system in terms of safety and capacity. Access management focuses on safety of travel and minimizing conflict points (locations where vehicles can cross paths) to maintain the smooth flow of traffic along a roadway. Maintaining smooth traffic flow can, in turn, reduce the need for roadway widening induced by growing congestion. Access design characteristics of a roadway that directly impact traffic flow and safety include the location, spacing, and design of access drives entering the roadway as well as location of signals, medians, and turn lanes.

In general, Route 66 abuts suburban and rural communities with a cohesive village center along the corridor in each town. The evaluation of access management conditions for this study focuses on the central business area from Main Street to Gospel Lane in Portland and from Maple Street to Lakeview Street in East Hampton.

The Route 66 segment between Main Street and Gospel Lane in Portland is approximately 2 miles long. Route 66 within this segment consists of two travel lanes in each direction, separated by a raised median, and widens to include dedicated turn lanes at major intersections and driveways. There are 6 signalized intersections, 7 side streets, and approximately 75 private driveways within the segment. The raised median and exclusive left-turn lanes within the segment helps regulate driveway access and circulation while significantly reducing vehicular conflicting points. However, a number of driveways are closely spaced at adjacent properties, generating confusion for drivers accessing and egressing from closed spaced driveways. A number of properties have multiple full-access driveways resulting in potential conflicts on the roadway. Some driveways are located within 25 feet of a major intersection, making the driveway access challenging and a safety concern.

The Route 66 segment between Maple Street and Lakeview Street (Route 196) in East Hampton is approximately 0.84 miles long. Route 66 within this segment consists of two travel lanes west of Main Street and two lanes with a centered back-to-back left-turn lane between Main Street and American Distilling. There are 4 signalized intersections, 5 side streets, and approximately 51 private driveways within the segment. The centered back-to-back left-turn lane within the segment helps regulate driveway access entering the properties and reduces vehicle conflicts in the immediate vicinity of the driveways. However, dense and poorly delineated driveways are frequent through this segment. A number of properties have multiple full-access driveways resulting in increased number of driveways and potential conflict on the road. The driveways at Citgo Gas Station, the jewelry store, and Subway are wide and closely spaced and vehicles tend to line up alongside one another attempting to enter Route 66 simultaneously, resulting in poor visibility. In addition, a few small size properties provide front yard parking backing into Route 66, which generates safety concern. Some poor pavement conditions along the roadway gutter in front of some driveways results in slower entering/existing turning movements which can decrease safety along this segment given all the turning movements that take place.

## Transportation System Conditions

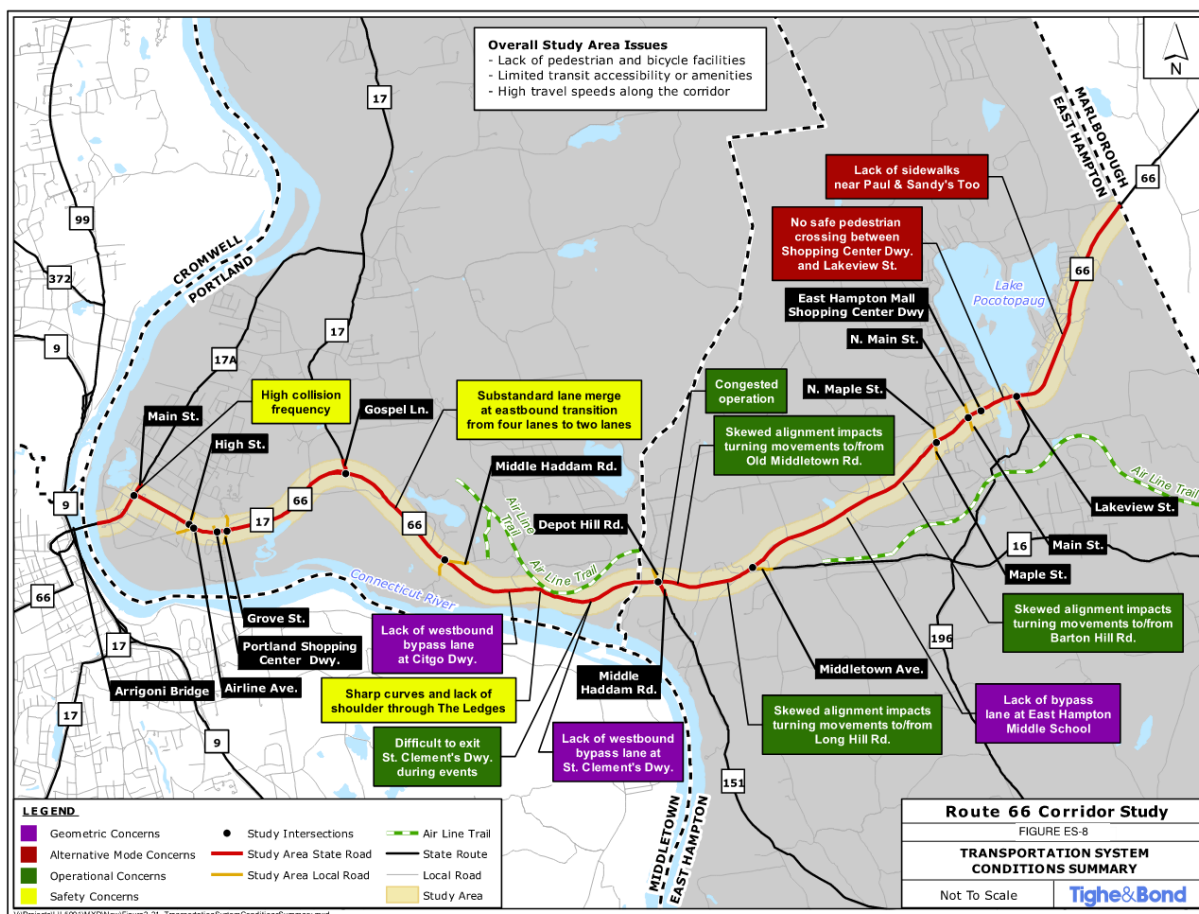
The Study Team conducted observations of the existing roadway network to identify deficiencies or areas of concern that warranted a more detailed assessment for mitigation during later phases of the project. Additionally, the team conducted operational and safety analyses for the study area evaluating the speed and collision data. The following observations were recorded and are summarized in Figure ES-8:

- High travel speeds exist along the Route 66 corridor.
- High collision rates occur at the following intersections:
  - Route 66 at Route 17A (Main Street)
  - Route 66 at High Street
  - Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road
- Skewed alignments impact turning movements to and from Route 66 causing safety concerns at the following locations:
  - Long Hill Road
  - Barton Hill Road
  - Lake Drive
  - Steath Road
  - Sand Hill Road
  - Old Middletown Road
- Safety concerns in the Ledges area of Portland related to travel speeds, limited sight distances, and limited roadway shoulder areas.
- Lack of by-pass/left turn lane and safety concerns at Citgo Gas Station driveway, as well as St. Clement's Castle & Marina driveway during events.
- Substandard merge lane at the eastbound transition from four lanes to two lanes on Route 66 east of Route 17.
- Areas with significant cut-through traffic utilizing local roadways have caused speeding and safety concerns at the following locations:
  - Wolcott Avenue, Airline Avenue, Pickering Street, Grove Street, Riverside Street to access Lower Main Street and the Arrigoni Bridge in Portland to avoid Route 66 and Route 17A intersection.
  - William Street Extension as an alternative to Route 17 intersection.
  - Middle Haddam Road and Penfield Hill Road are used as an alternative to access the intersection of Route 17 at Route 17A.
  - Middle Haddam Road in Cobalt as an alternative to Route 66.

- Limited transit usage, accessibility, or amenities do not exist within the study area.
- Lack of pedestrian and bicycle accommodations throughout the study area:
  - Sidewalks gaps along the corridor creates an unsafe pedestrian environment for pedestrians.
  - Dedicated bicycle facilities are not present through the corridor.
  - Narrow shoulders along the corridor discourage bicycling and walking.
  - Lack of safe bicycle route from the existing Air Line Trail terminus at YMCA Camp Ingersoll to the Portland Town Center.

**FIGURE ES-8**

Transportation System Conditions Summary



## Assessment of Future Conditions

The assessment of future conditions conducts an analysis of the Route 66 study area intersections under existing geometric and operational conditions utilizing 2040 Future Traffic volumes. This process identifies deterioration of operational efficiency from existing conditions and areas of concern that develop in the future under the scenario where no improvements are made to the transportation system.

The future conditions analysis includes traffic projections based on the methodology described below to expand the 2020 Corridor Conditions traffic volumes to the 2040 Future Conditions traffic volumes. The Route 66 study area intersections were analyzed under two scenarios utilizing the 2040 traffic volumes, a Future scenario and Future-Optimized scenario. The 2040 Future analysis utilizes existing geometry and existing traffic signal settings to facilitate a direct comparison between existing and future no-build conditions. The 2040 Future-Optimized analysis utilizes existing geometry but modifies intersection signal operations to provide the most efficient operations based on future traffic with adjustments to traffic control signal timings and settings. This optimization analysis determines if future travel demand can be mitigated through low-cost adjustments to signal operations or if additional physical improvements are needed to provide measurable improvements over the no-build scenario. The future conditions analyses provide the basis for generating roadway improvement plans for the study corridor to accommodate anticipated traffic growth, in addition to other safety and multi-modal improvements.

### 2040 Future Traffic Forecasts

2040 Future traffic forecasts for the study area were generated by the Connecticut Department of Transportation (CTDOT) utilizing their transportation traffic volume model. The model utilizes historical traffic volume trends, pending/approved and yet to be constructed developments, and expected future development based on information provided from local municipalities to forecast future traffic volume conditions. Based on this methodology, the 2020 Corridor Conditions traffic volumes were projected to 2040 Future Conditions traffic volumes.

Comparing the 2020 Corridor Conditions traffic volumes to the 2040 Future Conditions traffic volumes for the peak hours reveal that the anticipated development along the Route 66 corridor will generate significant traffic within the 20-year study horizon. Total traffic growth along Route 66 ranges from 20.8 to 52.7 percent, equating to 1.0 to 2.6 percent average annual growth in the study area. The most significant traffic volume increases along Route 66 focus around the Portland Town Center between Route 17A (Main Street) and Route 17 (Gospel Lane) with a growth rate of 2.6 percent, as the Brainerd Place mixed-use development is expected to generate significant new traffic in this area. To the east of Gospel Lane, growth along Route 66 is consistent at 20.8 to 38.9 percent, or average annual growth rates of 1.0 to 1.9 percent.

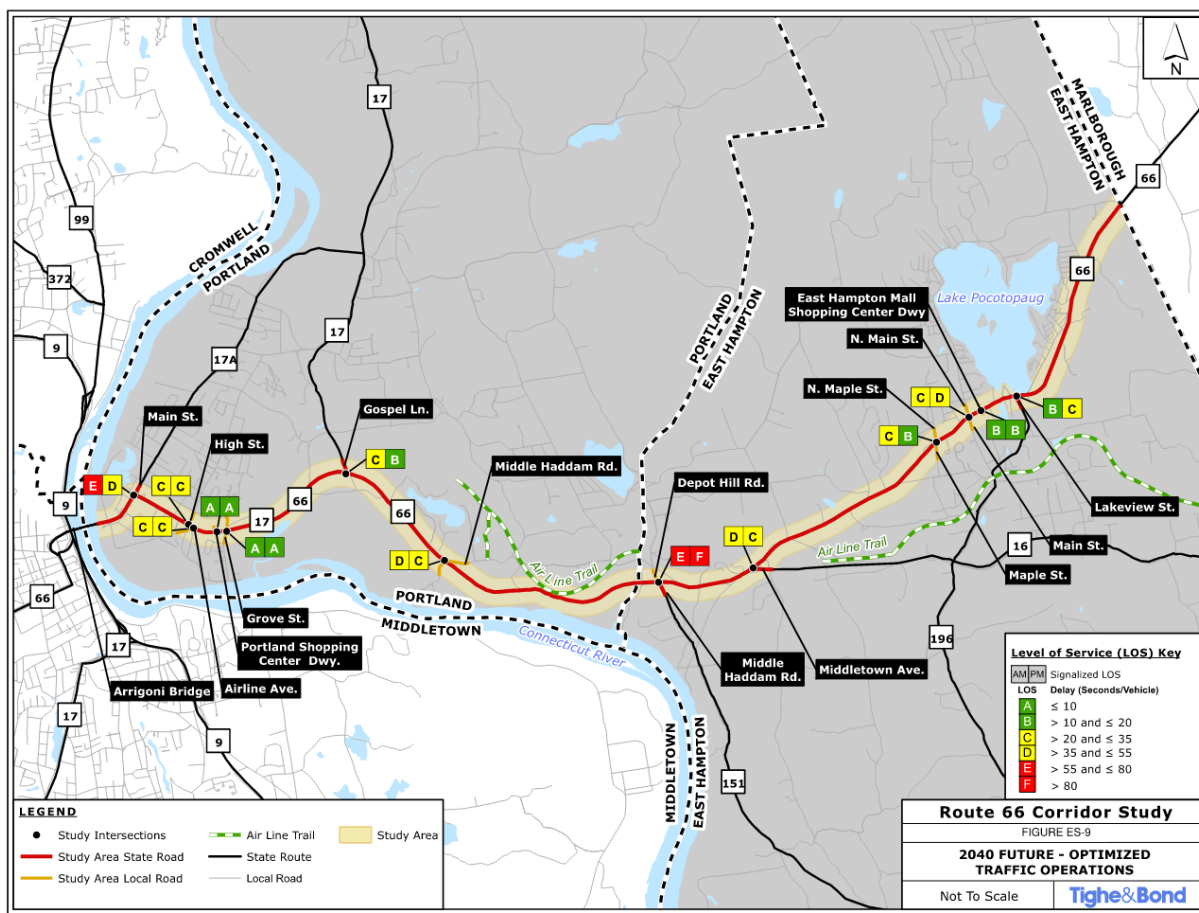
## Future Traffic Operations

Traffic operations for the 2040 Future traffic volumes were evaluated using Trafficware's Synchro plus SimTraffic 10 – Traffic Signal Coordination Software, based on the *Highway Capacity Manual (HCM)*, 6<sup>th</sup> Edition methodology. The existing geometry and traffic signal settings were utilized in the traffic model for the analysis.

Signal operations were optimized for the study area intersections to reflect routine timing adjustments made by CTDOT to accommodate changing traffic volumes and conditions. Figure ES-9 summarizes the expected traffic operations of the study intersections under 2040 Future-Optimized conditions in each of the peak periods.

**FIGURE ES-9**

2040 Future-Optimized Traffic Operations



The full report provides a detailed description of the future areas of concern related to the traffic operations results and other observed needs and deficiencies.

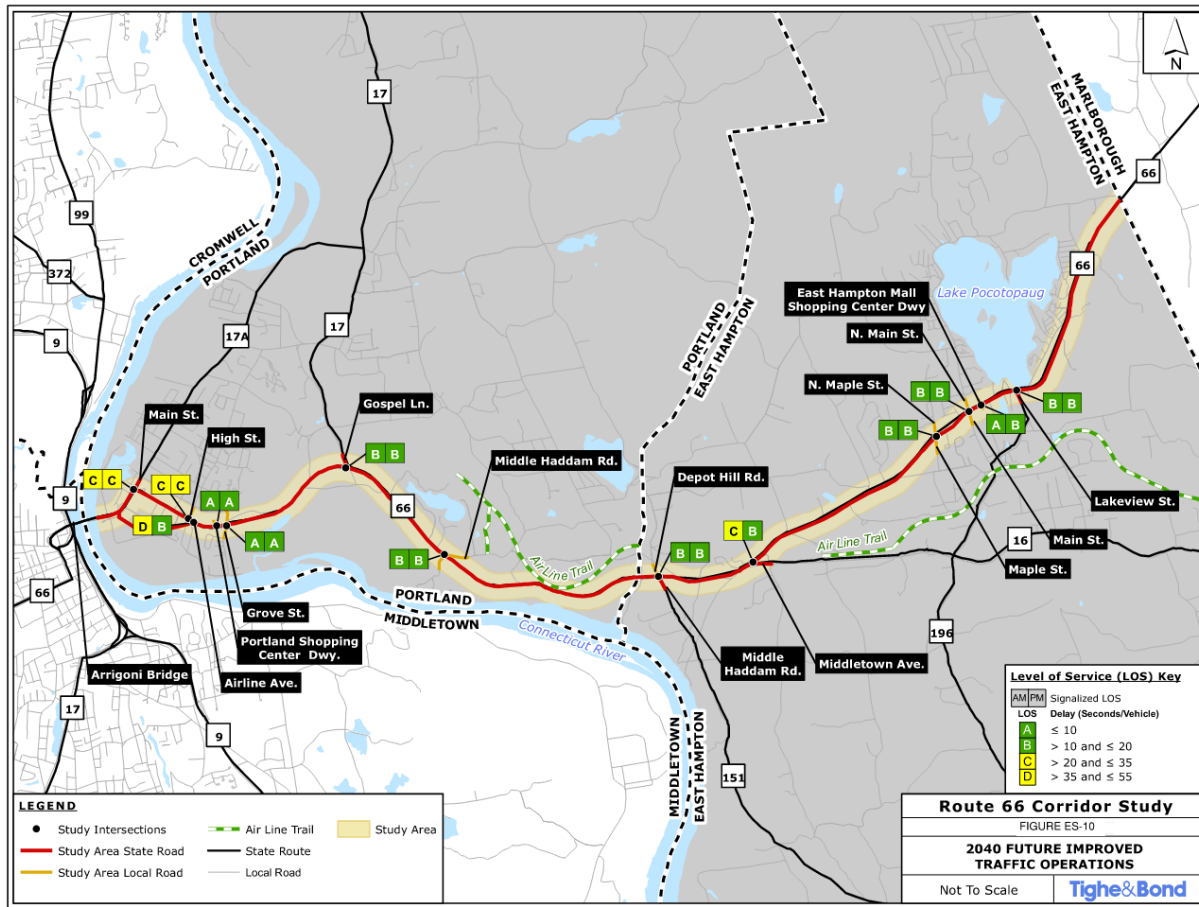


## Recommendations

The recommendations address both existing issues and those resulting from the forecasted travel demand and potential development growth that is expected to occur in the Towns of Portland and East Hampton as well as the surrounding region by the year 2040. The recommendations were developed cooperatively with the SAC, the CAC, CTDOT, and RiverCOG and were refined through a public involvement process to address the goals and objectives outlined in the Study Mission Statement.

The proposed improvements on Route 66 are corridor-wide operational and safety improvements that can be implemented through a phased approach that considers available funding and the prioritization of the improvements. Additionally, comprehensive multimodal and access management concepts for the network were developed to address existing deficiencies and future transportation needs. All improvements are intended to provide mitigation for current and future areas of concern and improve safety and promote alternative modes of travel. The recommendations are presented by location from west to east along the Route 66 corridor. Although many of the recommendations address transportation issues related to motor vehicles, a series of alternative mode focused recommendations were developed to address pedestrian, transit, cyclist, and recreational usage of the transportation system. A summary of the 2040 traffic operations with the proposed improvements is shown in Figure ES-10.

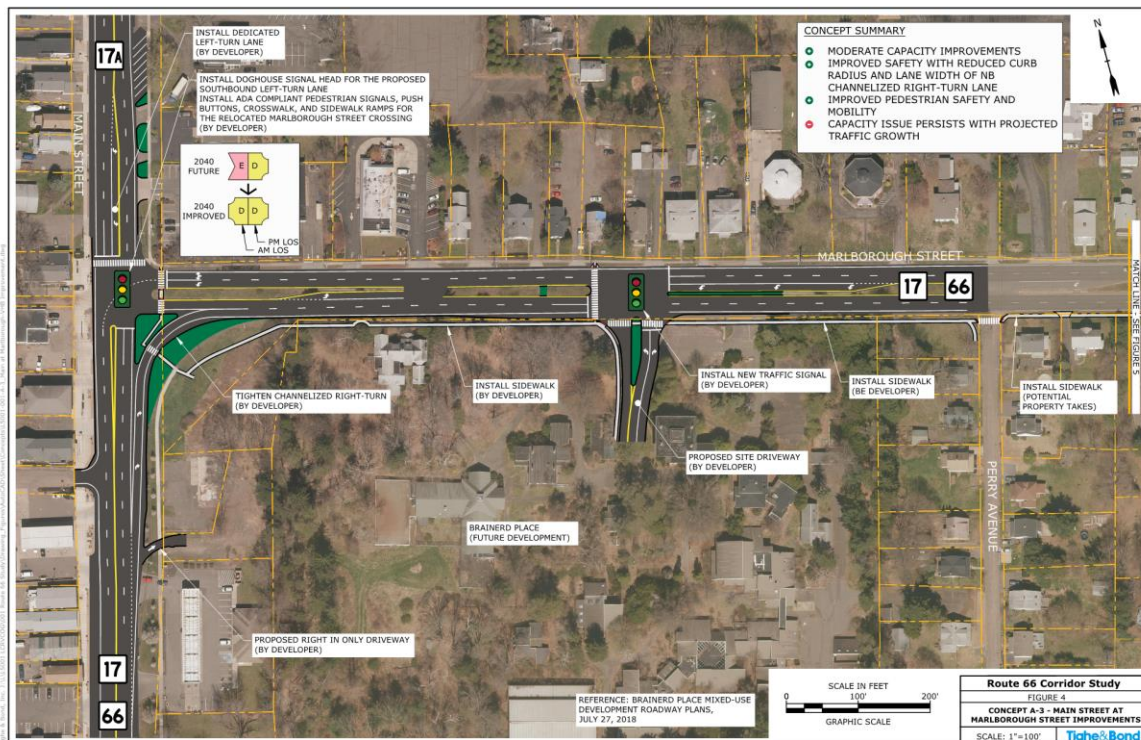
**FIGURE ES-10**  
2040 Improved Traffic Operations



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**Project 1: Marlborough Street at Main Street Intersection Improvements (Concept A-3)**

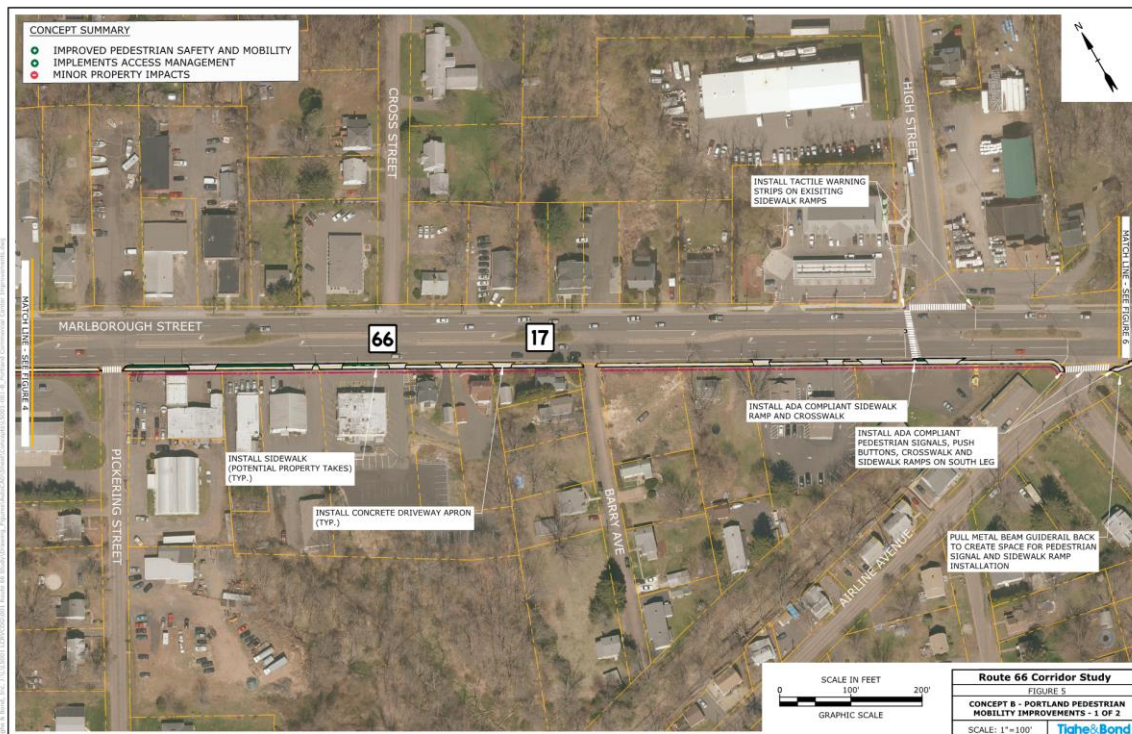
<b>Project Goals:</b>	Mitigate off-site traffic impacts of Brainerd Place Development by providing a dedicated southbound left-turn lane on Main Street at Marlborough Street; install ADA compliant pedestrian facilities to improve access and mobility for pedestrians; Install new traffic signal at site driveway on Route 66	<b>Project Type:</b>	Medium
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Short-Term
		<b>Project Cost<sup>1</sup>:</b>	(See note)
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>• Minor roadway widening along Main Street southbound approach to provide a dedicated southbound left-turn lane</li> <li>• Reduce the curve radius and lane width of the existing northbound channelized right-turn lane to reduce right-turning travel speeds</li> <li>• Shift the crosswalk on the east leg further from the intersection to provide a shorter crossing with straight alignment and refuge area on the median island</li> <li>• Install ADA compliant pedestrian signals and pushbuttons</li> <li>• Install traffic signal at Brainerd Place driveway on Marlborough Street</li> <li>• Provide right-in only driveway for Brainerd Place along Main Street north of Gulf gas station</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>• OSTA approval for Brainerd Place development</li> <li>• Town roadway construction permits for construction within Town right-of-way</li> <li>• CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way</li> </ul>		



<sup>1</sup> The project will be funded and implemented by the developer of Brainerd Place Mixed-Use Development.

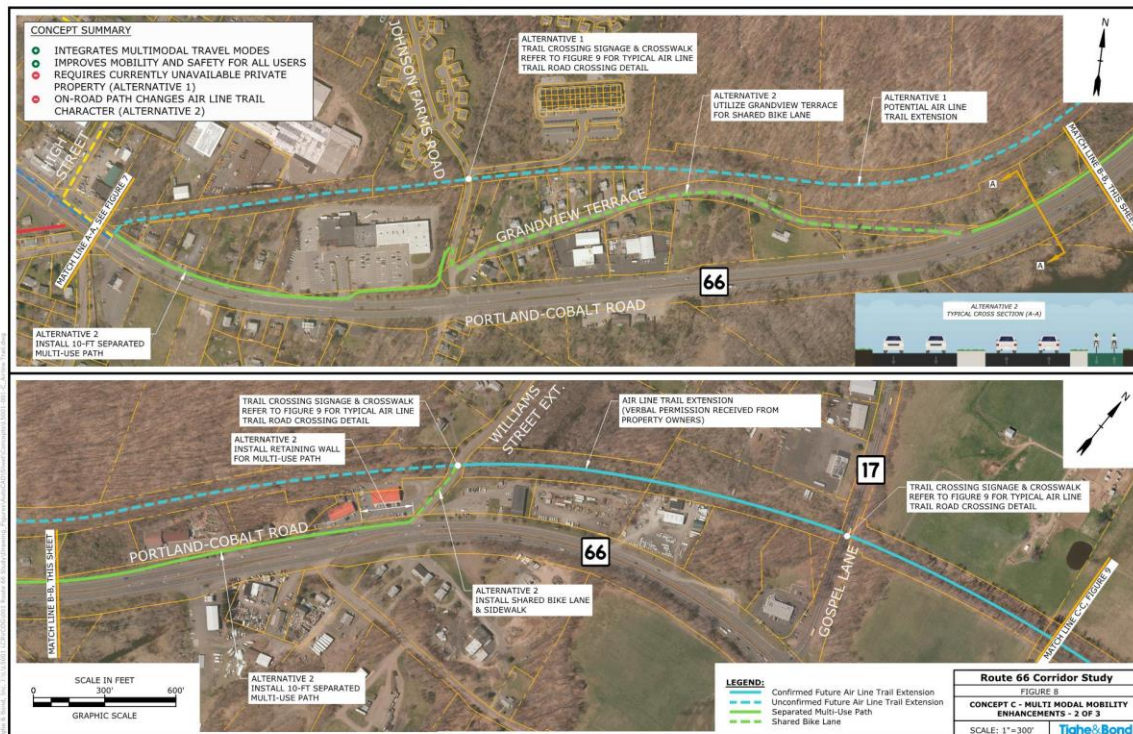
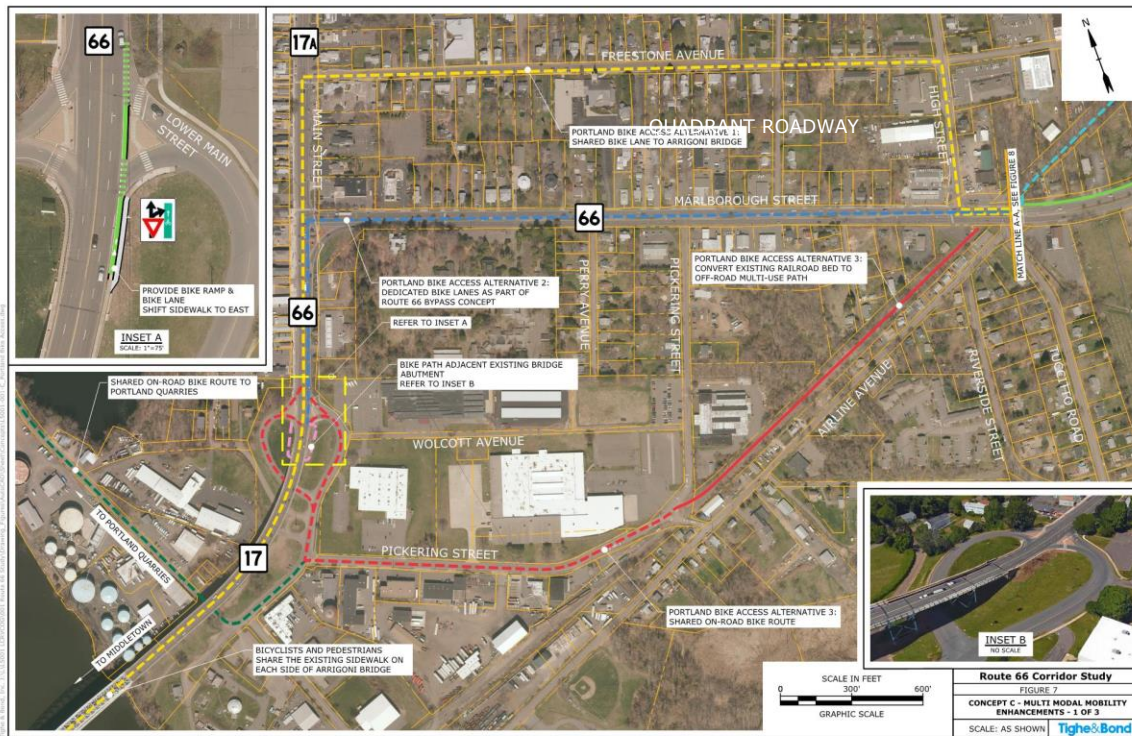
**Project 2: Route 66 Pedestrian Mobility Improvements (Concept B)**

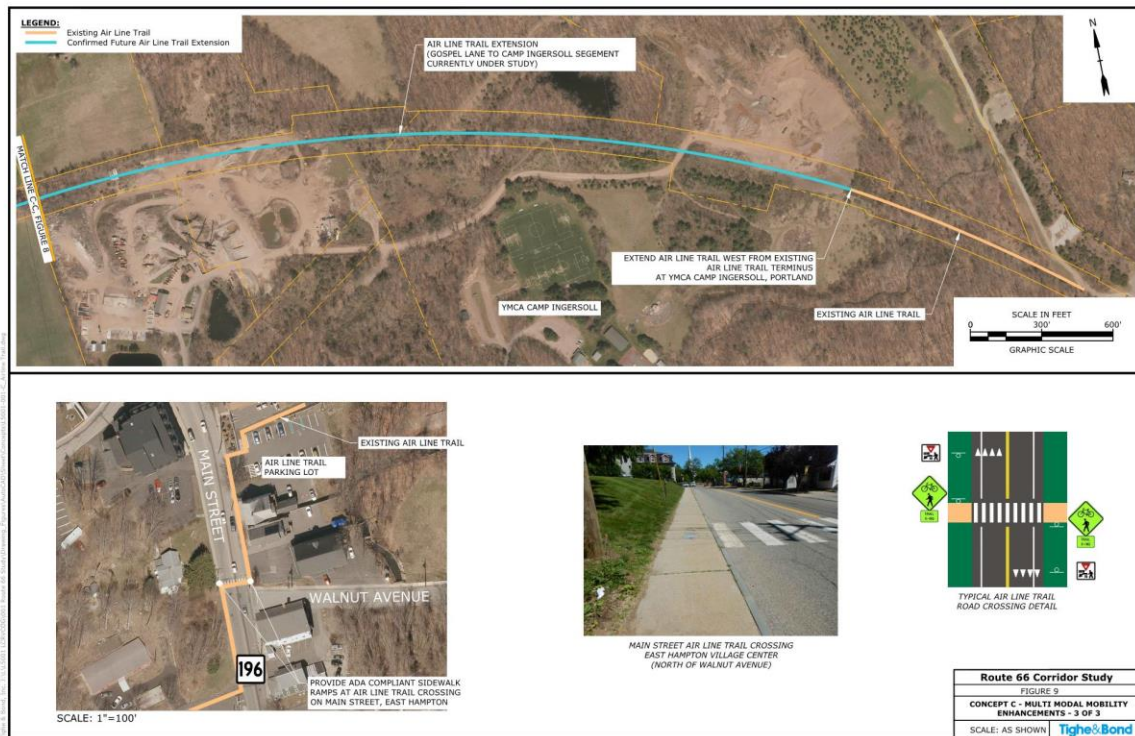
<b>Project Goals:</b>	Infill sidewalk gaps and install ADA compliant pedestrian crossing infrastructures to improve pedestrian mobility and safety along Route 66 between Main Street and Grandview Terrace in the Portland commercial center	<b>Project Type:</b>	Medium
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Short-Term
		<b>Project Cost:</b>	\$1.5 Million
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Install sidewalks and concrete driveway apron along the south side of Route 66 between Main Street and Grandview Terrace to provide a connected sidewalk network in the Portland commercial center</li> <li>Provide painted crosswalks, sidewalk ramps, pedestrian signals, and pushbuttons at signalized intersections to facilitate safe crossings for bicyclists and pedestrians</li> <li>Additional sidewalk may require sliver right of way takes or easements to expand the sidewalk network due to limited right of way along south side of Route 66</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>Town roadway construction permits for construction within Town right-of-way</li> <li>Encroachment permits for construction within CTDOT right-of-way</li> </ul>		



Project 3: Multi-Modal Mobility Enhancements (Concept C)			
<b>Project Goals:</b>	Improve bicycle routing between Arrigoni Bridge and YMCA Camp Ingersoll to enhance bicycle accommodations, connectivity and mobility in Portland; improve access at the Air Line Trail crossing on Main Street in East Hampton by installing ADA compliant sidewalk ramps.	<b>Project Type:</b>	Medium
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Short-Term
		<b>Project Cost:</b>	Varies by Alternative
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>At Arrigoni Bridge and the Ramp Area:               <ul style="list-style-type: none"> <li>Allows bicyclists to share the existing sidewalk with pedestrians on both sides of Arrigoni Bridge</li> <li>Provide space for a bike ramp and dedicated bike lane along the east side of Main Street</li> <li>Expand the embankment under the bridge to provide a bike path that connects both sides to facilitate crossing Route 66 under the bridge</li> </ul> </li> <li>Provide bicycle route alternatives between Arrigoni Bridge and Airline Avenue:               <ul style="list-style-type: none"> <li>Alternative 1: Provide shared bike lane on Main Street, Freestone Avenue, and High Street</li> <li>Alternative 2: Provide dedicated bike lane on each side of Main Street and Marlborough Street as part of Route 66 Bypass concept</li> <li>Alternative 3: Convert the existing railroad alignment to an off-road multi-use path between Route 66 and Pickering Street and a shared bike lane along the southern section of Pickering Street</li> </ul> </li> <li>Air Line Trail Extension from YMCA Camp Ingersoll to Airline Avenue               <ul style="list-style-type: none"> <li>Alternative 1: Convert the former Air Line Railroad property to an off-road multi-use path between Camp Ingersoll and Airline Avenue</li> <li>Alternative 2: Provide a 10' two-way multi-use path adjacent Route 66 between Airline Avenue and Grandview Terrace (west junction) as well as between Grandview Terrace (east junction) and Williams Street Extension; Provide a shared bike lane on Grandview Terrace</li> </ul> </li> <li>Install ADA compliant sidewalk ramps at the Air Line Trail crossing at Main Street in vicinity of East Hampton Village Center</li> <li>Right-of-way actions; private property negotiations for Air Line Trail extension</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>Town roadway construction permits for construction within Town right-of-way</li> <li>Encroachment permits for construction within CTDOT right-of-way</li> </ul>		



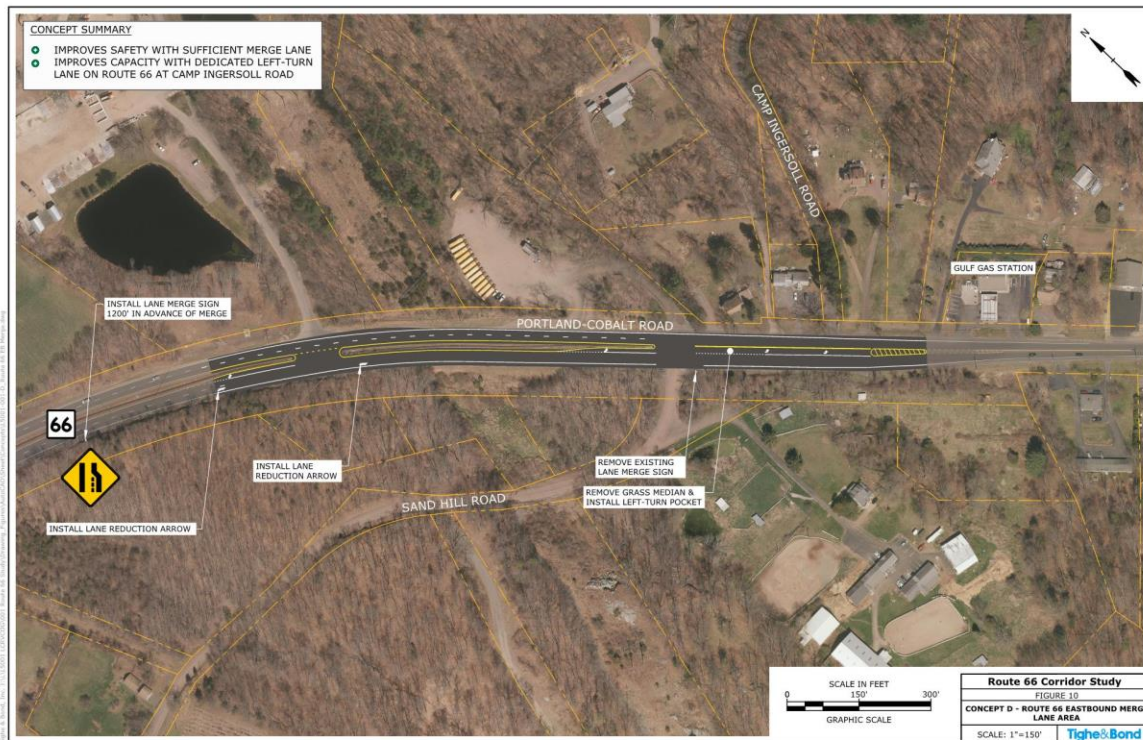






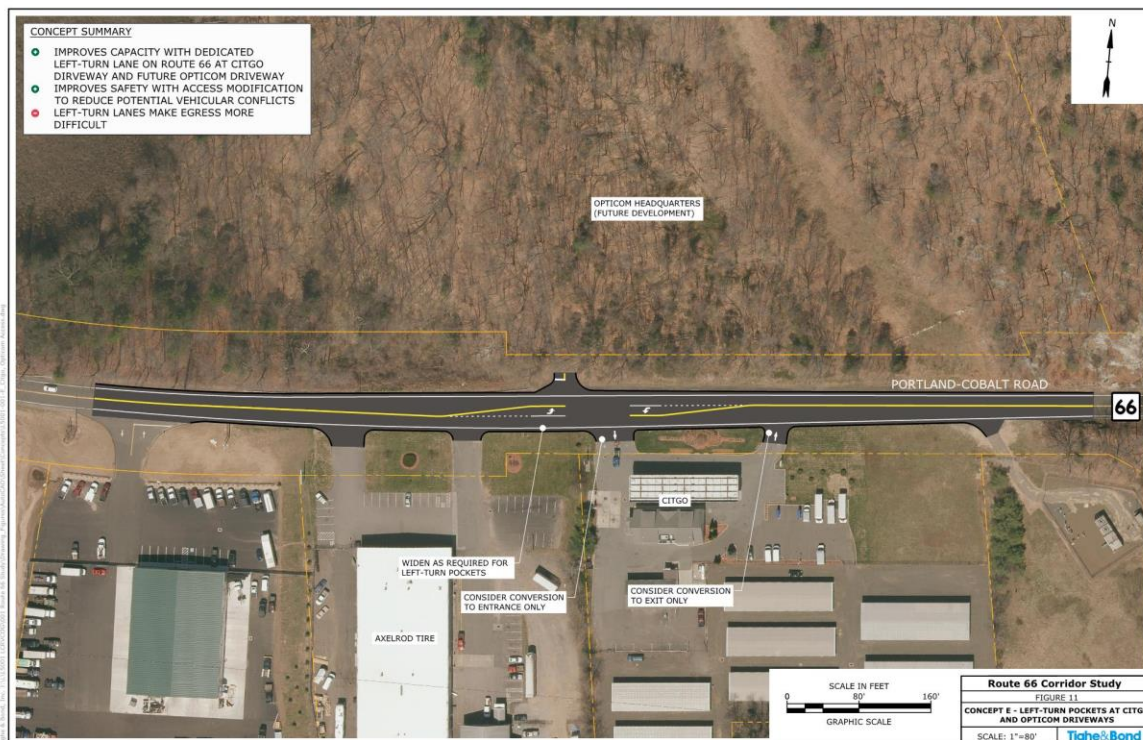
**Project 4: Route 66 Eastbound Merge Lane Area Safety Improvements (Concept D)**

<b>Project Goals:</b>	Provide sufficient length of merge lane to improve Route 66 eastbound merging operations near Portland Gulf gas station; facilitate Route 66 eastbound left-turn movements into YMCA Camp Ingersoll by installing a dedicated eastbound left-turn lane	<b>Project Type:</b>	Small
		<b>Project Complexity:</b>	Low
		<b>Project Priority:</b>	Short-Term
		<b>Project Cost:</b>	\$165,000
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Install lane merge signage and pavement markings to provide sufficient length of Route 66 eastbound merge lane near Portland Gulf gas station</li> <li>Provide dedicated left-turn lane on Route 66 eastbound at Portland YMCA Camp Ingersoll entrance to facilitate mobility and improve safety for traffic entering the facility</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way</li> </ul>		



### Project 5: Route 66 at Portland Citgo and Opticom Driveways Operational Improvements (Concept E)

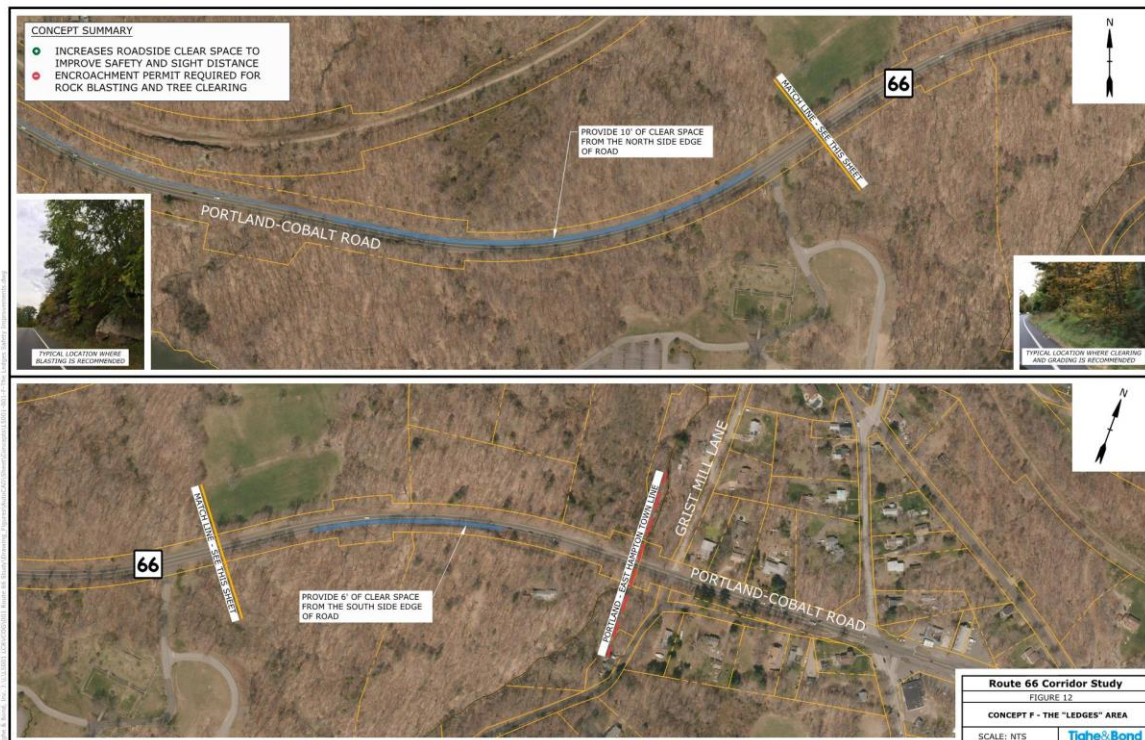
<b>Project Goals:</b>	Improve vehicle safety and driveway operations at development driveways on Route 66 by installing dedicated left-turn lanes; modify driveway access management to avoid vehicular conflicts and improve safety	<b>Project Type:</b>	Small
		<b>Project Complexity:</b>	Low
		<b>Project Priority:</b>	Mid-Term
		<b>Project Cost:</b>	\$710,000
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Minor roadway widening along Route 66 to provide a dedicated eastbound left-turn lane at future Opticom driveway and a dedicated westbound left-turn lane at Citgo driveway</li> <li>Convert Citgo western driveway to be entrance only and eastern driveway to be exit only to avoid potential vehicular conflicts at the offset intersections of Opticom driveway and Citgo western driveway on Route 66</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way</li> </ul>		





**Project 6: Route 66 at Portland Ledges Area Safety Improvements (Concept F)**

<b>Project Goals:</b>	Improve safety at Portland Ledges area along Route 66 by eliminating existing sightline restrictions caused by reverse horizontal curves and insufficient clear zone due to the proximity of the steep rock cut slopes, primarily along the north side of Route 66	<b>Project Type:</b>	Small
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Mid-Term
		<b>Project Cost<sup>1</sup>:</b>	(See note)
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Remove rock ledge and vegetation along both sides of Route 66 to improve roadside safety via expanded available clear zone and increased horizontal sight distance</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way</li> </ul>		

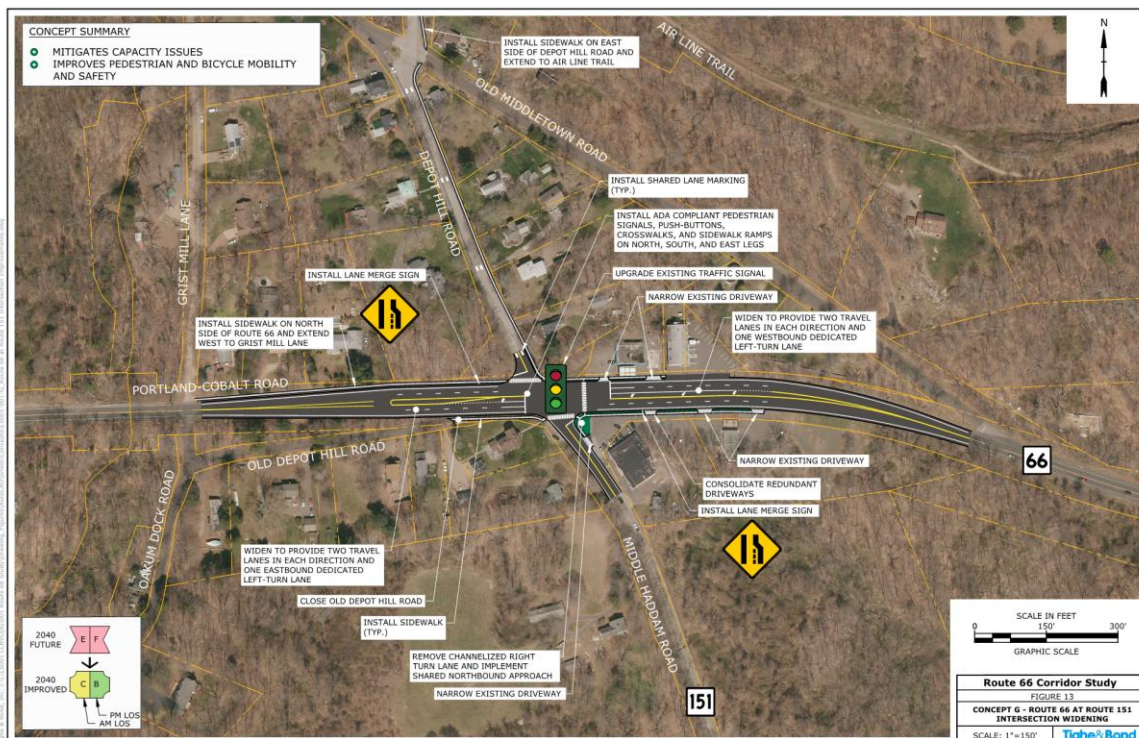


<sup>1</sup> This project requires additional investigation and engineering analysis to determine project scope and associated costs.



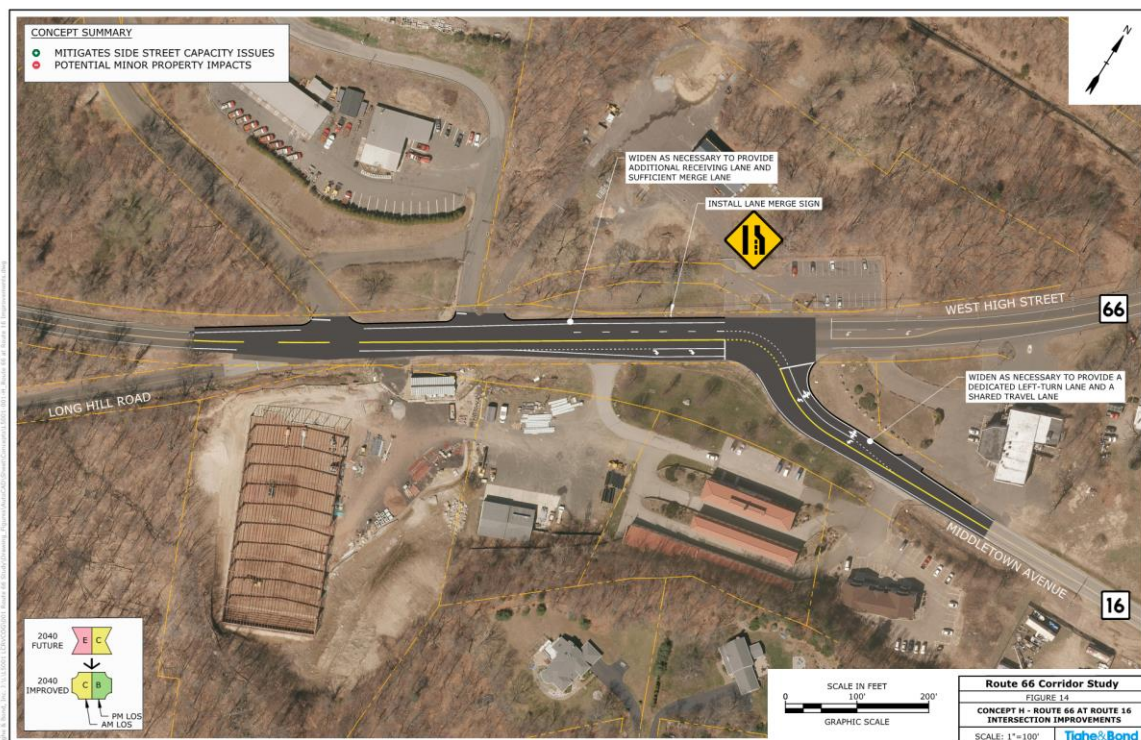
### Project 7: Route 66 at Route 151 and Depot Hill Road Intersection Improvements (Concept G)

<b>Project Goals:</b>	Widen the intersection to improve operation and mitigate delays and queues at the intersection; install multimodal facilities on Depot Hill Road and at the intersection to improve mobility and access of alternative travel modes	<b>Project Type:</b>	Large
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Mid-Term
		<b>Project Cost:</b>	\$4.2 Million
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Widen Route 66 at the intersection to provide opposing left-turn lanes and two through lanes in each direction along Route 66</li> <li>Provide sufficient extension of receiving lanes and downstream lane merges on the departure side of the intersection</li> <li>Eliminate the existing channelized right turn lane from Route 151 north to Route 66 east</li> <li>Provide shared bike lane and sidewalk on Depot Hill Road extending to the Air Line Trail to the north</li> <li>Provide sidewalks, crosswalks, pedestrian signals, and push buttons at the intersection</li> <li>Minor right of way taking of private property</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>Town roadway construction permits for construction within Town right-of-way</li> <li>CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way</li> </ul>		



**Project 8: Route 66 at Route 16 and Park & Ride Driveway Intersection Improvements (Concept H)**

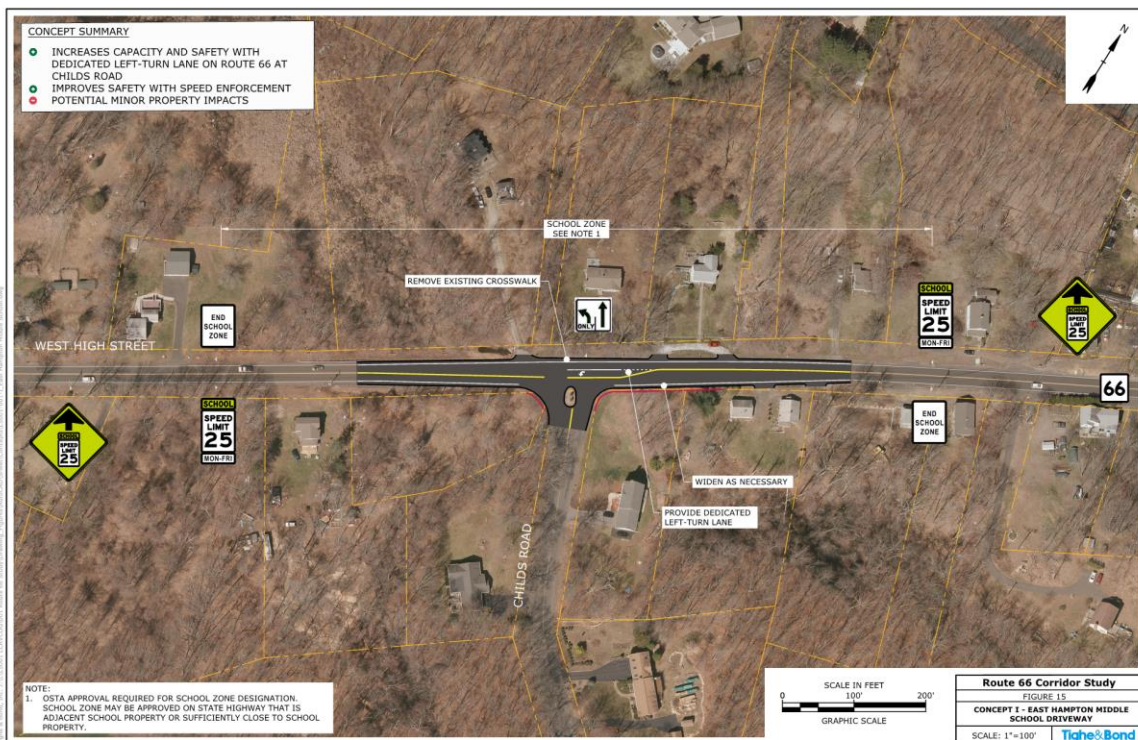
<b>Project Goals:</b>	Improve future capacity issues for Route 16 approach by modifying lane arrangement to accommodate forecast future traffic volumes	<b>Project Type:</b>	Small
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Long-Term
		<b>Project Cost:</b>	\$880,000
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Modify lane arrangement of Route 16 approach to provide a dedicated left-turn and a shared left-through-right turn lane to increase the left turn capacity of the Route 16 approach</li> <li>Provide two westbound receiving lanes to accommodate the traffic from Route 16</li> <li>Coordinate the proposed lane use modifications with the future operations of the intersection due to the location of the proposed driveway of the CTDOT Maintenance Facility located along the north side of Route 66 (currently under construction)</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way</li> </ul>		





**Project 9: Route 66 at Childs Road Operational Improvements (Concept I)**

<b>Project Goals:</b>	Improve access and safety on Route 66 at Childs Road (East Hampton Middle School access) intersection with dedicated left-turn lane; install school zone signs and school zone speed limit signs to reduce speed and improve safety	<b>Project Type:</b>	Small
		<b>Project Complexity:</b>	Low
		<b>Project Priority:</b>	Mid-Term
		<b>Project Cost:</b>	\$550,000
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Establish a Route 66 westbound left-turn pocket at Childs Road to separate the left-turn and through traffic which is a heavy movement during school arrival and dismissals</li> <li>Install school zone signs and school zone speed limit signs</li> <li>Remove the existing crosswalk striped at the intersection due to low pedestrian activity and lack of pedestrian facilities on Route 66 in the area</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way</li> </ul>		

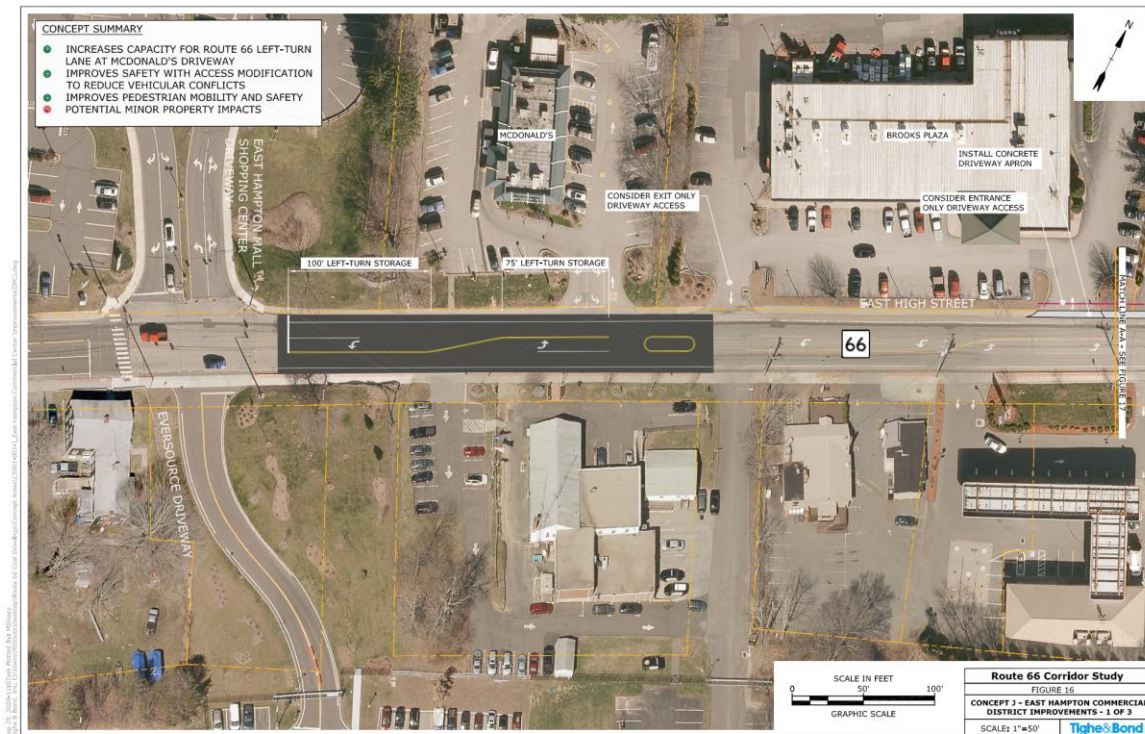


**Project 10: Route 66 at East Hampton Commercial District Improvements (Concept J)**

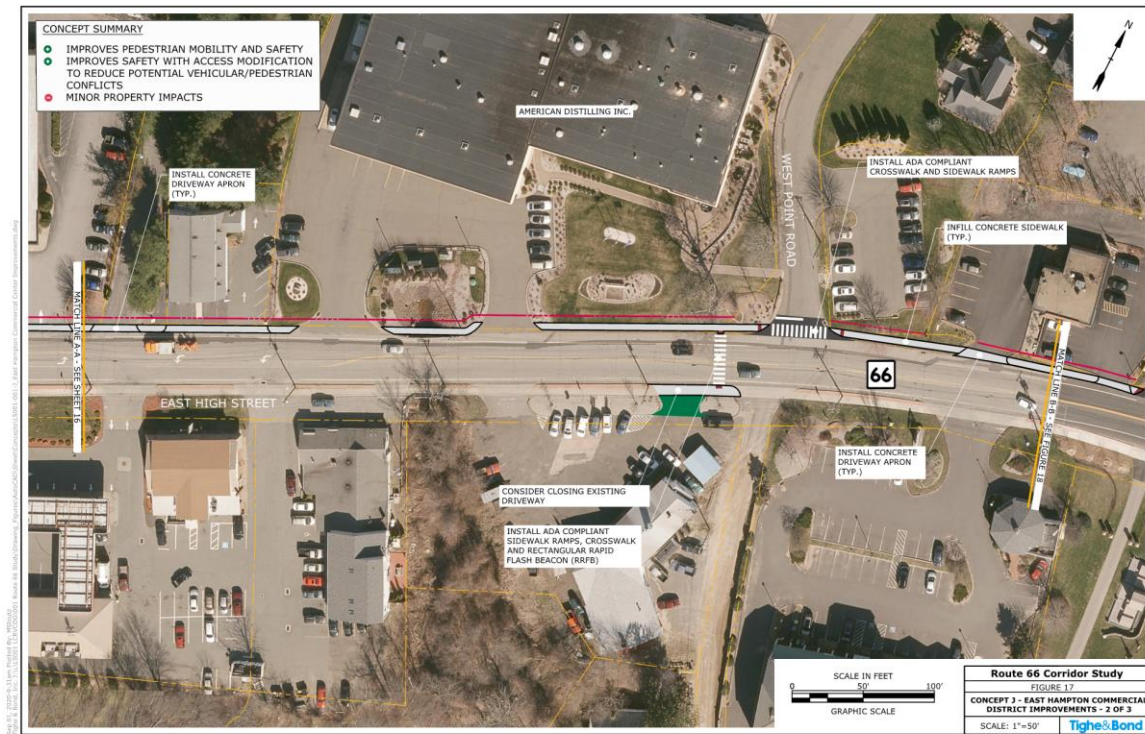
<b>Project Goals:</b>	Restripe Route 66 left-turn pockets to improve vehicle operation and safety in East Hampton Commercial District; install ADA compliant pedestrian facilities to improve pedestrian mobility and safety; improve vehicular safety with driveway access modifications	<b>Project Type:</b>	Small
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Short-Term
		<b>Project Cost:</b>	\$470,000

- Major Project Elements:**
- Lengthen the Route 66 eastbound left-turn pocket at McDonald's to alleviate congestion issues
  - Convert the access at Brooks Plaza to be entrance only at the eastern driveway and exit only at the western driveway to reduce vehicular conflicts
  - Install a mid-block crosswalk and Rectangular Rapid Flash Beacon (RRFB) on Route 66 to the west of West Point Road (west junction).
  - Infill sidewalk gaps and install concrete driveway apron along the north side of Route 66
  - Install crosswalks on West Point Road (west junction & east junction)

- Permits:**
- Town roadway construction permits for construction within Town right-of-way
  - CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way







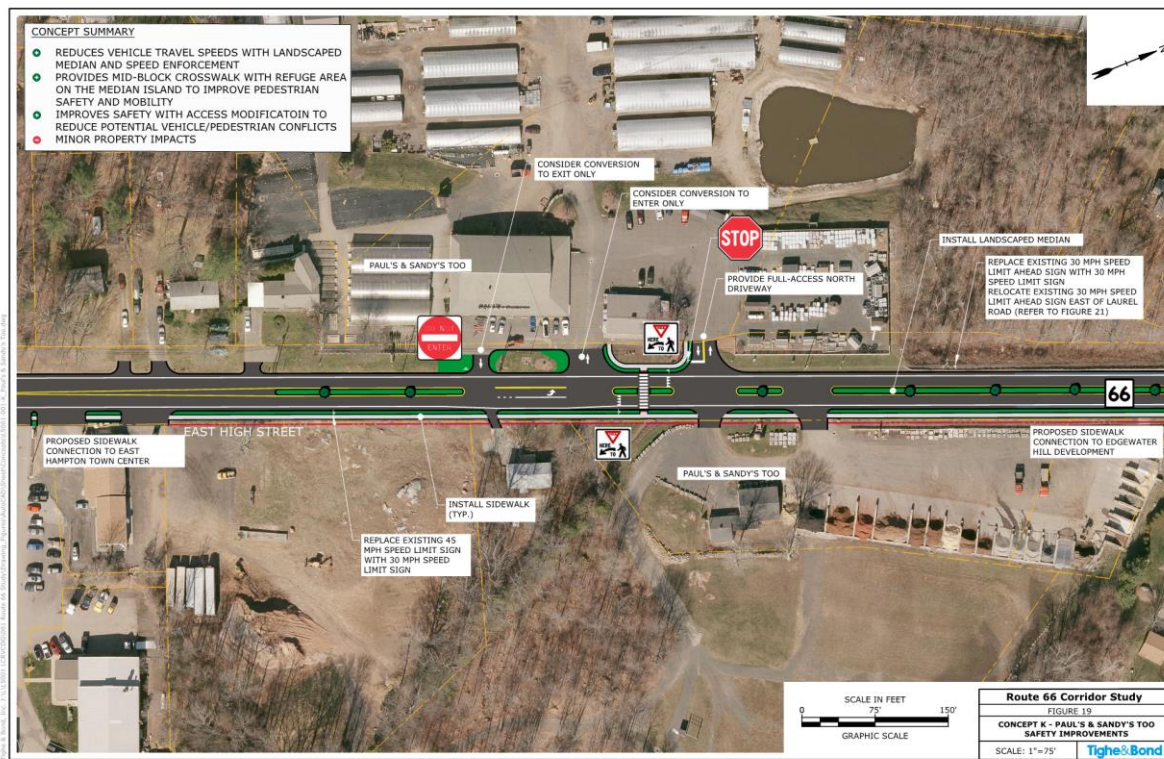


**Project 11: Route 66 at Paul's & Sandy's Too Safety Improvements (Concept K)**

<b>Project Goals:</b>	Install traffic calming measures to mitigate existing speeding issues and improve safety in the vicinity of Paul's & Sandy's Too	<b>Project Type:</b>	Medium
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Short-Term
		<b>Project Cost:</b>	\$2.2 Million

- Major Project Elements:**
- Install a landscaped median along the site frontage to reduce vehicular travel speeds
  - Relocate the existing 30-mph speed limit ahead sign for the westbound direction to Laurel Ridge to the east
  - Replace the existing 45-mph speed limit sign with a 30-mph speed limit sign for the eastbound direction
  - Install a mid-block crosswalk with refuge area on the median island between the northern and middle driveways of Paul's & Sandy's Too
  - Convert the middle and southern driveways to be ingress and egress only, respectively, to reduce potential vehicular and pedestrian conflicts in the area
  - Provide a dedicated Route 66 eastbound left-turn lane at the middle driveway to separate left-turn traffic from through traffic
  - Install continuous sidewalk along the south side of Route 66

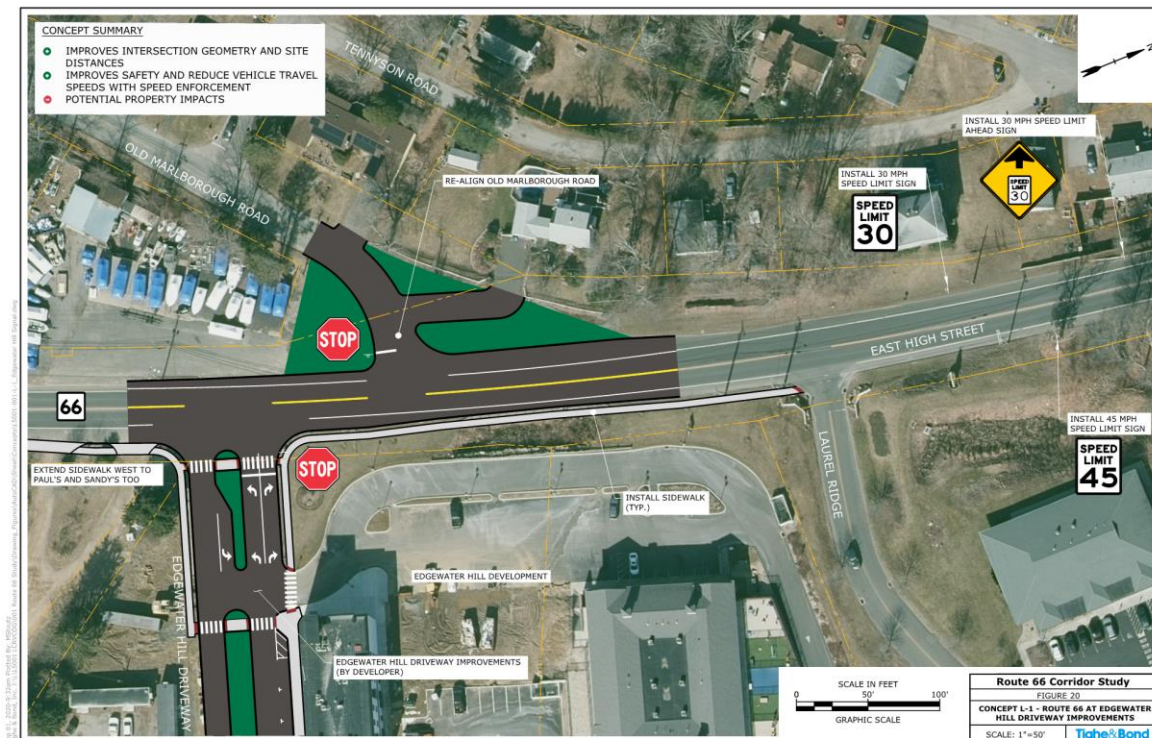
- Permits:**
- Town roadway construction permits for construction within Town right-of-way
  - CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way
  - Coordination with the owners of Paul and Sandy's Too to facilitate site operational modifications





### Project 12: Route 66 at Edgewater Hill Driveway Intersection Improvements (Concept L-1)

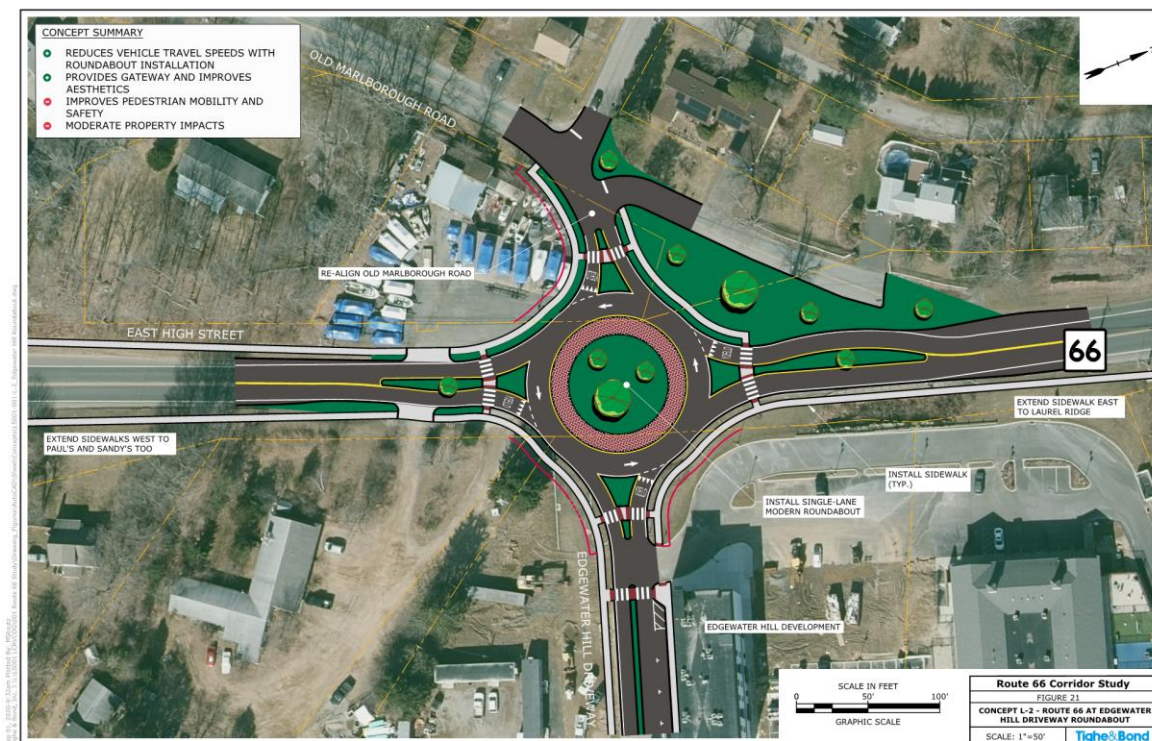
<b>Project Goals:</b>	Improve traffic operation and safety at and in vicinity of the Edgewater Hill Driveway intersection on Route 66; install sidewalks along the site frontage to support pedestrian mobility and access	<b>Project Type:</b>	Small
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Short-Term
		<b>Project Cost<sup>1</sup>:</b>	\$870,000
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Maintain stop sign and boulevard style driveway as part of the Edgewater Hill development</li> <li>Realign Old Marlborough Road skewed approach to a more perpendicular alignment with Route 66</li> <li>Install sidewalks along the site frontage to support the pedestrian mobility and access associated with the proposed mixed-use development</li> </ul>		
	<b>Permits:</b> <ul style="list-style-type: none"> <li>Town roadway construction permits for construction within Town right-of-way</li> <li>CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way</li> <li>Coordination with the developer of the Edgewater Hill development for site driveway modifications associated with any improvements in this intersection area</li> </ul>		



<sup>1</sup> The improvements on the Edgewater Hill Driveway and will be funded and implemented by the developer of Edgewater Hill Mixed-Use Development.

### Project 13: Route 66 at Edgewater Hill Driveway Modern Roundabout (Concept L-2)

<b>Project Goals:</b>	Improve traffic operation and safety at and in vicinity of the Edgewater Hill Driveway intersection on Route 66; install sidewalks along the site frontage to support pedestrian mobility and access	<b>Project Type:</b>	Medium
		<b>Project Complexity:</b>	High
		<b>Project Priority:</b>	Long-Term
		<b>Project Cost:</b>	\$2.3 Million
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Convert the intersection of Old Marlborough Road and Edgewater Hill development driveway at Route 66 into a single-lane modern roundabout to reduce vehicle traffic speeds, improve safety associated with side street turning movements and create an eastern gateway into the East Hampton business district</li> <li>Install sidewalks along both sites of Route 66</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>Town roadway construction permits for construction within Town right-of-way</li> <li>CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way</li> <li>Coordination with the developer of the Edgewater Hill development for site driveway modifications associated with any improvements in this intersection area</li> </ul>		





**Project 14: Route 66 at Lake Drive Safety Improvements (Concept M)**

<b>Project Goals:</b>	Realign Lake Drive at Route 66 to improve sightline, intersection geometry, vehicular turning operations and mitigate safety concerns at the intersection	<b>Project Type:</b>	Small
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Mid-Term
		<b>Project Cost:</b>	\$380,000

**Major Project Elements:**

- Realign Lake Drive at the Arrow Fence driveway to be perpendicular to Route 66

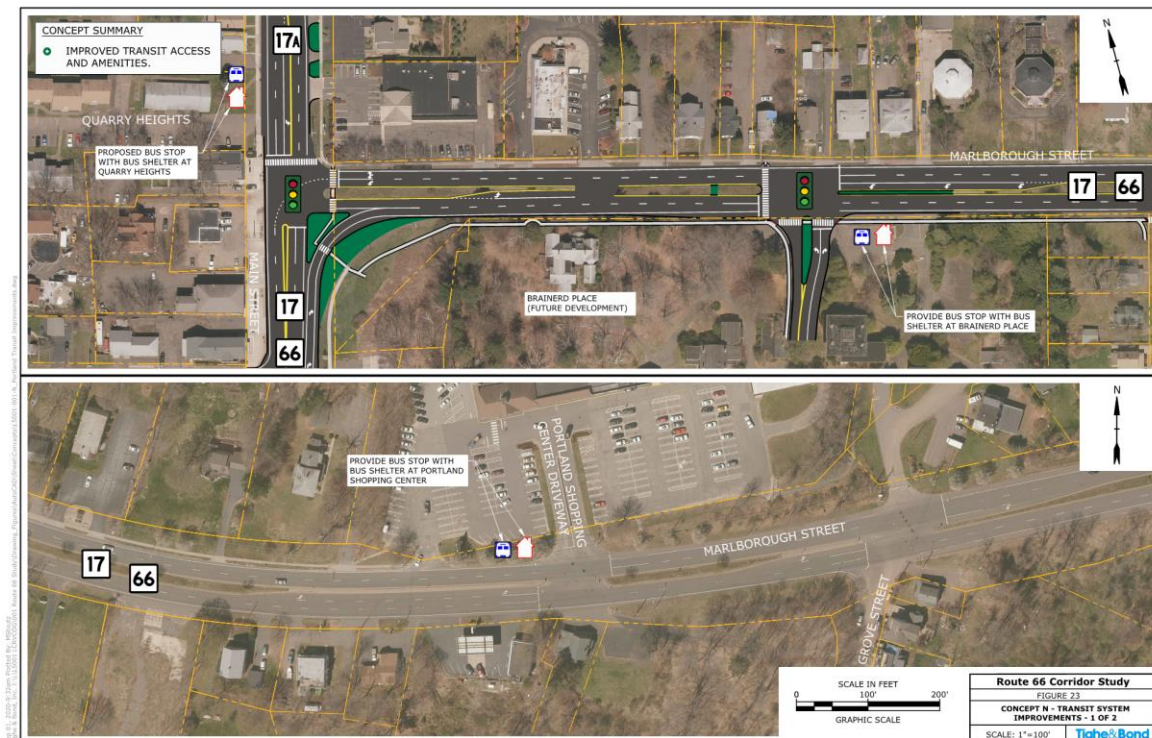
**Permits:**

- Town roadway construction permits for construction within Town right-of-way
- CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way



**Project 15: Transit Improvements (Concept N)**

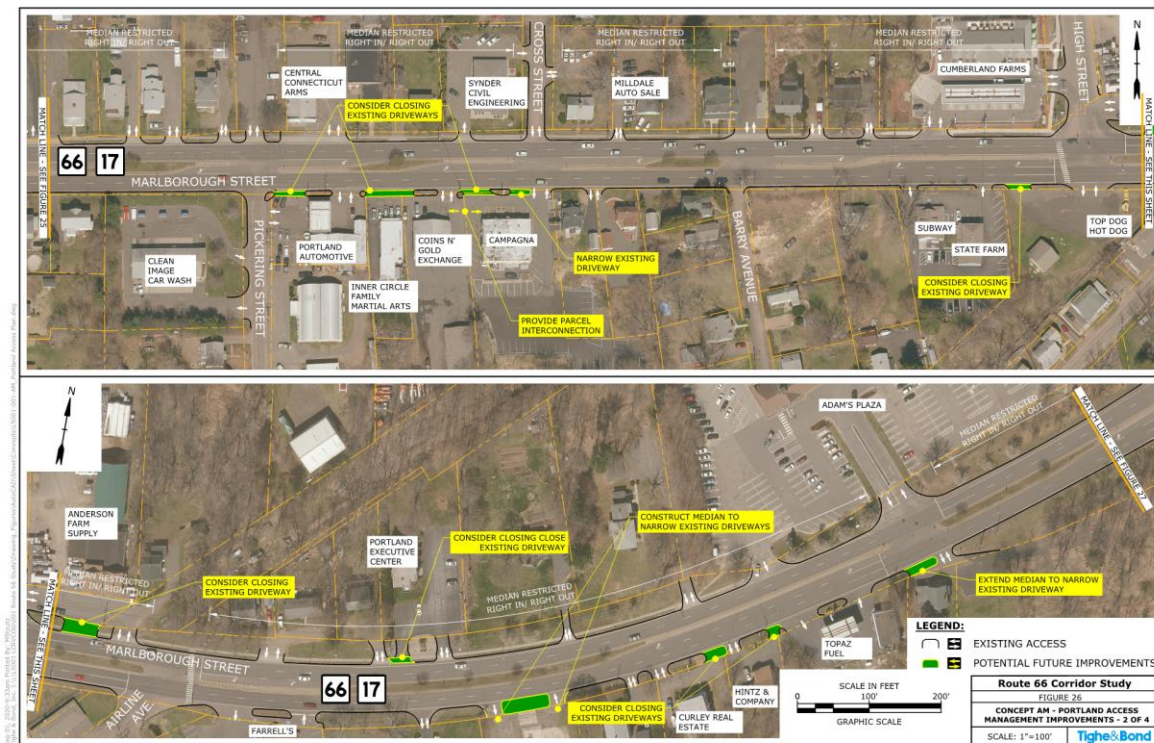
<b>Project Goals:</b>	Improve transit infrastructure and service to promote alternative travel modes	<b>Project Type:</b>	Small
		<b>Project Complexity:</b>	Low
		<b>Project Priority:</b>	Short-Term
		<b>Project Cost:</b>	\$250,000
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Formalize bus stop locations at Quarry Heights, Brainerd Place, Portland Shopping Center, East Hampton Shopping Center, and Edgewater Hill Development along MAT Route 586 (Former Route F)</li> <li>Provide bus shelters at regular bus stops along the route</li> <li>Improve sidewalk connectivity to bus stop locations from transit generating uses</li> </ul>		
<b>Permits:</b>	<ul style="list-style-type: none"> <li>Town roadway construction permits for construction within Town right-of-way</li> <li>Encroachment permits for construction within CTDOT right-of-way</li> </ul>		





**Project 16: Access Management Policy (Plans AM)**

<b>Project Goals:</b>	Modify and coordinate driveway access to parcels along the corridor to minimize the number of curb cuts and improve safety and operations for entering and exiting traffic, pedestrians, and cyclists	<b>Project Type:</b>	Medium
		<b>Project Complexity:</b>	Moderate
		<b>Project Priority:</b>	Mid-Term
		<b>Project Cost<sup>1</sup>:</b>	(See note)
<b>Major Project Elements:</b>	<ul style="list-style-type: none"> <li>Modify driveway ingress/egress restrictions as needed</li> <li>Reduce select driveway widths</li> <li>Close redundant driveway access to parcels in areas where high driveway density exists</li> <li>Interconnect adjacent parcels when appropriate to reduce the demand on entering and exiting driveways for short trips</li> <li>Review and implement access management strategies into local regulations to ensure implementation during development and other regulatory activities</li> </ul>		
	<b>Permits:</b> <ul style="list-style-type: none"> <li>OSTA approval for large developments</li> <li>Town Planning and Zoning approvals for developments</li> <li>Encroachment permits for construction within CTDOT right-of-way</li> </ul>		



<sup>1</sup> Project cost would be incurred by private development or public improvement project.

## Implementation Plan

The implementation plan identifies and prioritizes recommended improvements that could be planned, programmed, and built as funding became available and project need realized. The implementation plan includes the overall project costs, complexity, and benefit. This section of the report provides the Towns, CTDOT, and RiverCOG with a menu of projects with guidance for implementation over time based on a series of qualitative and quantitative metrics.

The Transportation Improvement Program (TIP) includes sixteen improvement projects that address the roadway network, transit system, and pedestrian and bicycle mobility and safety needs in the study area. The TIP recommends physical roadway improvements and identifies numerous improvements to enhance pedestrian, bicycle, and transit access to the roadway system through construction of new and improved facilities for alternative mode travelers. These alternative transportation mode recommendations are shown on the concept plans where applicable as implementation would likely occur through many separate projects as funding from various sources became available.

The priority for each of the recommended improvement projects is based on two primary criteria: project necessity and local interest for implementation. Project necessity is based on the need to mitigate an existing deficiency within the overall transportation system. Projects are deemed to have a higher priority when they address an identified safety deficiency, accessibility, or mitigate a current mobility or operational issue. The project priority categories are defined at Short-Term, Mid-Term, or Long-Term based on the criteria described in Table ES-1.

**TABLE ES-1**

Summary of Project Need Priority Metrics

Project Priority	Project Characteristics
Short-Term	<ul style="list-style-type: none"> <li>Project addresses an urgent safety issue</li> <li>Project is intended to address an existing operational deficiency</li> <li>Project addressed a deficiency in accessibility that has been identified as a local concern</li> </ul>
Mid-Term	<ul style="list-style-type: none"> <li>Project scope provides operational and mobility benefits that are currently an issue, but traffic operations are not poor or failing</li> <li>Local stakeholders have expressed interest in implementing the improvement to enhance the transportation system</li> </ul>
Long-Term	<ul style="list-style-type: none"> <li>Project does not address an identified safety concern</li> <li>Project addresses future travel demand and traffic operations</li> <li>Project may have mobility, accessibility, or multi-modal benefits</li> </ul>

Table ES-2 summarizes the implementation plan recommendations on a project-level basis. Six projects are identified as Short-Term priorities, seven projects as Mid-Term priority, and three projects as Long-Term priority. The projects prioritized as Short-Term indicate that funding sources should be sought to address the existing needs and deficiencies.



**TABLE ES-2**

Summary of Projects in Implementation Plan

	<b>Project Description</b>	<b>Project Priority</b>	<b>Project Complexity</b>	<b>Project Cost</b>
1	Marlborough Street at Main Street Intersection Improvements	Short-Term	Moderate	Funded by the Brainerd Place Development
2	Route 66 Pedestrian Mobility Improvements	Short-Term	Moderate	\$1.5 Million
3	Multi-Modal Mobility Enhancement	Short-Term	Moderate	Varies by Alternative
4	Route 66 Eastbound Merge Lane near Portland Gulf Gas Station Safety Improvement	Short-Term	Low	\$165,000
10	Route 66 at East Hampton Commercial District Improvements	Short-Term	Moderate	\$470,000
11	Route 66 at Paul's & Sandy's Too Safety Improvements	Short-Term	Moderate	\$2.2 Million
12	Route 66 at Edgewater Hill Driveway Intersection Improvements	Short-Term	Moderate	\$870,000
15	Transit Improvements	Short-Term	Low	\$250,000
5	Route 66 at Citgo & Opticom Driveways Operational Improvements	Mid-Term	Low	\$710,000
6	Route 66 at the Ledges Area Safety Improvements	Mid-Term	Moderate	N/A
7	Route 66 at Route 151 & Depot Hill Road Intersection Improvements	Mid-Term	Moderate	\$4.2 Million
9	Route 66 at Childs Road Intersection Improvements	Mid-Term	Low	\$550,000
14	Route 66 at Lake Drive Intersection Improvements	Mid-Term	Moderate	\$380,000
16	Access Management	Mid-Term	Moderate	N/A
8	Route 66 at Route 16 Intersection Improvements	Long-Term	Moderate	\$880,000
13	Route 66 at Edgewater Hill Driveway Modern Roundabout	Long-Term	High	\$2.3 Million